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The Global Innovation Index 2013

The Local Dynamics of Innovation

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The Local Dynamics of Innovation

Soumitra Dutta and **Bruno Lanvin**
Editors

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The Global Innovation Index 2013: The Local Dynamics of Innovation is the result of a collaboration between Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO) as co-publishers, and their Knowledge Partners.

The terms 'country', 'economy', and 'nation' as used in this report do not in all cases refer to a territorial entity that is a state as understood by international law and practice. The terms cover well-defined, geographically self-contained economic areas that may not be states but for which statistical data are maintained on a separate and independent basis.

Disclaimer: The index's methodology and the rankings do not necessarily present the views of WIPO or its Member States. The same applies to the substantive chapters in this report, which are the responsibility of the authors and not WIPO.

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Releasing the Global Innovation Index 2013: The Local Dynamics of Innovation Are Well at Play

We are pleased to present the Global Innovation Index (GII) 2013. The GII 2013, in its 6th edition this year, is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO, a specialized agency of the United Nations). Booz & Company, the Confederation of Indian Industry, du, and Huawei support the elaboration of the GII as Knowledge Partners in 2013.

Over the course of the last six years, the GII has established itself as a leading reference on innovation for researchers and for public and private decision makers. It has evolved into a valuable benchmarking tool to facilitate public-private dialogue. The GII recognizes the key role of innovation as a driver of economic growth and prosperity, and adopts an inclusive, horizontal vision of innovation applicable to both developed and emerging economies.

Local innovation matters

The theme of the GII 2013 is 'The Local Dynamics of Innovation'. The GII 2013 report shows that regional innovation is alive and bustling. New regions are emerging and rejuvenation is taking place even in developed metropolises such as New York City, where Cornell NYC Tech was invited to set up a unique campus focused on technology and innovation on Roosevelt Island. The hope is that this new campus will attract a new talent pool, lead to innovation, create novel jobs, and positively impact the economy of New York City and the surrounding region.

The theme 'Local Dynamics of Innovation' reflects the importance of local hubs and geographic concentrations of universities, companies, specialized suppliers, service providers, and associated institutions in fostering innovation. Clusters have an impact on competitiveness by pooling talent, know-how, research labs, and manufacturing capabilities and concentrating them in a small area. They often specialize in niche markets with a multiplier effect at the national level by fomenting a culture of entrepreneurship. Well-known examples include California in the United States of America, Baden-Württemberg in Germany, the Capital Region of the Republic of Korea, Guangdong Province in China, Stredni Cechy in the Czech Republic, the Mumbai region in India, Tel Aviv in Israel, São Paulo in Brazil, and the list goes on. New initiatives continue to develop in other emerging economies such as in Kenya and the United Republic of Tanzania, Colombia and Viet Nam.

At no other point in history has so much money been spent on R&D worldwide. Never before has innovation been so well distributed among countries.

The GII 2013 sheds light on the factors leading to the excellence of innovation hubs, such as the role of local 'champions' (large corporations), the availability of funding for the development of start-ups, and the importance of path dependency. Linkages among stakeholders (governments, firms, academia, and society) in the development of innovation capabilities—such as the existence of incubators and technology transfer programmes and the interaction of innovation clusters with local, inter-regional, and global networks and value chains—are included in the analyses.

Continuing towards better innovation metrics and policy

The innovation framework underlying the GII continues to evolve as we try each year to be responsive to both the availability of data across a diverse set of countries and to our growing understanding of the phenomenon of innovation. Our goal is to use the GII to capture the multi-dimensional facets of innovation across both developed and emerging economies. We also hope that users of the GII will go further than just focusing on year-to-year comparisons of the country rankings. Rather, the GII results are useful for benchmarking countries against their peers, to study country profiles over time and identify their relative strengths and weaknesses from the rich and unique GII dataset. We are encouraged by the fact that more and more ministers

and other policy makers around the world are using the GII for just this purpose.

We welcome four new members to our Advisory Board: Robert D. Atkinson, President, The Information Technology and Innovation Foundation, USA; Robert Bell, Program Director, National Science Foundation, USA; Dongmin Chen, Professor/Dean, School of Innovation and Entrepreneurship and Director, Peking University, China; and Diego Molano Vega, Minister of Information Technologies and Communications, Colombia.

We believe that the collective efforts of all members of the GII project is paving the way for better and more informed innovation policies around the world.

Soumitra Dutta
Dean, Samuel Curtis Johnson Graduate School of Management, Cornell University

Francis Gurry
Director General, World Intellectual Property Organization

Bruno Lanvin
Executive Director, European Competitiveness Initiative, INSEAD

A Virtuous Circle of Innovation

Booz & Company is honoured to be a Knowledge Partner in the Global Innovation Index report for the third consecutive year. This work is a vital part of our continuing efforts to illuminate the nature and mechanisms of innovation and to assist companies and governments globally as they seek to capture its rich economic and social returns.

One disturbing reality that our research has turned up is a major fault line at the front end of innovation. Booz & Company's most recent Global Innovation 1000 study revealed that just 43% of senior innovation executives and chief technology officers at nearly 700 companies believe their organizations are highly effective at generating new ideas, and only 36% believe they are highly effective at converting ideas to product development projects. Still fewer—one-quarter of respondents—indicate that their organizations are highly effective at both.

This year's Global Innovation Index report is especially timely because it explores a proven solution to the conundrum at the front end of innovation: the innovation hub. As innovation hubs such as Silicon Valley in the United States and the Daedeok Innopolis in the Republic of Korea have demonstrated, idea generation and conversion flourish in these robust ecosystems. Moreover, success begets success: as the companies in these hubs prosper, they invest more in research and development and attract more talent. They produce more ideas and convert more of those ideas into successful products. A virtuous circle is created. For this reason, innovation hubs should be of intense interest to companies and governments worldwide.

There are several models for innovation hubs. In every case we have examined, large enterprises—hub champions—have played a central role in hub development and success. These champions support innovation hubs by providing capital and connections, by facilitating knowledge creation and sharing, and by providing a bridge for the commercialization of ideas.

Governments, especially in emerging economies, play an equally important role. Their policies attract enterprise champions and create fertile conditions for hub growth by providing direct investment, streamlining business and logistical processes, and ensuring the availability of talent.

Innovation is the process by which ideas are generated and commercialized, and innovation hubs can help elevate that process to the level of a differentiating capability. We at Booz & Company are convinced that such capabilities are an essential mechanism in the achievement of a company's, or a nation's, larger strategy—what we call its 'way to play'. A truly differentiating capabilities system is difficult to develop, but, likewise, it is hard for others to replicate. Thus it offers a sustainable competitive advantage that provides the right to win in the market.

We believe that both the public and private sectors have important roles to play in the formation of healthy innovation ecosystems. Furthermore, when they work together, as they do in developing innovation hubs, they can raise their innovation capabilities to new heights and drive corporate and national prosperity.

Cesare R. Mainardi
Chief Executive Officer
Booz & Company

Local Solutions to Global Challenges

The Global Innovation Index (GII) has emerged as a truly successful indicator for setting up a benchmark in the innovation ranking of nations across the globe. It is heartening to see the journey closely and remain associated with this publication, which has not only demonstrated success in standardizing the uncertainties of measuring innovation but also helped in building a consensus among world leaders about the effectiveness of such a study to build future policies.

The theme of year's report, 'The Local Dynamics of Innovation', is highly relevant when we see the different regional growth patterns of the world influenced by local actors and their interactions. These are unique and reflect the characteristics of each nation's land, its people, and its culture. Studying these local dynamics is important because it can provide valuable insight into ways that successful models of innovation have taken shape in different conditions and their recipes for success. It can also help determine how these models can be replicated where the conditions are identical or adjusted where the conditions are similar.

One of the important aspects of studying local innovation dynamics is associated with the tracking of the movements of the tacit knowledge that prevails in such localized environments and that is mostly insulated from outside world. These localized innovation systems do not always correspond to well-defined innovation parameters such as R&D expenditure or patents or publications, but instead they go much deeper to the psyche of individuals, groups, and society. In India, for example, we can observe how local innovation functions and adapts in an environment that is constrained by available resources.

The Confederation of Indian Industry (CII) has been at the core of the Indian journey of innovation for years, and has worked very closely with industry, government (central and state), academia, entrepreneurs, and other actors. In its engagement with the innovation stakeholders in the country, the CII has come across some fundamental weaknesses of the Indian innovation system. Some of these inefficiencies are reflected in the country's current low R&D expenditure in cutting-edge technology and basic sciences, its low rate of commercialization of technology, and its inadequately skilled workforce, to name a few. Despite all these challenges, India has grown rapidly with the help of its people, who are inherently innovative and entrepreneurial, even if their innovations in some cases have been temporary and makeshift.

Like India, many developing and developed nations have much to offer to the world in terms of their innovation models of growth. This current edition of GII provides some interesting and thought-provoking stories and examples of local innovation dynamics that will enable others to gather helpful insights about different models of innovation.

On behalf of the CII, I congratulate INSEAD, the World Intellectual Property Organization, and the new member of the league, Cornell University, for leading this initiative to publish this important innovation index for a global audience. I also thank the other Knowledge Partners for their support and contributions to its success. Last but not the least, I congratulate the GII core team and the wonderful people associated with it, without whom the GII would not have been possible.

Chandrajit Banerjee
Director General
Confederation of Indian Industry

Connectivity as the Driver of Innovation

In today's globalized landscape, innovation is often associated with progress. It represents a business's tenacity in evolving and adapting to the changing face of competition and market conditions. In short, to innovate is a survival instinct compulsory to staying relevant.

Organizations today can no longer take a myopic stance, as their very existence is largely interdependent on the environment in which they exist and to which they cater. Organizations have a moral obligation to ensure that innovation is given a larger mandate to be the engine that enables economic growth, thereby driving societal changes and laying the foundations of an empowered and competitive nation.

The Global Innovation Index is an inspiration for those of us striving to be instruments of change and sets a precedent for those of us looking to make a difference. This year's theme, 'The Local Dynamics of Innovation', is more pertinent than ever; it articulates the need for a collaborative and defining effort from all concerned in shaping the future.

We are in the midst of an evolution. This is the communication era, in which connectivity has become a basic human right. Connectivity is making the world a smaller place by fuelling interaction and opening up access to information and knowledge in myriad ways. This, in turn, spurs economic activity through a process of empowerment. The socioeconomic momentum created in the United Arab Emirates (UAE) in the last few decades makes the country very well positioned to continue to attract a flow of intellectual capital, establishing itself as a hub for innovation in this part of the world.

The democratization of innovation in a reliable and sustainable manner is key to unlocking the true potential of value creation in a tangible manner; it will lay the groundwork for societal change and develop a framework for cohesion through collaboration.

At du, we have established several knowledge platforms through which we are able to mentor the future generation of leaders, aspiring young talent, and entrepreneurs, giving them the tools they need to succeed.

Being environmentally conscientious, we have adopted a green business philosophy of energy conservation to reduce our carbon footprint, contributing to the protection of our natural resources and the environment.

As an economic enabler, we provide a climate that encourages communities to build and grow their businesses—not just in the UAE, but regionally and internationally.

As part of our moral obligation to the communities we serve, we have created a proactive and informative intelligent ecosystem to address healthcare issues in the UAE.

In every aspect of these endeavours there is an underlying theme: connectivity. Connectivity lays the groundwork for empowerment and the framework for innovation.

Innovation itself is more than just a process. It is a belief, a philosophy that embeds itself in the fundamental elements of governance, sustainability, efficiency, and the competitive agility needed to deliver value.

Understanding the benefits of value through innovation is what will define us now and into the future. Achieving this is the responsibility not of one, but of many; a collaborative approach will drive innovation for the benefit of our future generations, our community, and the environment—as the whole is greater than the sum of its parts.

Osman Sultan
Chief Executive Officer
du

Open Innovation with a Global View

Innovation creates social progress and improves the economic well-being of people. The invention of the wheel shortened the distance between locations; the telephone reduced our dependence on the wheel. Today the Internet, over fixed and mobile networks, connects people from around the world, changing the way we communicate, work, learn, and innovate.

Designed as an open, global platform, the Internet enables people to share thoughts and ideas, eliminating the boundaries of geography and providing the ability for people to engage in collaborative innovation. Experts in different locations and from diverse backgrounds can collaborate in real time. As a result, innovation cycles are shortened and the barriers to innovation are lowered, opening up opportunities for all.

Open innovation—the principle that companies offer their own innovation to third parties and use the innovation of others in their own products—creates win-win opportunities. Wherever there are open markets, free-trade policies, and favourable investment environments, capital investment will follow to foster innovation. Within this environment, assets such as talent, capital, and knowledge can be aligned and the impact of innovation in one location can spread to help improve the world as a whole.

Open innovation provides opportunities for public and private enterprises and research institutions, as well as industry chains, to cooperate on multiple levels. Businesses engage customers and partners in new product development. Competitors work together to address common challenges. Duplication is eliminated to enable the creation of better products, faster. Cross-industry and cross-cluster collaboration also creates exciting possibilities. For example, the energy and ICT sectors have joined forces to create smart energy grids that provide significant environmental benefits.

Participation in open innovation is reciprocal: all parties benefit and contribute. This commitment to open, customer-centric innovation has helped Huawei grow from a small, local business to a global ICT leader. Our customers and partners have benefited through their direct participation in the open innovation process.

In open and collaborative innovation, respecting and protecting intellectual property rights (IPRs) is essential. IPRs should not be used to inhibit competition but instead should be used to nurture continuous innovation. We must explore and optimize IPR protection to encourage and promote open innovation.

Most innovation-rich regions are endowed with the ideas, policies, and infrastructure that advocate innovation. In such environments, innovators gravitate towards other innovators and innovation clusters are more easily established.

Regardless of location, however, open innovation offers everyone the opportunity to participate in bringing new ideas to life, whether they reside in an established cluster or not. Openness will help those outside established clusters to engage with those within. This, we believe, will begin to address the geographic imbalances between innovation-rich and innovation-developing regions, enhancing industry competitiveness and thus boosting overall economic development.

Huawei is proud to be a Global Innovation Index Knowledge Partner. We hope to contribute to the global innovation debate, to share our knowledge, and to learn from others through our participation. We hope our work with the Global Innovation Index report will help us to open discussions with telecommunication companies, governments, and private organizations around the world so that we can learn from one another and jointly create an open and effective innovation environment around the globe.

Ken Hu
Deputy Chairman and Rotating Chief Executive Officer
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Advisory Board to the Global Innovation Index

In 2011, an Advisory Board was set up to provide advice on the research underlying the Global Innovation Index (GII), generate synergies at its stages of development, and assist with the dissemination of its messages and results. The Advisory Board is a select group of leading international practitioners and experts with unique knowledge and skills in the realm of innovation. Its members, while coming from diverse geographical and institutional backgrounds (international organizations, the public sector, non-governmental organizations, business, and academia), participate in their personal capacity. We are grateful for the time and support provided by the Advisory Board members.

In 2013, we welcomed four new members to the Advisory Board: Robert D. Atkinson, Robert Bell, Dongmin Chen, and Diego Molano Vega.

We would like to express our gratitude to Rolf Lehming, former Program Director at the National Science Foundation of the United States of America, for his thoughtful contributions to the 2011 and 2012 editions of the GII as a member of the Advisory Board.

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Rankings

Global Innovation Index rankings

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank	Efficiency Ratio	Rank
Switzerland	66.59	**1**	HI	**1**	EUR	**1**	1.00	12
Sweden	61.36	2	HI	2	EUR	2	0.81	55
United Kingdom	61.25	3	HI	3	EUR	3	0.80	60
Netherlands	61.14	4	HI	4	EUR	4	0.91	26
United States of America	60.31	5	HI	5	NAC	**1**	0.74	86
Finland	59.51	6	HI	6	EUR	5	0.79	67
Hong Kong (China)	59.43	7	HI	7	SEAO	**1**	0.68	109
Singapore	59.41	8	HI	8	SEAO	2	0.64	121
Denmark	58.34	9	HI	9	EUR	6	0.76	78
Ireland	57.91	10	HI	10	EUR	7	0.81	57
Canada	57.60	11	HI	11	NAC	2	0.78	68
Luxembourg	56.57	12	HI	12	EUR	8	0.89	33
Iceland	56.40	13	HI	13	EUR	9	0.89	30
Israel	55.98	14	HI	14	NAWA	**1**	0.87	38
Germany	55.83	15	HI	15	EUR	10	0.87	40
Norway	55.64	16	HI	16	EUR	11	0.76	81
New Zealand	54.46	17	HI	17	SEAO	3	0.74	90
Korea, Rep.	53.31	18	HI	18	SEAO	4	0.72	95
Australia	53.07	19	HI	19	SEAO	5	0.65	116
France	52.83	20	HI	20	EUR	12	0.79	63
Belgium	52.49	21	HI	21	EUR	13	0.76	75
Japan	52.23	22	HI	22	SEAO	6	0.66	112
Austria	51.87	23	HI	23	EUR	14	0.71	98
Malta	51.79	24	HI	24	EUR	15	1.06	4
Estonia	50.60	25	HI	25	EUR	16	0.82	51
Spain	49.41	26	HI	26	EUR	17	0.71	101
Cyprus	49.32	27	HI	27	NAWA	2	0.86	43
Czech Republic	48.36	28	HI	28	EUR	18	0.81	53
Italy	47.85	29	HI	29	EUR	19	0.79	62
Slovenia	47.32	30	HI	30	EUR	20	0.78	70
Hungary	46.93	31	HI	31	EUR	21	0.94	23
Malaysia	46.92	32	UM	**1**	SEAO	7	0.81	52
Latvia	45.24	33	UM	2	EUR	22	0.77	74
Portugal	45.10	34	HI	32	EUR	23	0.73	92
China	44.66	35	UM	3	SEAO	8	0.98	14
Slovakia	42.25	36	HI	33	EUR	24	0.75	84
Croatia	41.95	37	HI	34	EUR	25	0.82	50
United Arab Emirates	41.87	38	HI	35	NAWA	3	0.55	133
Costa Rica	41.54	39	UM	4	LCN	**1**	1.02	9
Lithuania	41.39	40	UM	5	EUR	26	0.69	105
Bulgaria	41.33	41	UM	6	EUR	27	0.88	35
Saudi Arabia	41.21	42	HI	36	NAWA	4	0.80	61
Qatar	41.00	43	HI	37	NAWA	5	0.71	97
Montenegro	40.95	44	UM	7	EUR	28	0.72	94
Moldova, Rep.	40.94	45	LM	**1**	EUR	29	1.08	2
Chile	40.58	46	UM	8	LCN	2	0.74	88
Barbados	40.48	47	HI	38	LCN	3	0.73	91
Romania	40.33	48	UM	9	EUR	30	0.88	34
Poland	40.12	49	HI	39	EUR	31	0.68	110
Kuwait	40.02	50	HI	40	NAWA	6	1.03	8
TFYR of Macedonia	38.18	51	UM	10	EUR	32	0.72	96
Uruguay	38.08	52	UM	11	LCN	4	0.85	45
Mauritius	38.00	53	UM	12	SSF	**1**	0.80	59
Serbia	37.87	54	UM	13	EUR	33	0.82	49
Greece	37.71	55	HI	41	EUR	34	0.65	118
Argentina	37.66	56	UM	14	LCN	5	0.94	20
Thailand	37.63	57	UM	15	SEAO	9	0.76	76
South Africa	37.60	58	UM	16	SSF	2	0.71	99
Armenia	37.59	59	LM	2	NAWA	7	0.86	42
Colombia	37.38	60	UM	17	LCN	6	0.76	79
Jordan	37.30	61	UM	18	NAWA	8	0.77	73
Russian Federation	37.20	62	UM	19	EUR	35	0.70	104
Mexico	36.82	63	UM	20	LCN	7	0.81	56
Brazil	36.33	64	UM	21	LCN	8	0.78	69
Bosnia and Herzegovina	36.24	65	UM	22	EUR	36	0.70	103
India	36.17	66	LM	3	CSA	**1**	1.02	11
Bahrain	36.13	67	HI	42	NAWA	9	0.62	123
Turkey	36.03	68	UM	23	NAWA	10	0.90	29
Peru	35.96	69	UM	24	LCN	9	0.77	72
Tunisia	35.82	70	UM	25	NAWA	11	0.88	36
Ukraine	35.78	71	LM	4	EUR	37	0.89	31

Global Innovation Index rankings *(continued)*

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank	Efficiency Ratio	Rank	Median: 0.78
Mongolia	35.77	72	LM	5	SEAO	10	0.62	122	
Georgia	35.56	73	LM	6	NAWA	12	0.71	100	
Brunei Darussalam	35.53	74	HI	43	SEAO	11	0.65	119	
Lebanon	35.47	75	UM	26	NAWA	13	0.66	114	
Viet Nam	34.82	76	LM	7	SEAO	12	0.96	17	
Belarus	34.62	77	UM	27	EUR	38	0.75	82	
Guyana	34.36	78	LM	8	LCN	10	0.97	15	
Dominican Republic	33.28	79	UM	28	LCN	11	0.90	28	
Oman	33.25	80	HI	44	NAWA	14	0.54	134	
Trinidad and Tobago	33.17	81	HI	45	LCN	12	0.75	85	
Jamaica	32.89	82	UM	29	LCN	13	0.79	65	
Ecuador	32.83	83	UM	30	LCN	14	0.94	21	
Kazakhstan	32.73	84	UM	31	CSA	2	0.61	126	
Indonesia	31.95	85	LM	9	SEAO	13	1.04	6	
Panama	31.82	86	UM	32	LCN	15	0.61	127	
Guatemala	31.46	87	LM	10	LCN	16	0.79	66	
El Salvador	31.32	88	LM	11	LCN	17	0.76	80	
Uganda	31.21	89	LI	**1**	SSF	3	0.95	19	
Philippines	31.18	90	LM	12	SEAO	14	0.93	24	
Botswana	31.14	91	UM	33	SSF	4	0.51	136	
Morocco	30.89	92	LM	13	NAWA	15	0.75	83	
Albania	30.85	93	LM	14	EUR	39	0.58	129	
Ghana	30.60	94	LM	15	SSF	5	0.80	58	
Bolivia, Plurinational St.	30.48	95	LM	16	LCN	18	0.88	37	
Senegal	30.48	96	LM	17	SSF	6	0.95	18	
Fiji	30.46	97	LM	18	SEAO	15	0.51	137	
Sri Lanka	30.45	98	LM	19	CSA	3	0.99	13	
Kenya	30.28	99	LI	2	SSF	7	0.78	71	
Paraguay	30.28	100	LM	20	LCN	19	0.82	48	
Tajikistan	30.00	101	LI	3	CSA	4	0.90	27	
Belize	29.98	102	LM	21	LCN	20	0.73	93	
Cape Verde	29.69	103	LM	22	SSF	8	0.57	130	
Swaziland	29.60	104	LM	23	SSF	9	1.06	5	
Azerbaijan	28.99	105	UM	34	NAWA	16	0.65	117	
Mali	28.84	106	LI	4	SSF	10	1.13	**1**	
Honduras	28.80	107	LM	24	LCN	21	0.66	115	
Egypt	28.48	108	LM	25	NAWA	17	0.68	108	
Namibia	28.36	109	UM	35	SSF	11	0.48	139	
Cambodia	28.07	110	LI	5	SEAO	16	0.87	39	
Gabon	28.04	111	UM	36	SSF	12	0.81	54	
Rwanda	27.64	112	LI	6	SSF	13	0.64	120	
Iran, Islamic Rep.	27.30	113	UM	37	CSA	5	0.68	107	
Venezuela, Bolivarian Rep.	27.25	114	UM	38	LCN	22	1.02	10	
Nicaragua	27.10	115	LM	26	LCN	23	0.62	125	
Burkina Faso	27.03	116	LI	7	SSF	14	0.79	64	
Kyrgyzstan	26.98	117	LI	8	CSA	6	0.56	131	
Zambia	26.79	118	LM	27	SSF	15	0.89	32	
Malawi	26.73	119	LI	9	SSF	16	0.87	41	
Nigeria	26.57	120	LM	28	SSF	17	1.03	7	
Mozambique	26.50	121	LI	10	SSF	18	0.67	111	
Gambia	26.39	122	LI	11	SSF	19	0.86	44	
Tanzania, United Rep.	26.35	123	LI	12	SSF	20	0.66	113	
Lesotho	26.29	124	LM	29	SSF	21	0.47	140	
Cameroon	25.71	125	LM	30	SSF	22	0.84	47	
Guinea	25.70	126	LI	13	SSF	23	1.07	3	
Benin	25.10	127	LI	14	SSF	24	0.69	106	
Nepal	24.97	128	LI	15	CSA	7	0.76	77	
Ethiopia	24.80	129	LI	16	SSF	25	0.74	87	
Bangladesh	24.52	130	LI	17	CSA	8	0.84	46	
Niger	24.03	131	LI	18	SSF	26	0.71	102	
Zimbabwe	23.98	132	LI	19	SSF	27	0.91	25	
Uzbekistan	23.87	133	LM	31	CSA	9	0.52	135	
Syrian Arab Republic	23.73	134	LM	32	NAWA	18	0.45	142	
Angola	23.46	135	UM	39	SSF	28	0.94	22	
Côte d'Ivoire	23.42	136	LM	33	SSF	29	0.74	89	
Pakistan	23.33	137	LM	34	CSA	10	0.97	16	
Algeria	23.11	138	UM	40	NAWA	19	0.46	141	
Togo	23.04	139	LI	20	SSF	30	0.56	132	
Madagascar	22.95	140	LI	21	SSF	31	0.59	128	
Sudan	19.81	141	LM	35	SSF	32	0.49	138	
Yemen	19.32	142	LM	36	NAWA	20	0.62	124	

Note: World Bank Income Group Classification (July 2012): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification (11 February 2013): EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; and SSF = Sub-Saharan Africa.

Chapters

The Global Innovation Index 2013: Local Dynamics Keep Innovation Strong in the Face of Crisis

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Last year, we introduced the Global Innovation Index (GII) by stating that the global economic recovery was fragile and uneven across regions. This still holds in 2013. After the downturn of 2009, high-income countries have seen the sprouting of many green shoots of economic recovery. Most of them, however, vanished before generating a lasting growth momentum.

Facing a fragile economic recovery

The first half of 2013 witnessed an economic uptick, but its scope and strength have been less than anticipated last year.[1] Overall, economic growth has been and remains uneven between emerging markets and high-income economies. On the one hand, growth prospects for many low- and middle-income economies continue to be encouraging; large middle-income economies such as China exhibit solid economic performance, although they too have seen smaller growth rates by recent historical standards. On the other hand, many high-income economies continue to struggle on their way to recovery; while growth in the United States of America (USA) and Japan is improving, the growth forecasts for the euro area have been revised downward.

Although economic policy action continues to be largely focused on finding the right balance between reducing debt and supporting demand via economic stimulus, the key questions remain: Where will future growth come from to drive the global economy? Where and how will future jobs be created? In this context, the importance of innovation cannot be emphasized enough. Policies to promote innovation lay the foundation for future growth, productivity improvements, and better jobs. Indeed, opportunities for new sources of innovation-based growth abound in fields such as education, the environment, energy, food, health, information technologies, and transport. The challenge is to prioritize areas that will yield sustainable growth addressing the key economic, environmental, and societal issues we are facing.

Innovation is alive and well

Last year, this report noted that the effects of the recent economic crisis on innovation are complex.[2] Reduced innovation expenditures today might lead to reduced innovation expenditures and output in the future, a phenomenon dubbed 'innovation hysteresis'. At the same time, the crisis has presented many forward-looking firms and countries with new opportunities to innovate and move forward.

After a significant drop in 2009, countries and firms have resumed investing in R&D and innovation (see Box 1). Furthermore, according to private data sources, gross expenditures on R&D in many top-spending developed and emerging nations have been characterized by a continuously positive upward trend since 2010; these countries are exhibiting healthy growth in 2012 and 2013 as well, with countries such as China, India, Indonesia, and Malaysia leading with double-digit growth.[3]

As measured by the global use of intellectual property (IP), recovery thus far has also been swift and broad-based. After 2009, we witnessed strong growth of patent applications worldwide—by 7.5% in 2010 and 7.8% in 2011, rates that are significantly higher than those countries experienced before the crisis. International patent applications filed under the Patent Cooperation Treaty also grew by 11% in 2011 and by 6.6% in 2012.[4]

However, innovation cannot be reduced to investments in R&D and patents. The vision offered by the GII is more complex and offers a different view about the dynamics that shape innovation globally.

The spiky dispersion of innovation

One of the important motivations behind the creation of the GII was the realization that innovation has become more global, more dispersed than it used to be. The results of the GII this year and over the last years provide testimony to the evolving global nature of innovation today. And although high-income

Box 1: From an R&D crisis to recovery, but diverse outcomes so far

Research and development (R&D) expenditures of firms in high-income economies dropped from the annual increase in R&D spending of about 4% in 2008 to a decline of 5% in 2009.[1] Worldwide, the effects of the crisis led to a decline of business R&D in 2009 by close to 1%, down from the 5% growth seen in 2008.[2] This impact on business R&D in 2009 had been cushioned by government policies that increased the R&D paid by public funds.[3] Still, in Organisation for Economic Co-operation and Development (OECD) countries, private and public R&D combined declined by 1.4% in 2009.[4] Although many non-OECD countries—such as Argentina, China, and the Russian Federation—continued with robust R&D spending despite the crisis,[5] global R&D expenditures decreased from an annual growth of 4.7% in 2008 to 1.8% in 2009.[6]

Recovery has been taking place since 2009. At the firm level, the top 1,000 R&D spenders across the world have increased their R&D investment—in nominal terms—significantly, with expenditures since 2010 exceeding pre-crisis levels.[7] These top spenders increased their R&D expenditures by 9% in 2010 and by 10% in 2011.

Although the data are incomplete, it appears that in the aggregate, and beyond the top 1,000 alone, firms increased their R&D expenditures by 2.3% in 2010,[8] and by 1.2% in mostly high-income countries.[9] Total R&D expenditures in OECD countries grew in real terms by 1.3% in 2010 and an estimated 1.8% in 2011.[10] The situation is not uniform between countries, however. In some countries, business and total R&D are significantly above pre-crisis levels, whereas in others they are still below crisis levels (see Tables 1.1 and 1.2). It is mostly non-OECD economies and economies in Eastern Europe that see higher R&D spending today than they did in the past. According to private sources, the total R&D expenditure in many top-spending high- and middle-income economies has indeed been characterized by a continuously positive upward trend since 2010, with healthy growth in 2012 and 2013, and with countries such as Indonesia, India, Malaysia, and China leading in terms of increased R&D efforts.[11]

Note

Notes and references for this box appear at the end of the chapter.

Table 1.1: Business enterprise expenditure on R&D (BERD)

Continued positive trends of business R&D throughout the crisis and until 2011

	PRE-CRISIS	CRISIS		RECOVERY	
	2007	2008	2009	2010	2011
Estonia	96	100	99	131	259^{p}
Slovenia	78	100	103	124	160^{p}
Hungary	93	100	118	125	137
Poland	88	100	105	111	136
Slovak Republic	85	100	93	130	127
Czech Republic	102	100	97	108	127
Netherlands	107	100	93	98	119^{p}
Ireland	92	100	116	117	118^{p}

Business R&D is below pre-crisis (2008) levels in 2011

	PRE-CRISIS	CRISIS		RECOVERY	
	2007	2008	2009	2010	2011
Norway	94	100	98	95	99^{p}
Romania	117	100	102	94	98
United Kingdom	101	100	97	97	97^{p}
United States of America	95	100	96	94	94^{p}
Finland	91	100	94	93	94
Sweden	91	100	88	86	90
Spain	95	100	94	93	90
Portugal	79	100	100	96	89^{p}
Canada	105	100	95	90	88^{p}
Luxembourg	103	100	97	77	76^{p}

Source: OECD MSTI, updated 30 April 2013; Business enterprise expenditure on R&D (BERD) at constant 2005 PPP$, Index = 2008. Updated from OECD, 2012.

Note: p = provisional data.

Table 1.2: Gross domestic expenditure on R&D (GERD)

Continued positive trends of business R&D throughout the crisis and until 2011

	PRE-CRISIS	CRISIS		RECOVERY	
	2007	2008	2009	2010	2011
Estonia	88	100	96	113	178^{p}
Slovak Republic	92	100	97	132	147
China	87	100	126	144	n/a
Slovenia	84	100	103	118	140^{p}
Poland	89	100	113	128	140
Czech Republic	102	100	100	108	131
Argentina	91	100	114	130	n/a
Turkey	99	100	111	121	n/a
Republic of Korea	93	100	106	119	n/a
Chile	80	100	108	117	n/a
Hungary	97	100	108	110	115

GERD is below pre-crisis (2008) levels in 2010

	PRE-CRISIS	CRISIS		RECOVERY	
	2007	2008	2009	2010	2011
Finland	94	100	97	100	99
United States of America	96	100	99	98	98^{p}
United Kingdom	100	100	100	99	98^{p}
Portugal	78	100	106	105	97^{p}
Sweden	93	100	92	93	96
Spain	93	100	99	99	95
Canada	102	100	98	97	93^{p}
Japan	101	100	91	93	n/a
Singapore	88	100	84	90	n/a
Luxembourg	96	100	100	88	86^{p}
Romania	84	100	76	73	82

Source: OECD MSTI, updated 30 April 2013; Business enterprise expenditure on R&D (BERD) at constant 2005 PPP$, Index = 2008.

Note: p = provisional data.

economies dominate the list, several new players have increased their innovation capabilities and outputs.

The dispersion of innovation is expected to continue because emerging markets have not experienced the same R&D declines during the peak of the crisis, and in fact they have actually increased their R&D since the recovery began by significantly wider margins than high-income countries. Countries such as China, Argentina, Brazil, Poland, India, the Russian Federation, Turkey, and South Africa (in order of R&D spending growth) have shown a very high compound annual growth rate in their R&D spending from 2008 to 2013.[5] The same is true for patent filings. Emerging markets, and notably China, are now driving the growth in filings to a significant extent and making up an increasing share of global patents. The changing geography of innovation has truly been reinforced by the crisis.[6]

A recent article in *Nature* analysed the citation patterns of articles published in key physics journals and found that, although the USA accounted for 85.6% of the published papers in the 1960s, this proportion has declined to 36.7% in the past decade.[7] New centres of knowledge creation have arisen in Europe and Asia. However, this study also found that, although scientific research has become more globally distributed, its production remains highly concentrated and uneven or spiky. The world's leading cities for the production of scientific papers at the highest levels have remained essentially the same for the past three decades.

The local dynamics of innovation

Examples of innovation systems or entities at the local (sub-national) level typically include clusters;[8] they also include innovation-driven enterprises, regions, cities, or universities that are not linked to each other in a sufficiently structured way to be described as clusters. Several researchers have emphasized the importance of local innovation systems.[9] Recent field work and local research enriches the debate by bringing to light relevant information, data, and case studies about local innovation in developing countries. For example, aiming to identify challenges and concrete opportunities for fostering local development, RedeSist (Research Network on Local Productive and Innovative Systems) in Brazil highlights the local dimension of innovative and productive processes.[10]

Until the 1990s, the linear model of innovation policy was dominant. This model led to a focus on providing R&D infrastructure, financial support for innovation in companies, and technology transfer. Resulting analyses and policies emphasized the supply of innovation inputs and support instruments, often neglecting the absorption capacity of firms and the specific demand for innovation support in less-favoured regions. Moreover, issues such as management and organizational deficits (in particular within small and medium-sized enterprises) were often overlooked.[11]

More recently, innovative regions and spaces have garnered increased attention. These studies concentrate on the analysis of well-performing regions, dealing with the questions of why such industries concentrate in particular locations, which kinds of linkages and networks exist among and around them, and to what extent knowledge spillovers can be observed. Based on this literature, a broader vision of 'local' innovation has emerged, one that generally includes the following areas of focus: (1) encouraging high-tech, knowledge-based, or 'creative' industries; (2) building up research excellence; (3) attracting global companies; and (4) stimulating spin-offs.

This shift in emphasis should not come as a surprise, since the renewed approach to local innovation is actually at the confluence of two main streams of analysis: the 'new growth theory', which is centred on knowledge intensity,[12] and the cluster approach mentioned earlier.

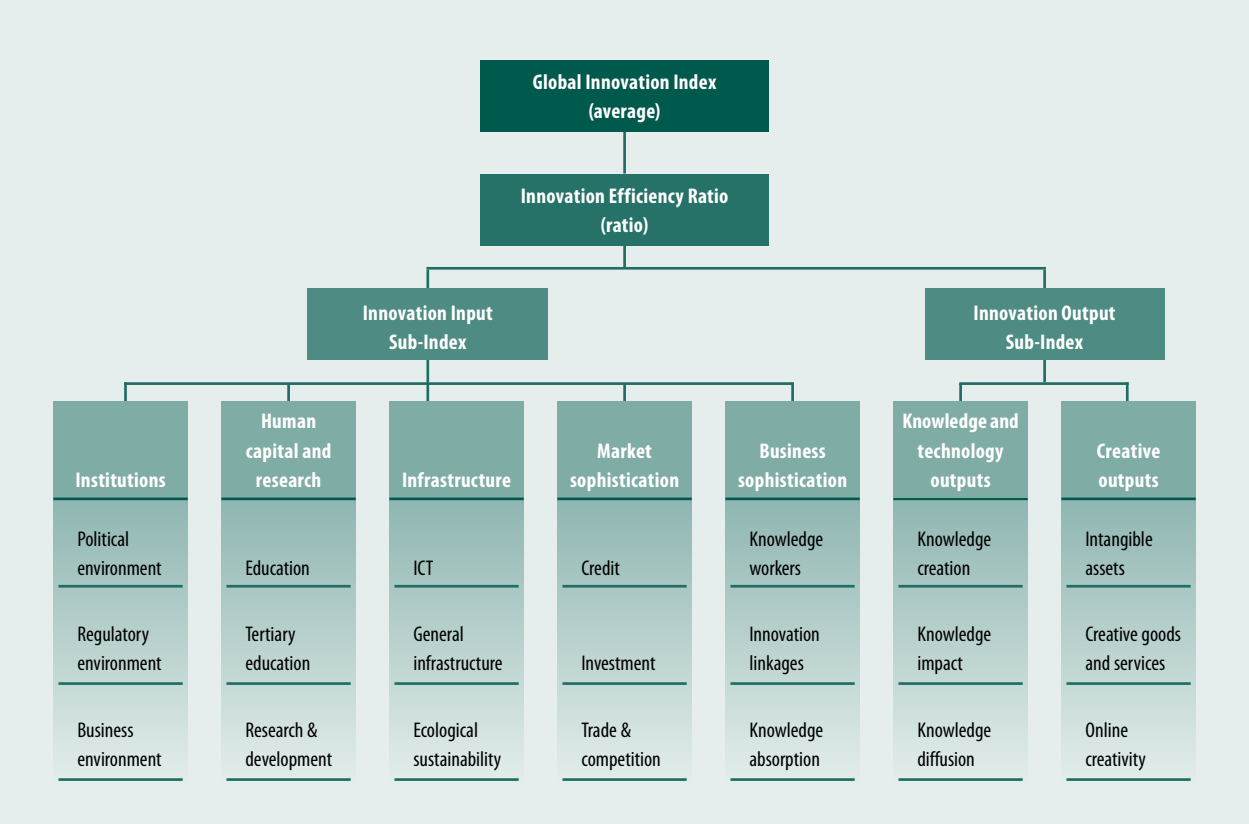
The significant work done since the mid-1990s around regional innovation systems contributes to this debate, highlighting the various deficiencies that can prevent local innovation from reaching sustainable market success.

For real progress to occur at local levels of innovation, critical elements need to be explored, identified, and measured. These elements include the specific strengths and weaknesses of local industries and knowledge institutions as well as access to finance and to markets within and outside national borders.[13] They also include the ability to move from ideas to marketable innovations. Together, these aspects are specific to every single local environment and need to be considered as such.

Not all attempts to create innovation clusters or 'innovation spaces' at the local level have been successful. Several key questions and critical issues arise concerning the local dynamics of innovation, including: Do clusters and local innovation spaces need critical mass to succeed? Can the dynamics of innovation suffer from an overabundance of clusters? Can one define complementarities among clusters within a particular national space?

These issues are at the forefront of current research of innovation. Several chapters in this report—from UNU-MERIT, the World Bank, the Organisation for Economic Co-operation and Development (OECD), and the Universidad de la

Figure 1: Framework of the Global Innovation Index 2013



República in Uruguay—attempt to consider them in the light of new data, examples, and approaches. In particular, the chapter by Annalisa Primi (OECD) shows that (1) the 'spikiness' of innovation tends to persist and few places (regions, cities, or local systems) concentrate innovation assets, capabilities, and financing; (2) new innovation hotspots are emerging in China and in other developing economies; and (3) local innovation systems are increasingly 'internationalized', meaning that their interaction with other regions and cities is growing, with respect to both collaboration for innovation and business organization.

The spiky dispersion of innovation around the globe presents important challenges for policy makers and deserves further study. Success in innovation requires excellence across a range of input conditions, an objective that is difficult to reach for many less-developed economies. As stated in a recent article by Richard Florida,

> Great scientific centres not only require eminent universities and laboratories, they also require a broader environment of meritocracy and openness to diversity that can attract top talent from around the world. For this reason, it is unlikely that the world's leading science cities will change significantly in coming decades. . . . The presence of major scientific centres has itself become a key source of innovation and economic growth. This is likely to lead to more concentrated innovation and economic development in the future, increasing the gaps between the world's scientific 'haves' and 'have-nots'. [14]

This holistic view of innovation is aligned with the principles underlying the design of the GII framework, which is constructed on the newest research and data on the measurement of innovation. The GII subscribes to a broad view of innovation that includes traditional scientific output indicators and also a wide range of new indicators for creative outputs.

A holistic view of innovation: The GII conceptual framework

The GII relies on two sub-indices—the Innovation Input Sub-Index and the Innovation Output Sub-Index—each built around pillars. Four overall measures are calculated (Figure 1):

1. **The Innovation Input Sub-Index:** Five input pillars capture elements of the national economy that enables innovative activities: (1) Institutions, (2) Human capital and research, (3) Infrastructure, (4) Market sophistication, and (5) Business sophistication.

2. **The Innovation Output Sub-Index:** Innovation outputs are the results of innovative activities within the economy. There are two output pillars: (6) Knowledge and technology outputs and (7) Creative outputs.

3. **The overall GII score** is the simple average of the Input and Output Sub-Indices.

4. **The Innovation Efficiency Ratio** is the ratio of the Output Sub-Index over the Input Sub-Index. It shows how much innovation output a given country is getting for its inputs.

Each pillar is divided into three sub-pillars and each sub-pillar is composed of individual indicators, for a total of 84 indicators.[15] Further details on the GII framework and the indicators used are provided in Annex 1. This year the GII model includes 142 economies, representing 94.9% of the world's population and 98.7% of the world's GDP (in current US dollars).

Global Innovation Index 2013: Main findings

The GII presents a rich trove of data to analyse innovation trends. The GII model has evolved over its last editions, and each year the variables included in its computation are reviewed and updated to provide the best possible snapshot of global innovation. Thus, year-on-year comparisons are not always easily possible and care needs to be exercised when analysing specific trends.

Innovative countries (with the exception of a few small economies or city states, such as Switzerland and Singapore) are rarely able to achieve uniformly high levels of achievement along all the different input dimensions of the GII model. Rather, many of the innovation capabilities are developed in local ecosystems that revolve around particular cities, clusters, or regions. Hence it is only appropriate that this year's GII focuses on the local dynamics of innovation.

Some of the key findings of this year's report are summarized below.

Innovation is a global game: The top-ranked countries in the GII come from different parts of the globe, confirming the global dispersion of innovation. The top 10 this year are ranked as follows:

1. Switzerland (1st in 2012)
2. Sweden (2nd)
3. United Kingdom (5th)
4. Netherlands (6th)
5. United States of America (10th)
6. Finland (4th)
7. Hong Kong (China) (8th)
8. Singapore (3rd)
9. Denmark (7th), and
10. Ireland (9th).

The USA rejoined the five most-innovative nations and the UK moved up to the 3rd spot, while Switzerland and Sweden retained the first two places in the rankings this year. The top 25 ranked countries in the GII represent a mixture of nations from across the world: they are from North America, Europe, Asia, Oceania, and the Middle East.

An innovation divide persists: The GII 2013 results show a striking pattern of stability among the most innovative nations, which demonstrates both a persistent innovation divide across time and the spiky dispersion of innovation (Box 2). Whether we look at the top 10 or top 25 innovators in the world, the GII rankings show that that, although individual countries swap their respective rankings within these groups, not a single country moved in or out of these groups this year. Even as innovators are thriving in local and regional hubs around the world, rankings remain strongly correlated with income levels: on average, high-income countries outpace developing countries by a wide margin across the board in terms of scores; other high- and middle-income countries are not yet breaking into the highest ranks of the GII 2013. Innovation divides also appear within regions. Last year, the GII 2012 identified the presence of a multi-speed Europe, with innovation leaders in northern Europe and countries performing less well in southern and eastern Europe, a trend confirmed this year.[16] This year a box comparing performances of best-ranked countries in Sub-Saharan Africa is included (Box 4).

Some nations are learning and rapidly improving their innovation capabilities: The GII results this year confirm the trend observed last year that a select group of emerging and middle-income countries are faring very well in innovation and moving up in the GII rankings. Eighteen emerging economies are outperforming others in their respective income groups: Armenia, China, Costa Rica, Georgia, Hungary, India, Jordan, Kenya, Latvia, Malaysia, Mali, the Republic of Moldova, Mongolia, Montenegro, Senegal, Tajikistan, Uganda, and Viet Nam. All of them demonstrate above-par levels of innovation compared with other countries with similar income levels. Their progress, even if not uniform, is mostly a result of a good policy

mix on multiple fronts: institutions, skills, infrastructures, integration with global markets, and linkages to the business community.

Mixed performance in middle-income countries; BRICs falling behind in GII rankings: The GII 2012 posited that a holistic, knowledge-based growth strategy for innovation was desirable: a strategy in which innovation improvements resulted from continuous improvements across all of the multiple input and output dimensions of the GII and in which these improvements were integrated across large segments of society and the economy. Achieving these broad-based and continuous improvements seems to be a challenge for many middle-income economies, as evidenced by their overall GII ranks (none have yet been able to break into the top 25).[17] The BRICs have experienced a relative stagnation or mostly a drop in innovation ranks in 2013 as compared to 2012, repeating the experience of last year (2011 to 2012): China (35th; a decrease of one spot from 2012 and six from 2011), the Russian Federation (62nd; a decrease of 11 positions from 2012 and six from 2011), Brazil (64th; a decrease of six spots from 2012 and 17 from 2011), and India (66th; a decrease of two positions from 2012 and four from 2011). In this context, other emerging middle-income nations are increasing their innovation ranks rapidly: Mexico (63rd; an increase of 16 positions from 2012 and 18 from 2011), Indonesia (85th; an increase of 15 from 2012 and 14 from 2011), and others (the Plurinational State of Bolivia, Cambodia, Costa Rica, Ecuador, Uganda, and Uruguay) all increased their rankings by more than 15 positions this year (see Box 2). That said, BRICs and other middle-income countries perform particularly well in three indicators, aimed at capturing the quality of innovations, introduced this year (see Box 3).

Discussion of results: The world's top innovators

The following analysis describes and analyses the salient features of the GII 2013 results. It does so for the global leaders in each index and for innovation performances in light of income levels.[18] A short discussion of the rankings at the regional level follows.[19]

Tables 1 through 3 report the overall GII and the Input and Output Sub-Indices, with regional and income group rankings.[20]

The top 10 in the Global Innovation Index

The top 10 countries in the GII 2013 edition are Switzerland, Sweden, the United Kingdom (UK), the Netherlands, the United States of America (USA), Finland, Hong Kong (China), Singapore, Denmark, and Ireland. The same 10 countries were in the top 10 in 2012.

Switzerland maintains its 2011 and 2012 position as number 1 in the GII, as well as its 2012 1st position in the Innovation Output Sub-Index and in Knowledge and technology outputs and its 2nd place in Creative outputs. It achieves a spot among the top 25 in all pillars and sub-pillars with only four exceptions: sub-pillars Education (where it ranks 56th); Knowledge absorption (34th), Tertiary education (32nd), and Business environment (31st). A knowledge-based economy of 8.1 million people with one of the highest GDP per capita in the world (PPP$45,285.8), its high innovation efficiency ratio (12th highest, 1st among the GII top 10) allows Switzerland to translate its robust innovation capabilities into high-level innovation outputs. In addition, Switzerland is one of the four economies at the efficient frontier (see Annex 3).

The runner-up, **Sweden,** retains the position it held in 2011 and 2012 and leads among Nordic and European Union (EU) countries. It ranks 5th on inputs and 3rd on outputs, with strengths in all seven pillars (its lowest rank is 12th in Creative outputs), and is one of the four economies at the efficient frontier (see Annex 3). Its major weaknesses at the sub-pillar level are in Trade and competition and Intangible assets, but even these are within the top 40 (ranking 32nd and 39th, respectively). Sweden does particularly well in key indicators introduced this year: GERD performed by business enterprise over GDP (5th), patent families filed in at least three offices (6th), the citable documents H index (10th), royalties and license fees receipts over total services exports (10th), logistics performance (12th), the QS university ranking average score of top 3 universities (14th); and high-tech and medium-high-tech output (21st).

The United Kingdom (UK) occupies 3rd place in 2013 (up from 5th in 2012 and 10th in 2011), and comes in 4th in both inputs and outputs. The UK places within the top 25 in 15 of the 20 indicators that have been adjusted or introduced this year, coming in 1st in the citable documents H index, the QS university ranking average score of top 3 universities, and ease of getting credit. With roughly six times the population of Sweden and eight times that of Switzerland, these results are commendable. Relative weaknesses are in the growth of its labour productivity (102nd, year 2011), the market access conditions to foreign markets for non-agricultural exports (rank 102nd, common

to all EU economies, year 2010), the level of foreign direct investment net inflows (117th, year 2011), and the level of gross capital formation over GDP (127th, year 2012)—all indicators strongly correlated with economic and business cycles, and all of which are expected to improve with the economic recovery.

The Netherlands is ranked 4th, up from 6th in 2012 and 9th in 2011, with a clear relative advantage again this year on outputs, where it is ranked 2nd (3rd in 2012). In comparison, it holds 10th position in inputs, coming in at 26th place in innovation efficiency (2nd after Switzerland among the GII top 10). The country achieves leader positions (within the top 25) on all pillars, 16 of 21 sub-pillars, and 54 out of 80 indicators with data, including 1st place in royalty and license fees payments and receipts (over total services imports/exports), online e-participation, and intensity of local competition. Its major weakness again this year is in Tertiary education (61st, up from 66th in 2012), although progress was made across the board.

The United States of America (USA) is ranked 5th, up from 10th in 2012, and leads the rankings in Northern America. This remarkable jump reflects the relative strength of the country in the 20 indicators introduced this year, with leading positions (within top 25) in 13 of them, including the citable documents H index (ranked 1st), the QS university ranking average score of top 3 universities (ranked 2nd after the UK), royalties and license fees receipts over total services exports (5th), logistics performance (8th), GERD performed by business enterprise over GDP (9th), patent families filed in at least three offices (13th), and high-tech and medium-high-tech output (15th). More generally, the USA is within the top 25 in all pillars, 17 sub-pillars (out of 21), and 49 out of 77 indicators with data, and places 1st in seven indicators and the R&D sub-pillar. Some areas of concern prevail, however. In Tertiary education, where it ranks 52nd, the USA is the victim of its own success: the high level of its academic institutions leads to a 2nd position in tertiary enrolment (91.9% in 2010), but to relatively low levels of student exchange with the rest of the world (the USA ranks 46th in tertiary inbound mobility and 122nd in gross tertiary outbound enrolment). The level of tertiary graduates in science and engineering is also low (ranked 77th, with 25.4% in 2007). Other areas in which improvements could be made are Ecological sustainability (74th) and Intangible assets (86th).

Finland is ranked 6th in the GII this year (4th in 2012), 6th in the Input Sub-Index, and 8th in the Output Sub-Index. It achieves positions among the top 25 in all pillars, 16 out of 21 sub-pillars, and 56 out of 82 indicators with data. It places 1st in Human capital and research and 2nd in Institutions, after Denmark. Its weakest showing is in Market sophistication, which is a still-respectable 19th position. At the indicator level, Finland achieves 1st place in political stability, government effectiveness, press freedom, rule of law, state of cluster development, and ICTs and business model creation. Some of its major weaknesses (measured in percent ranks to take account of missing values) are in foreign direct investment net inflow, market access for non-agricultural exports, audiovisual and related services exports, GDP per unit of energy use, printing and publishing output, gross capital formation, GERD financed by abroad, intensity of local competition, growth rate of GDP per person engaged, and ease of protecting investors.

Hong Kong (China) is ranked 7th this year, up one position from 8th in 2012 and taking the lead from Singapore among Asian economies. With a population of 7.5 million and a GDP per capita of PPP$50,708.9, its major leverage comes from the Input Sub-Index, where it ranks 2nd after Singapore. The economy takes 1st place in Infrastructure and Market sophistication (including top positions in the Credit and Investment sub-pillars), and 3rd position in Business sophistication after Singapore and the USA. On the input side, its relative weakness is in Human capital and research (still a very good 21st position). Its less good showing in the Output Sub-Index, where it ranks 15th, is the result of a pale 36th position in the key Knowledge and technology outputs pillar; this is, however, compensated for by a 5th place in Creative outputs. Yet Hong Kong (China) is one of the four economies at the efficient frontier (see Annex 3). At the indicator level, Hong Kong (China) achieves 1st place in 11 indicators. Its major weaknesses are in the Knowledge diffusion sub-pillar (80th), where adjustments to two indicators affected its ranking (see Annex 2), in addition to a sharp drop in the percentage of high-tech exports over total exports, which fell from 44.8% in 2010 (ranked 14th in the GII 2012) to 13.1% in 2012 (41st). In terms of percent ranks, areas of concern are Patent Cooperation Treaty and national office resident patent applications and royalties and license fees receipts, as well as expenditure on education, pupil-teacher ratio in secondary education, and public expenditure on education per pupil.

Singapore is ranked 8th, down five positions from its 3rd

Table 1: Global Innovation Index rankings

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank	Efficiency Ratio	Rank	Median: 0.78
Switzerland	66.59	**1**	HI	**1**	EUR	**1**	1.00	12	
Sweden	61.36	2	HI	2	EUR	2	0.81	55	
United Kingdom	61.25	3	HI	3	EUR	3	0.80	60	
Netherlands	61.14	4	HI	4	EUR	4	0.91	26	
United States of America	60.31	5	HI	5	NAC	**1**	0.74	86	
Finland	59.51	6	HI	6	EUR	5	0.79	67	
Hong Kong (China)	59.43	7	HI	7	SEAO	**1**	0.68	109	
Singapore	59.41	8	HI	8	SEAO	2	0.64	121	
Denmark	58.34	9	HI	9	EUR	6	0.76	78	
Ireland	57.91	10	HI	10	EUR	7	0.81	57	
Canada	57.60	11	HI	11	NAC	2	0.78	68	
Luxembourg	56.57	12	HI	12	EUR	8	0.89	33	
Iceland	56.40	13	HI	13	EUR	9	0.89	30	
Israel	55.98	14	HI	14	NAWA	**1**	0.87	38	
Germany	55.83	15	HI	15	EUR	10	0.87	40	
Norway	55.64	16	HI	16	EUR	11	0.76	81	
New Zealand	54.46	17	HI	17	SEAO	3	0.74	90	
Korea, Rep.	53.31	18	HI	18	SEAO	4	0.72	95	
Australia	53.07	19	HI	19	SEAO	5	0.65	116	
France	52.83	20	HI	20	EUR	12	0.79	63	
Belgium	52.49	21	HI	21	EUR	13	0.76	75	
Japan	52.23	22	HI	22	SEAO	6	0.66	112	
Austria	51.87	23	HI	23	EUR	14	0.71	98	
Malta	51.79	24	HI	24	EUR	15	1.06	4	
Estonia	50.60	25	HI	25	EUR	16	0.82	51	
Spain	49.41	26	HI	26	EUR	17	0.71	101	
Cyprus	49.32	27	HI	27	NAWA	2	0.86	43	
Czech Republic	48.36	28	HI	28	EUR	18	0.81	53	
Italy	47.85	29	HI	29	EUR	19	0.79	62	
Slovenia	47.32	30	HI	30	EUR	20	0.78	70	
Hungary	46.93	31	HI	31	EUR	21	0.94	23	
Malaysia	46.92	32	UM	**1**	SEAO	7	0.81	52	
Latvia	45.24	33	UM	2	EUR	22	0.77	74	
Portugal	45.10	34	HI	32	EUR	23	0.73	92	
China	44.66	35	UM	3	SEAO	8	0.98	14	
Slovakia	42.25	36	HI	33	EUR	24	0.75	84	
Croatia	41.95	37	HI	34	EUR	25	0.82	50	
United Arab Emirates	41.87	38	HI	35	NAWA	3	0.55	133	
Costa Rica	41.54	39	UM	4	LCN	**1**	1.02	9	
Lithuania	41.39	40	UM	5	EUR	26	0.69	105	
Bulgaria	41.33	41	UM	6	EUR	27	0.88	35	
Saudi Arabia	41.21	42	HI	36	NAWA	4	0.80	61	
Qatar	41.00	43	HI	37	NAWA	5	0.71	97	
Montenegro	40.95	44	UM	7	EUR	28	0.72	94	
Moldova, Rep.	40.94	45	LM	**1**	EUR	29	1.08	2	
Chile	40.58	46	UM	8	LCN	2	0.74	88	
Barbados	40.48	47	HI	38	LCN	3	0.73	91	
Romania	40.33	48	UM	9	EUR	30	0.88	34	
Poland	40.12	49	HI	39	EUR	31	0.68	110	
Kuwait	40.02	50	HI	40	NAWA	6	1.03	8	
TFYR of Macedonia	38.18	51	UM	10	EUR	32	0.72	96	
Uruguay	38.08	52	UM	11	LCN	4	0.85	45	
Mauritius	38.00	53	UM	12	SSF	**1**	0.80	59	
Serbia	37.87	54	UM	13	EUR	33	0.82	49	
Greece	37.71	55	HI	41	EUR	34	0.65	118	
Argentina	37.66	56	UM	14	LCN	5	0.94	20	
Thailand	37.63	57	UM	15	SEAO	9	0.76	76	
South Africa	37.60	58	UM	16	SSF	2	0.71	99	
Armenia	37.59	59	LM	2	NAWA	7	0.86	42	
Colombia	37.38	60	UM	17	LCN	6	0.76	79	
Jordan	37.30	61	UM	18	NAWA	8	0.77	73	
Russian Federation	37.20	62	UM	19	EUR	35	0.70	104	
Mexico	36.82	63	UM	20	LCN	7	0.81	56	
Brazil	36.33	64	UM	21	LCN	8	0.78	69	
Bosnia and Herzegovina	36.24	65	UM	22	EUR	36	0.70	103	
India	36.17	66	LM	3	CSA	**1**	1.02	11	
Bahrain	36.13	67	HI	42	NAWA	9	0.62	123	
Turkey	36.03	68	UM	23	NAWA	10	0.90	29	
Peru	35.96	69	UM	24	LCN	9	0.77	72	
Tunisia	35.82	70	UM	25	NAWA	11	0.88	36	
Ukraine	35.78	71	LM	4	EUR	37	0.89	31	

Table 1: Global Innovation Index rankings *(continued)*

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank	Efficiency Ratio	Rank	Median: 0.78
Mongolia	35.77	72	LM	5	SEAO	10	0.62	122	
Georgia	35.56	73	LM	6	NAWA	12	0.71	100	
Brunei Darussalam	35.53	74	HI	43	SEAO	11	0.65	119	
Lebanon	35.47	75	UM	26	NAWA	13	0.66	114	
Viet Nam	34.82	76	LM	7	SEAO	12	0.96	17	
Belarus	34.62	77	UM	27	EUR	38	0.75	82	
Guyana	34.36	78	LM	8	LCN	10	0.97	15	
Dominican Republic	33.28	79	UM	28	LCN	11	0.90	28	
Oman	33.25	80	HI	44	NAWA	14	0.54	134	
Trinidad and Tobago	33.17	81	HI	45	LCN	12	0.75	85	
Jamaica	32.89	82	UM	29	LCN	13	0.79	65	
Ecuador	32.83	83	UM	30	LCN	14	0.94	21	
Kazakhstan	32.73	84	UM	31	CSA	2	0.61	126	
Indonesia	31.95	85	LM	9	SEAO	13	1.04	6	
Panama	31.82	86	UM	32	LCN	15	0.61	127	
Guatemala	31.46	87	LM	10	LCN	16	0.79	66	
El Salvador	31.32	88	LM	11	LCN	17	0.76	80	
Uganda	31.21	89	LI	**1**	SSF	3	0.95	19	
Philippines	31.18	90	LM	12	SEAO	14	0.93	24	
Botswana	31.14	91	UM	33	SSF	4	0.51	136	
Morocco	30.89	92	LM	13	NAWA	15	0.75	83	
Albania	30.85	93	LM	14	EUR	39	0.58	129	
Ghana	30.60	94	LM	15	SSF	5	0.80	58	
Bolivia, Plurinational St.	30.48	95	LM	16	LCN	18	0.88	37	
Senegal	30.48	96	LM	17	SSF	6	0.95	18	
Fiji	30.46	97	LM	18	SEAO	15	0.51	137	
Sri Lanka	30.45	98	LM	19	CSA	3	0.99	13	
Kenya	30.28	99	LI	2	SSF	7	0.78	71	
Paraguay	30.28	100	LM	20	LCN	19	0.82	48	
Tajikistan	30.00	101	LI	3	CSA	4	0.90	27	
Belize	29.98	102	LM	21	LCN	20	0.73	93	
Cape Verde	29.69	103	LM	22	SSF	8	0.57	130	
Swaziland	29.60	104	LM	23	SSF	9	1.06	5	
Azerbaijan	28.99	105	UM	34	NAWA	16	0.65	117	
Mali	28.84	106	LI	4	SSF	10	1.13	**1**	
Honduras	28.80	107	LM	24	LCN	21	0.66	115	
Egypt	28.48	108	LM	25	NAWA	17	0.68	108	
Namibia	28.36	109	UM	35	SSF	11	0.48	139	
Cambodia	28.07	110	LI	5	SEAO	16	0.87	39	
Gabon	28.04	111	UM	36	SSF	12	0.81	54	
Rwanda	27.64	112	LI	6	SSF	13	0.64	120	
Iran, Islamic Rep.	27.30	113	UM	37	CSA	5	0.68	107	
Venezuela, Bolivarian Rep.	27.25	114	UM	38	LCN	22	1.02	10	
Nicaragua	27.10	115	LM	26	LCN	23	0.62	125	
Burkina Faso	27.03	116	LI	7	SSF	14	0.79	64	
Kyrgyzstan	26.98	117	LI	8	CSA	6	0.56	131	
Zambia	26.79	118	LM	27	SSF	15	0.89	32	
Malawi	26.73	119	LI	9	SSF	16	0.87	41	
Nigeria	26.57	120	LM	28	SSF	17	1.03	7	
Mozambique	26.50	121	LI	10	SSF	18	0.67	111	
Gambia	26.39	122	LI	11	SSF	19	0.86	44	
Tanzania, United Rep.	26.35	123	LI	12	SSF	20	0.66	113	
Lesotho	26.29	124	LM	29	SSF	21	0.47	140	
Cameroon	25.71	125	LM	30	SSF	22	0.84	47	
Guinea	25.70	126	LI	13	SSF	23	1.07	3	
Benin	25.10	127	LI	14	SSF	24	0.69	106	
Nepal	24.97	128	LI	15	CSA	7	0.76	77	
Ethiopia	24.80	129	LI	16	SSF	25	0.74	87	
Bangladesh	24.52	130	LI	17	CSA	8	0.84	46	
Niger	24.03	131	LI	18	SSF	26	0.71	102	
Zimbabwe	23.98	132	LI	19	SSF	27	0.91	25	
Uzbekistan	23.87	133	LM	31	CSA	9	0.52	135	
Syrian Arab Republic	23.73	134	LM	32	NAWA	18	0.45	142	
Angola	23.46	135	UM	39	SSF	28	0.94	22	
Côte d'Ivoire	23.42	136	LM	33	SSF	29	0.74	89	
Pakistan	23.33	137	LM	34	CSA	10	0.97	16	
Algeria	23.11	138	UM	40	NAWA	19	0.46	141	
Togo	23.04	139	LI	20	SSF	30	0.56	132	
Madagascar	22.95	140	LI	21	SSF	31	0.59	128	
Sudan	19.81	141	LM	35	SSF	32	0.49	138	
Yemen	19.32	142	LM	36	NAWA	20	0.62	124	

Note: World Bank Income Group Classification (July 2012): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification (11 February 2013): EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; and SSF = Sub-Saharan Africa.

Table 2: Innovation Input Sub-Index rankings

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank
Singapore	72.27	1	HI	1	SEAO	1
Hong Kong (China)	70.65	2	HI	2	SEAO	2
United States of America	69.19	3	HI	3	NAC	1
United Kingdom	68.20	4	HI	4	EUR	1
Sweden	67.86	5	HI	5	EUR	2
Finland	66.67	6	HI	6	EUR	3
Switzerland	66.52	7	HI	7	EUR	4
Denmark	66.34	8	HI	8	EUR	5
Canada	64.76	9	HI	9	NAC	2
Netherlands	64.18	10	HI	10	EUR	6
Australia	64.15	11	HI	11	SEAO	3
Ireland	64.09	12	HI	12	EUR	7
Norway	63.39	13	HI	13	EUR	8
Japan	62.81	14	HI	14	SEAO	4
New Zealand	62.76	15	HI	15	SEAO	5
Korea, Rep.	62.10	16	HI	16	SEAO	6
Austria	60.56	17	HI	17	EUR	9
Luxembourg	59.95	18	HI	18	EUR	10
Israel	59.82	19	HI	19	NAWA	1
Germany	59.78	20	HI	20	EUR	11
Iceland	59.65	21	HI	21	EUR	12
Belgium	59.49	22	HI	22	EUR	13
France	59.03	23	HI	23	EUR	14
Spain	57.85	24	HI	24	EUR	15
Estonia	55.68	25	HI	25	EUR	16
United Arab Emirates	53.99	26	HI	26	NAWA	2
Czech Republic	53.43	27	HI	27	EUR	17
Italy	53.33	28	HI	28	EUR	18
Slovenia	53.22	29	HI	29	EUR	19
Cyprus	53.07	30	HI	30	NAWA	3
Portugal	52.10	31	HI	31	EUR	20
Malaysia	51.71	32	UM	1	SEAO	7
Latvia	51.10	33	UM	2	EUR	21
Malta	50.16	34	HI	32	EUR	22
Lithuania	48.95	35	UM	3	EUR	23
Hungary	48.48	36	HI	33	EUR	24
Slovakia	48.33	37	HI	34	EUR	25
Qatar	47.84	38	HI	35	NAWA	4
Poland	47.82	39	HI	36	EUR	26
Montenegro	47.65	40	UM	4	EUR	27
Chile	46.73	41	UM	5	LCN	1
Barbados	46.68	42	HI	37	LCN	2
Croatia	46.12	43	HI	38	EUR	28
Saudi Arabia	45.89	44	HI	39	NAWA	5
Greece	45.70	45	HI	40	EUR	29
China	45.19	46	UM	6	SEAO	8
Bahrain	44.53	47	HI	41	NAWA	6
TFYR of Macedonia	44.49	48	UM	7	EUR	30
Mongolia	44.05	49	LM	1	SEAO	9
Bulgaria	43.96	50	UM	8	EUR	31
South Africa	43.93	51	UM	9	SSF	1
Russian Federation	43.77	52	UM	10	EUR	32
Oman	43.28	53	HI	42	NAWA	7
Brunei Darussalam	43.08	54	HI	43	SEAO	10
Romania	42.82	55	UM	11	EUR	33
Lebanon	42.71	56	UM	12	NAWA	8
Thailand	42.67	57	UM	13	SEAO	11
Bosnia and Herzegovina	42.54	58	UM	14	EUR	34
Colombia	42.51	59	UM	15	LCN	3
Mauritius	42.28	60	UM	16	SSF	2
Jordan	42.06	61	UM	17	NAWA	9
Georgia	41.62	62	LM	2	NAWA	10
Serbia	41.55	63	UM	18	EUR	35
Uruguay	41.21	64	UM	19	LCN	4
Botswana	41.18	65	UM	20	SSF	3
Costa Rica	41.08	66	UM	21	LCN	5
Brazil	40.84	67	UM	22	LCN	6
Mexico	40.73	68	UM	23	LCN	7
Kazakhstan	40.72	69	UM	24	CSA	1
Peru	40.53	70	UM	25	LCN	8
Armenia	40.41	71	LM	3	NAWA	11

Table 2: Innovation Input Sub-Index rankings *(continued)*

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank
Fiji	40.29	72	LM	4	SEAO	12
Panama	39.61	73	UM	26	LCN	9
Kuwait	39.48	74	HI	44	NAWA	12
Belarus	39.47	75	UM	27	EUR	36
Moldova, Rep.	39.29	76	LM	5	EUR	37
Albania	39.05	77	LM	6	EUR	38
Argentina	38.77	78	UM	28	LCN	10
Namibia	38.23	79	UM	29	SSF	4
Tunisia	38.12	80	UM	30	NAWA	13
Turkey	38.00	81	UM	31	NAWA	14
Trinidad and Tobago	37.99	82	HI	45	LCN	11
Ukraine	37.91	83	LM	7	EUR	39
Cape Verde	37.77	84	LM	8	SSF	5
Jamaica	36.78	85	UM	32	LCN	12
Lesotho	35.81	86	LM	9	SSF	6
India	35.77	87	LM	10	CSA	2
El Salvador	35.63	88	LM	11	LCN	13
Viet Nam	35.59	89	LM	12	SEAO	13
Morocco	35.34	90	LM	13	NAWA	15
Guatemala	35.24	91	LM	14	LCN	14
Azerbaijan	35.07	92	UM	33	NAWA	16
Dominican Republic	34.98	93	UM	34	LCN	15
Guyana	34.85	94	LM	15	LCN	16
Belize	34.73	95	LM	16	LCN	17
Honduras	34.68	96	LM	17	LCN	18
Kyrgyzstan	34.58	97	LI	1	CSA	3
Kenya	34.12	98	LI	2	SSF	7
Ghana	33.93	99	LM	18	SSF	8
Ecuador	33.83	100	UM	35	LCN	19
Egypt	33.81	101	LM	19	NAWA	17
Rwanda	33.62	102	LI	3	SSF	9
Nicaragua	33.49	103	LM	20	LCN	20
Paraguay	33.22	104	LM	21	LCN	21
Syrian Arab Republic	32.84	105	LM	22	NAWA	18
Bolivia, Plurinational St.	32.50	106	LM	23	LCN	22
Iran, Islamic Rep.	32.41	107	UM	36	CSA	4
Philippines	32.32	108	LM	24	SEAO	14
Uganda	31.97	109	LI	4	SSF	10
Tanzania, United Rep.	31.72	110	LI	5	SSF	11
Mozambique	31.71	111	LI	6	SSF	12
Algeria	31.62	112	UM	37	NAWA	19
Tajikistan	31.51	113	LI	7	CSA	5
Uzbekistan	31.50	114	LM	25	CSA	6
Indonesia	31.34	115	LM	26	SEAO	15
Senegal	31.20	116	LM	27	SSF	13
Gabon	30.99	117	UM	38	SSF	14
Sri Lanka	30.60	118	LM	28	CSA	7
Burkina Faso	30.22	119	LI	8	SSF	15
Cambodia	30.02	120	LI	9	SEAO	16
Benin	29.78	121	LI	10	SSF	16
Togo	29.55	122	LI	11	SSF	17
Madagascar	28.83	123	LI	12	SSF	18
Swaziland	28.67	124	LM	29	SSF	19
Malawi	28.63	125	LI	13	SSF	20
Ethiopia	28.50	126	LI	14	SSF	21
Gambia	28.44	127	LI	15	SSF	22
Zambia	28.38	128	LM	30	SSF	23
Nepal	28.34	129	LI	16	CSA	8
Niger	28.17	130	LI	17	SSF	24
Cameroon	27.99	131	LM	31	SSF	25
Mali	27.09	132	LI	18	SSF	26
Côte d'Ivoire	26.97	133	LM	32	SSF	27
Venezuela, Bolivarian Rep.	26.95	134	UM	39	LCN	23
Bangladesh	26.60	135	LI	19	CSA	9
Sudan	26.51	136	LM	33	SSF	28
Nigeria	26.21	137	LM	34	SSF	29
Zimbabwe	25.13	138	LI	20	SSF	30
Guinea	24.78	139	LI	21	SSF	31
Angola	24.21	140	UM	40	SSF	32
Yemen	23.86	141	LM	35	NAWA	20
Pakistan	23.68	142	LM	36	CSA	10

Note: World Bank Income Group Classification (July 2012): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification (11 February 2013): EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; and SSF = Sub-Saharan Africa.

Table 3: Innovation Output Sub-Index rankings

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank
Switzerland	66.65	1	HI	1	EUR	1
Netherlands	58.09	2	HI	2	EUR	2
Sweden	54.86	3	HI	3	EUR	3
United Kingdom	54.30	4	HI	4	EUR	4
Malta	53.42	5	HI	5	EUR	5
Luxembourg	53.20	6	HI	6	EUR	6
Iceland	53.14	7	HI	7	EUR	7
Finland	52.35	8	HI	8	EUR	8
Israel	52.14	9	HI	9	NAWA	1
Germany	51.88	10	HI	10	EUR	9
Ireland	51.73	11	HI	11	EUR	10
United States of America	51.42	12	HI	12	NAC	1
Canada	50.45	13	HI	13	NAC	2
Denmark	50.35	14	HI	14	EUR	11
Hong Kong (China)	48.21	15	HI	15	SEAO	1
Norway	47.88	16	HI	16	EUR	12
France	46.64	17	HI	17	EUR	13
Singapore	46.56	18	HI	18	SEAO	2
New Zealand	46.15	19	HI	19	SEAO	3
Cyprus	45.58	20	HI	20	NAWA	2
Estonia	45.52	21	HI	21	EUR	14
Belgium	45.48	22	HI	22	EUR	15
Hungary	45.37	23	HI	23	EUR	16
Korea, Rep.	44.53	24	HI	24	SEAO	4
China	44.12	25	UM	1	SEAO	5
Czech Republic	43.28	26	HI	25	EUR	17
Austria	43.18	27	HI	26	EUR	18
Moldova, Rep.	42.59	28	LM	1	EUR	19
Italy	42.37	29	HI	27	EUR	20
Malaysia	42.13	30	UM	2	SEAO	6
Costa Rica	42.00	31	UM	3	LCN	1
Australia	41.99	32	HI	28	SEAO	7
Japan	41.64	33	HI	29	SEAO	8
Slovenia	41.41	34	HI	30	EUR	21
Spain	40.97	35	HI	31	EUR	22
Kuwait	40.56	36	HI	32	NAWA	3
Latvia	39.37	37	UM	4	EUR	23
Bulgaria	38.71	38	UM	5	EUR	24
Portugal	38.10	39	HI	33	EUR	25
Romania	37.84	40	UM	6	EUR	26
Croatia	37.77	41	HI	34	EUR	27
India	36.56	42	LM	2	CSA	1
Argentina	36.55	43	UM	7	LCN	2
Saudi Arabia	36.52	44	HI	35	NAWA	4
Slovakia	36.17	45	HI	36	EUR	28
Uruguay	34.95	46	UM	8	LCN	3
Armenia	34.78	47	LM	3	NAWA	5
Chile	34.43	48	UM	9	LCN	4
Barbados	34.28	49	HI	37	LCN	5
Montenegro	34.26	50	UM	10	EUR	29
Serbia	34.20	51	UM	11	EUR	30
Qatar	34.17	52	HI	38	NAWA	6
Turkey	34.07	53	UM	12	NAWA	7
Viet Nam	34.04	54	LM	4	SEAO	9
Guyana	33.87	55	LM	5	LCN	6
Lithuania	33.84	56	UM	13	EUR	31
Mauritius	33.72	57	UM	14	SSF	1
Ukraine	33.65	58	LM	6	EUR	32
Tunisia	33.51	59	UM	15	NAWA	8
Mexico	32.90	60	UM	16	LCN	7
Thailand	32.58	61	UM	17	SEAO	10
Indonesia	32.57	62	LM	7	SEAO	11
Jordan	32.54	63	UM	18	NAWA	9
Poland	32.42	64	HI	39	EUR	33
Colombia	32.26	65	UM	19	LCN	8
TFYR of Macedonia	31.86	66	UM	20	EUR	34
Ecuador	31.83	67	UM	21	LCN	9
Brazil	31.81	68	UM	22	LCN	10
Dominican Republic	31.58	69	UM	23	LCN	11
Peru	31.39	70	UM	24	LCN	12
South Africa	31.26	71	UM	25	SSF	2

Table 3: Innovation Output Sub-Index rankings *(continued)*

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank
Russian Federation	30.62	72	UM	26	EUR	35
Mali	30.58	73	LI	**1**	SSF	3
Swaziland	30.52	74	LM	8	SSF	4
Uganda	30.45	75	LI	2	SSF	5
Sri Lanka	30.29	76	LM	9	CSA	2
Philippines	30.03	77	LM	10	SEAO	12
Bosnia and Herzegovina	29.94	78	UM	27	EUR	36
Belarus	29.77	79	UM	28	EUR	37
Senegal	29.77	80	LM	11	SSF	6
United Arab Emirates	29.76	81	HI	40	NAWA	10
Greece	29.72	82	HI	41	EUR	38
Georgia	29.49	83	LM	12	NAWA	11
Jamaica	29.00	84	UM	29	LCN	13
Tajikistan	28.50	85	LI	3	CSA	3
Bolivia, Plurinational St.	28.47	86	LM	13	LCN	14
Trinidad and Tobago	28.35	87	HI	42	LCN	15
Lebanon	28.23	88	UM	30	NAWA	12
Brunei Darussalam	27.99	89	HI	43	SEAO	13
Bahrain	27.74	90	HI	44	NAWA	13
Guatemala	27.68	91	LM	14	LCN	16
Venezuela, Bolivarian Rep.	27.55	92	UM	31	LCN	17
Mongolia	27.49	93	LM	15	SEAO	14
Paraguay	27.35	94	LM	16	LCN	18
Ghana	27.26	95	LM	17	SSF	7
El Salvador	27.01	96	LM	18	LCN	19
Nigeria	26.93	97	LM	19	SSF	8
Guinea	26.62	98	LI	4	SSF	9
Morocco	26.45	99	LM	20	NAWA	14
Kenya	26.45	100	LI	5	SSF	10
Cambodia	26.13	101	LI	6	SEAO	15
Belize	25.23	102	LM	21	LCN	20
Zambia	25.19	103	LM	22	SSF	11
Gabon	25.09	104	UM	32	SSF	12
Malawi	24.84	105	LI	7	SSF	13
Kazakhstan	24.73	106	UM	33	CSA	4
Gambia	24.34	107	LI	8	SSF	14
Panama	24.03	108	UM	34	LCN	21
Burkina Faso	23.84	109	LI	9	SSF	15
Cameroon	23.42	110	LM	23	SSF	16
Oman	23.22	111	HI	45	NAWA	15
Egypt	23.15	112	LM	24	NAWA	16
Pakistan	22.99	113	LM	25	CSA	5
Azerbaijan	22.91	114	UM	35	NAWA	17
Honduras	22.91	115	LM	26	LCN	22
Zimbabwe	22.83	116	LI	10	SSF	17
Angola	22.71	117	UM	36	SSF	18
Albania	22.66	118	LM	27	EUR	39
Bangladesh	22.45	119	LI	11	CSA	6
Iran, Islamic Rep.	22.20	120	UM	37	CSA	7
Rwanda	21.66	121	LI	12	SSF	19
Cape Verde	21.61	122	LM	28	SSF	20
Nepal	21.59	123	LI	13	CSA	8
Mozambique	21.28	124	LI	14	SSF	21
Botswana	21.11	125	UM	38	SSF	22
Ethiopia	21.09	126	LI	15	SSF	23
Tanzania, United Rep.	20.99	127	LI	16	SSF	24
Nicaragua	20.72	128	LM	29	LCN	23
Fiji	20.62	129	LM	30	SEAO	16
Benin	20.42	130	LI	17	SSF	25
Niger	19.89	131	LI	18	SSF	26
Côte d'Ivoire	19.86	132	LM	31	SSF	27
Kyrgyzstan	19.38	133	LI	19	CSA	9
Namibia	18.50	134	UM	39	SSF	28
Madagascar	17.06	135	LI	20	SSF	29
Lesotho	16.77	136	LM	32	SSF	30
Togo	16.52	137	LI	21	SSF	31
Uzbekistan	16.23	138	LM	33	CSA	10
Yemen	14.79	139	LM	34	NAWA	18
Syrian Arab Republic	14.63	140	LM	35	NAWA	19
Algeria	14.61	141	UM	40	NAWA	20
Sudan	13.11	142	LM	36	SSF	32

Note: World Bank Income Group Classification (July 2012): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification (11 February 2013): EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; and SSF = Sub-Saharan Africa.

place in 2012. Singapore is one of the four economies at the efficient frontier (see Annex 3). It shows strengths across the board in the Input Sub-Index, where it ranks 1st: Institutions (7th), Human capital and research (3rd, after Finland and the Republic of Korea), Infrastructure (6th), Market sophistication (5th), and Business sophistication (1st). It ranks only 18th in the Output Sub-Index, however, reaching the lowest efficiency ratio among the top 10 (121st): Knowledge and technology outputs (11th) and Creative outputs (40th). The adjustments made to the GII framework reveals Singapore's important relative weaknesses; had the 2012 GII framework been kept intact in 2013, Singapore would have kept its 3rd position in the GII rankings (see Annex 2 for details). A total of 20 indicators are new or were adjusted this year; Singapore has good showings in 12 of them, including 1st place in logistics performance, royalties and license fees payments, and high-tech and medium-high-tech output; and it ranks among the top 20 in the ease of resolving insolvency (2nd), protecting investors (2nd), paying taxes (5th), starting a business (8th), and getting credit (12th) as well as for creative goods exports (10th), GERD performed by business enterprise (18th), patent families filed in at least three offices (18th), and the QS university ranking average score of top 3 universities (19th). The areas in which Singapore performs less well are scientific and technical publications (27th), royalties and license fees receipts (27th), the citable documents H index (29th), the Madrid system trademark registrations by country of origin (35th), printing and publishing output (71st), and communications, computer and information services imports (90th, with 16.5%) and exports (108th, with 6.5%).

Denmark is ranked 9th, down two positions from 7th place in 2012. The strength of this country of 5.8 million people is in the Input Sub-Index (8th), with a 14th position in the Output Sub-Index. Its best showing is its 1st place in Institutions (1st); its other rankings are all at leader positions (within the top 25): Human capital and research (7th), Infrastructure (13th), Market sophistication (7th), Business sophistication (19th), Knowledge and technology outputs (19th), and Creative outputs (8th). Although Denmark achieves spots within the top 25 in 56 out of 81 indicators with data, recent developments in three indicators are of particular concern: with a school life expectancy that dropped from 16.8 to 13.2 years (from 2009 to 2010), Denmark plunged 57 positions in that indicator. This descent may be linked to the 15 position decline in employment in knowledge-intensive services, from 45.1% in 2008 to 34.0% in 2010, and to the drop of 41 positions in the growth rate of labour productivity, which fell from 4.0% in 2010 to 1.5% in 2011.

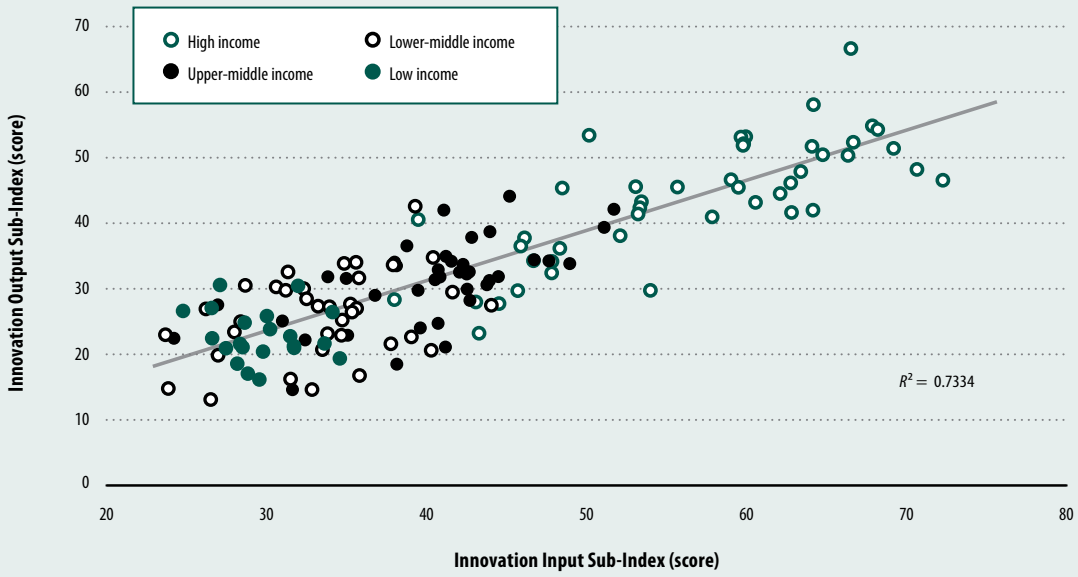
Ireland is ranked 10th, down from 9th in 2012; it is 12th in the Input Sub-Index and 11th in the Output Sub-Index. Ireland has good showings in five pillars: Institutions (8th), Human capital and research (9th), Market sophistication (8th), Business sophistication (6th), and Knowledge and technology outputs (a key pillar where it comes in at a strong 4th position after Switzerland, China, and Israel). Its relative weaknesses are in Creative outputs (26th this year, although this is up from 38th in 2012), and Infrastructure (37th, down from 35th in 2012), where its rankings in Information and communication technologies (41st) and General infrastructure (68th) are particularly disappointing. Among indicators for which year-on-year comparisons are valid, the major jumps are in joint venture/strategic alliance deals, graduates in science and engineering (from 21.6% in 2009 to 23.2% in 2010), GDP per unit of energy use (from PPP$9.4 per kg of oil equivalent in 2010 to PPP$12.0 in 2011), intensity of local competition, expenditure on education (from 5.2% of GNI in 2009 used in GII 2012, to a revised figure of 7.1%, same year), and ICTs and organizational models creation. Ireland's major drops are in foreign direct investment net outflows, national office resident trademark registrations, foreign direct investment net inflows, employment in knowledge-intensive services, and market access to foreign markets for non-agricultural exports.

The top 10 in the Innovation Input Sub-Index

The top 10 economies on the Innovation Input Sub-Index are Singapore, Hong Kong (China), the USA, the UK, Sweden, Finland, Switzerland, Denmark, Canada, and the Netherlands. Nine of these countries had reached the top 10 in 2012, and the Netherlands enters the list this year, while Ireland drops from 9th position in 2012 to 12th. In 2012 and again this year, Canada is the only country in this group that is not also in the GII top 10.

Canada is ranked 11th, up from 12th in 2012. It ranks 9th overall in the Input Sub-Index and 13th in the Output Sub-Index, with strong positions across the board, including spots within the top 10 in Institutions (5th), and Market sophistication (4th, with a 1st place in the Trade and competition sub-pillar), and within the top 25 in the remaining pillars: Human capital and research (25th), Infrastructure (15th), Business sophistication (16th),

Figure 2: Innovation Output Sub-Index vs. Innovation Input Sub-Index



Knowledge and technology outputs (17th), and Creative outputs (11th). It has leader positions in 16 out of 21 sub-pillars and in 48 out of 74 indicators with data, including 14 of the indicators that are new or were adjusted this year.

The top 10 in the Innovation Output Sub-Index

The Innovation Output Sub-Index variables provide information on elements that are the result of innovation within an economy. Although scores on the Input and Output Sub-Indices might differ substantially, leading to important shifts in rankings from one sub-index to the other for particular countries, the data confirm that efforts made to improve enabling environments are rewarded with increased innovation outputs (Figure 2).

The top 10 countries in the Innovation Output Sub-Index are Switzerland, the Netherlands, Sweden, the UK, Malta, Luxembourg, Iceland, Finland, Israel, and Germany. Eight of these had reached the top 10 in 2011; Iceland and Israel enter the list this year (they were ranked 12th and 13th, respectively, in 2012), while Estonia and Denmark (among the top 10 in 2012) drop to 21st and 14th place, respectively. Five of these countries are in the GII top 10, and their profiles are discussed there.

Luxembourg is ranked 12th in the GII, down from 11th in 2012. With a population of 0.5 million and a GDP per capita of PPP$80,679.1, it achieves 18th position in the Input Sub-Index, with leader positions in all pillars except Market sophistication (31st), where rankings above 100 in ease of getting credit, ease of protecting investors, and market access to foreign markets have not stopped the flow of credit, investments, and trade. Its strength in the Output Sub-Index (6th) comes from its 1st place in Creative outputs, driven by positions in the top 25 in all indicators and sub-pillars with only two exceptions: printing and publishing output (58th) and creative goods exports (52nd). Its position in Knowledge and technology outputs pillar is weaker (43rd).

Iceland is ranked 13th, up five positions from 18th in 2012. This Nordic country of 0.3 million people ranks 21st in the Input Sub-Index and 7th in the Output Sub-Index. On the input side, its main leverage comes from sound institutions (12th, with strong marks across the board), a skilled workforce and research capabilities (12th)—with, among others, a 1st place in gross outbound mobility for tertiary education and in the number of researchers per million population—and one of the best ICT infrastructures worldwide (4th in ICT access and use). Ranked 36th in Market sophistication and 24th in Business sophistication, progress is needed in Investment

(109th), Innovation linkages (41st), and Knowledge absorption (51st). On the output side, a 28th position in Knowledge and technology outputs is explained by some difficulty in translating good levels of patenting and scientific publications into increases in labour productivity (62nd), high- and medium-high tech output (86th), and knowledge diffusion (38th). The main leverage in the output side comes from Creative outputs (3rd), where Iceland shows strengths in all pillars and indicators, achieving the 1st place worldwide in Online creativity, with only the exports of creative goods found wanting (102nd).

Israel is ranked 14th, up three positions from 17th in 2012. It has leader positions across the board, ranking 19th in the Input Sub-Index and 9th in the Output Sub-Index, and 1st in its region. Israel's excellent scores in Human capital and research, where it ranks 8th; ICT infrastructure (10th); Business sophistication (5th); and specifically innovation linkages (2nd) translate into a 3rd global position in Knowledge and technology outputs, after Switzerland and China. Israel performs particularly well in a series of indicators introduced this year: the QS university ranking average score of top 3 universities (21st), GERD performed by business enterprise over GDP (1st), patent families filed in at least three offices (9th), the citable documents H index (15th), high-tech and medium-high-tech output over total manufactures output (4th), and royalties and license fees receipts over services exports (17th). Israel's weakest position is in Institutions (56th).

Germany is ranked 15th, maintaining its 2012 position. As has been the case for the past three years, Germany's relative strength is in the Output Sub-Index (10th), although it ranks a respectable 20th in the Input Sub-Index and has a balanced profile, with pillar rankings ranging from 10th to 26th and all sub-pillars rankings among the top 40, with the exception of Tertiary education (50th)—although again this year that ranking is only partially reliable because of missing data. Germany's 12th position in the R&D sub-pillar, however, corresponds with its 6th rank in Knowledge creation and its leader positions in seven key indicators introduced only this year: the citable documents H index (1st), logistics performance (4th), high-tech and medium-high-tech output (5th), the QS university ranking average score of top 3 universities (8th), GERD performed by business enterprise (8th), patent families filed in at least three offices (8th), and royalties and license fees receipts (11th).

Malta is ranked 24th this year, down from 16th in 2012, but it reaches 5th place in the Output Sub-Index (4th in 2012). With a rank of 34th in the Input Sub-Index, explained in great measure by relative weakness in Human capital and research (62nd, dropping from 47th in 2012) and Market sophistication (61st), it achieves one of the highest efficiency ratios (ranked 4th). Malta ranks 14th in Knowledge and technology outputs and 6th in Creative outputs, getting important leverage from four indicators: new business density (8th), ISO 9001 quality certificates (5th), high-tech and medium-high-tech output (6th), and high-tech exports (4th).

Learning to innovate: Top performers by income group

Identifying the underlying conditions of a country and comparing performances among peers is the key to a good understanding of the implications of a country's ranking in the GII. This report attempts to abide by this underlying principle by assessing results on the basis of the development stages of countries (captured by the World Bank income classifications).

Table 4 shows the 10 best performers on each index by income group. The top 31 positions in the GII are taken by high-income economies. The top 10 are the same countries as in 2012 (see Box 2). Switzerland, Sweden, the UK, the Netherlands, and Finland are among the high-income top 10 on the three main indices, while Switzerland and the Netherlands are the only economies also in the high-income top 10 in the efficiency ratio.

Among the upper-middle-income 10 best performers in the GII, Costa Rica, Lithuania, and Romania enter the list this year, displacing Serbia, Mauritius, and the Russian Federation. Malaysia, Latvia, China, Bulgaria, Montenegro, and Chile are among the 10 best performers in the three indices; of these, China and Bulgaria also make it to the upper-middle-income top 10 in the efficiency ratio.

The same analysis for lower-middle-income countries shows that, in 2013, Indonesia and Guatemala displace Belize (101st) and Swaziland (103rd). The Republic of Moldova, Armenia, India, and Ukraine are among the top 10 in the three indices; of these, the Republic of Moldova and India are the only countries with top 10 positions in the efficiency ratio as well.

Among low-income countries, those showing above-par performances in the three indices are Uganda, Kenya, Tajikistan, Cambodia, and Burkina Faso; all of them, with the exception of Kenya, are in the low-income top 10 on efficiency.

Table 4: Ten best-ranked economies by income group (rank)

	Global Innovation Index	Innovation Input Sub-index	Innovation Output Sub-index	Innovation Efficiency Ratio
High-income economies (45 in total)				
1	**Switzerland (1)**	Singapore (1)	**Switzerland (1)**	Malta (4)
2	**Sweden (2)**	Hong Kong (China) (2)	**Netherlands (2)**	Kuwait (8)
3	**United Kingdom (3)**	United States of America (3)	**Sweden (3)**	**Switzerland (12)**
4	**Netherlands (4)**	**United Kingdom (4)**	**United Kingdom (4)**	Hungary (23)
5	United States of America (5)	**Sweden (5)**	Malta (5)	**Netherlands (26)**
6	**Finland (6)**	**Finland (6)**	Luxembourg (6)	Iceland (30)
7	Hong Kong (China) (7)	**Switzerland (7)**	Iceland (7)	Luxembourg (33)
8	Singapore (8)	Denmark (8)	**Finland (8)**	Israel (38)
9	Denmark (9)	Canada (9)	Israel (9)	Germany (40)
10	Ireland (10)	**Netherlands (10)**	Germany (10)	Cyprus (43)
Upper-middle-income economies (40 in total)				
1	**Malaysia (32)**	**Malaysia (32)**	**China (25)**	Costa Rica (9)
2	**Latvia (33)**	**Latvia (33)**	**Malaysia (30)**	Venezuela, Bolivarian Rep. (10)
3	**China (35)**	Lithuania (35)	Costa Rica (31)	**China (14)**
4	Costa Rica (39)	**Montenegro (40)**	**Latvia (37)**	Argentina (20)
5	Lithuania (40)	**Chile (41)**	**Bulgaria (38)**	Ecuador (21)
6	**Bulgaria (41)**	**China (46)**	Romania (40)	Angola (22)
7	**Montenegro (44)**	TFYR of Macedonia (48)	Argentina (43)	Dominican Republic (28)
8	**Chile (46)**	**Bulgaria (50)**	Uruguay (46)	Turkey (29)
9	Romania (48)	South Africa (51)	**Chile (48)**	Romania (34)
10	TFYR of Macedonia (51)	Russian Federation (52)	**Montenegro (50)**	**Bulgaria (35)**
Lower-middle-income economies (36 in total)				
1	**Moldova, Rep. (45)**	Mongolia (49)	**Moldova, Rep. (28)**	**Moldova, Rep.(2)**
2	**Armenia (59)**	Georgia (62)	**India (42)**	Swaziland (5)
3	**India (66)**	**Armenia (71)**	**Armenia (47)**	Indonesia (6)
4	**Ukraine (71)**	Fiji (72)	Viet Nam (54)	Nigeria (7)
5	Mongolia (72)	**Moldova, Rep. (76)**	Guyana (55)	**India (11)**
6	Georgia (73)	Albania (77)	**Ukraine (58)**	Sri Lanka (13)
7	Viet Nam (76)	**Ukraine (83)**	Indonesia (62)	Guyana (15)
8	Guyana (78)	Cape Verde (84)	Swaziland (74)	Pakistan (16)
9	Indonesia (85)	Lesotho (86)	Sri Lanka (76)	Viet Nam (17)
10	Guatemala (87)	**India (87)**	Philippines (77)	Senegal (18)
Low-income economies (21 in total)				
1	**Uganda (89)**	Kyrgyzstan (97)	Mali (73)	Mali (1)
2	**Kenya (99)**	**Kenya (98)**	**Uganda (75)**	Guinea (3)
3	**Tajikistan (101)**	Rwanda (102)	**Tajikistan (85)**	**Uganda (19)**
4	Mali (106)	**Uganda (109)**	Guinea (98)	Zimbabwe (25)
5	**Cambodia (110)**	Tanzania, United Rep. (110)	**Kenya (100)**	**Tajikistan (27)**
6	Rwanda (112)	Mozambique (111)	**Cambodia (101)**	**Cambodia (39)**
7	**Burkina Faso (116)**	**Tajikistan (113)**	Malawi (105)	Malawi (41)
8	Kyrgyzstan (117)	**Burkina Faso (119)**	Gambia (107)	Gambia (44)
9	Malawi (119)	**Cambodia (120)**	**Burkina Faso (109)**	Bangladesh (46)
10	Mozambique (121)	Benin (121)	Zimbabwe (116)	**Burkina Faso (64)**

Note: Economies with top 10 positions in the GII, the Input Sub-Index, and the Output Sub-Index are highlighted.

Box 2: The persistent innovation divide: Innovation leaders uncontested; major moves in lower tiers only

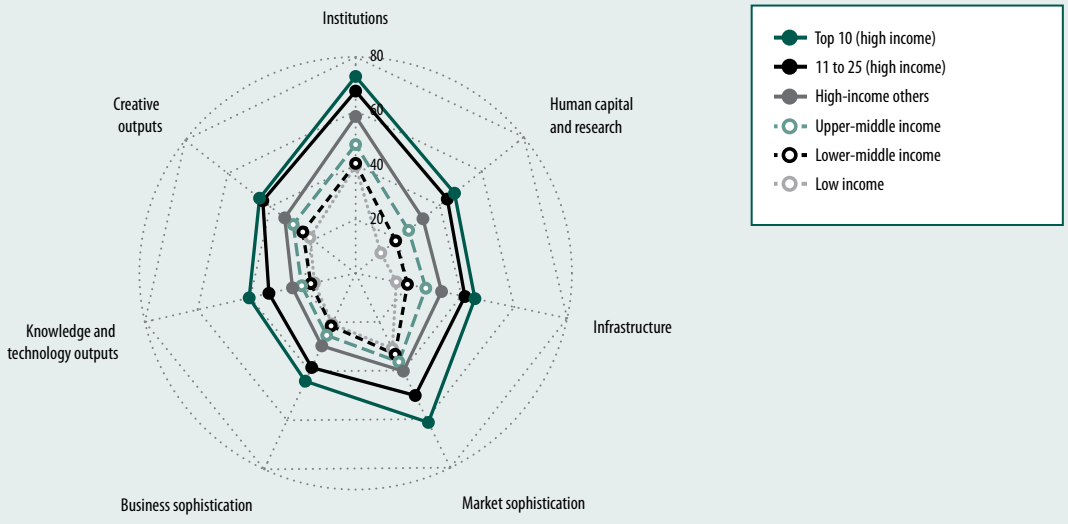
One prominent feature of this year's report is the stability at the top of the GII rankings. The top two countries are the same as they were in 2011 and 2012: Switzerland and Sweden. Among the top 10 and top 25, rankings have been swapped but the membership remains the same. In 2013, the innovation leaders are—without exception—the same as they were last year, and they are all high-income economies. Although not too far behind, other high-income countries and a group of dynamic middle-income countries outpacing their peers were unable to break into this group of GII leaders in 2013.

There is a clear distance between top-ranked countries on the one hand and their followers on the other. Figure 2.1 shows average scores for three tiers of high-income economies (the top 10, the next 15 that make up the top 25, and the rest), upper- and lower-middle-income economies, and low-income economies. The top 10 countries have clear strengths compared with the second tier; they perform significantly better in Market sophistication (with indicators on access to and depth of the credit, investment, and trade markets); Business sophistication (with indicators on knowledge workers, innovation linkages, and knowledge absorption); and Knowledge and Scientific outputs (with indicators on creation of knowledge, impact in domestic markets, and diffusion to global markets). The top 10 are Switzerland, Sweden, the United Kingdom, the Netherlands, the United States of America, Finland, Hong Kong (China), Singapore, Denmark, and Ireland. They are followed in the top 25 by Canada, Luxembourg, Iceland, Israel, Germany, Norway, New Zealand, the Republic of Korea, Australia, France, Belgium, Japan, Austria, Malta, and Estonia.

Interestingly, the divide is not only between high-income economies and less affluent ones. The same divide also holds between the second tier and the third tier of high-income economies: Spain (GII rank 26), Cyprus (27), the Czech Republic (28), Italy (29), Slovenia (30), Hungary (31), Portugal (34), Slovakia (36), Croatia (37), the United Arab Emirates (38), Saudi Arabia (42), Qatar (43), Barbados (47), Poland (49), Kuwait (50), Greece (55), Bahrain (67), Brunei Darussalam (74), Oman (80), and Trinidad and Tobago (81).

One interpretation could be that innovation success leads to the emergence of a virtuous circle once a critical threshold has been passed. Hence, determining whether that threshold is one that most countries (especially developing countries) can hope to reach and pass with additional investment, resources, and time, or whether instead a more fundamental transformation is needed that requires shifts in policies and mindsets, is a strategic issue that must be addressed.

Figure 2.1: The persistent innovation divide: Stability among the top 10 and top 25



Note: Countries/economies are classified according to the World Bank Income Group Classification (July 2012).

(Continued)

Box 2: The persistent innovation divide: Innovation leaders uncontested; major moves in lower tiers only *(continued)*

In fact, the third tier of high-income economies have scores that are, on average, closer to those of upper-middle-income countries, even if profiles and levels of achievement differ. Although the former present clear advantages in Institutions, Human capital and research, and Infrastructure, the latter have caught up significantly in Market and Business sophistication and Creative and Knowledge and technology outputs.

All this does not mean that middle- and low-income countries are unable to make significant moves in the rankings. Indeed, their scores are often remarkably close to one another, particularly for the countries in positions 51 to 75 (a span of 2.7 points) and those in positions 76 to 100 (4.5 points), implying that small relative changes among countries can have significant impacts on their respective rankings.

Table 2.1 shows the eight countries whose rankings underwent the biggest changes from 2012 to 2013: Uganda and Costa Rica had the most significant moves, bringing them, incidentally, into the category of innovation learners.

Table 2.1: Biggest jumps in the GII rankings from 2012 to 2013

Country	GII 2012 rank	GII 2013 rank	Jump
Uganda	117	89	+28
Costa Rica	60	39	+21
Bolivia, Plurinational St.	114	95	+19
Cambodia	129	110	+19
Mexico	79	63	+16
Uruguay	67	52	+15
Indonesia	100	85	+15
Ecuador	98	83	+15

Note: Part of these changes in rankings can also be attributed to improvements in data collection, as well as adjustments to the GII framework (details in Annex 2).

Doing more with less: The Innovation Efficiency Ratio

While the GII is calculated as the average of the Input and Output Sub-Indices, the Innovation Efficiency Ratio is calculated as the ratio of the Output over the Input Sub-Index. The relationship between the GII rankings and the efficiency ratios is slightly positive, as expected, implying that more efficient countries achieve, on average, better GII scores (Figure 3).

The efficiency ratio is designed to be neutral to countries' stages of development, and the data indeed reflect this neutrality. That said, the analysis by income group for efficiency ratios is particularly crucial, because economies might reach a relatively high efficiency ratio *as a result of particularly low input scores*. Efficiency ratios must be analysed jointly with GII, Input, and Output scores, and with the development stages of the economies in mind. Efficiency ratios are reported this year next to the GII scores for this reason (Table 1).

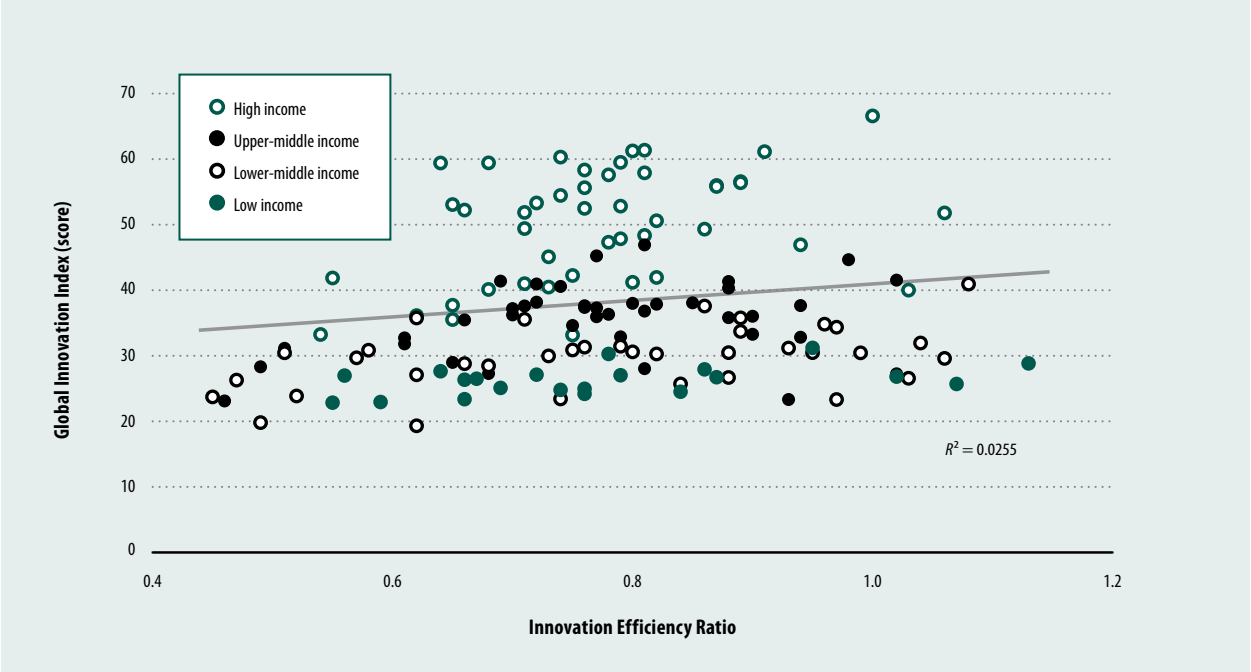
The 10 countries with the highest Innovation Efficiency Ratios are countries particularly good at surmounting relative weaknesses on their Input Sub-Indices with relatively robust output results, with GII rankings ranging from 24th to 126th: Mali (ranked 106th in the GII), the Republic of Moldova (45th), Guinea (126th), Malta (24th), Swaziland (104th), Indonesia (85th), Nigeria (120th), Kuwait (50th), Costa Rica (39th), and the Bolivarian Republic of Venezuela (114th).

Among high-income economies, Malta and Kuwait are in the global top 10. European countries take up the first 20 positions, with the exception of Kuwait (2nd), Israel (8th), Cyprus (10th), and Saudi Arabia (17th). Canada and the USA are ranked 21st and 28th, respectively. In this income group, 35.6% have better rankings on outputs than they do on inputs. The Middle Eastern countries Bahrain, the United Arab Emirates, and Oman have the lowest ratios among high-income economies (between 0.62 and 0.54).

Among upper-middle-income countries, Costa Rica and Venezuela are in the top 10. Bulgaria, China, Costa Rica, Latvia, Malaysia, and Romania make it to the top 40 globally on outputs, surmounting lower capabilities (except for Latvia, which ranks 33rd on inputs and 37th on outputs). In this income group, 45.0 % of countries have better rankings in outputs than in inputs.

Among lower-middle-income countries, the Republic of Moldova,

Figure 3: Global Innovation Index vs. Innovation Efficiency Ratio



Swaziland, Indonesia, and Nigeria are among the global top 10. The Republic of Moldova, India, and Armenia are in the global top 50 on outputs, with lower positions in inputs. Within this income group, 55.6% of countries have better rankings in outputs than in inputs.

Among low-income countries, Mali and Guinea are in the top 10, and 52.4% have better showings in outputs than in inputs.

Leaders and learners: The reward of leveraging strengths and rectifying weaknesses

Figure 4 illustrates the above findings by presenting the GII scores plotted against GDP per capita in PPP$ (in natural logs). When countries' stages of development are considered, the GII results can be interpreted in a new light.

The economies that appear close to the trend line show results that are in accordance with what is expected from their level of development.[21] A majority of economies are in this category. The farther up and above the trend line a country appears, the better its innovation performance compares with that of its peers at the same stage of development. Light-coloured bubbles in the figure correspond to the efficient innovators (in a majority situated above the trend line), while the dark-coloured bubbles represent those countries in the lower half of the Innovation Efficiency Ratio.

- Among the *innovation leaders* we find the top 25 countries already discussed above and in Box 2. These economies are the same as in 2012, all with GII scores above 50. They have succeeded in creating well-linked innovation ecosystems where investments in human capital thrive in fertile and stable innovation infrastructures to create impressive levels of innovation outputs.
- The group of *innovation learners* includes 18 high- and middle-income countries: the Republic of Moldova, China, India, Uganda, Armenia, Viet Nam, Malaysia, Jordan, Mongolia, Mali, Kenya, Senegal, Hungary, Georgia, Montenegro, Costa Rica, Tajikistan, and Latvia (these countries appear 10% or more above the trend line, in order of distance). They demonstrate rising levels of innovation results because of improvements made to institutional frameworks, a skilled labour force with expanded tertiary education, better innovation infrastructures, a deeper integration with global credit investment and trade markets, and a sophisticated business community—even if progress on these dimensions is not uniform across all segments of the country. Among low-income countries, Uganda, Mali, Kenya, and Tajikistan have above-par performances.

The paradox of plenty: High GII rankings might conceal below-par performances

Eight high-income economies and 20 middle-income economies have relative weaknesses in their innovation ecosystems when compared with countries of similar income levels (scores that are 10% or more below the trend line); although low-income economies could potentially be affected as well, no low-income economy performs below par in 2013.

In the Middle East, with the exception of Saudi Arabia, the resource-rich economies of the Gulf Cooperation Council (GCC) are in this group: Qatar, Oman, Kuwait, the United Arab Emirates, and Bahrain. Other high-income economies included here are Brunei Darussalam, Trinidad and Tobago, and Greece.

Although the scaling by GDP of a few indicators (required for comparability across countries) penalizes these relatively wealthy countries, these countries often exhibit relative shortcomings in important areas in which this effect does not prevail, such as Institutions, Market sophistication, and Business sophistication.

These countries, however, are uniquely positioned to do better in the years to come because of their natural endowments. Many of them have been diversifying towards innovation-rich sectors already. But several of these countries are resource-rich in oil, gas, or some other natural resource, and their resource-extracting activities crowd out investment in other productive sectors and hinder innovation. This phenomenon—reminiscent of what has been called the 'resource curse' or 'paradox of plenty'—has been well documented historically and across regions, and is captured by the GII.

The middle-income innovation challenge: The need for a knowledge-based growth strategy

Middle-income countries with below-par performances, beginning with the farthest from the trend line, include Gabon, Algeria, Venezuela, the Bolivarian Republic of Venezuela, the Islamic Republic of Iran, Angola, Botswana, Yemen, Sudan, the Syrian Arab Republic, Panama, Azerbaijan, Uzbekistan, Namibia, Pakistan, Kazakhstan, Belarus, Belize, Egypt, Lebanon, and Côte d'Ivoire.

The GII 2012 posited that countries might develop their innovation capabilities and results following an innovation transition model in four stages, briefly sketched here:

- **Stage 1:** A critical level must be reached in all input areas for innovation activities to take off with a multiplier effect in terms of innovation outputs.
- **Stage 2:** Innovation results increase from marginal but persistent improvements in institutional frameworks, the expansion of tertiary education, better infrastructures, a deeper integration to global markets, and a sophisticated business community. Some sub-national regions, clusters, and niche markets might prevail and pull the rest of the territory; innovation linkages are crucial.
- **Stage 3:** Input rankings improve with the integration of all segments of society into the economy: productivity and wages increase, cities develop, education expands, corruption regresses, and markets play a greater role in parallel to societal progress, with an *innovation hysteresis* effect that explains the steepness of the trend line. Innovation learners are found in stages 2 and 3.
- **Stage 4:** For innovation leaders, innovation capabilities and results stabilize at a high level in an equilibrium that is more the result of demographics, market size, and comparative advantages than it is the cause of failed policies or planned strategies.[22]

A knowledge-based growth strategy is required to encourage innovation and creativity through a supportive ecosystem. To reach that goal, middle-income economies must closely monitor the quality of their innovation inputs and outputs.

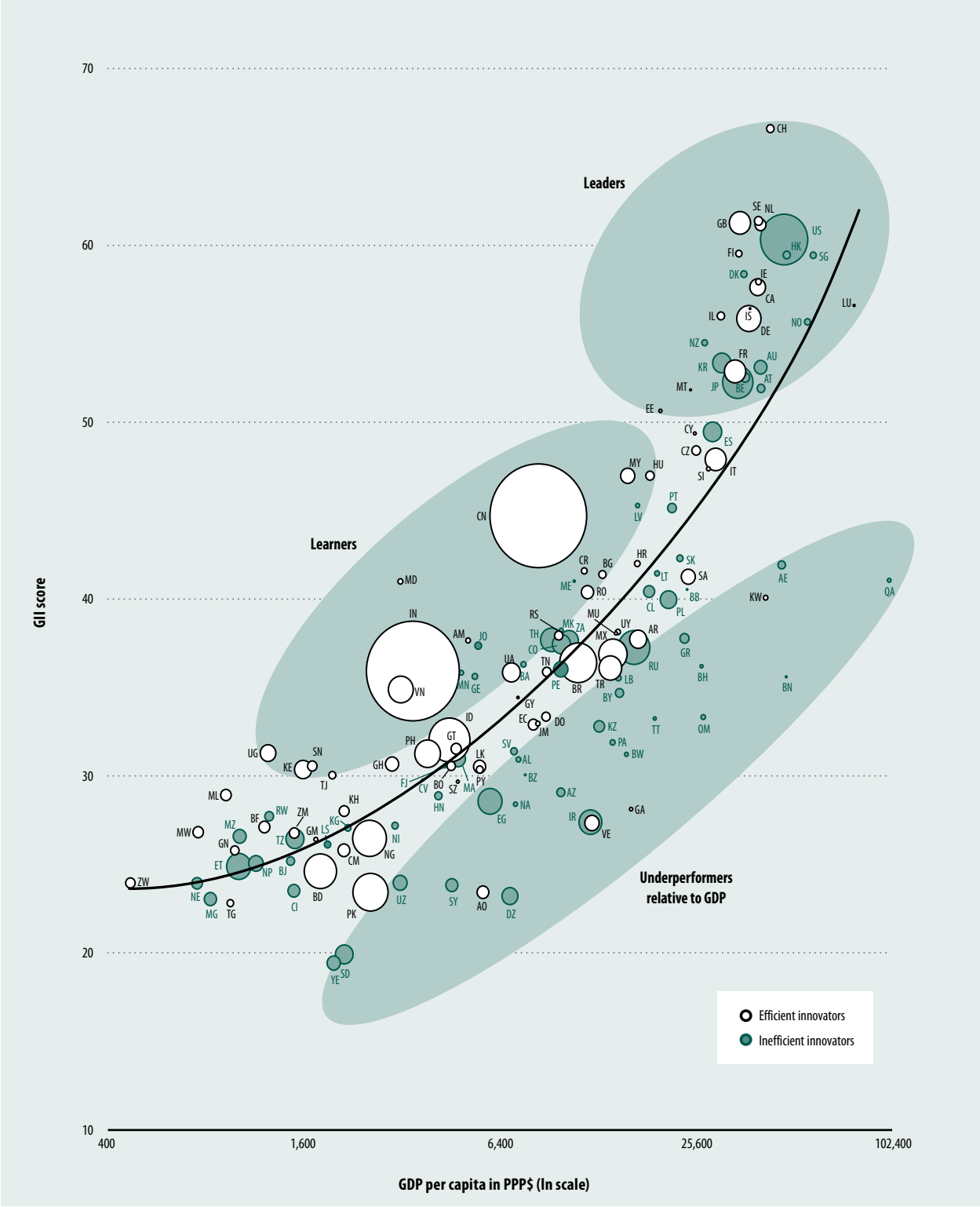
A special effort was made this year to capture this dimension by including three indicators focusing on innovation quality, and it was found that a few middle-income countries perform particularly well on these (Box 3).

Other adjustments made to the GII framework point in the same direction (Annex 2 includes a table summarizing adjustments made this year).

Regional rankings

Best-ranked economies in their respective regions in the GII are Switzerland in Europe (1st, with Sweden, 2nd in the GII, coming first in the EU); the USA in Northern America (5th); Hong Kong (China) in South East Asia and Oceania (7th, displacing Singapore, which is now 8th and 2nd in the region); Israel in Northern Africa and Western Asia (14th), Costa Rica in Latin America and the Caribbean (39th, displacing Chile, now 46th and 2nd in the region), Mauritius in Sub-Saharan Africa (53rd), and India in Central and Southern Asia (66th). Table 5 presents a heatmap with the scores for the top 10, and average scores by income and regional groups.

Figure 4: GII scores and GDP per capita in PPP$ (bubbles sized by population)



Note: 'Efficient innovators' are countries/economies with Innovation Efficiency ratios ≥ 0.78; 'Inefficient innovators' have ratios < 0.78; the trend line is a polynomial of degree three with intercept ($R^2 = 0.7178$).

Figure 4: GII scores and GDP per capita in PPP$ (bubbles sized by population): ISO-2 Country Codes

Code	Country
AE	United Arab Emirates
AL	Albania
AM	Armenia
AO	Angola
AR	Argentina
AT	Austria
AU	Australia
AZ	Azerbaijan
BA	Bosnia and Herzegovina
BB	Barbados
BD	Bangladesh
BE	Belgium
BF	Burkina Faso
BG	Bulgaria
BH	Bahrain
BJ	Benin
BN	Brunei Darussalam
BO	Bolivia, Plurinational St.
BR	Brazil
BW	Botswana
BY	Belarus
BZ	Belize
CA	Canada
CH	Switzerland
CI	Côte d'Ivoire
CL	Chile
CM	Cameroon
CN	China
CO	Colombia
CR	Costa Rica
CV	Cape Verde
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
DO	Dominican Republic
DZ	Algeria
EC	Ecuador
EE	Estonia
EG	Egypt
ES	Spain
ET	Ethiopia
FI	Finland
FJ	Fiji
FR	France
GA	Gabon
GB	United Kingdom
GE	Georgia
GH	Ghana
GM	Gambia
GN	Guinea
GR	Greece
GT	Guatemala
GY	Guyana
HK	Hong Kong (China)
HN	Honduras
HR	Croatia
HU	Hungary
ID	Indonesia
IE	Ireland
IL	Israel
IN	India
IR	Iran, Islamic Rep.
IS	Iceland
IT	Italy
JM	Jamaica
JO	Jordan
JP	Japan
KE	Kenya
KG	Kyrgyzstan
KH	Cambodia
KR	Korea, Rep.
KW	Kuwait
KZ	Kazakhstan
LB	Lebanon
LK	Sri Lanka
LS	Lesotho
LT	Lithuania
LU	Luxembourg
LV	Latvia
MA	Morocco
MD	Moldova, Rep.
ME	Montenegro
MG	Madagascar
MK	TFYR of Macedonia
ML	Mali
MN	Mongolia
MT	Malta
MU	Mauritius
MW	Malawi
MX	Mexico
MY	Malaysia
MZ	Mozambique
NA	Namibia
NE	Niger
NG	Nigeria
NI	Nicaragua
NL	Netherlands
NO	Norway
NP	Nepal
NZ	New Zealand
OM	Oman
PA	Panama
PE	Peru
PH	Philippines
PK	Pakistan
PL	Poland
PT	Portugal
PY	Paraguay
QA	Qatar
RO	Romania
RS	Serbia
RU	Russian Federation
RW	Rwanda
SA	Saudi Arabia
SD	Sudan
SE	Sweden
SG	Singapore
SI	Slovenia
SK	Slovakia
SN	Senegal
SV	El Salvador
SY	Syrian Arab Republic
SZ	Swaziland
TG	Togo
TH	Thailand
TJ	Tajikistan
TN	Tunisia
TR	Turkey
TT	Trinidad and Tobago
TZ	Tanzania, United Rep.
UA	Ukraine
UG	Uganda
US	United States of America
UY	Uruguay
UZ	Uzbekistan
VE	Venezuela, Bolivarian Rep.
VN	Viet Nam
YE	Yemen
ZA	South Africa
ZM	Zambia
ZW	Zimbabwe

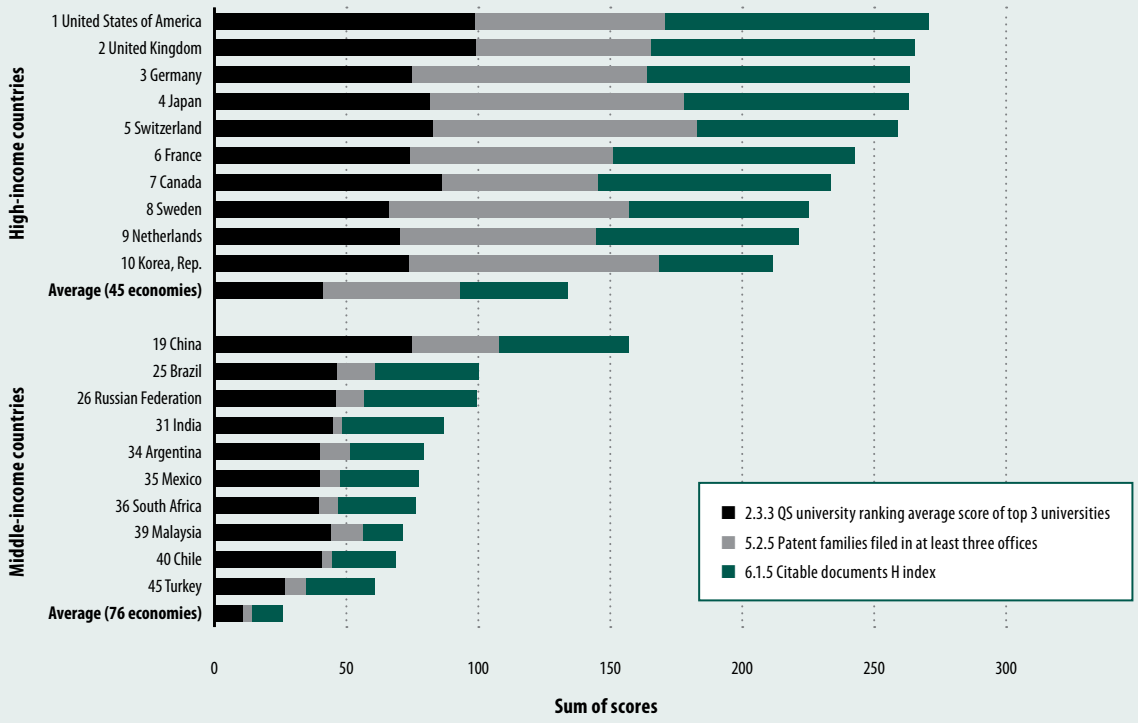
Box 3: New indicators in GII 2013 focused on the quality of innovation inputs and outputs

Not all innovation inputs and outputs are of equal quality, and hence not all of them have the same impact. For example, a count of the number of universities a country runs and the value of expenditure in tertiary education are not always good proxies for the quality and impact of its higher education. Equally, the number of patent applications filed is not always a good proxy for how good and commercially valuable the inventions underlying the patents really are. It makes sense to move beyond quantity in the few areas where this is possible, and to introduce some metrics on the quality of innovation inputs and outputs.

The GII 2013 builds on this idea and introduces three indicators that aim to address the shortcomings of traditional innovation metrics. They are included in pillar 2, Human capital and research; pillar 5, Business sophistication; and pillar 6, Knowledge and technology outputs.

- 2.3.3 The average score of the top 3 universities in the QS World University Ranking of 2012: By design, this indicator is aimed at assessing the availability of higher education institutions of quality, and not the average level of all universities within a particular economy. The QS World University Ranking includes six indicators drawn together to form an international ranking of universities: 40% academic reputation (from a global survey), 10% employer reputation (from global a survey), 20% citations per faculty (from SciVerse Scopus), 20% faculty student ratio, 5% proportion of international students, and 5% proportion of international faculty.
- 5.2.5 Patent families filed in at least three offices: This indicator measures the number of patents residents in a given country have filed in a minimum of three patent offices worldwide. Patents filed in several countries/jurisdictions to protect the same invention are potentially more inventive and more commercially valuable than patents filed in just one country. This indicator complements the data used to measure the number of resident filings under the Patent Cooperation Treaty by nationals of a given country (6.1.2), and is equally a metric hinting at the potential commercial value or the international scope of an invention.[1]
- 6.1.5 Citable documents H index: The number of scientific journal articles

Figure 3.1: Quality of innovation new metrics: Top 10 high-income and top 10 middle-income countries



Note: Economies classified by income according to the World Bank Income Group Classification (July 2012). Upper- and lower-middle income categories were grouped together as middle-income economies.

(Continued)

Box 3: New indicators in GII 2013 focused on the quality of innovation inputs and outputs *(continued)*

published in a given country is a good quantitative indicator of scientific output. To shed light on the quality of the output, the number of citations these publications receive provides a measure of scientific productivity and impact. To obtain such an assessment, the GII includes the H index, which ranks all publications of a given country by the number of citations they receive and expresses the number of articles (H) that have received at least H citations in the period 1996 to 2011.

As shown in Figure 3.1, the following 10 high-income economies do particularly well on these three indicators: the United States of America (USA), the United Kingdom (UK), Germany, Japan, Switzerland, France, Canada, Sweden, the Netherlands, and the Republic of Korea.[2] Indeed, this year, countries such as the UK and the USA perform better in the overall GII rankings, boosted to a certain extent by the inclusion of these new indicators.

Among middle-income countries, the 10 countries that achieve the highest sum of scores include the four BRICs: China (ranks 19th on the sum of scores on these three variables and 35th in the overall GII 2013), Brazil (25th/64th), the Russian Federation (26th/62nd), India (31st/66th), Argentina (34th/56th), Mexico (35th/63rd), South Africa (36th/58th), Malaysia (39th/32nd), Chile (40th/46th), and Turkey (45th/68th). With the exception of Malaysia and Chile, all of these top 10 middle-income countries achieve better ranks in these three indicators than they do in the overall GII 2013 rankings.[3]

Notes

1 Measuring the quality of a patent remains inherently difficult, however. The data on patents filed in at least three offices is not a perfect proxy. First, it does not account for the size of the countries in question. A patent filed in three small countries is, for example, not necessarily of better quality than a patent filed in the USA and Japan. Second, filings under the European Patent Office (EPO) introduce a bias in this dataset; an EPO patent filing counts as one, but it potentially covers a large number of countries.

2 The same 10 countries remain in the top 10 regardless of the criteria used: average rank, average percent rank, average score, or sum of scores.

3 The positions in between are all taken by high-income economies: Australia, Finland, Israel, Denmark, Belgium, Italy, Austria, Norway, Hong Kong (China), Ireland, Spain, Singapore, New Zealand, Luxembourg, Barbados, Hungary, the Czech Republic, Poland, Portugal, Greece, Slovenia, Saudi Arabia, Iceland, Cyprus, and Malta.

This section discusses regional and sub-regional trends, with snapshots for some of the economies leading in the rankings. To put the discussion of rankings further into perspective, Figure 5 presents, for each region, bars representing the median pillar scores (second quartile) as well as the range of scores determined by the first and second quartile; regions are presented in decreasing order of their average GII rankings (except for the EU, which is placed at the end). Some observations are noteworthy. For example, the great dispersion seen in South East Asia and Oceania in the first four pillars is greatly reduced in the last three; even if it places behind in the overall GII, the median Sub-Saharan African country achieves a better score than the median Central and Southern Asian country in three pillars; the median score in South East Asia and Oceania is above that of Europe in Market and Business sophistication. Although Human capital and research and Infrastructure present the expected shape, the last three pillars—Business sophistication, Knowledge and technology outputs, and Creative outputs—present the greatest dispersion in median scores compared to the GII.

Sub-Saharan Africa (32 countries)

Since the first edition of this report, only two Sub-Saharan African countries have reached positions in the upper half of the GII rankings: Mauritius has been in the top half since 2011 and is 53rd in 2013; and South Africa, which has been in the top half of the rankings in all editions, is 58th in 2013. In addition, five countries are ranked among the top 100 (refer to Box 4 for details).

The remaining 25 countries are placed at the bottom of the rankings (100 or lower); Cape Verde and Guinea, in particular, entered the rankings this year at positions 102 and 126, respectively. Uganda, Mali, Kenya, and Senegal are among innovation learners this year, while middle-income countries Gabon, Angola, Botswana, Sudan, Namibia, and Côte d'Ivoire have below-par performances. With the first- and second-highest PPP$ GDP per capita in the region, the performances of Gabon and Botswana are particularly disappointing.

Central and Southern Asia (10 economies)

Since the first editions of the GII, only India (66th), Kazakhstan (84th), and Sri Lanka (98th) have consistently achieved positions among the first 100; they prevail again in the region this year. The remaining seven countries place at the bottom of the rankings: Tajikistan (101st), the Islamic Republic of Iran (113th), Kyrgyzstan (117th), Nepal (128th), Bangladesh (130th), Uzbekistan (133rd), and Pakistan (137th). India

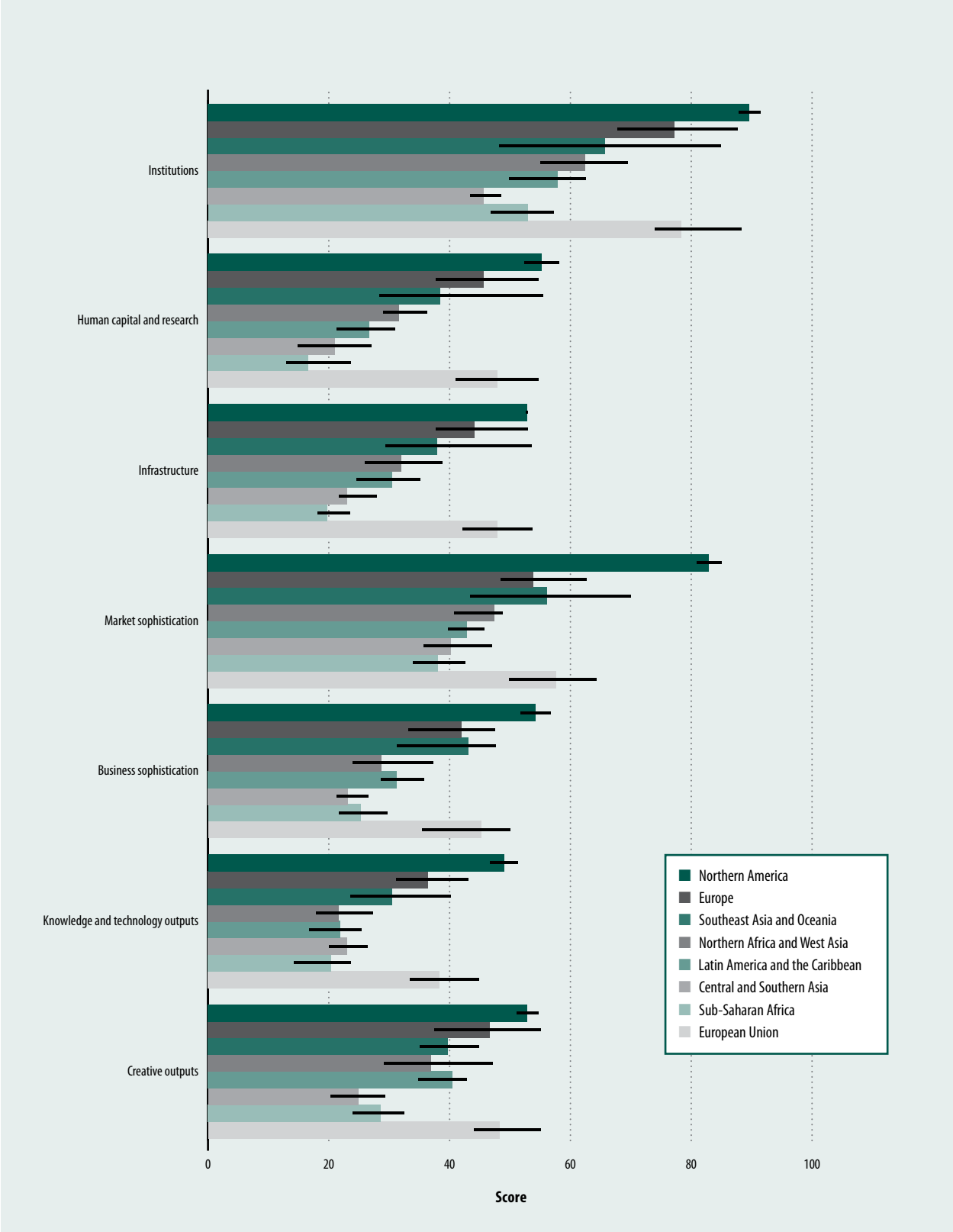
Table 5: Heatmap for GII top 10 economies and regional and income group averages (1–100)

Country/Economy	GII	Institutions	Human capital and research	Infrastructure	Market sophistication	Business sophistication	Input	Knowldege and technology outputs	Creative outputs	Output	Efficiency
Switzerland	66.59	87.31	55.45	57.03	77.47	55.33	66.52	61.46	71.84	66.65	1.00
Sweden	61.36	89.92	62.45	63.14	71.82	51.97	67.86	54.12	55.60	54.86	0.81
United Kingdom	61.25	88.44	56.18	59.45	84.60	52.32	68.20	51.07	57.52	54.30	0.80
Netherlands	61.14	92.76	50.64	55.48	69.18	52.85	64.18	53.89	62.30	58.09	0.91
United States of America	60.31	86.05	61.06	52.54	87.09	59.24	69.19	53.62	49.22	51.42	0.74
Finland	59.51	95.31	67.39	57.51	63.19	49.95	66.67	50.81	53.90	52.35	0.79
Hong Kong (China)	59.43	90.80	52.29	63.43	88.58	58.17	70.65	34.21	62.20	48.21	0.68
Singapore	59.41	92.24	63.18	59.19	77.60	69.16	72.27	48.53	44.58	46.56	0.64
Denmark	58.34	95.33	60.36	53.87	74.60	47.53	66.34	41.93	58.77	50.35	0.76
Ireland	57.91	91.95	59.28	42.19	73.22	53.83	64.09	55.58	47.88	51.73	0.81
Average	**37.41**	**62.52**	**32.69**	**33.54**	**48.26**	**33.70**	**42.15**	**27.62**	**37.73**	**32.67**	**0.78**
Regions											
Northern America	58.96	89.65	55.26	52.79	82.94	54.26	66.98	48.99	52.87	50.93	0.76
Europe	47.64	75.66	46.31	44.91	56.12	41.17	52.83	37.77	47.13	42.45	0.80
South East Asia and Oceania	43.06	66.91	40.23	40.98	57.88	41.19	49.44	32.07	41.28	36.67	0.76
Northern Africa and Western Asia	35.55	61.23	33.88	33.28	47.06	30.38	41.17	24.09	35.79	29.94	0.72
Latin America and the Caribbean	33.91	55.99	26.28	29.45	42.81	33.20	37.55	21.31	39.22	30.27	0.81
Central and Southern Asia	28.03	47.23	21.55	25.11	40.32	23.65	31.57	24.30	24.68	24.49	0.79
Sub-Saharan Africa	27.38	52.91	18.26	20.52	38.87	25.16	31.14	19.44	27.79	23.62	0.77
Income levels											
High income	50.11	80.54	49.05	47.79	60.39	44.71	56.50	38.26	49.18	43.72	0.77
Upper-middle income	35.71	59.53	31.55	33.17	45.59	31.66	40.30	25.61	36.63	31.12	0.77
Lower-middle income	29.83	50.82	23.84	24.49	41.66	26.83	33.53	21.25	31.01	26.13	0.78
Low income	26.43	49.69	14.99	19.25	38.68	25.81	29.68	19.54	26.84	23.19	0.79

Worst — Average — Best

Note: Darker shadings indicate better performances. Countries/economies are classified according to the World Bank Income Group and the United Nations Regional Classifications (July 2012 and 11 February 2013, respectively).

Figure 5: Median scores by regional group and by pillar



Note: The bars show median scores (second quartiles); the lines show the range of scores between the first and third quartiles.

Box 4: Sub-Saharan Africa: Best-ranked countries compared

In Sub-Saharan Africa, of a total of 32 countries, Mauritius (GII 53rd) and South Africa (GII 58th) make it to the upper half of the GII rankings, while five other countries achieve scores within the top 100: Uganda (89th), Botswana (91st), Ghana (94th), Senegal (96th), and Kenya (99th). In addition, Uganda, Mali (GII 106th), Kenya, and Senegal show above-par performances, placing them among innovation learners—a commendable achievement for countries that have GDP per capita incomes below PPP$2,000.

Figure 4.1 shows the scores of these seven countries along with the average scores for the region and for upper-middle-income and high-income countries for all pillars and indices. The low-income country grouping includes half of the countries in the region; the scores of these two groupings are therefore very close, which is why that income grouping is not drawn.

Mauritius, an island of 1.3 million people in the Indian Ocean, has the 3rd largest GDP per capita after Gabon and Botswana, at PPP$15,621.6. It scores above the upper-middle-income countries' average in the GII (53rd, down from 49th in 2012); the Input Sub-Index (60th); the Output Sub-Index (57th); and the Institutions (30th), Market sophistication (30th), and Creative outputs (31st) pillars. However, important weaknesses are evident in Human capital and research (95th), Infrastructure (101st), Business sophistication (101st), and Knowledge and technology outputs (100th).

South Africa comes in 4th in the region in terms of GDP per capita, at PPP$11,302.2. This upper-middle-income country also places above its income group average in the three indices: GII (58th), Input (51st), and Output (71st). Its relatively strong pillars are Institutions (44th), Market sophistication (ranked 16th globally, with a score above the average performance of high-income economies), and Creative outputs (68th). Its performance in the following three pillars is below par, however: Business sophistication (71st), Knowledge and technology outputs (79th), and Infrastructure (83rd). The ranking in Human capital and research (102nd) is not reliable, as six data points are missing in the first two sub-pillars; only the third ranking, of 38th in the R&D sub-pillar, can be taken at face value.

Aside from Mauritius and South Africa, the remaining five countries in Sub-Saharan Africa that score within the top 100 in the GII perform close to or better than the regional average, with only a few exceptions (Botswana in the Output Sub-Index, Kenya and Senegal in Human capital and research, Ghana and Uganda in Infrastructure, Senegal in Market sophistication, Uganda in Business sophistication, and Ghana and Botswana on Creative outputs). In some key variables, the relative performance advantage is indeed significant: for example, Botswana in the Input Sub-Index, Institutions, and Human capital and research; Kenya in Market sophistication; and Ghana in Knowledge and technology outputs all achieve scores above the

Figure 4.1: Sub-Saharan Africa: Best-ranked countries compared

(Continued)

Box 4: Sub-Saharan Africa: Best-ranked countries compared *(continued)*

average for upper-middle-income countries. Senegal also exhibits an above-par performance in Creative outputs, but missing data in the registration of trademarks, coupled with relatively high scores in two survey questions included in the Intangible assets sub-pillar, explain this performance.

Missing data are an issue when attempting to determine a proper assessment of performance. While the average for all countries worldwide this year is 12.8%, it reaches a peak of 22.0% in Sub-Saharan Africa.[1] Because no imputation of missing data is performed, the reliability of rankings is affected, as shown by the statistical audit performed by the Joint Research Centre of the European Commission, which provides a 90% confidence interval for the GII, Input, and Output rankings. For the past three years, all countries with indicator coverage above 63% have been included, but that threshold might need to increase in future editions.

Note

1 Missing data are 14.9% in Northern Africa and Western Asia, 14.4% in Latin America and the Caribbean, 10.1% in Northern America, 9.7% in South East Asia and Oceania, and merely 4.4% in Europe.

and Tajikistan are among the innovation learners, while the Islamic Republic of Iran, Uzbekistan, Pakistan, and Kazakhstan have below-par performances (Figure 4).

India comes in 1st in the region, ranked 66th (3rd among lower-middle-income countries) and down two positions since 2012; one of these positions was lost because of the inclusion of Barbados, which enters the rankings at 47th place. With more than 1.2 billion inhabitants and a robust economy (GDP per capita of PPP$3,851.3 in 2012, up from PPP$3,703.5), this low-income country is again among the innovation learners. In fact, India performs remarkably well in six out of seven key indicators introduced for the first time this year: the citable documents H index (23rd), the QS university ranking average score of top 3 universities (27th), high-tech and medium-high-tech output (31st), GERD performed by business enterprise over GDP (42nd), logistics performance (46th), and patent families filed in at least three offices (59th), with a single weakness in royalties and license fees receipts over services exports, where it is ranked 83rd. India has relative strength in the Output Sub-Index (ranked 42nd, down from 40th in 2012, and 1st in the region) over the Input Sub-Index (ranked 87th, up from 96th in 2012). This led to a fall in the efficiency ratio (to 11th this year, down from 2nd in 2012). Weak positions in Institutions (102nd) and Human capital and research (105th) remain, although rankings improved compared to 2012 (125th and 131st, respectively). The ranking in pillar 6, Knowledge and technology outputs, also improved (from 47th to 37th), with a 1st place in communications, computer and information services exports over total services exports providing the leverage for a 22nd world place in Knowledge diffusion.

Latin America and the Caribbean (23 economies)

Latin America and the Caribbean includes only upper- and middle-income economies, except for high-income Barbados (which re-entered the rankings this year at 47th position after two years of being excluded because of low indicator coverage) and Trinidad and Tobago (at a disappointing 81st).

This year, Costa Rica (39th) displaced Chile (46th) to reach 1st place in the regional rankings. They are followed by Barbados (47th) and by upper-middle-income countries Uruguay (52nd), Argentina (56th), Colombia (60th), Mexico (63rd), Brazil (64th), and Peru (69th), all in the first half of the rankings.

In the lower half we find Guyana (78th), followed by the three Caribbean countries Dominican Republic (79th), Trinidad and Tobago (81st), and Jamaica (82nd), as well as Ecuador (83rd), Panama (86th), Guatemala (87th), El Salvador (88th), and the Plurinational State of Bolivia (95th). With the exception of Guyana and Ecuador, the first 17 countries in the region have consistently achieved positions among the top 100 since the first edition of the GII. The Plurinational State of Bolivia broke that barrier for the first time this year. The Bolivarian Republic of Venezuela, at 114th, is the only upper-middle-income economy among the five at the bottom of the regional rankings: the other four are Paraguay (100th), Belize (102nd), Honduras (107th), and Nicaragua (115th).

Costa Rica is the only country in the region to be placed among innovation learners this year. The Bolivarian Republic of Venezuela, Trinidad and Tobago, Panama, and Belize have below-par performances when considered in the context of their GDP per capita data.

Costa Rica is ranked 39th, up 21 positions from 60th place in 2012. With a population of 4.9 million and a GDP per capita of PPP$12,558.6, Costa Rica ranks 66th in the Input Sub-Index (up from 71st in 2012). It comes in at 31st in the Output Sub-Index (up from 53rd), which is where its strengths are, leading to a 9th position in efficiency. The leverage on the input side comes from improvements in Institutions (from 67th to 60th) and Market sophistication (from 117th to 94th) and a stable position in Business sophistication (44th), which helps to compensate for worrisome deteriorating positions in Human capital and research (from 78th to 89th) and Infrastructure (56th to 61st). The boost in the rankings comes from the output side, however, with the country's 22nd place in Knowledge and technology outputs (56th in 2012) and its 44th position in Creative outputs (up from 55th), which together account for half of each country's score. Costa Rica ranks 9th in Knowledge absorption and 8th in Knowledge diffusion, its two best sub-pillar rankings, demonstrating a very good connection to foreign markets of knowledge.

Brazil is ranked 64th (down from 58th in 2012 and 47th in 2011), 21st among upper-middle-income countries, and 8th in the region. Brazil is one of the five countries in the region that fell in the rankings this year. With a population of 201.5 million and a GDP per capita of PPP$12,038.5 (up from PPP$11,845.8 in 2012), Brazil ranks 67th in the Input Sub-Index, 68th in the Output Sub-Index, and 69th in the efficiency ratio; it also shows relative strengths in Business sophistication (42nd), Infrastructure (51st), and Knowledge and technology outputs (67th). Brazil's excellent relative performance in key indicators introduced this year revealed strengths that had not been captured in past editions: the citable documents H index (22nd), high-tech and medium-high-tech output (22nd), the QS university ranking average score of top 3 universities (24th), royalties and license fees receipts over total service exports (29th), GERD performed by business enterprise as a percentage of GDP (36th), patent families filed in at least three offices (42nd), and logistics performance (45th). As in 2012, Brazil benefits from the adjustments made to the GII framework (by five positions; see Annex 2). The lower ranking in the GII has its origin in Brazil's relatively poor performance in the 63 indicators for which year-on-year comparisons are valid and data are not missing. These concern primarily the Institutions (95th), Market sophistication (76th), Human capital and research (75th), and Creative outputs (72) pillars.

Northern Africa and Western Asia (20 economies)

Israel (14th) and Cyprus (27th) achieved the top positions in the region for the second year running. Four of the six countries of the Gulf Cooperation Council (GCC) come next: the United Arab Emirates (38th) and Saudi Arabia (42nd) both surpass Qatar (43rd), which came 1st in the region in 2012, while Kuwait (50th) surpasses both Bahrain (67th) and Oman (80th, down from 47th in 2012).

With per capita incomes ranging from PPP$25,722 (Saudi Arabia) to PPP$102,768 (Qatar), most GCC economies achieve rankings that are below those of their peers in GDP per capita (Saudi Arabia to a minor extent), a feature common to most resource-rich economies.

Although GCC countries appeared all together in a block right after Israel and Cyprus in 2012, the regional rankings are now more dispersed: Bahrain comes behind Armenia (59th) and Jordan (61st). Oman comes behind Turkey (68th), Tunisia (70th), Georgia (73rd), and Lebanon (75th).

At the bottom of the regional rankings we find Morocco (92nd), Azerbaijan (105th), Egypt (108th), the Syrian Arab Republic (134th),[23] Algeria (138th), and Yemen (142nd).

Although Israel is the only innovation leader in the region (its profile is discussed in the section on the Output Sub-Index top 10), Armenia, Jordan, and Georgia joined the group of innovation learners this year. Oman, Algeria, Kuwait, the United Arab Emirates, Bahrain, Yemen, the Syrian Arab Republic, Azerbaijan, Egypt, and Lebanon show below-par performances compared to their income levels (Figure 4).

South East Asia and Oceania (16 economies)

This region includes 16 economies that are very dissimilar in level of development. The first four rank among the top 25 in the three indices (GII, input, and output): Hong Kong (China) (7th), which displaced Singapore at the top of the regional rankings; Singapore, which is now 8th globally and 2nd regionally; New Zealand (17th); and the Republic of Korea (18th). These four economies, as well as Australia (19th) and Japan (22nd), are innovation leaders, all placing within the top 25. High-income Brunei Darussalam ranks a disappointing 74th place (11th in the region).

Among upper-middle-income economies, Malaysia (32nd) and China (35th) rank high, while Thailand ranks 57th (same position as in 2012). Lower-middle-income Mongolia (72nd), Viet Nam (76th), Indonesia (85th), Philippines (90th), and Fiji (97th) are among the

top 100. Low-income Cambodia is ranked 110th.

China, Viet Nam, Malaysia, and Mongolia are among the innovation learners this year, whereas Brunei Darussalam shows below-par performance (Figure 4).

For the third year in a row, **China** shows several strengths. China is ranked 35th, down from 34th in 2012, 3rd among upper-middle-income countries (after Malaysia and Latvia) and 8th in the region. Similar to BRIC countries India and Brazil, China shows relatively strong positions (within the top 30) in six new indicators: the QS university ranking average score of top 3 universities (9th), high-tech and medium-high-tech output (16th), GERD performed by business enterprise (17th), the citable documents H index (17th), logistics performance (24th), and patent families filed in at least three offices (30th), and a relative weakness in royalties and license fees receipts (55th). Ranking a healthy 14th in efficiency (although down from 1st place in 2012), China made a commendable leap forward in the Input Sub-Index (from 55th to 46th), although it lost six positions in the Output Sub-Index (25th).

Europe (39 countries)

As last year, a total of 16 European countries are among the top 25, 13 of them from the EU: Switzerland (1st), Sweden (2nd, leader among the EU15), the UK (3rd), the Netherlands (4th), Finland (6th), Denmark (9th), Ireland (10th), Luxembourg (12th), Iceland (13th), Germany (15th), Norway (16th), France (20th), Belgium (21st), Austria (23rd), Malta (24th, leader among the EU12), and Estonia (25th). All of them achieve positions in the top 25 in the Output and Input Sub-Indices, with the exception of Austria (27th in outputs) and Malta (34th in inputs).

Fifteen countries follow among the top 50, including all remaining EU countries, with the exception of Greece (55th): Spain (26th), the Czech Republic (28th), Italy (29th), Slovenia (30th), Hungary (31st), Latvia (33rd), Portugal (34th), Slovakia (36th), Croatia (37th, leader among non-EU transition economies), Lithuania (40th), Bulgaria (41st), Montenegro (44th), the Republic of Moldova (45th), Romania (48th), and Poland (49th).

The former Yugoslav Republic of Macedonia (51st), Serbia (54th), Greece (55th), the Russian Federation (62nd), Bosnia and Herzegovina (65th), and Ukraine (71st) come next in the upper half of the rankings, followed by Belarus (77th) and Albania (93rd).

In addition, the Republic of Moldova, Hungary, Montenegro, and Latvia are positioned among the innovation learners, while Greece and Belarus show below-par performances (Figure 4).

Ranked 62nd, down 11 positions from its 51st place in 2012, the **Russian Federation** is ranked 19th among upper-middle-income countries, 35th in Europe, and 2nd among the BRICs. It must be noted, however, that the Joint Research Centre audit provided a 90% confidence interval of [43, 62] for Russia's GII ranking (see Annex 3). This year, the country makes significant progress in the Input Sub-Index (from 60th in 2012 to 52nd) closing gaps in Institutions (from 93rd in 2012 to 87th), Human capital and research (from 43rd to 33rd), Infrastructure (from 54th to 49th), and Market sophistication (from 87th to 74th), although nine positions were lost in Business sophistication (from 43rd to 52nd). Its relatively strong position in Knowledge and technology outputs is maintained this year, even though it fell slightly, from 46th to 48th place. In fact, the Russian Federation places better in new key indicators than in its GII ranking this year, something shared with the other three BRIC countries: the citable documents H index (20th), the QS university ranking average score of top 3 universities (25th), royalties and license fees receipts over total services exports (28th), GERD performed by business enterprise over GDP (30th), high-tech and medium-high-tech output (46th), and patent families filed in at least three offices (47th).

Conclusion

This year's report provides a cautiously optimistic and yet highly contrasted view of innovation: on the one hand, spending and investment in R&D and innovation has been sustained in spite of the crisis. On the other hand, innovation remains a spikily dispersed phenomenon, where many obstacles remain in the path of poorer economies. In these countries, as in other parts of the world, a better understanding and appreciation of the local dynamics of innovation can clearly contribute to unleashing new sources of growth, competitiveness, and job creation.

As stated at the start of this chapter, policies to promote innovation lay the foundation for future growth, productivity improvements, and better jobs. Opportunities for new sources of innovation-based growth abound in fields such as education, the environment, energy, food, health, information technologies, and transport, among others. The challenge from a policy perspective is for nations to optimize the interplay of institutions and the interactive processes in the creation, application, and diffusion of knowledge, human capital, and technology.

Success in innovation requires a holistic approach to progress along all dimensions of the GII framework. Innovation leaders show the benefits of a virtuous cycle in which the different facets of innovation inputs and outputs reinforce each other and lead to sustained progress.

The GII model is revised every year in a transparent exercise to improve the way innovation is measured. This year, for example, indicators focusing on the quality of innovation inputs and outputs were introduced. Such evolution will continue over the years as new metrics that provide better and more accurate measures of innovation, capabilities, and impact become available.

The GII is not meant to be the definitive ranking of economies with respect to innovation. The GII is more concerned with improving the 'journey' to better measuring and understanding innovation, and with identifying targeted policies and good practices. The GII also recognizes that there are important qualitative aspects of innovation policies and processes that are not captured adequately within the GII model. Hence the GII report also includes special analytical chapters and case studies focused on country and company experiences.

Notes and References for Box 1

Notes

1 UNESCO-UIS Science & Technology Data Center (updated 30 April 2013): gross domestic expenditure on R&D (GERD) performed by business enterprise (constant 2005 PPP$). High-income countries include: Australia, Austria, Belgium, Canada, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Israel, Italy, Japan, the Republic of Korea, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Singapore, Slovakia, Slovenia, Spain, Sweden, Trinidad and Tobago, the United Kingdom, and the United States of America.

Data from the OECD Main Science and Technology Indicators (MSTI) (updated 30 April 2013) on business enterprise expenditure on R&D (BERD) (constant 2005 PPP$) leads to similar results: in 2008, R&D spending increased by 4% while in 2009 it dropped by 4.6% (query including the same countries except Croatia, Cyprus, Malta, and Trinidad and Tobago, for which data were not available).

2 UNESCO-UIS Science & Technology Data Center (updated 30 April 2013): GERD performed by business enterprise (constant 2005 PPP$). Countries include: Argentina, Australia, Austria, Azerbaijan, Belarus, Belgium, Bulgaria, Canada, China, Colombia, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hong Kong (China), Hungary, Ireland, Israel, Italy, Japan, Kazakhstan, the Republic of Korea, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Macao (China), Malta, Mexico, the Republic of Moldova, Mongolia, the Netherlands, Norway, Panama, Poland, Portugal, Romania, the Russian Federation, Serbia, Singapore, Slovakia, Slovenia, Spain, Sweden, Trinidad and Tobago, Tunisia, Turkey, Uganda, Ukraine, the United Kingdom, and the United States of America.

3 OECD, 2009, 2012; WIPO, 2010.

4 OECD MSTI (updated 30 April 2013): GERD (constant 2005 PPP$). OECD countries are represented by the MSTI grouping 'OECD-total'.

5 OECD MSTI (updated 30 April 2013): GERD (constant 2005 PPP$). Countries include: Argentina, China, Romania, the Russian Federation, and Singapore.

6 UNESCO-UIS Science & Technology Data Center (updated 30 April 2013): GERD (constant 2005 PPP$). Countries include: Argentina, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Brazil, Bulgaria, Burkina Faso, Canada, China, Colombia, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Egypt, El Salvador, Estonia, Finland, France, Gabon, Germany, Guatemala, Hong Kong (China), Hungary, Ireland, Israel, Italy, Japan, Kazakhstan, Kuwait, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Macao (China), Madagascar, Malta, Mexico, Mongolia, the Netherlands, Norway, Panama, Poland, Portugal, the Republic of Korea, the Republic of Moldova, Romania, the Russian Federation, Saudi Arabia, Serbia, Singapore, Slovakia, Slovenia, Spain, Sweden, Tajikistan, Trinidad and Tobago, Tunisia, Turkey, Uganda, Ukraine, the United Kingdom, the United States of America, and Uruguay.

7 Booz & Company, 2009, 2012. This growth is based on a changing sample of firms, namely always the top 1,000 R&D spenders of a given year. Hence the numbers are upward biased compared with a stable sample of top R&D firms. That said, the composition of the top 1,000 spender list is quite stable over time.

8 UNESCO-UIS Science & Technology Data Center (updated 30 April 2013): GERD performed by business enterprise (constant 2005 PPP$). Countries include: Austria, Belgium, Bulgaria, Canada, Colombia, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Israel, Italy, the Republic of Korea, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Panama, Poland, Portugal, Romania, the Russian Federation, Slovakia, Slovenia, Spain, Sweden, Turkey, and the United Kingdom.

9 OECD MSTI (updated 30 April 2013): BERD (constant 2005 PPP$). Countries include: Austria, Belgium, Canada, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Israel, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, the United Kingdom, and the United States of America.

10 OECD MSTI (updated 30 April 2013) available at http://www.oecd.org/sti/inno/.

11 Battelle and *R&D Magazine,* 2012.

References

Battelle and *R&D Magazine.* 2012. 2013 Global R&D Funding Forecast, December. Available at http://www.rdmag.com/topics/global-r-d-funding-forecast.

Booz & Company. 2009. *Profits Down, Spending Steady: The 2009 Global Innovation 1000.* Booz & Company, Inc. Available at http://www.booz.com/media/file/2009_Innovation_1000_webinar.pdf.

———. 2012. *Making Ideas Work: The 2012 Global Innovation 1000 Study.* Booz & Company, Inc. Available at http://www.booz.com/media/file/BoozCo_The-2012-Global-Innovation-1000-Results-Summary.pdf.

OECD (Organisation for Economic Co-operation and Development). 2009. *Policy Responses to the Economic Crisis: Investing in Innovation for Long-Term Growth.* Paris: OECD. Available at http://www.oecd.org/dataoecd/59/45/42983414.pdf.

———. 2012. 'Innovation in the Crisis and Beyond'. *OECD Science, Technology and Industry Outlook.* Paris: OECD, Chapter 1.

WIPO (World Intellectual Property Organization). 2010. 'The Impact of the Economic Crisis and Recovery on Innovation', Special Theme. In *World Intellectual Property Indicators 2010,* Economics and Statistics Division. Geneva: WIPO.

Notes and References for Chapter 1

Notes

1 IMF, 2013a, 2013b, 2013c; OECD, 2013.

2 Benavente, Dutta, and Wunsch-Vincent, 2012. See also WIPO, 2010.

3 See UNESCO-UIS Science & Technology Data Center; OECD Main Science and Technology Indicators database; and Battelle, 2012.

4 WIPO, 2012, 2013.

5 See UNESCO-UIS Science & Technology Data Center; OECD Main Science and Technology Indicators database; and Battelle, 2012.

6 WIPO, 2011.

7 Zhang et al., 2013.

8 The first known analysis of clusters goes back to Alfred Marshall (1842–1924), who discussed the origins of British industries such as cutlery, ceramics, and textiles in Book Four, Chapter 10 of his *Principles of Economics* in 1890.

9 The phrase 'business cluster' was first used by Michael Porter in the 1980s and described in his seminal book *The Competitive Advantage of Nations* (1990). Porter's definition of a cluster as 'a geographic concentration of interconnected businesses, suppliers, and associated institutions in a particular field' remains the basis on which innovation clusters are also defined. See Porter, 2000.

10 See http://www.redesist.ie.ufrj.br/Ev/home.php (last accessed May 2013) and WIPO, 2013b.

11 Lagendijk, 2011.

12 See in particular Krugman, 1991; Lucas, 1988; Romer, 1986.

13 In this context, the importance of diasporas cannot be underestimated. Similarly, alumni networks and other professional groups play a significant role in the dissemination of innovative ideas and practices.

14 Florida, 2013.

15 The GII pays special attention to providing data sources and definitions (Appendix III), technical notes (Appendix IV), and improving and making accessible metrics (Appendix II, Data Tables).

16 See INSEAD and WIPO, 2012, Chapter 1, Box 4, p. 36.

17 The top-ranked upper-middle-income nations include Malaysia (32), Latvia (33), and China (35); the top-ranked lower-middle-income nations include the Republic of Moldova (45), Armenia (59), and India (66).

18 Countries are classified according to the World Bank classification. Economies are divided according to 2011 gross national income (GNI) per capita, calculated using the World Bank Atlas method. The groups are: low-income, US$1,025 or less; lower-middle-income, US$1,026 to US$4,035; upper-middle-income, US$4,036 to US$12,475; and high-income, US$12,476 or more.

19 Since 2012, the regional groups have been based on the United Nations Classification: EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; and SSF = Sub-Saharan Africa.

20 Caution should be exercised in comparing ranks across years with previous editions of the GII report because the indicators and the conceptual framework are adjusted every year (details in Annexes 1 and 2), so ranks are not always directly comparable.

21 Polynomial of degree 3 with intercept.

22 For the first time this year, the Joint Research Centre audit includes a measure of distance to the efficient frontier of innovation by using data envelopment analysis (DEA). Several innovation-related policy issues entail an intricate balance between global priorities and country-specific strategies. Subjecting countries to a fixed and common set of weights for pillars, as the GII does, may be unfair to some countries with specific strategies that favour one dimension (say market sophistication) over another. Annex 3 presents the DEA scores for the top countries in the GII rankings and shows that, the economies at the efficient frontier are Switzerland, Sweden, Hong Kong (China), and Singapore.

23 The Syrian Arab Republic dropped two positions this year. However, the current situation has not been necessarily captured by the data (17 data points are from 2012, 17 from 2011, 23 from 2010, and 6 from previous years, for a total of 69).

References

Battelle and *R&D Magazine.* 2012. 2013 Global R&D Funding Forecast, December. Available at http://www.rdmag.com/topics/global-r-d-funding-forecast.

Benavente, D., S. Dutta, and S. Wunsch-Vincent. 2012. 'The Global Innovation Index 2012: Stronger Innovation Linkages for Global Growth'. In *The Global Innovation Index 2012: Stronger Innovation Linkages for Global Growth,* ed. S. Dutta, Chapter 1. Fontainebleau and Geneva: INSEAD and WIPO.

Booz & Company. 2012. *Making Ideas Work: The 2012 Global Innovation 1000 Study.* Booz & Company, Inc. Available at http://www.booz.com/media/file/BoozCo_The-2012-Global-Innovation-1000-Results-Summary.pdf.

Conference Board. 2013. *Total Economy Database,* update from January 2013. Available at http://www.conference-board.org/data/economydatabase/.

de Beer, J., K. Fu, and S. Wunsch-Vincent. 2013. 'Conceptual Study on Innovation, Intellectual Property and the Informal Economy'. Committee on Development and Intellectual Property (CDIP), Eleventh Session. Geneva, 13–17 May 2013. Geneva: WIPO. Available at http://www.wipo.int/edocs/mdocs/mdocs/en/cdip_11/cdip_11_inf_5.pdf

EC (European Commission). 2012a. The 2012 European Union Industrial R&D Scoreboard, Sevilla: Institute for Prospective Technological Studies (IPTS), European Commission's Joint Research Centre (JRC). European Commission.

———. 2012b. The 2012 Survey on R&D Investment Business Trends, August 2012, Sevilla: Institute for Prospective Technological Studies (IPTS), European Commission's Joint Research Centre (JRC). European Commission.

Eurostat and OECD (Organisation for Economic Co-operation and Development). 2005. *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data.* 3rd edition. Paris: OECD.

Florida, R. 2013, 'The World's Leading Science Cities'. *The Atlantic,* posted 1 May. Available at http://www.theatlanticcities.com/jobs-and-economy/2013/05/worlds-leading-centers-physics/5403/.

IMF (International Monetary Fund). 2013a. *World Economic Outlook (WEO) Update: Gradual Upturn in Global Growth During 2013.* January 2013, Washington, DC: IMF.

———. 2013b. *Fiscal Monitor,* April 16. Washington, DC: IMF.

———. 2013c. *World Economic Outlook (WEO): Hopes, Realities, and Risks.* April 2013. Washington, DC: IMF.

INSEAD and WIPO (World Intellectual Property Organization). 2012. *The Global Innovation Index 2012: Stronger Innovation Linkages for Global Growth,* ed. S. Dutta. Fontainebleau and Geneva: INSEAD and WIPO.

Krugman, P. 1991. 'Increasing Returns and Economic Geography'. *Journal of Political Economy* 99: 483–99.

Lagendijk, A.2011. 'Regional Innovation Policy between Theory and Practice'. In *Handbook of Regional Innovation and Growth,* eds. P. Cooke, B. Asheim, R. Boschma, R. Martin, D. Schwartz, and F. Tödtling, Chapter 44. Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing.

Lerner, J. 2009. *Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed—and What to Do about It.* Kauffman Foundation series on innovation and entrepreneurship. Princeton, NJ: Princeton University Press.

Lucas, R. E. 1988. 'On the Mechanics of Economic Development'. *Journal of Monetary Economics* 22 (1988): 3–42.

Marshall, A. 1890. *Principles of Economics.* London: MacMillan & Company.

OECD (Organisation for Economic Co-operation and Development). 2009. *Policy Responses to the Economic Crisis: Investing in Innovation for Long-Term Growth.* Paris: OECD. Available at http://www.oecd.org/dataoecd/59/45/42983414.pdf.

———. 2012. 'Innovation in the Crisis and Beyond'. *OECD Science, Technology and Industry Outlook.* Paris: OECD, Chapter 1.

———. 2013. *Economic Outlook 93,* June 2013. Paris: OECD.

Porter, M. 1990. *The Competitive Advantage of Nations.* New York: The Free Press.

———. 2000. 'Location, Competition, and Economic Development: Local Clusters in a Global Economy'. *Journal of Economic Development Quarterly* 14 (1): 15–34.

Romer, P. M. 1986. 'Increasing Returns and Long-Run Growth'. *Journal of Political Economy* 94 (5): 1002–37.

WIPO (World Intellectual Property Organization). 2010. 'The Impact of the Economic Crisis and Recovery on Innovation', Special Theme. In *World Intellectual Property Indicators 2010,* Economics and Statistics Division. Geneva: WIPO.

———. 2011.'The Changing Nature of Innovation and Intellectual Property'. *World Intellectual Property Report 2011: The Changing Face of Innovation,* Chapter 1. Economics and Statistics Division, Geneva: WIPO. http://www.wio.int/econ_stat/en/economics/publications.html.

———. 2012. *World Intellectual Property Indicators 2012.* Economics and Statistics Division. Geneva: WIPO.

———. 2013a. *PCT Yearly Review: The International Patent System in 2012.* Economics and Statistics Division. Geneva: WIPO.

———. 2013b. 'Who Filed the Most PCT Patent Applications in 2012?' Press Release. Available at http://www.wipo.int/export/sites/www/pressroom/en/documents/pr_2013_732_1.pdf.

Zhang, Q., N. Perra, B. Gonçalves, F. Ciulla, and A. Vespignani. 2013. 'Characterizing Scientific Production and Consumption in Physics'. *Scientific Reports* 3 (article 1640). April. doi:10.1038/srep01640.

The Global Innovation Index Conceptual Framework

The rationale for the Global Innovation Index

The Global Innovation Index (GII) project was launched by INSEAD in 2007 with the simple goal of determining how to find metrics and approaches to better capture the richness of innovation in society and go beyond such traditional measures of innovation as the number of research articles and the level of research and development (R&D) expenditures.[1]

There were several motivations for setting this goal. First, innovation is important for driving economic progress and competitiveness—for both developed and developing economies. Many governments are putting innovation at the centre of their growth strategies. Second, there is awareness that the definition of innovation has broadened—it is no longer restricted to R&D laboratories and to published scientific papers. Innovation could be and is more general and horizontal in nature, and includes social innovations and business model innovations as well. Last but not least, recognizing and celebrating innovation in emerging markets is seen as critical for inspiring people—especially the next generation of entrepreneurs and innovators.

The GII helps to create an environment in which innovation factors are under continual evaluation, and it provides a key tool and a rich database of detailed metrics for refining innovation policies.

The GII is not meant to be the ultimate and definitive ranking of nations with respect to innovation. Measuring innovation outputs and impacts remains difficult; hence great emphasis is placed on measuring the climate and infrastructure for innovation and on assessing related outcomes.

Although the end results take the shape of several rankings, the GII is more concerned with improving 'the journey' to better measure and understand innovation and with identifying targeted policies, good practices, and other levers to foster innovation. The rich metrics can be used—on the level of the index, the sub-indices, or the actual raw data of individual variables—to monitor performance over time and to benchmark developments against countries in the same region or of the same income class.

Drawing on the expertise of the GII's Knowledge Partners and the prominent Advisory Board, the GII model is continually updated to reflect the improved availability of statistics and our understanding of innovation. For the past two years, particular emphasis has been placed on avoiding flawed year-on-year comparisons by estimating the impact in the rankings of updating the database, adjustments to the GII framework, and/or the inclusion of additional economies in the rankings (refer to Annex 2).

An inclusive perspective on innovation

The GII adopts a broad notion of innovation, originally developed in the *Oslo Manual* developed by the European Communities and the Organisation for Economic Co-operation and Development (OECD):[2]

> An innovation is the implementation of a new or significantly improved product (good or service), a new process, a new marketing method, or a new organizational method in business practices, workplace organization, or external relations.

This definition reflects the evolution of the way innovation has been perceived and understood over the last two decades.[3]

Previously, economists and policy makers focused on R&D-based technological product innovation, largely produced in-house and mostly in manufacturing industries. This type of innovation was performed by a highly educated labour force in R&D-intensive companies. The process leading to such innovation was conceptualized as closed, internal, and localized. Technological breakthroughs were necessarily 'radical' and took place at the 'global knowledge frontier'. This characterization implied the existence of leading and lagging countries, with low- or middle-income economies only catching up.

Today, innovation capability is seen more as the ability to exploit new technological combinations and embraces the notion of incremental innovation and 'innovation without

Box 1: Towards a global database of firm-level innovation statistics

As described in previous editions of the Global Innovation Index (GII), direct official measures to quantify innovation outputs are frequently not available.[1] In recent years, however, building on frameworks and guidelines for the study of innovation developed over the last decades, firm-level data originating in national innovation surveys has improved this situation.[2] These surveys are a rich source of data for analytical work on innovation, and their findings support the design and implementation of adequate innovation policies and strategies.

To date, national innovation surveys have been carried out by 95 countries, 15 of them in Africa (Table 1.1).[3] Innovation data typically describe the most innovative industrial sectors in a country, the portion of firms' revenue that comes from new products launched in the market, and how important industry-university linkages are. Surveys in developing countries also reveal information on other subjects, such as the forms and actors of collaboration, the difficulties faced by firms in making use of intellectual property to protect their innovations, and the importance of public policies for innovation activities.

To lay the groundwork for a global data collection, the UIS launched a pilot data collection of innovation statistics in 2011.[4] A total of 12 (out of 19) countries completed the questionnaire,[5] which was itself based on the *UIS Global Catalogue of Innovation Surveys,* a database with the most frequent questions included in innovation surveys. Overall, the results of the pilot show that innovation is a pervasive phenomenon that is not restricted to wealthy countries or their firms; that is correlated with the size of firms, and that often occurs without engagement in formal research and development (R&D). Product or process innovators, for instance, are found in all countries, regardless of their level of development (Figure 1.1). Pilot countries also show higher percentages of large manufacturing firms implementing innovations than medium-sized and small firms: in China, for example, these percentages are 72%, 47%, and 20%, respectively.

The existence of diverse methodological procedures hampers the collection of data that are comparable across countries: industrial coverage, size of firms, cut-off points, sample selection, and observation periods differ across surveys. Furthermore, cultural differences and country-specific approaches play a role in the way respondents interpret and reply to identical questions. An increased degree of alignment of surveys and a stronger reliance on the *Oslo Manual* guidelines would facilitate the use of survey data for international comparisons and the construction of composite indicators such as the GII. The UIS global database will reveal these dissimilarities and facilitate the convergence of surveys in future iterations.

Table 1.1: Number of countries with national innovation surveys

Region	Africa	Arab States	Asia and the Pacific	Europe	Latin America and the Caribbean	North America	Total
Number of countries with innovation surveys	15	6	19	36	17	2	95

Source: The *UIS Global Catalogue of Innovation Surveys* database.

Note: The innovation survey of Abu Dhabi is included in the Arab States; Mexico is included in Latin America and the Caribbean.The UNESCO Institute for Statistics (UIS) is now in the process of developing a database compiling the results from all these surveys in order to increase the availability of timely, accurate, and policy-relevant firm-level statistics in the fields of science, technology, and innovation. The results of the UIS 2013 Global Data Collection of Innovation Statistics, the first in a biannual series, will be released in June 2014. For this activity, the UIS also relies on its partnership with the New Partnership for Africa's Development–African Union (AU/NEPAD), Eurostat (the statistical office of the European Commission), the Organisation for Economic Co-operation and Development (OECD), and the Network for Science and Technology Indicators–Ibero-American and Inter-American (RICYT). All countries with an official innovation survey are targeted, and topics covered include product innovation, process innovation, innovation activities, sources of information, cooperation, hampering factors, marketing innovation, and organizational innovation.

(Continued)

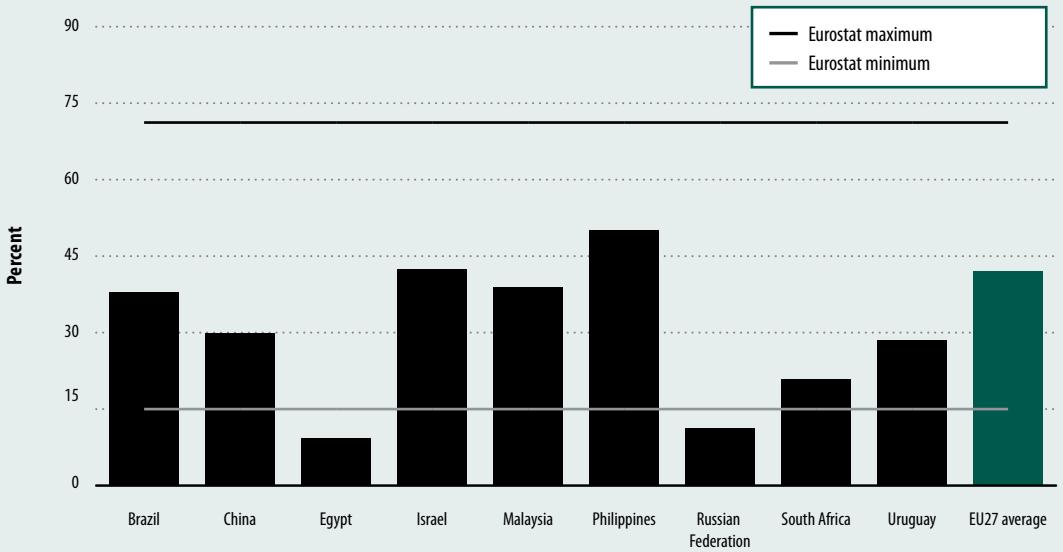
research'. Non-R&D-innovative expenditure is an important component of reaping the rewards of technological innovation. Interest in understanding how innovation takes place in low- and middle-income countries is increasing, along with an awareness that incremental forms of innovation can impact development.

Furthermore, the process of innovation itself has undergone significant change. Investment in innovation-related activity has consistently intensified at the firm, country, and global levels, adding both new innovation actors from outside high-income economies and also nonprofit actors. The structure of knowledge production activity is more complex and geographically dispersed than ever.

A key challenge is to find metrics that capture innovation as it happens

Box 1: Towards a global database of firm-level innovation statistics *(continued)*

Figure 1.1: Manufacturing firms that implemented product or process innovation, %



Source: 2011 UIS pilot data collection of innovation statistics; Community Innovation Survey 2006 (CIS 2006) database (Eurostat, 2012).

Notes: Three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), and Malaysia (4 years). For China: Product innovation covers only new or significantly improved goods and excludes services; logistics, delivery, or distribution methods are not explicitly mentioned in process innovation. For the Philippines: Information technology services are also included; results are not representative of the target population. For the EU27/Eurostat: Data cover firms with abandoned or ongoing activities.

Source

UNESCO Institute for Statistics (UIS).

Notes

1 See INSEAD, 2011, Chapter 1, Box 3; INSEAD and WIPO, 2012, Chapter 5.

2 The standardizing of innovation surveys started with the publication of the first edition of the *Oslo Manual* by the Organisation for Economic Co-operation and Development (OECD) in 1992. The *Manual* pushed the measurement of innovation as a process, fostering the collection of comparable innovation indicators.

3 These national innovation surveys are often inspired by the Community Innovation Survey (CIS) harmonized questionnaire, although they differ across countries in terms of scope and subjects covered. The first round of the CIS was carried out in 1992, in parallel to the publication of the *Oslo Manual,* now available in its 3rd edition at http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/OSLO/EN/OSLO-EN.PDF.

4 The results are available at http://www.uis.unesco.org/ScienceTechnology/Documents/Innovation-statistics-en%20%282%29.pdf.

5 The following countries participated in the pilot data collection: Brazil, China, Colombia, Egypt, Ghana, Indonesia, Israel, Malaysia, the Philippines, the Russian Federation, South Africa, and Uruguay.

References

INSEAD. 2011. *The Global Innovation Index 2011: Accelerating Growth and Development.* Fontainebleau: INSEAD.

INSEAD and WIPO (World Intellectual Property Organization). 2012. *The Global Innovation Index 2012: Stronger Innovation Linkages for Global Growth.* Fontainebleau: INSEAD.

OECD (Organisation for Economic Co-operation and Development). 1992. *Oslo Manual: Guidelines for Collecting and Interpreting Technological Innovation Data,* 1st edition. Paris: OECD.

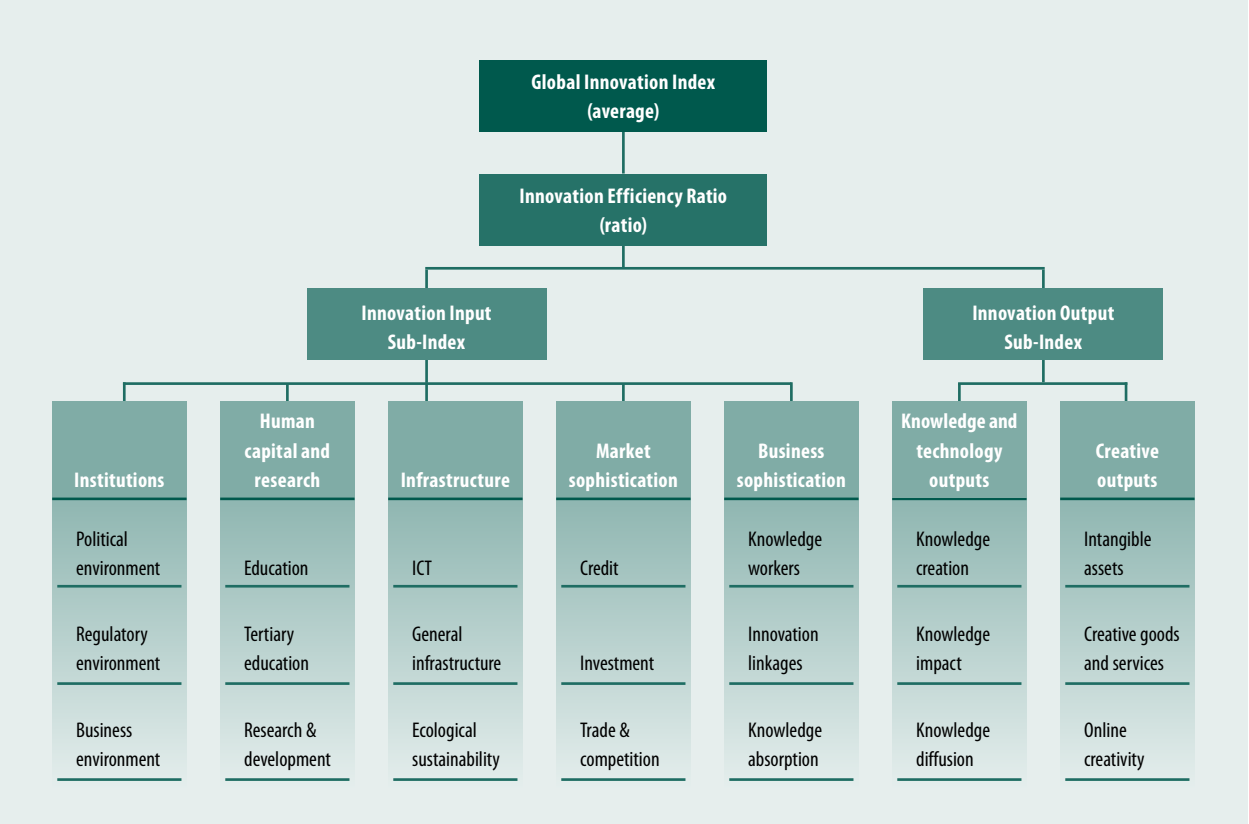
OECD (Organisation for Economic Co-operation and Development) and Eurostat. 2005. *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data,* 3rd edition. Paris: OECD. Available at http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/OSLO/EN/OSLO-EN.PDF.

in the world today.[4] Direct official measures that quantify innovation outputs remain extremely scarce.[5] For example, there are no official statistics on the amount of innovative activity—defined as the number of new products, processes, or other innovations—for any given innovation actor, let alone for any given country (see Box 1). Most measures also struggle to appropriately capture the innovation outputs of a wider spectrum of innovation actors, such as the services sector or public entities.

The GII aims to move beyond the mere measurement of such simple innovation metrics. To do so will require the integration of new variables, with a trade-off between the quality of the variable on the one hand and achieving good country coverage on the other hand.

The timeliest possible indicators are used for the GII: 38.2% of data

Figure 1: Framework of the Global Innovation Index 2013



obtained are from 2012, 34.5% are from 2011, 13.9% from 2010, and the small remainder (13.4%) from earlier years.[6]

The GII conceptual framework

The GII is an evolving project that builds on its previous editions while incorporating newly available data and that is inspired by the latest research on the measurement of innovation. This year the GII model includes 142 countries/economies that represent 94.9% of the world's population and 98.7% of the world's GDP (in current US dollars).

The GII relies on two sub-indices—the Innovation Input Sub-Index and the Innovation Output Sub-Index—each built around pillars. Four measures are calculated (Figure 1):

1. **Innovation Input Sub-Index:** Five input pillars capture elements of the national economy that enable innovative activities.
2. **Innovation Output Sub-Index:** Innovation outputs are the results of innovative activities within the economy. Although the Output Sub-Index includes only two pillars, it has the same weight in calculating the overall GII scores as the Input Sub-Index.
3. **The overall GII score** is the simple average of the Input and Output Sub-Indices.
4. **The Innovation Efficiency Ratio** is the ratio of the Output Sub-Index to the Input Sub-Index. It shows how much innovation output a given country is getting for its inputs.

Each pillar is divided into three sub-pillars, each of which is composed of individual indicators, for a total of 84 indicators. The GII pays special attention to presenting a scoreboard for each economy that includes strengths and weaknesses (Appendix I Country/Economy Profiles), making accessible the data series (Appendix II Data Tables), and providing data sources and definitions (Appendix III) and detailed technical notes (Appendix IV). First in 2012 and again this year, adjustments to the GII framework, including a detailed analysis of the factors influencing year-on-year changes, are detailed in Annex 2. In addition, since 2011 the GII has been submitted to an independent statistical audit

performed by the Joint Research Centre of the European Union (results are detailed in Annex 3).

A table is included for each pillar. That table provides a list of the pillar's indicators, specifying their type (composite indicators are identified with an asterisk '*', survey questions with a dagger '†', and the remaining indicators are hard data); their weight in the index (indicators with half weight are identified with the letter 'a'); and the direction of their effect (indicators for which higher values imply worse outcomes are identified with the letter 'b'). The table then provides each indicator's average values (in their respective units) per income group (World Bank classification) and for the whole sample of 142 economies retained in the final computation (Tables 1a through 1g).

Table 1a: Institutions pillar

	Indicator	Average value by income group (0–100)				
		High income	Upper-middle income	Lower-middle income	Low income	Mean
1	**Institutions**					
1.1	*Political environment*					
1.1.1	Political stability†	0.76	–0.22	–0.63	–0.70	–0.08
1.1.2	Government effectiveness†	1.23	–0.05	–0.49	–0.70	0.15
1.1.3	Press freedom† b	20.70	33.70	38.60	33.25	30.77
1.2	*Regulatory environment*					
1.2.1	Regulatory quality† a	1.16	0.02	–0.39	–0.58	0.19
1.2.2	Rule of law† a	1.20	–0.21	–0.62	–0.78	0.05
1.2.3	Cost of redundancy dismissal, salary weeks b	13.50	19.49	24.97	19.91	19.04
1.3	*Business environment*					
1.3.1	Ease of starting a business†	86.47	80.91	77.56	70.12	80.23
1.3.2	Ease of resolving insolvency†	68.11	38.86	31.17	23.18	43.86
1.3.3	Ease of paying taxes†	80.67	66.00	57.59	56.06	67.05

Note: (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

The Innovation Input Sub-Index

The first sub-index of the GII, the Innovation Input Sub-Index, has five enabler pillars: Institutions, Human capital and research, Infrastructure, Market sophistication, and Business sophistication. Enabler pillars define aspects of the environment conducive to innovation within an economy.

Pillar 1: Institutions

Nurturing an institutional framework that attracts business and fosters growth by providing good governance and the correct levels of protection and incentives is essential to innovation. The Institutions pillar captures the institutional framework of a country (Table 1a).

The political environment sub-pillar includes three indices that reflect perceptions of the likelihood that a government might be destabilized; the quality of public and civil services, policy formulation, and implementation; and perceptions on violations to press freedom.

The regulatory environment sub-pillar draws on two indices aimed at capturing perceptions on the ability of the government to formulate and implement cohesive policies that promote the development of the private sector and at evaluating the extent to which the rule of law prevails (in aspects such as contract enforcement, property rights, the police, and the courts). The third indicator evaluates the cost of redundancy dismissal as the sum, in salary weeks, of the cost of advance notice requirements added to severance payments due when terminating a redundant worker.

The business environment sub-pillar expands on three aspects that directly affect private entrepreneurial endeavours by using the World Bank indices on the ease of starting a business; the ease of resolving insolvency (based on the recovery rate recorded as the cents on the dollar recouped by creditors through reorganization, liquidation, or debt enforcement/foreclosure proceedings); and the ease of paying taxes.[7]

Pillar 2: Human capital and research

The level and standard of education and research activity in a country are prime determinants of the innovation capacity of a nation. This pillar tries to gauge the human capital of countries (Table 1b).

The first sub-pillar includes a mix of indicators aimed at capturing achievements at the elementary and secondary education levels. Education expenditure and school life expectancy are good proxies for coverage. Public expenditure per pupil gives a sense of the level of priority given to education by the state. The quality of education is measured through the results of the OECD Programme for International Student Assessment (PISA), which examines 15-year-old students' performances in reading, mathematics, and science, as well as the pupil-teacher ratio.

Higher education is crucial for economies to move up the value chain beyond simple production processes and products. The sub-pillar on tertiary education aims at capturing coverage (tertiary enrolment); priority is given to the sectors traditionally associated with innovation (with a series on the percentage

Table 1b: Human capital & research pillar

	Indicator	Average value by income group (0–100): High income	Upper-middle income	Lower-middle income	Low income	Mean
2	**Human capital & research**					
2.1	*Education*					
2.1.1	Current expenditure on education, % GNI	5.09	4.53	4.50	3.68	4.56
2.1.2	Public expenditure/pupil, % GDP/cap	24.44	18.15	18.35	17.88	20.31
2.1.3	School life expectancy, years	15.79	13.66	11.68	9.87	13.31
2.1.4	PISA scales in reading, maths, & science [a]	494.95	425.39	376.09	324.91	458.19
2.1.5	Pupil-teacher ratio, secondary [b]	11.38	15.72	19.21	27.95	17.13
2.2	*Tertiary education*					
2.2.1	Tertiary enrolment, % gross [a]	59.93	44.40	24.65	9.06	38.71
2.2.2	Graduates in science & engineering, %	22.65	21.02	18.76	14.16	20.39
2.2.3	Tertiary inbound mobility, % [a]	10.28	3.20	2.33	2.00	5.46
2.2.4	Gross tertiary outbound enrolment, % [a]	4.46	1.93	1.50	0.38	2.39
2.3	*Research & development (R&D)*					
2.3.1	Researchers, headcounts/mn pop.	5,093.69	1,210.01	487.33	108.22	2,121.22
2.3.2	Gross expenditure on R&D, % GDP	1.82	0.58	0.27	0.23	0.94
2.3.3	QS university ranking, average score top3†	40.96	15.90	4.84	0.26	18.72

Note: (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

Table 1c: Infrastructure pillar

	Indicator	Average value by income group (0–100): High income	Upper-middle income	Lower-middle income	Low income	Mean
3	**Infrastructure**					
3.1	*Information & communication technologies (ICTs)*					
3.1.1	ICT access†	7.47	4.81	3.27	1.99	4.88
3.1.2	ICT use†	5.32	2.18	1.06	0.27	2.64
3.1.3	Government's online service†	0.73	0.51	0.39	0.28	0.51
3.1.4	E-participation†	0.50	0.27	0.17	0.07	0.29
3.2	*General infrastructure*					
3.2.1	Electricity output, kWh/cap [a]	9,970.34	2,929.85	1,312.87	558.32	4,792.36
3.2.2	Electricity consumption, kWh/cap [a]	9,570.28	2,680.17	917.30	490.34	4,472.18
3.2.3	Logistics performance†	3.55	2.85	2.63	2.50	2.96
3.2.4	Gross capital formation, % GDP	20.03	25.18	24.77	24.97	23.40
3.3	*Ecological sustainability*					
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.42	7.08	5.56	3.44	6.48
3.3.2	Environmental performance†	60.30	51.81	48.85	49.73	53.80
3.3.3	ISO 14001 environ. certificates/bn PPP$ GDP	4.17	3.05	0.46	0.21	2.43

Note: (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

of tertiary graduates in science and engineering, manufacturing, and construction); and the inbound and gross outbound mobility of tertiary students, which play a crucial role in the exchange of ideas and skills necessary for innovation.

The last sub-pillar, on R&D, measures the level and quality of R&D activities, with indicators on researchers (headcounts), expenditure, and the quality of scientific and research institutions as measured by the average score of the top three universities in the QS World University Ranking of 2012. By design, this indicator aims at capturing the availability of at least three higher education institutions of quality within each economy (i.e., included in the global top 700), and is not aimed at assessing the average level of all institutions within a particular economy.[8]

Pillar 3: Infrastructure

The third pillar includes three sub-pillars: information and communication technologies (ICTs), general infrastructure, and ecological sustainability (Table 1c).

Good and ecologically friendly communication, transport, and energy infrastructures facilitate the production and exchange of ideas, services, and goods and feed into the innovation system through increased productivity and efficiency, lower transaction costs, better access to markets, and sustainable growth.

The ICT sub-pillar includes four indices developed by international organizations on ICT access, ICT use, online service by governments, and online participation of citizens.

The sub-pillar on general infrastructure includes two indicators related to electricity supply (the average of electricity output and consumption in kWh per capita); a composite indicator on logistics performance;[9] and gross capital formation, which consists of outlays on additions to the fixed assets and net inventories of the economy, including land improvements (fences, ditches, drains); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings.

The sub-pillar on ecological sustainability includes three indicators: GDP per unit of energy use (a measure of efficiency in the use of energy), the Environmental Performance Index developed by Yale University and Columbia University, and the number of certificates of conformity with standard ISO 14001 on environmental management systems issued.

Pillar 4: Market sophistication

The ongoing global financial crisis has underscored how crucial the availability of credit, investment funds, and access to international markets is for businesses to prosper. The Market sophistication pillar has three sub-pillars structured around market conditions and the total level of transactions (Table 1d).

The credit sub-pillar includes a measure on the ease of getting credit aimed at measuring the degree to which collateral and bankruptcy laws facilitate lending by protecting the rights of borrowers and lenders, as well as the rules and practices affecting the coverage, scope, and accessibility of credit information. Transactions are given by the total value of domestic credit and, in an attempt to make the model more applicable to emerging markets, the gross loan portfolio of microfinance institutions.

The investment sub-pillar includes the ease of protecting investors index as well as three indicators on the level of transactions. To show whether market size is matched by market dynamism, stock market capitalization is complemented by the total value of shares traded. The last metric is a hard data metric on venture capital deals, taking into account a total of 8,452 deals in 80 countries in 2012.[10]

The last sub-pillar tackles trade and competition. The market conditions for trade are given by two indicators: the average tariff rate weighted by import shares and a measure capturing market access conditions to foreign markets (five major export markets weighted actual applied tariffs for non-agricultural exports). The third and last indicator is a survey question that reflects on the intensity of competition in local markets. Efforts made at finding hard data on competition proved unsuccessful.[11]

Table 1d: Market sophistication pillar

	Indicator	Average value by income group (0–100): High income	Upper-middle income	Lower-middle income	Low income	Mean
4	**Market sophistication**					
4.1	*Credit*					
4.1.1	Ease of getting credit†	70.31	63.93	59.05	50.33	62.70
4.1.2	Domestic credit to private sector, % GDP	117.93	54.48	36.39	24.31	65.75
4.1.3	Microfinance gross loans, % GDP	0.01	1.07	2.42	2.61	1.87
4.2	*Investment*					
4.2.1	Ease of protecting investors†	62.37	58.69	50.57	49.33	56.41
4.2.2	Market capitalization, % GDP	61.99	41.94	23.40	33.51	45.54
4.2.3	Total value of stocks traded, % GDP	55.55	16.45	4.72	4.48	28.77
4.2.4	Venture capital deals/tr PPP$ GDP	0.08	0.01	0.01	0.03	0.03
4.3	*Trade & competition*					
4.3.1	Applied tariff rate, weighted mean, %[b]	2.47	5.32	6.65	9.72	5.40
4.3.2	Non-agricultural mkt access weighted tariff, %[b]	1.75	0.87	1.28	1.89	1.40
4.3.3	Intensity of local competition†	5.36	4.56	4.57	4.31	4.79

Note: (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

Table 1e: Business sophistication pillar

	Indicator	Average value by income group (0–100): High income	Upper-middle income	Lower-middle income	Low income	Mean
5	**Business sophistication**					
5.1	*Knowledge workers*					
5.1.1	Knowledge-intensive employment, %	32.10	21.85	16.91	7.14	24.13
5.1.2	Firms offering formal training, % firms	42.59	43.46	32.75	31.06	37.63
5.1.3	R&D performed by business, % GDP[a]	1.22	0.23	0.09	0.03	0.64
5.1.4	R&D financed by business, %[a]	47.10	34.10	15.63	13.62	34.96
5.1.5	GMAT mean score[a]	535.86	511.07	480.23	426.43	498.50
5.1.6	GMAT test takers/mn pop. 20–34[a]	365.32	116.01	55.23	18.66	165.56
5.2	*Innovation linkages*					
5.2.1	University/industry research collaboration†[a]	4.56	3.58	3.07	3.24	3.73
5.2.2	State of cluster development†[a]	4.35	3.56	3.38	3.25	3.73
5.2.3	R&D financed by abroad, %	10.40	8.54	11.58	29.40	12.28
5.2.4	JV–strategic alliance deals/tr PPP$ GDP[a]	0.09	0.03	0.02	0.01	0.04
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP[a]	1.64	0.03	0.01	0.00	0.55
5.3	*Knowledge absorption*					
5.3.1	Royalty & license fees pay'ts, % service imports[a]	7.21	2.87	1.69	0.44	3.52
5.3.2	High-tech imports less re-imports, %	12.84	10.51	7.21	7.03	10.03
5.3.3	Comm., computer & info. services imports, %	5.75	4.62	3.67	4.76	4.77
5.3.4	FDI net inflows, % GDP	4.94	4.03	5.34	5.17	4.82

Note: (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

Pillar 5: Business sophistication

The last enabler pillar tries to capture the level of business sophistication to assess how conducive firms are to innovation activity (Table 1e). The Human capital and research pillar (pillar 2) made the case that the accumulation of human capital through education, and particularly higher education and the prioritization of R&D activities, is an indispensable condition for innovation to take place. That logic is taken one step further here with the assertion that businesses foster their productivity, competitiveness, and innovation potential with the employment

Table 1f: Knowledge & technology outputs pillar

	Indicator	Average value by income group (0–100) High income	Upper-middle income	Lower-middle income	Low income	Mean
6	**Knowledge & technology outputs**					
6.1	*Knowledge creation*					
6.1.1	Domestic resident patent ap/bn PPP$ GDP [a]	10.35	3.43	2.20	0.44	5.22
6.1.2	PCT resident patent ap/bn PPP$ GDP [a]	3.52	0.27	0.10	0.03	1.34
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.86	3.63	5.57	1.64	3.17
6.1.4	Scientific & technical articles/bn PPP$ GDP [a]	31.88	12.76	7.97	10.86	17.22
6.1.5	Citable documents H index* [a]	309.82	111.95	67.39	58.76	155.49
6.2	*Knowledge impact*					
6.2.1	Growth rate of PPP$ GDP/worker, %	1.57	2.61	2.19	2.46	2.11
6.2.2	New businesses/th pop. 15–64 [a]	5.75	3.31	0.98	0.33	3.29
6.2.3	Computer software spending, % GDP [a]	0.52	0.31	0.26	0.19	0.39
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP [a]	17.05	12.18	3.91	0.85	9.95
6.2.5	High- & medium-high-tech manufactures, % [a]	33.96	21.51	16.05	6.67	24.14
6.3	*Knowledge diffusion*					
6.3.1	Royalty & license fees receipts, % service exports	4.55	0.63	1.65	0.30	2.10
6.3.2	High-tech exports less re-exports, %	10.00	5.02	1.54	0.76	5.32
6.3.3	Comm., computer & info. services exports, %	8.52	6.40	10.08	13.06	8.99
6.3.4	FDI net outflows, % GDP	16.82	7.03	0.44	0.27	7.96

Note: (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

of highly qualified professionals and technicians.

The first sub-pillar includes four quantitative indicators on knowledge workers: employment in knowledge-intensive services; the availability of formal training at the firm level; R&D performed by business enterprise (BERD) as a percentage of GDP (i.e., BERD over GDP);[12] and the percentage of total gross expenditure of R&D that is financed by business enterprise. In addition, the sub-pillar includes two indicators related to the Graduate Management Admission Test (GMAT).[13] The GMAT mean scores and total number of test takers (scaled by population aged 20 to 34 years old) were taken as proxies for the entrepreneurial mindset of young graduates and for their overall aptitude for success in global innovation markets (where skills in English and mathematics are crucial).

Innovation linkages and public/private/academic partnerships are essential to innovation (see Chapters 2–11 of *The Global Innovation Index 2012: Stronger Innovation Linkages for Global Growth*). In emerging markets, pockets of wealth have developed around industrial or technological clusters and networks, in sharp contrast to the poverty that may prevail in the rest of the territory. The innovation linkages sub-pillar draws on both qualitative and quantitative data regarding business/university collaboration on R&D, the prevalence of well-developed and deep clusters, the level of gross R&D expenditure financed by abroad, and the number of deals on joint ventures and strategic alliances. The latter covers a total of 4,078 deals announced in 2012, with firms headquartered in 139 participating economies.[14] In addition, the total number of Patent Cooperation Treaty (PCT) and national office published patent family applications filed by residents in at least three offices is included this year to proxy for international linkages.[15]

In broad terms, pillar 4 on market sophistication makes the case that well-functioning markets contribute to the innovation environment through competitive pressure, efficiency gains, and economies of transaction and by allowing supply to meet demand. Markets that are open to foreign trade and investment have the additional effect of exposing domestic firms to best practices around the globe, which is critical to innovation through knowledge absorption and diffusion, which are considered in pillars 5 and 6. The rationale behind sub-pillars 5.3 on knowledge absorption (an enabler) and 6.3 on knowledge diffusion (a result)—two sub-pillars designed to be mirror images of each other—is precisely that together they will reveal how good countries are at absorbing and diffusing knowledge.

Sub-pillar 5.3 includes four statistics that are linked to sectors with high-tech content or are key to innovation: royalty and license fees payments as a percentage of total services imports;[16] high-tech imports (net of re-imports) as a percentage of total imports; imports of communication, computer and information services as a percentage of total service imports;[17] and net inflows of foreign direct investment (FDI) as a percentage of GDP.

The Innovation Output Sub-Index

Innovation outputs are the results of innovative activities within the economy. Although the Output Sub-Index includes only two pillars, it has the same weight in calculating the overall GII scores as the Input Sub-Index. There are two output pillars: Knowledge and technology outputs and Creative outputs.

Pillar 6: Knowledge and technology outputs

This pillar covers all those variables that are traditionally thought to be the fruits of inventions and/or innovations (Table 1f). The first

sub-pillar refers to the creation of knowledge. It includes four indicators that are the result of inventive and innovation activities: patent applications filed by residents both at the national patent office and at the international level through the PCT; utility model applications filed by residents at the national office; and scientific and technical published articles in peer-reviewed journals.[18] The pillar was strengthened this year with a fifth indicator aimed at assessing the overall impact of scientific publications: the H index is an economy's number of articles (H) that have received at least H citations.

The second sub-pillar, on knowledge impact, includes statistics representing the impact of innovation activities at the micro and macroeconomic level or related proxies: increases in labour productivity, the entry density of new firms, spending on computer software, and the number of certificates of conformity with standard ISO 9001 on quality management systems issued. To strengthen the sub-pillar, the measure of high- and medium-high-tech industrial output over total manufactures output was added this year.

The third sub-pillar, on knowledge diffusion, is the mirror image of the knowledge absorption sub-pillar of pillar 5. It includes four statistics all linked to sectors with high-tech content or that are key to innovation: royalty and license fees receipts as a percentage of total service exports;[19] high-tech exports (net of re-exports) as a percentage of total exports (net of re-exports); exports of communication, computer and information services as a percentage of total service exports;[20] and net outflows of FDI as a percentage of GDP.

Table 1g: Creative outputs pillar

	Indicator	Average value by income group (0–100) High income	Upper-middle income	Lower-middle income	Low income	Mean
7	**Creative outputs**					
7.1	*Intangible assets*					
7.1.1	Domestic res trademark reg/bn PPP$ GDP	46.68	42.05	63.52	20.46	45.31
7.1.2	Madrid trademark registrations/bn PPP$ GDP	1.84	0.88	0.51	0.11	1.19
7.1.3	ICT & business model creation†	5.01	4.26	4.06	3.98	4.42
7.1.4	ICT & organizational model creation†	4.69	4.04	3.84	3.67	4.16
7.2	*Creative goods & services*					
7.2.1	Audio-visual & related services exports, %	0.78	0.63	0.17	0.47	0.58
7.2.2	National feature films/mn pop. 15–69 [a]	8.10	3.79	2.75	1.87	4.89
7.2.3	Paid-for dailies, circulation, % pop. 15–69 [a]	22.92	8.30	4.25	0.81	11.01
7.2.4	Creative goods exports, %	2.99	1.96	1.64	2.48	2.39
7.2.5	Printing & publishing manufactures, %	2.78	2.51	0.81	0.36	1.92
7.3	*Online creativity*					
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	82.84	13.52	9.72	0.60	32.61
7.3.2	Country-code TLDs/th pop. 15–69	93.72	50.70	9.47	0.43	46.77
7.3.3	Wikipedia monthly edits/mn pop. 15–69	6,645.04	1,748.86	763.89	140.53	2,942.24
7.3.4	Video uploads on YouTube/pop. 15–69*	83.06	67.98	58.43	36.43	65.67

Note: (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

Pillar 7: Creative outputs

The role of creativity for innovation is still largely underappreciated in innovation measurement and policy debates. Since its inception, the GII has always emphasized measuring creativity as part of its Innovation Output Sub-Index. The last pillar, on creative outputs, has three sub-pillars (Table 1g).

The first sub-pillar on intangible assets includes statistics on trademark registrations by residents at the national office; trademark registrations under the Madrid system by country of origin,[21] and two survey questions regarding the use of ICTs in business and organizational models, new areas that are increasingly linked to process innovations in the literature.

The second sub-pillar includes proxies to get at creativity and creative outputs in an economy. This year, the series on national feature films produced in a given country (per capita count) and on daily newspapers' circulation included in the past two editions were complemented by two additional sectoral indicators: audio-visual and related services exports (as a percentage of total services exports),[22] and printing and publishing output (as a percentage of total manufactures output).[23] The fifth indicator, creative goods exports, is aimed at providing an overall sense of the international reach of creative activities in the country.[24]

In future editions of the GII, attempts will be made to include a broader sectoral coverage (music, computer games, etc.). It will help that the UNESCO Institute for Statistics (UIS) recently launched a pilot data collection programme, so that in a few years it will be able to supply a large range of media indicators across countries (see Box 2).

The third sub-pillar on online creativity includes four indicators, all scaled by population aged 15 to 69 years old: generic (biz, info, org, net, and com) and country-code top level domains; average monthly edits to Wikipedia; and video uploads on YouTube. Attempts made to

Box 2: UNESCO cultural and creative trade data

Since its inception, the Global Innovation Index (GII) has endeavoured to measure creative outputs as part of its Innovation Output Sub-Index to stress the importance of creativity for innovation, a fact largely underestimated in innovation measurement and policy circles. In the GII, the Creative outputs pillar includes three sub-pillars: (1) Intangible assets, (2) Creative goods and services, and (3) Online creativity.

Among international organizations, the UNESCO Institute for Statistics (UIS)—the statistical arm of the United Nations Educational, Scientific and Cultural Organization (UNESCO)—is responsible for, among others, developing and disseminating conceptual models and practical methodologies for the development and collection of cultural statistics. The UIS, for example, administers and compiles data from a biannual survey on feature film statistics, which has been included in the GII since 2011.

In 2009, the UIS developed the 2009 UNESCO Framework for Cultural Statistics (FCS),[1] which establishes a conceptual and practical model for the development of cultural statistics. The FCS includes taxonomies for defining cultural industries, goods and services, and occupations from recognized international standard classifications. Compilation of data on the basis of these classifications is scheduled for mid-2013 for cultural employment statistics, and for 2014 for updated figures on international flows of cultural goods and services.

Creative goods exports

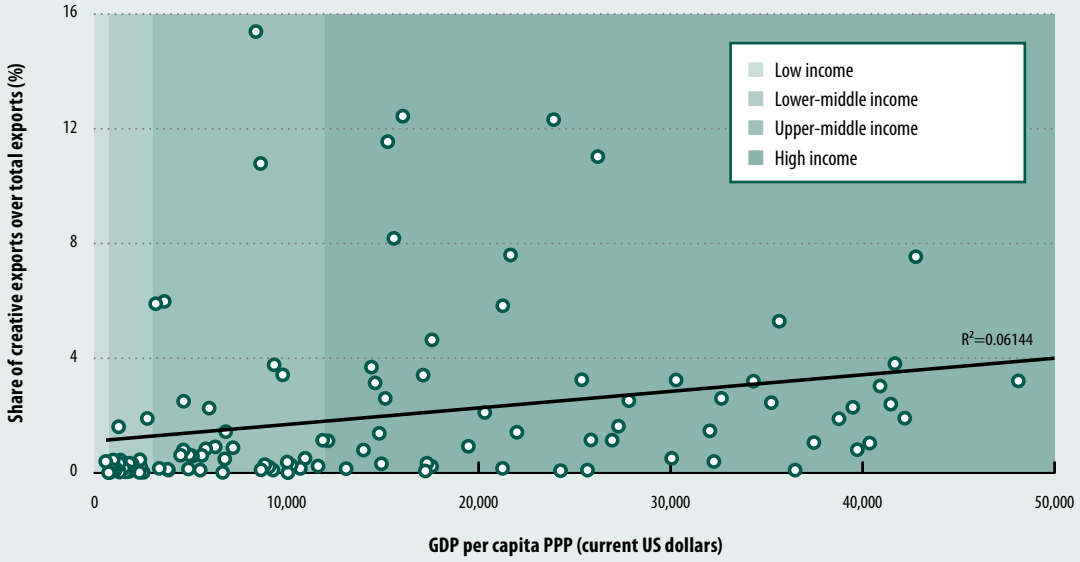
Since data on the basis of the FCS are not yet available, the GII research team, in close collaboration with the UIS, decided to compile data on the basis of the classification for creative goods exports.[2] To our knowledge, this is the first time that the data are reported following this new international standard.

This indicator replaces the series with the same title included in the past two editions of the GII, which were based on the 2008 and 2010 editions of UNCTAD's *Creative Economy Report*, now discontinued.[3] The UNCTAD estimates in that report used trade statistics as a benchmark and included all goods, without distinguishing the mode of production or type.[4] One limitation of customs data is the difficulty in differentiating by mode of production (handmade or processed), or type of product (decorative or functional), especially for crafts and design goods.

The UNESCO FCS proposes a more refined view that includes only the cultural and creative goods for the six core cultural domains associated with artistic or creative activity: A, Cultural and natural heritage; B, Performance and celebration; C, Visual arts and crafts; D, Books and press; E, Audiovisual and interactive media; and F, Design and creative services. In addition, the domain Equipment and supporting materials is taken into account.[5]

These new data yield a number of interesting results:

Figure 2.1: Creative exports as a percentage of total exports by PPP$ GDP, 2011



Source: The Global Innovation Index 2013, indicator 7.2.4, based on United Nations, *COMTRADE* database and UNESCO-UIS, 2009.
Note: Categories of GDP per capita follow the World Bank 2012 classification: low income = $1,025 or less; lower-middle income = $1,026 to $4,035; upper-middle income = $4,036 to $12,475; high income = $12,476 or more.

(Continued)

Box 2: UNESCO cultural and creative trade data *(continued)*

First, the intensity of creative goods exports is positively correlated with GDP but with contrasting patterns (Figure 2.1).[6] Low-income countries have, on average, a share of creative exports over total trade that is below 0.5%, whereas this share reaches 1% for lower-middle-income countries. In this category, India and Viet Nam, with 5.98% and 4.86%, respectively, have a higher share than the average for high-income countries, which is 2.57%. Upper-middle-income countries have the highest average share, at 2.62%.

Second, from 2007 to 2011, the economic crisis impacted mainly the exports of creative goods of high-income countries, which experienced an average drop of 10.79% in the share of creative goods in total exports during this period. By contrast, the intensity of creative exports continued to increase in the other countries, reaching an average growth of 3.12% in upper-middle income economies.

Although the data compilation efforts and these preliminary results constitute a promising venue for future analysis, several challenges remain:[7]

First, customs-based data are classified by their observable physical characteristics, not according to their commercial value, leading to cultural goods being undervalued. For example, customs statistics record the value of a tape at the commercial value of the support, even if the master copy of a movie would have a much higher valuation otherwise.[8]

Second, fragmented production networks causing intra-firm trade or trade in intermediate products need to be accounted for (e.g., trade among headquarters and foreign affiliates, or between parties in different locations involved in producing a movie).

Third, the Internet and new technologies have led to the dematerialization of creative industries. Services data are thus increasingly crucial. To this end, the UIS contributed to the *Manual on Statistics of International Trade in Services* (MSITS) to improve the definition and representation of cultural and creative services within its Extended Balance of Payments classification, updated in 2010 (EBOPS 2010).[9] As soon as countries begin producing services data according to this new classification, the assessment of creative services will be much improved.[10] For the moment, audiovisual services and computer services are increasingly and better tracked statistically. They provide an initial but still-partial picture of the intensity and dynamism of trade creative services.

Creative services exports

The past two editions of the GII included a series on creative services exports based on UNCTAD's *Creative Economy Report* (CER) 2008 and 2010. This series overestimated cultural services because it included non-cultural services as well, which is why only the trade on Audiovisual and related services (category 288) is included this year in the GII 2013.[11]

Source

UNESCO Institute for Statistics (UIS).

Notes

1 For more information about UNESCO's Framework for Cultural Statistics, see http://www.uis.unesco.org/culture/Documents/framework-cultural-statistics-culture-2009-en.pdf.

2 The data compiled for the GII are extracted from the United Nations COMTRADE database based on the codes listed in Table 3 of the 2009 UNESCO FCS: International trade of cultural goods and services, defined using the 2007 version of the nomenclature 'Harmonised Commodity Description and Coding Systems.

3 The UNCTAD compilation included 211 codes based on the 2002 Harmonised System HS 2002.

4 The category 'arts and crafts and design', for example, includes a large range of goods, from kitchen sinks to wallpaper and the entire fashion industry.

5 This category is defined as tools that are not necessarily cultural but can be used for the production or execution of a cultural good or activity and that are necessary for the existence of these cultural products.

6 Percentage of creative goods exports as share of total exports.

7 See UNESCO-UIS, 2005, Chapter 2.

8 See Basket IV: Digital Products, in Wunsch-Vincent, 2004.

9 See UN et al., 2010, section O. Definitions of the components of the Extended Balance of Payments Services Classification, sub-sections 8, Charges for the use of intellectual property n.i.e. and 11, Personal, cultural and recreational services; see also section P, Complementary groupings of service and non-service transactions, subsection 2, Cultural transactions.

10 EBOPS 2010 (in MSITS 2010) has been implemented only by Australia and Chile so far. See UN et al., 2010.

11 The explanatory notes to the CER 2010 Statistical Annex, available at http://unctadstat.unctad.org/UnctadStatMetadata/Documentation/CER2010_StatAnnex.pdf, list the included series as being EBOPS 2002 codes 266, 278, 280, 284, 288, 889, and 897. Audiovisual and related services is category 288.

References

UN, EUROSTAT, IMF, OECD, UNCTAD, UNWTO, and WTO (United Nations, Statistical Office of the European Union, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations Conference on Trade and Development, and World Trade Organization). 2010. *Manual on Statistics of International Trade in Services (MSITS, 2010).* Geneva, Luxembourg, Madrid, New York, Paris, and Washington DC: UN, EUROSTAT, IMF, OECD, UNCTAD, UNWTO, and WTO.

UNCTAD/UNDP (United Nations Conference on Trade and Development/United Nations Development Programme). 2008. *Creative Economy: Report 2008.* New York: UN. Available at http://www.unctad.org/en/docs/ditc20082cer_en.pdf.

———. 2010. *Creative Economy: Report 2010.* New York: UN. Available at http://www.unctad.org/en/docs/ditctab20103_en.pdf.

UNESCO-UIS (United Nations Educational, Scientific and Cultural Organization-Institute for Statistics). 2005. 'Methodological Approach'. In *International Flows of Selected Cultural Goods and Services, 1994–2003.* Chapter 2. Montreal: UNESCO Institute for Statistics.

———. 2009. *2009 UNESCO Framework for Cultural Statistics.* Montreal: UNESCO Institute for Statistics. Available at http://www.uis.unesco.org/culture/Pages/framework-cultural-statistics.aspx.

Wunsch-Vincent, S. 2004. 'WTO, E-commerce, and Information Technologies: From Uruguay Round through the Doha Development Agenda'. A Report for the UN ICT Task Force, ed. J. McIntosh. New York: UN ICT Task Force. Available at http://www.piie.com/publications/papers/wunsch1104.pdf.

strengthen this sub-pillar with indicators in areas such as blog posting, online gaming, the development of applications, and so on proved unsuccessful.

Notes

1 For a fuller introduction to the Global Innovation Index, see GII 2011. Examples of other composite innovation indices were reviewed there, too. The Global Innovation Policy Index of the Information Technology and Innovation Foundation, which is quite complementary to the GII, was formulated in 2012.

2 Eurostat and OECD, 2005.

3 OECD, 2010; GII 2011; and WIPO, 2011.

4 GII 2011; OECD Scoreboard, 2011; WIPO, 2011.

5 INSEAD, 2011; OECD, 2011; WIPO, 2011.

6 For completeness, 7.5% of datapoints are from 2009, 2.1% from 2008, 1.4% from 2007, 0.9% from 2006, 0.8% from 2005, 0.4% from 2004, and 0.3% from 2003. In addition, the GII is calculated on the basis of 10,401 data points (compared to 11,928 with complete series), implying that 12.8% of data points are missing. Data Tables (Appendix II) include the reference year for each data point and mark missing data as not available (n/a).

7 In 2013, for all ease of doing business indicators (1.3.1, 1.3.2, 1.3.3, 4.1.1, and 4.2.1), the percent rank measure used in 2012 was replaced by the new 'distance to frontier', which did not exist in 2012. The distance to frontier measure benchmarks economies to the frontier in regulatory practice, measuring the absolute distance to the best performance on each indicator and showing how much the regulatory environment for local entrepreneurs in each economy has changed over time in absolute terms.

8 This indicator replaces a survey question from the World Economic Forum's Executive Opinion Survey that was used in the last two editions of the GII on the quality of scientific and research institutions.

9 This year, the Logistics Performance Index (LPI) of the World Bank replaces one of its component indicators, the quality of trade- and transport-related infrastructure, used in the 2011 and 2012 editions of the GII.

10 In the GII 2012 and 2011, this indicator was constructed on the basis of 6,306 deals in 71 countries in 2011 and of 7,937 deals in 81 countries in 2010, respectively.

11 The total value of exports and imports as a percentage of GDP, two indicators included in 2011 and 2012, were eliminated this year. Since big countries rely relatively more heavily on their internal markets, these metrics showed some bias based on the size of the economy.

12 This year, the percentage of R&D performed by business over total GERD, which was included in GII 2011 and 2012, is replaced by BERD over GDP for two main reasons: the former was highly correlated with the percentage of R&D financed by business enterprise, which remains included in the GII framework; and the new indicator captures the level of R&D that is actually performed by business.

13 The GMAT is a standardized test aimed at measuring aptitude to succeed academically in graduate business studies. It is an important part of the admissions process for nearly 5,600 graduate management programmes in approximately 2,000 business schools worldwide.

14 This was determined from a query on joint ventures/strategic alliances deals announced in 2012 from Thomson Reuters SDC Platinum database. A count variable was created: each participating nation of each company in a deal (*n* countries per deal) gets, per deal, a score equivalent to 1/*n* so that all country scores add up to the total number of deals.

15 This indicator replaced the share of Patent Cooperation Treaty (PCT) published applications with at least one foreign inventor named, which was used in GII 2011 and 2012.

16 In GII 2011 and 2012, this indicator was scaled by GDP.

17 In GII 2011 and 2012, a compilation made by the World Bank—which included other services such as construction services, personal services, and royalty payments—was used. This year, this indicator was recalculated to include only communication, computer and information services.

18 In 2011 and 2012, the source of the metric on scientific and technical journal articles was the US National Science Foundation. This year this indicator was recalculated by using the Thomson Reuters Web of Science. A simple count is used instead of a fractional count; that is, if an article has authors from more than one country, each country adds one article. This approach rewards international collaboration, which has been proved to be crucial to innovation.

19 In GII 2011 and 2012, this indicator was scaled by GDP.

20 In GII 2011 and 2012, a compilation made by the World Bank—which included other services such as construction services, personal services exports, and royalty and license fees receipts—was used. This year, this indicator was recalculated to include only communication, computer and information services.

21 Registrations through the Madrid system are now counted by country of origin, not by resident as was the case in the GII 2011 and 2012.

22 The past two editions of the GII included a series on creative services exports based on UNCTAD's Creative Economy Report (CER) 2008 and 2010, which has now been discontinued.

23 This series was introduced this year. Although a count indicator of the number of original literary works, for example, would have been preferred, data on a global scale do not exist.

24 The past two editions of the GII draw on the series on creative goods exports based on UNCTAD's Creative Economy Report (CER) 2009 and 2010 editions, which has been discontinued. The current series follows the 2009 UNESCO Framework for Cultural Statistics.

References

Eurostat and OECD (Organisation for Economic Co-operation and Development). 2005. *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data,* 3rd edition. Paris: OECD.

INSEAD. 2011. *The Global Innovation Index 2011: Accelerating Growth and Development.* Fontainebleau: INSEAD.

OECD (Organisation for Economic Co-operation and Development). 2010. *The OECD Innovation Strategy: Getting a Head Start on Tomorrow.* Paris: OECD.

———. 2011. *OECD Science, Technology and Industry Scoreboard 2011.* Paris: OECD.

UNCTAD/UNDP (United Nations Conference on Trade and Development/United Nations Development Programme). 2008. *Creative Economy: Report 2008.* New York: UN. Available at http://www.unctad.org/en/docs/ditc20082cer_en.pdf.

———. 2010. *Creative Economy: Report 2010.* New York: UN. Available at http://www.unctad.org/en/docs/ditctab20103_en.pdf.

UNESCO–UIS (United Nations Educational, Scientific and Cultural Organization–Institute for Statistics). 2009. *2009 UNESCO Framework for Cultural Statistics.* Montreal: UNESCO Institute for Statistics. Available at http://www.uis.unesco.org/culture/Pages/framework-cultural-statistics.aspx.

WIPO (World Intellectual Property Organization), 2011. 'The Changing Nature of Innovation and Intellectual Property'. In *World Intellectual Property Report 2011: The Changing Face of Innovation,* Chapter 1. Geneva: WIPO. Available at http://www.wio.int/econ_stat/en/economics/publications.html.

Adjustments to the Global Innovation Index Framework and Year-on-Year Comparability of Results

The Global Innovation Index (GII) is a cross-country performance assessment, compiled on an annual basis, which continuously seeks to update/improve the way innovation is measured. The GII report pays special attention to making accessible the statistics used in the Country/Economy Profiles and Data Tables, providing data sources and definitions and detailing the computation methodology (Appendices I, II, III, and IV, respectively). This annex summarizes the changes made this year and provides an assessment of the impact of these changes on the comparability of rankings.

Adjustments to the Global Innovation Index framework

The GII model is revised every year in a transparent exercise. This year, no change was made at the pillar level. The title of sub-pillar 7.1 was changed from Creative intangibles to Intangible assets to better reflect the nature of its component indicators.

In addition, beyond the use of World Intellectual Property Organization (WIPO) data, we collaborate with both public international bodies (such as the International Energy Agency, the United Nations Educational, Scientific and Cultural Organization (UNESCO), and the International Telecommunication Union) and private organizations (such as the International Organization for Standardization (ISO), the Graduate Management Admission Council (GMAC), Thomson Reuters, IHS Global Insight, the World Association of Newspapers and News Publishers (WAN-IFRA), QS Quacquarelli Symonds Ltd, ZookNIC Inc., and Google) to obtain the best data on innovation measurement globally.

Although the rationale for the adjustments made to the GII framework are explained in detail in Annex 1, Table 1 provides a summary of these changes for quick referencing. A total of 20 indicators were modified, 10 indicators were deleted or replaced, and 10 underwent methodological changes (new computation methodology at the source, change of scaling factor, change of classification, etc.).

Sources of changes in the rankings

Scores and rankings from one year to the next are therefore not directly comparable. For the second time, however, an effort was made to be transparent regarding the sources of changes in rankings. The methodology used in 2012 was used again 2013.

Following the computation methodology established jointly with the Joint Research Centre of the European Commission and detailed in Appendix IV Technical Notes, only countries with an indicator coverage of at least 63% (53 out of 84 indicators) are included in the rankings. The application of this criterion led to the exclusion of Burundi and Lao People's Democratic Republic and the inclusion of Barbados, Cape Verde, and Guinea in the 2013 rankings.

Table 3 details the source of the changes in rankings, and includes six columns summarized in Table 2:

1. The GII 2013 ranking out of 142 economies (A).
2. The GII 2012 ranking out of 141 economies (B).
3. For the 139 economies included in both the 2012 and 2013 rankings, the difference between the GII 2012 and the GII 2013 rank is provided (C = A – B). There are three sources of changes in rankings (such that C = D + E + F):
   - Data updates: Column D compares the GII 2012 rankings with the rankings obtained with the 2013 database and the 2012 GII framework.
   - Adjustments to the GII framework in 2013: Column E compares the ranking obtained with the 2013 database and the 2012 GII framework with the GII 2013 ranking.
   - The exclusion/inclusion of countries/economies: Column F compares the GII 2012 and GII 2013 rankings out of 139 economies with the actual rankings (over 141 and 142 economies, respectively).

Table 1: Changes to the Global Innovation Index framework

GII 2012		GII 2013	
1.3.1	Ease of starting a business: Percent rank	1.3.1	Ease of starting a business: Distance to frontier
1.3.2	Ease of resolving insolvency: Percent rank	1.3.2	Ease of resolving insolvency: Distance to frontier
1.3.3	Ease of paying taxes: Percent rank	1.3.3	Ease of paying taxes: Distance to frontier
2.3.3	Quality of scientific research institutions	2.3.3	QS university ranking (average score of the top three universities per country/economy)
3.2.3	Trade and transport-related infrastructure index	3.2.3	The Logistics Performance Index, to which the former 3.2.3 indicator is a sub-component
4.1.1	Ease of getting credit: Percent rank	4.1.1	Ease of getting credit: Distance to frontier
4.2.1	Ease of protecting investors: Percent rank	4.2.1	Ease of protecting investors: Distance to frontier
4.3.3	Imports of goods and services		Deleted
4.3.4	Exports of goods and services		Deleted
5.1.3	GERD performed by business enterprise: Percentage of GERD	5.1.3	GERD performed by business enterprise: Percentage of GDP
5.2.5	Share of patents with at least one foreign inventor named	5.2.5	Patent families filed in at least three offices
5.3.1	Royalty and license fees payments (EBOPS 266): Percentage of GDP	5.3.1	Royalty and license fees payments (EBOPS 266): Percentage of total services imports
5.3.3	Computer, communications and other services imports: Percentage of commercial services imports (World Bank compilation including EBOPS 245, 259, 262, 266, 268, 287 over 200CS)	5.3.3	Restricted to communications, computer and information services imports as a percentage of total services imports (EBOPS 245 and 262 over 200)
6.1.4	Scientific and technical journal articles: Fractional count; computed biannually by the US National Science Foundation on the basis of Thomson Reuters, Web of Science	6.1.4	Direct computation from Thomson Reuters, Web of Science; simple count instead of fractional count—i.e., if authors are from more than one economy, each economy adds a count of one
		6.1.5	Citable documents H index
		6.2.5	High-tech and medium-high-tech: Percentage of total manufactures output
6.3.1	Royalty and license fees receipts (EBOPS 266): Percentage of GDP	6.3.1	Royalty and license fees receipts (EBOPS 266): Percentage of total services imports
6.3.3	Computer, communications and other services exports: Percentage of commercial services exports (World Bank compilation including EBOPS 245, 259, 262, 266, 268, 287 over 200CS)	6.3.3	Restricted to communications, computer and information services exports: Percentage of total services exports (EBOPS 245 and 262 over 200)
7.1	**Creative intangibles**	**7.1.**	**Intangible assets**
7.1.2	Madrid international registrations by residents	7.1.2	Madrid international registrations by country of origin
7.2.1	Recreation and culture consumption: Percentage of total consumption		Deleted
7.2.5	Creative services exports: Percentage of total services exports (UNCTAD compilation including EBOPS 266, 278, 280, 284, 288, 889, and 897over 200, now discontinued)	7.2.1	Restricted to audio-visual and related services exports: Percentage of total services exports (EBOPS 288 over 200)
		7.2.4	Printing and publishing output: Percentage of total manufactures output
7.2.4	Creative goods exports: Percentage of total goods exports (UNCTAD compilation including 211 codes based on the 2002 Harmonised System HS 2002)	7.2.5	Substituted by a compilation based on the Harmonised System 2007 (HS 2007) included in the UNESCO Framework for Cultural Statistics of 2009, Table 3 (135 6-digit codes and 6 4-digit codes)

Note: The highlighted row indicates a change of name at the sub-pillar level. Green text indicates changes that are essentially methodological in nature (involving the same indicator). Refer to Annex 1 and Appendix III for a detailed explanation of terminologies and acronyms.

Table 2: Summary of source of changes in the rankings: 2013 compared with 2012

				Source of changes in rankings		
	GII 2013 rank	GII 2012 rank	Change in ranking between GII 2012 and GII 2013	Data updates	Adjustments to the GII framework	Inclusion/exclusion of countries/ economies (net)
GII framework	2013	2012		2012	2012 vs. 2013	
Dataset	2013	2013		2012 vs. 2013	2013	
Number of countries/economies	142	141	139	139	139	139 vs. 141/142
Country/Economy	A	B	C = B - A = D + E + F	D	E	F

How to interpret Table 3

The adjustments to the framework affected the rankings of most countries. These examples illustrate how Table 3 should be interpreted:

- Singapore and the United States of America (USA) would have kept their 2012 rankings (3rd and 10th, respectively) had we kept the 2012 framework unchanged while updating the database; Singapore drops five spots and the USA gains five as a result of adjustments to the framework in 2013.
- Switzerland and Sweden, in contrast, exhibit rankings that are robust to changes in the framework, the updating of the database, and the inclusion and exclusion of economies; they keep their 1st and 2nd positions in all scenarios.
- Thailand remains at position 57 in 2013. However, Thailand would have fared better this year had we kept the GII 2012 framework unchanged and would have jumped five positions in the rankings. Thailand lost four positions as a result of adjustments to the framework in 2013, and lost an additional position because of the inclusion of Barbados, which entered the rankings at position 47.

Other factors to keep in mind

These sources of changes in rankings are only an approximation at best; for some countries, some weaknesses or strengths were also revealed through better data coverage or updated figures (the data span the 2003–12 period).

Moreover, the modelling choices—the statistical treatment of indicators that has no relation to the conceptual framework—also has an impact on scores and rankings. The exclusion/inclusion of countries/economies, for example, has a direct impact on the rankings (column F in Table 2), but also an indirect impact through the min-max normalization. Making inferences about absolute or relative performance on the basis of year-on-year differences in rankings can be misleading. Each ranking reflects the relative positioning of that particular country/economy on the basis of the conceptual framework, the data coverage, and the sample of countries—elements that change from one year to another.

The statistical audit performed by the Joint Research Centre (Annex 3) stresses a similar point by providing a confidence interval for each ranking following a robustness and uncertainty analysis of the modelling assumptions.

Although the technical exercises presented in Annexes 2 and 3 add layers of complexity to the interpretation of results, they allow analysts to refine their assessment of the changes in rankings and to avoid misinterpretations.

(Table 3 begins on following page)

Table 3: Source of changes in the rankings: 2013 compared with 2012

Country/Economy	GII 2013 rank	GII 2012 rank	Change in ranking between GII 2012 and GII 2013	Source of changes in rankings		
				Data updates	Adjustments to the GII framework	Inclusion/exclusion of countries/ economies (net)
Switzerland	1	1	0	0	0	0
Sweden	2	2	0	0	0	0
United Kingdom	3	5	2	1	1	0
Netherlands	4	6	2	–1	3	0
United States of America	5	10	5	0	5	0
Finland	6	4	–2	–1	–1	0
Hong Kong (China)	7	8	1	2	–1	0
Singapore	8	3	–5	0	–5	0
Denmark	9	7	–2	–1	–1	0
Ireland	10	9	–1	0	–1	0
Canada	11	12	1	–1	2	0
Luxembourg	12	11	–1	–1	0	0
Iceland	13	18	5	7	–2	0
Israel	14	17	3	1	2	0
Germany	15	15	0	0	0	0
Norway	16	14	–2	–4	2	0
New Zealand	17	13	–4	–1	–3	0
Korea, Rep.	18	21	3	4	–1	0
Australia	19	23	4	–2	6	0
France	20	24	4	4	0	0
Belgium	21	20	–1	–2	1	0
Japan	22	25	3	1	2	0
Austria	23	22	–1	1	–2	0
Malta	24	16	–8	–3	–5	0
Estonia	25	19	–6	–4	–2	0
Spain	26	29	3	0	3	0
Cyprus	27	28	1	1	0	0
Czech Republic	28	27	–1	1	–2	0
Italy	29	36	7	5	2	0
Slovenia	30	26	–4	–2	–2	0
Hungary	31	31	0	1	–1	0
Malaysia	32	32	0	0	0	0
Latvia	33	30	–3	–3	0	0
Portugal	34	35	1	0	1	0
China	35	34	–1	0	–1	0
Slovakia	36	40	4	–1	5	0
Croatia	37	42	5	2	3	0
United Arab Emirates	38	37	–1	1	–2	0
Costa Rica	39	60	21	12	9	0
Lithuania	40	38	–2	0	–2	0
Bulgaria	41	43	2	1	1	0
Saudi Arabia	42	48	6	1	5	0
Qatar	43	33	–10	–4	–6	0
Montenegro	44	45	1	–1	2	0
Moldova, Rep.	45	50	5	11	–6	0
Chile	46	39	–7	–5	–2	0
Barbados	**47**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**
Romania	48	52	4	3	2	–1
Poland	49	44	–5	–1	–3	–1
Kuwait	50	55	5	–7	13	–1
TFYR of Macedonia	51	62	11	11	1	–1
Uruguay	52	67	15	13	3	–1
Mauritius	53	49	–4	6	–9	–1
Serbia	54	46	–8	–4	–3	–1
Greece	55	66	11	1	11	–1
Argentina	56	70	14	–2	17	–1
Thailand	57	57	0	5	–4	–1
South Africa	58	54	–4	–2	–1	–1
Armenia	59	69	10	14	–3	–1
Colombia	60	65	5	–2	8	–1
Jordan	61	56	–5	–2	–2	–1
Russian Federation	62	51	–11	–6	–4	–1
Mexico	63	79	16	4	13	–1
Brazil	64	58	–6	–10	5	–1
Bosnia and Herzegovina	65	72	7	–5	13	–1
India	66	64	–2	–6	5	–1
Bahrain	67	41	–26	–33	8	–1
Turkey	68	74	6	5	2	–1
Peru	69	75	6	2	5	–1
Tunisia	70	59	–11	–1	–9	–1
Ukraine	71	63	–8	4	–11	–1

Country/Economy	GII 2013 rank	GII 2012 rank	Change in ranking between GII 2012 and GII 2013	Source of changes in rankings: Data updates	Adjustments to the GII framework	Inclusion/exclusion of countries/ economies (net)
Mongolia	72	68	–4	7	–10	–1
Georgia	73	71	–2	5	–6	–1
Brunei Darussalam	74	53	–21	–18	–2	–1
Lebanon	75	61	–14	–3	–10	–1
Viet Nam	76	76	0	23	–22	–1
Belarus	77	78	1	15	–13	–1
Guyana	78	77	–1	–2	2	–1
Dominican Republic	79	86	7	2	6	–1
Oman	80	47	–33	–29	–3	–1
Trinidad and Tobago	81	81	0	0	1	–1
Jamaica	82	91	9	11	–1	–1
Ecuador	83	98	15	5	11	–1
Kazakhstan	84	83	–1	5	–5	–1
Indonesia	85	100	15	14	2	–1
Panama	86	87	1	4	–2	–1
Guatemala	87	99	12	–1	14	–1
El Salvador	88	93	5	–9	15	–1
Uganda	89	117	28	16	13	–1
Philippines	90	95	5	0	6	–1
Botswana	91	85	–6	3	–8	–1
Morocco	92	88	–4	–1	–2	–1
Albania	93	90	–3	3	–5	–1
Ghana	94	92	–2	–2	1	–1
Bolivia, Plurinational St.	95	114	19	9	11	–1
Senegal	96	97	1	–6	8	–1
Fiji	97	101	4	16	–11	–1
Sri Lanka	98	94	–4	–4	1	–1
Kenya	99	96	–3	–3	1	–1
Paraguay	100	84	–16	–7	–8	–1
Tajikistan	101	108	7	18	–10	–1
Belize	102	80	–22	–8	–13	–1
Cape Verde	**103**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**
Swaziland	104	82	–22	–14	–6	–2
Azerbaijan	105	89	–16	–3	–11	–2
Mali	106	119	13	2	13	–2
Honduras	107	111	4	–5	11	–2
Egypt	108	103	–5	–1	–2	–2
Namibia	109	73	–36	–24	–10	–2
Cambodia	110	129	19	20	1	–2
Gabon	111	106	–5	–1	–2	–2
Rwanda	112	102	–10	–6	–2	–2
Iran, Islamic Rep.	113	104	–9	–6	–1	–2
Venezuela, Bolivarian Rep.	114	118	4	–5	11	–2
Nicaragua	115	105	–10	–9	1	–2
Burkina Faso	116	122	6	–4	12	–2
Kyrgyzstan	117	109	–8	3	–9	–2
Zambia	118	107	–11	–13	4	–2
Malawi	119	120	1	–5	8	–2
Nigeria	120	123	3	5	0	–2
Mozambique	121	110	–11	–11	2	–2
Gambia	122	130	8	–4	14	–2
Tanzania, United Rep.	123	128	5	9	–2	–2
Lesotho	124	116	–8	5	–11	–2
Cameroon	125	121	–4	8	–10	–2
Guinea	**126**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**
Benin	127	125	–2	–2	3	–3
Nepal	128	113	–15	1	–13	–3
Ethiopia	129	131	2	3	2	–3
Bangladesh	130	112	–18	–10	–5	–3
Niger	131	140	9	0	10	–1
Zimbabwe	132	115	–17	–14	0	–3
Uzbekistan	133	127	–6	–4	1	–3
Syrian Arab Rep. 134	132	–2	–1	2	–3	–3
Angola	135	135	0	0	3	–3
Côte d'Ivoire	136	134	–2	2	–1	–3
Pakistan	137	133	–4	9	–10	–3
Algeria	138	124	–14	–6	–5	–3
Togo	139	136	–3	0	0	–3
Madagascar	140	126	–14	11	–22	–3
Sudan	141	141	0	2	–1	–1
Yemen	142	139	–3	–2	0	–1

Joint Research Centre Statistical Audit of the 2013 Global Innovation Index

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Modelling versatile concepts underlying innovation at the national scale around the globe, as attempted in the Global Innovation Index (GII), raises practical challenges related to the quality of data and the combination of these into a single number. The Econometrics and Applied Statistics Unit at the European Commission Joint Research Centre (JRC) in Ispra (Italy) was invited for a third consecutive year to audit the GII because of the adjustments made to the list of indicators included in the GII framework (see Annex 2 for more details).

The JRC assessment of the 2013 GII focused on two main issues: the conceptual and statistical coherence of the structure, and the impact of key modelling assumptions on the GII scores and ranks.[1] These are necessary steps to ensure the transparency and reliability of the GII, to enable policy makers to derive more accurate and meaningful conclusions, and to potentially guide choices on priority setting and policy formulation.

As in the previous two GII reports, the JRC analysis complements the country rankings with confidence intervals for the GII, the Innovation Input Sub-Index, and the Innovation Output Sub-Index in order to better appreciate the robustness of these ranks to the computation methodology. In addition, for the first time this year, the JRC analysis includes both an assessment of potential redundancy of information in the GII and a measure of distance to the efficient frontier of innovation by using data envelopment analysis (DEA).

Conceptual and statistical coherence in the GII framework

An earlier version of the GII model was assessed by the JRC in April 2013. Fine-tuning suggestions were taken into account in the final computation of the rankings in an iterative process with the JRC, aiming to set the foundation for a balanced index. The entire process followed four steps (see Figure 1):

Step 1: Conceptual consistency

Candidate indicators were selected for their relevance to a specific innovation pillar on the basis of the literature review, expert opinion, country coverage, and timeliness. To represent a fair picture of country differences, indicators were scaled either at the source or by the GII team as appropriate and where needed.

Step 2: Data checks

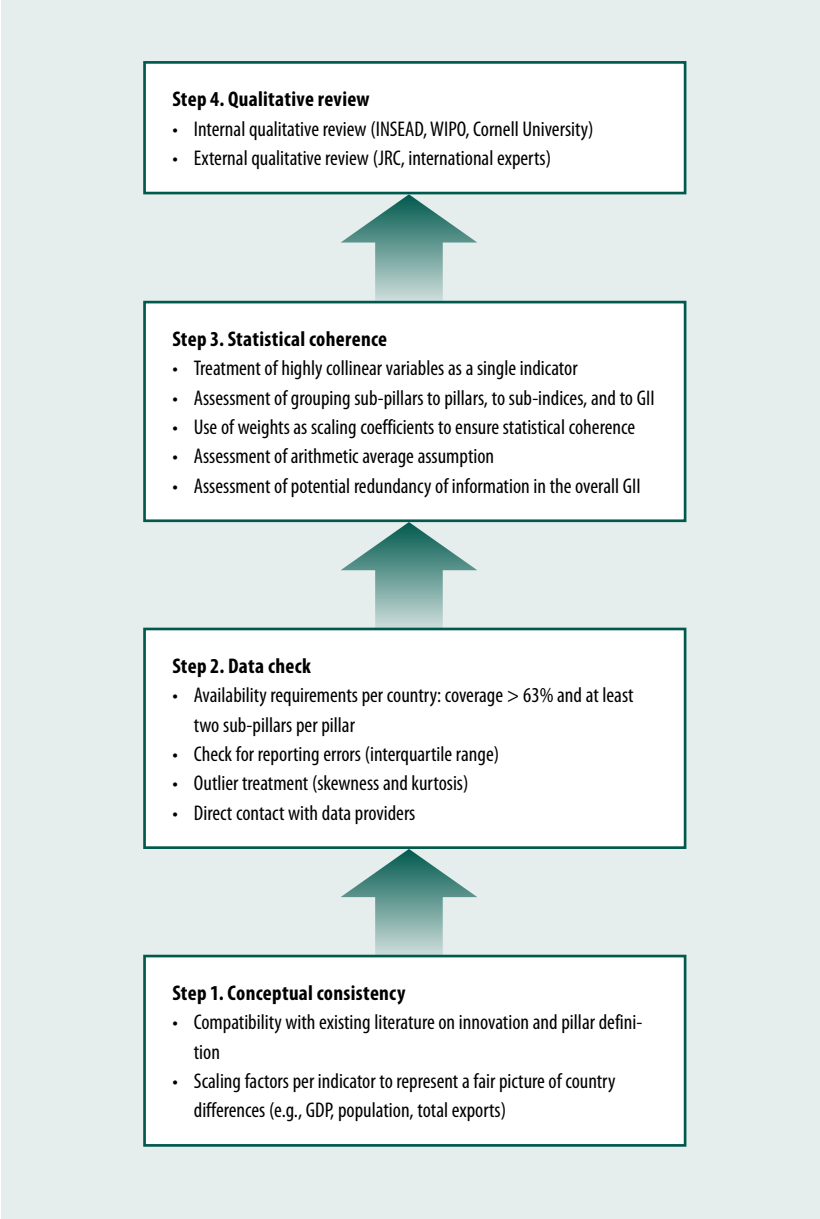
The most recently released data were used for each country with a cut-off at year 2003. Countries were included if data availability was at least 63% (i.e., 54 out of 84 variables) and at least two of the three sub-pillars in each pillar could be computed. Potentially problematic indicators that could bias the overall results were identified as those having absolute skewness greater than 2 and kurtosis greater than 3.5.[2] These indicators were treated either by winsorisation or by taking the natural logarithm (in case of more than five outliers). These criteria were decided jointly with the JRC back in 2011 (see Appendix IV, Technical Notes, for details).

Step 3: Statistical coherence

Weights as 'scaling coefficients'

Weights of 0.5 or 1.0 were jointly decided between the JRC and the GII team as 'scaling coefficients' and not as 'importance coefficients', with the aim of arriving at sub-pillar and pillar scores that were balanced in their underlying components (with balanced contributions of indicators/sub-pillars to the variance of their respective sub-pillars/pillars). Paruolo, Saisana, and Saltelli (2013) show that in weighted arithmetic averages, the ratio of two nominal weights gives the rate of substitutability between the two indicators and hence can be used to reveal the relative importance of individual indicators. This importance can then be compared with ex-post measures of variables' importance, such as the non-linear Pearson's 'correlation ratio'. As a result of this analysis, 23 out of 84 indicators and three sub-pillars—6.1 Knowledge creation, 7.2 Creative goods and services, and 7.3 Online creativity—were assigned half weights, while all

Figure 1: Conceptual and statistical coherence in the GII 2013 framework



Source: Saisana and Philippas, European Commission Joint Research Centre, 2013.

other indicators and sub-pillars were assigned a weight of 1.0.[3]

Principal component analysis

Principal component analysis confirms the presence of a single latent dimension in each of the seven pillars (one component with eigenvalue greater than 1.0) that captures between 63% (pillars 5 and 6) up to 83% (pillar 1) of the total variance in the three underlying sub-pillars.[4] These results reveal that the adjustments made to the 2013 GII framework led to a further improvement of its statistical coherence.[5] Furthermore, results confirm the expectation that the sub-pillars are more correlated with their own pillar than with any other. It is interesting to note that sub-pillar 6.1 Knowledge creation has the same degree of correlation (0.76) with its own pillar 6 Knowledge and technology outputs than with pillar 2 Human capital and research, a confirmation of the link between human capital and the creation of knowledge.

The five pillars in the Innovation Input Sub-index also share a single latent dimension that captures 82% of the total variance. The five loadings are very similar to each other; thereafter, building the Input Sub-Index as a simple average (equal weights) of the five pillars is statistically supported by the data. The two output pillars, Knowledge and technology outputs and Creative outputs, are moderately correlated with each other (0.60), but they are both strongly correlated with the Innovation Output Sub-Index (0.88), implying that that sub-index is also well balanced in its two pillars.

Last, building the GII as the simple average of the Input and Output Sub-Indices is also statistically justifiable because the Pearson correlation coefficient of either sub-index with the overall GII is roughly 0.90. So far, results show that the grouping of sub-pillars into pillars, sub-indices, and the GII is statistically coherent, and that the GII has a balanced structure justifying the various levels of aggregation.

Assessing potential redundancy of information in the GII

As discussed, the Input and Output Sub-Indices correlate well with each other and with the overall GII. However, the information summarized by the GII is not redundant. In fact, one way in which the GII helps to highlight other components of innovation is by pinpointing the differences in rankings that emerge from a comparison between

Table 1: Distribution of differences between pillar and GII rankings

	Innovation Input Sub-Index					Innovation Output Sub-Index	
Rank differences (positions)	Institutions (%)	Human capital and research (%)	Infrastructure (%)	Market sophistication (%)	Business sophistication (%)	Knowledge and technology outputs (%)	Creative outputs (%)
More than 30	19.7	13.4	10.6	20.4	18.3	25.4	17.6
20 to 29	13.4	20.4	15.5	14.1	16.2	15.5	14.8
10 to 19	20.4	24.6	29.6	27.5	20.4	19.0	29.6
5 to 9	26.1	19.0	19.7	20.4	24.6	21.1	16.2
Less than 5	20.4	22.5	22.5	15.5	17.6	16.2	19.0
Same rank	0.0	0.0	2.1	2.1	2.8	2.8	2.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Saisana and Philippas, European Commission Joint Research Centre, 2013.

the GII and each of the seven pillars (see Table 1). Of the 142 countries included in the GII 2013, for more than 53.5% (up to 62.0%) of the countries, the GII ranking and any of the seven pillar rankings differ by 10 positions or more.

Step 4: Qualitative review

Finally, the GII results—including overall country classifications and relative performances in terms of the Innovation Input or Output Sub-Indices—were evaluated to verify that the overall results were, to a great extent, consistent with current evidence, existing research, or prevailing theory.

Notwithstanding these statistical tests and the positive outcomes on the statistical coherence of the GII structure, it is important to mention that the GII model is, and has to remain, open for future improvements as better data, more comprehensive surveys and assessments, and new relevant research studies become available.

Impact of modelling assumptions on the GII results

Every country score on the GII and its two sub-indices depends on modelling choices: the seven-pillar structure, selected indicators, imputation or not of missing data, normalization, weights, aggregation method, among other elements. These choices are based on expert opinion (e.g., selection of indicators), common practice (e.g., min-max normalization in the [0,100] range), driven by statistical analysis (e.g., treatment of outliers), or simplicity (e.g., no imputation of missing data). The robustness analysis is aimed at assessing the simultaneous and joint impact of these modelling choices on the rankings. The data are assumed to be error-free, since potential outliers and eventual errors and typos were corrected during the computation phase (see Step 2 in Figure 1).

The robustness assessment of the GII was based on a combination of a Monte Carlo experiment and a multi-modelling approach that dealt with three issues: pillar weights, missing data, and the aggregation formula. This type of assessment aims to respond to eventual criticism that the country scores associated with aggregate measures are generally not calculated under conditions of certainty, even if they are frequently presented as such.[6]

The Monte Carlo simulation related to the issue of weighting and comprised 1,000 runs, each corresponding to a different set of weights of the seven pillars, randomly sampled from uniform continuous distributions centred in the reference values. The choice of the range for the weights' variation was driven by two opposite needs: (1) to ensure a wide enough interval to have meaningful robustness checks, and (2) to respect the rationale of the GII that places on an equal footing the Input Sub-Index and the Output Sub-Index. Given these considerations, limit values of uncertainty intervals for the pillar weights are: 10%–30% for the five Input pillars and 40%–60% for the two Output pillars (see Table 2).[7]

The GII developing team, for transparency and replicability, opted to not estimate missing data. The 'no imputation' choice, which is common in similar contexts, might encourage countries not to report low data values.[8] To overcome this limitation, the JRC opted to impute missing data using the Expectation Maximization (EM) algorithm.[9]

Regarding the aggregation formula, decision-theory practitioners have challenged the use of simple arithmetic averages because of their fully compensatory nature, in which a comparative high advantage on a

Table 2: Uncertainty parameters: Missing values, aggregation, and weights

		Reference	Alternative
I. Uncertainty in the treatment of missing values		No estimation of missing data	Expectation Maximization (EM)
II. Uncertainty in the aggregation formula at the pillar level		Arithmetic average	Geometric average
III. Uncertainty intervals for the GII weights			
GII Sub-Index	Pillar	Reference value for the weight	Distribution assigned for robustness analysis
Innovation Input	Institutions	0.2	U[0.1,0.3]
	Human capital and research	0.2	U[0.1,0.3]
	Infrastructure	0.2	U[0.1,0.3]
	Market sophistication	0.2	U[0.1,0.3]
	Business sophistication	0.2	U[0.1,0.3]
Innovation Output	Knowledge and technology outputs	0.5	U[0.4,0.6]
	Creative outputs	0.5	U[0.4,0.6]

Source: Saisana and Philippas, European Commission Joint Research Centre, 2013.

few indicators can compensate a comparative disadvantage on many indicators (Munda, 2008). Despite receiving statistical support in the previous section, the geometric average was considered instead,[10] which is a partially compensatory approach that rewards economies with balanced profiles and motivates them to improve in the dimensions in which they perform poorly, and not just in *any* dimension.

Four models were tested based on the combination of no imputation versus EM imputation, and arithmetic versus geometric average, combined with 1,000 simulations per model (random weights versus fixed weights), for a total of 4,000 simulations for the GII and each of the two sub-indices (see Table 2 for a summary of the uncertainties considered in the GII 2013).

Uncertainty analysis results

The main results of the robustness analysis are shown in Figures 2a, 2b, and 2c with median ranks and 90% confidence intervals computed across the 4,000 Monte Carlo simulations for the GII and the two sub-indices. Countries are ordered from best to worst according to their reference rank (black line), the dot being the median rank. Error bars represent, for each country, the 90% interval across all simulations. Table 3 reports the published rankings and the 90% confidence intervals. It can be verified that all but five country ranks lie within the simulated intervals, and that these are narrow enough for most countries (less than 10 positions) to allow meaningful inferences to be drawn.

GII ranks are rather robust: the median rank is close to the reference rank (six or fewer positions away) for 75% of the countries. Results for the Input Sub-Index are relatively more robust (75% of the countries shift fewer than three positions) for two main reasons: the high correlations between the five Input pillars (the average bivariate Pearson correlation coefficient of 0.82) and the very good data coverage (only 1 of the 142 countries has an indicator coverage below 63% of the 57 variables included in the Input Sub-Index).

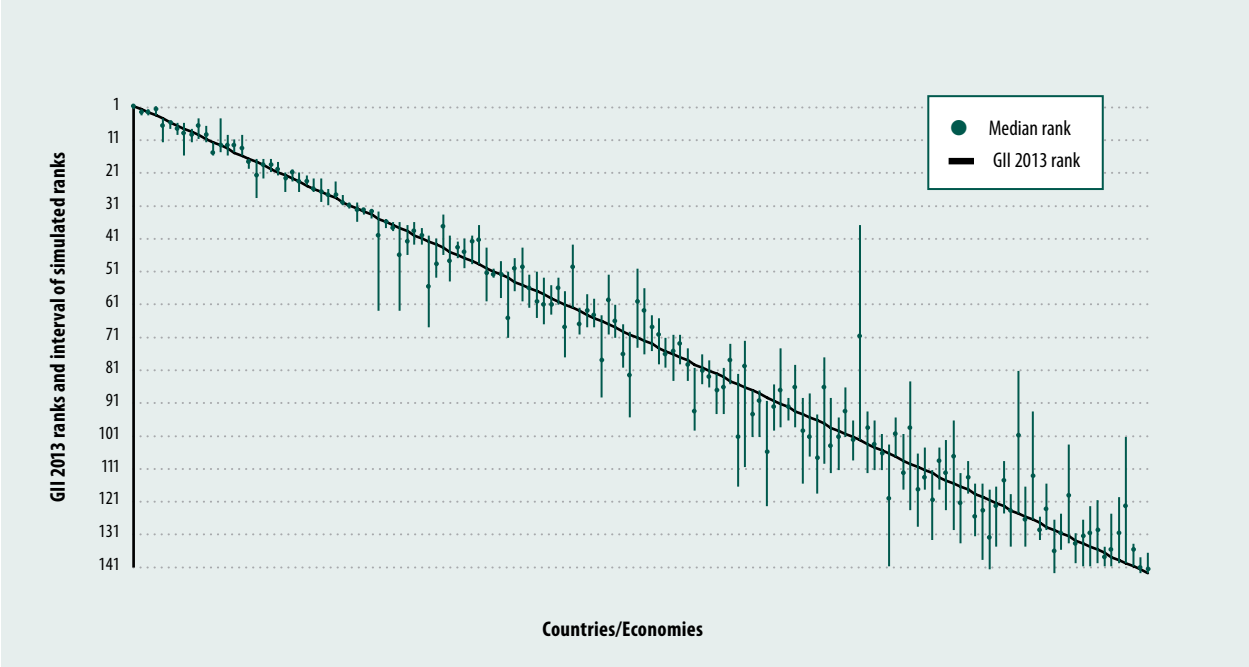
In contrast, the Output Sub-Index is more sensitive to the methodological choices (one-fourth of the countries shift more than 10 positions) for the same two reasons: there are only two pillars that are moderately correlated (0.60) and the data coverage is less satisfactory (15 countries have an indicator coverage of less than 63% of the 27 variables included in the Output Sub-Index). However, it cannot be ruled out altogether that the correlation between the two Output pillars could improve as data become available, as suggested by theory. The currently observed moderate correlation might be the result of (1) the fact that missing values are particularly distorting; (2) the use of count and not value variables; (3) the use of proxies due to the lack of statistics.

Sensitivity analysis results

Complementary to the uncertainty analysis, sensitivity analysis has been used to identify which of the modelling assumptions have the greatest impact on certain country ranks. Figure 3 plots the rankings of the GII and sub-indices versus one-at-a-time changes of either the EM imputation method or the geometric aggregation formula, with random weights, with summary results included in Table 4. Figure 4 presents the box plots of ranking shifts with respect to the original ranking resulting from random weights only.

The most influential assumption is the choice of no imputation versus EM imputation, particularly

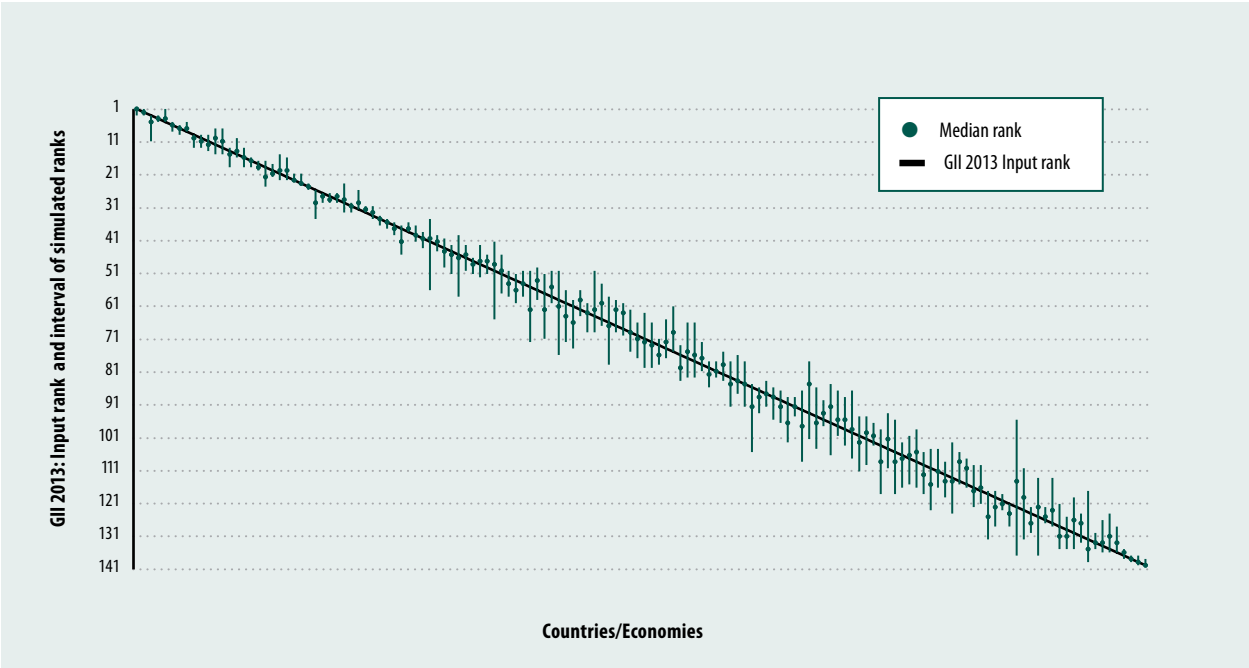
Figure 2a: Robustness analysis (GII rank vs. median rank, 90% confidence intervals)



Source: Saisana and Philippas, European Commission Joint Research Centre, 2013.

Note: The Spearman rank correlation between the median rank and the GII 2013 rank is 0.987. Median ranks and intervals are calculated over 4,000 simulated scenarios combining different sets of weights, imputed versus non imputed (missing) values and geometric versus arithmetic average at the pillar level.

Figure 2b: Robustness analysis (Input rank vs. median rank, 90% confidence intervals)



Source: Saisana and Philippas, European Commission Joint Research Centre, 2013.

Note: The Spearman rank correlation between the median rank and the Input rank is 0.998. Median ranks and intervals are calculated over 4,000 simulated scenarios combining different sets of weights, imputed versus non imputed (missing) values and geometric versus arithmetic average at the pillar level.

Table 3: GII 2013 and Input/Output Sub-Indices: Ranks and 90% confidence intervals

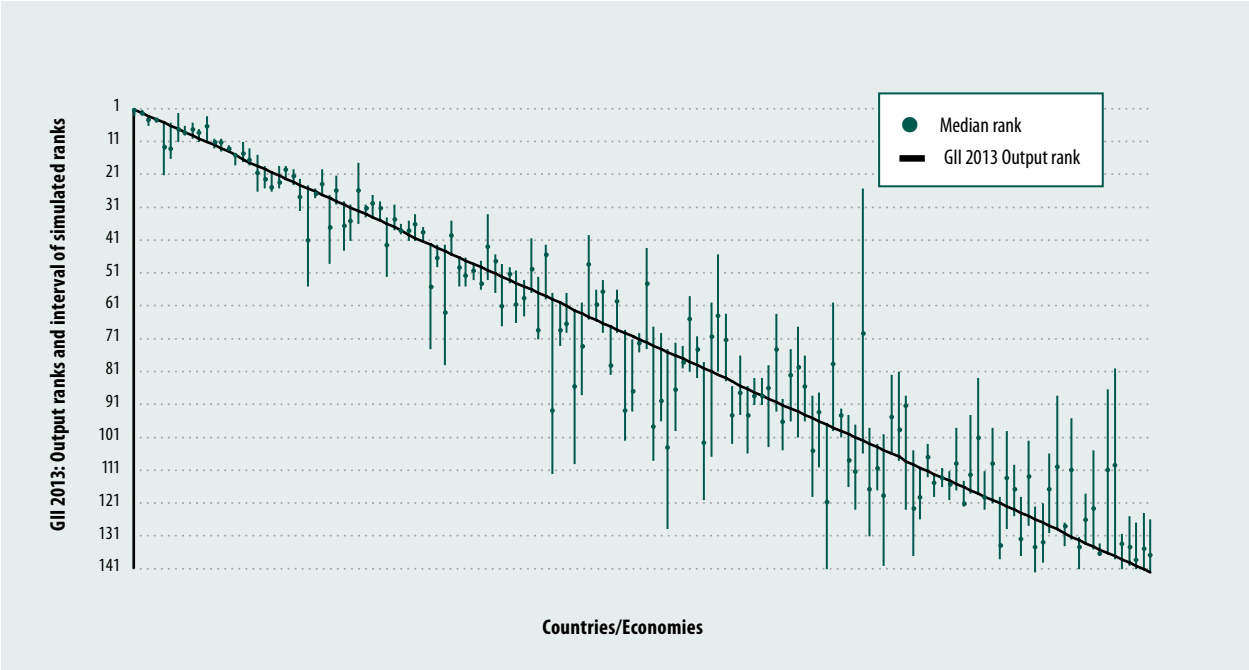
	GII 2013		Input Sub-Index		Output Sub-Index	
Country/Economy	Rank	Interval	Rank	Interval	Rank	Interval
Switzerland	1	[1, 2]	7	[5, 11]	1	[1, 3]
Sweden	2	[2, 4]	5	[3, 5]	3	[3, 6]
United Kingdom	3	[2, 4]	4	[3, 6]	4	[4, 5]
Netherlands	4	[1, 4]	10	[9, 13]	2	[1, 2]
United States of America	5	[5, 12]	3	[3, 13]	12	[10, 13]
Finland	6	[6, 8]	6	[4, 10]	8	[6, 9]
Hong Kong (China)	7	[6, 10]	2	[1, 3]	15	[15, 18]
Singapore	8	[6, 16]	1	[1, 2]	18	[15, 26]
Denmark	9	[8, 12]	8	[5, 8]	14	[12, 14]
Ireland	10	[5, 11]	12	[6, 15]	11	[3, 11]
Canada	11	[7, 12]	9	[6, 13]	13	[10, 14]
Luxembourg	12	[12, 16]	18	[15, 21]	6	[5, 16]
Iceland	13	[5, 15]	21	[15, 23]	7	[2, 11]
Israel	14	[10, 16]	19	[16, 25]	9	[5, 10]
Germany	15	[11, 15]	20	[18, 22]	10	[7, 11]
Norway	16	[10, 16]	13	[7, 15]	16	[11, 17]
New Zealand	17	[17, 20]	15	[11, 17]	19	[18, 25]
Korea, Rep.	18	[17, 29]	16	[11, 21]	24	[22, 32]
Australia	19	[17, 23]	11	[9, 14]	32	[17, 36]
France	20	[17, 21]	23	[21, 24]	17	[13, 18]
Belgium	21	[18, 22]	22	[16, 24]	22	[18, 22]
Japan	22	[21, 27]	14	[12, 19]	33	[30, 34]
Austria	23	[20, 24]	17	[16, 20]	27	[19, 27]
Malta	24	[21, 27]	34	[30, 36]	5	[5, 21]
Estonia	25	[22, 25]	25	[24, 26]	21	[18, 25]
Spain	26	[23, 27]	24	[21, 25]	35	[29, 35]
Cyprus	27	[23, 30]	30	[24, 33]	20	[20, 26]
Czech Republic	28	[26, 31]	27	[26, 31]	26	[25, 28]
Italy	29	[24, 29]	28	[26, 31]	29	[21, 30]
Slovenia	30	[28, 31]	29	[27, 30]	34	[27, 34]
Hungary	31	[30, 32]	36	[35, 40]	23	[19, 24]
Malaysia	32	[30, 36]	32	[26, 33]	30	[29, 44]
Latvia	33	[32, 34]	33	[29, 33]	37	[30, 38]
Portugal	34	[33, 35]	31	[29, 34]	39	[35, 41]
China	35	[33, 63]	46	[39, 58]	25	[24, 55]
Slovakia	36	[35, 38]	37	[36, 41]	45	[35, 45]
Croatia	37	[36, 39]	43	[40, 45]	41	[37, 41]
United Arab Emirates	38	[36, 63]	26	[26, 36]	81	[60, 107]
Costa Rica	39	[37, 46]	66	[55, 70]	31	[30, 41]
Lithuania	40	[36, 43]	35	[34, 38]	56	[40, 57]
Bulgaria	41	[38, 43]	50	[46, 53]	38	[36, 39]
Saudi Arabia	42	[40, 68]	44	[40, 52]	44	[42, 79]
Qatar	43	[41, 53]	38	[37, 45]	52	[48, 67]
Montenegro	44	[34, 46]	40	[35, 43]	50	[33, 53]
Moldova, Rep.	45	[40, 54]	76	[63, 77]	28	[27, 48]
Chile	46	[42, 47]	41	[40, 45]	48	[48, 53]
Barbados	47	[41, 50]	42	[32, 59]	49	[47, 56]
Romania	48	[40, 49]	55	[51, 60]	40	[33, 41]
Poland	49	[37, 49]	39	[36, 40]	64	[39, 65]
Kuwait	50	[44, 60]	74	[66, 78]	36	[34, 52]
TFYR of Macedonia	51	[50, 53]	48	[47, 55]	66	[53, 69]
Uruguay	52	[48, 59]	64	[58, 72]	46	[46, 55]
Mauritius	53	[51, 71]	60	[47, 78]	57	[52, 71]
Serbia	54	[47, 57]	63	[56, 67]	51	[45, 57]
Greece	55	[44, 60]	45	[42, 53]	82	[45, 81]
Argentina	56	[52, 62]	78	[66, 84]	43	[42, 49]
Thailand	57	[51, 65]	57	[49, 62]	61	[57, 69]
South Africa	58	[53, 67]	51	[41, 68]	71	[69, 75]
Armenia	59	[55, 64]	71	[66, 79]	47	[46, 55]
Colombia	60	[53, 61]	59	[51, 62]	65	[56, 65]
Jordan	61	[57, 77]	61	[56, 76]	63	[60, 88]
Russian Federation	62	[43, 62]	52	[46, 60]	72	[43, 74]
Mexico	63	[62, 70]	68	[60, 70]	60	[60, 73]
Brazil	64	[58, 68]	67	[58, 80]	68	[56, 69]
Bosnia and Herzegovina	65	[59, 68]	58	[51, 71]	78	[58, 81]
India	66	[64, 89]	87	[87, 106]	42	[42, 74]
Bahrain	67	[52, 70]	47	[44, 52]	90	[63, 93]
Turkey	68	[61, 71]	81	[78, 87]	53	[49, 54]
Peru	69	[67, 80]	70	[61, 79]	70	[71, 93]
Tunisia	70	[69, 95]	80	[71, 83]	59	[57, 112]
Ukraine	71	[50, 74]	83	[75, 85]	58	[42, 59]

Table 3: GII 2013 and Input/Output Sub-Indices: Ranks and 90% confidence intervals *(continued)*

	GII 2013		Input Sub-Index		Output Sub-Index	
Country/Economy	Rank	Interval	Rank	Interval	Rank	Interval
Mongolia	72	[56, 76]	49	[44, 54]	93	[67, 101]
Georgia	73	[64, 75]	62	[58, 78]	83	[63, 84]
Brunei Darussalam	74	[65, 79]	54	[46, 61]	89	[79, 104]
Lebanon	75	[71, 80]	56	[51, 76]	88	[83, 91]
Viet Nam	76	[70, 84]	89	[85, 96]	54	[50, 66]
Belarus	77	[70, 79]	75	[65, 80]	79	[70, 83]
Guyana	78	[74, 84]	94	[87, 113]	55	[53, 64]
Dominican Republic	79	[80, 99]	93	[90, 101]	69	[68, 102]
Oman	80	[76, 85]	53	[51, 63]	111	[103, 113]
Trinidad and Tobago	81	[78, 86]	82	[78, 84]	87	[83, 91]
Jamaica	82	[82, 94]	85	[77, 92]	84	[85, 103]
Ecuador	83	[80, 94]	100	[90, 107]	67	[67, 82]
Kazakhstan	84	[73, 85]	69	[61, 71]	106	[82, 106]
Indonesia	85	[82, 116]	115	[104, 125]	62	[62, 109]
Panama	86	[72, 110]	73	[65, 82]	108	[88, 123]
Guatemala	87	[87, 101]	91	[88, 102]	91	[89, 105]
El Salvador	88	[87, 101]	88	[86, 98]	96	[87, 110]
Uganda	89	[90, 122]	109	[103, 117]	75	[74, 129]
Philippines	90	[85, 99]	108	[103, 118]	77	[73, 80]
Botswana	91	[74, 98]	65	[51, 71]	125	[102, 128]
Morocco	92	[89, 96]	90	[86, 101]	99	[92, 101]
Albania	93	[79, 98]	77	[72, 84]	118	[83, 118]
Ghana	94	[89, 115]	99	[89, 105]	95	[88, 119]
Bolivia, Plurinational St.	95	[88, 107]	106	[95, 116]	86	[85, 106]
Senegal	96	[94, 118]	116	[107, 117]	80	[78, 120]
Fiji	97	[77, 109]	72	[60, 83]	129	[88, 129]
Sri Lanka	98	[89, 112]	118	[110, 125]	76	[72, 99]
Kenya	99	[95, 111]	98	[87, 108]	100	[94, 116]
Paraguay	100	[86, 101]	104	[100, 105]	94	[76, 96]
Tajikistan	101	[96, 108]	113	[109, 126]	85	[76, 94]
Belize	102	[37, 102]	95	[79, 103]	102	[25, 106]
Cape Verde	103	[93, 112]	84	[78, 94]	122	[99, 129]
Swaziland	104	[96, 111]	124	[99, 140]	74	[69, 96]
Azerbaijan	105	[100, 111]	92	[90, 99]	114	[111, 120]
Mali	106	[103, 140]	132	[128, 137]	73	[67, 108]
Honduras	107	[95, 107]	96	[88, 99]	115	[98, 117]
Egypt	108	[100, 117]	101	[88, 112]	112	[112, 119]
Namibia	109	[84, 123]	79	[63, 84]	134	[105, 135]
Cambodia	110	[106, 128]	120	[118, 129]	101	[97, 123]
Gabon	111	[104, 117]	117	[107, 118]	104	[103, 117]
Rwanda	112	[111, 132]	102	[88, 114]	121	[119, 138]
Iran, Islamic Rep.	113	[104, 117]	107	[97, 122]	120	[98, 121]
Venezuela, Bolivarian Rep.	114	[102, 123]	134	[117, 141]	92	[74, 96]
Nicaragua	115	[96, 129]	103	[89, 112]	128	[106, 130]
Burkina Faso	116	[112, 133]	119	[107, 125]	109	[105, 137]
Kyrgyzstan	117	[108, 118]	97	[90, 101]	133	[118, 133]
Zambia	118	[115, 131]	128	[120, 139]	103	[98, 131]
Malawi	119	[115, 138]	125	[115, 134]	105	[100, 140]
Nigeria	120	[117, 141]	137	[133, 138]	97	[97, 141]
Mozambique	121	[116, 134]	111	[102, 119]	124	[119, 137]
Gambia	122	[108, 124]	127	[122, 135]	107	[81, 108]
Tanzania, United Rep.	123	[118, 134]	110	[104, 118]	127	[121, 139]
Lesotho	124	[81, 124]	86	[74, 95]	136	[86, 136]
Cameroon	125	[116, 134]	131	[123, 133]	110	[110, 126]
Guinea	126	[93, 126]	139	[134, 141]	98	[60, 99]
Benin	127	[125, 132]	121	[117, 128]	130	[127, 134]
Nepal	128	[115, 129]	129	[123, 129]	123	[109, 125]
Ethiopia	129	[126, 142]	126	[123, 133]	126	[122, 142]
Bangladesh	130	[124, 135]	135	[132, 137]	119	[111, 123]
Niger	131	[103, 133]	130	[111, 131]	131	[95, 132]
Zimbabwe	132	[130, 139]	138	[132, 142]	116	[114, 122]
Uzbekistan	133	[126, 140]	114	[106, 127]	138	[130, 141]
Syrian Arab Republic	134	[122, 140]	105	[99, 117]	140	[127, 141]
Angola	135	[120, 139]	140	[137, 141]	117	[94, 118]
Côte d'Ivoire	136	[134, 140]	133	[126, 134]	132	[131, 141]
Pakistan	137	[124, 140]	142	[140, 142]	113	[110, 116]
Algeria	138	[119, 139]	112	[105, 118]	141	[124, 141]
Togo	139	[101, 139]	122	[119, 127]	137	[80, 138]
Madagascar	140	[133, 140]	123	[119, 130]	135	[133, 137]
Sudan	141	[137, 142]	136	[124, 140]	142	[126, 142]
Yemen	142	[136, 142]	141	[137, 142]	139	[125, 140]

Source: Saisana and Philippas, European Commission Joint Research Centre, 2013.

Figure 2c: Robustness analysis (Output rank vs. median rank, 90% confidence intervals)



Source: Saisana and Philippas, European Commission Joint Research Centre, 2013.
Note: The Spearman rank correlation between the median rank and the Output rank is 0.964. Median ranks and intervals are calculated over 4,000 simulated scenarios combining different sets of weights, imputed versus non imputed (missing) values and geometric versus arithmetic average at the pillar level.

for the Output Sub-Index, then for the GII, and least for the Input Sub-index. For example, in one case, a country improves by three positions in the Output Sub-Index ranking if a geometric aggregation is applied, although it is found to improve by 36 positions if EM imputation is applied. If both assumptions are changed with fixed (equal) pillar weights, the impact of the imputation is moderated (to a 19-position improvement). This sensitivity is the result of data availability, a factor that impacted the uncertainty analysis as well and that propagates from the Output Sub-Index to the estimation of the overall GII.

A recommendation for the future would be to apply the 63% criterion for data availability within each of the two sub-indices. For this year, drawing upon the analysis made by the JRC, the recommendation is to consider country ranks in the GII 2013 and in the Input and Output Sub-Indices not only at face value but also within the 90% confidence intervals in order to better appreciate to what degree a country rank depends on the modelling choices.

Distance to the efficient frontier in the GII by data envelopment analysis

Several innovation-related policy issues at the national level entail an intricate balance between global priorities and country-specific strategies. Comparing the multi-dimensional performance on innovation by subjecting countries to a fixed and common set of weights may prevent acceptance of an innovation index on the grounds that a given weighting scheme might not be fair to a particular country. An appealing feature of the more recent DEA literature applied in real decision-making settings is that it allows for the determination of endogenous weights that maximize the overall score of each decision-making unit given a set of other observations.

In this section, the assumption of fixed pillar weights common to all countries is relaxed once more; this time country-specific weights that maximize a country's score are determined endogenously by DEA.[11] In theory, each country is free to decide on the relative contribution of each pillar to its score so as to achieve the best possible score in a computation that reflects its innovation strategy. In practice, the DEA method assigns a higher (lower) contribution to those pillars in which a country is relatively strong (weak). Reasonable constraints on the weights are assumed to preclude the possibility of a country achieving a perfect score by assigning a zero weight to weak pillars: for each country, the share of

Figure 3a: Sensitivity analysis: Impact of modelling choices
(Imputation)

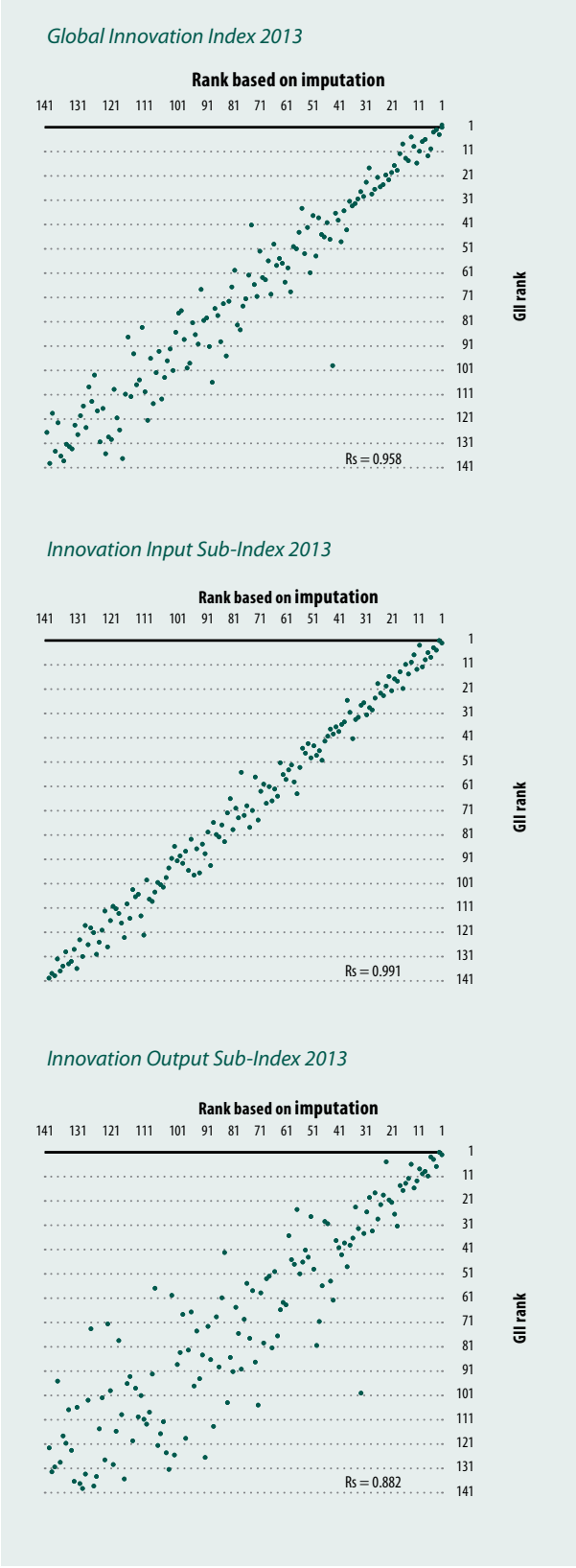
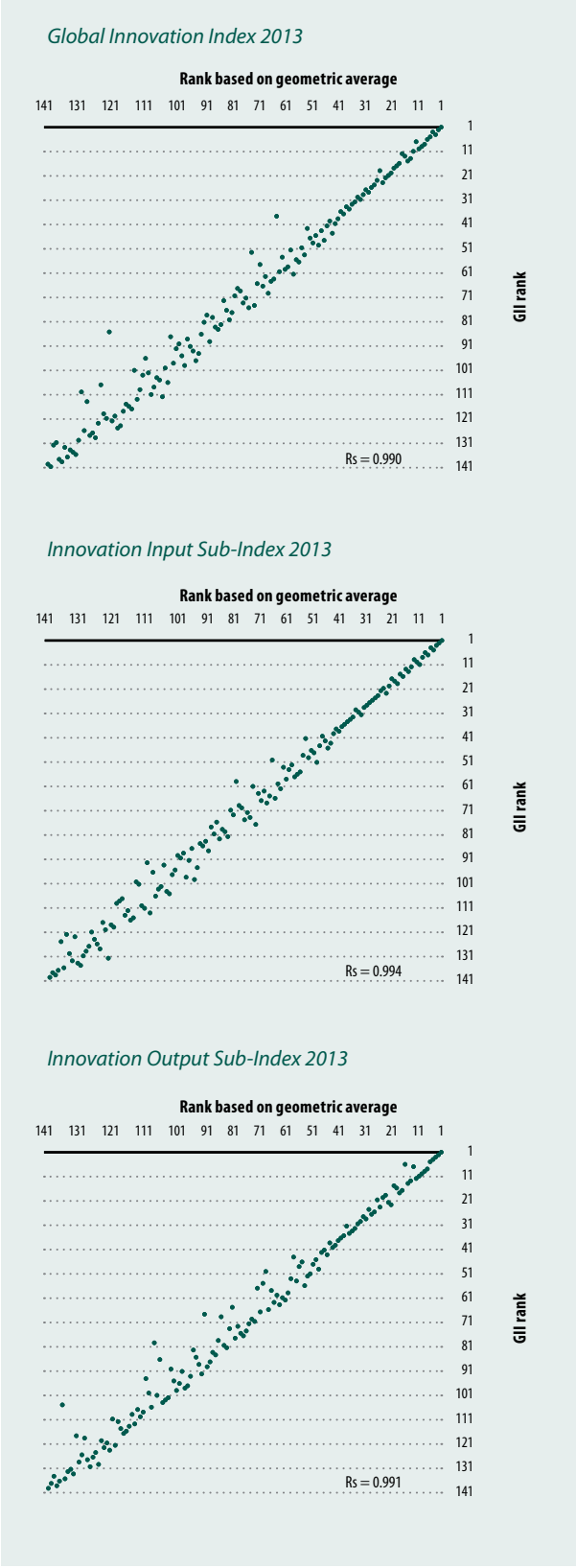


Figure 3b: Sensitivity analysis: Impact of modelling choices
(Geometric average)



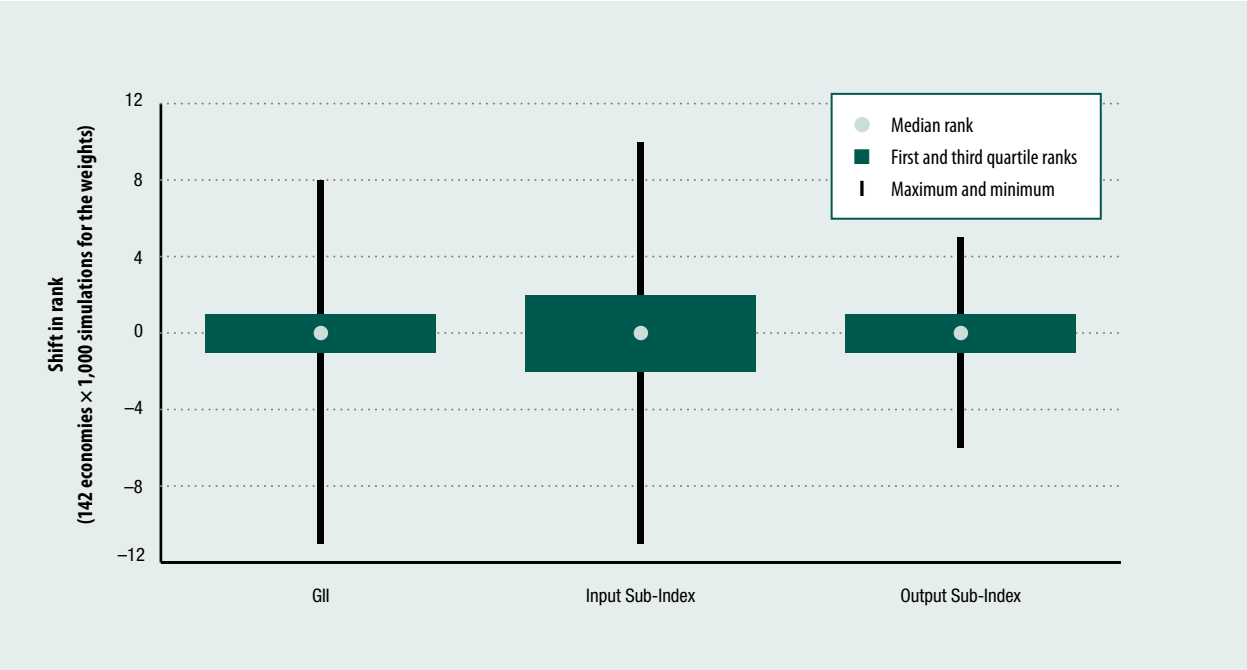
Source: Saisana and Philippas, European Commission Joint Research Centre, 2013.
Note: Rs = Spearman rank correlation; imputation based on expectation-maximization algorithm.

Table 4: Sensitivity analysis: Impact of modelling choices on countries with the most sensitive ranks

Index or Sub-Index	Uncertainty tested (pillar level only)	Number of countries that *improve* by 20 or more positions	Number of countries that *deteriorate* by 20 or more positions
GII	Geometric vs. arithmetic average	0	2
	EM imputation vs. no imputation of missing data	6	7
	Geometric average and EM imputation vs. arithmetic average and missing values	2	0
Input Sub-Index	Geometric vs. arithmetic average	0	0
	EM imputation vs. no imputation of missing data	1	0
	Geometric average and EM imputation vs. arithmetic average and missing values	0	0
Output Sub-Index	Geometric vs. arithmetic average	0	2
	EM imputation vs. no imputation of missing data	19	19
	Geometric average and EM imputation vs. arithmetic average and missing values	4	7

Source: Saisana and Philippas, European Commission Joint Research Centre, 2013.

Figure 4: Sensitivity analysis: Impact of random vs. fixed weights on the GII, Input, and Output Sub-Indices



Source: Saisana and Philippas, European Commission Joint Research Centre, 2013.

Table 5: Pie shares and distance to the efficient frontier: Top 10 economies in the GII 2013

Economy	DEA efficiency	Institutions	Human capital and research	Infrastructure	Market sophistication	Business sophistication	Knowledge and technology outputs	Creative outputs
Switzerland	1.00	0.06	0.18	0.11	0.08	0.19	0.19	0.19
Singapore	1.00	0.12	0.19	0.19	0.10	0.20	0.14	0.05
Hong Kong (China)	1.00	0.20	0.05	0.20	0.20	0.19	0.05	0.12
Sweden	1.00	0.20	0.20	0.20	0.17	0.05	0.13	0.05
United States of America	0.99	0.12	0.20	0.05	0.20	0.18	0.20	0.05
United Kingdom	0.99	0.20	0.20	0.20	0.20	0.05	0.06	0.09
Finland	0.98	0.20	0.20	0.20	0.05	0.11	0.19	0.05
Denmark	0.96	0.20	0.20	0.20	0.20	0.05	0.06	0.09
Ireland	0.95	0.20	0.20	0.05	0.20	0.12	0.18	0.05
Netherlands	0.95	0.20	0.12	0.20	0.05	0.20	0.05	0.18

Source: Saisana and Philippas, European Commission Joint Research Centre, 2013.
Note: The 10 economies that achieved the highest DEA scores are the same economies in the top 10 in the GII. Pie shares are in absolute terms, bounded by 0.05 and 0.20.

each pillar score (i.e., the pillar score multiplied by the DEA weight over the total score) has upper and lower bounds of 5% and 20%, respectively. The DEA score is then measured as the weighted average of all seven pillar scores, where the weights are the country-specific DEA weights, compared with the best performance among all other countries with those same weights. The DEA score can be interpreted as a measure of the 'distance to the efficient frontier'.

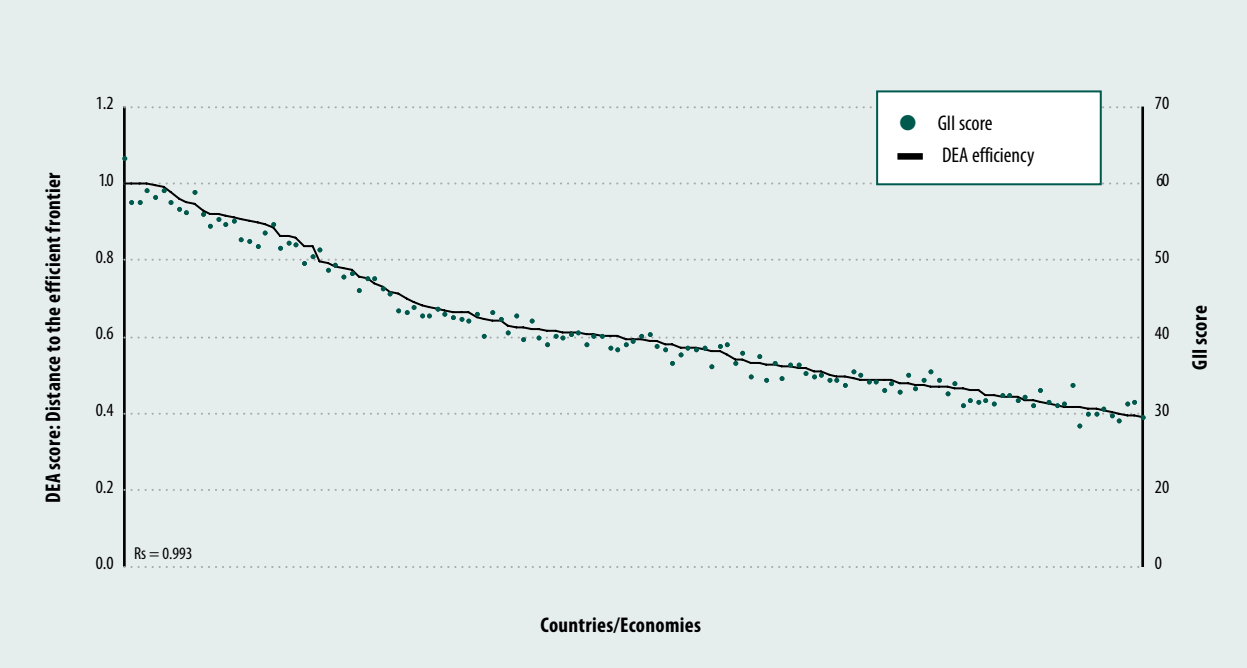
Table 5 presents the pie shares and DEA scores for the top 10 economies next to their GII scores. All pie shares are determined in accordance with a starting point that grants leeway to each country when assigning shares while not violating the (relative) upper and lower bounds. The pie shares are quite diverse, reflecting the different national innovation strategies. For example, Switzerland assigns 19% of its DEA score to Creative outputs, while the same pillar accounts for no more than 5% of Sweden's DEA score. Four of the top 10 economies assign the maximum allowed, 20%, to Institutions, Human capital and research, and Infrastructure. Four economies—Switzerland, Sweden, Hong Kong (China), and Singapore—reach a perfect DEA score of 1. Figure 5 shows how close the DEA scores and the GII 2013 scores are for all 142 economies (correlation of 0.993).[12]

Conclusion

The JRC analysis suggests that the conceptualized multi-level structure of the GII 2013 is statistically coherent and balanced (i.e., not dominated by any pillar or sub-pillar). Furthermore, the analysis has offered statistical justification for the weights and the use of arithmetic averaging at the various levels of aggregation. Together with other fine-tuning suggestions made in the sections above, a key recommendation for future years is to apply the data coverage criterion for countries' inclusion not at the overall GII level, as currently done, but within each of the two Innovation Sub-Indices. Furthermore, the 'no imputation' choice for not treating missing values, common in relevant contexts, as justified on grounds of transparency and replicability, can at times have undesirable impact on aggregate scores, with the additional negative side-effect that it may encourage countries not to report low data values. Finally, this year's choice of the GII team to use weights as scaling coefficients during the development of the index (as in the GII 2012) constitutes a significant departure from the traditional vision of weights as a reflection of indicators' importance in a weighted average. It is hoped that such a consideration will also be made by other developers of composite indicators. The 'distance to the efficient frontier' measure calculated with DEA scores could substitute for the Innovation Efficiency Ratio as a measure of efficiency, even if it is conceptually closer to the GII score than to the Efficiency Ratio.

Overall, the country/economy ranks of the GII and its sub-indices are fairly robust to methodological assumptions related to the estimation of missing data, weighting, and aggregation formula, without being redundant (four or fewer position shifts for 88 out of 142 countries).

Figure 5: GII 2013 scores and DEA 'distance to the efficient frontier' scores



Source: Saisana and Philippas, European Commission Joint Research Centre, 2013.

Consequently, inferences can be drawn for most economies in the GII, although some caution may be needed for a few. Note that perfect robustness would have been undesirable as this would have implied that the GII components are perfectly correlated and hence redundant, which is not the case for the GII 2013.

Notes

1 The JRC analysis was based on the recommendations of the OECD (2008) *Handbook on Composite Indicators,* and on more recent research from the JRC. The JRC auditing studies of composite indicators are available at http://composite-indicators.jrc.ec.europa.eu/; all audits were carried upon request of the index developers.

2 Groeneveld and Meeden (1984) set the criteria for absolute skewness above 1 and kurtosis above 3.5. The skewness criterion was relaxed to account for the small sample (142 countries).

3 When analyzing the statistical coherence of a framework, highly collinear indicators may dominate the aggregate scores. This problem is also taken care of by weights taken as 'scaling coefficients'. Only four cases of strong collinearity (i.e., Pearson correlation coefficients greater than ~ 0.92) were spotted within the same sub-pillar: 1.2.1 with 1.2.2, 3.1.1 with 3.1.2, 3.2.1 with 3.2.2, and 7.1.3 with 7.1.4. Indicators 1.2.1, 1.2.2, 3.2.1, and 3.2.2 were assigned half weights because of their high correlation with the sub-pillar score; while 3.1.1, 3.1.2, 7.1.3, and 7.1.4 were not treated, this was found not to bias the results of the respective sub-pillars 3.1 and 7.1.

4 Principal component analysis was applied to the GII dataset after treating pairs of highly collinear variables as a single indicator.

5 In GII 2012, the first principal component captured from 57% (Business sophistication) up to 80% (Institutions) of the total variance in the three underlying sub-pillars, while for the seventh pillar (Creative outputs) two principal components with eigenvalues greater than 1.0 were identified (in that case, the first component captured 56% of the variance of the three underlying sub-pillars).

6 Saisana, Saltelli, and Tarantola, 2005; Saisana et al., 2011.

7 The prior ranges are then rescaled to unity sum leading to posterior ranges of 5%–15% for the input pillar weights and 20%–30% for the output pillar weights. The ratio of the sum of the five Input pillar weights to the sum of the two pillar weights ranges between 0.77 and 1.39.

8 With arithmetic average, the 'no imputation' choice is equivalent to replacing missing values with the average of the available (normalized) data within each sub-pillar.

9 The Expectation-Maximization (EM) algorithm (Little and Rubin, 2002) is an iterative procedure that finds the maximum likelihood estimates of the parameter vector by repeating two steps: (1) The expectation E-step: Given a set of parameter estimates, such as a mean vector and covariance matrix for a multivariate normal distribution, the E-step calculates the conditional expectation of the complete-data log likelihood given the observed data and the parameter estimates. (2) The maximization M-step: Given a complete-data log likelihood, the M-step finds the parameter estimates to maximize the complete-data log likelihood from the E-step. The two steps are iterated until the iterations converge.

10 In the geometric average, pillars are multiplied as opposed to summed in the arithmetic average. Pillar weights appear as exponents in the multiplication. All pillar scores were greater than 1.0, so there was no reason to rescale them to avoid zero values that would have led to zero geometric averages.

11 The original question in the DEA-literature was how to measure each unit's relative efficiency in production compared to a sample of peers, given observations on input and output quantities and, often, no reliable information on prices (Charnes and Cooper, 1985). A notable difference between the original DEA question and the one applied here is that no differentiation between inputs and outputs is made (Melyn and Moesen, 1991; Cherchye et al., 2008). To estimate the DEA-based distance to the efficient frontier scores, we consider the $m = 7$ pillars in the GII 2013 for $n = 142$ countries, with y_j the value of pillar j in country i. The objective is to combine the pillar scores per country into a single number, calculated as the weighted average of the m pillars, where w_j represents the weight of the ith pillar. In the absence of reliable information about the true weights, the weights that maximize the DEA-based scores are endogenously determined. This gives the following linear programming problem for each country j:

$$Y_i = \max_{wij} \frac{\sum_{j=1}^{7} y_{ij} w_{ij}}{\max_{y_i \in \{dataset\}} \sum_{j=1}^{7} y_{ij} w_{ij}} \qquad \text{(bounding constraint)}$$

Subject to

$$w_{ij} \geqq 0, \text{ where } j = 1, \ldots, 7, \; i = 1, \ldots, 142 \qquad \text{(non-negativity constraint)}$$

In this basic programming problem, the weights are non-negative and a country's score is between 0 (worst) and 1 (best).

12 Of these, only Switzerland achieved a 1.0 score in the Innovation Efficiency Ratio, calculated as the ratio of the Output Sub-Index over the Input Sub-Index. The Efficiency Ratio and the DEA score embody very different concepts of efficiency, leading to completely different results and insights. A high score in the Innovation Efficiency Ratio is obtained by scoring higher on the Output Sub-Index than on the Input Sub-Index, irrespective of the actual scores in these two Sub-Indices. A high score in the DEA score can be obtained by having comparative advantages on several GII pillars (irrespective of these being input or output pillars). The DEA scores are therefore closer to the GII scores than to the Innovation Efficiency Ratio.

References

Charnes, A., and W. W. Cooper. 1985. 'Preface to Topics in Data Envelopment Analysis'. *Annals of Operations Research* 2: 59–94.

Cherchye, L., W. Moesen, N. Rogge, T. Van Puyenbroeck, M. Saisana, A. Saltelli, R. Liska, and S. Tarantola. 2008. 'Creating Composite Indicators with DEA and Robustness Analysis: The Case of the Technology Achievement Index'. *Journal of Operational Research Society* 59: 239–51.

Groeneveld, R. A. and G. Meeden. 1984. 'Measuring Skewness and Kurtosis'. *The Statistician* 33: 391–99.

Little, R. J. A. and D. B. Rubin. 2002. *Statistical Analysis with Missing Data.* 2nd edition. Hoboken, NJ: John Wiley & Sons, Inc.

Melyn, W. and W. Moesen. 1991. 'Towards a Synthetic Indicator of Macroeconomic Performance: Unequal Weighting when Limited Information is Available'. *Public Economics Research Paper* No. 17. Leuven: Centre for Economic Studies.

Munda, G. 2008. *Social Multi-Criteria Evaluation for a Sustainable Economy.* Berlin Heidelberg: Springer-Verlag.

OECD/EC JRC (Organisation for Economic Co-operation and Development/European Commission Joint Research Centre). 2008. *Handbook on Constructing Composite Indicators: Methodology and User Guide.* Paris: OECD.

Paruolo, P., M. Saisana, and A. Saltelli. 2013. 'Ratings and Rankings: Voodoo or Science?' *Journal of the Royal Statistical Society* A 176 (3): 609–34. doi: 0964–1998/13/176000

Saisana, M., B. D'Hombres, and A. Saltelli. 2011. 'Rickety Numbers: Volatility of University Rankings and Policy Implications'. *Research Policy* 40: 165–77.

Saisana, M., A. Saltelli, and S. Tarantola. 2005. 'Uncertainty and Sensitivity Analysis Techniques as Tools for the Analysis and Validation of Composite Indicators'. *Journal of the Royal Statistical Society* A 168 (2): 307–23.

Saltelli, A., M., Ratto, T. Andres, F. Campolongo, J. Cariboni, D. Gatelli, M. Saisana, and S. Tarantola. 2008. *Global Sensitivity Analysis: The Primer.* Chichester, England: John Wiley & Sons.

The Evolving Geography of Innovation: A Territorial Perspective

Annalisa Primi, OECD Development Centre

The theme of the 2013 edition of the *Global Innovation Index* report could not have been chosen at a more timely moment. The global economic landscape is changing rapidly. After the 2008 economic and financial crisis, innovation is viewed as central to building stronger, cleaner, and more inclusive economies capable of offering better jobs.[1] In this new innovation agenda, regions and territories are becoming central actors.[2] Local innovation systems are facing more pressure to stay competitive and to preserve or create their leadership. At the same time, regional and local governments are increasingly involved in innovation policy planning and financing.[3] These trends are not confined to countries in the European Union (EU) and Organisation for Economic Co-operation and Development (OECD). They are happening also in emerging economies, including Brazil, China, and India. In addition, regions in these countries differ not only in their natural endowments, history, and culture, but their populations are often larger than entire European countries. Therefore the management of their local innovation systems requires special attention.

Despite the acknowledged increasing relevance of the territorial dimension of innovation and growth, few international comparable indicators are available to measure and benchmark innovation at the local level (see Chapter 3). If measuring innovation is an evolving agenda with many goals to be reached, mapping innovation at the territorial level is an even greater challenge.[4] Our capacity to measure local innovation dynamics has improved in the last decades,[5] but more effort is needed to improve our understanding of innovation and to provide better insights for policy making at the global level.

This chapter focuses on identifying top global innovation hotspots by using a set of different indicators. It presents evidence on (1) traditional, technology-based indicators, including research and development (R&D) and patenting; (2) the origin and direction of knowledge-intensive foreign direct investment (FDI); and (3) the ranking of the world's top local start-up systems. These indicators offer a panorama of global innovation hotspots at different territorial scales, including regions, cities, and 'local innovation systems'. This focus is not only the result of data availability, but it is also a deliberate choice. All territorial scales are relevant, but to different extents, depending on the country and the innovation aspect being measured. These indicators measure different aspects of innovation and have been chosen for a variety of reasons. Some, such as R&D and patenting, are commonly included in innovation analyses at the country level; it is therefore interesting to examine if and how the picture changes when we shift to the territorial dimension. Others, such as knowledge-intensive FDI and local start-up systems, are related to emerging trends in innovation that have recently begun to be measured at the local level. Finally, these indicators are all relevant for policy making since national and regional innovation policies are establishing incentives and influencing regional and local innovation dynamics, both in OECD countries and in emerging economies.

The evidence presented in this chapter shows that (1) the 'spikiness' of innovation tends to persist—few places (whether regions, cities, or local systems) concentrate innovation assets, capabilities, and financing; (2) new innovation hotspots are emerging in China and in other developing economies; and (3) local innovation systems are increasingly 'internationalized', meaning that their interaction with other regions and cities is growing, with respect both to collaboration for innovation and to business organization (this is demonstrated by the new trends in destination and origin of knowledge-intensive FDI).

The opinions expressed in this chapter are those of the author and do not necessarily reflect those of the Organisation for Economic Co-operation and Development. The author is grateful to Sacha Wunsch-Vincent for his comments on a previous version of this chapter. Ivan Landabaso and Alsino Skowronnek provided statistical support.

Territorial concentration of technological innovation and heterogeneity in regional approaches to innovation

The geography of innovation is not flat. Certain places, weather regions, cities, or local clusters tend to agglomerate specific competences, including scientific and technical knowledge as well as entrepreneurial capabilities and finance; these stand out as the world's top innovation hotspots. Both R&D and patenting are highly concentrated in few hotspots in the OECD. According to OECD estimates, around 10% of OECD regions account for 30% of total OECD R&D expenditure and for more than 50% of total OECD patent applications.[6]

Heterogeneity in regional R&D investment within countries

Top world R&D investing countries host top world R&D investing regions. The top region for R&D in the OECD is New Mexico (United States of America, or USA). This state devotes more than 7% of its GDP to R&D, followed by Massachusetts (USA), which invests slightly less than 7% of its GDP in R&D. In the same year, 2007, the average OECD expenditure on R&D as a percentage of GDP was 2.3%. Pohjois-Suomi (Finland), Hovedstaden (Denmark), Sydsverige (Sweden), and Chungcheong (Republic of Korea) follow, each region investing more than 5% of its regional GDP in R&D. In general, countries that invest the most in R&D show quite a high heterogeneity between regions in terms of R&D intensity—that is, R&D is concentrated in one or two regions within the country (Figure 1).

The distribution of R&D expenditures within countries is determined by the institutional, geographic, and economic setting of each country. For example, among top R&D investing countries, we find different patterns. In the USA and in Germany, the top R&D investing regions—California and Baden-Württemberg—account, respectively, for 21% and 25% of total country investments in R&D. In Finland and the Republic of Korea, the top regions—Etela-Suomi and the Korean Capital Region—account for 55% and 63% of total R&D expenditures.[7]

Territorial concentration of patent applications

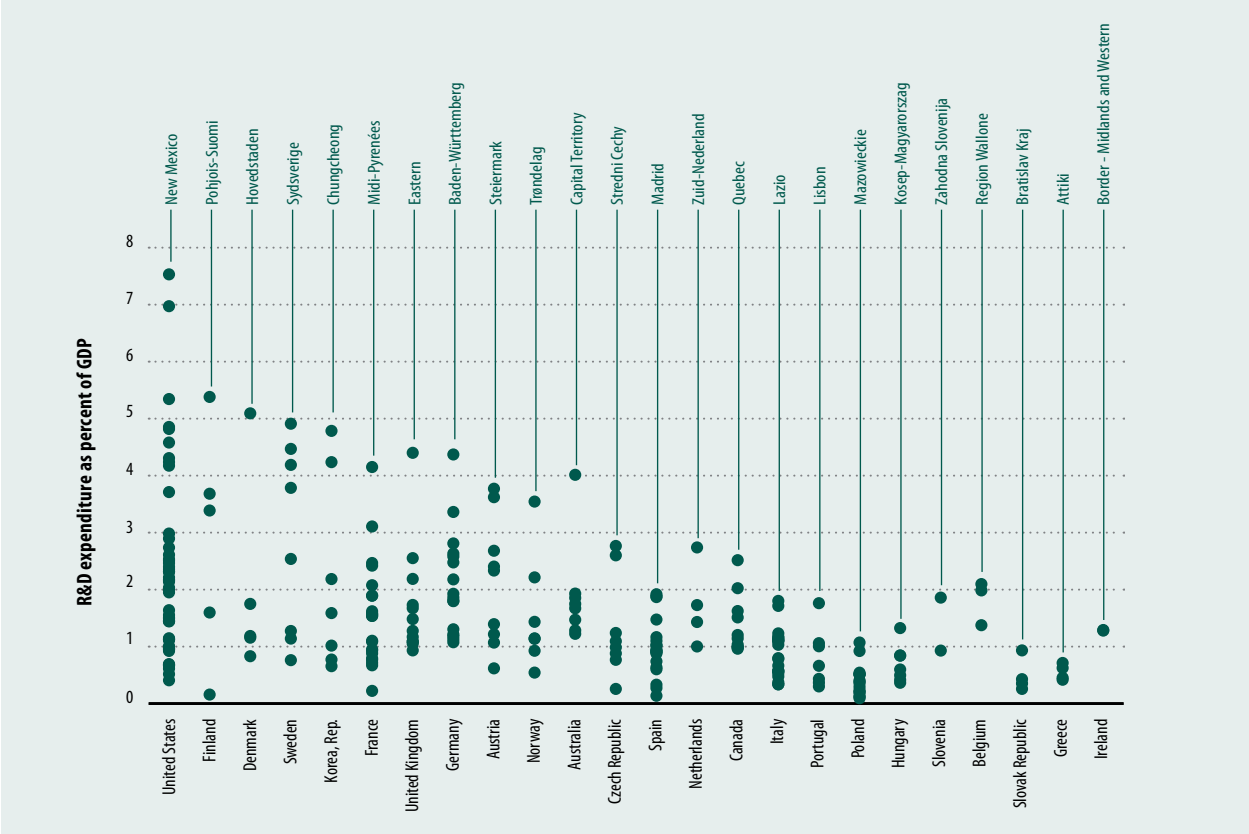
Looking at the world through the lenses of regional patenting reveals that innovation appears to be far from flat. The newly released OECD Regional Patent database shows that patenting via the World Intellectual Property Organization (WIPO)'s Patent Cooperation Treaty (PCT) is concentrated in a few regions across the world.[8] The top 20 patenting regions account for more than 50% of total world patent applications. Nine of these top 20 regions are from the USA, four are from Japan, three from Germany, and one each from France and the Netherlands. The Capital Region of Korea and Guangdong (China) have recently entered ranks of the world's top 20 patenting regions. They are noteworthy for their dynamism. The Korean Capital Region increased its share in total world patent applications from 1.4% in 2000–02 to 3.8% in 2008–10, and Guangdong's share rose from 0.1% to 3.5% in the same period (Figure 2).

Regions are also highly specialized with respect to innovation. For example, the top 10 patenting regions for information and communication technologies (ICTs) account for more than 50% of world patent applications in ICTs. The top three regions are Southern Kanto (Japan), California (USA), and Guangdong Province (China), accounting for 13%, 11%, and 6%, respectively, of world PCT applications in ICTs. In renewable energies, patenting is less concentrated: the top 10 patenting regions account for 36% of total world patent applications in this sector; the top three regions are California and the two Japanese regions of Southern Kanto and Kinki (Figure 3).

Variety of regional patent co-inventorship networks

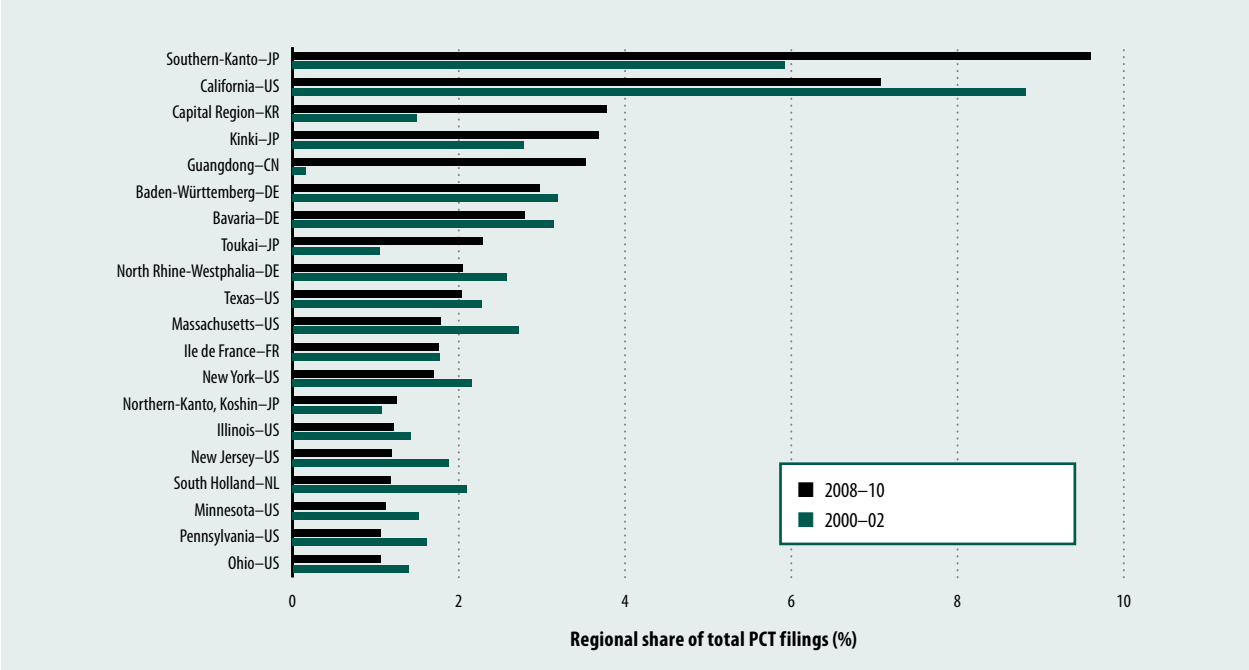
The regions that invest the most in R&D and account for most of the world's patent applications adopt different innovation modes. In fact, some rely more on networks than others. For instance, the propensity to carry out research with multiple inventors located in different regions varies across sectors and countries. The possibility that inventors located in one region may collaborate with others located elsewhere is shaped by several factors, including the institutional environment of the countries involved. In general, however, collaborations are increasingly important for innovation. In the telecommunication sector, the share of patents with at least two co-inventors located in two different regions increased from 7.9% in the late1970s to 16.2% in 2005–07. In this sector, California performs like a star; the share of patents applied for by residents of California with at least one co-inventor located in another region, in the USA or abroad, is around 24%, but the region has the world's widest network in terms of the geographic location of partners. Top patenting regions in telecommunications from Asian countries, on the contrary, tend to have less open collaboration patterns, both in terms of co-inventorship intensity and in terms of the variety regions with which they tend to co-invent.[9]

Figure 1: R&D investment by region, OECD countries (2007)



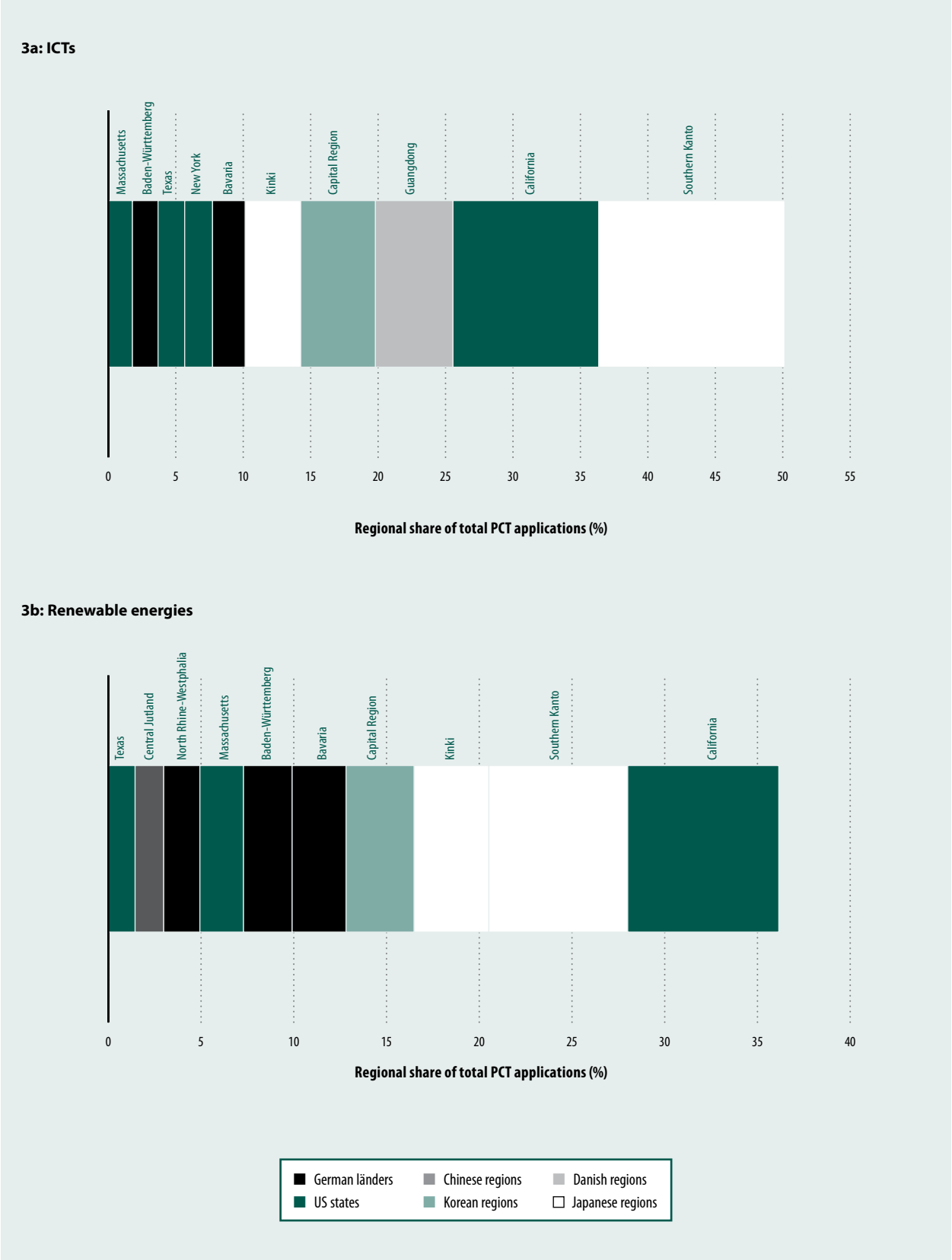
Source: OECD, 2011b.
Note: Data for France are for 2004; Australia for 2005; Canada and Korea, Rep. for 2006. Chile, Iceland, Japan, Mexico, New Zealand, Switzerland, and Turkey are not available at the regional level.

Figure 2: The world's top 20 regions by PCT patent applications, 2008–10



Source: Author's elaboration, based on the OECD REGPAT database, accessed January 2013.

Figure 3: The top 10 patenting regions in ICTs and renewable energies, 2008–10



Source: Author's elaboration, based on the OECD REGPAT database, accessed January 2013.

Collaboration modes also differ according to sectors. For instance, top patenting regions in telecommunications, biotechnology, and renewable energies exhibit different collaborative behaviours. Some inventors tend to apply for patents in collaboration with other inventors located outside their region, whereas others tend to co-invent mostly with inventors located in the same region. Ajmone-Marsan and Primi (2012) show that first-mover regions—that is, early patent leaders—tend to maintain their leadership over time, but there are opportunities for others to become local, national, or global hubs. An example of this growth is seen in the telecommunication sector: although California has maintained its leadership in telecommunications since the 1970s, the Chinese province of Guangdong has recently ranked among the top 20 world patenting regions in the field. National borders play an important role. Most top patenting regions show a high propensity to establish co-patenting collaborations within their own country rather than with foreign ones. This can be because of geographic proximity or scientific, linguistic, and cultural proximity, as well as for economic reasons.

New top destinations for knowledge-intensive FDI

The globalization of the world economy has brought about a growing internationalization at the regional level. Regions have increased their ties with foreign regions, both in terms of collaborations for innovation—as shown above by regional co-inventorship patterns—and in terms of new linkages deriving from the new forms of innovation organization; in fact, companies have started to delocalize research and design activities that had previously been kept in-house.[10] This unbundling of the production and innovation processes and the new knowledge-intensive FDI are contributing to the generation of new alliances among regions and cities located in different countries, especially in emerging economies. These new forms of FDI are targeting not only main regions and capital cities; more and more they are targeting new places characterized by growing domestic demand and/or by territorial clusters of scientific and knowledge capabilities. These new forms of FDI have primarily benefited those places that have implemented specific policies targeted to attract these types of investments, including cities in different countries, including Brazil, China, Costa Rica, India and the United Arab Emirates.

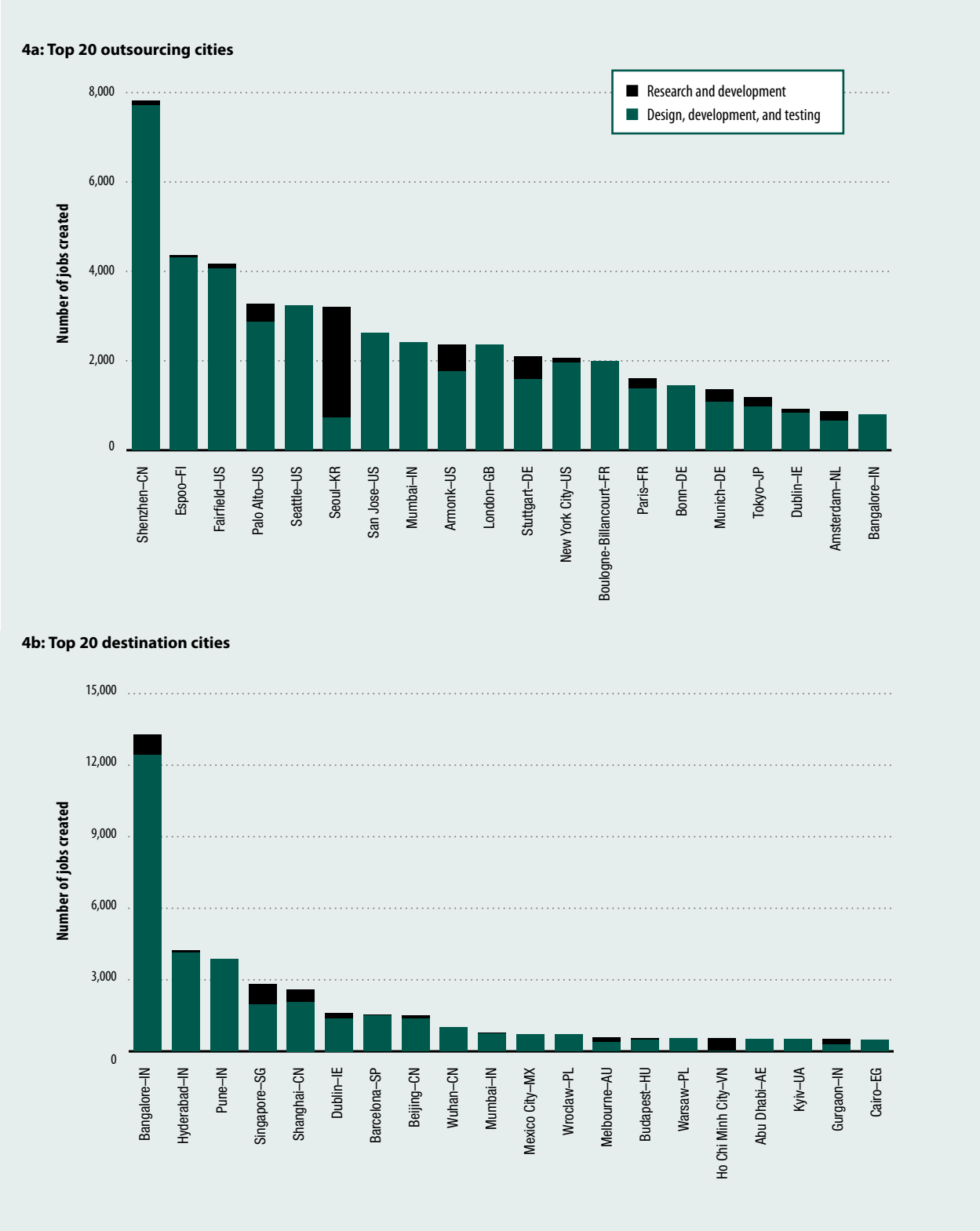
The fDi Market database collects information on greenfield investment projects. These data can be broken down to the city level.[11] According to this database, the top five cities for outsourcing innovative FDI activities in 2010–12, as measured by number of jobs created by greenfield investment projects, are Shenzhen (China); Espoo (Finland); and Fairfield, Palo Alto, and Seattle (USA). Seoul (Republic of Korea) ranks 6th, and has the peculiarity of outsourcing more R&D than design activities. Traditional European manufacturing sites, such as Boulogne Billancourt and Paris, also rank among the top 20 cities for outsourcing innovative activities (Figure 4a). Since the 2008 economic and financial crisis, innovative FDI has suffered of a sharp decrease. For example, the number of jobs created by greenfield FDI projects in design, testing, and R&D in the top recipient city decreased from 20,000 in 2005–07 to 13,000 in 2010–12, and from 1,500 to 500 in the 20th city in the rankings.[12] The cities that receive the most FDI inflows related to R&D and design are located in emerging economies. Only six out of the top 20 are from European countries; five are from India and three from China. The top five destinations for design, testing, and R&D are Bangalore, Hyderabad, and Pune in India; Singapore; and Shanghai in China (Figure 4b). Most of the jobs created are in design and testing, while a few are in R&D activities.

Emerging innovation hotspots in developing economies

The flourishing of new clusters of innovative start-ups in emerging economies is contributing to redefine the mapping of world innovation. Yet Silicon Valley is still the reference when thinking about a creative environment where knowledge-based firms flourish. In that environment, potential new entrepreneurs can easily make contact with a high-quality and vibrant science community, can interact with big and top innovative firms, and can have easy access to technologies and finance. Furthermore, the regulatory framework is business-friendly and less adverse to risk-taking than it is in other localities.[13] However, new innovative hotspots where technology-based entrepreneurs cluster together are beginning to appear in other regions. Israel, for instance, brands itself as the 'Start-up Nation'. But start-up hubs have begun to flourish in new places, including specific locations in Africa, Asia, and Latin America.

Several factors contribute to explain the emergence of clusters of start-ups in emerging economies. These include (1) the diffusion of ICTs that has opened new opportunities for knowledge exchange and innovation, making start-up companies a feasible business option in

Figure 4: Top 20 cities for knowledge-intensive FDI, 2010–12



Source: Author's elaboration on the basis of fDi Markets, a service from the Financial Times Ltd., 2013.

Note: 'Research and development' refers to projects that involve the discovery, design, or development of a product (e.g., a technical design centre). 'Design, development, and testing' refers to projects that involve the design, development, or testing of a product (e.g., a software company opening a development centre). To be included in the research & development category, a project must include pure (technical) research. The figure uses ISO-2 country codes: AE = United Arab Emirates; AU = Australia; CN = China; DE = Germany; EG = Egypt; ES = Spain; FI = Finland; Fr = France; GB = United Kingdom; HU = Hungary; IN = India; IE = Ireland; JP = Japan; KR = Korea, Rep. MX = Mexico; NL = Netherlands; PL = Poland; SG = Singapore; UA = Ukraine; VN = Viet Nam.

growing, developing economies; (2) high GDP growth in developing economies that has opened up new investment opportunities; and (3) the rise in the mobility of students and skilled workers, which has helped people from developing economies acquire professional skills in foreign universities and companies, thus contributing to the development of an entrepreneurial culture in their home countries.

Start-ups often develop in sectors related to ICTs. They therefore require adequate digital infrastructure (e.g., fast and reliable Internet access) as a precondition for their creation and expansion. For instance, according to the Forbes list of the top African start-ups,[14] in Africa, technology-based start-ups operate mostly in the software and telecommunication sectors; most of these new companies cluster in capital cities, are relatively young, and target the whole African continent as the principal market for their innovative services. The increasing relevance of start-ups and the growing interest of policy makers about if and how to promote them is generating an increasing demand to produce evidence about the conditions that determine the generation and evolution of new technology-based firms. Determining where the new global start-up hubs are and why they perform better in certain locations than in others is a topic of increasing relevance for both national and regional governments. Little international comparable evidence is available on this front, and more and better data are needed in this area to design better policies.

The Startup Genome, in partnership with Telefónica Digital, has carried out an interesting exercise in this respect. They have developed a Global Startup Ecosystem Index to rank territories with respect to their capacity to be conducive in the creation of new technology-based firms. Their analysis is based on data from more than 50,000 start-ups that use an online service to improve the strategic decision making of new businesses by providing benchmarks and technical recommendations. The index has eight components that measure the different characteristics of the local environment assumed to influence the development of start-ups: these are the critical mass of entrepreneurship activity in the region; the availability of funding for start-ups; average company performance; local mindset; the capacity to quickly adapt to changes; and the existence of mentorship and business services, local skills, and talents. It also includes a variable that measures the peculiarity of the local system (e.g., how different the system is from that of Silicon Valley) to take into account that the success of new innovative hotspots will be higher the more they are able to differentiate themselves from Silicon Valley and to create their own unique cluster of start-ups. The total index is then calculated using Silicon Valley as a benchmark to rank the performance of the other hotspots.

The index identifies 20 start-up ecosystems in the world, localized in 12 countries. Among these 20 ecosystems, five are from emerging markets, including Singapore, Moscow (Russian Federation), Bangalore (India), São Paulo (Brazil), and Santiago (Chile). Each local system has its own peculiarities. For example, São Paulo ranks in the middle for the availability of venture capital but falls short with respect to Silicon Valley for skills and expertise of start-up funders, while Moscow ranks in the middle for talent but has a pretty low score for the availability of funding (Figure 5). This index and its subcomponents face limitations, but it is a useful exercise that serves to enrich our mapping of innovation trends at the territorial level. In addition, this ranking exercise shows the potential of using new sources of information to generate comparable data on local innovation ecosystems.

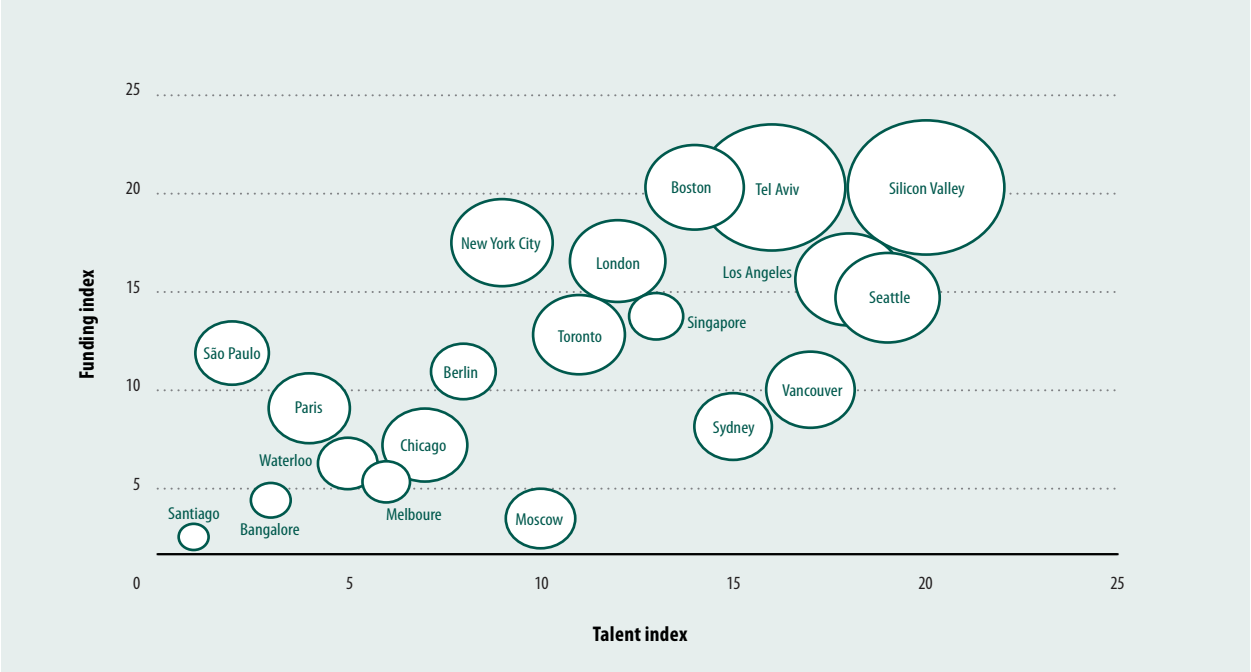
Conclusions: Some implications for measurement and policies

The geography of innovation is changing. The rise of emerging economies, the growing importance of networks and openness for innovation, and new forms of knowledge-intensive FDI are contributing to increase the relevance of the territorial dimension in the organization of economic activity. In addition, the search for new economic models that prioritize inclusive and sustainable growth is calling for new, and more active, roles for territories in policy design and implementation.

Today competition and business are global, but assets and capacities are local. Countries, regions, and cities are facing greater pressure to create and retain competences at the local level and to boost growth opportunities in a more balanced way within countries, especially in emerging economies. Only some places are increasingly connected to global innovation networks. Growth, production, and innovation are taking place in specific locations within countries while most of the territory still lags behind. This trend, if not counterbalanced by active policies, may create social tensions and undermine potential growth in the future.

Available regional innovation indicators show a changing geography of innovation characterized by (1) the persistence of the 'spikiness' of technological innovation,

Figure 5: Top world start-up ecosystems, 2012



Source: Author's elaboration, based on Telefónica Digital and Startup Genome, 2012.

Note: The bubble size indicates the positioning of each territory in the total ranking, where Silicon Valley ranks at the top (i.e., 20) and Santiago at the bottom (i.e., 1). In each index, Silicon Valley is assumed to be the reference and it ranks at the top (i.e., it scores 20). The funding index measures the availability of risk capital in each start-up ecosystem, while the talent index ranks the skills of the start-up founders in each territory, taking into account different variables including age, education, work experience, and industry domain expertise, among other factors.

with a few places concentrating most of global innovative capabilities and financing; (2) persistence in the leadership of traditional innovation hotspots, such as California, and the rise of new places for innovation in specific regions and cities in China and other emerging economies; and (3) a growing internationalization of innovative regions and cities.

The new evolving geography of innovation reaffirms the importance of territory. Competences and institutions tend to cluster in specific locations. Effective innovation policies recognize the local dimension of innovation and take it into account in policy design and implementation. This is even truer in the new global economic landscape where new, and different, innovation hotspots are emerging. For example, knowledge-intensive FDI does not spontaneously generate linkages with the local economy. Often, local innovation and production systems lag behind and face difficulties in providing critical inputs and services for international companies.

In parallel, foreign companies tend to show little interest in developing a network of local suppliers because the smaller local suppliers do not exhibit economies of scale, and because of trust and quality requirements on the part of the foreign companies. Regional and local governments can play a determinant role in fostering local innovation by promoting synergies between knowledge-intensive FDI and the local innovation system. For example, in the city of Porto Alegre in the state of Rio Grande do Sul in Brazil, the localization of an IBM design centre in the local technology park has contributed to increasing the brand-value of the park and to attracting other innovative companies to co-locate in the same site; matched with the national effort of creating national technology institutes in the different Brazilian states, this has helped to create a critical mass of innovative companies in the state. The creation of new innovative firms can contribute to the dynamism of a local production system. Their creation faces several barriers, and public policies can play a determinant role in helping to create the conditions that foster the development of start-ups. The experience of both OECD and non-OECD countries shows that policies can help by offering seed capital for the creation of these firms, as well as by providing incentives for the development of venture capital and angel investors. Policies can also facilitate access to soft and hard infrastructure and develop a business-friendly legal framework.[15]

History has also shown that success is not achieved by trying to

emulate or recreate the phenomenon of Silicon Valley, which is unique and shaped by multiple specific factors.[16] Successful cases are those that have identified their own local formula and created new forms of local innovation ecosystems. For this reason, venture capital is effective only when there is enough capital available to entrepreneurs in the earlier stages of their enterprises (i.e., seed and angel investors) and when measures to support the translation of ideas into business plans are in place. Many regions and cities in Latin America have recently established new instruments to promote the creation of start-ups. The province of Buenos Aires, for instance, offers financial support and business services to young entrepreneurs to initiate start-ups. In Colombia, the city of Bogotá has set up a new programme to attract foreign start-uppers to increase the dynamism of the local economy. In Brazil, various states—including Mina Gerais, São Paulo, and Rio Grande do Sul—are investing in promoting university spin-offs.[17] Although it is too soon to assess the impact of these incentives, improving the evidence about the performance and evolution of these new local start-up ecosystems would improve policy monitoring and increase policy impact.

As regions and cities become key units of analysis for innovation trends and policies, better metrics are needed to grasp the systemic dimension of innovation and the different characteristics that shape innovative dynamics at the local level. Measuring innovation at the country level, as the Global Innovation Index does, certainly remains an important, valid exercise. Innovation and innovation policies have—and will continue to have—a strong national dimension. Nevertheless, it is desirable to improve our capacity to measure innovation dynamics at the territorial level and to benchmark local innovation systems. Regions and local systems should not be considered smaller countries, and building metrics at the territorial level needs to take this into account.

Shifting to the territorial perspective entails at least two major challenges. First, it is important to define the appropriate territorial scale for comparison. Regions, cities, and functional regions can all be relevant depending on the aspect of innovation that we want to measure and on the geographic and institutional context of the country to which they belong. Second, the issue is not merely to 'territorialize' innovation indicators. The challenge is to develop measures that are appropriate to map innovation dynamics at the territorial level. While certain indicators—although debatable in their capacity to encompass all the complexity and the systemic dimension of innovation—are defendable and offer easy interpretations from a national point of view, this might not hold true at the local level. For instance, a higher level of patenting at the country level indicates, in general, a country with higher innovation capabilities. At the regional level, it is more likely that a difference in patenting performance reflects asymmetries in specialization patterns rather than in innovation strategies. In fact, at the territorial level, this indicator tends to be more appropriate to benchmark territories with a similar technological specialization profile.

There are no easy solutions that can take into account territorial metrics in national rankings. Identifying the characteristics for the local level that make one national innovation system outperform others is not straightforward. Some countries, like Germany and the USA, rank high in national indicators and rely on multi-innovative hub systems; others are more centralized, like Finland and the Republic of Korea. Historically, two trends have emerged as positive for catching up in innovation trajectories: (1) the capacity to create new competencies and assets in localities that were not naturally endowed with them; and (2) the generation of systems based on networks and interactions, whether local, national, or global.

Perhaps identifying new territory-based measures and including them in national innovation rankings could add a relevant dimension to the measurement of innovation at the country level. But this is easier said than done. The new global economic landscape calls for more refined innovation measures. Complementing national metrics with territory-based indicators is an avenue of research that needs to be addressed to improve our understanding of the dynamics of the real economy and to offer more realistic policy advices. Increased collaboration among international organizations and local think tanks could help to advance the innovation measurement agenda by improving our capacity to measure local innovation dynamics and by exploring new ways to address the systemic nature of innovation and its relationship with the local context to better inform policy decisions.

Notes

1 OECD, 2010.

2 OECD, 2011a; EU, 2010.

3 OECD, 2011a.

4 OECD, 2010; INSEAD, 2011; INSEAD and WIPO, 2012.

5 Council on Competitiveness, 2005; Asheim and Coenen, 2006; Hollanders, Tarantola, and Loschky, 2009.

6 OECD, 2011b.

7 OECD, 2011b.

8 OECD, 2011a; 2011b. For more information on the PCT, see http://www.wipo.int/pct/en/treaty/about.html; and for related statistics see http://www.wipo.int/ipstats/en/statistics/pct/.

9 Ajmone Marsan and Primi, 2012.

10 OECD, 2013a.

11 This database is part of the fDi Markets service from the Financial Times Limited; see http://www.fdimarkets.com/ for more detail.

12 fDi Markets database, 2012.

13 Saxenian, 2006.

14 Forbes, 2012.

15 OECD, 2013b.

16 Lerner, 2009.

17 OECD, 2013b.

References

Ajmone Marsan, G. and A. Primi. 2012. 'Tell Me Who You Patent With and I'll Tell You Who You Are: Evidence from Inter-Regional Patenting Networks in Three Emerging Technological Fields'. *OECD Regional Development, Working Papers,* 2012/03. Paris: OECD Publishing.

Asheim, B. T. and L. Coenen. 2006. 'Contextualising Regional Innovation Systems in a Globalising Learning Economy: On Knowledge Bases and Institutional Frameworks'. *Journal of Technology Transfer* 31: 163–73.

Atsmon, Y. H., P. Child, R. Dobbs, and L. Narasimhan. 2012. *Winning the $30 Trillion Decathlon: Going for Gold in Emerging Markets.* McKinsey & Company. Available at http://www.mckinsey.com/features/30_trillion_decathlon.

Council on Competitiveness. 2005. *Measuring Regional Innovation: A Guidebook for Conducting Regional Innovation Assessments.* Prepared by the U.S. Department of Commerce. United States of America: US Council on Competitiveness

EU (European Union). 2010. *EUROPE 2020: A Strategy for Smart, Sustainable and Inclusive Growth.* Brussels: European Commission.

Forbes. 2012. 'Ranking of Top 20 African Startups'. *Africa Magazine,* February. Forbes Magazine Press.

Hollanders, U., S. Tarantola, and A. Loschky. 2009. *Regional Innovation Scoreboard 2009: Methodology Report.* Brussels: Pro-Inno-Europe, European Commission.

INSEAD. 2011. *The Global Innovation Index 2011: Accelerating Growth and Development.* Fontainebleau: INSEAD.

INSEAD and WIPO (World Intellectual Property Organization). 2012. *The Global Innovation Index 2012: Stronger Innovation Linkages for Global Growth.* Fontainebleau: INSEAD.

Lerner, J. 2009. *Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed and What to Do About It.* Princeton, NJ: Princeton University Press.

OECD (Organisation for Economic Co-operation and Development). 2010. *Measuring Innovation: A New Perspective.* Paris: OECD.

———. 2011a. *Regions and Innovation Policy.* Paris: OECD.

———. 2011b. *Regions at a Glance 2011.* Paris: OECD.

———. 2013a, Forthcoming. *Perspectives on Global Development 2013: Industrial Policies in a Changing World.* Paris: OECD.

———. 2013b, Forthcoming. 'Start-up Latin America: A Comparative Study Based on the Experience of Six Countries in the Region'. *OECD Development Centre Study.* Paris: OECD.

Saxenian, A. 2006. *The New Argonauts: Regional Advantage in the Global Economy.* Cambridge, MA: Harvard University Press.

Telefonica Digital and Startup Genome. 2012. *Startup Ecosystem Report 2012.* Online report. Available at http://blog.startupcompass.co/pages/entrepreneurship-ecosystem-report (accessed November 2012).

Measuring Regional Innovation: A European Perspective

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The Global Innovation Index (GII) focuses on measuring innovation at the country level. It provides interesting insights into the framework conditions needed for innovation to take place; it also looks at variations in actual innovation performance. Yet benchmarking at the country level hides potential large regional differences within countries. For larger countries in particular, differences between regions, not only in innovation but also in economic performance, can be substantial: even in countries with an average performance we might find regions with top-level performance.

The importance of regional innovation

The concept of national systems of innovation, developed in the late 1980s by Freeman and Lundvall,[1] stressed the importance of flows of technology and information among people, enterprises, and institutions, seeing these flows as key to the innovative process. The role of regional innovation systems as a 'complement to the study of knowledge flows at the national level' was acknowledged by the Organisation for Economic Co-operation and Development (OECD) in their 1997 report on national systems of innovation.[2] Regions are increasingly becoming important engines of economic development; 'global economic forces have raised the profile of regions . . . because of the rise to prominence of regional and local business clusters as vehicles for global and national economic competitiveness'.[3]

Innovation policy in Europe is increasingly designed and implemented at the regional level. At the country level, almost 300 innovation-support measures have been identified for the EU Member States;[4] at the regional level, more than 1,000 support measures have been identified in these countries.[5] However, despite some advances, regional data on innovation indicators—which could help regional policy makers design and monitor innovation policies—frequently simply do not exist.

Regional-level data are of value for two reasons.[6] First, innovation policies are often developed and implemented at the regional and even municipal level, in addition to national- and European Union (EU)-level policies. Regions that are lagging behind in economic development can apply for government support through the European Regional Development Fund (ERDF) to modernize and diversify their economic structure.[7] Innovation promotion is increasingly seen as a crucial dimension of programmes set up under this fund. Regional indicators of innovation therefore can help inform regional innovation policies.

Second, many innovative activities are strongly localized into clusters of innovative firms, sometimes in close cooperation with institutions such as research institutes and universities. Policy needs to be directed at supporting these clusters and, where feasible, at encouraging new clusters of innovation in other regions. Doing so will often require different types of policy actions. The effective design and implementation of such policies depends on identifying both highly innovative regions and less innovative regions that might have future potential. Other regions, because their economic basis is in tourism, agriculture, or resource extraction, may need diffusion-oriented policies that focus on the adoption of new technology rather than its creation. Others, which base their economy on high-level knowledge creation activities, might be best served with policies focusing on spin-offs and high-tech clusters creation.

The Regional Innovation Scoreboard: Indicators and data availability

The following section illustrates some of the challenges and opportunities in measuring innovation at the regional level using the example of the European Regional Innovation Scoreboard (RIS). The RIS is the regional version of the Innovation Union Scoreboard (IUS). Similar to the GII, the IUS measures innovation performance at the country

Table 1: The Regional Innovation Scoreboard: Indicators and trends

	RIS 2002	RIS 2003	RIS 2006	RIS 2009	RIS 2012
Countries	EU15	EU15	EU25	EU27+1 (a)	EU21+3 (b)
Number of regions covered in the RIS	148	173	208	201	190
Number of indicators in the RIS	7	13	7	16	12
Number of indicators in the EIS/IUS	21	22	26	29	24
Specific indicators					
Share of population aged 25–64 having completed tertiary education	●	●	●	●	●
Share of population aged 25–64 participating in life-long learning	●	●	●	●	○
Share of employment in medium-high and high-tech manufacturing	●	●	●	●	● (f)
Share of employment in knowledge-intensive services	○	○	○	●	
Share of employment in high-tech services	●	●	●	○	○
Share of households with broadband access	○	○	○	●	○
R&D expenditures by the public sector as a % of GDP	●	●	●	●	●
R&D expenditures by the business sector as a % of GDP	●	●	●	●	●
Number of high-tech patent applications per million population	●	●	○	○	○
Number of public-private scientific co-publications per million population	○	○	○	○	●
Number of patent applications per million population (c)	○	●	●	●	●
Innovative companies as a % of all firms	○	● (d)	○	○	○
SMEs innovating in-house as a % of all SMEs	○	○	○	●	●
Innovative SMEs collaborating with others as a % of all SMEs	○	○	○	●	●
Innovation expenditures as a % of sales	○	● (d)	○	○	○
Non-R&D innovation expenditures as a % of sales	○	○	○	●	●
SMEs with product and/or process innovations as a % of all SMEs	○	○	○	●	●
SMEs with marketing and/or organizational innovations as a % of all SMEs	○	○	○	●	●
Resource efficiency innovators as a % of all SMEs	○	○	○	●	○
Sales of products new to the firm as a % of sales	○	● (e)	○	●	● (g)
Sales of products new to the market as a % of sales	○	○	○	●	

Source: Author's compilation.

Notes: The EU27 countries are Austria, Belgium, Bulgaria,the Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

The ● symbol shows that the indicator was used in the respective RIS report; ○ means that it was not. Indicators in italic use data from the innovation survey. SMEs are small and medium-sized enterprises.

(a) EU27 countries plus Norway; (b) 21 EU27 countries (this excludes the smaller countries Cyprus, Estonia, Latvia, Lithuania, Luxembourg, and Malta) plus Croatia, Norway, and Switzerland; (c) the RIS 2012 uses the number of patent applications per billion GDP; (d) in the RIS 2006, this indicator is separate for manufacturing and services; (e) the indicator in 2006 covered only the manufacturing sector; (f) this indicator combines employment data in medium-high and high-tech manufacturing and knowledge-intensive services; (g) this indicator combines sales of products new to the firm and new to the market.

level, but it focuses on European countries only.

The IUS is the successor of the European Innovation Scoreboard (EIS), which was first introduced in 2001. The EIS was one of the first scoreboards to use results from innovation surveys; its measurement framework has been continuously improved over the years by adding and replacing indicators. The last edition, the IUS 2013,[8] covers 34 countries using data for 25 indicators; innovation survey data are used for 6 of them.[9]

In its early stages, the EIS recognized the importance of including the regional dimension: the first attempt to apply the EIS measurement framework at the regional level dates back to 2002. Further editions were published in 2003, 2006, 2009, and 2012.[10] The number of regions and indicators included in the RIS has changed significantly since its inception (see Table 1). These changes are in part the result of following changes in the EIS/IUS measurement framework and in part a response to improved data availability. Readily available regional data on educational attainment, research and development (R&D) expenditures, and patent applications have provided a reliable source of data for the framework, but the availability of regional innovation survey data has also had a profound impact on the development of the RIS. Because of a lack of regional data, the RIS covers only some of the indicators used in the EIS/IUS.

Regional innovation survey data

The key challenge to any regional benchmarking study is the availability of regional data. Eurostat, the statistical office of the European Union, provides harmonized regional statistics for a wide range of indicators,[11]

but only a few are relevant for measuring regional innovation.

Statistics on educational attainment, R&D expenditures, and patent applications in particular are widely used in studies and academic publications measuring regional innovation. But at best these statistics capture only some of the framework conditions (e.g., education), inputs (R&D), or throughputs (patents) of the innovation process. Still needed are statistics measuring firms' innovation activities and innovation outputs. Such statistics are being collected using innovation surveys. In Europe, the Community Innovation Survey (CIS) provides information on the innovativeness of enterprises. The CIS provides statistics broken down by country, type of innovator, economic sector, and size, and is carried out every two years across a large number of European countries.[12] The CIS, however, is designed to collect data at the country level, and implementing the EIS/IUS measurement framework at the regional level has been severely hampered by the non-availability of regional CIS data for most European countries.

For the RIS 2009, Eurostat and national statistical offices were consulted to provide harmonized regional CIS data for those indicators included in the EIS. The following two limitations emerged as being the key impediments to providing regional CIS data:[13]

Regional activities in innovation surveys get misreported

For most countries, the CIS survey sample is drawn from respondents at the enterprise level. For companies with activities in multiple establishments in more than one region, it is impossible to determine in which establishment in which region the innovation takes place. A comparison of regional innovation performance could therefore attribute all innovative activities of an enterprise to the location of its head office even though a substantial part of these innovative activities may in fact be carried out in other regions. The problem is especially relevant in the case of indicators using expenditure or sales data because the aggregate results are dominated by large enterprises, which are more likely to be active in more than one region.

As a partial solution for this problem, the RIS uses CIS data only for small and medium-sized enterprises (SMEs) because these firms are less likely than large firms to be active in multiple regions.

Lack of regional stratum

The sample of enterprises at the regional level should (ideally) represent the size and sector composition of the population of enterprises in that region. Sampling should include a regional stratum, and the sample size should be sufficiently large to keep sampling errors at the regional level at a reasonable magnitude. Not all countries include the regional level in their national surveys, however; those that do not cannot produce reliable and representative regional data. Within national surveys, some regions will thus be overrepresented and others will be underrepresented. The lack of a regional stratum is also partly explained by some countries having a survey sample that is too small to include a regional stratum.

The Regional Innovation Scoreboard 2012

The latest RIS report was published in 2012 and includes data for 12 indicators (see Table 1).[14] The report covers 190 regions in 21 EU Member States,[15] along with Croatia, Norway, and Switzerland at different levels of nomenclature of territorial units for statistics (NUTS),[16] with 55 NUTS level 1 regions and 135 NUTS 2 regions.

Collection of regional innovation survey data

Regional CIS data requests were made to 20 countries in April-May 2010, and 16 of them—Austria, Belgium, Bulgaria, the Czech Republic, Finland, France, Hungary, Italy, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden—responded positively and provided regional CIS data in May-June 2011.[17]

Regional innovation performance groups

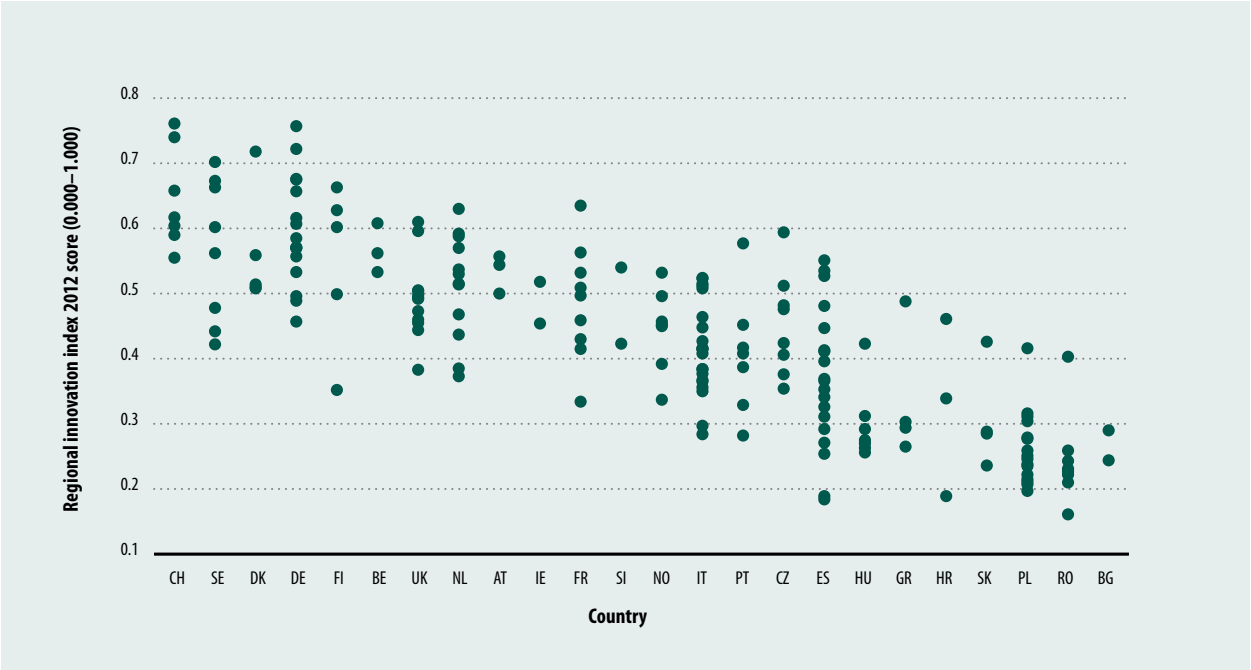
The performance data for the RIS 2012 have been summarized in one regional performance index using a composite indicator similar to the country-level innovation index in the IUS. In both the IUS and the RIS, countries and regions have been classified into four different performance groups based on their innovation performance relative to that of the EU27:[18]

- *innovation leaders* perform at a level well above that of the EU27;
- *innovation followers* perform at a level above or close to that of the EU27;
- *moderate innovators* perform at a level below that of the EU27; and
- *modest innovators* perform at a level well below that of the EU27.

Diversity in regional innovation performances

The results show that most European countries include regions at different levels of performance (Figure 1). The difference between the most and least innovative regions is highest in Finland, Romania, and Spain. There also appears to be a negative correlation between the difference

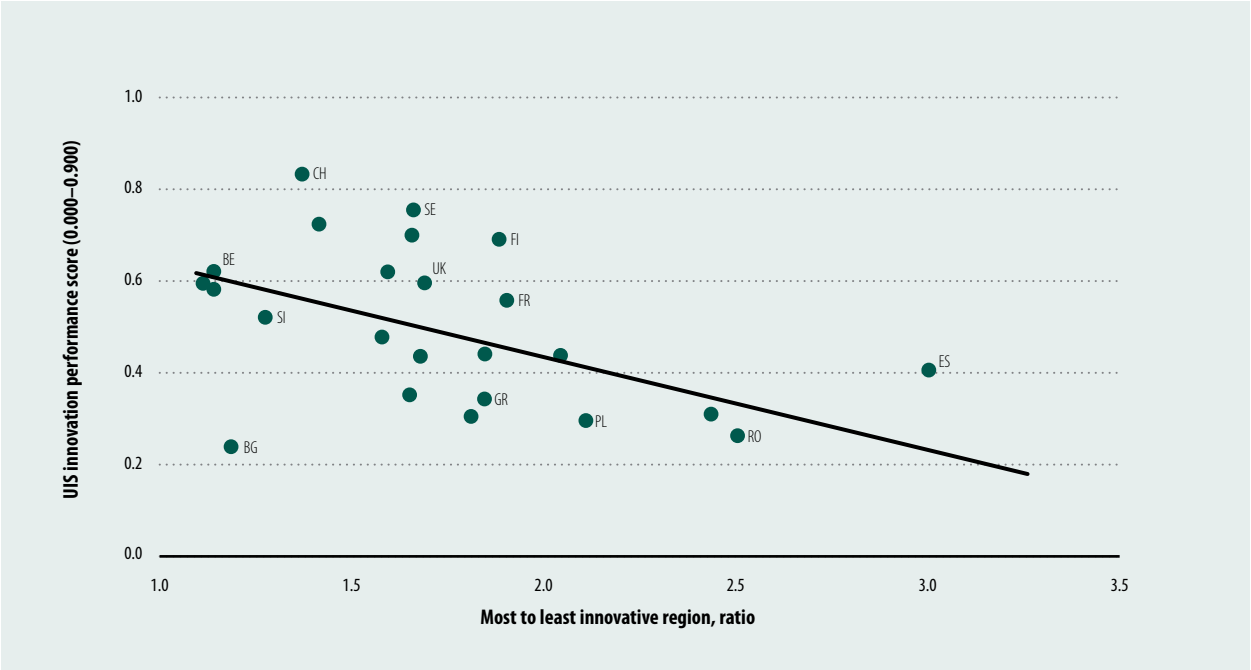
Figure 1: Regional innovation performance: Wide country variations



Source: Author's calculations using RIS 2012 data.

Note: Country codes are those used by Eurostat: AT = Austria, BE = Belgium, BG = Bulgaria, CH = Switzerland, CZ = Czech Republic, DE = Germany, DK = Denmark, ES = Spain, FI = Finland, FR = France, GR = Greece, HR = Croatia, HU = Hungary, IE = Ireland, IT = Italy, NL = Netherlands, NO = Norway, PL = Poland, PT = Portugal, RO = Romania, SE = Sweden, SI = Slovenia, SK = Slovakia, UK = United Kingdom.

Figure 2: Average innovative performance: Countries compared with regions



Source: Author's calculations, using data from the RIS 2012 and IUS 2011.

Notes: The vertical axis gives the innovation performance at the country level as measured in the IUS. The horizontal axis gives the difference between the most and least innovative regions as measured in the RIS. Country codes are those used by Eurostat. See the note to Figure 1 for a list of codes used.

Table 2: A comparison of IUS and RIS performance groups

	Regions (RIS groups)				
Country (IUS groups)	Leaders	Followers	Moderate performers	Modest performers	Total number of regions
Country leaders	28	11	2	0	41
Country followers	11	24	7	1	43
Country moderate performers	2	23	28	39	92
Country modest performers	0	0	2	12	14
Total number of regions	41	58	39	52	

Source: Author's calculations, based on data from EC, 2012a.
Note: The IUS country groups include the European countries as shown in endnote 18; that endnote also shows country performance groups.

between the most and least innovative region and the country's average innovation performance (Figure 2). Countries appear to be more innovative when the differences in performance between their regions are smaller.

Most innovative: Regions and countries

The IUS 2011 innovation leader and innovation follower countries include 84 regions, whereas there are 99 regional leaders and followers across the four country groups (see Table 2). Most of the regional leaders and followers are found within countries that are innovation leaders or followers themselves, although 25 regional leaders and followers are found in countries that are categorized as IUS moderate innovator countries.

In countries that are innovation leaders, the majority of regions (two out of three) are among the most innovative (Box 1), whereas the countries that are innovation followers have fewer than one out of three regional innovation leaders. A country that wishes to boost its innovation performance should not attempt to improve its performance in only one of a few regions but rather should improve in most of its regions: countries need a balanced regional innovation performance.

The RIS results highlight several regions in weaker-performing countries that are much more innovative than their country's average. Several moderate innovators include one or more regions that are more innovative than their country: both Portugal and the Czech Republic, for example, include one innovation leader (Lisbon and Prague) and one innovation follower; Italy includes seven regions that are innovation followers; Spain includes five such regions; and both Greece and Croatia each include one innovation follower. Of the modest innovators, only Romania includes one region in a higher performance group: Bucharest is a moderate innovator. Most of these regions are metropolitan regions (centred in either capitals or major cities) with a strong government sector presence, and they are home to universities and head offices of companies. This explains the regions' above-average performance on several of the RIS indicators (e.g., employment in knowledge-intensive services, tertiary education, scientific co-publications, and public-sector R&D expenditures).

Inter-regional exchanges

Regions also benefit from exchanges with other regions. Regions can draw on the supply of highly skilled workers in other regions in the same country because they share the same education system, and firms can collaborate for their R&D activities with firms in other regions within and outside their country. Border regions especially have more cross-border collaboration activities because of the close proximity of foreign regions. Such international inter-regional exchanges are not captured in the RIS because relevant European data are not available.

Regions matter: The need for more regional innovation data

Countries are made up of regions that may exhibit different industrial structures and where regional policy makers can be more or less autonomous in designing and implementing policies. A better understanding of what is happening at the regional level will explain differences in performance at the country level. By promoting regional innovation, countries will improve their overall innovativeness and competitiveness.

However, despite the improved availability of regional data (the consequence of several European countries having shared regional innovation survey data), these regional-level data are still scarce, especially when compared with the available country-level indicators. In particular, regional innovation survey data are sparse because sample sizes are too small to allow for a reliable regional breakdown of national-level data. An increase in sample size will require a corresponding increase in budget, but in times of austerity a call for an increase in budget is unlikely to be heard unless the need to better understand differences in

Box 1: Most-innovative European regions

Switzerland (7):
Innovation leader
Région lémanique (CH01)
Espace Mittelland (CH02)
Nordwestschweiz (CH03)
Zürich (CH04)
Zentralschweiz (CH06)
Ticino (CH07)

Sweden (8):
Innovation leader
Stockholm (SE11)
Östra Mellansverige (SE12)
Sydsverige (SE22)
Västsverige (SE23)
Övre Norrland (SE33)

Denmark (5):
Innovation leader
Hovedstaden (DK01)
Midtjylland (DK04)

Germany (16):
Innovation leader
Baden-Württemberg (DE1)
Bayern (DE2)
Berlin (DE3)
Bremen (DE5)
Hamburg (DE6)
Hessen (DE7)
Niedersachsen (DE9)
Nordrhein-Westfalen (DEA)
Rheinland-Pfalz (DEB)
Saarland (DEC)
Sachsen (DED)
Thüringen (DEG)

Finland (5):
Innovation leader
Etelä-Suomi (FI18)
Länsi-Suomi (FI19)
Pohjois-Suomi (FI1A)

Belgium (3):
Innovation follower
Région de Bruxelles-Capitale (BE1)
Vlaams Gewest (BE2)

United Kingdom (12):
Innovation follower
East of England (UKH)
South East (UKJ)

Netherlands (12):
Innovation follower
Utrecht (NL31)
Noord-Holland (NL32)
Zuid-Holland (NL33)
Noord-Brabant (NL41)

Austria (3):
Innovation follower
Ostösterreich (AT1)

France (9):
Innovation follower
Île de France (FR1)
Centre-Est (FR7)

Portugal (7):
Moderate innovator
Lisboa (PT17)

Czech Republic (8):
Moderate innovator
Praha (CZ01)

Source

RIS, 2012.

Note

Innovation group membership at the country level as identified in the IUS. The number in parentheses after the country name shows the total number of regions in each country; the codes after the city/region are the NUTS codes used for the regions within countries. See endnote 16 for further detail.

regional performance becomes better understood.

A regional version of the Global Innovation Index

The GII provides a useful benchmarking tool for comparing the innovation systems of countries. There are at least two strong arguments why it would be of interest to provide a Regional Innovation Index. First, we have seen that regions are engines of growth and that countries do well if regional differences within the country are small. Having more detailed information on strong and weak regions in countries will help us understand why some countries do not perform well in the GII or its (sub-)pillars.

Second, the GII encompasses countries with a wide range of sizes, from very small countries such as Bahrain and Cyprus to very large countries such as China and India. Applying best practices from these large countries to smaller ones will be difficult because of the differences in scale. We need to be able to compare smaller countries with regions of larger countries that are similar to the smaller countries in size or in industrial structure. Such a comparison requires a breakdown of country-level statistics into regional statistics, where regions should not be defined as static administrative regions (as in the European NUTS classification of regions), but rather as economic regions that can be distinguished from bordering regions and that should have a certain degree of internal cohesion.[19] There are no guidelines for determining the 'ideal' region, but large metropolitan areas seem to emerge as a natural category.

Conclusions

The large regional differences seen in innovation data within countries indicate that a consideration of regional data, rather than country-level data alone, could provide insight into ways that countries could form policy to encourage innovation. The GII model could be enhanced by adding a regional element, so that best practices for regions that are comparable to small countries, such as Cyprus, could be considered as more applicable and appropriate for small countries than the best practices of a large country, such as India. Work to be done will include establishing guidelines that

determine the 'ideal' size and characteristics of a region, but large cities seem a natural place to begin.

Notes

1 Freeman, 1987; Lundvall, 1992.

2 OECD, 1997.

3 Cooke and Memedovic, 2003.

4 More information on each of these support measures is provided by the European Commission–funded TrendChart project, available at http://ec.europa.eu/enterprise/policies/innovation/facts-figures-analysis/trendchart/index_en.htm.

5 An inventory of European innovation support measures at the regional level is provided by the European Commission–funded Regional Innovation Monitor project. See http://ec.europa.eu/enterprise/policies/innovation/policy/regional-innovation/monitor/.

6 The following is a revised version of the introduction in Hollanders, 2003.

7 The ERDF aims to strengthen economic and social cohesion in the European Union by correcting imbalances between its regions. The ERDF finances direct aid to investments in companies to create sustainable jobs; infrastructures linked notably to research and innovation, telecommunications, environment, energy and transport; financial instruments (capital risk funds, local development funds, etc.) to support regional and local development and to foster cooperation between towns and regions; and technical assistance measures.

8 See http://ec.europa.eu/enterprise/policies/innovation/files/ius-2013_en.pdf.

9 Hollanders and Janz, 2013.

10 The RIS 2012 (EC, 2012b) is available at http://ec.europa.eu/enterprise/policies/innovation/files/ris-2012_en.pdf. The accompanying RIS 2012 methodology report is available at http://ec.europa.eu/enterprise/policies/innovation/files/ris-2012-methodology-report_en.pdf.

11 The regional statistical database from Eurostat includes regional statistics on agriculture, demographics, economic accounts, education, science and technology, business, health, tourism, transport, labour market, labour costs, information society, migration, environment and energy, and poverty and social exclusion.

12 The community innovation survey is available at http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/en/inn_esms.htm.

13 The following material is adapted from the discussion in section 3 in Hollanders, Tarantola, and Loschky, 2009.

14 See EC, 2012b: http://ec.europa.eu/enterprise/policies/innovation/files/ris-2012_en.pdf. The report was prepared by Hugo Hollanders, Lorena Rivera Léon, and Laura Roman.

15 The EU Member States Cyprus, Estonia, Latvia, Lithuania, Luxembourg, and Malta have not been included because there are no separate statistical regions in these countries.

16 The nomenclature of territorial units for statistics (NUTS) classification is a hierarchical system for dividing up the economic territory of the EU for the purpose of the collection, development, and harmonization of EU regional statistics; the system distinguishes between different sizes. NUTS 1 regions (about 97 in total across Europe) are major socioeconomic regions with between 3 million and 7 million inhabitants. NUTS 2 regions (about 270 across Europe) are basic regions for the application of regional policies with between 800,000 and 3 million inhabitants. See http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction for more details.

17 These regional CIS data are not publicly available and have been made available by the different countries explicitly for constructing the Regional Innovation Scoreboard.

18 The innovation leaders are Denmark (DK), Finland (FI), Germany (DE), Sweden (SE), and Switzerland (CH); the innovation followers are Austria (AT), Belgium (BE), Cyprus (CY), Estonia (EE), France (FR), Iceland (IS), Ireland (IE), Luxembourg (LU), Netherlands (NL), Slovenia (SI), and the United Kingdom (UK); the moderate innovators are Croatia (HR), the Czech Republic (CZ), Greece (GR), Hungary (HU), Italy (IT), Lithuania (LT), Malta (MT), Norway (NO), Poland (PL), Portugal (PT), Serbia (RS), Slovakia (SK), and Spain (ES); and the modest innovators are Bulgaria (BG), Latvia (LV), the former Yugoslav Republic of Macedonia (MK), Romania (RO), and Turkey (TR) (see EC, 2012a).

19 Cooke and Memedovic, 2003.

References

Cooke, P. and O. Memedovic. 2003. *Strategies for Regional Innovation Systems: Learning Transfer and Applications.* UNIDO Policy Paper. Vienna: UNIDO.

EC (European Commission). 2012a. *Innovation Union Scoreboard 2011*. Brussels: EC.

———. 2012b. *Regional Innovation Scoreboard 2012.* Brussels: EC.

Freeman, C. 1987. *Technology and Economic Performance: Lessons from Japan.* London: Pinter.

Hollanders, H. 2003. *2003 European Innovation Scoreboard: Technical Paper No 3 Regional innovation performances.* Brussels: European Commission, DG Enterprise and Industry.

Hollanders, H. and N. Janz. 2013. 'Scoreboard and Indicator Reports'. In F. Gault, ed., *Handbook of Innovation Indicators and Measurement.* Cheltenham, UK: Edward Elgar, pp. 279–97.

Hollanders, H., S. Tarantola, and A. Loschky. 2009. *Regional Innovation Scoreboard 2009: Methodology Report.* Brussels: European Commission, DG Enterprise and Industry.

Lundvall, B-Å., ed. 1992. *National Innovation Systems: Towards a Theory of Innovation and Interactive Learning.* London: Pinter.

OECD (Organisation for Economic Co-operation and Development). 1997. *National Innovation Systems.* Paris: OECD.

The Role of Enterprise Champions in Strengthening Innovation Hubs

Barry Jaruzelski, **Rasheed Eltayeb**, **Tamer Obied**, and **Hatem Samman**, Booz & Company

Innovation hubs can be vital components of national and regional economic strategy. These hubs are knowledge-intensive business clusters that serve as centres of wealth creation and link the local economy to the global economy. Research indicates a positive correlation between the strength of these clusters and national prosperity.[1] Figure 1 presents this correlation for the NUTS regions in the European Union 15 (EU15).[2]

Given the increasingly integrated global economy and the resulting intensity of competition, countries need to develop strategically aligned innovation hubs to avoid falling behind in the race for economic sustainability and leadership. This chapter looks at some steps countries can take to put successful hubs into place.

Innovation hubs: More than one path to success

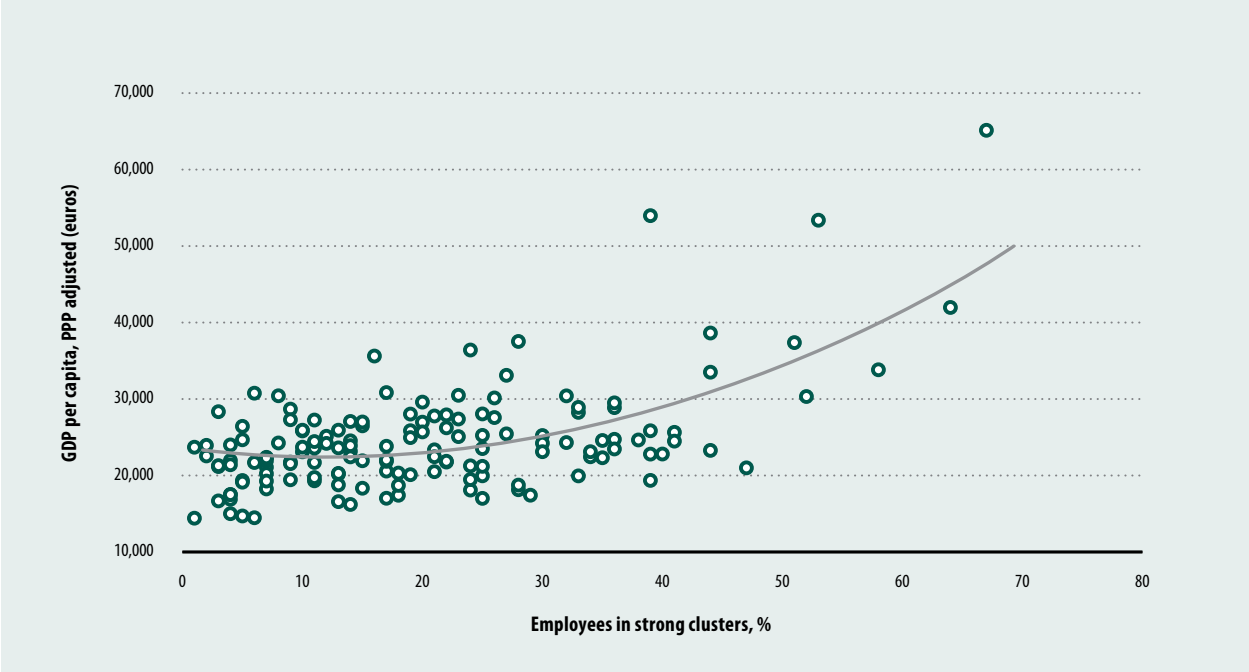
The developmental paths of innovation hubs vary. In some countries, such as the United States of America (USA), hubs tend to form around research universities and institutes that attract and support an entrepreneurial community.[3] For instance, San Diego, California, has become an important area for innovation in the USA. In addition to the draw of the University of California San Diego campus, the presence of research institutions such as the Scripps Institution of Oceanography, the Scripps Research Institute, the Salk Institute, and the Sanford-Burnham Medical Research Institute attracts leading minds. The area also hosts companies such as Qualcomm, the telecommunication technology supplier. At the other end of the spectrum, in economies such as Singapore and the Republic of Korea, state-sponsored research programmes provide the organizational kernel for innovation hubs. Between these extremes, in countries such as the United Kingdom (UK) and India, a range of paths are based on mixed models that include varying degrees of academic and state involvement.

Although innovation hubs develop along different paths, almost every successful innovation hub studied involves the participation of large enterprises that serve as hub champions. Sometimes these champions are private enterprises, as they are in Silicon Valley in the USA, where companies—including Hewlett-Packard, Lockheed, and Xerox—helped catalyse growth at various points in the hub's history. More recently, *chaebols* (conglomerates)—including Samsung, LG, and SK Energy—have played this role in innovation hubs in the Republic of Korea. Sometimes these champions are state-owned enterprises (SOEs). For example, the state-owned oil giant Saudi Aramco acts as a champion in the Dhahran Techno-Valley (DTV), an emerging innovation hub in Saudi Arabia.

Enterprise champions support innovation hubs in important ways. They help build hubs' capabilities by providing capital, a pool of experienced technical talent, and business opportunities; they also provide interregional and international connections via their networks and value chains. They stimulate research and development (R&D) within hubs by facilitating knowledge creation and sharing. In addition, they help other stakeholders within the hub to bridge the commercialization gap with their resources through collaboration or supplier relationships.

Enterprise champions therefore can play an essential role in the development of innovation clusters, especially in developing economies. In the Gulf Cooperation Council (GCC) countries,[4] for instance, efforts are afoot to establish hubs as a means of diversifying national economies. Whether or not these initiatives achieve their full potential will depend on how effectively they can establish a reliable innovation sequence and accelerate the rate of innovation. In the GCC and elsewhere, enterprise champions—including SOEs, family-owned conglomerates, and multinational corporations (MNCs)—can be the principal drivers of these activities. They are already connected to the main constituents of innovation ecosystems, including government, universities, financial institutions, and other companies throughout

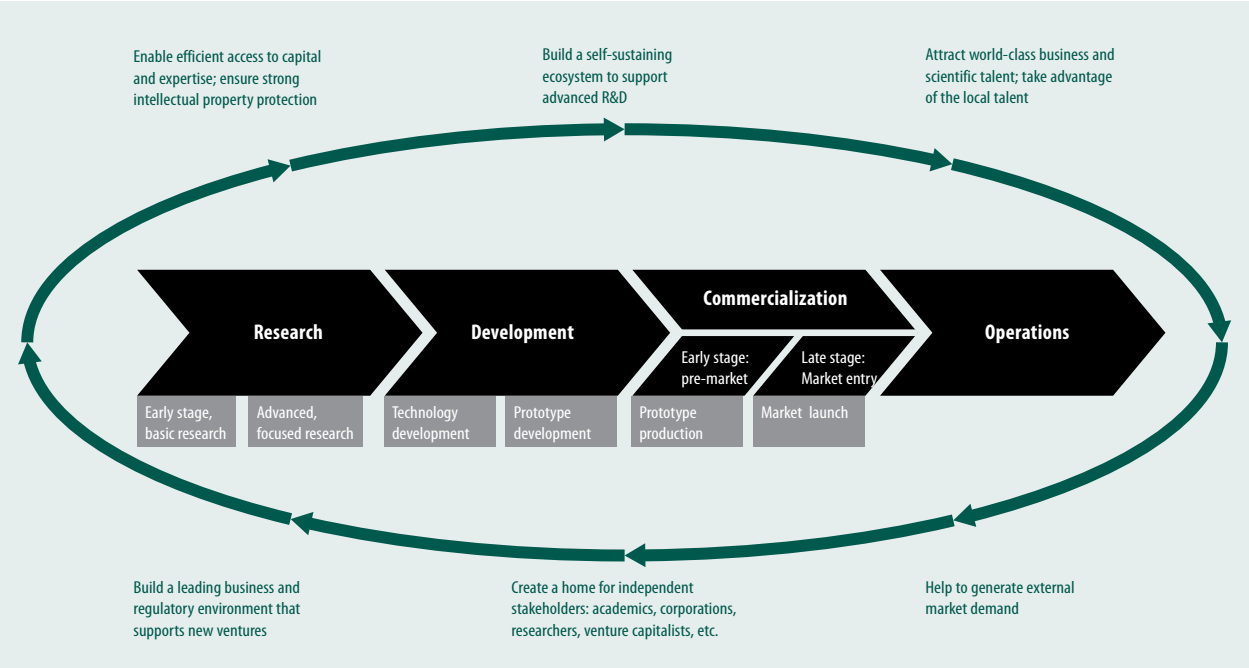
Figure 1: The correlation between innovation clusters and prosperity in the EU15



Source: EC, 2007; European Cluster Observatory, ISC/CSC cluster codes 1.0, dataset 20070510.

Note: The figure refers to the nomenclature of territorial units for statistics (NUTS) regions in the EU15, excluding Portugal and Greece. *Strong clusters* are defined by a localization quotient (LQ) greater than 2. For a given industry located in a region within a country (e.g., the automotive industry in Västsverige, Sweden), an LQ of 1 means that its share of employment in the region is at the average level for that industry in that country; an LQ of 2 means its share is at twice that level. With an LQ of 3.66, the automotive industry is a strong cluster in Västsverige.

Figure 2: The innovation hub value chain



Source: Booz & Company.

the world. Further, their influence and financial might are considerable.

For these reasons, governments should consider enterprise champions to be a critical foundational element. The local and national policies they help shape should create a sound basis for innovation hub development and should attract champions by streamlining the business and logistical processes that hubs require; ensuring the availability of talent; providing for and incentivizing foreign ownership; making direct investments in enabling technologies; and stimulating the investment of foreign and domestic venture capital. Although innovation hubs in Western economies are created without government instigation, in the GCC, SOEs are the dominant economic actors and therefore often play a key role in kick-starting the innovation process.

The three roles of enterprise champions

Innovation hubs are platforms for the integration of scientific endeavour and its commercial application. They serve as commercialization catalysts by transforming technological advances into marketable products and services. Accordingly, the value chain of innovation hubs that succeed in becoming serial innovators includes research, development, commercialization, and the production and dissemination of new products and services (see Figure 2). Enterprise champions support this value chain in three ways: by building hub capabilities, by supporting and developing hub R&D activities, and by enabling commercialization.

Building hub capabilities

Successful innovation hub development depends on the ability to generate and protect intellectual property (IP) and gain access to the capital and expertise needed to develop it commercially. Enterprise champions can leverage their financial resources and expansive networks to support these requirements, as follows:

- They can act as service providers, investors, and customers within the hub.
- They can attract local and international companies, which will co-locate within the hub in order to do business with them. In doing so, enterprise champions can orchestrate the creation of a network of resources that can, for example, provide university partners with access to top-notch commercial research.
- They can create a sufficiently large talent pool—one on the scale needed to start and seed new businesses.
- They can establish and manage alliances and partnerships, as well as make acquisitions, to secure the technologies and capabilities needed to strengthen the hub.
- They can support and encourage the development of a strong IP protection system by filing their patents and licenses domestically and internationally, maintaining strong internal policies and processes for protecting their own IP and that of their partners, and advocating the enactment of comprehensive national IP policies.

Building the capabilities of an innovation hub is especially important in the early stages of its development, when its structure and innovation activities are first being established (see Box 1).

Supporting and developing hub R&D activities

Once the major structural elements of a hub are in place, a self-sustaining R&D ecosystem is needed. To be successful, such an R&D system requires capabilities that enable hub players to capture customer needs, conceive breakthrough ideas, and feed high-value concepts into the prototype development pipeline.

Increasing R&D output requires talent development within the hub, especially with regard to the staff and students of academic partners. Often this development is fuelled by increased industry collaboration and financial support. Universities generate IP that is marketed to external users by university-owned companies, and local businesses produce products and services based on local IP. This requires finding specific beneficiaries with different objectives, including basic research, industry-driven commercial research, and technology development and commercialization.

Enterprise champions play an essential critical role in achieving R&D goals in at least three distinct ways:

- By making R&D a strategic priority, collaborating with academic institutions, and organizing forums, champions can leverage intellectual capital by encouraging knowledge sharing and cross-pollination within the hub.
- Through established R&D satellites across their international networks, champions can facilitate the transfer of complex knowledge to innovation hubs and promote the hubs as hot spots for innovation.
- By utilizing their local and international links, champions can steer hubs in directions that better meet regional and international needs and thus help contribute to the hub's economic growth.

Box 1: Enterprise champions in the Dhahran Techno-Valley

Established in 2001, the Dhahran Techno-Valley (DTV) is a nascent innovation hub founded to support the growth of Saudi Arabia's knowledge economy. Its principal objective is to support energy-related technology development by strengthening links between the hub's academic anchor—the King Fahd University of Petroleum & Minerals (KFUPM), one of Saudi Arabia's leading education institutions—and the energy industry, aligning R&D agendas between domestic and international energy stakeholders, and unlocking the commercial value of intellectual property.

The DTV's principal asset, the King Abdullah Bin Abdulaziz Science Park (KASP), encompasses approximately 770,000 square metres and provides a number of services and facilities, including proprietary R&D facilities owned and operated by leading energy companies, a collaborative ecosystem, conference and meeting facilities, business facilitation and support services, capabilities development services, investment opportunities, and licensing opportunities. KASP R&D Partners are typically located in six key sectors that support the energy industry in Saudi Arabia: advanced materials, refining and petrochemical processes, geosciences and petroleum engineering, water management, energy efficiency and renewable energy, and advanced computing.

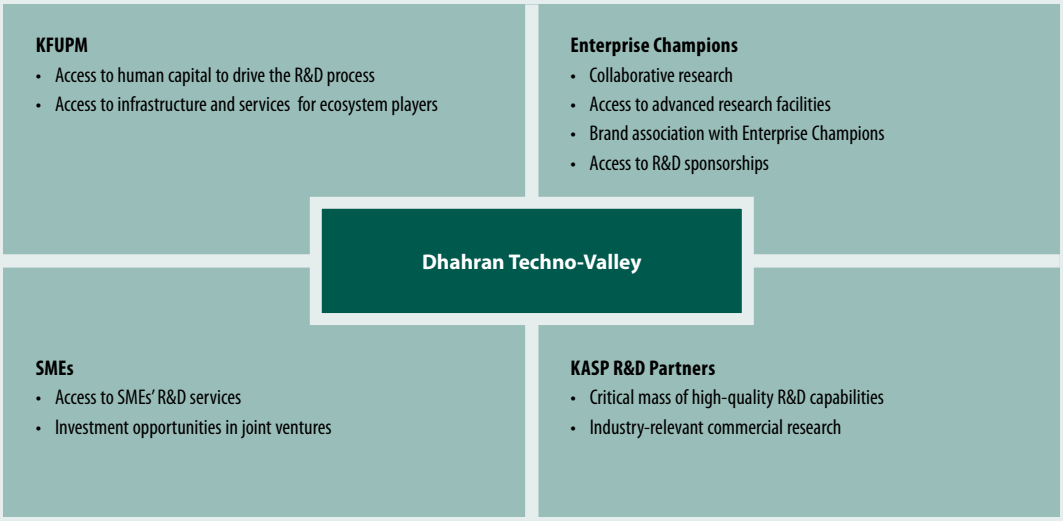
The science park is operated by the Dhahran Techno-Valley Company (DTVC), a wholly owned subsidiary of the KFUPM. The DTVC plays the important role of fostering an environment in which the drivers of innovation work together to deliver economic, business, and employment opportunities of national and global value in the energy sector.

Setting the energy R&D agenda in Saudi Arabia

Developing links: In an effort to strengthen their own ties with national enterprise champions such as Saudi Aramco, Sabic, Maaden, and Saline Water Conversion Corporation, a number of multi-national companies have established R&D facilities in the DTV's science park. These companies also have developed links with the KFUPM. The research conducted within the confines of these facilities is focused on finding innovative solutions related to the energy priorities of the Kingdom, many of which are driven by national champions. These solutions include efficiently extracting hydrocarbons through the pursuit of conventional and unconventional sources, expanding refining capacity, pursuing renewable energy and sustainable water management, diversifying the country's energy mix, reducing the country's energy intensity, leveraging intellectual capital and supply chains' economies of scale, and developing knowledge-based expertise. All of these solutions will rely heavily on improving existing technologies and developing new ones. As a result, a cohesive and integrated environment in which new industry-relevant technologies can be developed and commercialized has begun to emerge (see Figure 1.1).

Supporting collaborative research: The DTV provides KASP R&D Partners with access to collaborative research and the opportunities, infrastructure, and environment needed to develop, test, and deploy new

Figure 1.1: The Dhahran Techno-Valley innovation hub



Source: DTVC, 2013.
Note: KFUPM = King Fahd University of Petroleum and Minerals; SMEs = small and medium-sized enterprises.

(Continued)

Box 1: Enterprise champions in the Dhahran Techno-Valley *(continued)*

technologies. Similarly, the presence of both enterprise champions, other national companies (such as SIPCHEM, AMIANTIT) and multi-national companies will provide opportunities for the emergence of small and medium-sized enterprises via business opportunities and access to R&D services.

Challenges facing the DTV

The DTV has made considerable progress over the past decade in creating and fostering an innovation ecosystem. However, the DTV, like other innovation ecosystems in Saudi Arabia, would benefit from improvements made to government policies and regulations which would encourage key activities. For instance, revising policies to encourage talent recruitment in the Kingdom can help attract and retain specialized skills. Secondly, improving regulations that restrict the import/export of specialized research laboratory equipment and material will reduce delays and allow universities and companies to conduct the required R&D activities. Finally, new financing models that allow small and medium-sized enterprises to pursue product engineering and development will enable the manufacturing of promising new technologies created within the DTV.

A thriving environment in the DTV

Irrespective of these challenges, the DTV has created a thriving environment. It has managed to attract leading global and Saudi Arabian players in the energy sector to set up R&D facilities in its science park—among these are Amiantit, Baker Hughes, Emerson, GE, Halliburton, Honeywell, ROSEN, Schlumberger, Sipchem, Weatherford International, and Yokogawa. KASP has already begun to see successes in developing an innovation ecosystem. For example, Schlumberger's Carbonate Research Center has filed over 50 patents and published over 50 scientific papers over the last five years. Clearly, KASP's hosting some of the largest and most innovative companies in the energy sector is helping Saudi Arabia to build its knowledge-based economy.

Source

www.kfupm.edu.sa; company press releases; *Oil & Gas News*, 2011.

Enabling commercialization

Nascent innovation hubs often fail to close the gap between R&D and commercialization. There are a number of reasons for this failure, including the difficulties of attracting partners and investments in projects with high technical risk and long developmental time frames; the loss of grant funding as project scope expands beyond academic research; the lack of critical end market insight or access; and the lack of entrepreneurial culture within the research community. Enterprise champions can help bridge the commercialization gap, and reap benefits themselves, in several ways:

- Through training and consulting, enterprise champions can help their domestic suppliers enhance the capabilities—such as manufacturing quality and efficiency—that they need to successfully commercialize innovations. In turn, enhanced capabilities help champions improve the quality of their products and reduce waste. National enterprise champions can also create opportunities for entrepreneurs to sell products and services. For example, telecommunication operators can outsource installation and repair activities to their own employees on a commission basis.
- Enterprise champions often employ highly talented people, but they do not always provide them with incentives to innovate. An example of a successful approach to this issue is Saudi Aramco, which has addressed this need by providing employees with opportunities to share their ideas with senior management and rewarding them when ideas are successfully implemented.
- Enterprise champions can educate downstream companies vis-à-vis new domestic and international markets. They also can acquire companies in order to obtain capabilities that can provide an innovation ripple effect throughout the hub value chain.

The Hsinchu Science Park in Taiwan, Province of China, provides an example of how bridging the commercialization gap can provide benefits for all hub players including enterprise champions (see Box 2).

Public policy for successful innovation hubs

The study of innovation hubs and the foundational role that enterprise champions play in their viability offer useful lessons for governments seeking to build economic sectors through hub development. If these lessons are incorporated into national and hub-specific policies, governments can enhance their ability to create successful hubs and attract strong enterprise champions.

National policies: National policies must be aligned with hub-specific policies in order to replicate and leverage the cultures and processes of innovation hubs across the

Box 2: Enterprise champions in the Hsinchu Science Park

The Hsinchu Science Park (HSP), founded in 1980, is Asia's version of Silicon Valley. Its objective was to build an interactive community that could integrate science and its application to grow an Asian semiconductor industry. The HSP's two principal enterprise champions are the United Microelectronics Corporation (UMC) and the Taiwan Semiconductor Manufacturing Company Ltd. (TSMC), both of which were also founded in the 1980s. Local and international firms were enticed to the park through tax incentives and financing programmes. Its two major academic anchors are Tsinghua University and the Industrial Technology Research Institute (ITRI).

Building capacity: The HSP's capacity was built in lockstep with its enterprise champions. In 1974, ITRI formed the Electronics Research and Service Organization (ERSO) to conduct research and transfer global technology in semiconductors. In 1980, when the HSP was formally launched, the UMC was spun off from ITRI/ERSO. Throughout the 1980s, knowledge diffusion occurred throughout the local semiconductor industry with the funding and support of the government, and new private companies were launched in the HSP. Among these were the TSMC, another ITRI/ERSO spin-off, in 1987. By the end of the 1980s, a young industry cluster had emerged with capabilities in semiconductor technologies such as design and assembly. By the mid-1990s, the HSP cluster had matured and enjoyed a large number of firms and a large share of the world's semiconductor market. By 2009, the HSP was home to more than 190 companies operating across the entire value chain of the semiconductor industry and boasted annual revenues of US$20 billion.

Support of national champions: The HSP is an excellent example of the role that innovation hubs can play in the development of enterprise champions. Both the UMC and the TSMC grew into global giants along with the hub. Their commercialization capabilities were markedly strengthened by the international corporations and local private-sector firms that co-located in the HSP. In addition, the establishment of an export-processing zone brought in additional investment from foreign semiconductor corporations. Indeed, the hub generated more and more business over time, and entrepreneurial activity increased. This activity enabled the UMC and the TSMC to bridge the commercialization gap.

Supporting policies: The government's role in the HSP has been an essential element in its success. The government decided to establish the park and provided it with financial and regulatory support. It was instrumental in creating the enterprise champions needed to support a semiconductor innovation hub and act as magnets for other private-sector firms. The government also supported the attraction and retention of talent for the HSP by facilitating immigration and providing quality-of-life services, such as schooling for dependents and medical services.

Source

The Hsinchu Science Park website and Annual Reports 2006–11, available at http://www.sipa.gov.tw/english/index.jsp.

country. Towards this end, governments should do the following:

- A plan for knowledge economy development and policies that encourage technology transfer and innovation should be formulated at the national level. For example, infrastructure development programmes can facilitate interregional knowledge sharing and commerce, and educational initiatives can help nurture the development of a robust talent pool.
- National governments should seek to identify promising innovative projects within private enterprise and leverage them by providing financial and logistical support through programmes, infrastructure projects, and other initiatives that foster knowledge sharing and communication with stakeholders within innovation hubs.
- National policy should provide financial capital to support the commercialization of innovation hub research by establishing and funding start-up technology incubators.
- National governments should support business formation and operation, and promote market efficiency, by creating a conducive regulatory environment. For instance, policies that simplify and streamline business registration processes, offer easy access to worker visas, and revamp ownership laws (to enable, for example, foreign ownership in certain sectors and to protect IP) should be adopted.
- National governments should consider the competitive landscape in which their hubs will operate and seek to establish clear and distinct competitive advantages for each hub. Ideally, national policies should encourage hubs in different industries that complement each other and align with the country's economic development objectives. For example, in Saudi Arabia, where many hubs are being established, it is essential that the new hubs do not overlap or compete with each other directly for talent and/or investment funds.

Hub-specific policies: At the hub level, policies should be designed to ensure the viability and development of the hub by identifying both a technological focus that is properly aligned with national economic strategy and enterprise champions that can properly support that focus.

- Innovation hubs should be located in areas that offer a 'natural fit', irrespective of the value that will be created by the hub itself. For example, a focus on downstream and upstream energy industry is a natural fit for oil-producing countries such as those in the GCC. Focus on solar energy technology in these countries—where there is abundant direct solar radiation—is also a natural fit. The infrastructure, services, and regulatory environment delivered by a hub cannot substitute for location-specific advantages, such as easy access to resources and talent pools or close proximity to markets.
- Hub policy should establish a framework for governance that ensures coordination both within the hub (among its tenants and internal stakeholders) and with external partners, including ministries, agencies, MNCs, and other innovation hubs. The goal of this coordination is to create synergies within the hub and eliminate external obstacles that could negatively affect hub development.
- Hub policy should strengthen the ties between research and commerce with the aim of achieving a long-term collaborative relationship. One way to facilitate the development of this relationship is to institute regular events, such as meetings and seminars. In these encounters, industry and academia can match their wants and can break down the barriers between research and commercialization.
- Hub policy must be designed to facilitate long-term investment and attract both foreign and domestic investors. In particular, policy should address the high risks involved in innovation hub investment and reflect the interests of investor and operator in the management and execution of hub programmes, such as technical training.
- Hub policy should provide for the value-added services needed to boost the hub's appeal. For example, programmes that provide financing and logistical support for small and medium-sized enterprises can promote commercial activity and enhance hub competitiveness.

Conclusion

Innovation hubs do not grow overnight. They require sustained, public-private collaborations that may need 15 to 30 years to come to fruition. These collaborations require governmental, academic, and corporate anchors. In their quest to develop successful innovation hubs, governments must therefore either create and grow, or identify and enlist, strong enterprise champions. To provide strategic direction for innovation hubs, governments must also identify priority sectors for development. They must seek to balance their economic and human capital development strategies and provide incentives for innovation in priority sectors. For example, they can channel funding and investment to activities at various stages of the innovation value chain of high-potential start-ups, or they can establish companies to operate in these strategic sectors.

It is essential to recognize that hubs will thrive only if they naturally further both an enterprise champion's and the interested government's economic interests. These champions play the role of catalyst in developing innovation hubs by helping to build hub capabilities and talent pools, by stimulating and supporting R&D activities, and by helping bridge the gap between research and commercial success—a critical challenge that must be met to ensure the long-term viability of innovation hubs and the national economic sectors that they are intended to support. With these champions, the odds of creating a successful innovation hub rise significantly; without them, the odds of failure are almost certain.

Notes

1 See, for example, EC, 2007.

2 The nomenclature of territorial units for statistics or NUTS classification is a hierarchical system for dividing up the economic territory of the EU for collecting, developing, and harmonizing EU regional statistics: NUTS 1 (major socioeconomic regions), NUTS 2 (basic regions for the application of regional policies), and NUTS 3 (small regions for specific diagnoses). Furthermore, NUTS allows for the framing of EU regional policies: regions eligible for aid from the Structural Funds (Objective 1) have been classified at NUTS 2 level; areas eligible under the other priority objectives have mainly been classified at NUTS 3 level. For further detail, see http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction.

3 Wilson, 2012.

4 The GCC countries are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

References

DTVC (Dhahran Techno-Valley Company). 2013. Presentation to Society of Petroleum Engineers, Khobar, Saudi Arabia, 28 January. Available at http://spesas.org/sites/default/files/Final%20SANDROSE%20February%20iSSUE%202013.pdf.

EC (European Commission). 2007. 'Innovation Clusters in Europe: A Statistical Analysis and Overview of Current Policy Support'. DG Enterprise and Industry report, *Europe INNOVA/PRO INNO Europe Paper* No. 5. Luxembourg: European Commission.

Oil & Gas News. 2011. 'Schlumberger Celebrates Five Glorious Years of SDCR'. *Oil & Gas News,* 26 September. Available at http://www.thefreelibrary.com/_/print/PrintArticle.aspx?id=267926075.

Wilson, E. J. 2012. 'How to Make a Region Innovative'. *strategy+business* 28 February (Spring 66). Available at http://www.strategy-business.com/article/12103?gko=ee74a.

Open Innovation: The View of an ICT Leader in Distributed Global Innovation

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Industrial innovation requires both investment and scale.[1] As the Global Innovation Index (GII) demonstrates, a number of countries, regions, and sub-regions of the world—regardless of size, population, or natural resources—have been successful in fostering a culture of innovation and creating innovation clusters.

These clusters, which are concentrations of research and development (R&D) skills and investment, provide environments that assist in the creation of global industries and drive socioeconomic development. Switzerland and Ireland, for example, are two countries with relatively small populations. However, both have reached higher positions in the GII than many countries with significantly larger populations and greater resources.

The most successful innovation clusters are those that combine private and public investment with a public policy commitment to create an active and open environment where innovation is encouraged, investments are made, and a supportive ecosystem can thrive.[2]

As an example, Rochester, in Monroe County, New York, in the United States of America (USA), became the centre of the world's imaging industry when both Eastman Kodak and Xerox established operations there in the late 19th and early 20th centuries. Over several decades, a network of smaller satellite businesses was gradually established in the region to support these technology-based industry giants. A combination of entrepreneurship, technical development, and supportive local government polices came together to create the world's first 'innovation-in-imaging' innovation cluster.

In another example, in 1939, Bill Hewlett and Dave Packard met at Stanford University and set up a fledgling technology company in a small garage in Palo Alto in southern California. Hewlett Packard, also known as HP, has famously become one of the world's largest and most well recognized technology brands. The location of the HP garage is arguably the key foundation on which Silicon Valley grew to become the world's leading and highest profile 'innovation-in-information technologies (IT)' cluster.

In the early 1980s, the Chinese government designated Shenzhen on China's south coast as a special economic zone (SEZ). The decision was designed to attract high-technology investment from around the world. Thanks to the Chinese government's policy of economic reform and opening-up, Shenzhen quickly grew to become a major technology innovation cluster. The success of Shenzhen gave birth to a range of leading technology companies, including Huawei.

This chapter looks at the evolution of Huawei as a leading innovator and considers the environment in which it operates. Some of the strategies it pursues, as well as the environmental context in which it is able to thrive as an innovator, can apply to other enterprises. Policies that support this type of environment will be policies that other countries and regions looking to encourage innovation should consider.

The role of public policy

In 1980, Shenzhen was a small fishing village on the Chinese mainland close to Hong Kong (China). To fuel the growth of the city, public policies were enacted to ease the movement of talent, expertise, and investment into the area, both from across China and from overseas. International corporations were encouraged to invest and create operations in Shenzhen.

Policies supported the construction of public and private infrastructure, from business parks and transportation and communication links to hotels and residential developments. The city's population has grown from 20,000 to 15.5 million people in just over 30 years; Shenzhen is thriving as a high-technology innovation cluster and supporting markets around the world.[3]

Huawei was established in Shenzhen in 1987 as a sales company, reselling technology developed by a third party. The company enjoyed early local market recognition and success, but in 1990 the third party

was acquired by another corporation. As a result, its cooperation with Huawei ceased. With an early accumulation of technology and customer resources, Huawei decided to design and develop its own products and services and make innovation its core capability. Surrounded by the supportive environment of the emerging innovation cluster in Shenzhen, Huawei's R&D capability was established.

A global industry dominated by proprietary innovation

By the 1990s, with the advent of the Internet and the growth of mobile networks, the worldwide telecommunication market was growing quickly. The telecommunications industry had long been dominated by proprietary network technology from a range of well-established providers, but limited interoperability was built into the network technologies. This approach kept the cost of telecommunication services high, protected market positions, and inhibited competition.[4]

At this time, Huawei began to expand from its domestic market into markets around the world. These markets differed from Huawei's domestic market and from each other in their technical needs as well as their commercial requirements. Recognizing these new conditions, Huawei set about expanding its R&D activities into these overseas markets. The company's strategy was to place its R&D ventures as close as possible to the locations of its customers. To leverage the concentrated pools of talent pools and innovation excellence, it established those R&D operations mostly within existing clusters.

The advent of Internet protocol

By the mid to late 1990s, the Internet, based on a global standard called 'Internet protocol', came into prominence. In the years that followed, the Internet began to converge with traditional information and telecommunication technologies (ICTs). As a result, telecommunications operators began to think differently about how network architecture should be designed.[5]

Much of the research focus at the time was in replicating the traditional 'five 9s' reliability (0.99999 out of 1), which had become the accepted quality of service in telecommunications for Internet-based platforms. These Internet-based platforms promised operators significantly lower operating costs, but they compromised on service quality and reliability.

At the same time, research was also focused on the introduction of data and Internet services on mobile networks and devices. This period of convergence created greater collaboration between the IT technology clusters in locations such as Silicon Valley and the traditional telecommunication research clusters concentrated in Chicago and the East Coast of the USA, in northern Europe, and in Germany and the United Kingdom (UK).

Embracing open innovation

Open innovation is the principle that accepts that the best ideas can come from anywhere, not necessarily from within a single organization. Open innovation accepts that breakthroughs in innovation achieved by one company can be shared with both competitors and customers, usually under license, to accelerate the innovation process for all parties.[6]

In short, open innovation speeds up the creation of new technology and new markets through patent cross-licensing agreements and helps to spread global standards across the industry. It also allows multiple viewpoints to be considered in the product design and development process and includes the views of customers. These requirements can be engineered directly into the innovation life cycle.

Open innovation mitigates the investment risks of R&D. It avoids duplication of effort, reduces the cost of innovation, and accelerates the delivery of new products and services to market. It also leads to products that customers want, because open innovation begins with a clear understanding of specific customer requirements and maintains a view of these requirements throughout the innovation development cycle. The open innovation process ends only when customers enjoy market success through these new innovations.

Distributed innovation

As Huawei expanded its sales operations internationally, it chose, like many other enterprises, to implement a distributed innovation strategy. This led to the creation of R&D facilities in multiple geographies around the world, each with a specific innovation focus. The majority of Huawei's R&D sites were located in established innovation clusters. These decisions were driven by a number of requirements.

First was the requirement to have R&D operations located closer to key customer locations. The second was to place research operations in established clusters that offered an existing ecosystem, a collection of skilled talent, and existing linkages

with universities and research institutes and infrastructure.

This led to the location of R&D sites in northern Europe, where clusters had been established in mobile network and base station technology development as well as mobile device design. For the same reasons, optoelectronic research operations were located in Italy, Germany, and the UK, while software development centres were established in Bangalore, India, and the USA.

As convergence across the ICT industry progressed, the organizations located in these technology-specific distributed clusters began to work more closely together.

The evolution of the smartphone market, for example, made software and applications development in Bangalore or Silicon Valley more central to the future of the mobile telecommunications industry. As telecommunication networks began to carry digital entertainment and video games, this led to stronger collaboration between innovation centres in video compression technology with network equipment development.

Because of convergence, companies with a widely distributed R&D footprint found themselves well positioned to take advantage of a converging IT and telecommunications industry. Open innovation allowed other companies to participate in converging technology development through the licensing of third-party innovation.

The role of global standards bodies

As the communications and IT industries converged, network equipment from one vendor was required to execute the same communication protocols, within the same communication networks, as the equipment produced by competitors. This process is governed by a range of international standards bodies. For example, the 3rd Generation Partnership Project (3GPP) unites standards development partners from different countries to provide market advice and opinion on unified platforms, producing specifications for a 3G standard mobile system based on the evolved Global System for Mobile Communications (GSM) core networks, which have become core standards in today's global telecommunications industry.[7]

As in other industries, global standards bodies, to a large extent, play a critical role in the innovation and development of the ICT industry. They constitute one of the major facilities necessary for open innovation and collaboration.

Creating a sound environment for innovation investment

Innovation is an investment. Commercial companies that invest in innovation do so in the expectation that they will earn a return that can be reinvested in future R&D. For this reason, the choice of locations for new R&D sites is an important decision.

Typically, Huawei looks first to established clusters. These can provide the necessary pool of skilled professionals and links to academic research institutions and universities, as well as the right public policy environment to help ensure that the process of establishing a new centre proceeds as smoothly as possible.

Huawei is open to establishing R&D centres in new locations, particularly if they are close to key customers or if other conditions are attractive. Huawei will continue to look at the presence of supportive public policies, infrastructure and investment commitments, open trade philosophies, and respect for intellectual property rights (IPRs).

The global telecommunications industry is continually reinventing itself through innovation and new technology development. Good innovation is blind to geography, nationality, and the passport of the innovator, and recognizes that new ideas will not always come from existing centres of expertise. The ability to recognize, embrace, and enable innovation lies at the heart of any culture of innovation.

Respect for and protection of intellectual property rights

The idea that innovation is a fundamental input to socioeconomic development is a strong belief held within the corporate culture of any successful innovative company. Commercial companies that invest significantly in R&D do so on the basis that their innovation will have the opportunity to earn a return on those investments. Without a return on innovation, the ability to continually innovate diminishes. This ability requires that IPRs be both respected and protected. This is a key factor in establishing a culture of innovation and achieving scale.[8]

As an example, Huawei has entered into numerous cross-licensing agreements with industry peers since 2002 and has paid a large amount in patent licensing fees to use third-party intellectual property. In 2012 alone, Huawei paid some US$300 million in patent licensing fees.

Huawei also licenses its own intellectual property. In fact, Huawei is one of the leading IPR holders in the ICT industry. By December 2012, Huawei had filed 41,948 patent applications in China, 12,453 international Patent Cooperation Treaty patent applications, and 14,494 patent applications outside China.

Huawei attaches greater importance to the commercial value and quality of its IPRs than to their actual quantity, however. Huawei takes the lead in holding patents in such technical fields as long-term evolution, next-generation wireless communications technology, fibre-to-the-home networks, optical transport networks, and the G.711.1 audio standard on fixed broadband networks worldwide. Huawei strategically maintains its patent application level at 3,000 to 4,000 applications annually.

The future of technology innovation clusters

Just as technology convergence between telecommunications, IT, and the Internet has driven the growth of cross-cluster collaboration in recent years, the next decade will see the closer collaboration of ICT clusters with centres of innovation in other industries worldwide.

ICTs have traditionally been a business support capability for businesses. With the growth of cloud computing and big data, the fragmentation of markets, and the changes in consumer behaviour that are the consequence of the growth of social media and connected, digital technologies, however, the opportunities and need for industries to bring ICTs to the heart of their operations is rising.

ICTs and the energy industry will work more closely in the development of smart grids, for example. This will help to maximize the utilization and sustainability of energy resources. The integration of ICTs with travel information, public safety, and scheduling systems will create intelligent, integrated travel opportunities that enable people and goods to be transported more safely, predictably, and efficiently by roads, by rail, by air, and by sea. Looking to the future, every business will need to become an ICT business. ICTs will be the infrastructure, the central nervous system that makes the business of the future relevant and competitive. This will require cross-industry collaboration on a scale not yet experienced. This, in turn, will see an acceleration of cross-cluster collaboration.

Conclusion

Innovation clusters bring scale and ease of collaboration to innovation. There are many reasons why today's established clusters exist. Some were created through acts of history, while others depended on acts of public policy. In all cases, maintaining and growing innovation clusters require a range of factors—an environment that encourages investment, infrastructure, public planning, and policies, and the concentration and renewal of skills and connections with academia.

The recent revolutions in high-speed communication technologies have made cross-cluster collaboration and communication easier.

Good innovation delivers social and economic development, creates jobs, and improves life and business. However, it is also an investment, and investments need to earn financial returns if a commitment to innovation is to be sustained and maintained.

As product life cycles accelerate and customer demands for innovation grow, an open innovation approach—where innovation is shared among all stakeholders—helps to speed up development and helps to ensure investment returns.

Technology convergence has driven cross-cluster, cross-industry collaboration in innovation over the last decade. The next decade will be driven by cross-industry or cross-sector innovation, as ICTs are applied to the transformation of industries for the digital age.

Notes

1 Mandel, 2011.

2 Sallet, Paisley, and Masterman, 2009.

3 Tantri, 2011.

4 Braunstein, Jussawalla, and Morris, No date.

5 Ray and Sarracen, 2002.

6 Chesbrough, 2005.

7 For more detail about Global System for Mobile Communications (GSM) core networks, see http://www.etsi.org/about/our-global-role/3gpp.

8 WIPO, 2012.

References

Braunstein, Y, M., M. Jussawalla, and S. Morris. No date. 'Comparative Analysis of Telecommunications Globalization'. University of San Francisco. Available at http://people.ischool.berkeley.edu/~bigyale/global_telecom.pdf.

Chesbrough, H. W. 2005. *Open Innovation: The New Imperative for Creating and Profiting from Technology.* Cambridge, MA: Harvard Business School Press.

Mandel, M. 2011. 'Scale and Innovation in Today's Economy'. *Policy Memo,* 13 December. Progressive Policy Institute. Available at http://progressivepolicy.org/wp-content/uploads/2011/12/12.2011-Mandel_Scale-and-Innovation-in-Todays-Economy.pdf.

Ray and Sarracen. 2002. 'How Telecoms Can Get More from Internet Protocol'. *McKinsey Quarterly Review.*

Sallet, J., E. Paisley, and J. Masterman. 2009. 'The Geography of Innovation: The Federal Government and the Growth of Regional Innovation Clusters'. *Science Progress,* September. Available at http://www.scienceprogress.org/wp-content/uploads/2009/09/eda_paper.pdf.

Tantri, M. 2011. 'Trajectories of China's Integration with the World Economy through SEZs: A Study on Shenzhen SEZ.' *Working Paper* No. 261. Bangalore: Institute for Social and Economic Change. Available at http://www.isec.ac.in/WP%20261%20-%20Malini%20L%20T_4.pdf.

WIPO (World Intellectual Property Organization). 2012. *World Intellectual Property Report: The Changing Face of Innovation.* WIPO Economics & Statistics Series. Geneva: WIPO.

Local Innovation Dynamics: Examples and Lessons from the Arab world

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A new type of development strategy driven by innovation is needed in Arab countries to cope with the daunting challenges—chief among them unemployment—they face.[1] This new approach calls for higher growth rate regimes sustained by strong innovation and entrepreneurship efforts. Dynamic technology-based sites, such as science parks, industrial clusters, and so on, are key instruments for the success of an innovation-driven development strategy. Inspired by global experience, a number of Arab countries have actively embarked on such sites; there are no less than 50 technoparks in the region. Most of those, however, have experienced difficulties in 'taking off' and remain essentially real estate ventures.[2]

This chapter will look at the local dynamics of innovation in several Arab countries and focus on three success stories: the Elgazala Technopark in Tunisia, which specializes in information and communication technologies (ICTs); Haliopolis in Agadir, Morocco, an agrifood cluster; and the City of Dubai, which has witnessed dynamism in service innovation. These examples will be used to illustrate the common features of how such specific sites—technoparks, industrial zones, and city districts—can develop and how they can inspire similar approaches in the region and elsewhere. Key features of all three sites include the establishment of a dynamic private sector that cooperates actively with a strong knowledge and research base; the need for a clear, long-term vision that drives their development; the importance of building on competitive advantage within a good governance framework that involves all key actors along with the public authorities; the imperative to engage in continuous efforts to increase sophistication and diversification of the activities undertaken; and the need to forge strong international integration using methods such as attracting foreign direct investment (FDI), joint education schemes, research and development (R&D) cooperation mechanisms, and the like.

Elgazala Technopark, Tunisia

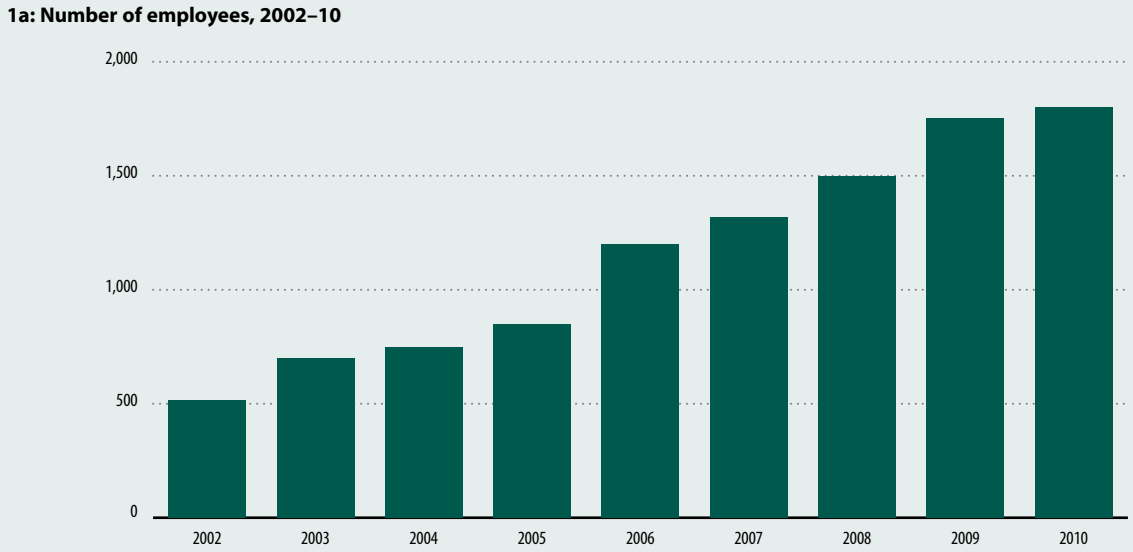
Elgazala was the first technopark in Tunisia and in the Maghreb Region to specialize in the ICT sector;[3] it was launched in 1999 as part of Tunisia's national strategy to develop this sector.[4]

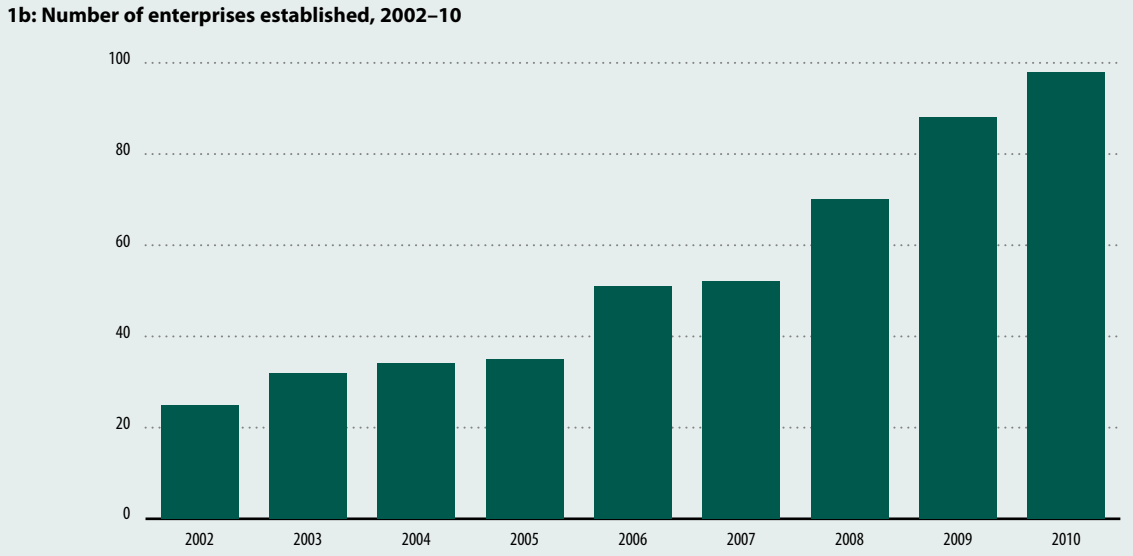
The ecosystem of Elgazala Technopark is highly diversified and incorporates a variety of components to create a vibrant environment where innovation can flourish. It includes a business incubator; a research centre dedicated to the ICT industry (Centre Etude Recherche Telécommuniations, or CERT); various telecommunication schools, including two doctoral schools; and several research divisions dealing with ICT-related disciplines: telecommunication systems, network engineering, mobile network, information systems, and business communications. Moreover, several national agencies—such as the National Electronic Certification Agency and the National Frequency Agency—are located in the technopark to serve ICT companies.

Elgazala Technopark has so far been relatively successful in meeting its objectives. It currently hosts about 100 firms (among them are 13 multinationals, including Microsoft, Huawei, Alcatel-Lucent, and Stonesoft), compared with 25 only in 2002 (Figure 1). The number of employees working in the technopark has increased from 500 in 2002 to about 2,000 currently, 70% of whom have a Master-level degree in engineering or an equivalent degree.[5] Moreover, 67% of these personnel are working in a private-sector entity.[6]

The environment offered by Elgazala—through technology transfer mechanisms from multinationals to national small and medium-sized enterprises, the sharing of resources, academia-business collaboration, or even participation in fairs and other thematic events—has helped to foster synergy with different actors in the technopark. For instance, 23% of intra-company partnerships were set up to work jointly on various projects and another 23% were in the form

Figure 1: Elgazala Technopark, Tunisia





Source: Elgazala Technopark, CMI survey, 2012.

Table 1: Inter-company partnerships in Elgazala Technopark

Type of partnership	Frequency (%)
Joint projects implementation	23
Joint participation in calls for proposals or consultations	23
Propose new solutions	17
Solving internal problems	6
Other services/assistance/counseling	31

Source: Ennaifar, 2008.

of joint participation in calls for proposals or consultations (Table 1).[7]

The internationalization dynamics created within Elgazala Technopark have had an influential spillover effect on the quality of the output produced by the companies in the technopark. For instance, 33% of the companies are totally exporting firms, while 29% are partially exporting, and the rest target the local market.[8] Moreover, 75% of the technological production taking place in the technopark in areas such as software and information technology solutions and services is directed towards exports.

Because of the relative success of the Elgazala model, in 2008, the Tunisian government decided to build technology parks in two new areas of Ariana and Manouba, in the suburbs of Tunis (Figure 2). In addition, the government has plans to replicate the model for other sectors (e.g., the textile and clothing sector at the Monastir cluster; renewable energy, water, and biotechnology at Borj Cedria Technopol; and agro-food industries at the Bizerta technology park located in the north of the country).

However, Elgazala is faced with some challenges that it would do well to overcome to attain its full potential. One of these has to do with the need for adequate financial resources for R&D activities, notably for its start-ups.[9] Additionally, despite a slew of incentives, neither technical nor managerial human competencies have been easily attracted to work on new ideas and to start up their own new businesses.[10] There is also a need to think of the model's limited sectoral diversification—it is too focused on ICTs—as it seems to be reaching a saturation point, especially in terms of job creation. Opportunities in related activities (applications of electronics, software, telecommunications, etc.) or in new fields (biotechnology) should be actively sought. Such diversification would call for a continuous critical mass of new ideas and start-ups to trigger more growth and jobs.

Haliopolis in Agadir, Morocco

A number of Moroccan cities have benefited from national plans launched by the Moroccan government over the past decade to boost established sectors such as tourism, agriculture, automobile, aeronautical, electronics, and offshoring industries.[11]

The city of Agadir (the capital of the Souss-Massa-Draâ region) has been at the forefront of some of these plans because it was already advanced in traditional sectors, such as tourism, agriculture, and fishing (representing 21%, 13%, and 6%, respectively, of the region's economy). The agro-food sector constitutes around two-thirds of the region's value-added, 81% of investment, 92% of exports, and around 80% of industrial employment. The region also contributed to more than 41% of Moroccan value-added in the fishing and aquaculture industries between 1999 and 2009.

Since the beginning of 2000, Morocco was faced with increasingly strict regulations and rules imposed by the European Union (EU), which is its biggest trading partner and accounts for half of its agro-food exports. In order to comply with these regulations, Moroccan enterprises were pushed to introduce innovative production processes in the fishing sector and to upgrade and modernize their related infrastructure. Such reforms have had a significant positive impact on the overall performance of the fishing industry.[12] These regulation constraints have also organically pushed the creation of a number of export groups (cooperatives) in the form of 'Boards' with the mission of coordinating issues related to logistics, insurance, and transport to foreign markets, as well as sharing available quotas, as allowed by the EU in this sector.[13]

Following these developments, Agadir, through Haliopolis, became the heart of the 'Halieutis' strategy, which is dedicated to strengthening the fishing sector's contribution to the national economy by tripling its value-added to attain 22 billion dirhams in 2020.[14] Agadir has also been chosen to host the country's first fishing and processing seafood cluster because of its high growth potential in this field, in addition to its location (it is near to Agadir harbour and the International Airport, and connected to northern Morocco by an expanding highway network) and know-how in seafood processing (the Souss-Massa-Draâ region is endowed with skilled human resources and training centres specialized in the halieutic industry).[15]

Moreover, the government has put in place an attractive incentive

Figure 2: Location of the cities of Manouba, Ariana, and Tunis

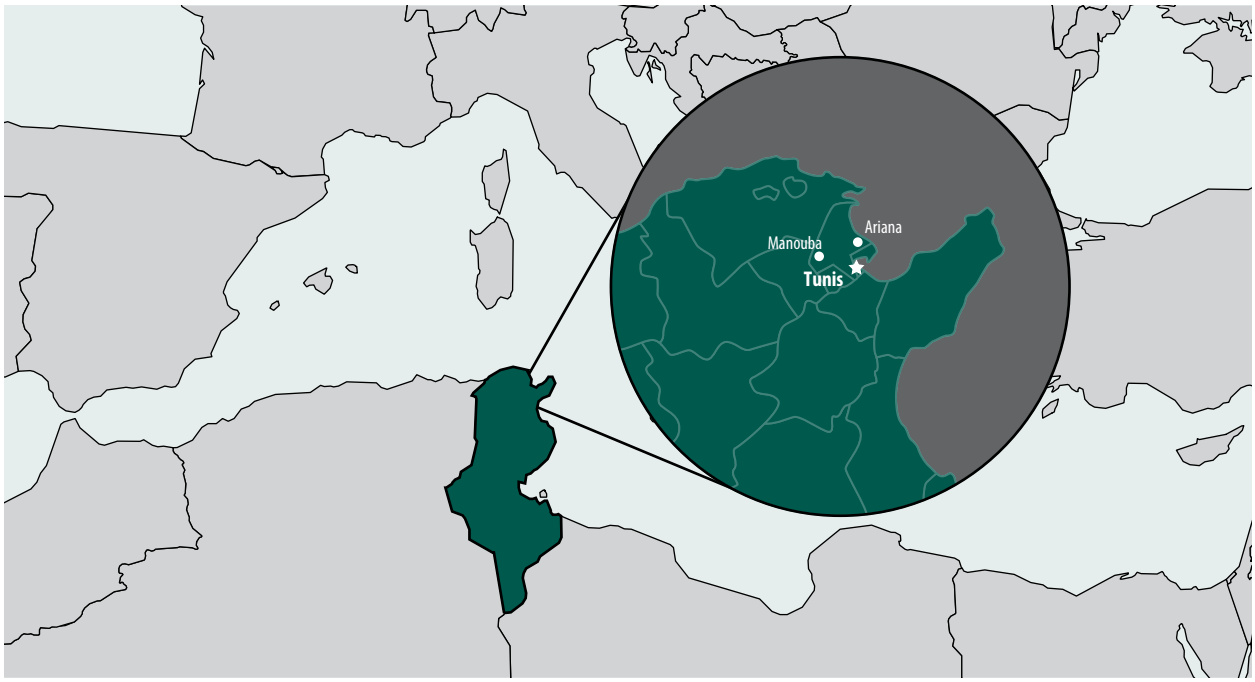
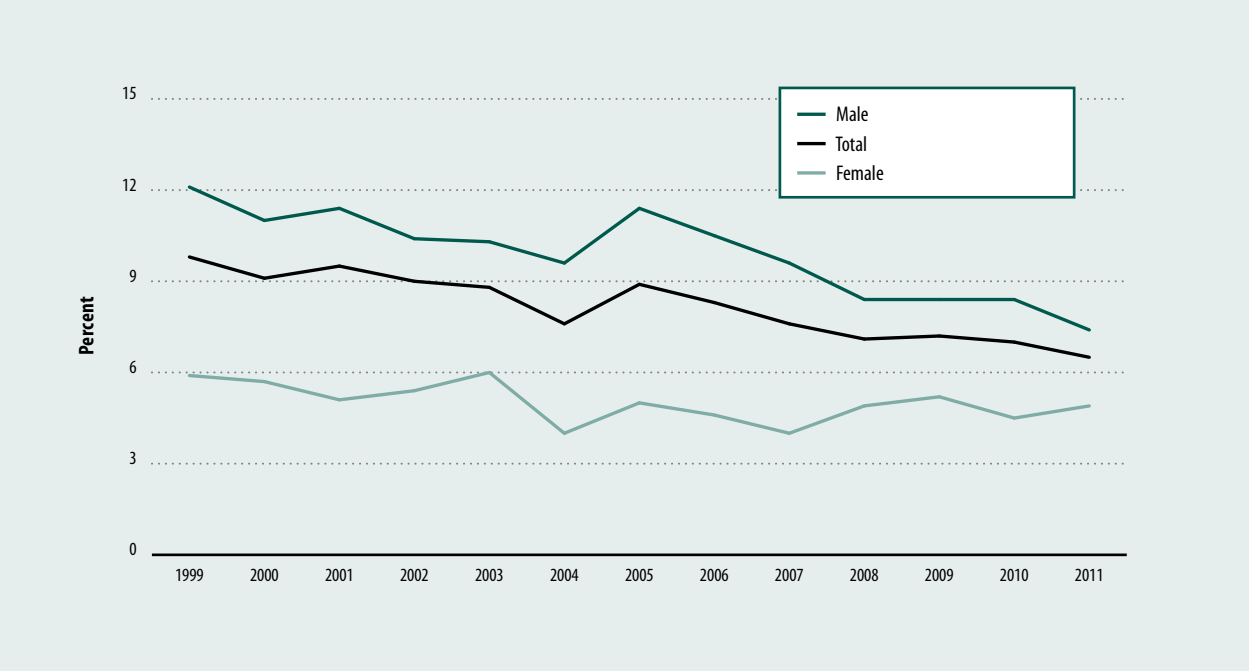


Figure 3: Unemployment rates in the Souss-Massa-Draâ region, 1999–2011



Source: Enquête nationale sur l'emploi, Haut-Commissariat au Plan (Direction de la Statistique).

package to encourage businesses to invest at Haliopolis. The package includes, among other things, tax measures, support schemes to support company relocalization to its new fisheries park, and assistance services in training and recruitment.[16]

As part of this plan, the Haliopolis Park was established in 2009 to cluster all actors in the value chain of the seafood processing, and to integrate various actors as sources of innovation. The park is registered as a company with stockholders—financial partners that have invested in the park for its development—from the private sector: Medz (55%), Crédit Agricole (22%), Igrane fund (15%), as well as the Souss-Massa-Draâ region (8%).[17] This project also aims to enhance forward linkages in the seafood-processing industries, such as in packaging and conditioning as well as providing related support and logistics services.

Although the project is still in its early stages, all lots of the first phase (70 hectares in a total area of 150 hectares of the Haliopolis Agadir) were sold by the end of September 2012 for 21 projects covering different segments of transformational processing, such as deep-freezing, preserving, producing flour and fish oil, and processing algae. With an investment of approximately 1 billion dirhams (around US$115 million), the first phase has also succeeded in creating 4,600 jobs.[18] The project predicts the creation of 20,000 job opportunities in total, including 13,000 direct jobs.[19]

Fostering innovation is one of the main channels used by Haliopolis to improve the competitiveness of companies within it. It offers support to R&D projects for companies within the cluster to improve their research skills and to create partnerships with research institutions. For instance, Haliopolis has partnered with Agadir International University (Universipolis) to offer training to its personnel as part of its continuous education program.

Haliopolis and other projects, such as the annual fishing exhibition Salon Halieutis, have helped place Morocco among the largest producers and exporters of seafood in Africa. In 2011, Moroccan exports of seafood recorded nearly 11.7 billion dirhams (roughly US$1.4 billion), thus contributing nearly 58% of its food exports and 6.8% of Morocco's total exports. Agadir's contribution to the preserved seafood sector jumped from 4.48% of the country's production in 2009 to 11.82% in 2012.[20]

Thanks to all these efforts, the region's unemployment rate dropped from 12.1% in 1999 to 7.4% in 2011 (Figure 3).[21]

This performance has been in no small part the result of the promotion of technological innovation and increasing the effectiveness of the support measures provided to companies seeking new markets (such as business information, fairs, and export platforms), as well as the development of logistics to optimize costs and improve connectivity of Morocco with different destinations, especially the African market.

In sum, the Agadir success story is largely the consequence of an excellent synergy between actions taken by dynamic industrial and agricultural communities on one hand and efficient government policies on the other, combining adequate investments in infrastructure, appropriate support for innovation and export, and so on.

City of Dubai

The city of Dubai is no stranger to innovation and is on its way to developing into a vibrant knowledge economy. The city's economy, like economies in many parts of the Arabian Gulf, relied heavily on pearls until the invention of artificial pearls in 1920s, which drastically affected the city's economy, and the discovery of oil on Dubai soil in mid-1960. But the Emirate's visionary rulers were determined to build Dubai on a much more diversified development model than its neighbours, aiming to give it a unique regional positioning in the knowledge economy. They focused on making Dubai a regional transport hub and tourist destination during the first phase. The second phase was devoted to building up needed infrastructure for various knowledge-based industries.[22]

The government of Dubai has drawn up two successive plans: Vision 2010 (approved in 2002) to drive the Emirate towards a knowledge-based economy, and the Dubai Strategic Plan 2015 (approved in 2009) to achieve social, economic, and environmental sustainability. Under the framework of the Vision 2010 master development plan, a number of mega-projects were devoted mainly to knowledge-based activities and innovation (Table 2).

The result of the implementation of both these plans has so far been impressive. The share of oil revenues in Dubai's GDP dropped from 18% in 1995 to 10.4% in 2000 and to less than 1.5% in 2011; in 2011 the oil sector represented only 1% of total stock in FDI.[23] Knowledge-based industries and services increased their share of GDP over the same period: tourism, financial services, manufacturing and transport, and storage and communication has accounted for a large share of GDP (4%, 11.3%, 14.2%, and 14% in 1995, 2000, 2011, and 2012, respectively). The real estate sector has also experienced a boom, notably between

Table 2: Dubai knowledge and technology sites

Name	Year founded	Area (km2)	Activities
Jebell Ali	1985	100	Trade
Dubai Airport Free Zone	1996	12	Trade
Dubai Internet City	2000	4	Information technology
Dubai Technology Park	2003	3	Petrochemicals
Knowledge Village	2003	21	Healthcare
Dubai Industrial City	2004	52	Manufacturing
Dubai Financial City	2004	44	Finance
Dubai Tech	2006	2.3	Biotech
Dubai Silicon Oasis	2007	7	Information technology

Source: Ennaifar, 2008.

2004 and 2008, as a result of the establishment of a number of construction megaprojects; it currently accounts for 9.7% of the Emirate's GDP.

TECOM Investments, a member of Dubai Holding, was established in 2005. It is now a global company dedicated to the development of knowledge industries and business growth, which it does in part through TECOM Business Parks. It comprises 10 interconnected business parks arranged in five industry clusters: the ICT, Media, Education, Sciences, and Manufacturing and Logistics sectors.[24] Some 4,500 businesses have taken part in these clusters and business parks not only because of the state-of-the-art infrastructure available, but also as a result of generous incentives provided by the government, which include tax incentives (these apply to corporate taxes, import and export taxes, and personal income taxes) and the possibility of full repatriation of capital. Dubai has also successfully attracted bright minds, in addition to investors, from all over the globe, preventing brain drain. Dubai Internet City (sometimes referred as the 'Middle East Silicon Oasis') currently employs 25,000 knowledge workers with 182 different nationalities.[25]

With the oil boom of the mid-2000s and the return of many Arab funds following the September 11, 2001, attacks, and accompanied by a speculative real estate bubble, Dubai's financial sector began to flourish. Since 2001, the city has witnessed double digit real GDP growth rates. Dubai has emerged as a dynamic financial hub for the region, hosting many banks and insurance, financial, and legal service firms. The government established the Dubai International Financial Center (DIFC), a free zone regulated by its own independent commercial and civil laws and under the United Arab Emirate (UAE) constitution. The DIFC provides a competitive operating environment that offers many advantages, including the possibility of full foreign ownership, a 0% tax rate on income and profits (guaranteed for a period of 50 years from 2004), and no restrictions on the repatriation of income and profits. These regulations have opened the door for financial institutions to start introducing financial innovations to the market, notably in Islamic finance.

These activities have served to make Dubai a model for neighbouring countries such as Qatar, Kuwait, and Saudi Arabia. However, the 2009 global financial crisis has called Dubai's growth model into question. Real estate speculation, accompanied by huge debts, led to a rescue operation by the UAE authorities in 2009. Since then, Dubai has recovered and is on a modest growth path. To continue on a higher growth trajectory that is sustainable in the long term, it will need to maintain its engagement with the knowledge economy by intensively exploring new areas, notably in high-tech and R&D activities, and by developing top-notch higher education programmes to educate a cadre of highly skilled people.

Common features and policy conclusions

These three cases, although different in terms of size and sector specialization, present some common features that characterize successful innovative sites:

- *Efficient government action,* which can be fostered by means such as building the needed infrastructure, providing a variety of incentives, and establishing a sound legal framework. This should be coupled with investments in research and education.
- *Dynamic interactions among local actors,* which can either preexist government action or be stimulated by it. Collaboration between industry and the on-site academic and research institutions is key to increase the overall skills of the workforce, to offer technical support, and to generate new ideas and spinoff companies, thus leading to the creation of jobs.
- *Internationalization of the sites,* which can be done by attracting FDI, having quality standards, encouraging export development, and developing international branding. These mechanisms are crucial if the sites are to be successful at inserting companies, universities, research centres, and other actors into global value

chains and competition, and for generating continuous pressure for quality and progress.

- *A focus on (potential) competitive advantages of the sites,* and then a demonstration of some tangible success—in the form of dynamic industrial clusters. This pragmatic approach of 'plucking the low-hanging fruit' helps to create the necessary trust and confidence in the process and to facilitate further reforms.
- *Sustained effort* for diversification and renewed sources of growth, with the creation of more sophisticated activities.

The above factors for success of local innovative sites are found all around the world. It is, however, important to observe that such sites can flourish in the Arab region, which needs a proliferation of such experiences to respond to the important challenges it faces, particularly in terms of the creation of good and sustainable jobs.

To sum up, to promote dynamic technology sites of national and global significance, governments should:

- *Be visionary catalysts* rather than 'hands-on' investors, and should create a climate favourable to entrepreneurship, knowledge accumulation, and cooperation among actors. This requires not only appropriate investments in infrastructure, education, and R&D structures along with the provision of attractive incentives, but also good governance in which the business sector plays an important role, alongside government and research and academic bodies. Most governments in the region are not prepared to play this kind of subtle role, which is needed at both the central and local level and calls for a kind of learning process. This process can be usefully stimulated by an exchange of good practices, study tours, and so on within the region, as well as with other parts of the world.
- *Be international integrators,* by inserting actors into the global economy by all means possible, through mechanisms such as FDI, international branding, trade networks, joint education, and R&D projects. These vectors not only bring financial and intellectual resources to a site, but also ensure a continuous pressure for quality upgrading. Regional integration processes—in the Arab world and in the Mediterranean—are of particular importance. Some focused and specialized schemes have begun to develop: examples include university twinning and management, joint R&D platforms, and access to venture capital.
- *Be clever strategists,* beginning with fine-tuned and focused projects that can show visible results after a few years and that can help build self-confidence among concerned communities. Gradual diversification and higher sophistication need to be encouraged if the economies are to keep up with the international competition. Various obstacles affect the formulation and implementation of such strategies. Among these are a lack of coordination among the different government departments (finance, infrastructure, education, research, and so on); the planning of grandiose projects with excessive ambitions; and continual changes in political and administrative personnel. It is for these reasons that the development of dynamic and innovative sites—crucial for the region—should be a national cause, broadly shared and understood among all key actors.

This chapter has considered the common elements of three different types of innovation-fostering approaches in three different countries with unique environments. These features can serve as landmarks for other countries striving to institute their own models for innovation in their own circumstances. Innovation is a powerful tool for progress, and these three successful examples have a great deal to offer the rest of the region.

Notes

1 This is the subject of a new report, *Transforming Arab Economies: Traveling the Knowledge and Innovation Road,* prepared by the Center for Mediterranean Integration (CMI) with the World Bank, the European Investment Bank (EIB), and the Islamic Educational, Scientific and Cultural Organization (ISESCO). See World Bank, 2013.

2 See World Bank, 2013. Appendix 9.1 will be available at www.cmimarseille.org/ke.

3 The Maghreb Region countries are Morocco, Algeria, Tunisia, Mauritania, and Libya. See World Bank et al., 2010, for more information about science parks in the region.

4 InfoDev Incubator Support Center (www.idisc.net/en/incubator.65.html).

5 World Bank, 2013.

6 MICT, 2010.

7 Abida, 2013.

8 MICT, 2012.

9 INSME, 2012.

10 Ghodbane, 2008.

11 These plans targeted different sectors, such as tourism (Plan Azur and Vision 2020); agriculture (Plan Maroc Vert); artisanal industry (Vision 2015); and the automobile, aeronautical, electronics and offshoring industries (Emergence Plan II).

12 Peuckert and Gonçalves, 2011.

13 Kuznetsov, Dahlman, and Djeflat, 2012.

14 Oxford Business Group, 2011.

15 Centre Régional d'Investissement: Souss Massa Draâ, 2010.

16 ATLAS, 2010.

17 ANIMA, 2011.

18 Agadir Haliopôle, 2012.

19 News Central: Morocco's News, 2009.

20 These data come from the Rapport Statistique des produits de la mer, 2010 and 2012.

21 Enquête nationale sur l'emploi, Haut Commissariat au Plan (Direction de la Statistique). (www.hcp.ma/Souss-Massa-Draa_a269.html)

22 Aubert and Reiffers, 2004.

23 Dubai Statistics Center.

24 Dubai Internet City and Dubai Outsource Zone form the ICT cluster, while Dubai Media City, Dubai Studio City, and the International Media Production Zone make up the Media cluster. Dubai Knowledge Village and Dubai International Academic City are part of the Education cluster. DuBiotech and ENPARK compose the Science cluster. Dubai Industrial City comes under the Manufacturing and Logistics cluster. (See www.tecom.ae).

25 Dubai Internet City, Corporate Profile and Fact Sheet, available at www.tecom.ae/uploads/file/DIC-fact-sheet.pdf.

References

Abida, N. 2013. 'Les Technopôle TIC en Tunisie'. WIPO African Conference on the Strategic Importance of Intellectual Property (IP) Policies to Foster Innovation, Value Createion, and Competitiveness. 13 March. Dar es Salaam: WIPO.

Agadir Haliopôle. 2012. 'La stratégie Halieutis est au cœur de la stratégie du Département de la Pêche maritime en 2013'. *Newsletter.* Agadir. October.

ANIMA. 2011. 'CRI SMD at the Heart of the Haliopolis Project'. *Invest in Med.* Morocco: Souss Massa Drâa Region. Available at www.animaweb.org/uploads/bases/document/CRI-SMD_2011_EN_4.pdf.

ATLAS, M. A. H. 2010. 'Use of "Territorial Intelligence" in the Development of Industrial Clusters in Morocco'. Master of Science thesis, August. Edinburgh: Edinburgh Napier University. Available at http://www.master-iped.com/downloads/USE%20OF%20TERRITORIAL%20INTELLIGENCE%20IN%20THE.pdf.

Aubert, J.-E. and J.-L. Reiffers. 2004. 'Knowledge Economies in the Middle East and North Africa: Toward New Development Strategies'. *WBI Learning Resources Series.* Washington, DC: World Bank. Available at http://www.ecolabs.org/IMG/pdf/MENA4K.pdf.

Centre Régional d'Investissement: Souss Massa Draâ. 2010. 'Haliopolis: The First Halieutic Park in Morocco'. Presentation at the ANIMA conference 'Territorial Marketing: Investments for the Local Economic Development Workshop'. Amman. January 14th. Available at www.animaweb.org/uploads/bases/document/CRIAgadir_Haliopolis_2010_EN_5.pdf.

Dubai Internet City. Corporate Profile and Fact Sheet. Available at www.tecom.ae/uploads/file/DIC-fact-sheet.pdf (accessed 16 March 2013).

Enquête nationale sur l'emploi, Haut Commissariat au Plan (Direction de la Statistique). Available at www.hcp.ma/Souss-Massa-Draa_a269.html.

Ennaifar, A. 2008. 'Technopôle Elgazala acteur majeur pour lesTIC en Tunisie.' MEDINNOV. November.

Ghodbane, W. 2008. 'ICT Job Shifts and ICT Cluster Assessment: An Exploratory Study'. *Proceedings of SIG GlobDev's First Annual Workshop,* Paris, France, 13 December.

INSME. 2012. 'Interview with Mrs. Aicha Ennaifar'. *INSME's Interviews.* Available at www.insme.org/insmes-interviews/interview-with-mrs.-aicha-ennaifar/interview.

Kuznetsov, Y., C. Dahlman, and A. Djeflat. 2012. *How to Facilitate High-Productivity Employment in MENA Economies?* Unpublished Background Report for the CMI. Marseille: CMI.

MICT (Ministry of Information and Communication Technologies), Tunisia. 2010. *El Gazala Report.* Unpublished.

———. 2012. Acteur Majeur pour la Promotion des TIC en Tunisis. El Gazala Technopark. Available at http://www.elgazala.tn/fileadmin/template/PDF/Elgazala_Technopark1_2012.pdf.

News Central: Morocco's News. 2009. 'Morocco to Set Up Large Halieutics Project'. 11 March. Available at http://news.central.co.ma/politics/home-morocco-to-set-up-large-halieutics-project.html

Office National des Pêches. 2010 and 2012. Rapport Statistique des produits de la mer. Rabat: Office National des Pêches.

Oxford Business Group. 2011. *The Report: Morocco 2011.* London: Oxford Business Group.

Peuckert, J. and J. Gonçalves. 2011. 'National Quality Infrastructure in the Context of Emerging Innovation System'. *African Journal of Science, Technology, Innovation and Development* 3 (2): 43–55.

World Bank. 2013. *Transforming Arab Economies: Traveling the Knowledge and Innovation Road.* Prepared by the CMI (Center for Mediterranean Integration) with the World Bank, EIB (European Investment Bank), and ISESCO. Washington, DC: World Bank.

World Bank, EIB, Medibtikar, and Ville de Marseille. 2010. *Plan and Manage a Science Park in the Mediterranean.* Marseille, Luxembourg, and Giza: EIB.

Innovation Clusters Initiative: Transforming India's Industry Clusters for Inclusive Growth and Global Competition

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The growth of micro, small, and medium enterprises (MSMEs) and their continual innovation of products and processes are critical components of a socioeconomic development plan for emerging economies such as India to compete globally. MSMEs—registered (i.e., organized) and unregistered (i.e., unorganized) units—are widely acknowledged to be the primary creators of new employment and inclusive growth on the path towards a nation's development. However, MSMEs find it increasingly difficult to compete in a globalized world because they suffer from a lack of talent, resources, financing, and capabilities that are needed in the journey of innovation.

The National Innovation Council (NInC) was created by the Prime Minister of India in 2010 to re-think and formulate new approaches for inclusive innovation in India. NInC, which consists of a group of eminent Indian innovators, is managed from the Office of Advisor to the Prime Minister of India.[1]

NInC recognized that MSME industry clusters, with their pre-existing concentration of industry talent, know-how, capabilities, supply chains, and practices, represent a key asset that can help jump-start innovation activities, the benefits of which are locally relevant (Box 1). Among these benefits are new growth, new income, and new employment for the MSME industry cluster and its participants. NInC used a unique approach that transformed the existing and established local industry associations present within each MSME industry cluster to catalyse, drive, and sustain innovation activities to benefit the cluster.

Innovation clusters

Cluster-based approaches for fostering industrial development have been successfully tried in both developed and developing economies, including in those of the European Union, the United States of America (USA), Japan, China, the Republic of Korea, and South Asia. Efforts such as creating common facilities, streamlining supply chains, and providing focused skill-training programmes have led to the industrial development of clusters.[2] Examples of successful MSME cluster initiatives in India are found in the auto ancillaries cluster in Pune and the specialty chemicals cluster in Gujarat, but few efforts have been able to nurture and sustain an innovation-focused development that can scale broadly across the country.

Innovation, with the constraints faced by MSMEs, must be a highly collaborative effort if it is to be successful in filling gaps such as acquiring new technologies for product development and providing access to experts to analyse processes/techniques, assistance by mentors to facilitate creativity, access to risk capital, and so on. Innovation ecosystems are well known to be a necessary condition for innovation to flourish. Most government efforts, both in India and elsewhere, have depended on initial stimulus to sow innovation in industry clusters. However, such initiatives have faced challenges in sustaining the programme beyond the initial stimulus.

NInC, after much field analysis, designed a new model and piloted that model as a locally driven innovation approach, where government acts as catalyst and facilitator (rather than mandating a government-managed scheme or programme). The model stipulates that the approach will:

1. *Use the existing cluster's institutional and organizational entities:* Institutions and organizations that already exist should work on innovation and take responsibility for it (see the next section). Endeavour to avoid creating a new organization or facility.
2. *Initially select clusters primed for short-term impact:* After assessing the existing MSME clusters, pick first those with an ability to showcase innovation benefits quickly to various cluster stakeholders. This will inspire belief, confidence, and self-rallying behind innovation within the cluster(s) and will present a message likely to spread to other clusters.
3. *Recruit local innovation leadership:* Identify local people who

Box 1: MSME clusters data in India

Formal data on the number of MSME industry clusters in India varies, as most MSME units remain unregistered and it is difficult to collect primary and statistical information. For the Innovation Cluster Initiative by NInC, MSME industry clusters include industrial, handicraft, and handloom clusters in India.

The Ministry of Micro, Small and Medium Enterprises data show 311.52 lakh registered MSMEs,[1] which employed 732.17 lakh and had an annual production of Rs 1,095,758 crore for 2010–11.[2] Analysing India's Annual Survey of Industries (ASI) from the Ministry of Statistics and Programme Implementation reveals close to 8,500 clusters in the country for 2009–10 when micro-clusters are included.[3] The Cluster Observatory pegs the number of MSME clusters (including micro-clusters) to be between 4,000 and 5,000 (which the author considers as generally accepted).[4]

Table 1.1: MSME industry clusters in India, 2009–10

Cluster information	2009	2010
Number of clusters	8,377	8,571
No. of registered units operating	155,321	157,634

Source: Interpretation of Annual Survey of Industries, Ministry of Statistics and Programme Implementation, 2009–10 data.
Note: 'Clusters' are defined as unique combinations of National Industrial Classification (NIC) Level 3-digits enterprises with one or more units within states and districts.

It is important to note that, in all reports, the data collected reflect only the registered units and the organized workforce, which are estimated to represent just 15%–20% of the total units within MSME clusters in India.[5] The bulk of MSME units and most of its workforce are unregistered and unorganized. A recent presentation by the State of Kerala Furniture Manufacturers & Merchants Welfare Association (FuMMa) notes that, in their furniture industry, registered organized MSME units comprise only 15% of the total units; unregistered unorganized MSME units comprise 30%; and unregistered, unorganized, open (contract-work) MSME units comprise 55%.[6]

Table 1.2: MSME unit types in the furniture industry cluster, State of Kerala, India

Unit type	Percent of total
Organized MSME units	15%
Unorganized MSME units	30%
Unorganized, open MSME units	55%

Source

NInC.

Notes

1 A lakh is 100,000.

2 Annual Report 2011–12, Ministry of Micro, Small and Medium Enterprises, Government of India (see http://msme.gov.in/msme_ars.htm for details).

3 Annual Survey of Industries 2009–10, Ministry of Statistics and Programme Implementation, Government of India (see http://mospi.nic.in/mospi_new/upload/asi/ASI_main.htm?status=1&menu_id=88 for details).

4 The Cluster Observatory—a project of foundation for MSME clusters—is supported by the Department of Science and Technology and the Ministry of Science and Technology, Government of India (see http://www.clusterobservatory.in/ for details).

5 These are empirical estimates based on analysis by NInC and other government agencies.

6 These figures are from a presentation made by FuMMa (K. P. Raveendran) to the Chairman of NInC and the State of Kerala officials in Cochin, Kerala, January 2013.

have leadership capabilities, who understand the need for change in the MSME cluster, and who are respected by the various cluster stakeholders and can thus lead the change towards driving and sustaining innovation activities in the cluster.

4. *Create a partner interest in collaboration:* Develop economies of scale and win-win partnerships that can attract significant partners to work with MSME clusters on new products and processes in close collaboration with the existing MSME participants.

Using cluster industry associations to propagate innovation

The unique aspect introduced by the Innovation Clusters Initiative was the use of local cluster industry associations to catalyse and self-sustain innovation activities in the MSME cluster. The responsibilities of the local industry association are expanded from the typical industry advocacy/lobbying activities so that the local industry organization becomes a nexus point for agreeing on critical innovation needs, developing a vibrant innovation ecosystem, and initiating innovation-oriented activities.

Having an association that represents several hundred or thousand MSME units enables various economy-of-scale advantages. This approach allows MSME industry clusters to pool their R&D talent and efforts, to more rapidly recruit the leadership necessary for innovation, and to rally other assets for local industry-specific innovation. This approach also makes the MSME cluster more attractive to world-class partners to establish collaborations, makes the clusters better able to identify appropriate skills and resources, and enables a quicker validation of

Table 1: India's Innovation Cluster Initiative pilots, 2011–13

Location (region, state)	Industry sector	Total size of seven pilots (combined)
Krishnagiri, Tamil Nadu	Agriculture, Food processing	More than 1 million people employed 85,000 MSME units US$4 billion annual revenue
Agartala, Tripura	Bamboo	
Moradabad, Uttar Pradesh	Brassware	
Thrissur, Kerala	Ayurveda medicine	
Ernakulam, Kerala	Furniture	
Faridabad, Haryana	Auto components	
Ahmedabad, Gujarat	Life sciences	

Source: NInC.

new product prototypes and testing of new innovative processes. All these advantages, when combined, accelerated the pace of innovation at the MSME cluster.

Furthermore, the model provides a new source of revenue (through items such as fees for pooled R&D and services) for these industry associations and helps to establish a scalability model for government efforts. It is estimated that two-thirds of clusters have a dedicated association office or space at the local premises of an affiliated state or district agency that can be used as a networking hub for innovation.

According to an independent study conducted by IIT Roorkee on the Faridabad Small Industries Association (FSIA),[3] local associations can impact the cluster with a certain level of synergy that is necessary for getting collective benefits. Leadership of the FSIA is instrumental in providing collective solutions for individual problems. Memorandums of understanding between the FSIA and the Small Industries Development Bank of India (SIDBI), the Indian Development Bank of India (IDBI), the Indian Overseas Bank, and the United India Insurance Company are examples. These tangible benefits keep members interested in activities of the association. Further, a large number of regular activities are important for the success of such associations. A selection of activities is equally important for keeping the interest of members alive. The FSIA prepared the plan of activities which, on one hand, helped members to explore new markets for business and, on the other hand, improved efficiency and productivity of various member units.[4]

Innovation cluster pilots

NInC piloted the innovation cluster model and supported the creation of cluster innovation centres (CICs) in seven MSME clusters in the country during a one-year implementation period. The CIC consists of a small group of people resident within the industry association who will manage the development of an innovation ecosystem relevant for the local industry's needs. The CIC also acts as a networking and sharing hub, manages cluster innovation activities, and facilitates inbound/outbound interactions among cluster participants and partners for innovative new product and process development (Box 2).

These seven clusters collectively comprise approximately 85,000 MSME units (registered and estimated unregistered), which together employ about 1 million people and generate US$4 billion in annual revenues (Table 1).[5]

Box 2: Actions taken by NInC in the Innovation Clusters Initiative

- Enlisted existing industry cluster associations to serve as a nexus for a localized innovation ecosystem.
- Helped recruit local, motivated innovation champions to lead the innovation initiatives for their industry cluster.
- Instituted, jointly with the industry association, a two- to three-person cluster innovation centre (CIC) within the industry association office to act as a networking hub and a forum for innovation activities.
- Facilitated collaboration between the CIC and external public and private research institutions, industries, universities, and agencies to jump-start innovation for local industry products and processes.
- Organized training sessions in intellectual property, innovation project management, building collaborative partnerships, etc., to upgrade the skills of stakeholders in MSME clusters and their industry associations.

Source

National Innovation Council, Government of India (see http://www.innovationcouncil.gov.in/ for details).

The NInC pilot succeeded in weaving together 39 public and private institutions and universities as collaborating participants in innovation ecosystems developed for these seven clusters. The partner for technology and knowledge efforts was the Council of Scientific and Industrial Research (CSIR)—India's largest R&D organization, consisting of 37 labs with 19,600 scientific personnel (scientists, scientific and technical support staff, and research students).[6] Funding for prototype development for some pilot clusters came

Box 3: Cluster issues at the brassware cluster, Moradabad

Six main issues are faced by brassware cluster stakeholders. These can be considered in two groups: issues faced by artisans and those faced by exporters.

- Artisans must confront:
  - low wages and income growth opportunities;
  - hazardous living conditions caused by coal pollution and the presence of cyanide in electrolytes during electroplating manufacturing procedures; and
  - an absence of formal channels for credit financing.
- Exporters must confront:
  - the high price of brass, which has caused a shift to other metals;
  - an inadequate power supply; and
  - competition from China and Thailand, which have better products available based on their better manufacturing processes and technologies.

Source

Sachan, Munagala, and Chakravarty, 2013.

from the Department of Scientific & Industrial Research (DSIR). Central government bodies—such as the Ministry of MSME, the Ministry of Textiles, the Ministry of Commerce, and the Agricultural & Processed Food Products Export Development Authority (APEDA)—were public partners. Several state institutions from the States of Kerala, Gujarat, Tamil Nadu, and Tripura, as well as local government agencies, became public partners as well. Private partners included India's leading industry associations: the Confederation of Indian Industry (CII) and the Federation of Indian Chambers of Commerce and Industry (FICCI); the Tata Management Training Centre, India's well-known innovation-focused industry group; and the Infrastructure Leasing & Financial Services Limited (IL&FS), the country's leading infrastructure, cluster development and financing company. Local universities—such as Tamil Nadu Agriculture University, the MS University of Baroda, Delhi University, Manav Rachna University, and NIT Tripura—also participated.

Within one year, the CIC-driven innovation cluster model resulted in the successful demonstration and/or prototype of 12 new products, 10 new process improvements, and 2 new entrepreneurship-support centres. These new innovations will lead to new markets for the industry cluster and new competitive offerings, and will ultimately drive more employment. The pilot demonstrated that innovation impact is possible in a short period of time across geographies and different industries with minimal budgetary investment by the government, giving confidence to the Innovation Clusters model's ability to have an important socioeconomic impact and scale broadly across the country.

One of the key success factors for the CIC-driven innovation cluster model concerns identifying, crafting, and managing win-win partnerships and collaborations. For example, when a partnership with a CSIR lab is established by an industry cluster, the lab invests in R&D and knowledge talent while the cluster invests in validating the technology in the field, enhancing it for manufacturing/distribution, and setting up go-to-market mechanisms, thus creating new products and/or processes in a collaborative fashion.

Innovation management and ecosystem/partnership management were found to be relatively new concepts for a number of industry associations and participants. NInC provided information and know-how such as intellectual property (IP) management, innovation management, and partner handholding in the form of training and programme management support to ensure that the ecosystem becomes better established.

Case studies

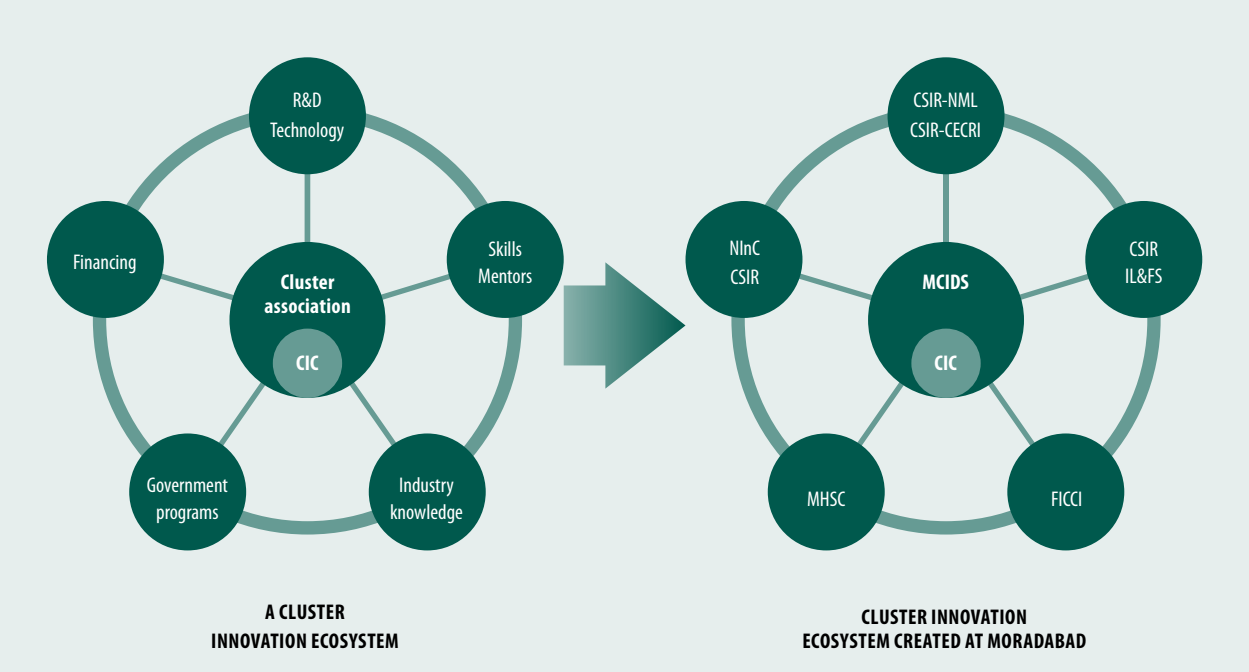
The Indian School of Business in Hyderabad and NInC carried out studies on three of the seven pilot clusters in 2013. Two of the studies are summarized in this chapter.[7]

Case study 1: The brassware cluster, Moradabad, State of Uttar Pradesh, India

Situation: The Moradabad brassware cluster in Uttar Pradesh, one of the oldest clusters in the country, has an annual turnover of over 3,500 crore rupees (Rs), of which 80% is earned through exports.[8] Despite growth in the number of exporters in the cluster, the number of artisans in the region has declined significantly because of the challenges presented by living conditions, wages, raw material procurement, prices, and stricter international compliance norms. These artisans form the backbone of the cluster, and the need to improve their socioeconomic conditions is acute. NInC has facilitated innovation interventions at the Moradabad cluster, which are expected to impact the economics for all stakeholders: the artisan, the manufacturer, and the exporter. NInC and its partners are focused on facilitating the creation of an innovation ecosystem and the CIC to address the long-term challenges confronting the cluster (Box 3).

Actions taken: NInC helped facilitate and launch (1) a CIC, which would be an innovation hub for

Figure 1: Innovation ecosystem development at Moradabad



Source: Adapted from NInC.
Note: CIC = cluster innovation centre; CECRI = Central Electrochemical Research Institute; CSIR = Council of Scientific and Industrial Research; FICCI = Federation of Indian Chambers of Commerce and Industry; IL&FS = Infrastructure Leasing & Financial Services; MCIDS = Moradabad Cluster Inclusion and Development Society; MHSC = Metal Handicrafts Service Centre; NML = National Metallurgical Laboratory.

Table 2: Impact of new energy-efficient coal furnace per day for each artisan

	Item	Pre-innovation	Post-innovation
(a)	Brass melt (kgs)	25	30
(b)	Coal consumption (kgs)	25	20
(c)	Revenue potential (Rs)	2,000	2,400
(d)	Cost of coal (Rs)	700	560
(e)	Estimated loss of brass during melting, fabrication, & other activities	600	600
(f)	Average income per furnace (c) – (d) – (e) (Rs)	700	1,240

Source: Pilot field measurements from the NML and NInC, 2013.

the local industry; and (2) a common MSME industry association called the Moradabad Cluster Inclusion and Development Society (MCIDS). Several smaller associations had previously served different interests; these are now brought under one umbrella. The formation of the MCIDS was geared towards bringing key players onto a common platform and facilitating the development of new programmes, products, services, collaborations, and partnerships for the benefit of the local MSME industry.

NInC, in partnership with the MCIDS, piloted three innovations to help improve the competitiveness of the cluster:

1. *Energy-efficient coal furnace:* A new low-cost (approximately Rs 3,000 to 4,000) furnace was developed to improve productivity and energy efficiency and to reduce pollution. The National Metallurgical Laboratory (NML) at Jamshedpur, a CSIR lab, partnered with the MCIDS to design an improved furnace with higher efficiency, greater capacity, and reduced coal consumption. The new furnace not only increased the artisan's income level—which is key for the artisans to adopt new innovations—but also provided socioeconomic benefits such as a dramatic reduction of pollution (Table 2).

Box 4: Cluster issues at the food-processing cluster, Krishnagiri

Three main issues are faced by the food-processing cluster at Krishnagiri:

- *Solid and liquid waste management:* The wet waste of mangoes decomposes quickly, causing disposal issues, polluting air and ground water, and creating a breeding ground for flies, rats, and diseases.
- *Limited technology:* Units do not have access to the technological expertise needed to produce diversified mango products on a commercial scale (such as mango-flavoured cereals, bars, etc.).
- *Farming, storage, and handling protocols:* The lack of proper protocols leads to a shorter shelf life, reducing the business potential of the mango produce.

Source

Sachan et al., 2013.

2. *Fast-acting, high-performance brass lacquer:* An efficient lacquer was developed in partnership with the CSIR-NML. Lacquer is used to protect the metal surface from environmental damage and increases the shelf life of the handicraft. The new lacquer reduced the time needed for baking and application by 66%, and also reduced the amount of thinner used, resulting in major savings in application time.
3. *Cyanide-free electrolytes:* Electrolytes used in brass plating used to contain cyanide, a poison that caused serious health problems for the artisans. A cyanide-free brass electrolyte is being developed by another CSIR lab, the Central Electrochemical Research Institute, to provide the artisans with a cleaner, safer environment that meets internationally accepted norms.

Figure 1 is a diagrammatic representation of an innovation cluster model that showcases the innovation ecosystem created at the brassware cluster in Moradabad, Uttar Pradesh.

Case study 2: Food-processing cluster, Krishnagiri, Tamil Nadu

Situation: Krishnagiri and its surrounding districts produce approximately 300,000 tonnes of fresh mango annually (in the two- to three-month harvest period), which in turn produces about 150,000 tonnes of pulp.[9] However, it is estimated that 30%–35% of the produce perishes before it reaches the end customer. This high spoilage rate is the result of operational inefficiencies in the harvest, storage, grading, transportation, packaging, and distribution of the fruit.[10] Moreover, diversification of mango-based products—which could have the potential to enable income generation during non-harvest periods—is minimal.

Actions taken: The Krishmaa Cluster Development Society (KCDS) engaged with stakeholders of the industry, both within and outside the Krishnagiri region. The CIC, created within the KCDS, provided a common platform and venue to exchange ideas and nurture innovation for the cluster's needs (Box 4).

NInC helped the KCDS to partner with the Central Food Technology Research Institute (CSIR-CFTRI), the National Institute of Interdisciplinary Science and Technology (CSIR-NIIST), the DSIR, the Tamil Nadu Agricultural University, and the Agricultural Products Export Development Authority (APEDA) to create new technologies and exchange knowledge to solve the cluster's needs (Box 4). Four innovative activities were undertaken:

1. *Solid waste management:* The CIC provided support to set up a pilot plant to make fuel briquettes from the pulverized solid waste generated during the mango production processes. These fuel briquettes would not only reduce the need for expensive firewood, which is traditionally used to fire the boilers in preparing the mangoes for market, but would also help reduce environmental pollution and improve efficiency. Using the briquettes instead of firewood is expected to result in an estimated savings of Rs 44,000 per day (Table 3). NInC has helped the KCDS to partner with the National Institute of Interdisciplinary Science and Technology to provide technical assistance to improve the process efficiency of the briquetting units.
2. *Liquid Waste Management:* The KCDS set up a pilot plant at one of the processing units to produce electricity from the liquid waste from the production process. The pilot trials were successful, and the CIC plans to help the cluster replicate them in other units. Power generated from liquid waste is expected to make the processing units less susceptible to power outages; it is also significantly cheaper than the grid power. With increased efficiency and proper management, the biofuel-based power is expected to be able to completely substitute for grid power. An estimated 800 cubic meters of biogas can be produced by an

Table 3: Impact of briquettes vs. firewood during harvest season (9–10 weeks)

Item	Calorific value (kcal)	Cost per tonne (Rs)	Consumption (tonnes)	Expenditure/day (Rs)	Additional revenue potential (selling price per tonne, Rs)
Firewood	2,400	5,000	10	50,000	
Briquettes	3,800–4,400	1,000	6	6,000	4,000–5,000
Savings from innovation		4,000		44,000	

Source: Pilot field measurements from the KCDS and NInC, 2013.

average processing plant—this is equivalent to nearly 100 kW of power per day, enough to power a processing plant for 16 hours.

3. *Farming and storage protocols:* The CSIR-CFTRI scientists experimented extensively with various pre- and post-harvest techniques designed to prevent the mangoes from rotting and to extend their shelf life by delaying ripening. These interventions are expected to increase the commercial value of the produce, especially since an extended shelf life for fresh mangoes opens new distant domestic and export markets for the farmers.

4. *Diversified mango products:* The CSIR-CFTRI was asked to suggest new products that would cater to wider tastes of the market. A hygienic form of mango fruit bar was developed to extend the working season for processing mango pulp and find new uses and markets for it. Additionally, local women's self-help groups, which were already making thin papadams, were trained to make new types of pickles from raw mangoes.

Concluding remarks

For governments and policy makers, stimulating and sustaining innovation in MSMEs clusters is critical to generating new employment and inclusive growth for a nation's economy. Taking advantage of pre-existing clusters and their organizations is vital, since it comprises industrial infrastructure that is already working along with people-oriented networks and community programmes that are already serving their participants.

Various cluster models have been attempted with scattered results, especially when top-down approaches are taken. NInC realized that determined local efforts are key to innovation model effectiveness, sustenance, and scaling up. This is particularly essential when dealing with a wide variety of industries and geographies. If innovation can become the responsibility of local organizations, stakeholders, and communities, where immediate benefits are felt, an initial push from government could be transformed to a local pull down the road.

Several challenges arise in facilitating innovation at MSME clusters. For example, the government is not able to deal directly with local MSME units, whether through central or state or even local interventions. NInC had the insight to transform India's hundreds of local industry associations, which already exist in clusters across the country, to become innovation actors, champions, and facilitators. Using these associations as larger representatives of the local industry made the cluster more attractive to external organizations because innovation partners see the industry association as a path to a larger market with a broader reach via an institution with strong leadership.

At both the national and state levels, NInC recommends the creation of small but agile innovation cluster teams at different levels of government. In India, it is expected these teams will be called Cluster Innovation Cells (another type of CIC) and be staffed by individuals experienced in business development. This special type of CIC will be housed within government, can support existing industry association CICs, enlist new industry associations to create CICs by showcasing successful case studies, develop new collaborative partners to expand local innovation ecosystems, formally monitor and analyse MSME clusters, and create communities that range from websites to physical communities that broaden relationships to stimulate beneficial network effects.

NInC and the pilot clusters successfully enlisted motivated public and private institutions and local universities as partners to develop local innovation ecosystems and new products and processes. The initiative demonstrated that innovation at MSME industry clusters is people-oriented, centred on collaboration, best managed locally by local participants, and can be self-sustained locally because true benefits are felt locally. The government's role is to catalyse, facilitate, and inject hands-on innovation leadership, support, and confidence at local levels.

Notes

1 For a description of the National Innovation Council, see http://www.innovationcouncil.gov.in/ and http://reports.weforum.org/social-innovation-2013/view/the-national-innovation-council-india/.

2 Internal KPMG (www.kpmg.com) report on cluster initiatives submitted to the Planning Commission, Government of India, FY 2010–2011.

3 This study is cited courtesy of Prof. V. K. Nangia, Dr Rajat Agarwal, and Dr Vinay Sharma of the Department of Management Studies, IIT Roorkee.

4 Further information on the Faridabad MSME cluster and association is available at http://www.fsiaindia.com/, http://www.iamsmeofindia.com/services/innovation-cluster, and http://www.sidbi.com/sites/default/files/products/Cluster%20Profile%20Report%20-%20Faridabad%20(Mixed)%20Cluster.pdf.

5 FY 2011–12 data are based on a compilation of industry cluster presentations made by industry associations to Chairman and members of NInC staff at the Planning Commission, Government of India, New Delhi, in 2012.

6 CSIR, Annual Report 2009–2010.

7 See Sachan, Munagala, and Chakravarty, 2013; Sachan et al., 2013.

8 This case study is based on Sachan, Munagala, and Chakravarty, 2013.

9 This case study is based on Sachan et al. 2013.

10 See the DSIR, Fruits and Vegetable Sector Report: An Overview, available at http://www.dsir.gov.in/reports/ittp_tedo/agro/AF_Farm_Fruits_Vegetables_Intro.pdf.

References

BIS (Bank for International Settlements). 2012. 'Strengthening SMEs Capabilities for Global Competitiveness'. Address by K. C. Chakrabarty, Deputy Governor of the Reserve Bank of India, Interactive Session, Bombay Chamber of Commerce and Industry, Mumbai, 8 October 2012. Available at http://www.bis.org/review/r121010h.pdf.

Clara, M., F. Russo, and M. Gulati. 2000. 'Cluster Development and BDS Promotion: UNIDO's Experience in India'. Paper presented at the Business Services for Small Enterprises in Asia: Developing Markets and Measuring Performance International Conference, 3–6 April 2000, Hanoi, Viet Nam. Available at http://www.unido.org/fileadmin/user_media/Services/PSD/Clusters_and_Networks/publications/cluster_and_BDS_development.pdf.

CSIR (Council of Scientific and Industrial Research). 2010. *CSIR Annual Report 2009–10.* New Delhi: CSIR. Available at http://www.csir.res.in.

DSIR (Department of Scientific & Industrial Research, Government of India). *Fruits and Vegetable Sector Report: An Overview.* Available at http://www.dsir.gov.in/reports/ittp_tedo/agro/AF_Farm_Fruits_Vegetables_Intro.pdf.

FISME (Federation of Indian Micro and Small & Medium Enterprises). 2009. 'Analysis of Schemes Involving Industry Associations & Suggestions for Effective Implementation'. Working Paper commissioned by German Technical Cooperation (GTZ), August. New Delhi: FISME. Available at http://www.fisme.org.in/FISME_Capable/Study.pdf.

GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH), Small and Medium Enterprises Financing and Development. 'Umbrella Programme for the Promotion of Micro. Small and Medium Enterprises, 2006–14'. Programme description, available at http://www.giz.de/themen/en/11163.htm.

Ministry of MSME (Ministry of Micro, Small and Medium Enterprises, Government of India). 2012. *Annual Report, 2011–12.* New Delhi: Government of India, Ministry of MSME.

NInC (National Innovation Council, Government of India). 2011. *Report to the People 2011: First Year.* New Delhi: NInC. Available at http://www.innovationcouncil.gov.in/index.php?option=com_content&view=article&id=96:-report-to-the-people-2011&catid=8:report&Itemid=10.

———. 2012. *Report to the People 2012: Second Year.* New Delhi: NInC. Available at http://innovationcouncil.gov.in/index.php?option=com_content&view=article&id=252:release-of-the-report-to-the-people-2012&catid=8:report&Itemid=10.

OECD and UNIDO (Organisation for Economic Co-operation and Development and United Nations Industrial Development Organization). 2004. *Effective Policies for Small Business: A Guide for the Policy Review Process and Strategic Plans for Micro, Small and Medium Enterprise Development.* Vienna and Paris: UNIDO and OECD. Available at http://www.unido.org/fileadmin/media/documents/pdf/Business_Environment/l5hvghso.pdf.pdf.

Rajan, Y. S. 2012. 'Shaping the National Innovation System: The Indian Perspective'. In *The Global Innovation Index 2012: Stronger Innovation Linkages for Global Growth,* Chapter 7. Fontainebleau: INSEAD and WIPO.

Rao, A. S., M. Gulati, T. Sarkar, R. Singh, K. L. Kala, S. Gargav, and A. Khanna. 2013. *Promoting Innovation in Clusters.* New Delhi: Foundation for MSME Clusters.

Sachan, N., V. Munagala, and S. Chakravarty. 2013. 'Innovation Cluster in the Brassware Industry at Moradabad, Uttar Pradesh: A Case Study Based on the Innovation Cluster Initiative of the National Innovation Council'. Indian School of Business (ISB), January 2013. Available at http://innovationcouncil.gov.in/index.php?option=com_content&view=article&id=51&Itemid=33.

Sachan, N., V. Munagala, S. Chakravarty, and N. Sharma. 2013. 'Innovation Cluster in the Food Processing Industry at Krishnagiri, Tamil Nadu: A Case Study Based on the Innovation Cluster Initiative of the National Innovation Council'. Indian School of Business (ISB), January 2013. Available at http://innovationcouncil.gov.in/index.php?option=com_content&view=article&id=51&Itemid=33.

Wunsch-Vincent, S. 2012. 'Accounting for Science-Industry Collaboration in Innovation: Existing Metrics and Related Challenges'. In *The Global Innovation Index 2012: Stronger Innovation Linkages for Global Growth,* Chapter 4. Fontainebleau: INSEAD and WIPO.

Creating Local Innovation Dynamics: The Uruguayan Experience

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The present chapter analyses some of the results of innovation policies implemented in Uruguay since 2007 and their effects on the generation of regional innovation environments and local development. This analysis should be of interest to other Latin American countries where the development of regional systems of innovation is even more relevant because their socioeconomic disparity and environmental heterogeneity are more pronounced than they are in the Uruguayan situation.

Innovation emerges as one of the variables that account for regional economic growth in local and endogenous development models.[1] These processes are characterized by know-how obtained through technological imitation and technological creation, along with significant cooperation and learning.[2] From this perspective, human capital, knowledge, and infrastructure are the most important determinants of regional growth,[3] and public policies are the instruments that activate, mobilize, and catalyse the relations among local stakeholders, which do not occur spontaneously.

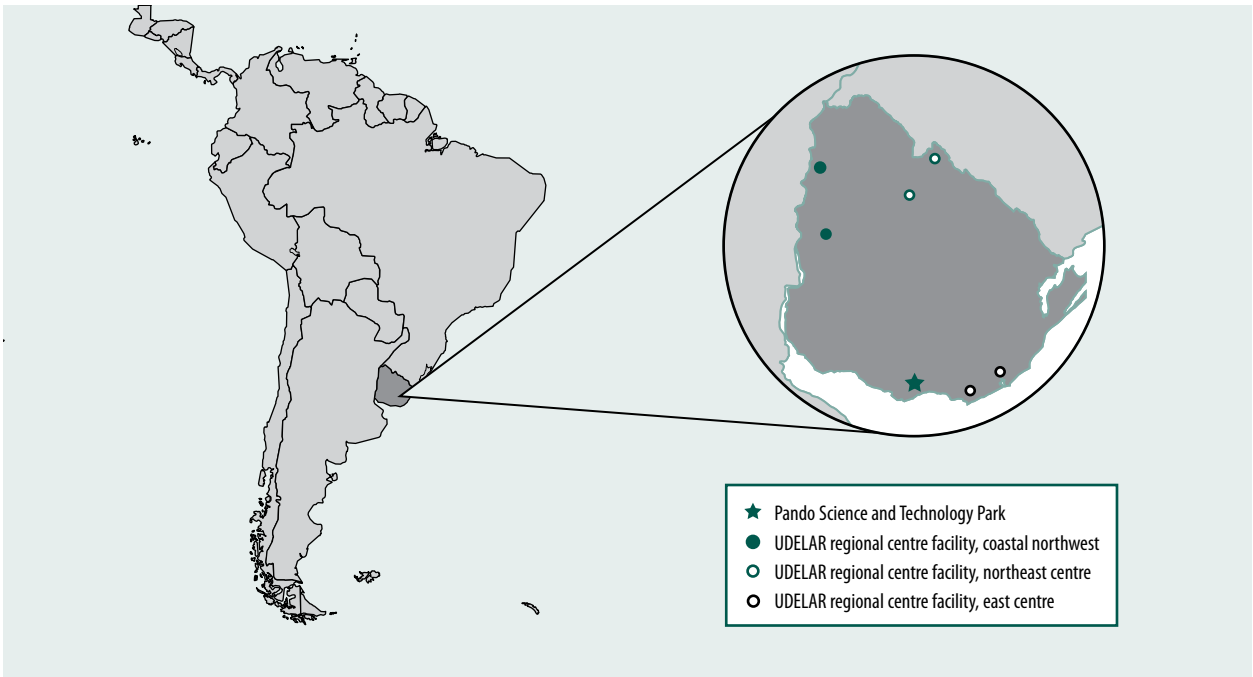
Uruguay has a continental territory of 176.215 square kilometres; in 2012 it had 3.29 million inhabitants and a gross domestic product (GDP) per capita of US$15,300. It leads the rankings, together with Argentina and Chile, of Latin American countries in human development and, together with Venezuela and El Salvador, it exhibits the highest levels of social equality in Latin America.[4] Its literacy rate ties with that of Chile and Cuba, at 98.5%, as the highest in Latin America,[5] and the government offers free education—including graduate and post-graduate studies—to all citizens. It was the first Latin American country to grant free access to the Internet in nearly 100% of the educational public centres by implementing Plan Ceibal, an adaptation of the One Laptop per Child programme created by professors of the Massachusetts Institute of Technology. The country's research & development (R&D) expenditure in 2010 was 0.4% of GDP (equivalent to US$47.4 per inhabitant).[6] The Uruguayan economy has been historically based on cattle production, agriculture, agroindustry, and services in sectors such as tourism, finance, and—more recently—the software industry.

In 2007, for the first time, Uruguay incorporated into its political agenda the systematic development of a national system of innovation in order to promote productive and social development. Under these policies, the Innovation Cabinet was created to lead the system and the National Research and Innovation Agency (ANII) to develop the instruments to be used and administer the resources needed to execute the policies. The results obtained thus far are encouraging: the capacity to generate endogenous knowledge has been strengthened, as demonstrated by the creation of a national researchers system, the funding of access to international scientific publications databases, the creation of a national postgraduate studies scholarship system, and support for new technical careers at the university and tertiary non-university level. Nonetheless, the impact of these policies is analysed from the perspective of local development and innovation dynamics.

Uruguay's approach to regional innovation: The public-sector role

The Universidad de la República (UDELAR) is a public institution that offers a wide range of free career training programmes; it also has the highest number of students, teachers, and researchers in the country (UDELAR employs 77% of the country's researchers). Within the UDELAR system, the majority of career offerings are centralized in the capital city, Montevideo, whereas the system in the rest of the country is characterized by its weak management capabilities and the lack of autonomy to make its own decisions.[7] In 1986, a UDELAR centre in the northern part of the country was established—the first in the process of decentralizing education. In 2007, this process was continued with the creation of three new regional centres (in the coastal northwest, the northeast, and the

Figure 1: Location of the Pando Science and Technology Park and UDELAR regional centres



Note: UDELAR = Universidad de la República.The coastal northwest, northeast, and east regional centres each have two facilities.

east—see Figure 1) with a commitment to provide research, education, and outreach.[8] The development of these centres, with multidisciplinary teaching groups, was based on thematic priority axes that addressed regional demands for education in specific areas such as tourism, agroindustry, and natural resource management.[9]

The process of decentralization, which is still in its development stage, has exhibited some weaknesses in its management and governance. In particular, some tensions have emerged from disciplinary approaches and institutional matters as well as some difficulties regarding the roles to be played and the responsibilities and tasks to be assumed by the teachers.[10]

With the support of ANII, the Universidad del Trabajo of Uruguay—another public educational institution—has increased its technical educational offerings across the country to meet the demands of the productive sector in different regions. For example, tertiary non-university careers are now offered in agro-energy, chemistry, fisheries, informatics, intensive vegetable production, meat technology, mechanics, renewable energies, ship maintenance, and sustainable tourism.

In 2013, the Technological University was created as a public entity with a mandate to bring tertiary education to the regions outside the capital. This university shares the same goals of decentralizing the university system so that the productive sector has sufficient resources available in terms of a skilled workforce and technical capabilities.

Since ANII's launch in 2007, several programmes—such as the National Researchers System and the National System of Scholarships—have been executed to increase the development of human capital and research capacities and direct them to meet the needs of the productive sector by providing sectoral funds, subsidies to support innovation in enterprises, and seed capital for start-ups. These programmes are also intended to satisfy social demands, such as projects of social innovation and support for activities intended to make science and technology part of the national culture. According to information presented by ANII in its annual reports, investment in research and development (R&D) increased between 2004 and 2011—from 0.32% of GDP to 0.41%. The links between research institutions and enterprises are very weak, with only the 35% of research investment coming from the private sector.[11]

The instruments created by ANII to promote links between academia and industry are difficult to execute and expensive to implement because these associations are not generated spontaneously. The National System of Scholarships provides sequential

support to research capacity building that begins with support for graduate MSc and PhD degrees to promote new research. There are a number of instruments intended to provide funding for National Researchers System grant holders. Subsidies are determined by a process of evaluation that categorizes the grant holder at different levels according to training, merit, and scientific production. This system allows access to a monthly stipend contingent on the production of scientific publications and the training of younger researchers, thus allowing the recipient to pursue otherwise non-income-generating research.

Together the linked National System of Scholarships and the National Researchers System promote the formation of advanced human capital, but they have been shown to be ill designed for reaching researchers in the private sector. The professionals working in private companies' R&D departments are barely included in the National Researchers System because of the barriers they face in publishing their own scientific work—personal publication is not always consistent with the interests of employers, who protect innovations made by their employees under confidentiality agreements. On the other hand, the National System of Scholarships requires that the tutors/mentors of the grant holders be members of the National Researchers System, thus almost entirely excluding company professionals from participating in the process of training researchers, despite their practical experience in R&D. This could explain ANII's finding, in its study of applications of the National Researchers System, of low participation rates of companies in the system and in research activities.[12]

Between 2008 and 2011, ANII injected resources into the Uruguayan productive sector by means of 10 horizontal instruments of subsidy, directed to all the companies in the formal sector of the country's economy. An analysis of the ANII reports shows that the subsidies to promote innovation are being given to the most dynamic companies that already have a strong innovative profile. Furthermore, the beneficiaries are centralized in the capital city and have a less significant presence in the interior of the country.[13] The innovation policies are attracting winners that do not need policy support—more evidence of the strong need to advance towards a new generation of instruments that are more innovative and designed to facilitate an increase in the competitiveness, internationalization, and technological adequacy of companies.[14] The observations listed above seem to indicate that current innovation policies may not be aligned with industrial policies, and that more selective interventions need to be developed that promote innovation in sectors and areas identified as priority by the Productive Cabinet (which is coordinated the Ministry of Industry, Energy and Mining, or MIEM).

Since 2007, scientific production (as measured by the number of publications indexed in the Science Citation Index) has increased by almost 50%. However, patent-based indicators—particularly the self-sufficiency rate (patent applications by residents versus total patent applications) and the coefficient of invention (patent applications by residents per 100,000 inhabitants)—decreased between 2010 and 2011.[15] This indicates that the growth of the National Researchers System is not yet reflected in an increase in the generation of value measured by the production of appropriable knowledge. This gap shows the weakness, previously mentioned, in academic-company relationships. It also possibly points out the predominant culture of the researchers, who historically have considered research to be a public good and not an intangible asset with a market value. Further, it shows how little the concept of intellectual property has spread, despite the efforts made over the last several years by MIEM's National Office of Industrial Property.

Instruments created by innovation policies intended to strengthen the interface between academic institutions and companies comprise a valuable contribution that could transform the knowledge generated in universities into economic, social, and/or environmental value, bridging the gap between the offerings of research and the demands of the productive sector. Some initiatives—such as the Network of Intellectual Property—and the process initiated by MIEM with the support of the World Intellectual Property Organization to create Offices of Transference of Research Results point to this objective.[16] Spreading the use of patent databases by science students as a source of technological information is a key measure to enhance their knowledge of the latest technological developments and bring scientists closer to fully understanding the concepts and system of intellectual property.[17]

The barriers that institutions face because of the lack of professionals experienced in technological transference have led even the most developed countries, to continue helping the universities to create greater capacity in intellectual property management. For example, both Denmark and Germany invested several million euros to spur the development of technology

transfer offices clustered around certain regions or in certain sectors, such as biotechnology.[18]

Cimoli, Ferraz, and Primi (2009) state that a well-designed innovation policy alone is not enough if the goal is productive development. There should also be integration between innovation and development policy. The instruments launched by ANII suggest that, in the case of Uruguay, so far this process has not taken place. Neither the applications for competitive funds (where the only requirement was that a researcher presented a project, not that the project had a clear application related to national innovation or the development of the goals of the policies) nor the sectoral funds instruments (which were weakly targeted because too many research priorities were set for very limited resources) seemed to show significant impacts related to the priorities defined by productive policies.

A capacity gap has resulted from asymmetries between central and sub-national authorities. This gap is related to regional weaknesses in terms of innovation strategy design, on one hand, and the limited ability of the central government to identify relevant regional innovation projects without consulting sub-national actors, on the other hand. The decentralization of supporting funds for regional innovation projects that use local knowledge and experience will allow projects that will have a direct impact in local communities to be selected. The country needs to generate high economic value and social impact if it is to significantly accelerate the development of companies and projects in all regions.

So far no instruments have been developed in Uruguay that can decentralize innovation processes, nor have resources and capabilities been transferred to departmental and local governments to lead those processes. In order to overcome the asymmetries, this process must begin by strengthening local management capacities.

Environments of innovation that are linked to local development within the frame of existing industrial policies is the missing link that must now be established to consolidate all previous efforts and give them a chance to succeed.

A practical example: The Pando Science and Technology Park

The Pando Science and Technology Park originated as the result of the coordination, led by UDELAR since 2008, of the development policies implemented by national (ANII and MIEM) and local (the government's Department of Canelones) innovation actors.[19] It is located in an industrial zone, 40 kilometres from the capital, and was supported by Uruguay INNOVA, the European Commission's international cooperation programme, in its foundational stage.[20]

The Department of Canelones is located near the city of Montevideo. The second most populated department in the country, it has more than 520,000 inhabitants. The city of Pando constitutes an important industrial and commercial conglomerate in the Department of Canelones near the metropolitan area. This innovation hub extends from Carrasco International Airport, where a science park (supported by a pharmaceutical group, Mega Pharma, to promote the creation, capture, and development of knowledge- and innovation-based companies) is located near to Pando, 15 kilometres away, where the Pando Science and Technology Park is situated, along with the UDELAR's Technology Pole, School of Chemistry.[21]

This micro-region hosts three industrial parks and numerous companies from the chemical, pharmaceutical, food technology, paper, textile, and cardboard industries. It hosts most of the department's industries, with the chemical industry (including rubber, plastic, and others, which comprise 42% of the industry in the micro-region) and the manufacture of food products (30%) being the main activities. Together these activities account for almost 75% of total local industry. Local industries in the pharmaceutical and medical sector account for a further 4% of the total at the local level.[22]

It is clear that both private and public investment is favourable for the development of an innovation environment. However, public policies are necessary to promote coordination among stakeholders and consolidate a regional innovation system. An assessment made in 2008,[23] before the creation of the Science and Technology Park, showed that the Technology Pole of the School of Chemistry (UDELAR) had poor relationships with the community in the region even though it was a fairly new project—it had been created within the past decade. This confirms the notion that interaction among stakeholders is a decisive factor in the development of regional innovation systems, but interaction does not appear spontaneously and must be generated through appropriate instruments. In order to organize a process of this kind, it is necessary to have skilled professionals who are prepared to manage local development, the governance of the process, the communication with stakeholders, and the coordination of projects.[24]

Following the creation of the Pando Science and Technology Park, the links between the R&D generators from the university and the business sector have been strengthened, thus promoting local development. This model is driven and guided by the governance of the park, where the university, the Chamber of Industries, the Ministry of Industry, and the Department of Canelones Uruguay are in partnership.

Although the Pando Science and Technology Park was established by law, a mechanism to encourage businesses to participate in this ecosystem and instruments to promote academia-business links or intellectual property were not defined. It was expected that the park would generate resources from its intervention in the market by selling services to companies. However, the experience of countries such as Spain, which has developed several science and technology parks, shows that these organizations reach a break-even point in the medium to long term (8 to 10 years), before which they require public support.

Comparing Uruguay's experience with that of other regions

Nieto (2010) analysed the experience of the Basque region of Spain and highlighted the importance of the design and implementation of active public policies that promote the generation and use of knowledge to systematically increase the competitiveness of production.

Despite the constraints mentioned earlier, interactions between the services of technology platforms from UDELAR's School of Chemistry and the private sector have increased significantly in the last year. The Pando Science and Technology Park has provided the technology centre with a professional innovation management system, which allows it to focus on R&D processes.

The innovation policies did not coordinate with UDELAR's efforts in creating regional centres in the interior of the country. To generate the necessary synergies, the interventions must promote communication among academic institutions, enterprises, and government. They must simultaneously promote the professionalization of management, focusing the installed capacities on the priorities established by the national and departmental governments, for local development.

The above weaknesses can be found in most Latin American countries. A case in point is a study by the Economic Commission for Latin American and the Caribbean,[25] which brings together standardized data on 53 clusters located in 19 states in Brazil, one cluster in Colombia, and one in Peru. Among its findings, it identifies problems of coordination among agents and highlights the formation of networks and consortia as drivers of these mechanisms. The education and science and technology sectors are cornerstones in the process of building industrial competitiveness, although the evidence indicates that the mere existence of knowledge does not guarantee innovation—to foster innovation, knowledge should be integrated into development policies.

In the case of Chile, for example, Von Baer (2009) analyses regional innovation systems and concludes that, regarding regional productive development and/or innovation agendas for competitiveness, no explicit mention has been made of the mechanisms for linking the areas of productive development and innovation. He proposes addressing both processes together by constructing spaces for interaction and communication, and for strengthening the relationship between academia and businesses. In 2012, the Corporation of Promotion of the Production of Chile developed a pilot program to decentralize the instruments of innovation by transferring the resources to three regions and, if it is successful, plans to replicate it in throughout the country.[26]

Some policy and strategic implications for local innovation strategies

From the experience of managing local innovation clusters, the following considerations can be empirically extracted:

- Environments of regional innovation need public policies to support them during the initial stages when they are getting established, thus generating structures of governance linking the academy, companies, and governments.
- Selective interventions for the promotion of these structures are needed because the enterprise-academy-government relationships are not generated spontaneously.
- The local governments must be firmly involved in the centres and in the construction of their agendas.
- The area where policies are developed must be separated from the area where they are executed (politicians are not necessarily good managers).
- The management of the centres must be carried out by professional management personnel in professional management structures. The managers must be trained in business administration (not in research or

teaching—professors are not necessarily good managers).

- A systemic approach must be promoted from the political environment to improve communication among all the associates. The quality policies, the information systems, and sharing strategic plans among the actors are some of the instruments that can be employed to achieve this goal.
- Mechanisms to evaluate the impacts of the centres and a clear commitment with management that defines short-, medium-, and long-term goals in accordance with the goals of the regional and national governments must be established. Public support for these environments must be directly tied to the fulfilment of the above-mentioned commitments.
- The innovation environments must generate ties with local companies in general and with the social local actors where the centre is located.
- The regional centres of innovation are dynamic structures where the generation of ties with other actors of the national innovation system must be promoted.
- The creation of public-private alliances must be encouraged.
- Strategic leadership at the regional and local levels is necessary.

This chapter has presented evidence that innovation policies have to focus on social and productive priorities defined at the national level by industrial development policies and at the regional level according to the productive specificities and socioeconomic particularities of each regional unit. In this context, it is particularly important to generate innovation environments. It is also essential that the government become involved as a catalyst for interaction among stakeholders, particularly in regard to the mechanisms that lead to a closer relationship between academia and businesses, the promotion of the best intellectual property management practices at universities and technical institutes, and actions that promote an increase in the number of patents.

Instead of focusing on finding or establishing a leader of collaborative networks, the idea of shared leadership becomes the primary focus. In this context, leadership is the ability to be a 'process catalyst' and the emphasis is on building trust and new ways of working together.[27] Hence the challenge of all stakeholders is to coordinate and lead to align actions, programs, instruments with the objectives of the national innovation and development policies.

Notes

1 Ogawa, 2000; Love and Stephen, 2001; Cheshire and Malecki, 2003.

2 Bramanti and Maggioni, 1997; Maillat, 1998.

3 McCann and Shefer, 2003.

4 CEPAL, 2012.

5 CEPAL, 2012.

6 ANII, 2011.

7 De la Cuesta and Heinzen, 2012.

8 Arocena, 2009.

9 UDELAR, 2008.

10 De la Cuesta and Heinzen, 2012.

11 ANII, 2011.

12 ANII, 2011.

13 ANII, 2011.

14 ANII, 2011.

15 ANII, 2011.

16 For details about the Network of Intellectual Property, see www.redpi.uy.

17 WIPO, 2007.

18 Cervantes, 2013.

19 For further detail about the Pando Science and Technology Park, see www.pctp.org.uy.

20 For more information about Uruguay INNOVA, see http://eeas.europa.eu/delegations/uruguay/projects/list_of_projects/19040_en.htm.

21 For details about UDELAR's Technology Pole, School of Chemistry, see www.polotecnologico.fq.edu.uy.

22 Barrenechea, Rodriguez, and Troncoso, 2008.

23 Barrenechea, Rodriguez, and Troncoso, 2008.

24 Garofoli, 2009.

25 Teixeira and Ferraro, 2009.

26 For more information about decentralizing the instruments of innovation, see http://www.pmgdescentralizacion.gov.cl/.

27 Mandell and Keast, 2009.

References

ANII (Agencia Nacional de Investigación e Innovación). 2011. *Informe año 2011.* Available at http://www.anii.org.uy/web/?q=node/106.

Arocena, R. 2009. 'La Universidad en el interior'. *Hacia la Reforma Universitaria* No. 7. Uruguay: Rectorado. Universidad de la República. Available at http://www.universidad.edu.uy/renderPage/index/pageId/810#heading_3567.

Barrenechea, P., A. Rodriguez, and C. Troncoso. 2008. Microregion 6 del Departamento de Canelones. Estudio de vocacion industrial tecnologica para identificar oportunidades de intervension que fomenten desarrollo local. Programa de Desarrollo y Gestion Municipal IV [Microregion 6 of the Department of Canelones. Study of industrial vocation technology to identify intervention opportunities that foster local development]. Oficina de Planeamiento y Presupuesto.

Bramanti, A. and M. A. Maggioni. 1997. 'The Dynamics of Milieux: The Network Análisis Approach'. In *The Dynamics of Innovative Regions,* R. Ratti, A. Bramanti, and R. Gordon, eds. Aldershot: Ashgate.

CEPAL (Comisión Económica para América Latina y el Caribe). 2000. 'El Tratado de Libre Comercio de Norteamérica y el desempeño en la economía de México' [The North America free trade agreement and the performance in the economy of Mexico], June. Available at http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/1/9571/P9571.xml&xsl=/mexico/tpl/p9f.xsl&base=/mexico/tpl/top-bottom.xsl.

———. 2012. *Statistical Yearbook for Latin America and the Caribbean, 2012.* Santiago, Chile: United Nations Publication. Available at http://www.eclac.cl/publicaciones/xml/4/48864/AnuarioEstadistico2012_ing.pdf.

Cervantes, M. 2013. 'Academic Patenting: How Universities and Public Research Organizations Are Using their Intellectual Property to Boost Research and Spur Innovative Start-Ups'. WIPO (World Intellectual Property Organization), *Small and Medium-Sized Enterprises E-Newsletter.* Available at http://www.wipo.int/sme/en/documents/academic_patenting.html.

Cheshire, P. C. and E. J. Malecki. 2003. "Growth, Development, and Innovation: A Look Backward and Forward'. *Papers in Regional Science* 83 (1): 249–67.

Cimoli, M., J. C. Ferraz, and A. Primi. 2009. 'Science, Technology and Innovation Policies in Global Open Economies: The Case of Latin America and the Caribbean'. *Revista Globalización, Competitividad y Gobernabilidad* 3 (1): 32–60.

De la Cuesta, P. and M. Heinzen. 2012. El proceso de descentralización universitaria en Uruguay. Polo Salud comunitaria. [The process of decentralization of the university in Uruguay. Polo Community Health]. III Seminario Internacional Universidad-Sociedad y Estado 'A 400 años de la Universidad en la región'. Univ. Nal de Córdoba y Asoc. Univ. Grupo Montevideo (AUGM). 25 and 26 October.

Garofoli, G. 2009. 'Las experiencias de desarrollo económico local en Europa: las enseñanzas para América Latina' ['The experiences of local economic development in Europe: Lessons for Latin America']. Seminario de lanzamiento del Programa URB-AL III, San José, Costa Rica, 4–7 May. Available at http://www.urb-al3.eu/uploads/documentos/Desarrollo_economico_local_en_Europa_GAROFOLI_1.pdf.

Love, J. H. and R. Stephen. 2001. 'Outsourcing in the Innovation Process: Locational and Strategic Determinants'. *Papers in Regional Science* 80 (3): 317–36.

Maillat, D. 1998. 'Interaction between Urban Systems and Localized Productive Systems'. *European Planning Studies* 6: 117–29.

Mandell, M. and R. L. Keast. 2009. 'A New Look at Leadership in Collaborative Networks: Process Catalysts'. In *Public Sector Leadership: International Challenges and Perspectives*, J. Raffel, P. Leisink, and A. Middlebrooks, eds. Cheltenham: Edward Elgar, 163–78.

McCann, P. and D. Shefer. 2003. 'Location, Agglomeration and Infrastructure'. *Papers in Regional Science* 83 (1): 177–96.

MCT (Ministério de Ciência, Tecnolgia e Inovação). 2013. *Plano de Ação 2007–2010.* Available at http://www.mct.gov.br/index.php/content/view/66226.html.

Nieto, A. 2010. *El Sistema Vasco de Innovación: Un caso de estudio para Uruguay* [The Basque country innovation system: A case study for Uruguay]. Montevideo, Uruguay: Letraeñe Ediciones.

Ogawa, H. 2000. 'Spatial Impact of Information Technology Development'. *The Annals of Regional Science* 34 (4): 537–51.

Teixeira, F. and C. Ferraro. 2009. *Aglomeraciones productivas locales en Brasil: formación de recursos humanos y resultados de la experiencia* [Local productive agglomerations in Brazil: Human resources training and experience´s results]. Santiago, Chile: CEPAL.

UDELAR (Universidad de la República). 2008. 'Programas Regionales de Enseñanza Terciaria: 2008–2010 y su proyección 2020' [Regional programmes in tertiary education: 2008-2010 and its projection to 2020]. *Serie Doc. Trab. CCI* No. 1. Montevideo, Uruguay: Comisión Coordinadora Interior. Available at http://www.cci.edu.uy/sites/default/files/Programa%20Regionales%20de%20Ense%C3%B1anza%20Terciaria.%202008-2010%20y%20su%20proyecci%C3%B3n%20al%202020.pdf.

Von Baer, H., ed. 2009. *Pensando Chile desde sus regiones* [Planning Chile from its regions]. Tamuco, Chile: Ediciones Universidad de La Frontera.

WIPO (World Intellectual Property Organization). 2007. *Developing Frameworks to Facilitate University-Industry Technology Transfer: A Checklist of Possible Actions.* Available at http://www.wipo.int/export/sites/www/uipc/en/partnership/pdf/ui_checklist.pdf.

Appendices

Appendix I

Country/Economy Profiles

Country/Economy Profiles

The following tables provide detailed profiles for each of the 142 economies in the Global Innovation Index 2013. They are constructed around three sections.

1 Five key indicators at the beginning of each profile are intended to put the economy into context. They present the population in millions,[1] GDP in US$ billions, and GDP per capita in PPP current international dollars.[2] The fourth indicator categorizes the economy into income group and the fifth indicates its geographical region.[3]

2 The next section provides the economy's scores and rankings on the Global Innovation Index (GII), the Innovation Input Sub-Index, the Innovation Output Sub-Index, and the Innovation Efficiency Ratio.

The GII ranking for the 2012 edition comes next. Three economies were added in 2013, and two were excluded. For that reason, and because of adjustments made to the GII framework every year and other technical factors not directly related to actual performance (missing data, updates of data, etc.), the GII rankings are not directly comparable from one year to the next. Please refer to Annex 2 of Chapter 1 for details.

Scores are normalized in the [0, 100] range except for the Innovation Efficiency Ratio, for which scores revolve around the number 1 (this index is calculated as the ratio between the Output and Input Sub-Indices).

The Innovation Input Sub-Index score is calculated as the simple average of the scores in the first five pillars, while the Innovation Output Sub-Index is calculated as the simple average of the last two pillars.

Albania

	Key indicators		
1.1	Political environment	33.9	76
1.1.1	Political stability*	59.5	83
1.1.2	Government effectiveness*	32.9	81
1.1.3	Press freedom*	69.1	81
1.2	Regulatory environment	59.8	80
1.2.1	Regulatory quality*	56.9	64
1.2.2	Rule of law*	33.9	93
1.2.3	Cost of redundancy dismissal, salary weeks	20.8	97
1.3	Business environment	62.9	73
1.3.1	Ease of starting a business*	91.4	23 ●
1.3.2	Ease of resolving insolvency*	42.6	59
1.3.3	Ease of paying taxes*	54.7	114
2	**Human capital & research**	**27.1**	**84**
2.1	Education	41.8	98
2.1.1	Current expenditure on education, % GNI	n/a	n/a
2.1.2	Public expenditure/pupil, % GDP/cap	13.†	89
2.1.3	School life expectancy, years	1	38
2.1.4	PISA scales in reading, maths, & science	l8.	64 ○
2.1.5	Pupil-teacher ratio, secondary	15.2	72
2.2	Tertiary education	37.1	51
2.2.1	Tertiary enrolment, % gross	43.9	54
2.2.2	Graduates in science & engineering, %	13.8	83
2.2.3	Tertiary inbound mobility, %	1.1	76
2.2.4	Gross tertiary outbound enrolment, %	7.7	7 ●
2.3	Research & development (R&D)	2.4	93
2.3.1	Researchers, headcounts/mn pop.	541.0	68
2.3.2	Gross expenditure on R&D, % GDP	0.2	90
2.3.3	QS university ranking, average score top 3*	0.0	68 ○
3	**Infrastructure**	**31.1**	**75**
3.1	Information & communication technologies (ICTs)	25.4	97
3.1.1	ICT access*	35.9	90
3.1.2	ICT use*	12.5	90
3.1.3	Government's online service*	42.5	89
3.1.4	E-participation*	10.5	94
3.2	General infrastructure	26.7	92
3.2.1	Electricity output, kWh/cap	2,368.8	71
3.2.2	Electricity consumption, kWh/cap	1,770.6	75
3.2.3	Logistics performance*	44.3	78
3.2.4	Gross capital formation, % GDP	24.3	53
3.3	Ecological sustainability	41.2	31 ●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq.	11.8	5 ●
3.3.2	Environmental performance*	65.9	15 ●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	88
4	**Market sophistication**	**56.8**	**32 ●**
4.1	Credit	58.4	29 ●
4.1.1	Ease of getting credit*	81.3	22 ●
4.1.2	Domestic credit to private sector, % GDP	39.3	82
4.1.3	Microfinance gross loans, % GDP	7.1	6 ●
4.2	Investment	38.4	30 ●
4.2.1	Ease of protecting investors*	76.7	17 ●
4.2.2	Market capitalization, % GDP	n/a	n/a
4.2.3	Total value of stocks traded, % GDP	n/a	n/a
4.2.4	Venture capital deals/mn PPP$ GDP	0.0	74 ○
4.3	Trade & competition	73.6	92
4.3.1	Applied tariff rate, weighted mean, %	5.1	80
4.3.2	Non-agricultural mkt access weighted tariff, %	0.1	23 ●
4.3.3	Intensity of local competition†	47.6	124
5	**Business sophistication**	**21.4**	**128**
5.1	Knowledge workers	29.1	118
5.1.1	Knowledge-intensive employment, %	9.3	95
5.1.2	Firms offering formal training, % firms	19.9	90
5.1.3	R&D performed by business, % GDP	n/a	n/a
5.1.4	R&D financed by business, %	3.3	77
5.1.5	GMAT mean score	516.8	63
5.1.6	GMAT test takers/mn pop. 20–34	145.4	38 ●
5.2	Innovation linkages	10.5	136 ○
5.2.1	University/industry research collaboration†	21.3	131 ○
5.2.2	State of cluster development†	19.1	136 ○
5.2.3	R&D financed by abroad, %	7.4	47
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114 ○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69 ○
5.3	Knowledge absorption	24.6	81
5.3.1	Royalty & license fees payments, % service imports	0.6	96
5.3.2	High-tech imports less re-exports, %	4.4	114 ○
5.3.3	Comm., computer & info. services imports, %	3.0	88
5.3.4	FDI net inflows, % GDP	10.6	12 ●
6	**Knowledge & technology outputs**	**19.2**	**108**
6.1	Knowledge impact	2.1	136 ○
6.1.1	Domestic res. utility model app/bn PPP$ GDP	0.1	104
6.1.2	Patents at home + extent app/bn PPP$ GDP	0.1	72
6.1.3	Domestic res. utility model app/bn PPP$ GDP	0.0	61 ○
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.8	110
6.1.5	Citable documents H index	34.0	128 ○
6.2	Knowledge impact	27.7	90
6.2.1	Growth rate of PPP$ GDP/worker, %	1.0	83
6.2.2	New businesses/th pop. 15–64	1.0	62
6.2.3	Computer software spending, % GDP	n/a	n/a
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	6.5	59
6.2.5	High- & medium-high-tech manufactures, %	14.6	63
6.3	Knowledge diffusion	10.3	102
6.3.1	Royalty & license fees receipts, % service exports	0.5	52
6.3.2	High-tech exports less re-exports, %	0.6	85
6.3.3	Comm., computer & info. services exports, %	4.8	81
6.3.4	FDI net outflows, % GDP	0.3	67
7	**Creative outputs**	**26.1**	**121**
7.1	Intangible assets	26.8	127 ○
7.1.1	Domestic res. trademark reg/bn PPP$ GDP	11.7	78
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.1	57
7.1.3	ICT & business model creation†	51.4	91
7.1.4	ICT & organizational model creation†	47.9	88
7.2	Creative goods & services	23.9	104
7.2.1	Audio-visual & related services exports, %	0.1	57
7.2.2	National feature films/mn pop. 15–69	n/a	n/a
7.2.3	Paid-for dailies, circulation, % pop. 15–69	3.1	98
7.2.4	Printing & publishing manufactures, %	n/a	n/a
7.2.5	Creative goods exports, %	0.3	83
7.3	Online creativity	26.8	69
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.2	87
7.3.2	Country-code TLDs/th pop. 15–69	19.8	78
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,150.4	64
7.3.4	Video uploads on YouTube/pop. 15–69	78.7	41 ●

NOTE: ● Indicates a strength; ○ a weakness; * an index; † a survey question.

3 Pillars are identified by single-digit numbers, sub-pillars by two-digit numbers, and indicators by three-digit numbers. For example, *indicator 1.3.1, Ease of starting a business,* appears under *sub-pillar 1.3, Business environment,* which in turn appears under *pillar 1, Institutions.*

The 2013 GII includes 84 indicators and three types of data. Composite indicators are identified with an asterisk (*), survey questions from the World Economic Forum's Executive Opinion Survey are identified with a dagger (†), and the remaining indicators are all hard data series.

For hard data, the original value is provided (except for indicators 7.3.1, 7.3.2, and 7.3.4, for which the raw data were provided under the condition that only the normalized scores be published). Normalized scores in the [0, 100] range are provided for everything else (index and survey data, sub-pillars, pillars, and indices).

When data are either not available or out of date (the cutoff year is 2003), 'n/a' is used. The year of each data point is indicated in the Data Tables shown in Appendix II.

For further details, see Appendix III, Sources and Definitions, and Appendix IV, Technical Notes.

4 To the far right of each column, a solid circle indicates that an indicator is one of the strengths of the country/economy in question, and a hollow circle indicates that it is a weakness.

All top ranks (of 1) are highlighted as strengths; for the remaining indicators, strengths and weaknesses of a particular economy are based on the percentage of economies with scores that fall below its score (i.e., percent ranks).

For a given economy, strengths (●) are those scores with percent ranks greater than the 10th largest percent rank among the 84 indicators in that economy.

Similarly, for that economy, weaknesses (○) are those scores with percent ranks lower than the 10th smallest percent rank among the 84 indicators in that economy.

Percent ranks embed more information than ranks and allow for comparisons of ranks of series with missing data and ties in ranks. Examples from Australia illustrate this point:

1. Strengths for Australia are all indicators with percent ranks above 0.94 (10th largest percent rank for Australia); weaknesses are all indicators with percent ranks below 0.52 (10th smallest percent rank).

2. Australia ranks 9th out of 142 in 1.2.2 Rule of law; with a percent rank of 0.94, this indicator is a strength for Australia.

3. Australia also ranks 9th in 2.1.4 Assessment in reading, mathematics, and science, but with a percent rank of 0.88 (because only 70 countries are covered by that indicator), this indicator is not a strength for Australia.

4. In spite of its high rank of 4 in 4.1.1 Ease of getting credit, the percent rank of Australia is only 0.93 because eight other economies are tied with Australia at position 4; thus this indicator is not a strength for Australia.

5. The rank of 77 (percent rank of 0.45) in 6.3.3 Communications, computer and information services exports (% of total services exports) is a weakness for Australia. By contrast, the rank of 87 for Lesotho in that same indicator is a strength for Lesotho (percent rank of 0.37, above the cutoff for strengths for Lesotho, which is 0.36).

Percent ranks are not reported in the Country/Economy Profiles but are presented in the Data Tables (Appendix II).

Notes

1 Data are from the United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2010 Revision*.

2 Data for GDP and GDP per capita are from the International Monetary Fund *World Economic Outlook 2012* database.

3 Income groups are based on the World Bank Income Group Classification (July 2012): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Geographical regions are based on the United Nations Classification (11 February 2013): EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; and SSF = Sub-Saharan Africa.

Index of Country/Economy Profiles

Albania

Key indicators

Population (millions)	3.3
GDP (US$ billions)	12.4
GDP per capita, PPP$	7,975.9
Income group	Lower-middle income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**30.9**	**93**	
Innovation Output Sub-Index		22.7	118	
Innovation Input Sub-Index		39.1	77	
Innovation Efficiency Ratio		0.6	129	
Global Innovation Index 2012 (based on GII 2012 framework)		30.4	90	
1	**Institutions**	**58.9**	**73**	
1.1	Political environment	53.9	76	
1.1.1	Political stability*	59.5	83	
1.1.2	Government effectiveness*	32.9	81	
1.1.3	Press freedom*	69.1	81	
1.2	Regulatory environment	59.8	89	
1.2.1	Regulatory quality*	56.9	64	
1.2.2	Rule of law*	33.9	93	
1.2.3	Cost of redundancy dismissal, salary weeks	20.8	97	
1.3	Business environment	62.9	73	
1.3.1	Ease of starting a business*	91.4	23	●
1.3.2	Ease of resolving insolvency*	42.6	59	
1.3.3	Ease of paying taxes*	54.7	114	
2	**Human capital & research**	**27.1**	**84**	
2.1	Education	41.8	98	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	13.2	89	
2.1.3	School life expectancy, years	11.3	98	
2.1.4	PISA scales in reading, maths, & science	384.3	64	○
2.1.5	Pupil-teacher ratio, secondary	15.2	72	
2.2	Tertiary education	37.1	51	
2.2.1	Tertiary enrolment, % gross	43.9	54	
2.2.2	Graduates in science & engineering, %	13.8	83	
2.2.3	Tertiary inbound mobility, %	1.1	79	
2.2.4	Gross tertiary outbound enrolment, %	7.7	7	●
2.3	Research & development (R&D)	2.4	93	
2.3.1	Researchers, headcounts/mn pop.	541.0	68	
2.3.2	Gross expenditure on R&D, % GDP	0.2	90	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**31.1**	**75**	
3.1	Information & communication technologies (ICTs)	25.4	97	
3.1.1	ICT access*	35.9	90	
3.1.2	ICT use*	12.5	90	
3.1.3	Government's online service*	42.5	89	
3.1.4	E-participation*	10.5	94	
3.2	General infrastructure	26.7	92	
3.2.1	Electricity output, kWh/cap	2,368.8	71	
3.2.2	Electricity consumption, kWh/cap	1,770.6	75	
3.2.3	Logistics performance*	44.3	78	
3.2.4	Gross capital formation, % GDP	24.3	53	
3.3	Ecological sustainability	41.2	31	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	11.8	5	●
3.3.2	Environmental performance*	65.9	15	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	88	
4	**Market sophistication**	**56.8**	**32**	●
4.1	Credit	58.4	29	●
4.1.1	Ease of getting credit*	81.3	22	●
4.1.2	Domestic credit to private sector, % GDP	39.3	82	
4.1.3	Microfinance gross loans, % GDP	7.1	6	●
4.2	Investment	38.4	30	●
4.2.1	Ease of protecting investors*	76.7	17	●
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	73.6	92	
4.3.1	Applied tariff rate, weighted mean, %	5.1	80	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.1	23	●
4.3.3	Intensity of local competition†	47.6	124	
5	**Business sophistication**	**21.4**	**128**	
5.1	Knowledge workers	29.1	118	
5.1.1	Knowledge-intensive employment, %	9.3	95	
5.1.2	Firms offering formal training, % firms	19.9	90	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	3.3	77	
5.1.5	GMAT mean score	516.8	63	
5.1.6	GMAT test takers/mn pop. 20–34	145.4	38	●
5.2	Innovation linkages	10.5	136	○
5.2.1	University/industry research collaboration†	21.3	131	○
5.2.2	State of cluster development†	19.1	136	○
5.2.3	R&D financed by abroad, %	7.4	47	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	24.6	81	
5.3.1	Royalty & license fees payments, % service imports	0.6	96	
5.3.2	High-tech imports less re-imports, %	4.4	114	○
5.3.3	Comm., computer & info. services imports, %	3.0	88	
5.3.4	FDI net inflows, % GDP	10.6	12	●
6	**Knowledge & technology outputs**	**19.2**	**108**	
6.1	Knowledge creation	2.1	136	○
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.1	104	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	72	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.0	61	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.8	110	
6.1.5	Citable documents H index	34.0	128	○
6.2	Knowledge impact	27.7	90	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.0	83	
6.2.2	New businesses/th pop. 15–64	1.0	62	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	6.5	59	
6.2.5	High- & medium-high-tech manufactures, %	14.6	63	
6.3	Knowledge diffusion	19.3	102	
6.3.1	Royalty & license fees receipts, % service exports	0.5	52	
6.3.2	High-tech exports less re-exports, %	0.6	85	
6.3.3	Comm., computer & info. services exports, %	4.8	81	
6.3.4	FDI net outflows, % GDP	0.3	67	
7	**Creative outputs**	**26.1**	**121**	
7.1	Intangible assets	26.8	127	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	11.7	78	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.1	57	
7.1.3	ICT & business model creation†	51.4	91	
7.1.4	ICT & organizational model creation†	47.9	88	
7.2	Creative goods & services	23.9	104	
7.2.1	Audio-visual & related services exports, %	0.1	57	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	3.1	98	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.3	83	
7.3	Online creativity	26.8	69	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.2	87	
7.3.2	Country-code TLDs/th pop. 15–69	19.8	78	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,150.4	64	
7.3.4	Video uploads on YouTube/pop. 15–69	78.7	41	●

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Algeria

Key indicators

Population (millions)	36.8
GDP (US$ billions)	206.5
GDP per capita, PPP$	7,521.7
Income group	Upper-middle income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**23.1**	**138**	○
Innovation Output Sub-Index		14.6	141	○
Innovation Input Sub-Index		31.6	112	
Innovation Efficiency Ratio		0.5	141	○
Global Innovation Index 2012 (based on GII 2012 framework)		24.4	124	
1	**Institutions**	**47.1**	**118**	
1.1	Political environment	39.0	127	
1.1.1	Political stability*	33.0	129	
1.1.2	Government effectiveness*	20.4	113	
1.1.3	Press freedom*	63.5	101	
1.2	Regulatory environment	51.7	113	
1.2.1	Regulatory quality*	19.3	136	
1.2.2	Rule of law*	24.9	114	
1.2.3	Cost of redundancy dismissal, salary weeks	17.3	82	
1.3	Business environment	50.8	113	
1.3.1	Ease of starting a business*	69.0	115	
1.3.2	Ease of resolving insolvency*	44.8	56	●
1.3.3	Ease of paying taxes*	38.6	133	
2	**Human capital & research**	**29.1**	**79**	
2.1	Education	58.9	50	●
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	13.6	61	●
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	20.8	94	
2.2	Tertiary education	27.1	79	
2.2.1	Tertiary enrolment, % gross	32.1	74	
2.2.2	Graduates in science & engineering, %	25.0	24	●
2.2.3	Tertiary inbound mobility, %	0.5	91	
2.2.4	Gross tertiary outbound enrolment, %	0.6	90	
2.3	Research & development (R&D)	1.4	107	
2.3.1	Researchers, headcounts/mn pop.	419.8	70	
2.3.2	Gross expenditure on R&D, % GDP	0.1	100	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**25.7**	**93**	
3.1	Information & communication technologies (ICTs)	19.6	111	
3.1.1	ICT access*	35.3	92	
3.1.2	ICT use*	12.5	92	
3.1.3	Government's online service*	25.5	125	
3.1.4	E-participation*	5.3	111	
3.2	General infrastructure	30.7	62	●
3.2.1	Electricity output, kWh/cap	1,284.5	87	
3.2.2	Electricity consumption, kWh/cap	1,026.3	93	
3.2.3	Logistics performance*	35.3	120	
3.2.4	Gross capital formation, % GDP	38.1	7	●
3.3	Ecological sustainability	26.7	85	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.6	57	●
3.3.2	Environmental performance*	48.6	83	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	102	
4	**Market sophistication**	**38.4**	**114**	
4.1	Credit	24.3	110	
4.1.1	Ease of getting credit*	43.8	110	
4.1.2	Domestic credit to private sector, % GDP	14.8	133	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	27.8	59	●
4.2.1	Ease of protecting investors*	55.6	70	●
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	63.2	118	
4.3.1	Applied tariff rate, weighted mean, %	8.6	113	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.2	32	●
4.3.3	Intensity of local competition†	35.8	136	○
5	**Business sophistication**	**17.7**	**139**	○
5.1	Knowledge workers	27.0	121	
5.1.1	Knowledge-intensive employment, %	19.1	68	
5.1.2	Firms offering formal training, % firms	17.3	93	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	456.0	107	
5.1.6	GMAT test takers/mn pop. 20–34	3.0	137	○
5.2	Innovation linkages	10.7	135	
5.2.1	University/industry research collaboration†	14.2	136	○
5.2.2	State of cluster development†	20.5	135	○
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	75	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	15.4	124	
5.3.1	Royalty & license fees payments, % service imports	0.7	90	
5.3.2	High-tech imports less re-imports, %	9.6	55	●
5.3.3	Comm., computer & info. services imports, %	1.0	125	
5.3.4	FDI net inflows, % GDP	1.4	110	
6	**Knowledge & technology outputs**	**17.6**	**115**	
6.1	Knowledge creation	5.1	107	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.4	90	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	88	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.7	87	
6.1.5	Citable documents H index	74.0	80	
6.2	Knowledge impact	25.3	102	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.0	84	
6.2.2	New businesses/th pop. 15–64	0.2	93	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.0	119	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	16.2	120	
6.3.1	Royalty & license fees receipts, % service exports	0.1	86	
6.3.2	High-tech exports less re-exports, %	0.0	122	○
6.3.3	Comm., computer & info. services exports, %	5.0	80	
6.3.4	FDI net outflows, % GDP	0.3	69	●
7	**Creative outputs**	**11.6**	**140**	○
7.1	Intangible assets	11.4	137	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	7.2	85	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.0	65	
7.1.3	ICT & business model creation†	23.0	136	○
7.1.4	ICT & organizational model creation†	18.6	136	○
7.2	Creative goods & services	8.7	130	
7.2.1	Audio-visual & related services exports, %	0.0	63	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	14.0	40	●
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.0	120	
7.3	Online creativity	14.9	116	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.4	121	
7.3.2	Country-code TLDs/th pop. 15–69	2.2	121	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	214.4	106	
7.3.4	Video uploads on YouTube/pop. 15–69	55.8	104	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Angola

Key indicators

Population (millions)	20.2
GDP (US$ billions)	114.8
GDP per capita, PPP$	6,244.1
Income group	Upper-middle income
Region	Sub-Saharan Africa

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)	**23.5**	**135**	
Innovation Output Sub-Index	22.7	117	
Innovation Input Sub-Index	24.2	140	○
Innovation Efficiency Ratio	0.9	22	●
Global Innovation Index 2012 (based on GII 2012 framework)	22.2	135	
1 Institutions	**40.0**	**136**	
1.1 Political environment	42.4	122	
1.1.1 Political stability*	58.0	87	●
1.1.2 Government effectiveness*	7.0	137	
1.1.3 Press freedom*	62.2	105	
1.2 Regulatory environment	35.6	135	
1.2.1 Regulatory quality*	20.8	135	
1.2.2 Rule of law*	14.0	133	
1.2.3 Cost of redundancy dismissal, salary weeks	31.0	130	
1.3 Business environment	42.0	134	
1.3.1 Ease of starting a business*	59.9	130	
1.3.2 Ease of resolving insolvency*	9.4	137	
1.3.3 Ease of paying taxes*	56.7	110	
2 Human capital & research	**14.0**	**126**	
2.1 Education	20.9	135	
2.1.1 Current expenditure on education, % GNI	3.6	79	●
2.1.2 Public expenditure/pupil, % GDP/cap	11.3	100	
2.1.3 School life expectancy, years	10.2	113	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	38.7	126	
2.2 Tertiary education	21.3	97	●
2.2.1 Tertiary enrolment, % gross	3.7	129	
2.2.2 Graduates in science & engineering, %	11.9	89	
2.2.3 Tertiary inbound mobility, %	9.9	18	●
2.2.4 Gross tertiary outbound enrolment, %	0.4	107	
2.3 Research & development (R&D)	0.0	123	○
2.3.1 Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3 QS university ranking, average score top 3*	0.0	68	○
3 Infrastructure	**18.2**	**129**	
3.1 Information & communication technologies (ICTs)	14.9	125	
3.1.1 ICT access*	18.6	128	
3.1.2 ICT use*	5.3	112	
3.1.3 Government's online service*	33.3	109	
3.1.4 E-participation*	2.6	116	
3.2 General infrastructure	12.2	140	○
3.2.1 Electricity output, kWh/cap	275.5	114	
3.2.2 Electricity consumption, kWh/cap	247.9	114	
3.2.3 Logistics performance*	32.0	127	
3.2.4 Gross capital formation, % GDP	11.7	138	○
3.3 Ecological sustainability	27.6	78	●
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	7.7	44	●
3.3.2 Environmental performance*	47.6	87	●
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.0	133	○
4 Market sophistication	**36.9**	**121**	
4.1 Credit	17.3	135	
4.1.1 Ease of getting credit*	43.8	110	
4.1.2 Domestic credit to private sector, % GDP	21.1	115	
4.1.3 Microfinance gross loans, % GDP	0.0	85	
4.2 Investment	29.5	50	●
4.2.1 Ease of protecting investors*	58.9	56	●
4.2.2 Market capitalization, % GDP	n/a	n/a	
4.2.3 Total value of stocks traded, % GDP	n/a	n/a	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3 Trade & competition	64.1	115	
4.3.1 Applied tariff rate, weighted mean, %	7.4	102	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.5	57	●
4.3.3 Intensity of local competition†	36.1	135	○
5 Business sophistication	**11.8**	**141**	○
5.1 Knowledge workers	19.5	137	
5.1.1 Knowledge-intensive employment, %	n/a	n/a	
5.1.2 Firms offering formal training, % firms	23.5	83	
5.1.3 R&D performed by business, % GDP	n/a	n/a	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	370.0	137	
5.1.6 GMAT test takers/mn pop. 20–34	2.6	138	○
5.2 Innovation linkages	11.0	134	
5.2.1 University/industry research collaboration†	17.8	133	
5.2.2 State of cluster development†	23.6	132	
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	0.0	102	
5.2.5 Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3 Knowledge absorption	5.0	141	○
5.3.1 Royalty & license fees payments, % service imports	0.0	122	
5.3.2 High-tech imports less re-imports, %	n/a	n/a	
5.3.3 Comm., computer & info. services imports, %	2.3	98	●
5.3.4 FDI net inflows, % GDP	–2.9	142	○
6 Knowledge & technology outputs	**27.2**	**62**	●
6.1 Knowledge creation	0.6	142	○
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	0.3	141	○
6.1.5 Citable documents H index	23.0	138	
6.2 Knowledge impact	29.4	87	●
6.2.1 Growth rate of PPP$ GDP/worker, %	0.1	97	
6.2.2 New businesses/th pop. 15–64	n/a	n/a	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	0.3	134	
6.2.5 High- & medium-high-tech manufactures, %	n/a	n/a	
6.3 Knowledge diffusion	38.2	26	●
6.3.1 Royalty & license fees receipts, % service exports	3.6	18	●
6.3.2 High-tech exports less re-exports, %	n/a	n/a	
6.3.3 Comm., computer & info. services exports, %	5.4	76	●
6.3.4 FDI net outflows, % GDP	2.0	31	●
7 Creative outputs	**18.3**	**137**	
7.1 Intangible assets	30.3	120	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	27.3	134	○
7.1.4 ICT & organizational model creation†	33.3	127	
7.2 Creative goods & services	0.7	140	○
7.2.1 Audio-visual & related services exports, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation, % pop. 15–69	0.4	128	
7.2.4 Printing & publishing manufactures, %	n/a	n/a	
7.2.5 Creative goods exports, %	n/a	n/a	
7.3 Online creativity	11.7	124	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.2	128	
7.3.2 Country-code TLDs/th pop. 15–69	0.4	132	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	47.1	122	
7.3.4 Video uploads on YouTube/pop. 15–69	46.0	118	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Argentina

Key indicators

Population (millions)	42.2
GDP (US$ billions)	474.8
GDP per capita, PPP$	18,205.1
Income group	Upper-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**37.7**	**56**	
Innovation Output Sub-Index		36.6	43	
Innovation Input Sub-Index		38.8	78	
Innovation Efficiency Ratio		0.9	20	●
Global Innovation Index 2012 (based on GII 2012 framework)		34.4	70	
1	**Institutions**	**50.7**	**106**	
1.1	Political environment	59.8	59	
1.1.1	Political stability*	71.0	57	
1.1.2	Government effectiveness*	34.0	80	
1.1.3	Press freedom*	74.3	45	
1.2	Regulatory environment	43.2	127	○
1.2.1	Regulatory quality*	30.4	123	○
1.2.2	Rule of law*	32.1	101	
1.2.3	Cost of redundancy dismissal, salary weeks	30.3	127	○
1.3	Business environment	49.1	117	○
1.3.1	Ease of starting a business*	69.8	113	
1.3.2	Ease of resolving insolvency*	33.3	84	
1.3.3	Ease of paying taxes*	44.1	127	○
2	**Human capital & research**	**36.7**	**51**	
2.1	Education	58.0	55	
2.1.1	Current expenditure on education, % GNI	5.7	25	●
2.1.2	Public expenditure/pupil, % GDP/cap	18.8	64	
2.1.3	School life expectancy, years	16.4	15	●
2.1.4	PISA scales in reading, maths, & science	395.7	60	○
2.1.5	Pupil-teacher ratio, secondary	10.9	32	
2.2	Tertiary education	29.4	75	
2.2.1	Tertiary enrolment, % gross	74.8	14	●
2.2.2	Graduates in science & engineering, %	13.5	84	○
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.3	115	○
2.3	Research & development (R&D)	22.5	36	
2.3.1	Researchers, headcounts/mn pop.	1,831.6	38	
2.3.2	Gross expenditure on R&D, % GDP	0.6	51	
2.3.3	QS university ranking, average score top 3*	39.9	31	●
3	**Infrastructure**	**35.0**	**63**	
3.1	Information & communication technologies (ICTs)	41.3	57	
3.1.1	ICT access*	56.6	55	
3.1.2	ICT use*	26.7	56	
3.1.3	Government's online service*	52.9	59	
3.1.4	E-participation*	29.0	52	
3.2	General infrastructure	30.4	64	
3.2.1	Electricity output, kWh/cap	3,099.8	63	
3.2.2	Electricity consumption, kWh/cap	2,904.5	62	
3.2.3	Logistics performance*	51.3	48	
3.2.4	Gross capital formation, % GDP	24.2	55	
3.3	Ecological sustainability	33.4	57	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.8	42	
3.3.2	Environmental performance*	56.5	49	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.1	57	
4	**Market sophistication**	**37.3**	**120**	○
4.1	Credit	22.8	121	○
4.1.1	Ease of getting credit*	62.5	68	
4.1.2	Domestic credit to private sector, % GDP	16.6	127	○
4.1.3	Microfinance gross loans, % GDP	0.0	87	○
4.2	Investment	17.0	113	
4.2.1	Ease of protecting investors*	47.4	102	
4.2.2	Market capitalization, % GDP	9.8	91	○
4.2.3	Total value of stocks traded, % GDP	0.6	79	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	61	
4.3	Trade & competition	72.2	99	
4.3.1	Applied tariff rate, weighted mean, %	6.2	93	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.3	40	
4.3.3	Intensity of local competition†	51.2	114	○
5	**Business sophistication**	**34.2**	**55**	
5.1	Knowledge workers	48.3	52	
5.1.1	Knowledge-intensive employment, %	19.0	69	
5.1.2	Firms offering formal training, % firms	63.6	9	●
5.1.3	R&D performed by business, % GDP	0.1	53	
5.1.4	R&D financed by business, %	22.3	62	
5.1.5	GMAT mean score	597.7	3	●
5.1.6	GMAT test takers/mn pop. 20–34	31.2	102	
5.2	Innovation linkages	16.9	115	
5.2.1	University/industry research collaboration†	46.0	55	
5.2.2	State of cluster development†	39.9	87	
5.2.3	R&D financed by abroad, %	0.6	82	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	104	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.1	45	
5.3	Knowledge absorption	37.4	26	●
5.3.1	Royalty & license fees payments, % service imports	10.6	7	●
5.3.2	High-tech imports less re-imports, %	13.3	26	●
5.3.3	Comm., computer & info. services imports, %	6.2	41	
5.3.4	FDI net inflows, % GDP	1.6	107	
6	**Knowledge & technology outputs**	**25.6**	**74**	
6.1	Knowledge creation	16.3	56	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.4	60	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	10.3	73	
6.1.5	Citable documents H index	206.0	35	
6.2	Knowledge impact	26.4	97	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.9	60	
6.2.2	New businesses/th pop. 15–64	0.5	87	○
6.2.3	Computer software spending, % GDP	0.2	68	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	6.6	57	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	29.6	47	
6.3.1	Royalty & license fees receipts, % service exports	1.2	34	
6.3.2	High-tech exports less re-exports, %	2.4	57	
6.3.3	Comm., computer & info. services exports, %	13.3	27	●
6.3.4	FDI net outflows, % GDP	0.3	65	
7	**Creative outputs**	**47.5**	**29**	●
7.1	Intangible assets	51.3	38	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	51.4	92	
7.1.4	ICT & organizational model creation†	51.3	77	
7.2	Creative goods & services	47.9	26	●
7.2.1	Audio-visual & related services exports, %	2.1	7	●
7.2.2	National feature films/mn pop. 15–69	3.6	42	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	4.2	90	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.2	89	
7.3	Online creativity	39.2	40	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.7	71	
7.3.2	Country-code TLDs/th pop. 15–69	61.6	17	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	2,203.1	50	
7.3.4	Video uploads on YouTube/pop. 15–69	78.8	40	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Armenia

Key indicators

Population (millions)	3.2
GDP (US$ billions)	10.6
GDP per capita, PPP$	5,637.2
Income group	Lower-middle income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**37.6**	**59**	
Innovation Output Sub-Index		34.8	47	
Innovation Input Sub-Index		40.4	71	
Innovation Efficiency Ratio		0.9	42	
Global Innovation Index 2012 (based on GII 2012 framework)		34.5	69	
1	**Institutions**	**65.7**	**57**	
1.1	Political environment	57.3	63	
1.1.1	Political stability*	63.8	75	
1.1.2	Government effectiveness*	36.0	74	
1.1.3	Press freedom*	72.0	61	
1.2	Regulatory environment	70.2	51	
1.2.1	Regulatory quality*	56.4	65	
1.2.2	Rule of law*	36.4	81	
1.2.3	Cost of redundancy dismissal, salary weeks	11.0	45	
1.3	Business environment	69.6	49	
1.3.1	Ease of starting a business*	94.7	12	●
1.3.2	Ease of resolving insolvency*	44.2	57	
1.3.3	Ease of paying taxes*	69.9	68	
2	**Human capital & research**	**31.5**	**71**	
2.1	Education	56.8	59	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	16.3	75	
2.1.3	School life expectancy, years	12.0	85	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	6.7	2	●
2.2	Tertiary education	31.3	66	
2.2.1	Tertiary enrolment, % gross	48.9	48	
2.2.2	Graduates in science & engineering, %	15.9	71	
2.2.3	Tertiary inbound mobility, %	3.0	47	
2.2.4	Gross tertiary outbound enrolment, %	2.0	53	
2.3	Research & development (R&D)	6.5	74	
2.3.1	Researchers, headcounts/mn pop.	1,796.4	40	
2.3.2	Gross expenditure on R&D, % GDP	0.3	71	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**25.5**	**97**	
3.1	Information & communication technologies (ICTs)	22.2	102	
3.1.1	ICT access*	40.7	79	
3.1.2	ICT use*	15.5	82	
3.1.3	Government's online service*	32.7	111	
3.1.4	E-participation*	0.0	129	○
3.2	General infrastructure	28.6	77	
3.2.1	Electricity output, kWh/cap	2,100.6	77	
3.2.2	Electricity consumption, kWh/cap	1,606.4	79	
3.2.3	Logistics performance*	39.0	98	
3.2.4	Gross capital formation, % GDP	30.7	21	●
3.3	Ecological sustainability	25.6	89	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.2	65	
3.3.2	Environmental performance*	47.5	89	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	110	○
4	**Market sophistication**	**50.0**	**48**	
4.1	Credit	54.5	35	
4.1.1	Ease of getting credit*	75.0	38	
4.1.2	Domestic credit to private sector, % GDP	35.0	90	
4.1.3	Microfinance gross loans, % GDP	6.8	7	●
4.2	Investment	17.2	111	
4.2.1	Ease of protecting investors*	68.9	27	●
4.2.2	Market capitalization, % GDP	0.4	107	○
4.2.3	Total value of stocks traded, % GDP	0.0	107	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	78.3	56	
4.3.1	Applied tariff rate, weighted mean, %	2.3	45	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.1	24	●
4.3.3	Intensity of local competition†	47.5	126	○
5	**Business sophistication**	**29.3**	**84**	
5.1	Knowledge workers	48.3	51	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	30.4	65	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	490.1	85	
5.1.6	GMAT test takers/mn pop. 20–34	210.7	29	
5.2	Innovation linkages	18.4	113	
5.2.1	University/industry research collaboration†	31.6	117	○
5.2.2	State of cluster development†	41.6	75	
5.2.3	R&D financed by abroad, %	4.2	61	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	39	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	21.3	97	
5.3.1	Royalty & license fees payments, % service imports	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	5.9	95	
5.3.3	Comm., computer & info. services imports, %	1.7	112	
5.3.4	FDI net inflows, % GDP	6.5	29	●
6	**Knowledge & technology outputs**	**28.3**	**58**	
6.1	Knowledge creation	26.2	37	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	7.1	23	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.4	40	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	2.5	15	
6.1.4	Scientific & technical articles/bn PPP$ GDP	40.7	17	●
6.1.5	Citable documents H index	98.0	61	
6.2	Knowledge impact	29.1	88	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.8	29	
6.2.2	New businesses/th pop. 15–64	1.1	58	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.9	95	
6.2.5	High- & medium-high-tech manufactures, %	5.8	84	○
6.3	Knowledge diffusion	28.5	50	
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.6	86	
6.3.3	Comm., computer & info. services exports, %	12.3	30	
6.3.4	FDI net outflows, % GDP	0.8	53	
7	**Creative outputs**	**41.3**	**53**	
7.1	Intangible assets	45.4	59	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	88.9	8	●
7.1.2	Madrid trademark registrations/bn PPP$ GDP	1.3	25	
7.1.3	ICT & business model creation†	57.2	68	
7.1.4	ICT & organizational model creation†	53.2	65	
7.2	Creative goods & services	41.3	49	
7.2.1	Audio-visual & related services exports, %	0.5	22	
7.2.2	National feature films/mn pop. 15–69	2.3	56	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	2.0	106	
7.2.4	Printing & publishing manufactures, %	3.0	18	●
7.2.5	Creative goods exports, %	0.8	58	
7.3	Online creativity	33.0	52	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.7	91	
7.3.2	Country-code TLDs/th pop. 15–69	32.4	54	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	3,962.7	39	
7.3.4	Video uploads on YouTube/pop. 15–69	75.1	59	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	23.8
GDP (US$ billions)	1,542.1
GDP per capita, PPP$	42,354.2
Income group	High income
Region	South East Asia and Oceania

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**53.1**	**19**	
Innovation Output Sub-Index		42.0	32	
Innovation Input Sub-Index		64.1	11	
Innovation Efficiency Ratio		0.7	116	○
Global Innovation Index 2012 (based on GII 2012 framework)		51.9	23	
1	**Institutions**	**89.4**	**11**	
1.1	Political environment	86.1	14	
1.1.1	Political stability*	87.4	29	
1.1.2	Government effectiveness*	86.1	10	●
1.1.3	Press freedom*	84.8	24	
1.2	Regulatory environment	94.5	14	
1.2.1	Regulatory quality*	96.3	8	●
1.2.2	Rule of law*	95.2	9	●
1.2.3	Cost of redundancy dismissal, salary weeks	11.3	47	
1.3	Business environment	87.5	11	
1.3.1	Ease of starting a business*	97.9	3	●
1.3.2	Ease of resolving insolvency*	85.7	17	
1.3.3	Ease of paying taxes*	78.9	37	
2	**Human capital & research**	**57.8**	**11**	
2.1	Education	60.0	47	
2.1.1	Current expenditure on education, % GNI	4.8	48	
2.1.2	Public expenditure/pupil, % GDP/cap	19.2	60	○
2.1.3	School life expectancy, years	19.6	2	●
2.1.4	PISA scales in reading, maths, & science	518.8	9	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	Tertiary education	44.3	29	
2.2.1	Tertiary enrolment, % gross	79.9	9	●
2.2.2	Graduates in science & engineering, %	16.6	65	○
2.2.3	Tertiary inbound mobility, %	21.2	6	●
2.2.4	Gross tertiary outbound enrolment, %	0.7	86	○
2.3	Research & development (R&D)	69.1	7	●
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	2.4	13	
2.3.3	QS university ranking, average score top 3*	84.0	4	●
3	**Infrastructure**	**52.7**	**16**	
3.1	Information & communication technologies (ICTs)	73.9	13	
3.1.1	ICT access*	76.6	19	
3.1.2	ICT use*	56.4	19	
3.1.3	Government's online service*	86.3	9	
3.1.4	E-participation*	76.3	8	●
3.2	General infrastructure	49.4	11	
3.2.1	Electricity output, kWh/cap	10,431.0	12	
3.2.2	Electricity consumption, kWh/cap	9,792.5	13	
3.2.3	Logistics performance*	68.3	18	
3.2.4	Gross capital formation, % GDP	28.4	27	
3.3	Ecological sustainability	34.7	54	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.0	50	
3.3.2	Environmental performance*	56.6	47	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.1	41	
4	**Market sophistication**	**72.7**	**9**	●
4.1	Credit	77.1	12	
4.1.1	Ease of getting credit*	93.8	4	
4.1.2	Domestic credit to private sector, % GDP	127.8	19	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	52.7	13	
4.2.1	Ease of protecting investors*	57.4	65	
4.2.2	Market capitalization, % GDP	86.9	17	
4.2.3	Total value of stocks traded, % GDP	90.4	11	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	26	
4.3	Trade & competition	88.2	5	●
4.3.1	Applied tariff rate, weighted mean, %	1.9	42	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.6	58	
4.3.3	Intensity of local competition†	80.9	5	●
5	**Business sophistication**	**48.2**	**18**	
5.1	Knowledge workers	73.5	3	●
5.1.1	Knowledge-intensive employment, %	42.9	7	●
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	1.4	15	
5.1.4	R&D financed by business, %	61.9	9	
5.1.5	GMAT mean score	591.7	6	●
5.1.6	GMAT test takers/mn pop. 20–34	188.2	33	
5.2	Innovation linkages	37.6	36	
5.2.1	University/industry research collaboration†	68.3	12	
5.2.2	State of cluster development†	53.9	34	
5.2.3	R&D financed by abroad, %	1.6	74	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	19	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.9	21	
5.3	Knowledge absorption	33.6	43	
5.3.1	Royalty & license fees payments, % service imports	6.7	19	
5.3.2	High-tech imports less re-imports, %	13.6	25	
5.3.3	Comm., computer & info. services imports, %	3.4	74	○
5.3.4	FDI net inflows, % GDP	4.9	43	
6	**Knowledge & technology outputs**	**30.9**	**46**	
6.1	Knowledge creation	33.4	28	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.6	47	
6.1.2	PCT resident patent ap/bn PPP$ GDP	1.8	25	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.3	23	
6.1.4	Scientific & technical articles/bn PPP$ GDP	45.2	13	
6.1.5	Citable documents H index	481.0	11	
6.2	Knowledge impact	34.5	66	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.3	93	○
6.2.2	New businesses/th pop. 15–64	6.2	19	
6.2.3	Computer software spending, % GDP	0.3	30	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	10.6	44	
6.2.5	High- & medium-high-tech manufactures, %	22.0	48	○
6.3	Knowledge diffusion	26.1	63	
6.3.1	Royalty & license fees receipts, % service exports	1.8	26	
6.3.2	High-tech exports less re-exports, %	2.1	60	○
6.3.3	Comm., computer & info. services exports, %	5.3	77	○
6.3.4	FDI net outflows, % GDP	2.2	29	
7	**Creative outputs**	**53.1**	**17**	
7.1	Intangible assets	43.8	65	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	46.5	36	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	1.0	28	
7.1.3	ICT & business model creation†	68.7	27	
7.1.4	ICT & organizational model creation†	64.3	27	
7.2	Creative goods & services	54.0	15	
7.2.1	Audio-visual & related services exports, %	0.4	27	
7.2.2	National feature films/mn pop. 15–69	2.7	51	○
7.2.3	Paid-for dailies, circulation, % pop. 15–69	15.1	32	
7.2.4	Printing & publishing manufactures, %	6.1	6	●
7.2.5	Creative goods exports, %	0.8	59	
7.3	Online creativity	70.6	9	●
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	91.6	7	●
7.3.2	Country-code TLDs/th pop. 15–69	69.4	15	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	6,109.7	27	
7.3.4	Video uploads on YouTube/pop. 15–69	85.9	15	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Austria

Key indicators

Population (millions)	8.8
GDP (US$ billions)	391.5
GDP per capita, PPP$	42,477.5
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**51.9**	**23**	
	Innovation Output Sub-Index	43.2	27	
	Innovation Input Sub-Index	60.6	17	
	Innovation Efficiency Ratio	0.7	98	○
	Global Innovation Index 2012 (based on GII 2012 framework)	53.1	22	
1	**Institutions**	**88.5**	**13**	
1.1	Political environment	89.9	9	●
1.1.1	Political stability*	95.3	11	●
1.1.2	Government effectiveness*	83.9	14	
1.1.3	Press freedom*	90.6	10	●
1.2	Regulatory environment	95.6	9	●
1.2.1	Regulatory quality*	86.5	17	
1.2.2	Rule of law*	96.0	7	●
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	
1.3	Business environment	80.0	22	
1.3.1	Ease of starting a business*	79.5	86	○
1.3.2	Ease of resolving insolvency*	88.4	12	
1.3.3	Ease of paying taxes*	72.1	57	
2	**Human capital & research**	**58.7**	**10**	●
2.1	Education	66.8	24	
2.1.1	Current expenditure on education, % GNI	5.8	24	
2.1.2	Public expenditure/pupil, % GDP/cap	29.4	9	●
2.1.3	School life expectancy, years	15.6	27	
2.1.4	PISA scales in reading, maths, & science	486.8	29	
2.1.5	Pupil-teacher ratio, secondary	10.0	26	
2.2	Tertiary education	55.2	9	●
2.2.1	Tertiary enrolment, % gross	68.2	21	
2.2.2	Graduates in science & engineering, %	29.0	13	
2.2.3	Tertiary inbound mobility, %	19.6	9	●
2.2.4	Gross tertiary outbound enrolment, %	2.5	38	
2.3	Research & development (R&D)	54.2	14	
2.3.1	Researchers, headcounts/mn pop.	7,090.0	8	●
2.3.2	Gross expenditure on R&D, % GDP	2.8	9	●
2.3.3	QS university ranking, average score top 3*	45.2	26	
3	**Infrastructure**	**50.3**	**21**	
3.1	Information & communication technologies (ICTs)	62.4	24	
3.1.1	ICT access*	78.8	15	
3.1.2	ICT use*	59.7	15	
3.1.3	Government's online service*	74.5	26	
3.1.4	E-participation*	36.8	41	
3.2	General infrastructure	44.0	19	
3.2.1	Electricity output, kWh/cap	7,426.6	27	
3.2.2	Electricity consumption, kWh/cap	8,433.7	16	
3.2.3	Logistics performance*	72.3	11	●
3.2.4	Gross capital formation, % GDP	23.0	70	○
3.3	Ecological sustainability	44.3	22	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	9.4	21	
3.3.2	Environmental performance*	68.9	7	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.8	36	
4	**Market sophistication**	**60.1**	**24**	
4.1	Credit	68.9	18	
4.1.1	Ease of getting credit*	81.3	22	
4.1.2	Domestic credit to private sector, % GDP	119.8	23	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	29.0	55	
4.2.1	Ease of protecting investors*	51.9	85	○
4.2.2	Market capitalization, % GDP	19.7	71	○
4.2.3	Total value of stocks traded, % GDP	9.3	44	
4.2.4	Venture capital deals/tr PPP$ GDP	0.1	25	
4.3	Trade & competition	82.4	23	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	80.5	6	●
5	**Business sophistication**	**45.2**	**29**	
5.1	Knowledge workers	60.1	31	
5.1.1	Knowledge-intensive employment, %	25.5	46	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	1.9	10	
5.1.4	R&D financed by business, %	44.6	33	
5.1.5	GMAT mean score	579.9	14	
5.1.6	GMAT test takers/mn pop. 20–34	210.2	30	
5.2	Innovation linkages	43.3	23	
5.2.1	University/industry research collaboration†	64.8	21	
5.2.2	State of cluster development†	62.3	16	
5.2.3	R&D financed by abroad, %	15.5	22	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	63	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	2.0	12	
5.3	Knowledge absorption	32.3	46	
5.3.1	Royalty & license fees payments, % service imports	3.9	37	
5.3.2	High-tech imports less re-imports, %	9.9	50	
5.3.3	Comm., computer & info. services imports, %	7.0	39	
5.3.4	FDI net inflows, % GDP	3.8	63	
6	**Knowledge & technology outputs**	**36.8**	**30**	
6.1	Knowledge creation	37.6	22	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	11.1	14	
6.1.2	PCT resident patent ap/bn PPP$ GDP	3.7	12	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.8	19	
6.1.4	Scientific & technical articles/bn PPP$ GDP	33.7	25	
6.1.5	Citable documents H index	355.0	16	
6.2	Knowledge impact	40.5	46	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.5	72	○
6.2.2	New businesses/th pop. 15–64	0.6	84	○
6.2.3	Computer software spending, % GDP	0.6	11	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	11.8	41	
6.2.5	High- & medium-high-tech manufactures, %	36.5	25	
6.3	Knowledge diffusion	32.8	39	
6.3.1	Royalty & license fees receipts, % service exports	1.3	32	
6.3.2	High-tech exports less re-exports, %	10.5	24	
6.3.3	Comm., computer & info. services exports, %	6.5	65	○
6.3.4	FDI net outflows, % GDP	6.1	9	●
7	**Creative outputs**	**49.5**	**18**	
7.1	Intangible assets	46.3	50	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	21.9	62	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	2.9	7	
7.1.3	ICT & business model creation†	67.3	32	
7.1.4	ICT & organizational model creation†	57.7	48	
7.2	Creative goods & services	43.6	41	
7.2.1	Audio-visual & related services exports, %	0.1	47	○
7.2.2	National feature films/mn pop. 15–69	8.8	18	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	32.5	9	●
7.2.4	Printing & publishing manufactures, %	1.8	49	○
7.2.5	Creative goods exports, %	1.9	36	
7.3	Online creativity	61.9	19	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	55.6	16	
7.3.2	Country-code TLDs/th pop. 15–69	72.3	8	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	6,634.8	22	
7.3.4	Video uploads on YouTube/pop. 15–69	81.2	35	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Azerbaijan

Key indicators

Population (millions)	9.5
GDP (US$ billions)	71.0
GDP per capita, PPP$	10,685.0
Income group	Upper-middle income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**29.0**	**105**	
Innovation Output Sub-Index		22.9	114	
Innovation Input Sub-Index		35.1	92	
Innovation Efficiency Ratio		0.7	117	
Global Innovation Index 2012 (based on GII 2012 framework)		30.4	89	
1	**Institutions**	**52.7**	**99**	
1.1	Political environment	40.4	123	
1.1.1	Political stability*	52.2	100	
1.1.2	Government effectiveness*	16.8	121	
1.1.3	Press freedom*	52.3	125	○
1.2	Regulatory environment	52.0	111	
1.2.1	Regulatory quality*	39.2	104	
1.2.2	Rule of law*	23.6	119	
1.2.3	Cost of redundancy dismissal, salary weeks	21.7	99	
1.3	Business environment	65.7	63	
1.3.1	Ease of starting a business*	89.3	33	●
1.3.2	Ease of resolving insolvency*	33.1	85	
1.3.3	Ease of paying taxes*	74.6	52	
2	**Human capital & research**	**25.5**	**94**	
2.1	Education	41.6	99	
2.1.1	Current expenditure on education, % GNI	2.9	94	
2.1.2	Public expenditure/pupil, % GDP/cap	13.6	87	
2.1.3	School life expectancy, years	11.8	91	
2.1.4	PISA scales in reading, maths, & science	388.6	62	○
2.1.5	Pupil-teacher ratio, secondary	9.0	16	●
2.2	Tertiary education	23.9	83	
2.2.1	Tertiary enrolment, % gross	19.6	91	
2.2.2	Graduates in science & engineering, %	16.2	66	
2.2.3	Tertiary inbound mobility, %	2.8	50	
2.2.4	Gross tertiary outbound enrolment, %	1.2	71	
2.3	Research & development (R&D)	11.1	63	
2.3.1	Researchers, headcounts/mn pop.	1,217.8	48	
2.3.2	Gross expenditure on R&D, % GDP	0.2	73	
2.3.3	QS university ranking, average score top 3*	18.7	51	●
3	**Infrastructure**	**25.1**	**99**	
3.1	Information & communication technologies (ICTs)	29.1	84	
3.1.1	ICT access*	46.3	69	
3.1.2	ICT use*	20.2	69	
3.1.3	Government's online service*	36.6	101	
3.1.4	E-participation*	13.2	84	
3.2	General infrastructure	21.0	118	
3.2.1	Electricity output, kWh/cap	2,067.4	78	
3.2.2	Electricity consumption, kWh/cap	1,604.6	80	
3.2.3	Logistics performance*	37.0	110	
3.2.4	Gross capital formation, % GDP	19.4	101	
3.3	Ecological sustainability	25.1	91	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.8	52	
3.3.2	Environmental performance*	43.1	106	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	112	
4	**Market sophistication**	**48.4**	**55**	
4.1	Credit	35.3	77	
4.1.1	Ease of getting credit*	68.8	51	
4.1.2	Domestic credit to private sector, % GDP	18.0	123	
4.1.3	Microfinance gross loans, % GDP	2.8	20	●
4.2	Investment	34.3	36	●
4.2.1	Ease of protecting investors*	68.5	30	●
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	75.7	77	
4.3.1	Applied tariff rate, weighted mean, %	3.9	68	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	7	●
4.3.3	Intensity of local competition†	47.1	127	○
5	**Business sophistication**	**23.7**	**118**	
5.1	Knowledge workers	29.9	115	
5.1.1	Knowledge-intensive employment, %	20.3	62	
5.1.2	Firms offering formal training, % firms	10.5	101	○
5.1.3	R&D performed by business, % GDP	0.1	66	
5.1.4	R&D financed by business, %	24.8	59	
5.1.5	GMAT mean score	521.8	55	
5.1.6	GMAT test takers/mn pop. 20–34	49.2	83	
5.2	Innovation linkages	15.3	121	
5.2.1	University/industry research collaboration†	40.5	80	
5.2.2	State of cluster development†	46.5	59	
5.2.3	R&D financed by abroad, %	0.1	87	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	92	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	25.9	77	
5.3.1	Royalty & license fees payments, % service imports	0.3	109	
5.3.2	High-tech imports less re-imports, %	11.2	38	●
5.3.3	Comm., computer & info. services imports, %	2.1	102	
5.3.4	FDI net inflows, % GDP	7.1	24	●
6	**Knowledge & technology outputs**	**13.7**	**126**	○
6.1	Knowledge creation	4.0	118	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.3	49	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	78	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.1	54	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.1	104	
6.1.5	Citable documents H index	41.0	120	
6.2	Knowledge impact	17.9	118	
6.2.1	Growth rate of PPP$ GDP/worker, %	–1.3	112	○
6.2.2	New businesses/th pop. 15–64	0.6	80	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.3	110	
6.2.5	High- & medium-high-tech manufactures, %	6.8	82	
6.3	Knowledge diffusion	14.3	127	○
6.3.1	Royalty & license fees receipts, % service exports	0.0	111	○
6.3.2	High-tech exports less re-exports, %	0.2	105	
6.3.3	Comm., computer & info. services exports, %	2.7	107	
6.3.4	FDI net outflows, % GDP	0.8	49	
7	**Creative outputs**	**32.1**	**94**	
7.1	Intangible assets	41.6	79	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.0	62	
7.1.3	ICT & business model creation†	64.5	40	●
7.1.4	ICT & organizational model creation†	60.0	38	●
7.2	Creative goods & services	20.7	114	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	22.5	4	●
7.2.3	Paid-for dailies, circulation, % pop. 15–69	1.8	109	
7.2.4	Printing & publishing manufactures, %	0.9	82	
7.2.5	Creative goods exports, %	0.0	117	○
7.3	Online creativity	24.5	79	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.8	70	
7.3.2	Country-code TLDs/th pop. 15–69	16.6	84	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	2,049.2	52	
7.3.4	Video uploads on YouTube/pop. 15–69	65.9	85	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Bahrain

Key indicators

Population (millions)	1.4
GDP (US$ billions)	26.5
GDP per capita, PPP$	28,182.1
Income group	High income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**36.1**	**67**	
Innovation Output Sub-Index		27.7	90	
Innovation Input Sub-Index		44.5	47	
Innovation Efficiency Ratio		0.6	123	
Global Innovation Index 2012 (based on GII 2012 framework)		41.1	41	
1	**Institutions**	**69.9**	**46**	
1.1	Political environment	48.0	93	
1.1.1	Political stability*	50.4	103	
1.1.2	Government effectiveness*	56.3	43	
1.1.3	Press freedom*	37.3	134	○
1.2	Regulatory environment	81.8	29	
1.2.1	Regulatory quality*	70.5	37	
1.2.2	Rule of law*	56.5	51	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	
1.3	Business environment	80.0	22	
1.3.1	Ease of starting a business*	76.6	97	
1.3.2	Ease of resolving insolvency*	70.4	25	
1.3.3	Ease of paying taxes*	93.0	7	●
2	**Human capital & research**	**27.8**	**82**	
2.1	Education	33.5	118	
2.1.1	Current expenditure on education, % GNI	3.0	91	
2.1.2	Public expenditure/pupil, % GDP/cap	13.3	88	
2.1.3	School life expectancy, years	14.4	46	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	Tertiary education	43.9	33	
2.2.1	Tertiary enrolment, % gross	29.8	76	
2.2.2	Graduates in science & engineering, %	17.9	58	
2.2.3	Tertiary inbound mobility, %	20.5	7	●
2.2.4	Gross tertiary outbound enrolment, %	4.7	16	●
2.3	Research & development (R&D)	6.1	77	
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	6.1	64	
3	**Infrastructure**	**39.8**	**45**	
3.1	Information & communication technologies (ICTs)	66.1	22	
3.1.1	ICT access*	69.4	31	
3.1.2	ICT use*	43.0	31	
3.1.3	Government's online service*	86.3	9	●
3.1.4	E-participation*	65.8	19	●
3.2	General infrastructure	42.7	25	
3.2.1	Electricity output, kWh/cap	10,500.0	11	●
3.2.2	Electricity consumption, kWh/cap	9,813.0	12	●
3.2.3	Logistics performance*	51.3	48	
3.2.4	Gross capital formation, % GDP	26.6	34	
3.3	Ecological sustainability	10.6	125	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	2.7	115	○
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.3	53	
4	**Market sophistication**	**47.6**	**59**	
4.1	Credit	39.3	64	
4.1.1	Ease of getting credit*	43.8	110	○
4.1.2	Domestic credit to private sector, % GDP	75.9	43	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	24.5	78	
4.2.1	Ease of protecting investors*	54.8	75	
4.2.2	Market capitalization, % GDP	89.0	15	●
4.2.3	Total value of stocks traded, % GDP	1.3	71	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	79.0	49	
4.3.1	Applied tariff rate, weighted mean, %	3.6	61	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.6	90	
4.3.3	Intensity of local competition†	72.9	31	
5	**Business sophistication**	**37.5**	**43**	
5.1	Knowledge workers	47.0	57	
5.1.1	Knowledge-intensive employment, %	20.7	60	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	464.2	99	
5.1.6	GMAT test takers/mn pop. 20–34	116.2	48	
5.2	Innovation linkages	47.4	17	●
5.2.1	University/industry research collaboration†	33.7	112	
5.2.2	State of cluster development†	56.0	26	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.7	1	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	18.0	113	
5.3.1	Royalty & license fees payments, % service imports	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	7.7	73	
5.3.3	Comm., computer & info. services imports, %	3.1	85	
5.3.4	FDI net inflows, % GDP	0.7	127	○
6	**Knowledge & technology outputs**	**26.1**	**72**	
6.1	Knowledge creation	2.6	133	○
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.0	114	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	76	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.5	118	
6.1.5	Citable documents H index	36.0	126	○
6.2	Knowledge impact	27.7	91	
6.2.1	Growth rate of PPP$ GDP/worker, %	–1.7	113	○
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.4	22	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	6.0	62	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	36.2	31	
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.0	119	○
6.3.3	Comm., computer & info. services exports, %	20.6	12	●
6.3.4	FDI net outflows, % GDP	1.5	41	
7	**Creative outputs**	**29.4**	**111**	
7.1	Intangible assets	33.7	107	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	13.5	75	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.1	58	
7.1.3	ICT & business model creation†	66.8	34	
7.1.4	ICT & organizational model creation†	59.3	39	
7.2	Creative goods & services	21.1	112	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	20.7	21	●
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.0	115	○
7.3	Online creativity	29.3	63	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	6.1	55	
7.3.2	Country-code TLDs/th pop. 15–69	22.7	72	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,997.7	53	
7.3.4	Video uploads on YouTube/pop. 15–69	76.9	54	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Bangladesh

Key indicators

Population (millions)	153.5
GDP (US$ billions)	118.7
GDP per capita, PPP$	2,036.2
Income group	Low income
Region	Central and Southern Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**24.5**	**130**	
Innovation Output Sub-Index		22.4	119	
Innovation Input Sub-Index		26.6	135	○
Innovation Efficiency Ratio		0.8	46	●
Global Innovation Index 2012 (based on GII 2012 framework)		26.1	112	
1	**Institutions**	**45.3**	**127**	
1.1	Political environment	34.1	136	○
1.1.1	Political stability*	29.4	134	○
1.1.2	Government effectiveness*	15.0	127	
1.1.3	Press freedom*	58.0	116	
1.2	Regulatory environment	40.9	130	
1.2.1	Regulatory quality*	28.4	127	
1.2.2	Rule of law*	27.8	109	
1.2.3	Cost of redundancy dismissal, salary weeks	31.0	129	
1.3	Business environment	60.9	81	
1.3.1	Ease of starting a business*	82.6	73	
1.3.2	Ease of resolving insolvency*	27.8	106	
1.3.3	Ease of paying taxes*	72.2	56	●
2	**Human capital & research**	**11.7**	**138**	○
2.1	Education	18.6	137	○
2.1.1	Current expenditure on education, % GNI	1.8	108	○
2.1.2	Public expenditure/pupil, % GDP/cap	10.7	102	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	28.3	114	
2.2	Tertiary education	10.9	122	
2.2.1	Tertiary enrolment, % gross	10.6	106	
2.2.2	Graduates in science & engineering, %	13.4	85	
2.2.3	Tertiary inbound mobility, %	0.1	105	○
2.2.4	Gross tertiary outbound enrolment, %	0.1	132	○
2.3	Research & development (R&D)	5.4	81	
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	5.4	65	●
3	**Infrastructure**	**22.6**	**109**	
3.1	Information & communication technologies (ICTs)	18.2	114	
3.1.1	ICT access*	19.1	122	
3.1.2	ICT use*	1.3	130	○
3.1.3	Government's online service*	44.4	85	
3.1.4	E-participation*	7.9	99	
3.2	General infrastructure	24.6	103	
3.2.1	Electricity output, kWh/cap	284.8	113	
3.2.2	Electricity consumption, kWh/cap	278.9	111	
3.2.3	Logistics performance*	43.5	83	
3.2.4	Gross capital formation, % GDP	25.8	39	●
3.3	Ecological sustainability	25.1	92	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.1	48	●
3.3.2	Environmental performance*	42.6	110	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	127	
4	**Market sophistication**	**35.6**	**126**	
4.1	Credit	34.9	78	
4.1.1	Ease of getting credit*	56.3	80	
4.1.2	Domestic credit to private sector, % GDP	48.8	68	●
4.1.3	Microfinance gross loans, % GDP	2.5	21	●
4.2	Investment	22.7	86	
4.2.1	Ease of protecting investors*	69.3	26	●
4.2.2	Market capitalization, % GDP	21.0	69	
4.2.3	Total value of stocks traded, % GDP	16.2	33	●
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	49.1	136	○
4.3.1	Applied tariff rate, weighted mean, %	13.0	132	
4.3.2	Non-agricultural mkt access weighted tariff, %	4.4	134	○
4.3.3	Intensity of local competition†	61.0	82	
5	**Business sophistication**	**17.8**	**138**	○
5.1	Knowledge workers	27.8	120	
5.1.1	Knowledge-intensive employment, %	7.3	99	○
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	492.5	82	
5.1.6	GMAT test takers/mn pop. 20–34	11.1	124	
5.2	Innovation linkages	18.4	112	
5.2.1	University/industry research collaboration†	26.3	124	
5.2.2	State of cluster development†	44.3	67	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	100	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	7.3	140	○
5.3.1	Royalty & license fees payments, % service imports	0.2	112	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Comm., computer & info. services imports, %	0.6	134	○
5.3.4	FDI net inflows, % GDP	0.7	126	
6	**Knowledge & technology outputs**	**24.5**	**80**	
6.1	Knowledge creation	5.8	100	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.1	106	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.1	113	
6.1.5	Citable documents H index	89.0	68	●
6.2	Knowledge impact	25.9	101	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.9	28	●
6.2.2	New businesses/th pop. 15–64	0.1	98	
6.2.3	Computer software spending, % GDP	0.2	73	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.6	124	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	32.6	40	●
6.3.1	Royalty & license fees receipts, % service exports	0.0	100	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Comm., computer & info. services exports, %	17.3	18	●
6.3.4	FDI net outflows, % GDP	0.0	107	
7	**Creative outputs**	**20.4**	**131**	
7.1	Intangible assets	31.0	116	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	1.2	90	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	49.7	98	
7.1.4	ICT & organizational model creation†	42.6	109	
7.2	Creative goods & services	7.7	134	○
7.2.1	Audio-visual & related services exports, %	0.0	61	
7.2.2	National feature films/mn pop. 15–69	0.7	85	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	1.5	110	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	n/a	n/a	
7.3	Online creativity	11.7	123	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.5	116	
7.3.2	Country-code TLDs/th pop. 15–69	0.7	131	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	75.8	114	
7.3.4	Video uploads on YouTube/pop. 15–69	45.4	120	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Barbados

Key indicators

Population (millions)	0.3
GDP (US$ billions)	4.5
GDP per capita, PPP$	25,509.6
Income group	High income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**40.5**	**47**	
	Innovation Output Sub-Index	34.3	49	
	Innovation Input Sub-Index	46.7	42	
	Innovation Efficiency Ratio	0.7	91	
	Global Innovation Index 2012 (based on GII 2012 framework)	n/a	n/a	
1	**Institutions**	**79.3**	**22**	
1.1	Political environment	88.2	12	●
1.1.1	Political stability*	97.9	5	●
1.1.2	Government effectiveness*	78.6	19	
1.1.3	Press freedom*	n/a	n/a	
1.2	Regulatory environment	77.1	40	
1.2.1	Regulatory quality*	65.5	44	
1.2.2	Rule of law*	75.1	28	
1.2.3	Cost of redundancy dismissal, salary weeks	16.0	77	
1.3	Business environment	72.5	38	
1.3.1	Ease of starting a business*	83.1	71	
1.3.2	Ease of resolving insolvency*	69.3	26	
1.3.3	Ease of paying taxes*	65.0	89	
2	**Human capital & research**	**40.1**	**38**	
2.1	Education	71.2	11	●
2.1.1	Current expenditure on education, % GNI	7.2	9	●
2.1.2	Public expenditure/pupil, % GDP/cap	31.7	5	●
2.1.3	School life expectancy, years	16.6	13	●
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	14.6	66	
2.2	Tertiary education	49.2	18	
2.2.1	Tertiary enrolment, % gross	61.8	32	
2.2.2	Graduates in science & engineering, %	15.0	80	
2.2.3	Tertiary inbound mobility, %	13.8	14	
2.2.4	Gross tertiary outbound enrolment, %	6.3	12	●
2.3	Research & development (R&D)	0.0	123	○
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**18.0**	**131**	○
3.1	Information & communication technologies (ICTs)	40.2	59	
3.1.1	ICT access*	71.5	27	
3.1.2	ICT use*	49.2	27	
3.1.3	Government's online service*	37.3	99	
3.1.4	E-participation*	2.6	116	○
3.2	General infrastructure	11.9	141	○
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Logistics performance*	n/a	n/a	
3.2.4	Gross capital formation, % GDP	16.3	122	○
3.3	Ecological sustainability	2.1	130	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	96	
4	**Market sophistication**	**46.1**	**69**	
4.1	Credit	52.2	40	
4.1.1	Ease of getting credit*	56.3	80	
4.1.2	Domestic credit to private sector, % GDP	102.9	31	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	23.0	85	
4.2.1	Ease of protecting investors*	30.4	136	○
4.2.2	Market capitalization, % GDP	124.1	6	●
4.2.3	Total value of stocks traded, % GDP	3.3	58	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	63.0	119	○
4.3.1	Applied tariff rate, weighted mean, %	14.8	137	○
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	15	●
4.3.3	Intensity of local competition†	64.3	70	
5	**Business sophistication**	**49.9**	**15**	●
5.1	Knowledge workers	64.4	22	
5.1.1	Knowledge-intensive employment, %	30.3	32	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	511.0	68	
5.1.6	GMAT test takers/mn pop. 20–34	339.5	15	●
5.2	Innovation linkages	48.7	16	
5.2.1	University/industry research collaboration†	54.6	36	
5.2.2	State of cluster development†	47.0	57	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	4.8	5	●
5.3	Knowledge absorption	36.8	31	
5.3.1	Royalty & license fees payments, % service imports	2.6	56	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Comm., computer & info. services imports, %	5.3	54	
5.3.4	FDI net inflows, % GDP	9.1	16	
6	**Knowledge & technology outputs**	**30.5**	**47**	
6.1	Knowledge creation	29.9	33	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.1	99	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	23.6	1	●
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	9.7	75	
6.1.5	Citable documents H index	46.0	112	
6.2	Knowledge impact	38.3	50	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.5	74	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	6.1	61	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	23.0	88	
6.3.1	Royalty & license fees receipts, % service exports	0.2	70	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Comm., computer & info. services exports, %	2.3	113	○
6.3.4	FDI net outflows, % GDP	8.3	7	●
7	**Creative outputs**	**38.0**	**67**	
7.1	Intangible assets	38.4	92	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	3.2	89	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	59.2	61	
7.1.4	ICT & organizational model creation†	54.1	62	
7.2	Creative goods & services	43.5	42	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	23.8	18	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	n/a	n/a	
7.3	Online creativity	32.0	54	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	14.2	40	
7.3.2	Country-code TLDs/th pop. 15–69	21.2	74	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,613.7	57	
7.3.4	Video uploads on YouTube/pop. 15–69	83.1	25	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Belarus

Key indicators

Population (millions)	9.8
GDP (US$ billions)	58.2
GDP per capita, PPP$	16,008.3
Income group	Upper-middle income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**34.6**	**77**	
Innovation Output Sub-Index		29.8	79	
Innovation Input Sub-Index		39.5	75	
Innovation Efficiency Ratio		0.8	82	
Global Innovation Index 2012 (based on GII 2012 framework)		32.9	78	
1	**Institutions**	**50.4**	**107**	○
1.1	Political environment	39.7	124	○
1.1.1	Political stability*	59.1	84	
1.1.2	Government effectiveness*	8.4	133	○
1.1.3	Press freedom*	51.7	126	○
1.2	Regulatory environment	45.3	122	○
1.2.1	Regulatory quality*	18.0	137	○
1.2.2	Rule of law*	18.2	130	○
1.2.3	Cost of redundancy dismissal, salary weeks	21.7	99	○
1.3	Business environment	66.2	61	
1.3.1	Ease of starting a business*	91.7	20	●
1.3.2	Ease of resolving insolvency*	46.1	52	
1.3.3	Ease of paying taxes*	60.7	97	
2	**Human capital & research**	**38.1**	**43**	
2.1	Education	52.2	74	
2.1.1	Current expenditure on education, % GNI	5.0	43	
2.1.2	Public expenditure/pupil, % GDP/cap	25.0	28	
2.1.3	School life expectancy, years	15.3	33	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	Tertiary education	49.4	17	●
2.2.1	Tertiary enrolment, % gross	85.2	6	●
2.2.2	Graduates in science & engineering, %	26.5	16	●
2.2.3	Tertiary inbound mobility, %	1.7	61	
2.2.4	Gross tertiary outbound enrolment, %	4.3	20	●
2.3	Research & development (R&D)	12.7	55	
2.3.1	Researchers, headcounts/mn pop.	2,134.8	35	
2.3.2	Gross expenditure on R&D, % GDP	0.6	46	
2.3.3	QS university ranking, average score top 3*	7.7	59	
3	**Infrastructure**	**31.1**	**74**	
3.1	Information & communication technologies (ICTs)	35.5	70	
3.1.1	ICT access*	61.3	48	
3.1.2	ICT use*	31.7	49	
3.1.3	Government's online service*	41.2	93	
3.1.4	E-participation*	7.9	99	○
3.2	General infrastructure	32.7	53	
3.2.1	Electricity output, kWh/cap	3,677.0	56	
3.2.2	Electricity consumption, kWh/cap	3,563.5	54	
3.2.3	Logistics performance*	40.3	91	
3.2.4	Gross capital formation, % GDP	32.5	15	●
3.3	Ecological sustainability	25.2	90	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.3	95	○
3.3.2	Environmental performance*	53.9	63	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	89	
4	**Market sophistication**	**50.4**	**47**	
4.1	Credit	34.1	81	
4.1.1	Ease of getting credit*	50.0	93	○
4.1.2	Domestic credit to private sector, % GDP	42.0	77	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	26.9	66	
4.2.1	Ease of protecting investors*	53.7	79	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	90.2	2	●
4.3.1	Applied tariff rate, weighted mean, %	2.1	43	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.8	64	
4.3.3	Intensity of local competition†	n/a	n/a	
5	**Business sophistication**	**27.3**	**100**	○
5.1	Knowledge workers	49.0	48	
5.1.1	Knowledge-intensive employment, %	30.3	33	
5.1.2	Firms offering formal training, % firms	44.4	39	
5.1.3	R&D performed by business, % GDP	0.3	39	
5.1.4	R&D financed by business, %	28.8	54	
5.1.5	GMAT mean score	560.3	30	
5.1.6	GMAT test takers/mn pop. 20–34	54.5	78	
5.2	Innovation linkages	7.8	139	○
5.2.1	University/industry research collaboration†	n/a	n/a	
5.2.2	State of cluster development†	n/a	n/a	
5.2.3	R&D financed by abroad, %	8.5	42	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	99	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	62	
5.3	Knowledge absorption	25.1	80	
5.3.1	Royalty & license fees payments, % service imports	2.8	52	
5.3.2	High-tech imports less re-imports, %	3.5	121	○
5.3.3	Comm., computer & info. services imports, %	5.1	58	
5.3.4	FDI net inflows, % GDP	7.3	23	●
6	**Knowledge & technology outputs**	**29.1**	**54**	
6.1	Knowledge creation	34.1	27	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	12.6	10	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	70	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	7.2	7	●
6.1.4	Scientific & technical articles/bn PPP$ GDP	7.5	84	
6.1.5	Citable documents H index	96.0	64	
6.2	Knowledge impact	34.1	69	
6.2.1	Growth rate of PPP$ GDP/worker, %	5.1	15	●
6.2.2	New businesses/th pop. 15–64	0.9	66	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.2	116	○
6.2.5	High- & medium-high-tech manufactures, %	14.5	64	
6.3	Knowledge diffusion	21.6	94	
6.3.1	Royalty & license fees receipts, % service exports	0.4	60	
6.3.2	High-tech exports less re-exports, %	1.2	73	
6.3.3	Comm., computer & info. services exports, %	8.8	48	
6.3.4	FDI net outflows, % GDP	0.1	86	
7	**Creative outputs**	**30.4**	**102**	○
7.1	Intangible assets	35.0	101	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	69.5	19	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	1.9	15	●
7.1.3	ICT & business model creation†	n/a	n/a	
7.1.4	ICT & organizational model creation†	n/a	n/a	
7.2	Creative goods & services	28.3	91	
7.2.1	Audio-visual & related services exports, %	0.1	55	○
7.2.2	National feature films/mn pop. 15–69	0.1	100	○
7.2.3	Paid-for dailies, circulation, % pop. 15–69	25.4	15	●
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.3	81	
7.3	Online creativity	23.4	84	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.6	93	
7.3.2	Country-code TLDs/th pop. 15–69	4.3	113	○
7.3.3	Wikipedia monthly edits/mn pop. 15–69	2,704.7	49	
7.3.4	Video uploads on YouTube/pop. 15–69	72.1	68	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Belgium

Key indicators

Population (millions)	11.4
GDP (US$ billions)	476.8
GDP per capita, PPP$	38,089.4
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**52.5**	**21**	
Innovation Output Sub-Index		45.5	22	
Innovation Input Sub-Index		59.5	22	
Innovation Efficiency Ratio		0.8	75	○
Global Innovation Index 2012 (based on GII 2012 framework)		54.3	20	
1	**Institutions**	**88.2**	**15**	
1.1	Political environment	86.3	13	
1.1.1	Political stability*	87.7	27	
1.1.2	Government effectiveness*	84.1	13	
1.1.3	Press freedom*	87.1	19	
1.2	Regulatory environment	92.1	16	
1.2.1	Regulatory quality*	82.3	22	
1.2.2	Rule of law*	86.3	20	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	
1.3	Business environment	86.3	13	
1.3.1	Ease of starting a business*	94.3	13	
1.3.2	Ease of resolving insolvency*	94.0	7	●
1.3.3	Ease of paying taxes*	70.6	64	
2	**Human capital & research**	**54.0**	**20**	
2.1	Education	72.9	6	●
2.1.1	Current expenditure on education, % GNI	6.4	16	
2.1.2	Public expenditure/pupil, % GDP/cap	29.3	10	●
2.1.3	School life expectancy, years	16.5	14	
2.1.4	PISA scales in reading, maths, & science	509.3	14	
2.1.5	Pupil-teacher ratio, secondary	6.5	1	●
2.2	Tertiary education	39.6	47	
2.2.1	Tertiary enrolment, % gross	70.6	19	
2.2.2	Graduates in science & engineering, %	16.1	68	○
2.2.3	Tertiary inbound mobility, %	8.1	19	
2.2.4	Gross tertiary outbound enrolment, %	1.8	58	
2.3	Research & development (R&D)	49.4	18	
2.3.1	Researchers, headcounts/mn pop.	5,239.5	17	
2.3.2	Gross expenditure on R&D, % GDP	2.0	17	
2.3.3	QS university ranking, average score top 3*	62.0	15	
3	**Infrastructure**	**44.1**	**31**	
3.1	Information & communication technologies (ICTs)	53.1	37	
3.1.1	ICT access*	77.2	18	
3.1.2	ICT use*	57.3	18	
3.1.3	Government's online service*	64.7	39	
3.1.4	E-participation*	13.2	84	○
3.2	General infrastructure	43.9	20	
3.2.1	Electricity output, kWh/cap	8,050.5	22	
3.2.2	Electricity consumption, kWh/cap	8,005.3	19	
3.2.3	Logistics performance*	74.5	7	●
3.2.4	Gross capital formation, % GDP	21.2	79	○
3.3	Ecological sustainability	35.2	50	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.5	60	○
3.3.2	Environmental performance*	63.0	24	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.7	45	
4	**Market sophistication**	**57.9**	**27**	
4.1	Credit	52.8	39	
4.1.1	Ease of getting credit*	62.5	68	○
4.1.2	Domestic credit to private sector, % GDP	92.6	35	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	37.9	31	
4.2.1	Ease of protecting investors*	72.2	21	
4.2.2	Market capitalization, % GDP	44.8	44	
4.2.3	Total value of stocks traded, % GDP	20.9	30	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	32	
4.3	Trade & competition	83.1	18	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	82.7	3	●
5	**Business sophistication**	**53.3**	**8**	●
5.1	Knowledge workers	65.2	18	
5.1.1	Knowledge-intensive employment, %	31.8	27	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	1.4	16	
5.1.4	R&D financed by business, %	58.6	13	
5.1.5	GMAT mean score	592.8	5	●
5.1.6	GMAT test takers/mn pop. 20–34	178.6	35	
5.2	Innovation linkages	42.3	25	
5.2.1	University/industry research collaboration†	75.4	6	●
5.2.2	State of cluster development†	61.2	19	
5.2.3	R&D financed by abroad, %	12.1	30	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	54	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	1.4	17	
5.3	Knowledge absorption	52.4	4	●
5.3.1	Royalty & license fees payments, % service imports	2.8	54	
5.3.2	High-tech imports less re-imports, %	8.6	61	○
5.3.3	Comm., computer & info. services imports, %	8.3	20	
5.3.4	FDI net inflows, % GDP	19.9	1	●
6	**Knowledge & technology outputs**	**41.8**	**20**	
6.1	Knowledge creation	48.0	15	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	6.4	26	
6.1.2	PCT resident patent ap/bn PPP$ GDP	2.9	16	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	41.8	16	
6.1.5	Citable documents H index	428.0	13	
6.2	Knowledge impact	41.0	42	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.0	87	○
6.2.2	New businesses/th pop. 15–64	3.0	37	
6.2.3	Computer software spending, % GDP	0.7	8	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.8	50	
6.2.5	High- & medium-high-tech manufactures, %	32.8	30	
6.3	Knowledge diffusion	39.4	25	
6.3.1	Royalty & license fees receipts, % service exports	2.6	22	
6.3.2	High-tech exports less re-exports, %	8.5	27	
6.3.3	Comm., computer & info. services exports, %	10.5	36	
6.3.4	FDI net outflows, % GDP	15.8	4	●
7	**Creative outputs**	**49.2**	**20**	
7.1	Intangible assets	45.6	57	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	40.4	43	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	1.7	20	
7.1.3	ICT & business model creation†	67.8	30	
7.1.4	ICT & organizational model creation†	64.0	29	
7.2	Creative goods & services	46.2	31	
7.2.1	Audio-visual & related services exports, %	0.6	17	
7.2.2	National feature films/mn pop. 15–69	6.3	24	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	17.9	26	
7.2.4	Printing & publishing manufactures, %	1.7	50	○
7.2.5	Creative goods exports, %	1.9	38	
7.3	Online creativity	59.6	22	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	26.8	28	
7.3.2	Country-code TLDs/th pop. 15–69	71.2	12	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	9,627.1	9	●
7.3.4	Video uploads on YouTube/pop. 15–69	84.6	19	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	0.3
GDP (US$ billions)	1.5
GDP per capita, PPP$	8,357.8
Income group	Lower-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**30.0**	**102**	
Innovation Output Sub-Index		25.2	102	
Innovation Input Sub-Index		34.7	95	
Innovation Efficiency Ratio		0.7	93	
Global Innovation Index 2012 (based on GII 2012 framework)		32.5	80	
1	**Institutions**	**62.2**	**65**	
1.1	Political environment	48.1	92	
1.1.1	Political stability*	67.6	67	
1.1.2	Government effectiveness*	28.6	89	
1.1.3	Press freedom*	n/a	n/a	
1.2	Regulatory environment	67.0	69	
1.2.1	Regulatory quality*	35.5	111	
1.2.2	Rule of law*	33.6	96	
1.2.3	Cost of redundancy dismissal, salary weeks	8.3	23	●
1.3	Business environment	71.5	40	●
1.3.1	Ease of starting a business*	70.6	112	
1.3.2	Ease of resolving insolvency*	68.1	28	●
1.3.3	Ease of paying taxes*	75.9	44	●
2	**Human capital & research**	**25.1**	**96**	
2.1	Education	52.1	75	
2.1.1	Current expenditure on education, % GNI	5.1	40	●
2.1.2	Public expenditure/pupil, % GDP/cap	22.1	46	
2.1.3	School life expectancy, years	13.1	72	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	16.3	77	
2.2	Tertiary education	23.3	88	
2.2.1	Tertiary enrolment, % gross	21.4	88	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	2.6	34	●
2.3	Research & development (R&D)	0.0	123	○
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**18.1**	**130**	
3.1	Information & communication technologies (ICTs)	29.1	83	
3.1.1	ICT access*	n/a	n/a	
3.1.2	ICT use*	n/a	n/a	
3.1.3	Government's online service*	39.9	95	
3.1.4	E-participation*	18.4	72	
3.2	General infrastructure	16.9	137	○
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Logistics performance*	n/a	n/a	
3.2.4	Gross capital formation, % GDP	19.0	104	
3.3	Ecological sustainability	8.1	126	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.1	58	
4	**Market sophistication**	**39.9**	**107**	
4.1	Credit	27.3	105	
4.1.1	Ease of getting credit*	43.8	110	
4.1.2	Domestic credit to private sector, % GDP	60.3	54	
4.1.3	Microfinance gross loans, % GDP	1.0	38	
4.2	Investment	22.4	87	
4.2.1	Ease of protecting investors*	44.8	108	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	70.0	105	
4.3.1	Applied tariff rate, weighted mean, %	6.4	94	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.0	73	
4.3.3	Intensity of local competition†	53.7	106	
5	**Business sophistication**	**28.3**	**93**	
5.1	Knowledge workers	51.8	45	●
5.1.1	Knowledge-intensive employment, %	20.4	61	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	494.8	80	
5.1.6	GMAT test takers/mn pop. 20–34	247.2	26	●
5.2	Innovation linkages	12.7	131	○
5.2.1	University/industry research collaboration†	24.2	127	○
5.2.2	State of cluster development†	26.5	130	○
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	20.5	102	
5.3.1	Royalty & license fees payments, % service imports	1.2	76	
5.3.2	High-tech imports less re-imports, %	4.8	111	
5.3.3	Comm., computer & info. services imports, %	3.2	80	
5.3.4	FDI net inflows, % GDP	6.3	31	●
6	**Knowledge & technology outputs**	**15.8**	**122**	
6.1	Knowledge creation	6.6	92	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.4	83	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.7	34	●
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.8	108	
6.1.5	Citable documents H index	24.0	137	○
6.2	Knowledge impact	17.1	119	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	4.5	24	●
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.4	106	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	19.0	104	
6.3.1	Royalty & license fees receipts, % service exports	0.7	44	
6.3.2	High-tech exports less re-exports, %	0.1	114	○
6.3.3	Comm., computer & info. services exports, %	4.0	95	
6.3.4	FDI net outflows, % GDP	0.0	94	
7	**Creative outputs**	**34.7**	**85**	
7.1	Intangible assets	28.1	124	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	32.8	130	○
7.1.4	ICT & organizational model creation†	23.3	135	○
7.2	Creative goods & services	13.5	125	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	n/a	n/a	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.0	113	
7.3	Online creativity	69.2	11	●
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	100.0	1	●
7.3.2	Country-code TLDs/th pop. 15–69	74.8	6	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	3,235.7	44	●
7.3.4	Video uploads on YouTube/pop. 15–69	83.1	26	●

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Benin

Key indicators

Population (millions)	9.4
GDP (US$ billions)	7.5
GDP per capita, PPP$	1,658.0
Income group	Low income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**25.1**	**127**	
Innovation Output Sub-Index		20.4	130	
Innovation Input Sub-Index		29.8	121	
Innovation Efficiency Ratio		0.7	106	
Global Innovation Index 2012 (based on GII 2012 framework)		24.4	125	
1	**Institutions**	**53.3**	**96**	
1.1	Political environment	56.7	69	●
1.1.1	Political stability*	72.7	54	●
1.1.2	Government effectiveness*	25.7	98	
1.1.3	Press freedom*	71.7	65	●
1.2	Regulatory environment	63.4	78	●
1.2.1	Regulatory quality*	40.7	98	
1.2.2	Rule of law*	27.4	111	
1.2.3	Cost of redundancy dismissal, salary weeks	11.6	51	●
1.3	Business environment	39.9	136	
1.3.1	Ease of starting a business*	60.3	129	
1.3.2	Ease of resolving insolvency*	22.2	117	
1.3.3	Ease of paying taxes*	37.1	134	
2	**Human capital & research**	**15.6**	**123**	
2.1	Education	36.4	111	
2.1.1	Current expenditure on education, % GNI	4.7	50	●
2.1.2	Public expenditure/pupil, % GDP/cap	17.0	72	
2.1.3	School life expectancy, years	9.4	117	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	23.9	101	
2.2	Tertiary education	9.9	124	
2.2.1	Tertiary enrolment, % gross	10.6	105	
2.2.2	Graduates in science & engineering, %	9.2	96	○
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.5	101	
2.3	Research & development (R&D)	0.4	115	
2.3.1	Researchers, headcounts/mn pop.	123.3	89	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**22.5**	**110**	
3.1	Information & communication technologies (ICTs)	13.8	130	
3.1.1	ICT access*	23.6	115	
3.1.2	ICT use*	4.0	116	
3.1.3	Government's online service*	19.6	133	
3.1.4	E-participation*	7.9	99	
3.2	General infrastructure	21.1	117	
3.2.1	Electricity output, kWh/cap	16.9	125	○
3.2.2	Electricity consumption, kWh/cap	99.2	122	○
3.2.3	Logistics performance*	46.3	66	●
3.2.4	Gross capital formation, % GDP	19.1	102	
3.3	Ecological sustainability	32.6	58	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.4	106	
3.3.2	Environmental performance*	50.4	77	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	n/a	n/a	
4	**Market sophistication**	**28.0**	**140**	○
4.1	Credit	24.3	112	
4.1.1	Ease of getting credit*	43.8	110	
4.1.2	Domestic credit to private sector, % GDP	24.5	108	
4.1.3	Microfinance gross loans, % GDP	1.8	25	●
4.2	Investment	16.9	115	
4.2.1	Ease of protecting investors*	33.7	129	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	42.7	140	○
4.3.1	Applied tariff rate, weighted mean, %	15.4	139	○
4.3.2	Non-agricultural mkt access weighted tariff, %	4.7	136	
4.3.3	Intensity of local competition†	57.9	90	
5	**Business sophistication**	**29.6**	**83**	●
5.1	Knowledge workers	39.9	85	●
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	32.4	57	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	467.0	96	
5.1.6	GMAT test takers/mn pop. 20–34	20.4	116	
5.2	Innovation linkages	19.6	104	
5.2.1	University/industry research collaboration†	34.1	111	
5.2.2	State of cluster development†	29.6	127	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	56	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	29.2	58	●
5.3.1	Royalty & license fees payments, % service imports	0.6	97	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Comm., computer & info. services imports, %	8.5	19	●
5.3.4	FDI net inflows, % GDP	1.6	105	
6	**Knowledge & technology outputs**	**11.6**	**134**	
6.1	Knowledge creation	7.4	84	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.7	74	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	14.9	56	●
6.1.5	Citable documents H index	45.0	114	
6.2	Knowledge impact	1.4	140	○
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.7	122	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	24.0	83	●
6.3.1	Royalty & license fees receipts, % service exports	0.0	113	○
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Comm., computer & info. services exports, %	8.7	51	●
6.3.4	FDI net outflows, % GDP	–0.3	120	○
7	**Creative outputs**	**29.2**	**112**	
7.1	Intangible assets	50.2	43	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	58.9	62	●
7.1.4	ICT & organizational model creation†	41.5	114	
7.2	Creative goods & services	1.4	137	○
7.2.1	Audio-visual & related services exports, %	0.0	71	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	1.1	117	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	n/a	n/a	
7.3	Online creativity	15.2	115	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.5	115	
7.3.2	Country-code TLDs/th pop. 15–69	1.0	129	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4	Video uploads on YouTube/pop. 15–69	44.1	121	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Bolivia (Plurinational State of)

Key indicators

Population (millions)	10.3
GDP (US$ billions)	26.7
GDP per capita, PPP$	5,016.9
Income group	Lower-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**30.5**	**95**	
Innovation Output Sub-Index		28.5	86	
Innovation Input Sub-Index		32.5	106	
Innovation Efficiency Ratio		0.9	37	●
Global Innovation Index 2012 (based on GII 2012 framework)		25.8	114	
1	**Institutions**	**33.0**	**140**	○
1.1	Political environment	49.3	89	
1.1.1	Political stability*	53.8	97	
1.1.2	Government effectiveness*	27.0	92	
1.1.3	Press freedom*	67.2	87	
1.2	Regulatory environment	12.5	140	○
1.2.1	Regulatory quality*	30.1	124	○
1.2.2	Rule of law*	20.1	125	○
1.2.3	Cost of redundancy dismissal, salary weeks	82.3	138	○
1.3	Business environment	37.1	139	○
1.3.1	Ease of starting a business*	55.9	133	○
1.3.2	Ease of resolving insolvency*	41.9	61	
1.3.3	Ease of paying taxes*	13.4	141	○
2	**Human capital & research**	**26.7**	**90**	
2.1	Education	55.4	62	
2.1.1	Current expenditure on education, % GNI	7.2	10	●
2.1.2	Public expenditure/pupil, % GDP/cap	17.9	69	
2.1.3	School life expectancy, years	13.5	66	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	18.2	90	
2.2	Tertiary education	23.2	89	
2.2.1	Tertiary enrolment, % gross	38.6	64	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	1.0	79	
2.3	Research & development (R&D)	1.6	105	
2.3.1	Researchers, headcounts/mn pop.	199.2	78	
2.3.2	Gross expenditure on R&D, % GDP	0.2	88	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**25.2**	**98**	
3.1	Information & communication technologies (ICTs)	25.9	94	
3.1.1	ICT access*	32.3	101	
3.1.2	ICT use*	9.0	100	
3.1.3	Government's online service*	41.2	93	
3.1.4	E-participation*	21.1	64	
3.2	General infrastructure	20.6	123	○
3.2.1	Electricity output, kWh/cap	693.3	102	
3.2.2	Electricity consumption, kWh/cap	616.4	104	
3.2.3	Logistics performance*	40.3	91	
3.2.4	Gross capital formation, % GDP	19.9	92	
3.3	Ecological sustainability	29.3	71	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.9	70	
3.3.2	Environmental performance*	54.6	60	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.9	63	
4	**Market sophistication**	**46.3**	**67**	
4.1	Credit	53.8	37	●
4.1.1	Ease of getting credit*	43.8	110	○
4.1.2	Domestic credit to private sector, % GDP	40.9	79	
4.1.3	Microfinance gross loans, % GDP	13.5	1	●
4.2	Investment	12.5	137	○
4.2.1	Ease of protecting investors*	41.9	116	
4.2.2	Market capitalization, % GDP	17.2	77	
4.2.3	Total value of stocks traded, % GDP	0.1	101	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	72.6	97	
4.3.1	Applied tariff rate, weighted mean, %	5.4	84	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	11	●
4.3.3	Intensity of local competition†	45.1	130	○
5	**Business sophistication**	**31.3**	**72**	
5.1	Knowledge workers	41.0	74	
5.1.1	Knowledge-intensive employment, %	14.3	85	
5.1.2	Firms offering formal training, % firms	57.1	17	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	0.5	84	○
5.1.5	GMAT mean score	501.1	74	
5.1.6	GMAT test takers/mn pop. 20–34	29.2	103	
5.2	Innovation linkages	28.8	56	
5.2.1	University/industry research collaboration†	39.1	86	
5.2.2	State of cluster development†	40.1	85	
5.2.3	R&D financed by abroad, %	18.6	17	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	82	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	n/a	n/a	
5.3	Knowledge absorption	24.0	87	
5.3.1	Royalty & license fees payments, % service imports	1.3	73	
5.3.2	High-tech imports less re-imports, %	10.1	48	●
5.3.3	Comm., computer & info. services imports, %	3.7	73	
5.3.4	FDI net inflows, % GDP	3.6	65	
6	**Knowledge & technology outputs**	**21.9**	**91**	
6.1	Knowledge creation	5.5	102	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.1	122	○
6.1.5	Citable documents H index	57.0	94	
6.2	Knowledge impact	26.9	95	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.7	43	●
6.2.2	New businesses/th pop. 15–64	0.5	86	
6.2.3	Computer software spending, % GDP	0.2	63	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.5	78	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	25.2	73	
6.3.1	Royalty & license fees receipts, % service exports	0.9	39	●
6.3.2	High-tech exports less re-exports, %	0.5	89	
6.3.3	Comm., computer & info. services exports, %	11.1	34	●
6.3.4	FDI net outflows, % GDP	0.0	108	○
7	**Creative outputs**	**35.0**	**83**	
7.1	Intangible assets	43.1	71	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	42.0	125	○
7.1.4	ICT & organizational model creation†	44.3	98	
7.2	Creative goods & services	34.9	67	
7.2.1	Audio-visual & related services exports, %	0.2	40	
7.2.2	National feature films/mn pop. 15–69	4.2	34	●
7.2.3	Paid-for dailies, circulation, % pop. 15–69	2.6	103	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.6	64	
7.3	Online creativity	19.0	99	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.9	69	
7.3.2	Country-code TLDs/th pop. 15–69	11.4	97	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	394.8	95	
7.3.4	Video uploads on YouTube/pop. 15–69	58.4	100	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Bosnia and Herzegovina

Key indicators

Population (millions)	3.9
GDP (US$ billions)	16.6
GDP per capita, PPP$	8,260.7
Income group	Upper-middle income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**36.2**	**65**	
Innovation Output Sub-Index		29.9	78	
Innovation Input Sub-Index		42.5	58	
Innovation Efficiency Ratio		0.7	103	
Global Innovation Index 2012 (based on GII 2012 framework)		34.2	72	
1	**Institutions**	**57.2**	**82**	
1.1	Political environment	44.9	105	
1.1.1	Political stability*	44.0	116	
1.1.2	Government effectiveness*	17.6	119	
1.1.3	Press freedom*	73.1	55	
1.2	Regulatory environment	70.6	50	
1.2.1	Regulatory quality*	48.5	76	
1.2.2	Rule of law*	38.7	76	
1.2.3	Cost of redundancy dismissal, salary weeks	9.2	32	●
1.3	Business environment	56.1	94	
1.3.1	Ease of starting a business*	71.4	107	
1.3.2	Ease of resolving insolvency*	38.2	75	
1.3.3	Ease of paying taxes*	58.8	103	
2	**Human capital & research**	**38.2**	**42**	●
2.1	Education	70.5	14	●
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	13.6	63	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	12.5	49	
2.2	Tertiary education	42.2	39	●
2.2.1	Tertiary enrolment, % gross	38.1	66	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	4.8	33	●
2.2.4	Gross tertiary outbound enrolment, %	4.2	21	●
2.3	Research & development (R&D)	2.0	96	
2.3.1	Researchers, headcounts/mn pop.	781.4	58	
2.3.2	Gross expenditure on R&D, % GDP	0.0	107	○
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**28.2**	**84**	
3.1	Information & communication technologies (ICTs)	26.2	93	
3.1.1	ICT access*	46.7	67	
3.1.2	ICT use*	20.7	67	
3.1.3	Government's online service*	37.3	99	
3.1.4	E-participation*	0.0	129	○
3.2	General infrastructure	27.9	79	
3.2.1	Electricity output, kWh/cap	4,554.3	49	
3.2.2	Electricity consumption, kWh/cap	3,109.8	59	
3.2.3	Logistics performance*	49.8	55	
3.2.4	Gross capital formation, % GDP	18.8	105	
3.3	Ecological sustainability	30.4	67	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.3	94	
3.3.2	Environmental performance*	36.8	116	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	4.7	23	●
4	**Market sophistication**	**48.1**	**58**	
4.1	Credit	40.2	60	
4.1.1	Ease of getting credit*	62.5	68	
4.1.2	Domestic credit to private sector, % GDP	54.8	60	
4.1.3	Microfinance gross loans, % GDP	3.1	19	●
4.2	Investment	26.1	67	
4.2.1	Ease of protecting investors*	52.2	82	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	77.9	59	
4.3.1	Applied tariff rate, weighted mean, %	1.8	40	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	20	●
4.3.3	Intensity of local competition†	43.4	132	○
5	**Business sophistication**	**41.0**	**37**	●
5.1	Knowledge workers	62.6	29	●
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	66.5	6	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	450.2	109	
5.1.6	GMAT test takers/mn pop. 20–34	47.7	85	
5.2	Innovation linkages	22.9	82	
5.2.1	University/industry research collaboration†	48.3	46	
5.2.2	State of cluster development†	38.6	96	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	90	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	37.6	25	●
5.3.1	Royalty & license fees payments, % service imports	0.9	85	
5.3.2	High-tech imports less re-imports, %	4.8	109	○
5.3.3	Comm., computer & info. services imports, %	15.7	2	●
5.3.4	FDI net inflows, % GDP	2.1	88	
6	**Knowledge & technology outputs**	**30.3**	**50**	
6.1	Knowledge creation	7.0	88	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.4	61	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.3	52	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.4	41	
6.1.4	Scientific & technical articles/bn PPP$ GDP	13.2	63	
6.1.5	Citable documents H index	40.0	121	○
6.2	Knowledge impact	46.2	27	●
6.2.1	Growth rate of PPP$ GDP/worker, %	2.0	57	
6.2.2	New businesses/th pop. 15–64	0.7	77	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	35.4	8	●
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	26.0	66	
6.3.1	Royalty & license fees receipts, % service exports	1.0	37	
6.3.2	High-tech exports less re-exports, %	1.6	68	
6.3.3	Comm., computer & info. services exports, %	10.5	37	●
6.3.4	FDI net outflows, % GDP	0.1	82	
7	**Creative outputs**	**29.6**	**108**	
7.1	Intangible assets	26.8	126	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	11.3	81	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.4	42	
7.1.3	ICT & business model creation†	48.0	102	
7.1.4	ICT & organizational model creation†	46.9	90	
7.2	Creative goods & services	34.4	70	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	2.5	54	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	6.7	72	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.3	82	
7.3	Online creativity	30.3	58	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.4	83	
7.3.2	Country-code TLDs/th pop. 15–69	24.7	67	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	2,752.0	48	
7.3.4	Video uploads on YouTube/pop. 15–69	78.2	44	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Botswana

Key indicators

Population (millions)	2.1
GDP (US$ billions)	17.6
GDP per capita, PPP$	16,792.9
Income group	Upper-middle income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**31.1**	**91**	
	Innovation Output Sub-Index	21.1	125	○
	Innovation Input Sub-Index	41.2	65	
	Innovation Efficiency Ratio	0.5	136	○
	Global Innovation Index 2012 (based on GII 2012 framework)	31.4	85	
1	**Institutions**	**71.5**	**42**	●
1.1	Political environment	73.9	34	●
1.1.1	Political stability*	91.6	18	●
1.1.2	Government effectiveness*	53.1	47	●
1.1.3	Press freedom*	77.1	36	●
1.2	Regulatory environment	68.1	63	
1.2.1	Regulatory quality*	62.7	48	
1.2.2	Rule of law*	64.9	41	●
1.2.3	Cost of redundancy dismissal, salary weeks	21.7	102	
1.3	Business environment	72.5	37	●
1.3.1	Ease of starting a business*	71.0	109	
1.3.2	Ease of resolving insolvency*	69.0	27	●
1.3.3	Ease of paying taxes*	77.4	41	●
2	**Human capital & research**	**32.5**	**63**	
2.1	Education	62.5	39	●
2.1.1	Current expenditure on education, % GNI	7.6	7	●
2.1.2	Public expenditure/pupil, % GDP/cap	27.9	14	●
2.1.3	School life expectancy, years	11.8	90	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	13.9	60	
2.2	Tertiary education	29.0	76	
2.2.1	Tertiary enrolment, % gross	7.4	118	○
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	4.2	37	●
2.2.4	Gross tertiary outbound enrolment, %	3.6	27	●
2.3	Research & development (R&D)	6.1	76	
2.3.1	Researchers, headcounts/mn pop.	923.4	55	
2.3.2	Gross expenditure on R&D, % GDP	0.5	57	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**27.7**	**88**	
3.1	Information & communication technologies (ICTs)	21.4	106	
3.1.1	ICT access*	35.0	93	
3.1.2	ICT use*	12.0	93	
3.1.3	Government's online service*	36.0	104	
3.1.4	E-participation*	2.6	116	○
3.2	General infrastructure	26.4	94	
3.2.1	Electricity output, kWh/cap	227.4	116	○
3.2.2	Electricity consumption, kWh/cap	1,586.4	81	
3.2.3	Logistics performance*	46.0	68	
3.2.4	Gross capital formation, % GDP	25.8	38	●
3.3	Ecological sustainability	35.3	48	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	11.0	9	●
3.3.2	Environmental performance*	53.7	64	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	116	○
4	**Market sophistication**	**44.2**	**80**	
4.1	Credit	39.2	65	
4.1.1	Ease of getting credit*	68.8	51	
4.1.2	Domestic credit to private sector, % GDP	24.3	109	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	18.7	103	
4.2.1	Ease of protecting investors*	63.0	39	●
4.2.2	Market capitalization, % GDP	23.7	65	
4.2.3	Total value of stocks traded, % GDP	0.8	75	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	74.6	84	
4.3.1	Applied tariff rate, weighted mean, %	5.2	82	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.2	80	
4.3.3	Intensity of local competition†	63.3	74	
5	**Business sophistication**	**30.0**	**82**	
5.1	Knowledge workers	39.6	86	
5.1.1	Knowledge-intensive employment, %	17.1	77	
5.1.2	Firms offering formal training, % firms	51.9	26	●
5.1.3	R&D performed by business, % GDP	0.1	60	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	445.4	111	
5.1.6	GMAT test takers/mn pop. 20–34	54.1	80	
5.2	Innovation linkages	23.3	80	
5.2.1	University/industry research collaboration†	44.6	62	
5.2.2	State of cluster development†	41.5	76	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	79	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	27.1	70	
5.3.1	Royalty & license fees payments, % service imports	1.3	72	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Comm., computer & info. services imports, %	6.1	43	●
5.3.4	FDI net inflows, % GDP	3.4	66	
6	**Knowledge & technology outputs**	**22.7**	**88**	
6.1	Knowledge creation	4.7	110	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.6	100	
6.1.5	Citable documents H index	54.0	99	
6.2	Knowledge impact	33.1	75	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	9.4	9	●
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.6	126	○
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	21.4	96	
6.3.1	Royalty & license fees receipts, % service exports	0.0	95	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Comm., computer & info. services exports, %	5.5	75	
6.3.4	FDI net outflows, % GDP	0.0	106	
7	**Creative outputs**	**19.5**	**134**	○
7.1	Intangible assets	30.2	121	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.1	55	
7.1.3	ICT & business model creation†	47.0	106	
7.1.4	ICT & organizational model creation†	41.6	113	
7.2	Creative goods & services	1.5	136	○
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	0.9	119	○
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	n/a	n/a	
7.3	Online creativity	16.0	110	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.4	117	
7.3.2	Country-code TLDs/th pop. 15–69	3.8	115	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	376.7	97	
7.3.4	Video uploads on YouTube/pop. 15–69	57.8	102	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Brazil

Key indicators

Population (millions)	201.5
GDP (US$ billions)	2,425.1
GDP per capita, PPP$	12,038.5
Income group	Upper-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**36.3**	**64**	
Innovation Output Sub-Index		31.8	68	
Innovation Input Sub-Index		40.8	67	
Innovation Efficiency Ratio		0.8	69	
Global Innovation Index 2012 (based on GII 2012 framework)		36.6	58	
1	**Institutions**	**53.8**	**95**	
1.1	Political environment	56.9	67	
1.1.1	Political stability*	65.2	71	
1.1.2	Government effectiveness*	38.2	69	
1.1.3	Press freedom*	67.3	86	
1.2	Regulatory environment	67.9	64	
1.2.1	Regulatory quality*	53.9	68	
1.2.2	Rule of law*	47.6	60	
1.2.3	Cost of redundancy dismissal, salary weeks	15.4	72	
1.3	Business environment	36.6	140	○
1.3.1	Ease of starting a business*	53.0	138	○
1.3.2	Ease of resolving insolvency*	17.7	125	○
1.3.3	Ease of paying taxes*	39.1	132	○
2	**Human capital & research**	**30.3**	**75**	
2.1	Education	51.0	78	
2.1.1	Current expenditure on education, % GNI	5.4	31	
2.1.2	Public expenditure/pupil, % GDP/cap	20.1	54	
2.1.3	School life expectancy, years	14.2	49	
2.1.4	PISA scales in reading, maths, & science	401.0	56	○
2.1.5	Pupil-teacher ratio, secondary	16.7	81	
2.2	Tertiary education	12.7	116	○
2.2.1	Tertiary enrolment, % gross	25.6	82	
2.2.2	Graduates in science & engineering, %	11.3	94	○
2.2.3	Tertiary inbound mobility, %	0.2	99	○
2.2.4	Gross tertiary outbound enrolment, %	0.1	138	○
2.3	Research & development (R&D)	27.2	33	●
2.3.1	Researchers, headcounts/mn pop.	1,189.6	49	
2.3.2	Gross expenditure on R&D, % GDP	1.2	31	
2.3.3	QS university ranking, average score top 3*	46.5	24	●
3	**Infrastructure**	**37.2**	**51**	
3.1	Information & communication technologies (ICTs)	48.3	44	
3.1.1	ICT access*	53.5	61	
3.1.2	ICT use*	22.4	61	
3.1.3	Government's online service*	67.3	32	
3.1.4	E-participation*	50.0	31	●
3.2	General infrastructure	27.9	80	
3.2.1	Electricity output, kWh/cap	2,645.5	67	
3.2.2	Electricity consumption, kWh/cap	2,383.7	67	
3.2.3	Logistics performance*	53.3	45	
3.2.4	Gross capital formation, % GDP	20.2	91	
3.3	Ecological sustainability	35.3	47	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.4	46	
3.3.2	Environmental performance*	60.9	29	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.5	49	
4	**Market sophistication**	**44.9**	**76**	
4.1	Credit	26.2	107	
4.1.1	Ease of getting credit*	50.0	93	
4.1.2	Domestic credit to private sector, % GDP	61.4	53	
4.1.3	Microfinance gross loans, % GDP	0.1	72	○
4.2	Investment	33.1	40	
4.2.1	Ease of protecting investors*	55.9	68	
4.2.2	Market capitalization, % GDP	49.6	37	
4.2.3	Total value of stocks traded, % GDP	38.8	28	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	49	
4.3	Trade & competition	75.3	81	
4.3.1	Applied tariff rate, weighted mean, %	7.6	105	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.4	47	
4.3.3	Intensity of local competition†	69.0	45	
5	**Business sophistication**	**38.0**	**42**	
5.1	Knowledge workers	48.1	53	
5.1.1	Knowledge-intensive employment, %	19.3	67	
5.1.2	Firms offering formal training, % firms	52.9	22	●
5.1.3	R&D performed by business, % GDP	0.4	36	
5.1.4	R&D financed by business, %	45.4	29	
5.1.5	GMAT mean score	564.3	26	●
5.1.6	GMAT test takers/mn pop. 20–34	35.3	101	
5.2	Innovation linkages	31.8	47	
5.2.1	University/industry research collaboration†	51.7	42	
5.2.2	State of cluster development†	54.5	31	●
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	83	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.1	42	
5.3	Knowledge absorption	34.2	42	
5.3.1	Royalty & license fees payments, % service imports	4.3	33	
5.3.2	High-tech imports less re-imports, %	14.8	19	●
5.3.3	Comm., computer & info. services imports, %	5.6	48	
5.3.4	FDI net inflows, % GDP	2.9	72	
6	**Knowledge & technology outputs**	**26.5**	**67**	
6.1	Knowledge creation	14.6	59	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.2	62	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.2	56	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.9	31	
6.1.4	Scientific & technical articles/bn PPP$ GDP	14.6	57	
6.1.5	Citable documents H index	285.0	22	●
6.2	Knowledge impact	35.6	63	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.4	76	
6.2.2	New businesses/th pop. 15–64	2.4	44	
6.2.3	Computer software spending, % GDP	0.3	58	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	12.3	39	
6.2.5	High- & medium-high-tech manufactures, %	39.0	22	●
6.3	Knowledge diffusion	23.2	86	
6.3.1	Royalty & license fees receipts, % service exports	1.5	29	
6.3.2	High-tech exports less re-exports, %	3.9	44	
6.3.3	Comm., computer & info. services exports, %	1.4	129	○
6.3.4	FDI net outflows, % GDP	–0.0	116	○
7	**Creative outputs**	**37.2**	**72**	
7.1	Intangible assets	47.1	49	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	21.9	61	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	66.8	33	
7.1.4	ICT & organizational model creation†	62.1	32	●
7.2	Creative goods & services	22.6	108	
7.2.1	Audio-visual & related services exports, %	0.0	62	○
7.2.2	National feature films/mn pop. 15–69	0.7	83	○
7.2.3	Paid-for dailies, circulation, % pop. 15–69	6.3	79	
7.2.4	Printing & publishing manufactures, %	2.0	42	
7.2.5	Creative goods exports, %	0.3	87	
7.3	Online creativity	31.9	55	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.2	88	
7.3.2	Country-code TLDs/th pop. 15–69	43.0	44	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	941.4	72	
7.3.4	Video uploads on YouTube/pop. 15–69	77.1	51	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Brunei Darussalam

Key indicators

Population (millions)	0.4
GDP (US$ billions)	16.9
GDP per capita, PPP$	50,526.4
Income group	High income
Region	South East Asia and Oceania

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**35.5**	**74**	
Innovation Output Sub-Index		28.0	89	
Innovation Input Sub-Index		43.1	54	
Innovation Efficiency Ratio		0.6	119	
Global Innovation Index 2012 (based on GII 2012 framework)		37.7	53	
1	**Institutions**	**74.4**	**34**	●
1.1	Political environment	73.5	35	●
1.1.1	Political stability*	93.6	13	●
1.1.2	Government effectiveness*	62.4	35	●
1.1.3	Press freedom*	64.6	99	
1.2	Regulatory environment	87.8	21	●
1.2.1	Regulatory quality*	80.2	25	●
1.2.2	Rule of law*	71.0	33	●
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	Business environment	61.9	75	
1.3.1	Ease of starting a business*	52.6	139	○
1.3.2	Ease of resolving insolvency*	50.5	42	
1.3.3	Ease of paying taxes*	82.7	29	●
2	**Human capital & research**	**31.9**	**65**	
2.1	Education	45.9	87	
2.1.1	Current expenditure on education, % GNI	2.0	106	○
2.1.2	Public expenditure/pupil, % GDP/cap	13.1	90	
2.1.3	School life expectancy, years	15.1	35	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	9.9	25	●
2.2	Tertiary education	48.0	20	●
2.2.1	Tertiary enrolment, % gross	19.6	92	
2.2.2	Graduates in science & engineering, %	20.7	42	
2.2.3	Tertiary inbound mobility, %	5.6	30	●
2.2.4	Gross tertiary outbound enrolment, %	9.6	1	●
2.3	Research & development (R&D)	1.9	99	
2.3.1	Researchers, headcounts/mn pop.	685.5	61	
2.3.2	Gross expenditure on R&D, % GDP	0.0	105	○
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**36.1**	**55**	
3.1	Information & communication technologies (ICTs)	52.0	39	
3.1.1	ICT access*	64.6	42	
3.1.2	ICT use*	36.3	42	
3.1.3	Government's online service*	59.5	44	
3.1.4	E-participation*	47.4	34	●
3.2	General infrastructure	24.6	102	
3.2.1	Electricity output, kWh/cap	9,655.0	14	●
3.2.2	Electricity consumption, kWh/cap	8,756.9	15	●
3.2.3	Logistics performance*	n/a	n/a	
3.2.4	Gross capital formation, % GDP	13.9	130	○
3.3	Ecological sustainability	31.6	61	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.6	75	
3.3.2	Environmental performance*	62.5	26	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.0	60	
4	**Market sophistication**	**43.9**	**84**	
4.1	Credit	28.5	104	
4.1.1	Ease of getting credit*	43.8	110	○
4.1.2	Domestic credit to private sector, % GDP	31.8	94	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	23.7	81	
4.2.1	Ease of protecting investors*	47.4	102	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	79.3	44	
4.3.1	Applied tariff rate, weighted mean, %	4.1	72	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.4	52	
4.3.3	Intensity of local competition†	63.8	71	
5	**Business sophistication**	**29.1**	**86**	
5.1	Knowledge workers	37.0	98	
5.1.1	Knowledge-intensive employment, %	28.4	41	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	0.0	83	○
5.1.4	R&D financed by business, %	1.6	81	○
5.1.5	GMAT mean score	491.4	84	
5.1.6	GMAT test takers/mn pop. 20–34	62.1	73	
5.2	Innovation linkages	29.6	54	
5.2.1	University/industry research collaboration†	47.8	48	
5.2.2	State of cluster development†	48.9	52	
5.2.3	R&D financed by abroad, %	6.6	50	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	31	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	n/a	n/a	
5.3	Knowledge absorption	20.6	100	
5.3.1	Royalty & license fees payments, % service imports	0.5	99	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Comm., computer & info. services imports, %	1.1	124	○
5.3.4	FDI net inflows, % GDP	7.4	22	●
6	**Knowledge & technology outputs**	**14.3**	**125**	○
6.1	Knowledge creation	4.0	120	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.1	123	
6.1.5	Citable documents H index	37.0	123	○
6.2	Knowledge impact	6.5	129	○
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.2	82	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	27.2	57	
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Comm., computer & info. services exports, %	2.4	112	
6.3.4	FDI net outflows, % GDP	0.2	78	
7	**Creative outputs**	**41.7**	**51**	
7.1	Intangible assets	56.3	19	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	56.8	69	
7.1.4	ICT & organizational model creation†	55.8	56	
7.2	Creative goods & services	26.8	96	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	14.7	36	●
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	n/a	n/a	
7.3	Online creativity	27.3	67	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.3	73	
7.3.2	Country-code TLDs/th pop. 15–69	21.8	73	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,119.8	66	
7.3.4	Video uploads on YouTube/pop. 15–69	77.4	50	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Bulgaria

Key indicators

Population (millions)	7.7
GDP (US$ billions)	50.8
GDP per capita, PPP$	14,234.6
Income group	Upper-middle income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**41.3**	**41**	
Innovation Output Sub-Index		38.7	38	
Innovation Input Sub-Index		44.0	50	
Innovation Efficiency Ratio		0.9	35	
Global Innovation Index 2012 (based on GII 2012 framework)		40.7	43	
1	**Institutions**	**68.0**	**51**	
1.1	Political environment	61.2	56	
1.1.1	Political stability*	73.6	51	
1.1.2	Government effectiveness*	38.7	67	
1.1.3	Press freedom*	71.4	71	
1.2	Regulatory environment	77.2	39	
1.2.1	Regulatory quality*	64.2	45	
1.2.2	Rule of law*	44.7	65	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	Business environment	65.5	64	
1.3.1	Ease of starting a business*	90.9	28	
1.3.2	Ease of resolving insolvency*	34.3	82	
1.3.3	Ease of paying taxes*	71.3	60	
2	**Human capital & research**	**35.7**	**55**	
2.1	Education	55.4	63	
2.1.1	Current expenditure on education, % GNI	4.4	57	
2.1.2	Public expenditure/pupil, % GDP/cap	26.6	19	●
2.1.3	School life expectancy, years	14.0	53	
2.1.4	PISA scales in reading, maths, & science	432.1	43	
2.1.5	Pupil-teacher ratio, secondary	12.1	44	
2.2	Tertiary education	42.5	37	
2.2.1	Tertiary enrolment, % gross	56.9	41	
2.2.2	Graduates in science & engineering, %	19.8	49	
2.2.3	Tertiary inbound mobility, %	3.5	43	
2.2.4	Gross tertiary outbound enrolment, %	4.8	15	●
2.3	Research & development (R&D)	9.4	69	
2.3.1	Researchers, headcounts/mn pop.	1,948.8	36	
2.3.2	Gross expenditure on R&D, % GDP	0.6	54	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**40.0**	**43**	
3.1	Information & communication technologies (ICTs)	35.5	71	
3.1.1	ICT access*	59.7	49	
3.1.2	ICT use*	30.4	50	
3.1.3	Government's online service*	49.0	71	
3.1.4	E-participation*	2.6	116	○
3.2	General infrastructure	35.2	44	
3.2.1	Electricity output, kWh/cap	6,103.1	36	
3.2.2	Electricity consumption, kWh/cap	4,471.3	45	
3.2.3	Logistics performance*	55.3	36	
3.2.4	Gross capital formation, % GDP	24.1	57	
3.3	Ecological sustainability	49.2	18	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.9	84	
3.3.2	Environmental performance*	56.3	51	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	9.2	8	●
4	**Market sophistication**	**43.9**	**83**	
4.1	Credit	40.7	58	
4.1.1	Ease of getting credit*	75.0	38	
4.1.2	Domestic credit to private sector, % GDP	72.1	47	
4.1.3	Microfinance gross loans, % GDP	1.3	33	
4.2	Investment	17.0	114	○
4.2.1	Ease of protecting investors*	60.4	54	
4.2.2	Market capitalization, % GDP	15.4	83	○
4.2.3	Total value of stocks traded, % GDP	0.5	85	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	74.0	88	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	55.5	98	○
5	**Business sophistication**	**32.2**	**65**	
5.1	Knowledge workers	45.2	59	
5.1.1	Knowledge-intensive employment, %	23.5	50	
5.1.2	Firms offering formal training, % firms	30.7	64	
5.1.3	R&D performed by business, % GDP	0.3	41	
5.1.4	R&D financed by business, %	30.2	52	
5.1.5	GMAT mean score	578.7	16	●
5.1.6	GMAT test takers/mn pop. 20–34	358.7	12	●
5.2	Innovation linkages	19.9	100	○
5.2.1	University/industry research collaboration†	33.4	114	○
5.2.2	State of cluster development†	41.2	79	
5.2.3	R&D financed by abroad, %	8.4	43	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	73	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.1	49	
5.3	Knowledge absorption	31.4	50	
5.3.1	Royalty & license fees payments, % service imports	2.9	48	
5.3.2	High-tech imports less re-imports, %	7.8	70	
5.3.3	Comm., computer & info. services imports, %	7.6	28	
5.3.4	FDI net inflows, % GDP	4.8	46	
6	**Knowledge & technology outputs**	**35.0**	**36**	
6.1	Knowledge creation	17.0	54	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.8	45	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.3	50	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	2.0	18	
6.1.4	Scientific & technical articles/bn PPP$ GDP	20.5	47	
6.1.5	Citable documents H index	129.0	44	
6.2	Knowledge impact	55.7	8	●
6.2.1	Growth rate of PPP$ GDP/worker, %	5.5	7	●
6.2.2	New businesses/th pop. 15–64	7.2	17	●
6.2.3	Computer software spending, % GDP	0.3	37	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	49.5	1	●
6.2.5	High- & medium-high-tech manufactures, %	15.6	59	
6.3	Knowledge diffusion	23.4	85	
6.3.1	Royalty & license fees receipts, % service exports	0.2	68	
6.3.2	High-tech exports less re-exports, %	3.8	48	
6.3.3	Comm., computer & info. services exports, %	9.7	43	
6.3.4	FDI net outflows, % GDP	0.4	60	
7	**Creative outputs**	**42.4**	**49**	
7.1	Intangible assets	44.7	61	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	79.0	16	●
7.1.2	Madrid trademark registrations/bn PPP$ GDP	2.3	13	
7.1.3	ICT & business model creation†	51.1	94	○
7.1.4	ICT & organizational model creation†	46.5	92	
7.2	Creative goods & services	41.6	47	
7.2.1	Audio-visual & related services exports, %	0.5	25	
7.2.2	National feature films/mn pop. 15–69	2.7	50	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	19.9	23	●
7.2.4	Printing & publishing manufactures, %	1.5	64	○
7.2.5	Creative goods exports, %	1.4	44	
7.3	Online creativity	38.5	41	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	25.9	29	
7.3.2	Country-code TLDs/th pop. 15–69	23.1	70	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	4,822.0	31	
7.3.4	Video uploads on YouTube/pop. 15–69	77.1	52	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Burkina Faso

Key indicators

Population (millions)	17.5
GDP (US$ billions)	10.3
GDP per capita, PPP$	1,384.2
Income group	Low income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**27.0**	**116**	
Innovation Output Sub-Index		23.8	109	
Innovation Input Sub-Index		30.2	119	
Innovation Efficiency Ratio		0.8	64	●
Global Innovation Index 2012 (based on GII 2012 framework)		24.6	122	
1	**Institutions**	**57.1**	**83**	●
1.1	Political environment	51.0	83	●
1.1.1	Political stability*	52.8	98	
1.1.2	Government effectiveness*	23.8	100	
1.1.3	Press freedom*	76.3	41	●
1.2	Regulatory environment	68.3	61	●
1.2.1	Regulatory quality*	45.8	85	
1.2.2	Rule of law*	37.5	80	●
1.2.3	Cost of redundancy dismissal, salary weeks	10.5	43	●
1.3	Business environment	52.1	109	
1.3.1	Ease of starting a business*	71.7	106	
1.3.2	Ease of resolving insolvency*	29.7	102	
1.3.3	Ease of paying taxes*	54.9	113	
2	**Human capital & research**	**17.7**	**117**	
2.1	Education	30.5	123	
2.1.1	Current expenditure on education, % GNI	3.4	83	
2.1.2	Public expenditure/pupil, % GDP/cap	24.6	32	●
2.1.3	School life expectancy, years	6.9	126	○
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	26.5	112	
2.2	Tertiary education	20.9	100	
2.2.1	Tertiary enrolment, % gross	3.9	128	○
2.2.2	Graduates in science & engineering, %	17.8	59	●
2.2.3	Tertiary inbound mobility, %	3.6	41	●
2.2.4	Gross tertiary outbound enrolment, %	0.2	126	
2.3	Research & development (R&D)	1.6	104	
2.3.1	Researchers, headcounts/mn pop.	69.5	98	
2.3.2	Gross expenditure on R&D, % GDP	0.2	84	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**13.5**	**139**	○
3.1	Information & communication technologies (ICTs)	16.2	120	
3.1.1	ICT access*	18.2	130	
3.1.2	ICT use*	1.4	129	
3.1.3	Government's online service*	29.4	122	
3.1.4	E-participation*	15.8	79	●
3.2	General infrastructure	24.0	109	
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Logistics performance*	33.0	125	
3.2.4	Gross capital formation, % GDP	18.0	113	
3.3	Ecological sustainability	0.2	138	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.0	130	○
4	**Market sophistication**	**34.4**	**129**	
4.1	Credit	22.8	120	
4.1.1	Ease of getting credit*	43.8	110	
4.1.2	Domestic credit to private sector, % GDP	19.8	120	
4.1.3	Microfinance gross loans, % GDP	1.6	29	●
4.2	Investment	18.5	104	
4.2.1	Ease of protecting investors*	37.0	124	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	61.8	121	
4.3.1	Applied tariff rate, weighted mean, %	8.8	115	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.2	101	
4.3.3	Intensity of local competition†	54.3	102	
5	**Business sophistication**	**28.4**	**91**	
5.1	Knowledge workers	26.1	126	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	24.8	79	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	11.9	68	
5.1.5	GMAT mean score	414.8	125	
5.1.6	GMAT test takers/mn pop. 20–34	12.7	122	
5.2	Innovation linkages	41.7	29	●
5.2.1	University/industry research collaboration†	36.1	102	
5.2.2	State of cluster development†	28.8	128	
5.2.3	R&D financed by abroad, %	59.6	2	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	17.4	118	
5.3.1	Royalty & license fees payments, % service imports	0.0	124	○
5.3.2	High-tech imports less re-imports, %	5.9	94	
5.3.3	Comm., computer & info. services imports, %	5.7	47	●
5.3.4	FDI net inflows, % GDP	0.1	135	
6	**Knowledge & technology outputs**	**21.3**	**93**	
6.1	Knowledge creation	4.4	116	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.1	107	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.1	52	
6.1.4	Scientific & technical articles/bn PPP$ GDP	12.0	68	●
6.1.5	Citable documents H index	58.0	92	
6.2	Knowledge impact	26.1	99	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.4	78	
6.2.2	New businesses/th pop. 15–64	0.1	96	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.2	113	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	25.0	75	●
6.3.1	Royalty & license fees receipts, % service exports	0.1	78	
6.3.2	High-tech exports less re-exports, %	0.1	108	
6.3.3	Comm., computer & info. services exports, %	16.6	21	●
6.3.4	FDI net outflows, % GDP	0.4	61	●
7	**Creative outputs**	**26.4**	**118**	
7.1	Intangible assets	42.4	74	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	47.5	105	
7.1.4	ICT & organizational model creation†	37.4	125	
7.2	Creative goods & services	12.9	127	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	0.5	91	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	0.4	130	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.0	110	
7.3	Online creativity	7.7	134	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.0	137	○
7.3.2	Country-code TLDs/th pop. 15–69	0.2	137	○
7.3.3	Wikipedia monthly edits/mn pop. 15–69	35.5	127	
7.3.4	Video uploads on YouTube/pop. 15–69	30.5	132	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Cambodia

Key indicators

Population (millions)	14.5
GDP (US$ billions)	14.2
GDP per capita, PPP$	2,398.5
Income group	Low income
Region	South East Asia and Oceania

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**28.1**	**110**	
Innovation Output Sub-Index		26.1	101	
Innovation Input Sub-Index		30.0	120	
Innovation Efficiency Ratio		0.9	39	●
Global Innovation Index 2012 (based on GII 2012 framework)		23.4	129	
1	**Institutions**	**48.0**	**116**	
1.1	Political environment	43.8	111	
1.1.1	Political stability*	55.3	93	
1.1.2	Government effectiveness*	17.9	118	
1.1.3	Press freedom*	58.2	115	
1.2	Regulatory environment	52.9	109	
1.2.1	Regulatory quality*	37.8	108	
1.2.2	Rule of law*	19.5	127	
1.2.3	Cost of redundancy dismissal, salary weeks	19.4	91	
1.3	Business environment	47.2	128	
1.3.1	Ease of starting a business*	54.9	135	
1.3.2	Ease of resolving insolvency*	14.5	133	
1.3.3	Ease of paying taxes*	72.1	57	●
2	**Human capital & research**	**12.5**	**131**	
2.1	Education	26.3	131	
2.1.1	Current expenditure on education, % GNI	1.6	111	○
2.1.2	Public expenditure/pupil, % GDP/cap	10.3	104	
2.1.3	School life expectancy, years	11.0	105	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	23.9	100	
2.2	Tertiary education	11.2	121	
2.2.1	Tertiary enrolment, % gross	14.5	97	
2.2.2	Graduates in science & engineering, %	12.5	88	
2.2.3	Tertiary inbound mobility, %	0.1	109	○
2.2.4	Gross tertiary outbound enrolment, %	0.3	117	
2.3	Research & development (R&D)	0.0	123	○
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**20.5**	**116**	
3.1	Information & communication technologies (ICTs)	12.7	134	
3.1.1	ICT access*	25.3	107	
3.1.2	ICT use*	6.5	107	
3.1.3	Government's online service*	19.0	135	○
3.1.4	E-participation*	0.0	129	○
3.2	General infrastructure	21.5	116	
3.2.1	Electricity output, kWh/cap	70.3	122	○
3.2.2	Electricity consumption, kWh/cap	146.1	118	
3.2.3	Logistics performance*	39.0	98	
3.2.4	Gross capital formation, % GDP	23.5	64	●
3.3	Ecological sustainability	27.2	82	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.5	76	
3.3.2	Environmental performance*	55.3	57	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	108	
4	**Market sophistication**	**42.0**	**93**	
4.1	Credit	60.1	26	●
4.1.1	Ease of getting credit*	68.8	51	●
4.1.2	Domestic credit to private sector, % GDP	28.3	102	
4.1.3	Microfinance gross loans, % GDP	13.7	1	●
4.2	Investment	28.4	57	●
4.2.1	Ease of protecting investors*	56.7	66	●
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	37.7	141	○
4.3.1	Applied tariff rate, weighted mean, %	9.9	121	
4.3.2	Non-agricultural mkt access weighted tariff, %	9.2	142	○
4.3.3	Intensity of local competition†	63.5	72	
5	**Business sophistication**	**27.1**	**102**	
5.1	Knowledge workers	25.6	127	
5.1.1	Knowledge-intensive employment, %	2.5	104	○
5.1.2	Firms offering formal training, % firms	48.4	34	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	378.4	133	
5.1.6	GMAT test takers/mn pop. 20–34	5.7	131	
5.2	Innovation linkages	36.3	40	●
5.2.1	University/industry research collaboration†	42.0	70	
5.2.2	State of cluster development†	50.4	46	●
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	50	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	n/a	n/a	
5.3	Knowledge absorption	19.4	109	
5.3.1	Royalty & license fees payments, % service imports	1.0	81	
5.3.2	High-tech imports less re-imports, %	3.8	120	○
5.3.3	Comm., computer & info. services imports, %	2.8	92	
5.3.4	FDI net inflows, % GDP	7.0	26	●
6	**Knowledge & technology outputs**	**21.3**	**94**	
6.1	Knowledge creation	6.0	98	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.9	107	
6.1.5	Citable documents H index	45.0	114	
6.2	Knowledge impact	33.8	71	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.4	23	●
6.2.2	New businesses/th pop. 15–64	0.2	91	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.4	131	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	16.5	117	
6.3.1	Royalty & license fees receipts, % service exports	0.1	88	
6.3.2	High-tech exports less re-exports, %	0.1	112	
6.3.3	Comm., computer & info. services exports, %	5.5	74	
6.3.4	FDI net outflows, % GDP	0.2	72	
7	**Creative outputs**	**31.0**	**99**	
7.1	Intangible assets	39.0	89	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	16.7	71	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	55.7	77	
7.1.4	ICT & organizational model creation†	51.9	74	
7.2	Creative goods & services	32.0	82	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	1.4	65	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	0.6	122	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.5	69	
7.3	Online creativity	13.9	118	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.3	127	
7.3.2	Country-code TLDs/th pop. 15–69	2.1	122	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	128.6	111	
7.3.4	Video uploads on YouTube/pop. 15–69	52.4	110	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Cameroon

Key indicators

Population (millions)	20.6
GDP (US$ billions)	24.5
GDP per capita, PPP$	2,345.3
Income group	Lower-middle income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**25.7**	**125**	
Innovation Output Sub-Index		23.4	110	
Innovation Input Sub-Index		28.0	131	
Innovation Efficiency Ratio		0.8	47	●
Global Innovation Index 2012 (based on GII 2012 framework)		25.0	121	
1	**Institutions**	**46.9**	**119**	
1.1	Political environment	43.5	112	
1.1.1	Political stability*	51.1	102	
1.1.2	Government effectiveness*	14.3	130	
1.1.3	Press freedom*	65.2	98	
1.2	Regulatory environment	54.7	107	
1.2.1	Regulatory quality*	28.9	126	
1.2.2	Rule of law*	19.2	129	
1.2.3	Cost of redundancy dismissal, salary weeks	15.3	71	●
1.3	Business environment	42.5	133	
1.3.1	Ease of starting a business*	77.8	94	
1.3.2	Ease of resolving insolvency*	15.3	131	
1.3.3	Ease of paying taxes*	34.4	136	○
2	**Human capital & research**	**18.6**	**113**	
2.1	Education	31.4	122	
2.1.1	Current expenditure on education, % GNI	3.0	93	
2.1.2	Public expenditure/pupil, % GDP/cap	11.2	101	
2.1.3	School life expectancy, years	11.5	96	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	24.1	103	
2.2	Tertiary education	23.4	87	●
2.2.1	Tertiary enrolment, % gross	12.4	99	
2.2.2	Graduates in science & engineering, %	21.0	40	●
2.2.3	Tertiary inbound mobility, %	1.4	72	
2.2.4	Gross tertiary outbound enrolment, %	1.0	75	●
2.3	Research & development (R&D)	0.9	110	
2.3.1	Researchers, headcounts/mn pop.	243.2	76	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**18.4**	**126**	
3.1	Information & communication technologies (ICTs)	12.9	133	
3.1.1	ICT access*	17.7	131	○
3.1.2	ICT use*	1.2	131	○
3.1.3	Government's online service*	30.1	118	
3.1.4	E-participation*	2.6	116	
3.2	General infrastructure	19.2	130	
3.2.1	Electricity output, kWh/cap	301.0	112	
3.2.2	Electricity consumption, kWh/cap	271.4	112	
3.2.3	Logistics performance*	38.3	104	
3.2.4	Gross capital formation, % GDP	19.7	98	
3.3	Ecological sustainability	23.2	100	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.7	74	●
3.3.2	Environmental performance*	43.0	107	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	115	
4	**Market sophistication**	**34.1**	**131**	
4.1	Credit	21.6	123	
4.1.1	Ease of getting credit*	50.0	93	
4.1.2	Domestic credit to private sector, % GDP	14.9	132	
4.1.3	Microfinance gross loans, % GDP	0.9	39	●
4.2	Investment	21.9	88	●
4.2.1	Ease of protecting investors*	43.7	114	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	58.9	127	
4.3.1	Applied tariff rate, weighted mean, %	15.0	138	○
4.3.2	Non-agricultural mkt access weighted tariff, %	0.3	44	●
4.3.3	Intensity of local competition†	56.9	94	
5	**Business sophistication**	**22.0**	**125**	
5.1	Knowledge workers	35.1	106	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	25.5	76	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	434.8	116	
5.1.6	GMAT test takers/mn pop. 20–34	39.8	94	
5.2	Innovation linkages	20.7	92	●
5.2.1	University/industry research collaboration†	37.1	96	
5.2.2	State of cluster development†	36.6	105	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	72	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	10.1	137	○
5.3.1	Royalty & license fees payments, % service imports	0.7	91	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Comm., computer & info. services imports, %	1.0	128	
5.3.4	FDI net inflows, % GDP	1.4	112	
6	**Knowledge & technology outputs**	**17.4**	**117**	
6.1	Knowledge creation	6.7	91	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.6	77	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	11.1	70	●
6.1.5	Citable documents H index	68.0	86	●
6.2	Knowledge impact	20.6	115	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.4	77	●
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.2	74	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.5	127	
6.2.5	High- & medium-high-tech manufactures, %	1.9	95	○
6.3	Knowledge diffusion	19.4	101	
6.3.1	Royalty & license fees receipts, % service exports	0.0	99	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Comm., computer & info. services exports, %	3.6	99	
6.3.4	FDI net outflows, % GDP	–0.2	118	
7	**Creative outputs**	**29.5**	**110**	
7.1	Intangible assets	45.9	53	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	48.9	99	
7.1.4	ICT & organizational model creation†	42.8	105	
7.2	Creative goods & services	15.3	122	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	1.8	60	●
7.2.3	Paid-for dailies, circulation, % pop. 15–69	0.7	121	
7.2.4	Printing & publishing manufactures, %	1.3	66	
7.2.5	Creative goods exports, %	n/a	n/a	
7.3	Online creativity	10.9	125	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.7	111	
7.3.2	Country-code TLDs/th pop. 15–69	9.9	103	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	28.3	130	○
7.3.4	Video uploads on YouTube/pop. 15–69	32.8	129	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Canada

Key indicators

Population (millions)	36.1
GDP (US$ billions)	1,770.1
GDP per capita, PPP$	41,506.9
Income group	High income
Region	Northern America

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**57.6**	**11**	
Innovation Output Sub-Index		50.4	13	
Innovation Input Sub-Index		64.8	9	
Innovation Efficiency Ratio		0.8	68	○
Global Innovation Index 2012 (based on GII 2012 framework)		56.9	12	
1	**Institutions**	**93.3**	**5**	●
1.1	Political environment	89.3	11	
1.1.1	Political stability*	91.6	17	
1.1.2	Government effectiveness*	89.1	7	
1.1.3	Press freedom*	87.3	18	
1.2	Regulatory environment	95.0	11	
1.2.1	Regulatory quality*	93.5	10	
1.2.2	Rule of law*	94.5	12	
1.2.3	Cost of redundancy dismissal, salary weeks	10.0	38	
1.3	Business environment	95.4	2	●
1.3.1	Ease of starting a business*	99.1	2	●
1.3.2	Ease of resolving insolvency*	96.1	4	●
1.3.3	Ease of paying taxes*	91.1	9	
2	**Human capital & research**	**49.4**	**25**	
2.1	Education	65.2	29	
2.1.1	Current expenditure on education, % GNI	4.7	52	○
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	526.6	7	
2.1.5	Pupil-teacher ratio, secondary	12.6	50	
2.2	Tertiary education	20.3	102	○
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	2.0	54	
2.3	Research & development (R&D)	62.8	10	
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	1.7	23	
2.3.3	QS university ranking, average score top 3*	86.2	3	●
3	**Infrastructure**	**53.0**	**15**	
3.1	Information & communication technologies (ICTs)	71.6	15	
3.1.1	ICT access*	75.4	22	
3.1.2	ICT use*	53.9	22	
3.1.3	Government's online service*	88.9	6	●
3.1.4	E-participation*	68.4	15	
3.2	General infrastructure	58.0	2	●
3.2.1	Electricity output, kWh/cap	18,462.1	4	●
3.2.2	Electricity consumption, kWh/cap	15,473.8	6	
3.2.3	Logistics performance*	71.3	12	
3.2.4	Gross capital formation, % GDP	23.7	62	○
3.3	Ecological sustainability	29.5	70	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.8	86	○
3.3.2	Environmental performance*	58.4	36	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.2	56	
4	**Market sophistication**	**78.8**	**4**	●
4.1	Credit	71.0	14	
4.1.1	Ease of getting credit*	81.3	22	
4.1.2	Domestic credit to private sector, % GDP	128.2	18	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	75.1	4	●
4.2.1	Ease of protecting investors*	90.0	4	●
4.2.2	Market capitalization, % GDP	109.8	10	
4.2.3	Total value of stocks traded, % GDP	87.6	12	
4.2.4	Venture capital deals/tr PPP$ GDP	0.3	2	●
4.3	Trade & competition	90.2	1	●
4.3.1	Applied tariff rate, weighted mean, %	0.9	6	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.2	29	
4.3.3	Intensity of local competition†	77.1	17	
5	**Business sophistication**	**49.3**	**16**	
5.1	Knowledge workers	70.0	10	
5.1.1	Knowledge-intensive employment, %	42.4	9	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	0.9	24	
5.1.4	R&D financed by business, %	46.5	26	
5.1.5	GMAT mean score	560.0	31	
5.1.6	GMAT test takers/mn pop. 20–34	1,101.5	6	●
5.2	Innovation linkages	43.6	22	
5.2.1	University/industry research collaboration†	68.2	14	
5.2.2	State of cluster development†	63.6	14	
5.2.3	R&D financed by abroad, %	6.4	53	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	12	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	1.1	19	
5.3	Knowledge absorption	34.3	41	
5.3.1	Royalty & license fees payments, % service imports	9.1	8	
5.3.2	High-tech imports less re-imports, %	12.1	32	
5.3.3	Comm., computer & info. services imports, %	5.4	51	
5.3.4	FDI net inflows, % GDP	2.3	82	○
6	**Knowledge & technology outputs**	**44.4**	**17**	
6.1	Knowledge creation	47.9	16	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	3.4	38	
6.1.2	PCT resident patent ap/bn PPP$ GDP	1.9	24	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	37.8	18	
6.1.5	Citable documents H index	621.0	5	●
6.2	Knowledge impact	46.9	25	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.6	91	○
6.2.2	New businesses/th pop. 15–64	7.6	15	
6.2.3	Computer software spending, % GDP	0.8	3	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	5.1	65	○
6.2.5	High- & medium-high-tech manufactures, %	35.2	27	
6.3	Knowledge diffusion	40.1	24	
6.3.1	Royalty & license fees receipts, % service exports	5.2	12	
6.3.2	High-tech exports less re-exports, %	6.3	32	
6.3.3	Comm., computer & info. services exports, %	11.2	33	
6.3.4	FDI net outflows, % GDP	2.8	22	
7	**Creative outputs**	**56.5**	**11**	
7.1	Intangible assets	51.6	37	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	26.9	58	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	71.0	22	
7.1.4	ICT & organizational model creation†	68.7	13	
7.2	Creative goods & services	51.2	18	
7.2.1	Audio-visual & related services exports, %	2.9	5	
7.2.2	National feature films/mn pop. 15–69	3.4	45	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	15.2	31	
7.2.4	Printing & publishing manufactures, %	1.9	43	○
7.2.5	Creative goods exports, %	0.9	56	○
7.3	Online creativity	71.7	7	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	100.0	1	●
7.3.2	Country-code TLDs/th pop. 15–69	60.0	21	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	6,608.3	23	
7.3.4	Video uploads on YouTube/pop. 15–69	88.4	9	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Cape Verde

Key indicators

Population (millions)	0.5
GDP (US$ billions)	1.9
GDP per capita, PPP$	4,126.2
Income group	Lower-middle income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**29.7**	**103**	
Innovation Output Sub-Index		21.6	122	
Innovation Input Sub-Index		37.8	84	
Innovation Efficiency Ratio		0.6	130	○
Global Innovation Index 2012 (based on GII 2012 framework)		n/a	n/a	
1	**Institutions**	**58.4**	**76**	
1.1	Political environment	70.3	45	●
1.1.1	Political stability*	83.6	33	●
1.1.2	Government effectiveness*	41.5	59	●
1.1.3	Press freedom*	85.7	23	●
1.2	Regulatory environment	56.0	105	
1.2.1	Regulatory quality*	51.4	72	●
1.2.2	Rule of law*	59.0	49	●
1.2.3	Cost of redundancy dismissal, salary weeks	29.5	125	
1.3	Business environment	49.1	118	
1.3.1	Ease of starting a business*	82.0	77	
1.3.2	Ease of resolving insolvency*	0.0	142	○
1.3.3	Ease of paying taxes*	65.3	85	
2	**Human capital & research**	**31.0**	**73**	●
2.1	Education	47.8	85	
2.1.1	Current expenditure on education, % GNI	4.9	45	●
2.1.2	Public expenditure/pupil, % GDP/cap	16.7	74	
2.1.3	School life expectancy, years	13.0	73	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	17.2	83	
2.2	Tertiary education	45.2	28	●
2.2.1	Tertiary enrolment, % gross	20.4	90	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	1.4	73	
2.2.4	Gross tertiary outbound enrolment, %	9.0	5	●
2.3	Research & development (R&D)	0.0	123	○
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**35.5**	**58**	●
3.1	Information & communication technologies (ICTs)	26.8	91	
3.1.1	ICT access*	31.3	103	
3.1.2	ICT use*	8.3	102	
3.1.3	Government's online service*	43.8	86	
3.1.4	E-participation*	23.7	59	●
3.2	General infrastructure	44.1	19	●
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Logistics performance*	n/a	n/a	
3.2.4	Gross capital formation, % GDP	33.9	14	●
3.3	Ecological sustainability	n/a	n/a	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	n/a	n/a	
4	**Market sophistication**	**40.1**	**105**	
4.1	Credit	39.6	62	●
4.1.1	Ease of getting credit*	50.0	93	
4.1.2	Domestic credit to private sector, % GDP	64.5	51	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	21.0	93	
4.2.1	Ease of protecting investors*	41.9	116	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	59.7	128	
4.3.1	Applied tariff rate, weighted mean, %	11.6	129	○
4.3.2	Non-agricultural mkt access weighted tariff, %	1.1	75	
4.3.3	Intensity of local competition†	50.3	119	
5	**Business sophistication**	**23.9**	**116**	
5.1	Knowledge workers	18.2	144	○
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	16.6	94	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	368.0	138	○
5.1.6	GMAT test takers/mn pop. 20–34	7.1	128	○
5.2	Innovation linkages	22.7	84	
5.2.1	University/industry research collaboration†	35.5	106	
5.2.2	State of cluster development†	32.6	120	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	n/a	n/a	
5.3	Knowledge absorption	30.7	54	●
5.3.1	Royalty & license fees payments, % service imports	0.1	117	○
5.3.2	High-tech imports less re-imports, %	12.9	30	●
5.3.3	Comm., computer & info. services imports, %	5.4	53	●
5.3.4	FDI net inflows, % GDP	4.9	44	●
6	**Knowledge & technology outputs**	**9.6**	**136**	○
6.1	Knowledge creation	3.6	123	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.1	105	
6.1.5	Citable documents H index	11.0	142	○
6.2	Knowledge impact	6.9	128	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.4	80	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	15.3	126	
6.3.1	Royalty & license fees receipts, % service exports	0.0	114	○
6.3.2	High-tech exports less re-exports, %	0.0	124	○
6.3.3	Comm., computer & info. services exports, %	4.8	82	
6.3.4	FDI net outflows, % GDP	0.1	88	
7	**Creative outputs**	**33.6**	**88**	
7.1	Intangible assets	54.9	24	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	58.2	66	●
7.1.4	ICT & organizational model creation†	51.7	76	
7.2	Creative goods & services	1.1	140	○
7.2.1	Audio-visual & related services exports, %	0.0	69	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	n/a	n/a	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.0	124	○
7.3	Online creativity	23.6	82	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.4	82	
7.3.2	Country-code TLDs/th pop. 15–69	17.2	81	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,009.0	70	●
7.3.4	Video uploads on YouTube/pop. 15–69	68.8	79	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Chile

Key indicators

Population (millions)	17.8
GDP (US$ billions)	268.3
GDP per capita, PPP$	18,354.1
Income group	Upper-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**40.6**	**46**	
Innovation Output Sub-Index		34.4	48	
Innovation Input Sub-Index		46.7	41	
Innovation Efficiency Ratio		0.7	88	
Global Innovation Index 2012 (based on GII 2012 framework)		42.7	39	
1	**Institutions**	**72.2**	**40**	
1.1	Political environment	74.7	33	
1.1.1	Political stability*	79.8	41	
1.1.2	Government effectiveness*	70.6	27	●
1.1.3	Press freedom*	73.8	51	
1.2	Regulatory environment	74.0	45	
1.2.1	Regulatory quality*	89.7	14	●
1.2.2	Rule of law*	84.1	21	●
1.2.3	Cost of redundancy dismissal, salary weeks	27.4	118	○
1.3	Business environment	68.0	56	
1.3.1	Ease of starting a business*	87.3	52	
1.3.2	Ease of resolving insolvency*	32.5	88	
1.3.3	Ease of paying taxes*	84.1	23	●
2	**Human capital & research**	**31.5**	**70**	
2.1	Education	45.4	90	
2.1.1	Current expenditure on education, % GNI	4.3	62	
2.1.2	Public expenditure/pupil, % GDP/cap	15.8	78	○
2.1.3	School life expectancy, years	14.9	38	
2.1.4	PISA scales in reading, maths, & science	439.3	42	
2.1.5	Pupil-teacher ratio, secondary	21.9	97	○
2.2	Tertiary education	31.1	67	
2.2.1	Tertiary enrolment, % gross	66.1	23	●
2.2.2	Graduates in science & engineering, %	20.0	47	
2.2.3	Tertiary inbound mobility, %	1.0	80	○
2.2.4	Gross tertiary outbound enrolment, %	0.6	92	○
2.3	Research & development (R&D)	18.1	44	
2.3.1	Researchers, headcounts/mn pop.	552.4	67	
2.3.2	Gross expenditure on R&D, % GDP	0.4	65	
2.3.3	QS university ranking, average score top 3*	40.8	30	
3	**Infrastructure**	**41.0**	**40**	
3.1	Information & communication technologies (ICTs)	54.4	33	
3.1.1	ICT access*	54.2	60	
3.1.2	ICT use*	22.6	60	
3.1.3	Government's online service*	75.2	24	●
3.1.4	E-participation*	65.8	19	●
3.2	General infrastructure	33.3	50	
3.2.1	Electricity output, kWh/cap	3,802.5	54	
3.2.2	Electricity consumption, kWh/cap	3,557.0	55	
3.2.3	Logistics performance*	54.3	39	
3.2.4	Gross capital formation, % GDP	25.7	40	
3.3	Ecological sustainability	35.2	51	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.6	45	
3.3.2	Environmental performance*	55.3	56	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.1	40	
4	**Market sophistication**	**52.5**	**40**	
4.1	Credit	36.2	73	
4.1.1	Ease of getting credit*	68.8	51	
4.1.2	Domestic credit to private sector, % GDP	71.2	49	
4.1.3	Microfinance gross loans, % GDP	0.7	45	
4.2	Investment	38.8	29	●
4.2.1	Ease of protecting investors*	65.6	34	
4.2.2	Market capitalization, % GDP	108.7	11	●
4.2.3	Total value of stocks traded, % GDP	22.9	29	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	52	
4.3	Trade & competition	82.6	21	●
4.3.1	Applied tariff rate, weighted mean, %	4.0	70	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.3	36	
4.3.3	Intensity of local competition†	71.0	37	
5	**Business sophistication**	**36.4**	**50**	
5.1	Knowledge workers	55.4	40	
5.1.1	Knowledge-intensive employment, %	30.6	29	
5.1.2	Firms offering formal training, % firms	57.5	16	●
5.1.3	R&D performed by business, % GDP	0.2	51	
5.1.4	R&D financed by business, %	35.4	47	
5.1.5	GMAT mean score	572.5	21	●
5.1.6	GMAT test takers/mn pop. 20–34	110.8	50	
5.2	Innovation linkages	28.0	60	
5.2.1	University/industry research collaboration†	53.4	37	
5.2.2	State of cluster development†	55.0	28	●
5.2.3	R&D financed by abroad, %	15.7	21	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	81	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	58	
5.3	Knowledge absorption	25.8	78	
5.3.1	Royalty & license fees payments, % service imports	3.8	39	
5.3.2	High-tech imports less re-imports, %	9.2	59	
5.3.3	Comm., computer & info. services imports, %	1.7	110	○
5.3.4	FDI net inflows, % GDP	7.0	27	●
6	**Knowledge & technology outputs**	**26.3**	**70**	
6.1	Knowledge creation	11.3	66	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.1	66	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.4	44	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.2	45	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	17.4	48	
6.1.5	Citable documents H index	181.0	37	
6.2	Knowledge impact	41.1	41	
6.2.1	Growth rate of PPP$ GDP/worker, %	5.5	8	●
6.2.2	New businesses/th pop. 15–64	4.1	29	
6.2.3	Computer software spending, % GDP	0.3	40	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	12.2	40	
6.2.5	High- & medium-high-tech manufactures, %	21.7	49	
6.3	Knowledge diffusion	19.0	106	○
6.3.1	Royalty & license fees receipts, % service exports	0.6	49	
6.3.2	High-tech exports less re-exports, %	0.7	83	○
6.3.3	Comm., computer & info. services exports, %	2.1	115	○
6.3.4	FDI net outflows, % GDP	4.0	18	●
7	**Creative outputs**	**42.6**	**47**	
7.1	Intangible assets	54.3	26	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	59.1	29	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	67.8	29	
7.1.4	ICT & organizational model creation†	61.9	33	
7.2	Creative goods & services	24.2	103	○
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	1.8	59	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	4.2	89	○
7.2.4	Printing & publishing manufactures, %	0.6	87	○
7.2.5	Creative goods exports, %	0.3	79	
7.3	Online creativity	37.5	43	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.6	72	
7.3.2	Country-code TLDs/th pop. 15–69	48.0	40	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	3,339.8	42	
7.3.4	Video uploads on YouTube/pop. 15–69	79.2	38	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	1,374.0
GDP (US$ billions)	8,250.2
GDP per capita, PPP$	9,146.4
Income group	Upper-middle income
Region	South East Asia and Oceania

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**44.7**	**35**	
Innovation Output Sub-Index		44.1	25	
Innovation Input Sub-Index		45.2	46	
Innovation Efficiency Ratio		1.0	14	
Global Innovation Index 2012 (based on GII 2012 framework)		45.4	34	
1	**Institutions**	**48.3**	**113**	
1.1	Political environment	39.2	126	○
1.1.1	Political stability*	49.0	106	
1.1.2	Government effectiveness*	41.7	58	
1.1.3	Press freedom*	26.9	138	○
1.2	Regulatory environment	50.3	116	○
1.2.1	Regulatory quality*	44.3	89	
1.2.2	Rule of law*	34.8	87	
1.2.3	Cost of redundancy dismissal, salary weeks	27.4	118	○
1.3	Business environment	55.5	98	
1.3.1	Ease of starting a business*	67.5	118	○
1.3.2	Ease of resolving insolvency*	38.5	73	
1.3.3	Ease of paying taxes*	60.5	98	
2	**Human capital & research**	**40.6**	**36**	
2.1	Education	68.7	20	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	11.9	88	
2.1.4	PISA scales in reading, maths, & science	576.8	1	●
2.1.5	Pupil-teacher ratio, secondary	15.2	70	
2.2	Tertiary education	11.7	120	○
2.2.1	Tertiary enrolment, % gross	26.8	80	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	0.3	98	○
2.2.4	Gross tertiary outbound enrolment, %	0.5	100	
2.3	Research & development (R&D)	41.5	24	
2.3.1	Researchers, headcounts/mn pop.	1,302.9	46	
2.3.2	Gross expenditure on R&D, % GDP	1.8	21	
2.3.3	QS university ranking, average score top 3*	74.9	9	
3	**Infrastructure**	**39.8**	**44**	
3.1	Information & communication technologies (ICTs)	32.9	75	
3.1.1	ICT access*	41.2	77	
3.1.2	ICT use*	16.6	77	
3.1.3	Government's online service*	52.9	59	
3.1.4	E-participation*	21.1	64	
3.2	General infrastructure	48.7	13	
3.2.1	Electricity output, kWh/cap	3,118.7	62	
3.2.2	Electricity consumption, kWh/cap	2,942.3	61	
3.2.3	Logistics performance*	63.0	24	
3.2.4	Gross capital formation, % GDP	47.8	2	●
3.3	Ecological sustainability	37.9	38	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.7	101	○
3.3.2	Environmental performance*	42.2	111	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	7.3	11	
4	**Market sophistication**	**54.2**	**35**	
4.1	Credit	41.5	55	
4.1.1	Ease of getting credit*	62.5	68	
4.1.2	Domestic credit to private sector, % GDP	127.0	20	
4.1.3	Microfinance gross loans, % GDP	0.2	59	
4.2	Investment	46.5	21	
4.2.1	Ease of protecting investors*	50.4	96	
4.2.2	Market capitalization, % GDP	46.3	38	
4.2.3	Total value of stocks traded, % GDP	104.8	7	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	37	
4.3	Trade & competition	74.7	83	
4.3.1	Applied tariff rate, weighted mean, %	4.0	71	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.5	129	○
4.3.3	Intensity of local competition†	71.7	35	
5	**Business sophistication**	**42.9**	**33**	
5.1	Knowledge workers	62.9	28	
5.1.1	Knowledge-intensive employment, %	7.4	98	○
5.1.2	Firms offering formal training, % firms	84.8	1	●
5.1.3	R&D performed by business, % GDP	1.3	17	
5.1.4	R&D financed by business, %	71.7	4	●
5.1.5	GMAT mean score	591.0	7	●
5.1.6	GMAT test takers/mn pop. 20–34	183.5	34	
5.2	Innovation linkages	27.9	61	
5.2.1	University/industry research collaboration†	56.2	33	
5.2.2	State of cluster development†	59.7	22	
5.2.3	R&D financed by abroad, %	1.3	75	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	55	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.3	30	
5.3	Knowledge absorption	38.0	24	
5.3.1	Royalty & license fees payments, % service imports	6.2	21	
5.3.2	High-tech imports less re-imports, %	22.3	5	●
5.3.3	Comm., computer & info. services imports, %	2.1	105	
5.3.4	FDI net inflows, % GDP	3.0	70	
6	**Knowledge & technology outputs**	**56.4**	**2**	●
6.1	Knowledge creation	66.5	3	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	36.8	1	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	1.5	28	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	51.4	1	
6.1.4	Scientific & technical articles/bn PPP$ GDP	14.4	59	
6.1.5	Citable documents H index	353.0	17	
6.2	Knowledge impact	65.5	2	●
6.2.1	Growth rate of PPP$ GDP/worker, %	8.8	3	●
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.4	27	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	29.0	15	
6.2.5	High- & medium-high-tech manufactures, %	43.1	16	
6.3	Knowledge diffusion	42.1	21	
6.3.1	Royalty & license fees receipts, % service exports	0.5	55	
6.3.2	High-tech exports less re-exports, %	28.5	3	●
6.3.3	Comm., computer & info. services exports, %	7.6	60	
6.3.4	FDI net outflows, % GDP	0.7	54	
7	**Creative outputs**	**31.9**	**96**	
7.1	Intangible assets	42.8	72	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	82.0	12	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.2	52	
7.1.3	ICT & business model creation†	62.0	48	
7.1.4	ICT & organizational model creation†	60.9	35	
7.2	Creative goods & services	34.4	69	
7.2.1	Audio-visual & related services exports, %	0.1	54	
7.2.2	National feature films/mn pop. 15–69	0.6	87	○
7.2.3	Paid-for dailies, circulation, % pop. 15–69	11.7	49	
7.2.4	Printing & publishing manufactures, %	0.6	86	○
7.2.5	Creative goods exports, %	15.4	1	●
7.3	Online creativity	7.4	136	○
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.4	80	
7.3.2	Country-code TLDs/th pop. 15–69	27.1	62	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	44.6	123	○
7.3.4	Video uploads on YouTube/pop. 15–69	0.0	142	○

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Colombia

Key indicators

Population (millions)	48.1
GDP (US$ billions)	365.4
GDP per capita, PPP$	10,729.0
Income group	Upper-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**37.4**	**60**	
Innovation Output Sub-Index		32.3	65	
Innovation Input Sub-Index		42.5	59	
Innovation Efficiency Ratio		0.8	79	
Global Innovation Index 2012 (based on GII 2012 framework)		35.5	65	
1	**Institutions**	**62.9**	**62**	
1.1	Political environment	47.7	95	
1.1.1	Political stability*	35.4	124	○
1.1.2	Government effectiveness*	45.1	56	
1.1.3	Press freedom*	62.5	104	○
1.2	Regulatory environment	66.0	73	
1.2.1	Regulatory quality*	58.8	60	
1.2.2	Rule of law*	40.1	73	
1.2.3	Cost of redundancy dismissal, salary weeks	16.7	79	
1.3	Business environment	74.9	30	●
1.3.1	Ease of starting a business*	84.1	68	
1.3.2	Ease of resolving insolvency*	80.9	20	●
1.3.3	Ease of paying taxes*	59.7	101	
2	**Human capital & research**	**26.8**	**87**	
2.1	Education	36.8	110	○
2.1.1	Current expenditure on education, % GNI	3.3	84	○
2.1.2	Public expenditure/pupil, % GDP/cap	15.9	77	
2.1.3	School life expectancy, years	13.6	60	
2.1.4	PISA scales in reading, maths, & science	398.6	58	○
2.1.5	Pupil-teacher ratio, secondary	25.6	109	○
2.2	Tertiary education	31.0	68	
2.2.1	Tertiary enrolment, % gross	42.9	57	
2.2.2	Graduates in science & engineering, %	22.3	36	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.5	95	
2.3	Research & development (R&D)	12.7	54	
2.3.1	Researchers, headcounts/mn pop.	347.5	73	
2.3.2	Gross expenditure on R&D, % GDP	0.2	89	○
2.3.3	QS university ranking, average score top 3*	32.5	36	
3	**Infrastructure**	**42.2**	**36**	
3.1	Information & communication technologies (ICTs)	54.6	32	
3.1.1	ICT access*	41.7	75	
3.1.2	ICT use*	18.5	75	
3.1.3	Government's online service*	84.3	16	●
3.1.4	E-participation*	73.7	11	●
3.2	General infrastructure	25.4	97	
3.2.1	Electricity output, kWh/cap	1,226.6	89	
3.2.2	Electricity consumption, kWh/cap	1,012.4	95	○
3.2.3	Logistics performance*	46.8	64	
3.2.4	Gross capital formation, % GDP	23.1	69	
3.3	Ecological sustainability	46.6	20	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	12.2	3	●
3.3.2	Environmental performance*	62.3	27	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.8	35	
4	**Market sophistication**	**45.8**	**70**	
4.1	Credit	34.1	82	
4.1.1	Ease of getting credit*	62.5	68	
4.1.2	Domestic credit to private sector, % GDP	45.0	74	
4.1.3	Microfinance gross loans, % GDP	1.9	24	
4.2	Investment	31.4	46	
4.2.1	Ease of protecting investors*	86.3	8	●
4.2.2	Market capitalization, % GDP	60.4	25	
4.2.3	Total value of stocks traded, % GDP	8.2	47	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	73	
4.3	Trade & competition	71.9	100	
4.3.1	Applied tariff rate, weighted mean, %	8.9	116	○
4.3.2	Non-agricultural mkt access weighted tariff, %	0.1	25	●
4.3.3	Intensity of local competition†	61.9	78	
5	**Business sophistication**	**34.9**	**54**	
5.1	Knowledge workers	47.7	54	
5.1.1	Knowledge-intensive employment, %	21.6	57	
5.1.2	Firms offering formal training, % firms	65.2	8	●
5.1.3	R&D performed by business, % GDP	0.0	72	○
5.1.4	R&D financed by business, %	22.1	63	
5.1.5	GMAT mean score	514.0	65	
5.1.6	GMAT test takers/mn pop. 20–34	84.7	59	
5.2	Innovation linkages	19.8	102	
5.2.1	University/industry research collaboration†	49.8	45	
5.2.2	State of cluster development†	45.5	64	
5.2.3	R&D financed by abroad, %	4.2	62	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	87	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	56	
5.3	Knowledge absorption	37.0	28	●
5.3.1	Royalty & license fees payments, % service imports	4.4	31	
5.3.2	High-tech imports less re-imports, %	17.5	12	●
5.3.3	Comm., computer & info. services imports, %	4.6	61	
5.3.4	FDI net inflows, % GDP	4.0	58	
6	**Knowledge & technology outputs**	**25.3**	**76**	
6.1	Knowledge creation	6.3	95	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.4	87	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	62	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.5	37	
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.0	96	
6.1.5	Citable documents H index	122.0	48	
6.2	Knowledge impact	36.1	59	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.1	36	
6.2.2	New businesses/th pop. 15–64	1.8	47	
6.2.3	Computer software spending, % GDP	0.2	65	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	21.0	21	●
6.2.5	High- & medium-high-tech manufactures, %	22.4	45	
6.3	Knowledge diffusion	24.0	81	
6.3.1	Royalty & license fees receipts, % service exports	1.2	35	
6.3.2	High-tech exports less re-exports, %	0.8	80	
6.3.3	Comm., computer & info. services exports, %	6.4	67	
6.3.4	FDI net outflows, % GDP	2.4	28	
7	**Creative outputs**	**39.2**	**60**	
7.1	Intangible assets	43.3	70	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	27.7	54	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	58.3	65	
7.1.4	ICT & organizational model creation†	56.1	54	
7.2	Creative goods & services	36.9	62	
7.2.1	Audio-visual & related services exports, %	0.7	12	●
7.2.2	National feature films/mn pop. 15–69	0.6	88	○
7.2.3	Paid-for dailies, circulation, % pop. 15–69	3.8	95	
7.2.4	Printing & publishing manufactures, %	2.7	26	
7.2.5	Creative goods exports, %	0.4	74	
7.3	Online creativity	33.3	51	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4.5	63	
7.3.2	Country-code TLDs/th pop. 15–69	51.5	34	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,140.1	65	
7.3.4	Video uploads on YouTube/pop. 15–69	70.7	72	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Costa Rica

Key indicators

Population (millions)	4.9
GDP (US$ billions)	44.9
GDP per capita, PPP$	12,558.6
Income group	Upper-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**41.5**	**39**	
Innovation Output Sub-Index		42.0	31	
Innovation Input Sub-Index		41.1	66	
Innovation Efficiency Ratio		1.0	9	●
Global Innovation Index 2012 (based on GII 2012 framework)		36.3	60	
1	**Institutions**	**64.3**	**60**	
1.1	Political environment	72.3	40	
1.1.1	Political stability*	80.9	38	
1.1.2	Government effectiveness*	48.0	53	
1.1.3	Press freedom*	87.9	16	●
1.2	Regulatory environment	69.5	57	
1.2.1	Regulatory quality*	61.3	51	
1.2.2	Rule of law*	59.7	48	
1.2.3	Cost of redundancy dismissal, salary weeks	18.7	88	
1.3	Business environment	51.2	112	○
1.3.1	Ease of starting a business*	66.5	121	○
1.3.2	Ease of resolving insolvency*	24.6	113	○
1.3.3	Ease of paying taxes*	62.6	94	
2	**Human capital & research**	**26.7**	**89**	
2.1	Education	53.6	71	
2.1.1	Current expenditure on education, % GNI	6.2	18	●
2.1.2	Public expenditure/pupil, % GDP/cap	18.7	65	
2.1.3	School life expectancy, years	13.5	64	
2.1.4	PISA scales in reading, maths, & science	427.5	45	
2.1.5	Pupil-teacher ratio, secondary	14.9	69	
2.2	Tertiary education	20.6	101	
2.2.1	Tertiary enrolment, % gross	43.0	56	
2.2.2	Graduates in science & engineering, %	11.4	93	○
2.2.3	Tertiary inbound mobility, %	1.4	69	
2.2.4	Gross tertiary outbound enrolment, %	0.4	102	
2.3	Research & development (R&D)	5.9	78	
2.3.1	Researchers, headcounts/mn pop.	763.7	59	
2.3.2	Gross expenditure on R&D, % GDP	0.5	55	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**35.2**	**61**	
3.1	Information & communication technologies (ICTs)	38.9	62	
3.1.1	ICT access*	52.8	62	
3.1.2	ICT use*	21.7	62	
3.1.3	Government's online service*	49.7	67	
3.1.4	E-participation*	31.6	47	
3.2	General infrastructure	24.3	104	
3.2.1	Electricity output, kWh/cap	2,056.7	79	
3.2.2	Electricity consumption, kWh/cap	1,855.1	73	
3.2.3	Logistics performance*	43.8	81	
3.2.4	Gross capital formation, % GDP	20.9	85	
3.3	Ecological sustainability	42.3	29	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	10.4	11	●
3.3.2	Environmental performance*	69.0	5	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.3	52	
4	**Market sophistication**	**41.9**	**94**	
4.1	Credit	26.3	106	
4.1.1	Ease of getting credit*	56.3	80	
4.1.2	Domestic credit to private sector, % GDP	47.6	70	
4.1.3	Microfinance gross loans, % GDP	0.2	62	
4.2	Investment	15.0	129	○
4.2.1	Ease of protecting investors*	31.9	133	○
4.2.2	Market capitalization, % GDP	3.5	104	○
4.2.3	Total value of stocks traded, % GDP	0.1	99	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	48	
4.3	Trade & competition	84.4	14	●
4.3.1	Applied tariff rate, weighted mean, %	2.4	50	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	19	●
4.3.3	Intensity of local competition†	65.9	60	
5	**Business sophistication**	**37.2**	**44**	
5.1	Knowledge workers	45.6	58	
5.1.1	Knowledge-intensive employment, %	22.2	55	
5.1.2	Firms offering formal training, % firms	54.7	20	●
5.1.3	R&D performed by business, % GDP	0.1	55	
5.1.4	R&D financed by business, %	28.7	55	
5.1.5	GMAT mean score	503.2	72	
5.1.6	GMAT test takers/mn pop. 20–34	79.7	63	
5.2	Innovation linkages	19.3	107	
5.2.1	University/industry research collaboration†	55.9	34	
5.2.2	State of cluster development†	51.0	41	
5.2.3	R&D financed by abroad, %	1.7	72	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	97	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	46.8	9	●
5.3.1	Royalty & license fees payments, % service imports	3.2	44	
5.3.2	High-tech imports less re-imports, %	21.4	6	●
5.3.3	Comm., computer & info. services imports, %	7.3	35	
5.3.4	FDI net inflows, % GDP	5.3	39	
6	**Knowledge & technology outputs**	**41.0**	**22**	●
6.1	Knowledge creation	4.7	112	○
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.3	92	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	71	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.2	48	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.7	86	
6.1.5	Citable documents H index	97.0	63	
6.2	Knowledge impact	46.0	28	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.2	52	
6.2.2	New businesses/th pop. 15–64	17.6	1	●
6.2.3	Computer software spending, % GDP	0.3	51	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.3	81	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	54.1	8	●
6.3.1	Royalty & license fees receipts, % service exports	0.2	75	
6.3.2	High-tech exports less re-exports, %	24.7	5	●
6.3.3	Comm., computer & info. services exports, %	31.2	8	●
6.3.4	FDI net outflows, % GDP	0.1	79	
7	**Creative outputs**	**43.0**	**44**	
7.1	Intangible assets	55.8	21	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	83.4	11	●
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	62.3	47	
7.1.4	ICT & organizational model creation†	58.4	42	
7.2	Creative goods & services	30.6	86	
7.2.1	Audio-visual & related services exports, %	0.0	74	○
7.2.2	National feature films/mn pop. 15–69	1.2	70	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	11.3	52	
7.2.4	Printing & publishing manufactures, %	2.7	25	
7.2.5	Creative goods exports, %	1.1	48	
7.3	Online creativity	29.8	61	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	16.1	35	
7.3.2	Country-code TLDs/th pop. 15–69	22.8	71	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,530.6	60	
7.3.4	Video uploads on YouTube/pop. 15–69	71.4	71	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Côte d'Ivoire

Key indicators

Population (millions)	20.7
GDP (US$ billions)	24.3
GDP per capita, PPP$	1,696.1
Income group	Lower-middle income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**23.4**	**136**	○
Innovation Output Sub-Index		19.9	132	
Innovation Input Sub-Index		27.0	133	○
Innovation Efficiency Ratio		0.7	89	
Global Innovation Index 2012 (based on GII 2012 framework)		22.6	134	
1	**Institutions**	**46.1**	**123**	
1.1	Political environment	35.8	134	○
1.1.1	Political stability*	31.5	131	
1.1.2	Government effectiveness*	5.8	139	○
1.1.3	Press freedom*	70.2	76	●
1.2	Regulatory environment	55.0	106	
1.2.1	Regulatory quality*	27.1	128	
1.2.2	Rule of law*	13.2	138	○
1.2.3	Cost of redundancy dismissal, salary weeks	13.1	59	●
1.3	Business environment	47.6	126	
1.3.1	Ease of starting a business*	53.5	137	○
1.3.2	Ease of resolving insolvency*	40.5	67	●
1.3.3	Ease of paying taxes*	48.8	121	
2	**Human capital & research**	**15.3**	**124**	
2.1	Education	35.7	113	
2.1.1	Current expenditure on education, % GNI	4.3	58	●
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	Tertiary education	9.8	125	
2.2.1	Tertiary enrolment, % gross	8.3	115	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	1.1	78	
2.2.4	Gross tertiary outbound enrolment, %	0.3	113	
2.3	Research & development (R&D)	0.5	114	
2.3.1	Researchers, headcounts/mn pop.	133.0	87	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**19.8**	**121**	
3.1	Information & communication technologies (ICTs)	19.8	110	
3.1.1	ICT access*	25.9	106	
3.1.2	ICT use*	6.7	106	
3.1.3	Government's online service*	33.3	109	
3.1.4	E-participation*	13.2	84	
3.2	General infrastructure	16.2	138	○
3.2.1	Electricity output, kWh/cap	303.6	111	
3.2.2	Electricity consumption, kWh/cap	209.6	115	
3.2.3	Logistics performance*	43.3	84	●
3.2.4	Gross capital formation, % GDP	12.1	137	○
3.3	Ecological sustainability	23.4	98	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.5	104	
3.3.2	Environmental performance*	53.5	65	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	111	
4	**Market sophistication**	**33.4**	**132**	
4.1	Credit	17.8	132	
4.1.1	Ease of getting credit*	43.8	110	
4.1.2	Domestic credit to private sector, % GDP	18.1	122	
4.1.3	Microfinance gross loans, % GDP	0.3	57	
4.2	Investment	11.6	139	○
4.2.1	Ease of protecting investors*	33.7	129	
4.2.2	Market capitalization, % GDP	26.1	56	●
4.2.3	Total value of stocks traded, % GDP	0.5	83	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	70.8	102	
4.3.1	Applied tariff rate, weighted mean, %	7.3	101	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.1	76	●
4.3.3	Intensity of local competition†	62.0	77	●
5	**Business sophistication**	**20.2**	**133**	○
5.1	Knowledge workers	31.7	112	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	19.1	91	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	456.6	105	
5.1.6	GMAT test takers/mn pop. 20–34	27.4	108	
5.2	Innovation linkages	12.8	130	
5.2.1	University/industry research collaboration†	22.8	130	○
5.2.2	State of cluster development†	28.5	129	○
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	16.2	123	
5.3.1	Royalty & license fees payments, % service imports	0.8	89	
5.3.2	High-tech imports less re-imports, %	6.6	85	
5.3.3	Comm., computer & info. services imports, %	3.3	79	●
5.3.4	FDI net inflows, % GDP	1.4	111	
6	**Knowledge & technology outputs**	**9.7**	**135**	○
6.1	Knowledge creation	4.5	115	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.2	94	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	86	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.0	97	
6.1.5	Citable documents H index	64.0	90	
6.2	Knowledge impact	0.7	141	○
6.2.1	Growth rate of PPP$ GDP/worker, %	−8.3	118	○
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.1	117	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	21.2	97	
6.3.1	Royalty & license fees receipts, % service exports	0.0	97	
6.3.2	High-tech exports less re-exports, %	1.6	67	●
6.3.3	Comm., computer & info. services exports, %	11.0	35	●
6.3.4	FDI net outflows, % GDP	0.1	83	
7	**Creative outputs**	**30.1**	**104**	
7.1	Intangible assets	48.2	45	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	53.6	84	●
7.1.4	ICT & organizational model creation†	42.8	107	
7.2	Creative goods & services	10.8	128	
7.2.1	Audio-visual & related services exports, %	0.0	72	○
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	1.8	108	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.0	107	
7.3	Online creativity	13.1	120	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.4	123	
7.3.2	Country-code TLDs/th pop. 15–69	2.6	119	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	42.3	126	○
7.3.4	Video uploads on YouTube/pop. 15–69	49.3	111	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	4.6
GDP (US$ billions)	57.5
GDP per capita, PPP$	18,098.8
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**41.9**	**37**	
Innovation Output Sub-Index		37.8	41	
Innovation Input Sub-Index		46.1	43	
Innovation Efficiency Ratio		0.8	50	
Global Innovation Index 2012 (based on GII 2012 framework)		40.7	42	
1	**Institutions**	**69.1**	**48**	
1.1	Political environment	68.8	46	
1.1.1	Political stability*	79.3	45	
1.1.2	Government effectiveness*	53.6	45	
1.1.3	Press freedom*	73.4	54	
1.2	Regulatory environment	71.9	48	
1.2.1	Regulatory quality*	64.1	46	
1.2.2	Rule of law*	52.0	54	
1.2.3	Cost of redundancy dismissal, salary weeks	15.1	70	
1.3	Business environment	66.7	60	
1.3.1	Ease of starting a business*	87.9	48	
1.3.2	Ease of resolving insolvency*	32.6	87	
1.3.3	Ease of paying taxes*	79.6	35	
2	**Human capital & research**	**34.9**	**58**	
2.1	Education	58.4	53	
2.1.1	Current expenditure on education, % GNI	4.2	64	
2.1.2	Public expenditure/pupil, % GDP/cap	24.5	34	
2.1.3	School life expectancy, years	14.1	51	
2.1.4	PISA scales in reading, maths, & science	474.0	35	
2.1.5	Pupil-teacher ratio, secondary	8.1	8	●
2.2	Tertiary education	31.6	65	
2.2.1	Tertiary enrolment, % gross	54.1	46	
2.2.2	Graduates in science & engineering, %	20.1	46	
2.2.3	Tertiary inbound mobility, %	0.6	90	○
2.2.4	Gross tertiary outbound enrolment, %	2.5	36	
2.3	Research & development (R&D)	14.8	51	
2.3.1	Researchers, headcounts/mn pop.	2,745.0	30	
2.3.2	Gross expenditure on R&D, % GDP	0.7	44	
2.3.3	QS university ranking, average score top 3*	7.1	62	
3	**Infrastructure**	**43.3**	**32**	
3.1	Information & communication technologies (ICTs)	49.7	42	
3.1.1	ICT access*	66.7	35	
3.1.2	ICT use*	39.2	35	
3.1.3	Government's online service*	64.1	40	
3.1.4	E-participation*	29.0	52	
3.2	General infrastructure	30.5	63	
3.2.1	Electricity output, kWh/cap	3,167.2	60	
3.2.2	Electricity consumption, kWh/cap	3,808.3	51	
3.2.3	Logistics performance*	54.0	42	
3.2.4	Gross capital formation, % GDP	21.8	77	
3.3	Ecological sustainability	49.7	15	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.4	31	
3.3.2	Environmental performance*	64.2	20	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	6.2	19	●
4	**Market sophistication**	**46.5**	**64**	
4.1	Credit	36.3	72	
4.1.1	Ease of getting credit*	75.0	38	
4.1.2	Domestic credit to private sector, % GDP	73.8	45	
4.1.3	Microfinance gross loans, % GDP	0.0	86	○
4.2	Investment	23.3	82	
4.2.1	Ease of protecting investors*	41.9	116	○
4.2.2	Market capitalization, % GDP	34.9	50	
4.2.3	Total value of stocks traded, % GDP	1.5	68	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	40	
4.3	Trade & competition	80.0	40	
4.3.1	Applied tariff rate, weighted mean, %	1.2	9	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.4	48	
4.3.3	Intensity of local competition†	50.7	117	○
5	**Business sophistication**	**36.7**	**48**	
5.1	Knowledge workers	43.7	66	
5.1.1	Knowledge-intensive employment, %	30.1	35	
5.1.2	Firms offering formal training, % firms	28.0	68	○
5.1.3	R&D performed by business, % GDP	0.3	40	
5.1.4	R&D financed by business, %	38.8	43	
5.1.5	GMAT mean score	489.6	87	○
5.1.6	GMAT test takers/mn pop. 20–34	128.5	44	
5.2	Innovation linkages	23.1	81	
5.2.1	University/industry research collaboration†	40.9	78	
5.2.2	State of cluster development†	41.2	81	
5.2.3	R&D financed by abroad, %	9.9	39	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	69	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.1	41	
5.3	Knowledge absorption	43.3	14	●
5.3.1	Royalty & license fees payments, % service imports	7.5	15	●
5.3.2	High-tech imports less re-imports, %	8.3	63	
5.3.3	Comm., computer & info. services imports, %	13.7	3	●
5.3.4	FDI net inflows, % GDP	2.0	91	○
6	**Knowledge & technology outputs**	**33.9**	**39**	
6.1	Knowledge creation	20.6	44	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	3.1	42	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.4	43	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.2	27	
6.1.4	Scientific & technical articles/bn PPP$ GDP	42.1	14	●
6.1.5	Citable documents H index	132.0	42	
6.2	Knowledge impact	52.0	16	●
6.2.1	Growth rate of PPP$ GDP/worker, %	4.8	18	●
6.2.2	New businesses/th pop. 15–64	2.4	43	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	26.7	18	●
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	22.6	90	○
6.3.1	Royalty & license fees receipts, % service exports	0.2	72	○
6.3.2	High-tech exports less re-exports, %	7.4	30	
6.3.3	Comm., computer & info. services exports, %	5.2	78	
6.3.4	FDI net outflows, % GDP	0.1	93	○
7	**Creative outputs**	**41.6**	**52**	
7.1	Intangible assets	43.4	69	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	65.2	24	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	1.9	16	
7.1.3	ICT & business model creation†	55.9	74	
7.1.4	ICT & organizational model creation†	50.5	81	
7.2	Creative goods & services	37.5	59	
7.2.1	Audio-visual & related services exports, %	0.1	44	
7.2.2	National feature films/mn pop. 15–69	2.8	49	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	12.7	46	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.9	55	
7.3	Online creativity	42.1	38	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	12.7	44	
7.3.2	Country-code TLDs/th pop. 15–69	44.3	43	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	5,818.7	28	●
7.3.4	Video uploads on YouTube/pop. 15–69	77.7	48	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Cyprus

Key indicators

Population (millions)	1.2
GDP (US$ billions)	22.4
GDP per capita, PPP$	26,908.3
Income group	High income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**49.3**	**27**	
Innovation Output Sub-Index		45.6	20	
Innovation Input Sub-Index		53.1	30	
Innovation Efficiency Ratio		0.9	43	
Global Innovation Index 2012 (based on GII 2012 framework)		47.9	28	
1	**Institutions**	**84.1**	**18**	
1.1	Political environment	82.0	20	
1.1.1	Political stability*	79.4	43	
1.1.2	Government effectiveness*	80.3	18	
1.1.3	Press freedom*	86.2	22	
1.2	Regulatory environment	89.3	19	
1.2.1	Regulatory quality*	81.4	24	
1.2.2	Rule of law*	75.8	27	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	
1.3	Business environment	81.0	19	
1.3.1	Ease of starting a business*	88.1	47	
1.3.2	Ease of resolving insolvency*	75.2	23	
1.3.3	Ease of paying taxes*	79.7	34	
2	**Human capital & research**	**45.3**	**31**	
2.1	Education	71.9	8	●
2.1.1	Current expenditure on education, % GNI	6.9	13	●
2.1.2	Public expenditure/pupil, % GDP/cap	37.0	3	●
2.1.3	School life expectancy, years	14.0	52	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	9.8	22	
2.2	Tertiary education	56.4	6	●
2.2.1	Tertiary enrolment, % gross	48.3	50	
2.2.2	Graduates in science & engineering, %	13.3	86	○
2.2.3	Tertiary inbound mobility, %	31.9	5	●
2.2.4	Gross tertiary outbound enrolment, %	40.5	1	●
2.3	Research & development (R&D)	7.6	70	
2.3.1	Researchers, headcounts/mn pop.	1,555.3	43	
2.3.2	Gross expenditure on R&D, % GDP	0.5	59	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**38.5**	**46**	
3.1	Information & communication technologies (ICTs)	41.2	58	
3.1.1	ICT access*	64.6	43	
3.1.2	ICT use*	36.3	43	
3.1.3	Government's online service*	56.2	51	
3.1.4	E-participation*	7.9	99	○
3.2	General infrastructure	30.8	61	
3.2.1	Electricity output, kWh/cap	6,725.0	31	
3.2.2	Electricity consumption, kWh/cap	6,425.9	28	
3.2.3	Logistics performance*	56.0	35	
3.2.4	Gross capital formation, % GDP	13.3	133	○
3.3	Ecological sustainability	43.5	25	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.5	27	
3.3.2	Environmental performance*	57.2	43	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	4.5	24	
4	**Market sophistication**	**65.3**	**18**	
4.1	Credit	84.4	6	●
4.1.1	Ease of getting credit*	68.8	51	
4.1.2	Domestic credit to private sector, % GDP	298.4	1	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	33.0	41	
4.2.1	Ease of protecting investors*	64.8	37	
4.2.2	Market capitalization, % GDP	11.6	90	○
4.2.3	Total value of stocks traded, % GDP	2.0	63	
4.2.4	Venture capital deals/tr PPP$ GDP	0.1	17	●
4.3	Trade & competition	78.6	53	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	69.1	43	
5	**Business sophistication**	**32.1**	**66**	
5.1	Knowledge workers	36.3	101	
5.1.1	Knowledge-intensive employment, %	16.3	80	○
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	0.1	58	
5.1.4	R&D financed by business, %	15.7	67	○
5.1.5	GMAT mean score	518.9	58	
5.1.6	GMAT test takers/mn pop. 20–34	220.4	27	
5.2	Innovation linkages	37.5	37	
5.2.1	University/industry research collaboration†	45.1	61	
5.2.2	State of cluster development†	51.3	40	
5.2.3	R&D financed by abroad, %	12.1	32	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	24	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.8	24	
5.3	Knowledge absorption	22.7	92	
5.3.1	Royalty & license fees payments, % service imports	1.2	75	
5.3.2	High-tech imports less re-imports, %	7.7	72	
5.3.3	Comm., computer & info. services imports, %	3.9	71	
5.3.4	FDI net inflows, % GDP	4.4	52	
6	**Knowledge & technology outputs**	**37.5**	**27**	
6.1	Knowledge creation	26.7	35	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.1	52	
6.1.2	PCT resident patent ap/bn PPP$ GDP	2.0	23	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	36.6	21	
6.1.5	Citable documents H index	79.0	73	
6.2	Knowledge impact	56.3	5	●
6.2.1	Growth rate of PPP$ GDP/worker, %	1.3	79	
6.2.2	New businesses/th pop. 15–64	24.7	1	●
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	31.3	12	●
6.2.5	High- & medium-high-tech manufactures, %	12.4	67	
6.3	Knowledge diffusion	24.0	82	
6.3.1	Royalty & license fees receipts, % service exports	0.0	104	○
6.3.2	High-tech exports less re-exports, %	12.9	20	
6.3.3	Comm., computer & info. services exports, %	1.4	131	○
6.3.4	FDI net outflows, % GDP	3.5	20	
7	**Creative outputs**	**53.7**	**16**	●
7.1	Intangible assets	61.1	8	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	60.7	27	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	7.7	1	●
7.1.3	ICT & business model creation†	58.5	63	
7.1.4	ICT & organizational model creation†	52.0	72	
7.2	Creative goods & services	35.1	66	
7.2.1	Audio-visual & related services exports, %	0.1	52	
7.2.2	National feature films/mn pop. 15–69	3.6	43	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	12.4	47	
7.2.4	Printing & publishing manufactures, %	3.1	17	
7.2.5	Creative goods exports, %	0.4	73	
7.3	Online creativity	57.4	23	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	85.8	10	●
7.3.2	Country-code TLDs/th pop. 15–69	37.7	50	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	4,444.4	33	
7.3.4	Video uploads on YouTube/pop. 15–69	80.4	36	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Czech Republic

Key indicators

Population (millions)	11.0
GDP (US$ billions)	193.5
GDP per capita, PPP$	27,164.8
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**48.4**	**28**	
Innovation Output Sub-Index		43.3	26	
Innovation Input Sub-Index		53.4	27	
Innovation Efficiency Ratio		0.8	53	
Global Innovation Index 2012 (based on GII 2012 framework)		49.7	27	
1	**Institutions**	**76.1**	**31**	
1.1	Political environment	83.2	18	
1.1.1	Political stability*	93.5	14	●
1.1.2	Government effectiveness*	66.3	30	
1.1.3	Press freedom*	89.8	14	●
1.2	Regulatory environment	76.9	41	
1.2.1	Regulatory quality*	82.2	23	
1.2.2	Rule of law*	74.5	30	
1.2.3	Cost of redundancy dismissal, salary weeks	20.2	93	○
1.3	Business environment	68.1	54	
1.3.1	Ease of starting a business*	79.3	88	○
1.3.2	Ease of resolving insolvency*	60.1	32	
1.3.3	Ease of paying taxes*	64.9	90	○
2	**Human capital & research**	**45.7**	**30**	
2.1	Education	58.7	51	
2.1.1	Current expenditure on education, % GNI	4.1	68	○
2.1.2	Public expenditure/pupil, % GDP/cap	22.1	45	
2.1.3	School life expectancy, years	15.8	22	
2.1.4	PISA scales in reading, maths, & science	490.5	26	
2.1.5	Pupil-teacher ratio, secondary	11.0	34	
2.2	Tertiary education	43.7	34	
2.2.1	Tertiary enrolment, % gross	63.5	28	
2.2.2	Graduates in science & engineering, %	23.4	28	
2.2.3	Tertiary inbound mobility, %	8.0	20	
2.2.4	Gross tertiary outbound enrolment, %	1.7	60	
2.3	Research & development (R&D)	34.7	28	
2.3.1	Researchers, headcounts/mn pop.	4,357.3	22	
2.3.2	Gross expenditure on R&D, % GDP	1.8	19	
2.3.3	QS university ranking, average score top 3*	29.1	38	
3	**Infrastructure**	**49.0**	**24**	
3.1	Information & communication technologies (ICTs)	45.6	48	
3.1.1	ICT access*	65.3	39	
3.1.2	ICT use*	36.6	39	
3.1.3	Government's online service*	54.3	53	
3.1.4	E-participation*	26.3	55	
3.2	General infrastructure	37.6	36	
3.2.1	Electricity output, kWh/cap	8,249.2	21	
3.2.2	Electricity consumption, kWh/cap	6,275.6	29	
3.2.3	Logistics performance*	53.5	44	
3.2.4	Gross capital formation, % GDP	24.1	58	
3.3	Ecological sustainability	63.7	3	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.9	71	○
3.3.2	Environmental performance*	64.8	18	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	15.6	1	●
4	**Market sophistication**	**48.9**	**53**	
4.1	Credit	46.8	47	
4.1.1	Ease of getting credit*	68.8	51	
4.1.2	Domestic credit to private sector, % GDP	55.4	58	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	18.3	106	○
4.2.1	Ease of protecting investors*	51.9	85	○
4.2.2	Market capitalization, % GDP	17.7	76	○
4.2.3	Total value of stocks traded, % GDP	7.1	49	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	70	
4.3	Trade & competition	81.7	28	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	78.5	12	●
5	**Business sophistication**	**47.5**	**20**	
5.1	Knowledge workers	63.0	27	
5.1.1	Knowledge-intensive employment, %	30.5	31	
5.1.2	Firms offering formal training, % firms	70.7	4	●
5.1.3	R&D performed by business, % GDP	1.1	20	
5.1.4	R&D financed by business, %	46.9	25	
5.1.5	GMAT mean score	572.1	24	
5.1.6	GMAT test takers/mn pop. 20–34	44.5	87	○
5.2	Innovation linkages	31.5	48	
5.2.1	University/industry research collaboration†	59.0	27	
5.2.2	State of cluster development†	50.6	43	
5.2.3	R&D financed by abroad, %	15.2	23	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	93	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.2	33	
5.3	Knowledge absorption	47.9	8	●
5.3.1	Royalty & license fees payments, % service imports	5.1	27	
5.3.2	High-tech imports less re-imports, %	17.3	13	●
5.3.3	Comm., computer & info. services imports, %	11.5	6	●
5.3.4	FDI net inflows, % GDP	2.5	78	
6	**Knowledge & technology outputs**	**38.3**	**25**	
6.1	Knowledge creation	34.1	26	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	3.3	41	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.6	36	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	5.6	8	
6.1.4	Scientific & technical articles/bn PPP$ GDP	33.2	26	
6.1.5	Citable documents H index	223.0	31	
6.2	Knowledge impact	44.2	37	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.0	85	○
6.2.2	New businesses/th pop. 15–64	2.8	38	
6.2.3	Computer software spending, % GDP	0.3	36	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	44.6	4	●
6.2.5	High- & medium-high-tech manufactures, %	26.6	36	
6.3	Knowledge diffusion	34.6	36	
6.3.1	Royalty & license fees receipts, % service exports	0.5	54	
6.3.2	High-tech exports less re-exports, %	16.3	12	●
6.3.3	Comm., computer & info. services exports, %	10.0	41	
6.3.4	FDI net outflows, % GDP	0.5	57	
7	**Creative outputs**	**48.2**	**25**	
7.1	Intangible assets	43.7	66	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	88.6	10	●
7.1.2	Madrid trademark registrations/bn PPP$ GDP	1.3	26	
7.1.3	ICT & business model creation†	54.8	80	○
7.1.4	ICT & organizational model creation†	49.3	85	○
7.2	Creative goods & services	54.3	14	●
7.2.1	Audio-visual & related services exports, %	0.8	9	●
7.2.2	National feature films/mn pop. 15–69	5.6	29	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	14.3	39	
7.2.4	Printing & publishing manufactures, %	2.2	36	
7.2.5	Creative goods exports, %	10.7	6	●
7.3	Online creativity	51.2	29	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	14.0	43	
7.3.2	Country-code TLDs/th pop. 15–69	66.5	16	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	7,024.0	21	
7.3.4	Video uploads on YouTube/pop. 15–69	83.4	24	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Denmark

Key indicators

Population (millions)	5.8
GDP (US$ billions)	309.2
GDP per capita, PPP$	37,738.1
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**58.3**	**9**	
Innovation Output Sub-Index		50.4	14	
Innovation Input Sub-Index		66.3	8	●
Innovation Efficiency Ratio		0.8	78	○
Global Innovation Index 2012 (based on GII 2012 framework)		59.9	7	
1	**Institutions**	**95.3**	**1**	●
1.1	Political environment	94.7	2	●
1.1.1	Political stability*	93.3	15	
1.1.2	Government effectiveness*	97.9	2	●
1.1.3	Press freedom*	92.9	5	●
1.2	Regulatory environment	99.7	1	●
1.2.1	Regulatory quality*	100.0	1	●
1.2.2	Rule of law*	98.9	3	●
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	
1.3	Business environment	91.6	5	●
1.3.1	Ease of starting a business*	92.4	18	
1.3.2	Ease of resolving insolvency*	92.3	10	
1.3.3	Ease of paying taxes*	90.0	11	
2	**Human capital & research**	**60.4**	**7**	●
2.1	Education	67.6	21	
2.1.1	Current expenditure on education, % GNI	8.1	6	●
2.1.2	Public expenditure/pupil, % GDP/cap	34.8	4	●
2.1.3	School life expectancy, years	13.2	68	○
2.1.4	PISA scales in reading, maths, & science	499.2	19	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	Tertiary education	42.3	38	
2.2.1	Tertiary enrolment, % gross	74.4	15	
2.2.2	Graduates in science & engineering, %	19.3	53	○
2.2.3	Tertiary inbound mobility, %	7.5	21	
2.2.4	Gross tertiary outbound enrolment, %	1.6	62	○
2.3	Research & development (R&D)	71.2	5	●
2.3.1	Researchers, headcounts/mn pop.	9,861.2	3	●
2.3.2	Gross expenditure on R&D, % GDP	3.1	6	●
2.3.3	QS university ranking, average score top 3*	68.0	13	
3	**Infrastructure**	**53.9**	**13**	
3.1	Information & communication technologies (ICTs)	73.3	14	
3.1.1	ICT access*	83.7	9	
3.1.2	ICT use*	68.6	9	
3.1.3	Government's online service*	85.6	13	
3.1.4	E-participation*	55.3	28	
3.2	General infrastructure	39.1	30	
3.2.1	Electricity output, kWh/cap	6,293.7	34	
3.2.2	Electricity consumption, kWh/cap	6,068.4	31	
3.2.3	Logistics performance*	75.5	5	●
3.2.4	Gross capital formation, % GDP	17.3	116	○
3.3	Ecological sustainability	49.2	17	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	10.3	13	
3.3.2	Environmental performance*	63.6	21	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	4.8	21	
4	**Market sophistication**	**74.6**	**7**	●
4.1	Credit	90.7	5	●
4.1.1	Ease of getting credit*	81.3	22	
4.1.2	Domestic credit to private sector, % GDP	208.4	1	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	53.0	12	
4.2.1	Ease of protecting investors*	65.2	36	
4.2.2	Market capitalization, % GDP	53.8	35	
4.2.3	Total value of stocks traded, % GDP	45.1	23	
4.2.4	Venture capital deals/tr PPP$ GDP	0.3	6	●
4.3	Trade & competition	80.1	38	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	73.7	27	
5	**Business sophistication**	**47.5**	**19**	
5.1	Knowledge workers	67.4	13	
5.1.1	Knowledge-intensive employment, %	34.0	20	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	2.1	7	
5.1.4	R&D financed by business, %	60.2	11	
5.1.5	GMAT mean score	557.1	33	
5.1.6	GMAT test takers/mn pop. 20–34	117.6	46	
5.2	Innovation linkages	45.3	20	
5.2.1	University/industry research collaboration†	65.3	20	
5.2.2	State of cluster development†	61.4	18	
5.2.3	R&D financed by abroad, %	8.7	41	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	14	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	1.7	14	
5.3	Knowledge absorption	29.9	55	
5.3.1	Royalty & license fees payments, % service imports	2.8	55	○
5.3.2	High-tech imports less re-imports, %	11.2	37	
5.3.3	Comm., computer & info. services imports, %	5.3	55	
5.3.4	FDI net inflows, % GDP	3.9	61	
6	**Knowledge & technology outputs**	**41.9**	**19**	
6.1	Knowledge creation	49.9	13	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	16.4	8	
6.1.2	PCT resident patent ap/bn PPP$ GDP	6.8	7	●
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.8	33	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	64.2	4	●
6.1.5	Citable documents H index	399.0	14	
6.2	Knowledge impact	43.9	38	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.5	73	○
6.2.2	New businesses/th pop. 15–64	4.6	23	
6.2.3	Computer software spending, % GDP	0.6	14	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.3	53	
6.2.5	High- & medium-high-tech manufactures, %	38.6	23	
6.3	Knowledge diffusion	36.0	32	
6.3.1	Royalty & license fees receipts, % service exports	4.1	16	
6.3.2	High-tech exports less re-exports, %	9.3	25	
6.3.3	Comm., computer & info. services exports, %	4.0	96	○
6.3.4	FDI net outflows, % GDP	4.1	17	
7	**Creative outputs**	**58.8**	**8**	●
7.1	Intangible assets	53.5	29	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	50.5	34	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	2.7	8	
7.1.3	ICT & business model creation†	72.7	16	
7.1.4	ICT & organizational model creation†	69.6	12	
7.2	Creative goods & services	62.1	5	●
7.2.1	Audio-visual & related services exports, %	0.6	20	
7.2.2	National feature films/mn pop. 15–69	10.9	12	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	24.5	16	
7.2.4	Printing & publishing manufactures, %	4.9	9	
7.2.5	Creative goods exports, %	3.0	26	
7.3	Online creativity	66.0	15	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	61.1	15	
7.3.2	Country-code TLDs/th pop. 15–69	78.5	4	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	6,310.1	26	
7.3.4	Video uploads on YouTube/pop. 15–69	87.8	11	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	10.3
GDP (US$ billions)	59.1
GDP per capita, PPP$	9,645.2
Income group	Upper-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**33.3**	**79**	
Innovation Output Sub-Index		31.6	69	
Innovation Input Sub-Index		35.0	93	
Innovation Efficiency Ratio		0.9	28	●
Global Innovation Index 2012 (based on GII 2012 framework)		30.9	86	
1	**Institutions**	**52.8**	**98**	
1.1	Political environment	54.3	73	
1.1.1	Political stability*	68.0	66	
1.1.2	Government effectiveness*	23.3	105	
1.1.3	Press freedom*	71.7	66	
1.2	Regulatory environment	49.6	117	○
1.2.1	Regulatory quality*	44.5	88	
1.2.2	Rule of law*	26.8	112	
1.2.3	Cost of redundancy dismissal, salary weeks	26.2	114	○
1.3	Business environment	54.6	102	
1.3.1	Ease of starting a business*	81.1	82	
1.3.2	Ease of resolving insolvency*	10.2	135	○
1.3.3	Ease of paying taxes*	72.5	55	●
2	**Human capital & research**	**20.3**	**108**	
2.1	Education	43.2	93	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	12.3	83	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	28.7	115	○
2.2	Tertiary education	17.8	110	
2.2.1	Tertiary enrolment, % gross	34.0	71	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.4	109	
2.3	Research & development (R&D)	0.0	123	○
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**30.5**	**77**	
3.1	Information & communication technologies (ICTs)	36.6	66	
3.1.1	ICT access*	33.7	95	
3.1.2	ICT use*	11.8	94	
3.1.3	Government's online service*	53.6	55	
3.1.4	E-participation*	47.4	34	●
3.2	General infrastructure	21.0	120	○
3.2.1	Electricity output, kWh/cap	1,602.4	83	
3.2.2	Electricity consumption, kWh/cap	1,442.2	84	
3.2.3	Logistics performance*	42.5	86	
3.2.4	Gross capital formation, % GDP	17.2	118	○
3.3	Ecological sustainability	33.9	56	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	10.0	14	●
3.3.2	Environmental performance*	52.4	69	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.5	84	
4	**Market sophistication**	**42.9**	**90**	
4.1	Credit	25.8	109	
4.1.1	Ease of getting credit*	56.3	80	
4.1.2	Domestic credit to private sector, % GDP	22.5	113	○
4.1.3	Microfinance gross loans, % GDP	1.2	35	●
4.2	Investment	25.8	71	
4.2.1	Ease of protecting investors*	51.5	90	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	77.1	68	
4.3.1	Applied tariff rate, weighted mean, %	6.1	91	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.4	50	●
4.3.3	Intensity of local competition†	66.7	56	
5	**Business sophistication**	**28.4**	**92**	
5.1	Knowledge workers	44.1	65	
5.1.1	Knowledge-intensive employment, %	13.7	87	○
5.1.2	Firms offering formal training, % firms	53.3	21	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	450.7	108	
5.1.6	GMAT test takers/mn pop. 20–34	49.7	82	
5.2	Innovation linkages	21.3	90	
5.2.1	University/industry research collaboration†	39.0	87	
5.2.2	State of cluster development†	43.7	70	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	105	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	19.7	106	
5.3.1	Royalty & license fees payments, % service imports	2.9	51	
5.3.2	High-tech imports less re-imports, %	5.2	102	○
5.3.3	Comm., computer & info. services imports, %	3.2	81	
5.3.4	FDI net inflows, % GDP	4.1	57	●
6	**Knowledge & technology outputs**	**16.0**	**120**	○
6.1	Knowledge creation	1.9	137	○
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	80	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.6	140	○
6.1.5	Citable documents H index	39.0	122	○
6.2	Knowledge impact	30.9	81	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.5	44	●
6.2.2	New businesses/th pop. 15–64	1.0	63	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.8	97	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	8.2	131	○
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	1.6	66	
6.3.3	Comm., computer & info. services exports, %	4.5	86	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**47.1**	**30**	●
7.1	Intangible assets	59.9	11	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	61.4	51	●
7.1.4	ICT & organizational model creation†	58.4	40	●
7.2	Creative goods & services	45.9	33	●
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	1.0	76	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	3.9	94	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	3.4	21	●
7.3	Online creativity	22.8	88	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.9	76	
7.3.2	Country-code TLDs/th pop. 15–69	16.7	83	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	414.1	94	
7.3.4	Video uploads on YouTube/pop. 15–69	69.1	78	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ecuador

Key indicators

Population (millions)	15.1
GDP (US$ billions)	70.8
GDP per capita, PPP$	8,841.5
Income group	Upper-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**32.8**	**83**	
Innovation Output Sub-Index		31.8	67	
Innovation Input Sub-Index		33.8	100	
Innovation Efficiency Ratio		0.9	21	●
Global Innovation Index 2012 (based on GII 2012 framework)		28.5	98	
1	**Institutions**	**43.3**	**131**	○
1.1	Political environment	45.7	102	
1.1.1	Political stability*	48.3	110	
1.1.2	Government effectiveness*	23.4	104	
1.1.3	Press freedom*	65.3	97	
1.2	Regulatory environment	36.0	134	○
1.2.1	Regulatory quality*	23.0	134	○
1.2.2	Rule of law*	16.5	131	○
1.2.3	Cost of redundancy dismissal, salary weeks	31.8	131	○
1.3	Business environment	48.3	123	
1.3.1	Ease of starting a business*	63.2	127	○
1.3.2	Ease of resolving insolvency*	19.7	121	
1.3.3	Ease of paying taxes*	61.9	95	
2	**Human capital & research**	**29.1**	**80**	
2.1	Education	63.7	32	●
2.1.1	Current expenditure on education, % GNI	4.7	53	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	10.9	33	●
2.2	Tertiary education	21.4	95	
2.2.1	Tertiary enrolment, % gross	39.8	62	
2.2.2	Graduates in science & engineering, %	12.8	87	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.8	83	
2.3	Research & development (R&D)	2.3	94	
2.3.1	Researchers, headcounts/mn pop.	186.6	80	
2.3.2	Gross expenditure on R&D, % GDP	0.3	72	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**31.8**	**70**	
3.1	Information & communication technologies (ICTs)	31.9	78	
3.1.1	ICT access*	41.6	76	
3.1.2	ICT use*	16.7	76	
3.1.3	Government's online service*	45.8	81	
3.1.4	E-participation*	23.7	59	
3.2	General infrastructure	28.0	78	
3.2.1	Electricity output, kWh/cap	1,222.4	91	
3.2.2	Electricity consumption, kWh/cap	1,055.0	90	
3.2.3	Logistics performance*	44.0	80	
3.2.4	Gross capital formation, % GDP	28.8	26	●
3.3	Ecological sustainability	35.5	46	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.6	26	●
3.3.2	Environmental performance*	60.6	30	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.9	64	
4	**Market sophistication**	**41.1**	**101**	
4.1	Credit	38.0	66	
4.1.1	Ease of getting credit*	56.3	80	
4.1.2	Domestic credit to private sector, % GDP	33.0	92	
4.1.3	Microfinance gross loans, % GDP	4.1	15	●
4.2	Investment	11.5	140	○
4.2.1	Ease of protecting investors*	41.9	116	
4.2.2	Market capitalization, % GDP	8.8	94	○
4.2.3	Total value of stocks traded, % GDP	0.2	96	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	73.8	90	
4.3.1	Applied tariff rate, weighted mean, %	6.0	88	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.3	42	
4.3.3	Intensity of local competition†	54.9	100	
5	**Business sophistication**	**23.8**	**117**	
5.1	Knowledge workers	41.8	72	
5.1.1	Knowledge-intensive employment, %	18.1	75	
5.1.2	Firms offering formal training, % firms	65.9	7	●
5.1.3	R&D performed by business, % GDP	0.0	73	
5.1.4	R&D financed by business, %	8.5	71	
5.1.5	GMAT mean score	484.8	91	
5.1.6	GMAT test takers/mn pop. 20–34	43.3	89	
5.2	Innovation linkages	14.7	125	○
5.2.1	University/industry research collaboration†	40.3	82	
5.2.2	State of cluster development†	41.4	77	
5.2.3	R&D financed by abroad, %	0.5	83	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	89	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	14.9	126	○
5.3.1	Royalty & license fees payments, % service imports	2.1	62	
5.3.2	High-tech imports less re-imports, %	9.5	57	
5.3.3	Comm., computer & info. services imports, %	0.6	133	○
5.3.4	FDI net inflows, % GDP	0.9	124	○
6	**Knowledge & technology outputs**	**20.4**	**99**	
6.1	Knowledge creation	4.0	119	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.0	113	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.3	46	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.2	50	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.7	129	○
6.1.5	Citable documents H index	78.0	75	
6.2	Knowledge impact	34.7	65	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.6	30	●
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.3	56	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	8.6	49	
6.2.5	High- & medium-high-tech manufactures, %	14.0	66	
6.3	Knowledge diffusion	14.3	128	○
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.3	101	
6.3.3	Comm., computer & info. services exports, %	10.2	39	●
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**43.3**	**42**	
7.1	Intangible assets	51.6	36	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	92.9	7	●
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	52.8	87	
7.1.4	ICT & organizational model creation†	50.1	82	
7.2	Creative goods & services	45.5	34	●
7.2.1	Audio-visual & related services exports, %	5.2	2	●
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	6.8	71	
7.2.4	Printing & publishing manufactures, %	1.6	62	
7.2.5	Creative goods exports, %	0.1	101	
7.3	Online creativity	24.4	80	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.8	77	
7.3.2	Country-code TLDs/th pop. 15–69	19.2	79	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	864.4	76	
7.3.4	Video uploads on YouTube/pop. 15–69	70.6	73	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	84.6
GDP (US$ billions)	255.0
GDP per capita, PPP$	6,557.4
Income group	Lower-middle income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**28.5**	**108**	
Innovation Output Sub-Index		23.1	112	
Innovation Input Sub-Index		33.8	101	
Innovation Efficiency Ratio		0.7	108	
Global Innovation Index 2012 (based on GII 2012 framework)		27.9	103	
1	**Institutions**	**43.9**	**130**	○
1.1	Political environment	35.9	133	○
1.1.1	Political stability*	34.6	125	○
1.1.2	Government effectiveness*	21.9	108	
1.1.3	Press freedom*	51.3	127	○
1.2	Regulatory environment	40.2	131	○
1.2.1	Regulatory quality*	40.9	97	
1.2.2	Rule of law*	35.9	83	
1.2.3	Cost of redundancy dismissal, salary weeks	36.8	134	○
1.3	Business environment	55.6	97	
1.3.1	Ease of starting a business*	88.6	42	●
1.3.2	Ease of resolving insolvency*	19.5	122	
1.3.3	Ease of paying taxes*	58.6	104	
2	**Human capital & research**	**28.3**	**81**	
2.1	Education	52.3	73	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	17.7	70	
2.1.3	School life expectancy, years	12.4	81	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	13.5	54	●
2.2	Tertiary education	19.8	103	
2.2.1	Tertiary enrolment, % gross	32.4	73	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	1.9	57	
2.2.4	Gross tertiary outbound enrolment, %	0.2	129	○
2.3	Research & development (R&D)	12.7	56	●
2.3.1	Researchers, headcounts/mn pop.	1,017.5	51	
2.3.2	Gross expenditure on R&D, % GDP	0.2	82	
2.3.3	QS university ranking, average score top 3*	26.0	45	●
3	**Infrastructure**	**33.7**	**66**	
3.1	Information & communication technologies (ICTs)	47.4	46	●
3.1.1	ICT access*	41.8	74	
3.1.2	ICT use*	19.3	74	
3.1.3	Government's online service*	60.1	42	●
3.1.4	E-participation*	68.4	15	●
3.2	General infrastructure	23.6	110	
3.2.1	Electricity output, kWh/cap	1,809.6	81	
3.2.2	Electricity consumption, kWh/cap	1,607.9	78	
3.2.3	Logistics performance*	49.5	56	●
3.2.4	Gross capital formation, % GDP	17.2	117	
3.3	Ecological sustainability	30.1	68	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.1	66	
3.3.2	Environmental performance*	55.2	58	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.0	59	
4	**Market sophistication**	**35.8**	**125**	○
4.1	Credit	23.4	117	
4.1.1	Ease of getting credit*	56.3	80	
4.1.2	Domestic credit to private sector, % GDP	31.3	97	
4.1.3	Microfinance gross loans, % GDP	0.1	71	
4.2	Investment	20.7	95	
4.2.1	Ease of protecting investors*	54.4	77	
4.2.2	Market capitalization, % GDP	21.2	67	
4.2.3	Total value of stocks traded, % GDP	9.6	43	●
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	
4.3	Trade & competition	63.2	117	
4.3.1	Applied tariff rate, weighted mean, %	8.1	107	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.8	94	
4.3.3	Intensity of local competition†	50.4	118	○
5	**Business sophistication**	**27.4**	**99**	
5.1	Knowledge workers	43.5	67	
5.1.1	Knowledge-intensive employment, %	30.3	34	●
5.1.2	Firms offering formal training, % firms	21.7	85	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	477.7	93	
5.1.6	GMAT test takers/mn pop. 20–34	42.4	91	
5.2	Innovation linkages	25.1	74	
5.2.1	University/industry research collaboration†	28.1	122	○
5.2.2	State of cluster development†	41.3	78	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	32	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	13.6	132	○
5.3.1	Royalty & license fees payments, % service imports	1.5	69	
5.3.2	High-tech imports less re-imports, %	5.3	100	
5.3.3	Comm., computer & info. services imports, %	3.4	76	
5.3.4	FDI net inflows, % GDP	–0.2	139	○
6	**Knowledge & technology outputs**	**18.0**	**113**	
6.1	Knowledge creation	10.4	69	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.2	63	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	73	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	12.5	66	
6.1.5	Citable documents H index	122.0	48	●
6.2	Knowledge impact	21.0	114	
6.2.1	Growth rate of PPP$ GDP/worker, %	–0.7	107	○
6.2.2	New businesses/th pop. 15–64	0.1	95	○
6.2.3	Computer software spending, % GDP	0.2	67	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	4.0	70	
6.2.5	High- & medium-high-tech manufactures, %	19.9	53	
6.3	Knowledge diffusion	18.9	108	
6.3.1	Royalty & license fees receipts, % service exports	0.6	48	●
6.3.2	High-tech exports less re-exports, %	0.3	102	
6.3.3	Comm., computer & info. services exports, %	4.2	90	
6.3.4	FDI net outflows, % GDP	0.3	70	
7	**Creative outputs**	**28.2**	**114**	
7.1	Intangible assets	33.9	106	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.0	60	
7.1.3	ICT & business model creation†	50.2	96	
7.1.4	ICT & organizational model creation†	50.8	79	
7.2	Creative goods & services	28.2	92	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	0.5	89	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	8.0	66	
7.2.4	Printing & publishing manufactures, %	0.8	83	○
7.2.5	Creative goods exports, %	0.9	53	
7.3	Online creativity	17.0	108	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.9	90	
7.3.2	Country-code TLDs/th pop. 15–69	1.5	128	○
7.3.3	Wikipedia monthly edits/mn pop. 15–69	267.1	104	
7.3.4	Video uploads on YouTube/pop. 15–69	63.3	91	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

El Salvador

Key indicators

Population (millions)	6.4
GDP (US$ billions)	24.0
GDP per capita, PPP$	7,734.2
Income group	Lower-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**31.3**	**88**	
Innovation Output Sub-Index		27.0	96	
Innovation Input Sub-Index		35.6	88	
Innovation Efficiency Ratio		0.8	80	
Global Innovation Index 2012 (based on GII 2012 framework)		29.5	93	
1	**Institutions**	**57.9**	**78**	
1.1	Political environment	60.5	58	
1.1.1	Political stability*	69.0	64	
1.1.2	Government effectiveness*	35.5	75	
1.1.3	Press freedom*	77.1	34	●
1.2	Regulatory environment	57.5	99	
1.2.1	Regulatory quality*	62.3	50	
1.2.2	Rule of law*	27.6	110	
1.2.3	Cost of redundancy dismissal, salary weeks	22.9	105	
1.3	Business environment	55.7	95	
1.3.1	Ease of starting a business*	78.5	92	
1.3.2	Ease of resolving insolvency*	34.8	79	
1.3.3	Ease of paying taxes*	53.9	116	
2	**Human capital & research**	**19.1**	**112**	
2.1	Education	33.2	120	
2.1.1	Current expenditure on education, % GNI	3.2	88	
2.1.2	Public expenditure/pupil, % GDP/cap	11.3	99	
2.1.3	School life expectancy, years	12.2	84	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	24.3	104	
2.2	Tertiary education	23.4	86	
2.2.1	Tertiary enrolment, % gross	24.6	83	
2.2.2	Graduates in science & engineering, %	23.1	32	●
2.2.3	Tertiary inbound mobility, %	0.5	95	
2.2.4	Gross tertiary outbound enrolment, %	0.4	110	
2.3	Research & development (R&D)	0.7	112	
2.3.1	Researchers, headcounts/mn pop.	83.3	96	
2.3.2	Gross expenditure on R&D, % GDP	0.1	99	○
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**30.7**	**76**	
3.1	Information & communication technologies (ICTs)	43.2	53	
3.1.1	ICT access*	37.2	89	
3.1.2	ICT use*	13.1	89	
3.1.3	Government's online service*	67.3	32	●
3.1.4	E-participation*	55.3	28	●
3.2	General infrastructure	17.6	135	○
3.2.1	Electricity output, kWh/cap	966.1	94	
3.2.2	Electricity consumption, kWh/cap	855.2	97	
3.2.3	Logistics performance*	40.0	93	
3.2.4	Gross capital formation, % GDP	14.5	128	
3.3	Ecological sustainability	31.4	63	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.8	24	●
3.3.2	Environmental performance*	52.1	72	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	104	
4	**Market sophistication**	**41.3**	**98**	
4.1	Credit	34.5	79	
4.1.1	Ease of getting credit*	68.8	51	
4.1.2	Domestic credit to private sector, % GDP	39.6	81	
4.1.3	Microfinance gross loans, % GDP	1.6	28	●
4.2	Investment	10.4	141	○
4.2.1	Ease of protecting investors*	30.0	139	○
4.2.2	Market capitalization, % GDP	23.7	64	
4.2.3	Total value of stocks traded, % GDP	0.3	89	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	79.0	46	●
4.3.1	Applied tariff rate, weighted mean, %	5.5	85	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	16	●
4.3.3	Intensity of local competition†	65.4	64	
5	**Business sophistication**	**29.1**	**87**	
5.1	Knowledge workers	40.4	82	
5.1.1	Knowledge-intensive employment, %	10.0	94	
5.1.2	Firms offering formal training, % firms	61.0	13	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	0.7	83	○
5.1.5	GMAT mean score	485.7	90	
5.1.6	GMAT test takers/mn pop. 20–34	55.4	77	
5.2	Innovation linkages	19.5	106	
5.2.1	University/industry research collaboration†	38.0	90	
5.2.2	State of cluster development†	38.7	94	
5.2.3	R&D financed by abroad, %	11.3	35	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	57	
5.3	Knowledge absorption	27.5	66	
5.3.1	Royalty & license fees payments, % service imports	3.6	41	●
5.3.2	High-tech imports less re-imports, %	7.7	74	
5.3.3	Comm., computer & info. services imports, %	7.8	26	●
5.3.4	FDI net inflows, % GDP	1.1	120	
6	**Knowledge & technology outputs**	**13.0**	**129**	
6.1	Knowledge creation	1.4	140	○
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.9	139	○
6.1.5	Citable documents H index	34.0	128	○
6.2	Knowledge impact	5.7	132	○
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	0.5	88	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	4.1	69	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	26.1	62	
6.3.1	Royalty & license fees receipts, % service exports	0.0	98	
6.3.2	High-tech exports less re-exports, %	4.2	43	
6.3.3	Comm., computer & info. services exports, %	15.2	24	●
6.3.4	FDI net outflows, % GDP	0.0	103	
7	**Creative outputs**	**41.0**	**56**	
7.1	Intangible assets	52.5	34	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	53.2	86	
7.1.4	ICT & organizational model creation†	51.8	75	
7.2	Creative goods & services	37.7	58	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	0.3	97	○
7.2.3	Paid-for dailies, circulation, % pop. 15–69	7.3	69	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	1.2	45	
7.3	Online creativity	21.2	93	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.6	94	
7.3.2	Country-code TLDs/th pop. 15–69	12.8	91	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	618.9	85	
7.3.4	Video uploads on YouTube/pop. 15–69	67.0	83	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Estonia

Key indicators

Population (millions)	1.4
GDP (US$ billions)	21.4
GDP per capita, PPP$	21,226.6
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**50.6**	**25**	
Innovation Output Sub-Index		45.5	21	
Innovation Input Sub-Index		55.7	25	
Innovation Efficiency Ratio		0.8	51	
Global Innovation Index 2012 (based on GII 2012 framework)		55.3	19	
1	**Institutions**	**78.2**	**26**	
1.1	Political environment	80.9	21	
1.1.1	Political stability*	80.6	39	
1.1.2	Government effectiveness*	71.4	25	
1.1.3	Press freedom*	90.7	9	●
1.2	Regulatory environment	86.3	23	
1.2.1	Regulatory quality*	86.0	19	
1.2.2	Rule of law*	78.9	25	
1.2.3	Cost of redundancy dismissal, salary weeks	12.9	55	
1.3	Business environment	67.3	58	
1.3.1	Ease of starting a business*	90.4	29	
1.3.2	Ease of resolving insolvency*	41.4	64	
1.3.3	Ease of paying taxes*	70.1	66	
2	**Human capital & research**	**47.2**	**28**	
2.1	Education	67.2	23	
2.1.1	Current expenditure on education, % GNI	5.4	33	
2.1.2	Public expenditure/pupil, % GDP/cap	27.2	17	
2.1.3	School life expectancy, years	16.0	20	
2.1.4	PISA scales in reading, maths, & science	513.6	12	
2.1.5	Pupil-teacher ratio, secondary	8.8	14	
2.2	Tertiary education	39.6	48	
2.2.1	Tertiary enrolment, % gross	64.3	27	
2.2.2	Graduates in science & engineering, %	20.6	43	
2.2.3	Tertiary inbound mobility, %	1.8	59	○
2.2.4	Gross tertiary outbound enrolment, %	3.7	25	
2.3	Research & development (R&D)	34.9	27	
2.3.1	Researchers, headcounts/mn pop.	5,585.5	15	
2.3.2	Gross expenditure on R&D, % GDP	2.4	14	
2.3.3	QS university ranking, average score top 3*	8.2	58	
3	**Infrastructure**	**55.2**	**11**	●
3.1	Information & communication technologies (ICTs)	70.2	17	
3.1.1	ICT access*	72.0	26	
3.1.2	ICT use*	50.2	26	
3.1.3	Government's online service*	82.4	18	
3.1.4	E-participation*	76.3	8	●
3.2	General infrastructure	37.0	38	
3.2.1	Electricity output, kWh/cap	9,621.6	15	
3.2.2	Electricity consumption, kWh/cap	6,182.1	30	
3.2.3	Logistics performance*	46.5	65	
3.2.4	Gross capital formation, % GDP	25.2	42	
3.3	Ecological sustainability	58.3	9	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.3	93	○
3.3.2	Environmental performance*	56.1	52	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	13.1	1	●
4	**Market sophistication**	**51.0**	**42**	
4.1	Credit	57.1	30	
4.1.1	Ease of getting credit*	75.0	38	
4.1.2	Domestic credit to private sector, % GDP	84.7	40	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	15.5	125	○
4.2.1	Ease of protecting investors*	57.8	64	
4.2.2	Market capitalization, % GDP	7.3	96	○
4.2.3	Total value of stocks traded, % GDP	1.1	72	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	80.6	34	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	75.0	23	
5	**Business sophistication**	**46.8**	**23**	
5.1	Knowledge workers	70.0	9	●
5.1.1	Knowledge-intensive employment, %	35.2	18	
5.1.2	Firms offering formal training, % firms	69.3	5	●
5.1.3	R&D performed by business, % GDP	1.5	12	
5.1.4	R&D financed by business, %	53.2	16	
5.1.5	GMAT mean score	574.7	19	
5.1.6	GMAT test takers/mn pop. 20–34	217.7	28	
5.2	Innovation linkages	33.4	46	
5.2.1	University/industry research collaboration†	56.9	32	
5.2.2	State of cluster development†	46.0	62	
5.2.3	R&D financed by abroad, %	12.0	33	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	33	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.3	32	
5.3	Knowledge absorption	37.0	30	
5.3.1	Royalty & license fees payments, % service imports	2.0	63	
5.3.2	High-tech imports less re-imports, %	13.0	29	
5.3.3	Comm., computer & info. services imports, %	9.9	9	●
5.3.4	FDI net inflows, % GDP	2.0	93	○
6	**Knowledge & technology outputs**	**33.7**	**40**	
6.1	Knowledge creation	30.2	32	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	3.4	39	
6.1.2	PCT resident patent ap/bn PPP$ GDP	1.2	30	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	3.0	11	
6.1.4	Scientific & technical articles/bn PPP$ GDP	50.2	9	●
6.1.5	Citable documents H index	119.0	51	
6.2	Knowledge impact	50.9	18	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.0	59	
6.2.2	New businesses/th pop. 15–64	8.1	11	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	30.6	13	
6.2.5	High- & medium-high-tech manufactures, %	19.7	54	○
6.3	Knowledge diffusion	18.3	112	○
6.3.1	Royalty & license fees receipts, % service exports	0.4	59	○
6.3.2	High-tech exports less re-exports, %	12.9	21	
6.3.3	Comm., computer & info. services exports, %	8.8	49	
6.3.4	FDI net outflows, % GDP	–6.8	124	○
7	**Creative outputs**	**57.3**	**10**	●
7.1	Intangible assets	56.9	18	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	76.3	17	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	2.4	11	
7.1.3	ICT & business model creation†	75.8	6	●
7.1.4	ICT & organizational model creation†	70.2	11	●
7.2	Creative goods & services	48.7	22	
7.2.1	Audio-visual & related services exports, %	0.3	34	
7.2.2	National feature films/mn pop. 15–69	13.5	7	●
7.2.3	Paid-for dailies, circulation, % pop. 15–69	21.9	19	
7.2.4	Printing & publishing manufactures, %	2.8	21	
7.2.5	Creative goods exports, %	1.5	42	
7.3	Online creativity	66.8	14	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	23.0	32	
7.3.2	Country-code TLDs/th pop. 15–69	58.8	22	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	16,734.4	2	●
7.3.4	Video uploads on YouTube/pop. 15–69	88.1	10	●

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ethiopia

Key indicators

Population (millions)	86.9
GDP (US$ billions)	41.9
GDP per capita, PPP$	1,159.9
Income group	Low income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**24.8**	**129**	
Innovation Output Sub-Index		21.1	126	
Innovation Input Sub-Index		28.5	126	
Innovation Efficiency Ratio		0.7	87	
Global Innovation Index 2012 (based on GII 2012 framework)		23.3	131	
1	**Institutions**	**46.6**	**121**	
1.1	Political environment	37.9	128	
1.1.1	Political stability*	26.1	137	
1.1.2	Government effectiveness*	27.3	91	
1.1.3	Press freedom*	60.4	110	
1.2	Regulatory environment	51.7	112	
1.2.1	Regulatory quality*	23.8	131	
1.2.2	Rule of law*	27.9	108	
1.2.3	Cost of redundancy dismissal, salary weeks	19.1	90	
1.3	Business environment	50.2	114	
1.3.1	Ease of starting a business*	55.2	134	
1.3.2	Ease of resolving insolvency*	28.2	105	
1.3.3	Ease of paying taxes*	67.2	80	
2	**Human capital & research**	**12.2**	**135**	
2.1	Education	20.7	136	
2.1.1	Current expenditure on education, % GNI	2.9	97	
2.1.2	Public expenditure/pupil, % GDP/cap	20.3	53	●
2.1.3	School life expectancy, years	9.1	119	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	40.3	127	
2.2	Tertiary education	14.1	115	
2.2.1	Tertiary enrolment, % gross	7.6	117	
2.2.2	Graduates in science & engineering, %	15.2	79	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.1	140	○
2.3	Research & development (R&D)	1.9	97	
2.3.1	Researchers, headcounts/mn pop.	87.8	95	
2.3.2	Gross expenditure on R&D, % GDP	0.2	75	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**22.0**	**113**	
3.1	Information & communication technologies (ICTs)	24.6	98	
3.1.1	ICT access*	16.4	135	○
3.1.2	ICT use*	0.8	135	○
3.1.3	Government's online service*	47.1	77	
3.1.4	E-participation*	34.2	44	●
3.2	General infrastructure	20.4	124	
3.2.1	Electricity output, kWh/cap	60.0	123	
3.2.2	Electricity consumption, kWh/cap	54.3	125	○
3.2.3	Logistics performance*	31.0	133	○
3.2.4	Gross capital formation, % GDP	26.2	36	●
3.3	Ecological sustainability	21.1	111	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	2.3	117	
3.3.2	Environmental performance*	52.7	67	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	117	
4	**Market sophistication**	**39.3**	**110**	
4.1	Credit	23.7	114	
4.1.1	Ease of getting credit*	50.0	93	
4.1.2	Domestic credit to private sector, % GDP	17.8	125	
4.1.3	Microfinance gross loans, % GDP	1.4	32	●
4.2	Investment	36.8	33	●
4.2.1	Ease of protecting investors*	44.8	108	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	45	●
4.3	Trade & competition	57.5	130	
4.3.1	Applied tariff rate, weighted mean, %	10.5	124	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.6	88	
4.3.3	Intensity of local competition†	43.2	133	
5	**Business sophistication**	**22.2**	**123**	
5.1	Knowledge workers	24.6	128	
5.1.1	Knowledge-intensive employment, %	12.6	90	
5.1.2	Firms offering formal training, % firms	38.2	46	●
5.1.3	R&D performed by business, % GDP	0.0	69	
5.1.4	R&D financed by business, %	10.8	69	
5.1.5	GMAT mean score	437.4	115	
5.1.6	GMAT test takers/mn pop. 20–34	3.5	136	
5.2	Innovation linkages	27.9	62	●
5.2.1	University/industry research collaboration†	36.8	99	
5.2.2	State of cluster development†	35.1	112	
5.2.3	R&D financed by abroad, %	30.0	10	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	106	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	14.3	127	
5.3.1	Royalty & license fees payments, % service imports	0.0	121	
5.3.2	High-tech imports less re-imports, %	5.2	101	
5.3.3	Comm., computer & info. services imports, %	2.9	89	
5.3.4	FDI net inflows, % GDP	2.1	89	
6	**Knowledge & technology outputs**	**14.8**	**123**	
6.1	Knowledge creation	7.5	83	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.2	96	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.2	28	●
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.4	90	
6.1.5	Citable documents H index	68.0	86	
6.2	Knowledge impact	29.6	86	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.3	24	●
6.2.2	New businesses/th pop. 15–64	0.0	105	○
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.3	132	
6.2.5	High- & medium-high-tech manufactures, %	10.9	74	
6.3	Knowledge diffusion	3.8	135	
6.3.1	Royalty & license fees receipts, % service exports	0.0	106	
6.3.2	High-tech exports less re-exports, %	0.2	104	
6.3.3	Comm., computer & info. services exports, %	4.1	93	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**27.3**	**117**	
7.1	Intangible assets	42.0	76	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	43.3	122	
7.1.4	ICT & organizational model creation†	40.7	118	
7.2	Creative goods & services	21.4	111	
7.2.1	Audio-visual & related services exports, %	0.0	75	○
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	0.2	133	
7.2.4	Printing & publishing manufactures, %	2.7	24	●
7.2.5	Creative goods exports, %	0.1	95	
7.3	Online creativity	3.9	142	○
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.1	136	
7.3.2	Country-code TLDs/th pop. 15–69	0.3	133	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	6.9	135	○
7.3.4	Video uploads on YouTube/pop. 15–69	15.2	141	○

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	0.9
GDP (US$ billions)	3.9
GDP per capita, PPP$	4,791.2
Income group	Lower-middle income
Region	South East Asia and Oceania

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**30.5**	**97**	
Innovation Output Sub-Index		20.6	129	○
Innovation Input Sub-Index		40.3	72	
Innovation Efficiency Ratio		0.5	137	○
Global Innovation Index 2012 (based on GII 2012 framework)		27.9	101	
1	**Institutions**	**58.6**	**75**	
1.1	Political environment	50.9	84	
1.1.1	Political stability*	66.6	69	
1.1.2	Government effectiveness*	18.8	117	
1.1.3	Press freedom*	67.3	85	
1.2	Regulatory environment	63.1	80	
1.2.1	Regulatory quality*	36.4	109	
1.2.2	Rule of law*	22.8	122	
1.2.3	Cost of redundancy dismissal, salary weeks	9.7	35	●
1.3	Business environment	61.9	77	
1.3.1	Ease of starting a business*	67.3	120	
1.3.2	Ease of resolving insolvency*	48.4	44	●
1.3.3	Ease of paying taxes*	69.9	68	
2	**Human capital & research**	**35.0**	**57**	
2.1	Education	46.5	86	
2.1.1	Current expenditure on education, % GNI	4.2	66	
2.1.2	Public expenditure/pupil, % GDP/cap	21.3	49	
2.1.3	School life expectancy, years	15.7	24	●
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	26.5	111	○
2.2	Tertiary education	58.4	5	●
2.2.1	Tertiary enrolment, % gross	61.8	31	●
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	32.9	4	●
2.2.4	Gross tertiary outbound enrolment, %	2.1	51	
2.3	Research & development (R&D)	0.0	123	○
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**17.3**	**134**	○
3.1	Information & communication technologies (ICTs)	24.2	99	
3.1.1	ICT access*	38.5	85	
3.1.2	ICT use*	14.6	85	
3.1.3	Government's online service*	36.0	104	
3.1.4	E-participation*	7.9	99	
3.2	General infrastructure	24.1	107	
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Logistics performance*	35.5	118	○
3.2.4	Gross capital formation, % GDP	16.7	120	
3.3	Ecological sustainability	3.6	129	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.5	81	
4	**Market sophistication**	**40.1**	**106**	
4.1	Credit	32.3	92	
4.1.1	Ease of getting credit*	62.5	68	
4.1.2	Domestic credit to private sector, % GDP	74.6	44	●
4.1.3	Microfinance gross loans, % GDP	0.0	84	○
4.2	Investment	20.0	99	
4.2.1	Ease of protecting investors*	63.0	39	●
4.2.2	Market capitalization, % GDP	35.9	48	
4.2.3	Total value of stocks traded, % GDP	0.2	95	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	68.0	111	
4.3.1	Applied tariff rate, weighted mean, %	11.0	128	○
4.3.2	Non-agricultural mkt access weighted tariff, %	0.7	60	
4.3.3	Intensity of local competition†	n/a	n/a	
5	**Business sophistication**	**50.4**	**12**	●
5.1	Knowledge workers	56.2	39	●
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	61.0	12	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	444.0	112	
5.1.6	GMAT test takers/mn pop. 20–34	22.6	112	
5.2	Innovation linkages	52.9	6	●
5.2.1	University/industry research collaboration†	n/a	n/a	
5.2.2	State of cluster development†	n/a	n/a	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	11	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	n/a	n/a	
5.3	Knowledge absorption	42.2	15	●
5.3.1	Royalty & license fees payments, % service imports	0.2	115	○
5.3.2	High-tech imports less re-imports, %	5.1	104	
5.3.3	Comm., computer & info. services imports, %	16.1	1	●
5.3.4	FDI net inflows, % GDP	5.4	37	●
6	**Knowledge & technology outputs**	**11.7**	**132**	○
6.1	Knowledge creation	19.1	48	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	23.2	39	●
6.1.5	Citable documents H index	36.0	126	○
6.2	Knowledge impact	5.8	130	○
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.2	94	
6.2.5	High- & medium-high-tech manufactures, %	5.9	83	
6.3	Knowledge diffusion	14.0	129	○
6.3.1	Royalty & license fees receipts, % service exports	0.1	90	
6.3.2	High-tech exports less re-exports, %	0.9	77	
6.3.3	Comm., computer & info. services exports, %	1.3	134	○
6.3.4	FDI net outflows, % GDP	0.2	75	
7	**Creative outputs**	**29.5**	**109**	
7.1	Intangible assets	n/a	n/a	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	n/a	n/a	
7.1.4	ICT & organizational model creation†	n/a	n/a	
7.2	Creative goods & services	32.8	77	
7.2.1	Audio-visual & related services exports, %	0.1	45	
7.2.2	National feature films/mn pop. 15–69	1.7	62	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	6.9	70	
7.2.4	Printing & publishing manufactures, %	2.2	35	
7.2.5	Creative goods exports, %	0.8	60	
7.3	Online creativity	26.3	72	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.1	99	
7.3.2	Country-code TLDs/th pop. 15–69	28.0	61	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,671.4	56	
7.3.4	Video uploads on YouTube/pop. 15–69	66.2	84	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Finland

Key indicators

Population (millions)	5.7
GDP (US$ billions)	247.2
GDP per capita, PPP$	36,458.5
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**59.5**	**6**	
	Innovation Output Sub-Index	52.4	8	
	Innovation Input Sub-Index	66.7	6	
	Innovation Efficiency Ratio	0.8	67	○
	Global Innovation Index 2012 (based on GII 2012 framework)	61.8	4	
1	**Institutions**	**95.3**	**2**	●
1.1	Political environment	97.9	1	●
1.1.1	Political stability*	100.0	1	●
1.1.2	Government effectiveness*	100.0	1	●
1.1.3	Press freedom*	93.6	1	●
1.2	Regulatory environment	96.8	6	
1.2.1	Regulatory quality*	95.9	9	
1.2.2	Rule of law*	100.0	1	●
1.2.3	Cost of redundancy dismissal, salary weeks	10.1	39	
1.3	Business environment	91.2	8	
1.3.1	Ease of starting a business*	93.2	15	
1.3.2	Ease of resolving insolvency*	95.1	5	
1.3.3	Ease of paying taxes*	85.3	21	
2	**Human capital & research**	**67.4**	**1**	●
2.1	Education	73.0	5	
2.1.1	Current expenditure on education, % GNI	6.3	17	
2.1.2	Public expenditure/pupil, % GDP/cap	29.6	8	
2.1.3	School life expectancy, years	16.9	9	
2.1.4	PISA scales in reading, maths, & science	543.5	3	
2.1.5	Pupil-teacher ratio, secondary	9.6	20	
2.2	Tertiary education	55.0	10	
2.2.1	Tertiary enrolment, % gross	93.7	3	●
2.2.2	Graduates in science & engineering, %	31.8	9	
2.2.3	Tertiary inbound mobility, %	4.6	34	
2.2.4	Gross tertiary outbound enrolment, %	2.3	46	
2.3	Research & development (R&D)	74.2	4	●
2.3.1	Researchers, headcounts/mn pop.	10,655.8	2	●
2.3.2	Gross expenditure on R&D, % GDP	3.8	2	●
2.3.3	QS university ranking, average score top 3*	55.0	18	
3	**Infrastructure**	**57.5**	**7**	
3.1	Information & communication technologies (ICTs)	74.2	12	
3.1.1	ICT access*	77.4	17	
3.1.2	ICT use*	57.6	17	
3.1.3	Government's online service*	88.2	7	
3.1.4	E-participation*	73.7	11	
3.2	General infrastructure	54.1	4	●
3.2.1	Electricity output, kWh/cap	13,721.3	8	
3.2.2	Electricity consumption, kWh/cap	15,795.3	4	
3.2.3	Logistics performance*	76.3	3	●
3.2.4	Gross capital formation, % GDP	20.3	87	○
3.3	Ecological sustainability	44.2	23	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.1	82	○
3.3.2	Environmental performance*	64.4	19	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	6.0	20	
4	**Market sophistication**	**63.2**	**19**	
4.1	Credit	60.1	27	
4.1.1	Ease of getting credit*	75.0	38	
4.1.2	Domestic credit to private sector, % GDP	96.7	33	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	52.4	14	
4.2.1	Ease of protecting investors*	58.1	60	○
4.2.2	Market capitalization, % GDP	54.4	34	
4.2.3	Total value of stocks traded, % GDP	66.3	16	
4.2.4	Venture capital deals/tr PPP$ GDP	0.2	8	
4.3	Trade & competition	77.1	66	○
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	64.5	68	○
5	**Business sophistication**	**50.0**	**14**	
5.1	Knowledge workers	71.7	7	
5.1.1	Knowledge-intensive employment, %	35.1	19	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	2.7	3	
5.1.4	R&D financed by business, %	67.0	6	
5.1.5	GMAT mean score	517.1	61	
5.1.6	GMAT test takers/mn pop. 20–34	250.9	25	
5.2	Innovation linkages	50.6	10	
5.2.1	University/industry research collaboration†	76.7	4	
5.2.2	State of cluster development†	71.1	1	●
5.2.3	R&D financed by abroad, %	6.5	51	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	23	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	5.4	3	●
5.3	Knowledge absorption	27.6	65	○
5.3.1	Royalty & license fees payments, % service imports	3.4	43	
5.3.2	High-tech imports less re-imports, %	10.0	49	
5.3.3	Comm., computer & info. services imports, %	8.8	17	
5.3.4	FDI net inflows, % GDP	–2.2	141	○
6	**Knowledge & technology outputs**	**50.8**	**9**	
6.1	Knowledge creation	53.0	10	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	16.6	6	
6.1.2	PCT resident patent ap/bn PPP$ GDP	11.9	2	●
6.1.3	Domestic res utility model ap/bn PPP$ GDP	2.4	16	
6.1.4	Scientific & technical articles/bn PPP$ GDP	52.1	8	
6.1.5	Citable documents H index	352.0	18	
6.2	Knowledge impact	45.3	32	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.0	58	○
6.2.2	New businesses/th pop. 15–64	3.6	33	
6.2.3	Computer software spending, % GDP	0.6	17	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	11.7	43	
6.2.5	High- & medium-high-tech manufactures, %	41.3	19	
6.3	Knowledge diffusion	55.3	6	
6.3.1	Royalty & license fees receipts, % service exports	11.1	7	
6.3.2	High-tech exports less re-exports, %	7.5	29	
6.3.3	Comm., computer & info. services exports, %	23.9	10	
6.3.4	FDI net outflows, % GDP	2.0	30	
7	**Creative outputs**	**53.9**	**15**	
7.1	Intangible assets	55.0	23	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	57.1	31	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	1.9	17	
7.1.3	ICT & business model creation†	81.4	1	●
7.1.4	ICT & organizational model creation†	75.9	2	●
7.2	Creative goods & services	41.3	48	
7.2.1	Audio-visual & related services exports, %	0.0	66	○
7.2.2	National feature films/mn pop. 15–69	11.0	11	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	49.9	4	●
7.2.4	Printing & publishing manufactures, %	1.6	61	○
7.2.5	Creative goods exports, %	1.1	50	
7.3	Online creativity	64.3	17	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	25.1	30	
7.3.2	Country-code TLDs/th pop. 15–69	60.3	20	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	13,874.5	5	
7.3.4	Video uploads on YouTube/pop. 15–69	91.1	5	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	67.0
GDP (US$ billions)	2,580.4
GDP per capita, PPP$	35,519.6
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**52.8**	**20**	
Innovation Output Sub-Index		46.6	17	
Innovation Input Sub-Index		59.0	23	
Innovation Efficiency Ratio		0.8	63	
Global Innovation Index 2012 (based on GII 2012 framework)		51.8	24	
1	**Institutions**	**79.0**	**24**	
1.1	Political environment	78.4	28	
1.1.1	Political stability*	81.1	37	
1.1.2	Government effectiveness*	75.8	22	
1.1.3	Press freedom*	78.4	33	
1.2	Regulatory environment	87.6	22	
1.2.1	Regulatory quality*	78.5	26	
1.2.2	Rule of law*	87.5	19	
1.2.3	Cost of redundancy dismissal, salary weeks	11.8	52	
1.3	Business environment	70.9	42	
1.3.1	Ease of starting a business*	91.5	22	
1.3.2	Ease of resolving insolvency*	51.8	39	
1.3.3	Ease of paying taxes*	69.3	72	
2	**Human capital & research**	**54.6**	**18**	
2.1	Education	63.4	34	
2.1.1	Current expenditure on education, % GNI	5.3	35	
2.1.2	Public expenditure/pupil, % GDP/cap	25.8	24	
2.1.3	School life expectancy, years	16.3	16	
2.1.4	PISA scales in reading, maths, & science	496.9	22	
2.1.5	Pupil-teacher ratio, secondary	12.7	51	
2.2	Tertiary education	45.7	25	
2.2.1	Tertiary enrolment, % gross	56.7	42	
2.2.2	Graduates in science & engineering, %	26.1	18	
2.2.3	Tertiary inbound mobility, %	11.6	15	
2.2.4	Gross tertiary outbound enrolment, %	1.4	67	
2.3	Research & development (R&D)	54.6	13	
2.3.1	Researchers, headcounts/mn pop.	5,081.4	18	
2.3.2	Gross expenditure on R&D, % GDP	2.2	15	
2.3.3	QS university ranking, average score top 3*	74.1	10	●
3	**Infrastructure**	**52.4**	**18**	
3.1	Information & communication technologies (ICTs)	71.5	16	
3.1.1	ICT access*	79.2	13	
3.1.2	ICT use*	61.2	13	
3.1.3	Government's online service*	87.6	8	●
3.1.4	E-participation*	57.9	25	
3.2	General infrastructure	42.1	26	
3.2.1	Electricity output, kWh/cap	8,575.3	18	
3.2.2	Electricity consumption, kWh/cap	7,240.3	22	
3.2.3	Logistics performance*	71.3	12	
3.2.4	Gross capital formation, % GDP	20.2	90	○
3.3	Ecological sustainability	43.7	24	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.8	42	
3.3.2	Environmental performance*	69.0	6	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.5	29	
4	**Market sophistication**	**63.1**	**20**	
4.1	Credit	61.7	24	
4.1.1	Ease of getting credit*	68.8	51	
4.1.2	Domestic credit to private sector, % GDP	116.2	24	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	47.1	19	
4.2.1	Ease of protecting investors*	53.7	79	○
4.2.2	Market capitalization, % GDP	56.6	32	
4.2.3	Total value of stocks traded, % GDP	53.2	19	
4.2.4	Venture capital deals/tr PPP$ GDP	0.1	11	●
4.3	Trade & competition	80.4	36	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	74.6	26	
5	**Business sophistication**	**46.1**	**25**	
5.1	Knowledge workers	71.3	8	●
5.1.1	Knowledge-intensive employment, %	43.2	5	●
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	1.4	14	
5.1.4	R&D financed by business, %	53.5	15	
5.1.5	GMAT mean score	553.5	34	
5.1.6	GMAT test takers/mn pop. 20–34	315.8	20	
5.2	Innovation linkages	37.8	35	
5.2.1	University/industry research collaboration†	57.4	31	
5.2.2	State of cluster development†	56.2	25	
5.2.3	R&D financed by abroad, %	7.6	46	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	59	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	2.4	10	●
5.3	Knowledge absorption	29.2	59	
5.3.1	Royalty & license fees payments, % service imports	4.0	36	
5.3.2	High-tech imports less re-imports, %	13.9	22	
5.3.3	Comm., computer & info. services imports, %	4.4	65	
5.3.4	FDI net inflows, % GDP	1.6	104	○
6	**Knowledge & technology outputs**	**44.3**	**18**	
6.1	Knowledge creation	37.9	21	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	11.0	15	
6.1.2	PCT resident patent ap/bn PPP$ GDP	3.4	13	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.1	59	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	28.2	33	
6.1.5	Citable documents H index	646.0	4	●
6.2	Knowledge impact	44.4	36	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.0	86	○
6.2.2	New businesses/th pop. 15–64	3.1	36	
6.2.3	Computer software spending, % GDP	0.6	12	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	13.2	35	
6.2.5	High- & medium-high-tech manufactures, %	41.6	18	
6.3	Knowledge diffusion	47.4	16	
6.3.1	Royalty & license fees receipts, % service exports	7.4	10	●
6.3.2	High-tech exports less re-exports, %	19.1	10	●
6.3.3	Comm., computer & info. services exports, %	4.0	94	○
6.3.4	FDI net outflows, % GDP	3.3	21	
7	**Creative outputs**	**49.0**	**21**	
7.1	Intangible assets	44.0	63	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	10.0	84	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	1.8	19	
7.1.3	ICT & business model creation†	75.2	9	●
7.1.4	ICT & organizational model creation†	66.2	21	
7.2	Creative goods & services	46.6	28	
7.2.1	Audio-visual & related services exports, %	0.7	15	
7.2.2	National feature films/mn pop. 15–69	6.3	25	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	16.4	29	
7.2.4	Printing & publishing manufactures, %	1.6	60	○
7.2.5	Creative goods exports, %	2.5	32	
7.3	Online creativity	61.3	20	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	52.7	18	
7.3.2	Country-code TLDs/th pop. 15–69	55.8	29	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	8,890.3	12	
7.3.4	Video uploads on YouTube/pop. 15–69	85.2	17	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Gabon

Key indicators

Population (millions)	1.6
GDP (US$ billions)	16.8
GDP per capita, PPP$	17,339.0
Income group	Upper-middle income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**28.0**	**111**	
	Innovation Output Sub-Index	25.1	104	
	Innovation Input Sub-Index	31.0	117	
	Innovation Efficiency Ratio	0.8	54	●
	Global Innovation Index 2012 (based on GII 2012 framework)	26.5	106	
1	**Institutions**	**53.8**	**94**	
1.1	Political environment	53.7	77	
1.1.1	Political stability*	75.2	49	●
1.1.2	Government effectiveness*	14.5	128	
1.1.3	Press freedom*	71.3	73	
1.2	Regulatory environment	60.1	88	
1.2.1	Regulatory quality*	33.8	114	
1.2.2	Rule of law*	34.0	92	
1.2.3	Cost of redundancy dismissal, salary weeks	14.8	67	
1.3	Business environment	47.7	125	
1.3.1	Ease of starting a business*	70.9	111	
1.3.2	Ease of resolving insolvency*	17.0	127	
1.3.3	Ease of paying taxes*	55.1	112	
2	**Human capital & research**	**22.1**	**104**	
2.1	Education	n/a	n/a	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	Tertiary education	38.5	49	●
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	3.7	24	●
2.3	Research & development (R&D)	5.6	80	
2.3.1	Researchers, headcounts/mn pop.	359.4	72	
2.3.2	Gross expenditure on R&D, % GDP	0.6	47	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**25.6**	**95**	
3.1	Information & communication technologies (ICTs)	18.5	113	
3.1.1	ICT access*	33.5	97	
3.1.2	ICT use*	10.9	96	
3.1.3	Government's online service*	19.0	135	○
3.1.4	E-participation*	10.5	94	
3.2	General infrastructure	24.1	108	
3.2.1	Electricity output, kWh/cap	1,223.2	90	
3.2.2	Electricity consumption, kWh/cap	1,004.7	96	
3.2.3	Logistics performance*	33.5	122	
3.2.4	Gross capital formation, % GDP	28.3	28	●
3.3	Ecological sustainability	34.2	55	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	9.5	20	●
3.3.2	Environmental performance*	57.9	39	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	118	
4	**Market sophistication**	**30.1**	**136**	○
4.1	Credit	17.6	133	
4.1.1	Ease of getting credit*	50.0	93	
4.1.2	Domestic credit to private sector, % GDP	10.2	139	○
4.1.3	Microfinance gross loans, % GDP	0.0	88	○
4.2	Investment	16.9	115	
4.2.1	Ease of protecting investors*	33.7	129	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	56.0	131	
4.3.1	Applied tariff rate, weighted mean, %	14.5	134	○
4.3.2	Non-agricultural mkt access weighted tariff, %	0.5	53	●
4.3.3	Intensity of local competition†	46.6	128	○
5	**Business sophistication**	**23.3**	**119**	
5.1	Knowledge workers	39.2	87	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	30.9	63	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	29.3	53	
5.1.5	GMAT mean score	456.9	104	
5.1.6	GMAT test takers/mn pop. 20–34	39.7	96	
5.2	Innovation linkages	12.9	129	
5.2.1	University/industry research collaboration†	19.5	132	○
5.2.2	State of cluster development†	31.4	124	
5.2.3	R&D financed by abroad, %	3.1	66	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	48	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	17.9	114	
5.3.1	Royalty & license fees payments, % service imports	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Comm., computer & info. services imports, %	1.0	127	
5.3.4	FDI net inflows, % GDP	4.3	54	●
6	**Knowledge & technology outputs**	**19.3**	**106**	
6.1	Knowledge creation	3.9	121	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.2	95	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	63	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.5	117	
6.1.5	Citable documents H index	57.0	94	
6.2	Knowledge impact	16.0	120	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	4.3	28	●
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.3	112	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	30.3	43	●
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Comm., computer & info. services exports, %	4.1	91	
6.3.4	FDI net outflows, % GDP	0.9	48	●
7	**Creative outputs**	**30.9**	**100**	
7.1	Intangible assets	36.0	98	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	43.7	119	
7.1.4	ICT & organizational model creation†	28.3	133	○
7.2	Creative goods & services	34.0	72	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	10.5	13	●
7.2.3	Paid-for dailies, circulation, % pop. 15–69	2.2	105	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	n/a	n/a	
7.3	Online creativity	17.6	104	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4.2	67	
7.3.2	Country-code TLDs/th pop. 15–69	4.3	114	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	340.1	99	
7.3.4	Video uploads on YouTube/pop. 15–69	59.9	99	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Gambia

Key indicators

Population (millions)	1.8
GDP (US$ billions)	0.9
GDP per capita, PPP$	1,891.8
Income group	Low income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**26.4**	**122**	
	Innovation Output Sub-Index	24.3	107	
	Innovation Input Sub-Index	28.4	127	
	Innovation Efficiency Ratio	0.9	44	●
	Global Innovation Index 2012 (based on GII 2012 framework)	23.3	130	
1	**Institutions**	**46.1**	**124**	
1.1	Political environment	48.2	91	
1.1.1	Political stability*	68.2	65	●
1.1.2	Government effectiveness*	21.6	109	
1.1.3	Press freedom*	54.9	121	
1.2	Regulatory environment	51.0	114	
1.2.1	Regulatory quality*	42.5	94	
1.2.2	Rule of law*	33.7	95	
1.2.3	Cost of redundancy dismissal, salary weeks	26.0	111	
1.3	Business environment	39.2	137	
1.3.1	Ease of starting a business*	63.5	126	
1.3.2	Ease of resolving insolvency*	30.2	97	
1.3.3	Ease of paying taxes*	23.8	139	○
2	**Human capital & research**	**12.3**	**134**	
2.1	Education	17.2	138	○
2.1.1	Current expenditure on education, % GNI	2.7	100	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	8.6	122	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	37.8	125	○
2.2	Tertiary education	19.3	104	
2.2.1	Tertiary enrolment, % gross	4.1	125	
2.2.2	Graduates in science & engineering, %	20.0	48	●
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.6	93	
2.3	Research & development (R&D)	0.2	119	
2.3.1	Researchers, headcounts/mn pop.	106.4	92	
2.3.2	Gross expenditure on R&D, % GDP	0.0	108	○
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**22.2**	**112**	
3.1	Information & communication technologies (ICTs)	15.5	123	
3.1.1	ICT access*	24.7	111	
3.1.2	ICT use*	5.2	113	
3.1.3	Government's online service*	32.0	112	
3.1.4	E-participation*	0.0	129	○
3.2	General infrastructure	28.9	72	
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Logistics performance*	36.5	113	
3.2.4	Gross capital formation, % GDP	21.4	78	
3.3	Ecological sustainability	n/a	n/a	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	n/a	n/a	
4	**Market sophistication**	**28.7**	**139**	○
4.1	Credit	13.5	137	
4.1.1	Ease of getting credit*	31.3	132	
4.1.2	Domestic credit to private sector, % GDP	16.3	128	
4.1.3	Microfinance gross loans, % GDP	0.3	54	
4.2	Investment	13.5	133	
4.2.1	Ease of protecting investors*	27.0	140	○
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	59.0	126	
4.3.1	Applied tariff rate, weighted mean, %	14.8	135	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.8	66	●
4.3.3	Intensity of local competition†	61.1	81	
5	**Business sophistication**	**32.9**	**63**	●
5.1	Knowledge workers	38.1	89	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	25.6	75	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	464.3	98	
5.1.6	GMAT test takers/mn pop. 20–34	46.3	86	
5.2	Innovation linkages	23.5	79	
5.2.1	University/industry research collaboration†	46.0	56	●
5.2.2	State of cluster development†	47.9	55	●
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	37.2	27	●
5.3.1	Royalty & license fees payments, % service imports	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	3.9	119	
5.3.3	Comm., computer & info. services imports, %	12.2	5	●
5.3.4	FDI net inflows, % GDP	4.0	60	●
6	**Knowledge & technology outputs**	**18.6**	**112**	
6.1	Knowledge creation	16.6	55	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	27.2	34	●
6.1.5	Citable documents H index	76.0	78	
6.2	Knowledge impact	12.9	122	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.6	125	
6.2.5	High- & medium-high-tech manufactures, %	16.8	56	
6.3	Knowledge diffusion	25.2	72	
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.3	99	
6.3.3	Comm., computer & info. services exports, %	17.8	17	●
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**30.1**	**103**	
7.1	Intangible assets	41.5	82	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	15.9	72	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	60.6	55	●
7.1.4	ICT & organizational model creation†	55.1	58	●
7.2	Creative goods & services	19.6	116	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	0.4	129	
7.2.4	Printing & publishing manufactures, %	0.1	94	○
7.2.5	Creative goods exports, %	0.3	78	
7.3	Online creativity	17.8	103	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.4	120	
7.3.2	Country-code TLDs/th pop. 15–69	10.4	100	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	494.5	90	
7.3.4	Video uploads on YouTube/pop. 15–69	57.7	103	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Georgia

Key indicators

Population (millions)	4.5
GDP (US$ billions)	15.8
GDP per capita, PPP$	5,907.7
Income group	Lower-middle income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**35.6**	**73**	
Innovation Output Sub-Index		29.5	83	
Innovation Input Sub-Index		41.6	62	
Innovation Efficiency Ratio		0.7	100	
Global Innovation Index 2012 (based on GII 2012 framework)		34.3	71	
1	**Institutions**	**69.4**	**47**	
1.1	Political environment	57.0	66	
1.1.1	Political stability*	47.7	111	
1.1.2	Government effectiveness*	53.4	46	
1.1.3	Press freedom*	69.9	79	
1.2	Regulatory environment	77.4	37	
1.2.1	Regulatory quality*	66.7	42	
1.2.2	Rule of law*	42.8	67	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	Business environment	73.9	34	
1.3.1	Ease of starting a business*	97.6	5	●
1.3.2	Ease of resolving insolvency*	38.5	73	
1.3.3	Ease of paying taxes*	85.5	20	●
2	**Human capital & research**	**24.9**	**97**	
2.1	Education	42.0	97	
2.1.1	Current expenditure on education, % GNI	1.8	109	○
2.1.2	Public expenditure/pupil, % GDP/cap	15.4	81	
2.1.3	School life expectancy, years	13.2	71	
2.1.4	PISA scales in reading, maths, & science	375.5	65	○
2.1.5	Pupil-teacher ratio, secondary	7.6	5	●
2.2	Tertiary education	27.0	80	
2.2.1	Tertiary enrolment, % gross	30.0	75	
2.2.2	Graduates in science & engineering, %	17.4	61	
2.2.3	Tertiary inbound mobility, %	1.5	67	
2.2.4	Gross tertiary outbound enrolment, %	2.3	45	
2.3	Research & development (R&D)	5.8	79	
2.3.1	Researchers, headcounts/mn pop.	1,811.9	39	
2.3.2	Gross expenditure on R&D, % GDP	0.2	86	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**31.2**	**72**	
3.1	Information & communication technologies (ICTs)	36.8	65	
3.1.1	ICT access*	46.1	70	
3.1.2	ICT use*	20.1	70	
3.1.3	Government's online service*	60.1	42	
3.1.4	E-participation*	21.1	64	
3.2	General infrastructure	27.8	81	
3.2.1	Electricity output, kWh/cap	2,275.1	73	
3.2.2	Electricity consumption, kWh/cap	1,742.9	76	
3.2.3	Logistics performance*	44.3	78	
3.2.4	Gross capital formation, % GDP	26.2	35	
3.3	Ecological sustainability	29.0	73	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.5	61	
3.3.2	Environmental performance*	56.8	46	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	119	○
4	**Market sophistication**	**54.5**	**34**	
4.1	Credit	53.4	38	
4.1.1	Ease of getting credit*	93.8	4	●
4.1.2	Domestic credit to private sector, % GDP	32.8	93	
4.1.3	Microfinance gross loans, % GDP	4.9	10	●
4.2	Investment	29.1	52	
4.2.1	Ease of protecting investors*	72.2	21	●
4.2.2	Market capitalization, % GDP	5.5	99	○
4.2.3	Total value of stocks traded, % GDP	0.0	106	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	34	
4.3	Trade & competition	81.0	30	
4.3.1	Applied tariff rate, weighted mean, %	0.4	4	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.3	39	
4.3.3	Intensity of local competition†	47.8	123	○
5	**Business sophistication**	**28.0**	**95**	
5.1	Knowledge workers	42.3	69	
5.1.1	Knowledge-intensive employment, %	22.2	54	
5.1.2	Firms offering formal training, % firms	14.5	98	○
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	572.1	23	●
5.1.6	GMAT test takers/mn pop. 20–34	106.4	51	
5.2	Innovation linkages	19.5	105	
5.2.1	University/industry research collaboration†	25.2	126	○
5.2.2	State of cluster development†	35.7	109	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	47	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	22.2	93	
5.3.1	Royalty & license fees payments, % service imports	0.6	94	
5.3.2	High-tech imports less re-imports, %	6.3	89	
5.3.3	Comm., computer & info. services imports, %	2.3	99	
5.3.4	FDI net inflows, % GDP	8.0	19	●
6	**Knowledge & technology outputs**	**27.0**	**63**	
6.1	Knowledge creation	20.1	45	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	5.6	31	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.2	60	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	3.0	13	●
6.1.4	Scientific & technical articles/bn PPP$ GDP	21.8	42	
6.1.5	Citable documents H index	71.0	83	
6.2	Knowledge impact	41.0	43	
6.2.1	Growth rate of PPP$ GDP/worker, %	5.4	9	●
6.2.2	New businesses/th pop. 15–64	4.5	25	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.1	83	
6.2.5	High- & medium-high-tech manufactures, %	16.4	58	
6.3	Knowledge diffusion	16.3	118	
6.3.1	Royalty & license fees receipts, % service exports	0.2	67	
6.3.2	High-tech exports less re-exports, %	1.3	72	
6.3.3	Comm., computer & info. services exports, %	2.1	116	
6.3.4	FDI net outflows, % GDP	1.0	45	
7	**Creative outputs**	**32.0**	**95**	
7.1	Intangible assets	30.4	119	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	42.7	40	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.5	40	
7.1.3	ICT & business model creation†	48.6	100	
7.1.4	ICT & organizational model creation†	41.0	117	
7.2	Creative goods & services	37.4	60	
7.2.1	Audio-visual & related services exports, %	0.2	38	
7.2.2	National feature films/mn pop. 15–69	4.5	33	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	1.4	113	
7.2.4	Printing & publishing manufactures, %	3.8	13	●
7.2.5	Creative goods exports, %	0.3	84	
7.3	Online creativity	29.9	60	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.8	107	
7.3.2	Country-code TLDs/th pop. 15–69	26.8	64	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	3,200.7	45	
7.3.4	Video uploads on YouTube/pop. 15–69	73.6	63	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Germany

Key indicators

Population (millions)	86.3
GDP (US$ billions)	3,366.7
GDP per capita, PPP$	39,058.8
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**55.8**	**15**	
Innovation Output Sub-Index		51.9	10	
Innovation Input Sub-Index		59.8	20	
Innovation Efficiency Ratio		0.9	40	
Global Innovation Index 2012 (based on GII 2012 framework)		56.2	15	
1	**Institutions**	**82.5**	**21**	
1.1	Political environment	85.8	16	
1.1.1	Political stability*	87.3	30	
1.1.2	Government effectiveness*	80.4	17	
1.1.3	Press freedom*	89.8	15	
1.2	Regulatory environment	81.3	31	
1.2.1	Regulatory quality*	89.0	15	
1.2.2	Rule of law*	90.8	16	
1.2.3	Cost of redundancy dismissal, salary weeks	21.6	98	○
1.3	Business environment	80.3	21	
1.3.1	Ease of starting a business*	82.2	75	○
1.3.2	Ease of resolving insolvency*	82.9	18	
1.3.3	Ease of paying taxes*	75.7	45	
2	**Human capital & research**	**54.3**	**19**	
2.1	Education	64.1	31	
2.1.1	Current expenditure on education, % GNI	4.8	49	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	510.2	13	
2.1.5	Pupil-teacher ratio, secondary	12.9	52	
2.2	Tertiary education	37.3	50	
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	25.6	19	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	2.1	52	
2.3	Research & development (R&D)	61.5	12	
2.3.1	Researchers, headcounts/mn pop.	5,880.3	14	
2.3.2	Gross expenditure on R&D, % GDP	2.8	8	
2.3.3	QS university ranking, average score top 3*	74.9	8	●
3	**Infrastructure**	**53.5**	**14**	
3.1	Information & communication technologies (ICTs)	77.7	7	●
3.1.1	ICT access*	86.6	5	●
3.1.2	ICT use*	72.9	5	●
3.1.3	Government's online service*	75.2	24	
3.1.4	E-participation*	76.3	8	
3.2	General infrastructure	41.3	27	
3.2.1	Electricity output, kWh/cap	7,452.5	26	
3.2.2	Electricity consumption, kWh/cap	7,188.6	23	
3.2.3	Logistics performance*	75.8	4	●
3.2.4	Gross capital formation, % GDP	18.0	112	○
3.3	Ecological sustainability	41.4	30	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	9.2	23	
3.3.2	Environmental performance*	66.9	11	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.0	43	
4	**Market sophistication**	**62.8**	**21**	
4.1	Credit	65.1	22	
4.1.1	Ease of getting credit*	81.3	22	
4.1.2	Domestic credit to private sector, % GDP	104.5	29	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	41.0	28	
4.2.1	Ease of protecting investors*	51.9	85	○
4.2.2	Market capitalization, % GDP	32.9	51	○
4.2.3	Total value of stocks traded, % GDP	48.8	21	
4.2.4	Venture capital deals/tr PPP$ GDP	0.1	16	
4.3	Trade & competition	82.1	24	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	79.8	7	●
5	**Business sophistication**	**45.9**	**26**	
5.1	Knowledge workers	60.0	32	
5.1.1	Knowledge-intensive employment, %	29.6	36	
5.1.2	Firms offering formal training, % firms	35.4	51	○
5.1.3	R&D performed by business, % GDP	1.9	8	
5.1.4	R&D financed by business, %	65.6	7	
5.1.5	GMAT mean score	570.6	25	
5.1.6	GMAT test takers/mn pop. 20–34	283.5	23	
5.2	Innovation linkages	42.2	26	
5.2.1	University/industry research collaboration†	70.8	11	
5.2.2	State of cluster development†	68.6	6	●
5.2.3	R&D financed by abroad, %	3.9	64	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	58	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	4.0	8	
5.3	Knowledge absorption	35.4	37	
5.3.1	Royalty & license fees payments, % service imports	4.4	32	
5.3.2	High-tech imports less re-imports, %	13.6	24	
5.3.3	Comm., computer & info. services imports, %	8.2	24	
5.3.4	FDI net inflows, % GDP	1.1	119	○
6	**Knowledge & technology outputs**	**49.1**	**10**	
6.1	Knowledge creation	62.2	6	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	23.5	1	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	5.9	9	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	4.1	10	
6.1.4	Scientific & technical articles/bn PPP$ GDP	28.5	31	
6.1.5	Citable documents H index	704.0	1	●
6.2	Knowledge impact	47.1	24	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.7	67	○
6.2.2	New businesses/th pop. 15–64	1.4	53	○
6.2.3	Computer software spending, % GDP	0.6	16	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	15.9	29	
6.2.5	High- & medium-high-tech manufactures, %	53.5	5	●
6.3	Knowledge diffusion	44.5	20	
6.3.1	Royalty & license fees receipts, % service exports	5.4	11	
6.3.2	High-tech exports less re-exports, %	14.0	18	
6.3.3	Comm., computer & info. services exports, %	9.3	45	
6.3.4	FDI net outflows, % GDP	1.5	40	
7	**Creative outputs**	**54.7**	**14**	
7.1	Intangible assets	52.6	33	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	66.5	22	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	2.1	14	
7.1.3	ICT & business model creation†	72.0	19	
7.1.4	ICT & organizational model creation†	66.8	17	
7.2	Creative goods & services	44.7	36	
7.2.1	Audio-visual & related services exports, %	0.3	30	
7.2.2	National feature films/mn pop. 15–69	3.6	40	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	31.6	11	
7.2.4	Printing & publishing manufactures, %	1.5	63	○
7.2.5	Creative goods exports, %	2.2	35	
7.3	Online creativity	68.9	12	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	70.6	13	
7.3.2	Country-code TLDs/th pop. 15–69	76.4	5	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	7,956.6	16	
7.3.4	Video uploads on YouTube/pop. 15–69	82.4	28	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ghana

Key indicators

Population (millions)	25.7
GDP (US$ billions)	40.1
GDP per capita, PPP$	3,337.0
Income group	Lower-middle income
Region	Sub-Saharan Africa

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)	**30.6**	**94**	
Innovation Output Sub-Index	27.3	95	
Innovation Input Sub-Index	33.9	99	
Innovation Efficiency Ratio	0.8	58	●
Global Innovation Index 2012 (based on GII 2012 framework)	29.6	92	
1 Institutions	**52.5**	**100**	
1.1 Political environment	63.3	53	●
1.1.1 Political stability*	69.7	61	●
1.1.2 Government effectiveness*	37.6	71	
1.1.3 Press freedom*	82.7	28	●
1.2 Regulatory environment	32.8	136	○
1.2.1 Regulatory quality*	53.2	69	
1.2.2 Rule of law*	45.7	61	●
1.2.3 Cost of redundancy dismissal, salary weeks	49.8	136	○
1.3 Business environment	61.4	80	
1.3.1 Ease of starting a business*	84.6	66	
1.3.2 Ease of resolving insolvency*	29.2	103	
1.3.3 Ease of paying taxes*	70.4	65	
2 Human capital & research	**26.0**	**93**	
2.1 Education	54.5	67	
2.1.1 Current expenditure on education, % GNI	8.2	4	●
2.1.2 Public expenditure/pupil, % GDP/cap	18.0	68	
2.1.3 School life expectancy, years	11.3	97	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	18.7	91	
2.2 Tertiary education	21.8	94	
2.2.1 Tertiary enrolment, % gross	12.1	100	
2.2.2 Graduates in science & engineering, %	19.4	51	
2.2.3 Tertiary inbound mobility, %	2.0	54	
2.2.4 Gross tertiary outbound enrolment, %	0.3	111	
2.3 Research & development (R&D)	1.7	103	
2.3.1 Researchers, headcounts/mn pop.	28.0	108	○
2.3.2 Gross expenditure on R&D, % GDP	0.2	77	
2.3.3 QS university ranking, average score top 3*	0.0	68	○
3 Infrastructure	**18.9**	**123**	
3.1 Information & communication technologies (ICTs)	16.2	121	
3.1.1 ICT access*	21.0	120	
3.1.2 ICT use*	3.2	121	
3.1.3 Government's online service*	30.1	118	
3.1.4 E-participation*	10.5	94	
3.2 General infrastructure	19.2	131	○
3.2.1 Electricity output, kWh/cap	343.0	109	
3.2.2 Electricity consumption, kWh/cap	297.8	110	
3.2.3 Logistics performance*	37.8	106	
3.2.4 Gross capital formation, % GDP	19.8	96	
3.3 Ecological sustainability	21.4	108	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	3.9	98	
3.3.2 Environmental performance*	47.5	88	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.0	132	○
4 Market sophistication	**40.3**	**104**	
4.1 Credit	31.3	94	
4.1.1 Ease of getting credit*	81.3	22	●
4.1.2 Domestic credit to private sector, % GDP	15.2	130	○
4.1.3 Microfinance gross loans, % GDP	0.7	43	
4.2 Investment	21.7	89	
4.2.1 Ease of protecting investors*	61.9	42	●
4.2.2 Market capitalization, % GDP	7.9	95	
4.2.3 Total value of stocks traded, % GDP	0.3	88	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	53	●
4.3 Trade & competition	68.1	110	
4.3.1 Applied tariff rate, weighted mean, %	8.6	112	
4.3.2 Non-agricultural mkt access weighted tariff, %	1.8	93	
4.3.3 Intensity of local competition†	67.3	53	●
5 Business sophistication	**31.9**	**68**	
5.1 Knowledge workers	37.6	93	
5.1.1 Knowledge-intensive employment, %	n/a	n/a	
5.1.2 Firms offering formal training, % firms	33.0	55	
5.1.3 R&D performed by business, % GDP	0.0	76	○
5.1.4 R&D financed by business, %	50.9	19	●
5.1.5 GMAT mean score	426.1	122	
5.1.6 GMAT test takers/mn pop. 20–34	77.0	65	
5.2 Innovation linkages	19.6	103	
5.2.1 University/industry research collaboration†	35.9	104	
5.2.2 State of cluster development†	37.5	103	
5.2.3 R&D financed by abroad, %	11.9	34	●
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	0.0	77	
5.2.5 Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3 Knowledge absorption	38.6	21	●
5.3.1 Royalty & license fees payments, % service imports	n/a	n/a	
5.3.2 High-tech imports less re-imports, %	9.6	54	●
5.3.3 Comm., computer & info. services imports, %	n/a	n/a	
5.3.4 FDI net inflows, % GDP	8.2	18	●
6 Knowledge & technology outputs	**28.9**	**56**	●
6.1 Knowledge creation	5.8	99	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	6.6	88	
6.1.5 Citable documents H index	67.0	88	
6.2 Knowledge impact	44.7	34	●
6.2.1 Growth rate of PPP$ GDP/worker, %	10.8	1	●
6.2.2 New businesses/th pop. 15–64	1.1	61	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	0.1	137	○
6.2.5 High- & medium-high-tech manufactures, %	11.4	70	
6.3 Knowledge diffusion	24.6	76	
6.3.1 Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2 High-tech exports less re-exports, %	0.1	109	
6.3.3 Comm., computer & info. services exports, %	n/a	n/a	
6.3.4 FDI net outflows, % GDP	0.1	89	
7 Creative outputs	**25.6**	**122**	
7.1 Intangible assets	34.0	105	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid trademark registrations/bn PPP$ GDP	0.0	66	○
7.1.3 ICT & business model creation†	55.4	78	
7.1.4 ICT & organizational model creation†	46.6	91	
7.2 Creative goods & services	23.6	105	
7.2.1 Audio-visual & related services exports, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation, % pop. 15–69	1.4	112	
7.2.4 Printing & publishing manufactures, %	1.1	77	
7.2.5 Creative goods exports, %	0.2	88	
7.3 Online creativity	10.8	126	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	1.3	97	
7.3.2 Country-code TLDs/th pop. 15–69	0.0	139	○
7.3.3 Wikipedia monthly edits/mn pop. 15–69	71.4	116	
7.3.4 Video uploads on YouTube/pop. 15–69	41.7	124	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	12.0
GDP (US$ billions)	255.0
GDP per capita, PPP$	25,061.5
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**37.7**	**55**	
Innovation Output Sub-Index		29.7	82	
Innovation Input Sub-Index		45.7	45	
Innovation Efficiency Ratio		0.7	118	
Global Innovation Index 2012 (based on GII 2012 framework)		35.3	66	
1	**Institutions**	**67.8**	**53**	
1.1	Political environment	62.5	54	
1.1.1	Political stability*	64.5	73	
1.1.2	Government effectiveness*	51.5	48	
1.1.3	Press freedom*	71.5	69	
1.2	Regulatory environment	73.5	46	
1.2.1	Regulatory quality*	62.9	47	
1.2.2	Rule of law*	62.7	44	
1.2.3	Cost of redundancy dismissal, salary weeks	15.9	76	
1.3	Business environment	67.3	58	
1.3.1	Ease of starting a business*	76.5	99	
1.3.2	Ease of resolving insolvency*	47.7	46	
1.3.3	Ease of paying taxes*	77.7	40	
2	**Human capital & research**	**44.5**	**32**	
2.1	Education	57.4	57	
2.1.1	Current expenditure on education, % GNI	3.2	86	
2.1.2	Public expenditure/pupil, % GDP/cap	20.7	51	
2.1.3	School life expectancy, years	16.3	17	●
2.1.4	PISA scales in reading, maths, & science	473.0	36	
2.1.5	Pupil-teacher ratio, secondary	7.9	7	●
2.2	Tertiary education	55.2	8	●
2.2.1	Tertiary enrolment, % gross	89.4	5	●
2.2.2	Graduates in science & engineering, %	27.5	15	●
2.2.3	Tertiary inbound mobility, %	4.2	36	
2.2.4	Gross tertiary outbound enrolment, %	4.6	17	●
2.3	Research & development (R&D)	20.9	42	
2.3.1	Researchers, headcounts/mn pop.	2,986.3	28	
2.3.2	Gross expenditure on R&D, % GDP	0.6	53	
2.3.3	QS university ranking, average score top 3*	26.5	43	
3	**Infrastructure**	**37.4**	**48**	
3.1	Information & communication technologies (ICTs)	48.7	43	
3.1.1	ICT access*	65.6	38	
3.1.2	ICT use*	37.3	38	
3.1.3	Government's online service*	57.5	48	
3.1.4	E-participation*	34.2	44	
3.2	General infrastructure	24.2	105	
3.2.1	Electricity output, kWh/cap	4,694.3	48	
3.2.2	Electricity consumption, kWh/cap	4,670.4	44	
3.2.3	Logistics performance*	45.8	69	
3.2.4	Gross capital formation, % GDP	12.9	135	○
3.3	Ecological sustainability	39.4	34	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	9.6	19	●
3.3.2	Environmental performance*	60.0	32	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.8	44	
4	**Market sophistication**	**48.8**	**54**	
4.1	Credit	56.9	32	
4.1.1	Ease of getting credit*	56.3	80	
4.1.2	Domestic credit to private sector, % GDP	121.9	22	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	14.9	131	○
4.2.1	Ease of protecting investors*	48.1	99	
4.2.2	Market capitalization, % GDP	11.6	89	
4.2.3	Total value of stocks traded, % GDP	8.5	45	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	74.6	85	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	57.1	92	
5	**Business sophistication**	**30.1**	**81**	
5.1	Knowledge workers	43.1	68	
5.1.1	Knowledge-intensive employment, %	28.6	39	
5.1.2	Firms offering formal training, % firms	20.0	89	○
5.1.3	R&D performed by business, % GDP	0.2	49	
5.1.4	R&D financed by business, %	31.1	50	
5.1.5	GMAT mean score	531.9	50	
5.1.6	GMAT test takers/mn pop. 20–34	598.2	9	●
5.2	Innovation linkages	24.9	75	
5.2.1	University/industry research collaboration†	31.0	118	○
5.2.2	State of cluster development†	30.8	126	○
5.2.3	R&D financed by abroad, %	19.0	16	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	53	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.1	43	
5.3	Knowledge absorption	22.2	94	
5.3.1	Royalty & license fees payments, % service imports	2.9	49	
5.3.2	High-tech imports less re-imports, %	8.0	68	
5.3.3	Comm., computer & info. services imports, %	5.5	50	
5.3.4	FDI net inflows, % GDP	0.4	131	○
6	**Knowledge & technology outputs**	**23.5**	**83**	
6.1	Knowledge creation	16.1	57	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.3	91	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.3	45	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.1	60	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	35.0	22	●
6.1.5	Citable documents H index	247.0	28	
6.2	Knowledge impact	32.2	80	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.2	96	
6.2.2	New businesses/th pop. 15–64	0.9	69	
6.2.3	Computer software spending, % GDP	0.6	19	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	14.2	33	
6.2.5	High- & medium-high-tech manufactures, %	14.1	65	
6.3	Knowledge diffusion	18.5	110	
6.3.1	Royalty & license fees receipts, % service exports	0.2	74	
6.3.2	High-tech exports less re-exports, %	4.2	42	
6.3.3	Comm., computer & info. services exports, %	2.6	110	
6.3.4	FDI net outflows, % GDP	0.6	55	
7	**Creative outputs**	**35.9**	**77**	
7.1	Intangible assets	22.5	133	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	4.0	88	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.3	44	
7.1.3	ICT & business model creation†	45.0	115	
7.1.4	ICT & organizational model creation†	37.6	124	○
7.2	Creative goods & services	55.9	11	●
7.2.1	Audio-visual & related services exports, %	0.3	35	
7.2.2	National feature films/mn pop. 15–69	2.2	57	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	12.1	48	
7.2.4	Printing & publishing manufactures, %	7.1	1	●
7.2.5	Creative goods exports, %	1.2	46	
7.3	Online creativity	43.0	36	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	15.0	38	
7.3.2	Country-code TLDs/th pop. 15–69	52.9	33	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	3,905.9	40	
7.3.4	Video uploads on YouTube/pop. 15–69	81.3	34	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Guatemala

Key indicators

Population (millions)	15.3
GDP (US$ billions)	50.3
GDP per capita, PPP$	5,191.7
Income group	Lower-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**31.5**	**87**	
Innovation Output Sub-Index		27.7	91	
Innovation Input Sub-Index		35.2	91	
Innovation Efficiency Ratio		0.8	66	
Global Innovation Index 2012 (based on GII 2012 framework)		28.4	99	
1	**Institutions**	**49.0**	**110**	
1.1	Political environment	46.1	100	
1.1.1	Political stability*	48.3	109	
1.1.2	Government effectiveness*	19.2	116	
1.1.3	Press freedom*	70.6	75	
1.2	Regulatory environment	47.4	120	
1.2.1	Regulatory quality*	46.2	84	
1.2.2	Rule of law*	19.4	128	
1.2.3	Cost of redundancy dismissal, salary weeks	27.0	115	
1.3	Business environment	53.6	105	
1.3.1	Ease of starting a business*	65.5	124	
1.3.2	Ease of resolving insolvency*	30.2	97	
1.3.3	Ease of paying taxes*	65.2	87	
2	**Human capital & research**	**18.3**	**114**	
2.1	Education	36.2	112	
2.1.1	Current expenditure on education, % GNI	2.9	96	
2.1.2	Public expenditure/pupil, % GDP/cap	10.1	106	○
2.1.3	School life expectancy, years	10.7	110	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	14.0	61	
2.2	Tertiary education	18.4	107	
2.2.1	Tertiary enrolment, % gross	17.8	95	
2.2.2	Graduates in science & engineering, %	16.8	63	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.2	131	○
2.3	Research & development (R&D)	0.4	116	
2.3.1	Researchers, headcounts/mn pop.	53.9	104	○
2.3.2	Gross expenditure on R&D, % GDP	0.1	102	○
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**24.4**	**102**	
3.1	Information & communication technologies (ICTs)	27.6	88	
3.1.1	ICT access*	34.4	94	
3.1.2	ICT use*	5.7	109	
3.1.3	Government's online service*	46.4	78	
3.1.4	E-participation*	23.7	59	
3.2	General infrastructure	18.7	133	○
3.2.1	Electricity output, kWh/cap	613.8	106	
3.2.2	Electricity consumption, kWh/cap	567.3	105	
3.2.3	Logistics performance*	45.0	75	
3.2.4	Gross capital formation, % GDP	14.4	129	
3.3	Ecological sustainability	26.9	84	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.0	68	
3.3.2	Environmental performance*	51.9	73	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	106	
4	**Market sophistication**	**49.2**	**51**	
4.1	Credit	34.2	80	
4.1.1	Ease of getting credit*	87.5	12	●
4.1.2	Domestic credit to private sector, % GDP	23.4	112	
4.1.3	Microfinance gross loans, % GDP	0.5	48	
4.2	Investment	28.0	58	
4.2.1	Ease of protecting investors*	34.1	128	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	51	
4.3	Trade & competition	85.4	9	●
4.3.1	Applied tariff rate, weighted mean, %	2.4	48	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	2	●
4.3.3	Intensity of local competition†	68.5	46	●
5	**Business sophistication**	**35.3**	**53**	
5.1	Knowledge workers	44.3	63	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	51.9	25	●
5.1.3	R&D performed by business, % GDP	0.0	82	○
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	500.8	75	
5.1.6	GMAT test takers/mn pop. 20–34	22.8	111	
5.2	Innovation linkages	41.4	30	●
5.2.1	University/industry research collaboration†	46.4	51	
5.2.2	State of cluster development†	50.4	45	●
5.2.3	R&D financed by abroad, %	47.7	5	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	101	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	20.2	103	
5.3.1	Royalty & license fees payments, % service imports	4.2	34	●
5.3.2	High-tech imports less re-imports, %	7.8	71	
5.3.3	Comm., computer & info. services imports, %	2.6	96	
5.3.4	FDI net inflows, % GDP	2.3	81	
6	**Knowledge & technology outputs**	**20.9**	**95**	
6.1	Knowledge creation	1.6	139	○
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.1	110	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	89	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.1	51	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.6	135	○
6.1.5	Citable documents H index	47.0	111	
6.2	Knowledge impact	23.4	108	
6.2.1	Growth rate of PPP$ GDP/worker, %	–0.2	104	
6.2.2	New businesses/th pop. 15–64	0.6	78	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.3	91	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	28.2	54	
6.3.1	Royalty & license fees receipts, % service exports	0.6	47	
6.3.2	High-tech exports less re-exports, %	2.1	61	
6.3.3	Comm., computer & info. services exports, %	15.4	23	●
6.3.4	FDI net outflows, % GDP	0.0	96	
7	**Creative outputs**	**34.4**	**86**	
7.1	Intangible assets	45.6	56	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	33.4	48	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	59.9	57	
7.1.4	ICT & organizational model creation†	58.1	43	●
7.2	Creative goods & services	25.7	98	
7.2.1	Audio-visual & related services exports, %	0.0	70	○
7.2.2	National feature films/mn pop. 15–69	1.2	69	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	6.3	77	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.8	61	
7.3	Online creativity	20.8	94	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	8.9	51	
7.3.2	Country-code TLDs/th pop. 15–69	11.9	95	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	351.4	98	
7.3.4	Video uploads on YouTube/pop. 15–69	60.5	97	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	10.5
GDP (US$ billions)	5.7
GDP per capita, PPP$	1,128.6
Income group	Low income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**25.7**	**126**	
Innovation Output Sub-Index		26.6	98	●
Innovation Input Sub-Index		24.8	139	○
Innovation Efficiency Ratio		1.1	3	●
Global Innovation Index 2012 (based on GII 2012 framework)		n/a	n/a	
1	**Institutions**	**42.6**	**133**	
1.1	Political environment	36.5	130	
1.1.1	Political stability*	31.1	132	
1.1.2	Government effectiveness*	6.9	138	
1.1.3	Press freedom*	71.5	70	●
1.2	Regulatory environment	57.7	98	●
1.2.1	Regulatory quality*	23.3	133	
1.2.2	Rule of law*	7.5	140	○
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	Business environment	33.5	141	○
1.3.1	Ease of starting a business*	57.2	132	
1.3.2	Ease of resolving insolvency*	19.0	124	
1.3.3	Ease of paying taxes*	24.3	138	
2	**Human capital & research**	**12.0**	**137**	
2.1	Education	23.4	133	
2.1.1	Current expenditure on education, % GNI	3.3	85	●
2.1.2	Public expenditure/pupil, % GDP/cap	12.9	91	
2.1.3	School life expectancy, years	9.5	116	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	33.1	121	
2.2	Tertiary education	12.6	117	
2.2.1	Tertiary enrolment, % gross	11.3	104	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	1.3	75	●
2.2.4	Gross tertiary outbound enrolment, %	0.6	89	●
2.3	Research & development (R&D)	0.0	123	○
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**16.2**	**136**	
3.1	Information & communication technologies (ICTs)	4.5	142	○
3.1.1	ICT access*	17.1	133	
3.1.2	ICT use*	1.0	133	
3.1.3	Government's online service*	0.0	141	○
3.1.4	E-participation*	0.0	129	○
3.2	General infrastructure	43.7	21	●
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Logistics performance*	37.0	110	
3.2.4	Gross capital formation, % GDP	37.3	8	●
3.3	Ecological sustainability	0.6	136	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	125	
4	**Market sophistication**	**27.6**	**141**	○
4.1	Credit	13.7	136	
4.1.1	Ease of getting credit*	37.5	129	
4.1.2	Domestic credit to private sector, % GDP	9.1	140	○
4.1.3	Microfinance gross loans, % GDP	0.1	64	●
4.2	Investment	13.5	133	
4.2.1	Ease of protecting investors*	27.0	140	○
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	55.6	133	
4.3.1	Applied tariff rate, weighted mean, %	11.9	130	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.2	100	●
4.3.3	Intensity of local competition†	51.3	113	
5	**Business sophistication**	**25.5**	**109**	
5.1	Knowledge workers	21.6	132	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	21.1	87	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	386.2	128	
5.1.6	GMAT test takers/mn pop. 20–34	5.3	132	
5.2	Innovation linkages	14.1	128	
5.2.1	University/industry research collaboration†	23.7	128	
5.2.2	State of cluster development†	32.6	121	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	40.8	17	●
5.3.1	Royalty & license fees payments, % service imports	0.1	116	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Comm., computer & info. services imports, %	2.1	103	
5.3.4	FDI net inflows, % GDP	17.6	6	●
6	**Knowledge & technology outputs**	**20.6**	**98**	●
6.1	Knowledge creation	1.7	138	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.1	105	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.5	130	
6.1.5	Citable documents H index	31.0	132	
6.2	Knowledge impact	0.2	142	○
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.1	139	○
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	50.6	12	●
6.3.1	Royalty & license fees receipts, % service exports	0.1	85	●
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Comm., computer & info. services exports, %	42.2	1	●
6.3.4	FDI net outflows, % GDP	0.0	104	
7	**Creative outputs**	**32.6**	**90**	●
7.1	Intangible assets	35.0	100	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	38.0	127	
7.1.4	ICT & organizational model creation†	32.1	129	
7.2	Creative goods & services	51.2	19	●
7.2.1	Audio-visual & related services exports, %	4.3	3	●
7.2.2	National feature films/mn pop. 15–69	0.9	78	●
7.2.3	Paid-for dailies, circulation, % pop. 15–69	0.5	127	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	n/a	n/a	
7.3	Online creativity	9.3	130	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.1	134	
7.3.2	Country-code TLDs/th pop. 15–69	0.3	134	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4	Video uploads on YouTube/pop. 15–69	27.4	134	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Guyana

Key indicators

Population (millions)	0.8
GDP (US$ billions)	2.8
GDP per capita, PPP$	7,950.3
Income group	Lower-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**34.4**	**78**	
Innovation Output Sub-Index		33.9	55	
Innovation Input Sub-Index		34.9	94	
Innovation Efficiency Ratio		1.0	15	●
Global Innovation Index 2012 (based on GII 2012 framework)		33.7	77	
1	**Institutions**	**56.1**	**86**	
1.1	Political environment	54.6	72	
1.1.1	Political stability*	55.4	92	
1.1.2	Government effectiveness*	35.3	77	
1.1.3	Press freedom*	72.9	56	
1.2	Regulatory environment	58.0	96	
1.2.1	Regulatory quality*	32.3	119	
1.2.2	Rule of law*	34.6	89	
1.2.3	Cost of redundancy dismissal, salary weeks	16.7	79	
1.3	Business environment	55.6	96	
1.3.1	Ease of starting a business*	81.9	79	
1.3.2	Ease of resolving insolvency*	19.5	122	
1.3.3	Ease of paying taxes*	65.5	84	
2	**Human capital & research**	**17.1**	**120**	
2.1	Education	33.2	121	
2.1.1	Current expenditure on education, % GNI	3.1	89	
2.1.2	Public expenditure/pupil, % GDP/cap	12.3	93	
2.1.3	School life expectancy, years	10.6	111	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	20.9	95	
2.2	Tertiary education	18.1	109	
2.2.1	Tertiary enrolment, % gross	12.0	101	
2.2.2	Graduates in science & engineering, %	13.9	82	
2.2.3	Tertiary inbound mobility, %	0.5	92	
2.2.4	Gross tertiary outbound enrolment, %	2.4	42	
2.3	Research & development (R&D)	0.0	123	○
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**14.8**	**138**	○
3.1	Information & communication technologies (ICTs)	16.8	116	
3.1.1	ICT access*	32.3	100	
3.1.2	ICT use*	9.5	99	
3.1.3	Government's online service*	25.5	125	○
3.1.4	E-participation*	0.0	129	○
3.2	General infrastructure	26.3	95	
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Logistics performance*	33.3	123	○
3.2.4	Gross capital formation, % GDP	20.4	86	
3.3	Ecological sustainability	1.3	132	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	113	
4	**Market sophistication**	**37.8**	**116**	
4.1	Credit	20.6	127	○
4.1.1	Ease of getting credit*	25.0	135	○
4.1.2	Domestic credit to private sector, % GDP	37.9	87	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	15.8	124	
4.2.1	Ease of protecting investors*	55.2	73	
4.2.2	Market capitalization, % GDP	17.1	78	
4.2.3	Total value of stocks traded, % GDP	0.0	104	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	77.0	70	
4.3.1	Applied tariff rate, weighted mean, %	6.9	97	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	8	●
4.3.3	Intensity of local competition†	66.0	59	
5	**Business sophistication**	**48.5**	**17**	●
5.1	Knowledge workers	65.4	17	●
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	63.0	10	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	457.3	103	
5.1.6	GMAT test takers/mn pop. 20–34	175.6	36	●
5.2	Innovation linkages	39.5	32	●
5.2.1	University/industry research collaboration†	37.6	92	
5.2.2	State of cluster development†	44.0	69	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	26	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	n/a	n/a	
5.3	Knowledge absorption	40.5	18	●
5.3.1	Royalty & license fees payments, % service imports	8.1	12	●
5.3.2	High-tech imports less re-imports, %	5.5	99	
5.3.3	Comm., computer & info. services imports, %	10.5	8	●
5.3.4	FDI net inflows, % GDP	6.4	30	●
6	**Knowledge & technology outputs**	**25.1**	**77**	
6.1	Knowledge creation	3.0	130	○
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.9	125	○
6.1.5	Citable documents H index	25.0	136	○
6.2	Knowledge impact	10.0	125	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	5.0	66	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	51.1	10	●
6.3.1	Royalty & license fees receipts, % service exports	18.9	4	●
6.3.2	High-tech exports less re-exports, %	0.0	120	○
6.3.3	Comm., computer & info. services exports, %	20.7	11	●
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**42.7**	**46**	
7.1	Intangible assets	50.6	41	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	51.2	93	
7.1.4	ICT & organizational model creation†	50.0	83	
7.2	Creative goods & services	46.4	29	●
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	22.4	5	●
7.2.3	Paid-for dailies, circulation, % pop. 15–69	6.3	76	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.3	85	
7.3	Online creativity	23.1	85	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.1	102	
7.3.2	Country-code TLDs/th pop. 15–69	23.5	69	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	667.1	83	
7.3.4	Video uploads on YouTube/pop. 15–69	64.1	88	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Honduras

Key indicators

Population (millions)	8.0
GDP (US$ billions)	18.2
GDP per capita, PPP$	4,593.5
Income group	Lower-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**28.8**	**107**	
Innovation Output Sub-Index		22.9	115	
Innovation Input Sub-Index		34.7	96	
Innovation Efficiency Ratio		0.7	115	
Global Innovation Index 2012 (based on GII 2012 framework)		26.3	111	
1	**Institutions**	**47.3**	**117**	
1.1	Political environment	47.2	97	
1.1.1	Political stability*	55.9	90	
1.1.2	Government effectiveness*	22.6	106	
1.1.3	Press freedom*	63.1	103	
1.2	Regulatory environment	44.9	124	
1.2.1	Regulatory quality*	46.7	82	
1.2.2	Rule of law*	22.7	123	
1.2.3	Cost of redundancy dismissal, salary weeks	30.3	127	
1.3	Business environment	49.9	115	
1.3.1	Ease of starting a business*	69.7	114	
1.3.2	Ease of resolving insolvency*	21.4	118	
1.3.3	Ease of paying taxes*	58.5	105	
2	**Human capital & research**	**26.8**	**88**	
2.1	Education	65.5	28	●
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	11.7	93	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	11.3	37	●
2.2	Tertiary education	14.4	114	
2.2.1	Tertiary enrolment, % gross	20.6	89	
2.2.2	Graduates in science & engineering, %	11.9	91	
2.2.3	Tertiary inbound mobility, %	0.7	85	
2.2.4	Gross tertiary outbound enrolment, %	0.3	118	
2.3	Research & development (R&D)	0.4	117	
2.3.1	Researchers, headcounts/mn pop.	81.6	97	
2.3.2	Gross expenditure on R&D, % GDP	0.0	104	○
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**24.8**	**100**	
3.1	Information & communication technologies (ICTs)	23.0	100	
3.1.1	ICT access*	32.1	102	
3.1.2	ICT use*	8.9	101	
3.1.3	Government's online service*	37.9	97	
3.1.4	E-participation*	13.2	84	
3.2	General infrastructure	24.2	106	
3.2.1	Electricity output, kWh/cap	886.1	95	
3.2.2	Electricity consumption, kWh/cap	670.7	99	
3.2.3	Logistics performance*	38.3	104	
3.2.4	Gross capital formation, % GDP	26.7	33	●
3.3	Ecological sustainability	27.1	83	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.9	72	
3.3.2	Environmental performance*	52.5	68	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	92	
4	**Market sophistication**	**44.4**	**78**	
4.1	Credit	41.9	54	●
4.1.1	Ease of getting credit*	87.5	12	●
4.1.2	Domestic credit to private sector, % GDP	49.1	67	●
4.1.3	Microfinance gross loans, % GDP	1.5	31	●
4.2	Investment	16.0	123	
4.2.1	Ease of protecting investors*	31.9	133	○
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	75.3	82	
4.3.1	Applied tariff rate, weighted mean, %	6.5	95	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	18	●
4.3.3	Intensity of local competition†	59.2	87	
5	**Business sophistication**	**30.2**	**80**	
5.1	Knowledge workers	34.2	108	
5.1.1	Knowledge-intensive employment, %	12.8	89	
5.1.2	Firms offering formal training, % firms	35.8	50	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	418.6	123	
5.1.6	GMAT test takers/mn pop. 20–34	43.7	88	
5.2	Innovation linkages	20.7	93	
5.2.1	University/industry research collaboration†	37.3	94	
5.2.2	State of cluster development†	45.5	65	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	35.7	35	●
5.3.1	Royalty & license fees payments, % service imports	2.0	66	
5.3.2	High-tech imports less re-imports, %	8.8	60	
5.3.3	Comm., computer & info. services imports, %	9.0	16	●
5.3.4	FDI net inflows, % GDP	6.0	33	●
6	**Knowledge & technology outputs**	**15.9**	**121**	
6.1	Knowledge creation	1.2	141	○
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.1	109	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.1	53	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.4	137	○
6.1.5	Citable documents H index	37.0	123	
6.2	Knowledge impact	11.6	123	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.3	41	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.5	77	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	27.6	56	●
6.3.1	Royalty & license fees receipts, % service exports	0.1	79	
6.3.2	High-tech exports less re-exports, %	0.4	91	
6.3.3	Comm., computer & info. services exports, %	20.1	15	●
6.3.4	FDI net outflows, % GDP	0.0	95	
7	**Creative outputs**	**29.9**	**105**	
7.1	Intangible assets	41.6	80	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	32.2	49	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	53.9	82	
7.1.4	ICT & organizational model creation†	52.8	66	
7.2	Creative goods & services	18.7	118	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	0.2	99	○
7.2.3	Paid-for dailies, circulation, % pop. 15–69	4.3	88	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.1	103	
7.3	Online creativity	17.8	102	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.9	105	
7.3.2	Country-code TLDs/th pop. 15–69	11.3	98	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	205.7	107	
7.3.4	Video uploads on YouTube/pop. 15–69	58.0	101	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Hong Kong (China)

Key indicators

Population (millions)	7.5
GDP (US$ billions)	258.0
GDP per capita, PPP$	50,708.9
Income group	High income
Region	South East Asia and Oceania

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**59.4**	**7**	
Innovation Output Sub-Index		48.2	15	
Innovation Input Sub-Index		70.7	2	●
Innovation Efficiency Ratio		0.7	109	○
Global Innovation Index 2012 (based on GII 2012 framework)		58.7	8	
1	**Institutions**	**90.8**	**9**	
1.1	Political environment	82.8	19	
1.1.1	Political stability*	89.6	23	
1.1.2	Government effectiveness*	85.1	12	
1.1.3	Press freedom*	73.8	49	
1.2	Regulatory environment	96.8	7	
1.2.1	Regulatory quality*	98.5	3	●
1.2.2	Rule of law*	88.6	18	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	
1.3	Business environment	92.8	4	
1.3.1	Ease of starting a business*	95.8	9	
1.3.2	Ease of resolving insolvency*	86.2	16	
1.3.3	Ease of paying taxes*	96.3	4	
2	**Human capital & research**	**52.3**	**21**	
2.1	Education	51.7	76	
2.1.1	Current expenditure on education, % GNI	2.8	98	○
2.1.2	Public expenditure/pupil, % GDP/cap	18.9	63	○
2.1.3	School life expectancy, years	15.8	23	
2.1.4	PISA scales in reading, maths, & science	545.6	2	●
2.1.5	Pupil-teacher ratio, secondary	17.8	87	○
2.2	Tertiary education	63.0	4	
2.2.1	Tertiary enrolment, % gross	60.4	34	
2.2.2	Graduates in science & engineering, %	34.7	6	
2.2.3	Tertiary inbound mobility, %	6.6	26	
2.2.4	Gross tertiary outbound enrolment, %	7.3	8	
2.3	Research & development (R&D)	42.2	23	
2.3.1	Researchers, headcounts/mn pop.	3,293.4	26	
2.3.2	Gross expenditure on R&D, % GDP	0.8	40	
2.3.3	QS university ranking, average score top 3*	83.8	5	
3	**Infrastructure**	**63.4**	**1**	●
3.1	Information & communication technologies (ICTs)	86.9	3	●
3.1.1	ICT access*	92.1	1	●
3.1.2	ICT use*	81.7	1	●
3.1.3	Government's online service*	n/a	n/a	
3.1.4	E-participation*	n/a	n/a	
3.2	General infrastructure	42.8	24	
3.2.1	Electricity output, kWh/cap	5,416.5	39	
3.2.2	Electricity consumption, kWh/cap	5,923.3	34	
3.2.3	Logistics performance*	78.0	2	●
3.2.4	Gross capital formation, % GDP	23.3	67	
3.3	Ecological sustainability	60.6	6	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	21.4	1	●
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.8	34	
4	**Market sophistication**	**88.6**	**1**	●
4.1	Credit	95.4	1	●
4.1.1	Ease of getting credit*	93.8	4	
4.1.2	Domestic credit to private sector, % GDP	202.2	5	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	83.0	1	●
4.2.1	Ease of protecting investors*	93.0	3	●
4.2.2	Market capitalization, % GDP	357.8	1	●
4.2.3	Total value of stocks traded, % GDP	624.1	1	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	36	
4.3	Trade & competition	87.3	7	
4.3.1	Applied tariff rate, weighted mean, %	0.0	1	●
4.3.2	Non-agricultural mkt access weighted tariff, %	1.6	89	○
4.3.3	Intensity of local competition†	79.6	8	
5	**Business sophistication**	**58.2**	**3**	●
5.1	Knowledge workers	64.8	20	
5.1.1	Knowledge-intensive employment, %	36.0	16	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	0.3	38	
5.1.4	R&D financed by business, %	45.8	28	
5.1.5	GMAT mean score	583.1	11	
5.1.6	GMAT test takers/mn pop. 20–34	1,521.0	2	●
5.2	Innovation linkages	42.0	28	
5.2.1	University/industry research collaboration†	64.1	23	
5.2.2	State of cluster development†	65.9	12	
5.2.3	R&D financed by abroad, %	6.1	54	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.2	8	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.3	31	
5.3	Knowledge absorption	67.8	2	●
5.3.1	Royalty & license fees payments, % service imports	3.9	38	
5.3.2	High-tech imports less re-imports, %	42.3	1	●
5.3.3	Comm., computer & info. services imports, %	4.4	64	
5.3.4	FDI net inflows, % GDP	36.3	1	
6	**Knowledge & technology outputs**	**34.2**	**38**	
6.1	Knowledge creation	11.5	65	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.5	78	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.1	29	
6.1.4	Scientific & technical articles/bn PPP$ GDP	n/a	n/a	
6.1.5	Citable documents H index	268.0	25	
6.2	Knowledge impact	55.7	7	
6.2.1	Growth rate of PPP$ GDP/worker, %	5.4	10	
6.2.2	New businesses/th pop. 15–64	27.7	1	
6.2.3	Computer software spending, % GDP	0.4	21	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	10.5	45	
6.2.5	High- & medium-high-tech manufactures, %	24.7	39	
6.3	Knowledge diffusion	24.1	80	○
6.3.1	Royalty & license fees receipts, % service exports	0.4	63	○
6.3.2	High-tech exports less re-exports, %	4.3	41	
6.3.3	Comm., computer & info. services exports, %	2.0	118	○
6.3.4	FDI net outflows, % GDP	32.8	3	
7	**Creative outputs**	**62.2**	**5**	
7.1	Intangible assets	55.1	22	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	43.8	39	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	72.3	18	
7.1.4	ICT & organizational model creation†	68.5	14	
7.2	Creative goods & services	68.6	3	●
7.2.1	Audio-visual & related services exports, %	0.1	49	○
7.2.2	National feature films/mn pop. 15–69	9.4	16	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	39.5	6	
7.2.4	Printing & publishing manufactures, %	18.3	1	
7.2.5	Creative goods exports, %	7.3	9	
7.3	Online creativity	70.0	10	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	89.5	8	
7.3.2	Country-code TLDs/th pop. 15–69	48.1	38	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	9,619.6	10	
7.3.4	Video uploads on YouTube/pop. 15–69	86.5	14	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Hungary

Key indicators

Population (millions)	10.4
GDP (US$ billions)	128.8
GDP per capita, PPP$	19,754.0
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**46.9**	**31**	
Innovation Output Sub-Index		45.4	23	
Innovation Input Sub-Index		48.5	36	
Innovation Efficiency Ratio		0.9	23	
Global Innovation Index 2012 (based on GII 2012 framework)		46.5	31	
1	**Institutions**	**73.5**	**38**	
1.1	Political environment	72.0	41	
1.1.1	Political stability*	84.5	32	
1.1.2	Government effectiveness*	57.7	39	
1.1.3	Press freedom*	73.9	47	
1.2	Regulatory environment	80.8	33	
1.2.1	Regulatory quality*	76.9	28	
1.2.2	Rule of law*	68.0	37	
1.2.3	Cost of redundancy dismissal, salary weeks	13.4	61	
1.3	Business environment	67.6	57	
1.3.1	Ease of starting a business*	92.3	19	
1.3.2	Ease of resolving insolvency*	41.7	63	
1.3.3	Ease of paying taxes*	68.7	75	
2	**Human capital & research**	**40.2**	**37**	
2.1	Education	62.2	40	
2.1.1	Current expenditure on education, % GNI	4.9	44	
2.1.2	Public expenditure/pupil, % GDP/cap	24.7	30	
2.1.3	School life expectancy, years	15.5	30	
2.1.4	PISA scales in reading, maths, & science	495.7	24	
2.1.5	Pupil-teacher ratio, secondary	10.2	29	
2.2	Tertiary education	33.0	60	
2.2.1	Tertiary enrolment, % gross	60.7	33	
2.2.2	Graduates in science & engineering, %	15.6	75	○
2.2.3	Tertiary inbound mobility, %	4.0	38	
2.2.4	Gross tertiary outbound enrolment, %	1.3	69	
2.3	Research & development (R&D)	25.5	35	
2.3.1	Researchers, headcounts/mn pop.	3,575.8	25	
2.3.2	Gross expenditure on R&D, % GDP	1.2	30	
2.3.3	QS university ranking, average score top 3*	22.3	46	
3	**Infrastructure**	**44.1**	**30**	
3.1	Information & communication technologies (ICTs)	53.7	36	
3.1.1	ICT access*	64.8	40	
3.1.2	ICT use*	36.6	40	
3.1.3	Government's online service*	68.6	31	
3.1.4	E-participation*	44.7	36	
3.2	General infrastructure	28.7	75	
3.2.1	Electricity output, kWh/cap	3,635.0	57	
3.2.2	Electricity consumption, kWh/cap	3,921.1	49	
3.2.3	Logistics performance*	54.3	39	
3.2.4	Gross capital formation, % GDP	17.8	114	○
3.3	Ecological sustainability	49.9	14	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.9	51	
3.3.2	Environmental performance*	57.1	44	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	8.1	10	●
4	**Market sophistication**	**43.3**	**87**	
4.1	Credit	32.8	87	
4.1.1	Ease of getting credit*	68.8	51	
4.1.2	Domestic credit to private sector, % GDP	65.0	50	
4.1.3	Microfinance gross loans, % GDP	0.0	90	○
4.2	Investment	18.0	108	○
4.2.1	Ease of protecting investors*	44.8	108	○
4.2.2	Market capitalization, % GDP	13.4	86	○
4.2.3	Total value of stocks traded, % GDP	13.9	38	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	67	
4.3	Trade & competition	79.3	45	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	71.2	36	
5	**Business sophistication**	**41.3**	**36**	
5.1	Knowledge workers	44.2	64	
5.1.1	Knowledge-intensive employment, %	26.9	45	
5.1.2	Firms offering formal training, % firms	14.8	97	○
5.1.3	R&D performed by business, % GDP	0.7	26	
5.1.4	R&D financed by business, %	47.5	24	
5.1.5	GMAT mean score	581.8	12	●
5.1.6	GMAT test takers/mn pop. 20–34	98.7	54	
5.2	Innovation linkages	29.7	53	
5.2.1	University/industry research collaboration†	55.1	35	
5.2.2	State of cluster development†	39.7	88	○
5.2.3	R&D financed by abroad, %	13.5	26	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	84	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.3	29	
5.3	Knowledge absorption	49.9	6	●
5.3.1	Royalty & license fees payments, % service imports	8.3	10	●
5.3.2	High-tech imports less re-imports, %	18.4	8	●
5.3.3	Comm., computer & info. services imports, %	7.4	33	
5.3.4	FDI net inflows, % GDP	6.9	28	
6	**Knowledge & technology outputs**	**44.9**	**13**	
6.1	Knowledge creation	22.1	41	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	3.9	35	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.8	32	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.3	24	
6.1.4	Scientific & technical articles/bn PPP$ GDP	29.5	28	
6.1.5	Citable documents H index	239.0	30	
6.2	Knowledge impact	50.7	19	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.3	94	○
6.2.2	New businesses/th pop. 15–64	7.6	14	
6.2.3	Computer software spending, % GDP	0.3	48	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	34.9	9	●
6.2.5	High- & medium-high-tech manufactures, %	49.3	9	●
6.3	Knowledge diffusion	50.6	11	●
6.3.1	Royalty & license fees receipts, % service exports	4.9	13	
6.3.2	High-tech exports less re-exports, %	20.5	9	●
6.3.3	Comm., computer & info. services exports, %	7.9	58	
6.3.4	FDI net outflows, % GDP	15.6	5	●
7	**Creative outputs**	**45.8**	**37**	
7.1	Intangible assets	36.8	96	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	34.2	47	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	1.4	24	
7.1.3	ICT & business model creation†	56.1	71	
7.1.4	ICT & organizational model creation†	49.9	84	
7.2	Creative goods & services	59.3	9	●
7.2.1	Audio-visual & related services exports, %	5.5	1	●
7.2.2	National feature films/mn pop. 15–69	3.3	46	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	16.8	27	
7.2.4	Printing & publishing manufactures, %	1.0	79	○
7.2.5	Creative goods exports, %	7.6	7	●
7.3	Online creativity	50.3	30	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	14.1	41	
7.3.2	Country-code TLDs/th pop. 15–69	61.2	18	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	7,438.9	19	
7.3.4	Video uploads on YouTube/pop. 15–69	82.9	27	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Iceland

Key indicators

Population (millions)	0.3
GDP (US$ billions)	13.6
GDP per capita, PPP$	39,380.4
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**56.4**	**13**	
	Innovation Output Sub-Index	53.1	7	
	Innovation Input Sub-Index	59.7	21	
	Innovation Efficiency Ratio	0.9	30	
	Global Innovation Index 2012 (based on GII 2012 framework)	55.7	18	
1	**Institutions**	**88.5**	**12**	
1.1	Political environment	89.7	10	
1.1.1	Political stability*	96.1	8	
1.1.2	Government effectiveness*	81.4	15	
1.1.3	Press freedom*	91.5	7	
1.2	Regulatory environment	90.0	18	
1.2.1	Regulatory quality*	76.0	30	
1.2.2	Rule of law*	92.6	14	
1.2.3	Cost of redundancy dismissal, salary weeks	10.1	39	
1.3	Business environment	85.9	14	
1.3.1	Ease of starting a business*	91.1	26	
1.3.2	Ease of resolving insolvency*	90.1	11	
1.3.3	Ease of paying taxes*	76.4	42	
2	**Human capital & research**	**61.9**	**5**	
2.1	Education	77.4	3	●
2.1.1	Current expenditure on education, % GNI	9.0	2	●
2.1.2	Public expenditure/pupil, % GDP/cap	26.3	21	
2.1.3	School life expectancy, years	18.5	4	
2.1.4	PISA scales in reading, maths, & science	500.9	16	
2.1.5	Pupil-teacher ratio, secondary	12.1	45	
2.2	Tertiary education	54.9	11	
2.2.1	Tertiary enrolment, % gross	78.6	10	
2.2.2	Graduates in science & engineering, %	15.6	74	○
2.2.3	Tertiary inbound mobility, %	4.9	32	
2.2.4	Gross tertiary outbound enrolment, %	12.2	1	●
2.3	Research & development (R&D)	53.4	16	
2.3.1	Researchers, headcounts/mn pop.	13,101.2	1	●
2.3.2	Gross expenditure on R&D, % GDP	2.6	11	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**47.2**	**27**	
3.1	Information & communication technologies (ICTs)	58.3	29	
3.1.1	ICT access*	88.1	4	
3.1.2	ICT use*	75.1	4	
3.1.3	Government's online service*	54.3	53	
3.1.4	E-participation*	15.8	79	
3.2	General infrastructure	56.8	3	●
3.2.1	Electricity output, kWh/cap	53,781.3	1	●
3.2.2	Electricity consumption, kWh/cap	51,921.4	1	●
3.2.3	Logistics performance*	59.8	32	
3.2.4	Gross capital formation, % GDP	15.5	125	○
3.3	Ecological sustainability	26.5	86	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	1.9	122	○
3.3.2	Environmental performance*	66.3	13	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.8	66	
4	**Market sophistication**	**53.9**	**36**	
4.1	Credit	61.7	25	
4.1.1	Ease of getting credit*	75.0	38	
4.1.2	Domestic credit to private sector, % GDP	103.3	30	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	17.9	109	○
4.2.1	Ease of protecting investors*	61.9	42	
4.2.2	Market capitalization, % GDP	14.4	85	○
4.2.3	Total value of stocks traded, % GDP	4.1	56	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	82.1	25	
4.3.1	Applied tariff rate, weighted mean, %	1.1	8	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.8	65	
4.3.3	Intensity of local competition†	60.6	83	
5	**Business sophistication**	**46.7**	**24**	
5.1	Knowledge workers	73.3	4	●
5.1.1	Knowledge-intensive employment, %	46.0	3	●
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	1.4	13	
5.1.4	R&D financed by business, %	50.3	21	
5.1.5	GMAT mean score	537.8	47	
5.1.6	GMAT test takers/mn pop. 20–34	626.2	7	
5.2	Innovation linkages	35.7	41	
5.2.1	University/industry research collaboration†	65.3	19	
5.2.2	State of cluster development†	54.3	33	
5.2.3	R&D financed by abroad, %	10.0	38	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	46	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.6	26	
5.3	Knowledge absorption	31.3	51	
5.3.1	Royalty & license fees payments, % service imports	5.0	28	
5.3.2	High-tech imports less re-imports, %	8.4	62	
5.3.3	Comm., computer & info. services imports, %	4.1	70	
5.3.4	FDI net inflows, % GDP	7.9	21	
6	**Knowledge & technology outputs**	**37.3**	**28**	
6.1	Knowledge creation	49.7	14	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	7.7	22	
6.1.2	PCT resident patent ap/bn PPP$ GDP	3.4	14	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	66.7	1	●
6.1.5	Citable documents H index	150.0	39	
6.2	Knowledge impact	34.4	67	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.8	62	
6.2.2	New businesses/th pop. 15–64	7.9	12	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.8	85	
6.2.5	High- & medium-high-tech manufactures, %	4.8	86	○
6.3	Knowledge diffusion	34.0	38	
6.3.1	Royalty & license fees receipts, % service exports	8.2	8	
6.3.2	High-tech exports less re-exports, %	2.9	52	
6.3.3	Comm., computer & info. services exports, %	3.4	101	○
6.3.4	FDI net outflows, % GDP	–0.5	122	○
7	**Creative outputs**	**69.0**	**3**	●
7.1	Intangible assets	61.6	7	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	109.3	4	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	3.2	6	
7.1.3	ICT & business model creation†	67.4	31	
7.1.4	ICT & organizational model creation†	64.9	24	
7.2	Creative goods & services	60.6	7	
7.2.1	Audio-visual & related services exports, %	0.7	13	
7.2.2	National feature films/mn pop. 15–69	43.6	1	●
7.2.3	Paid-for dailies, circulation, % pop. 15–69	21.2	20	
7.2.4	Printing & publishing manufactures, %	6.4	5	
7.2.5	Creative goods exports, %	0.1	102	○
7.3	Online creativity	92.2	1	●
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	97.7	5	
7.3.2	Country-code TLDs/th pop. 15–69	71.2	11	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	17,226.1	1	●
7.3.4	Video uploads on YouTube/pop. 15–69	100.0	1	●

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	1,267.6
GDP (US$ billions)	1,946.8
GDP per capita, PPP$	3,851.3
Income group	Lower-middle income
Region	Central and Southern Asia

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**36.2**	**66**	
	Innovation Output Sub-Index	36.6	42	
	Innovation Input Sub-Index	35.8	87	
	Innovation Efficiency Ratio	1.0	11	●
	Global Innovation Index 2012 (based on GII 2012 framework)	35.7	64	
1	**Institutions**	**51.9**	**102**	
1.1	Political environment	44.4	108	
1.1.1	Political stability*	36.7	123	○
1.1.2	Government effectiveness*	37.6	70	
1.1.3	Press freedom*	58.8	113	
1.2	Regulatory environment	63.6	77	
1.2.1	Regulatory quality*	40.7	99	
1.2.2	Rule of law*	45.1	64	
1.2.3	Cost of redundancy dismissal, salary weeks	15.8	74	
1.3	Business environment	47.7	124	○
1.3.1	Ease of starting a business*	62.4	128	○
1.3.2	Ease of resolving insolvency*	28.3	104	
1.3.3	Ease of paying taxes*	52.5	118	
2	**Human capital & research**	**21.7**	**105**	
2.1	Education	27.6	127	○
2.1.1	Current expenditure on education, % GNI	3.1	90	
2.1.2	Public expenditure/pupil, % GDP/cap	12.9	92	
2.1.3	School life expectancy, years	10.7	109	○
2.1.4	PISA scales in reading, maths, & science	336.0	69	○
2.1.5	Pupil-teacher ratio, secondary	25.3	108	○
2.2	Tertiary education	6.5	133	○
2.2.1	Tertiary enrolment, % gross	17.9	94	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	0.1	107	○
2.2.4	Gross tertiary outbound enrolment, %	0.2	128	○
2.3	Research & development (R&D)	30.9	30	●
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	0.8	43	
2.3.3	QS university ranking, average score top 3*	44.8	27	●
3	**Infrastructure**	**27.5**	**89**	
3.1	Information & communication technologies (ICTs)	25.6	96	
3.1.1	ICT access*	24.8	109	
3.1.2	ICT use*	5.6	110	
3.1.3	Government's online service*	53.6	55	
3.1.4	E-participation*	18.4	72	
3.2	General infrastructure	34.4	46	
3.2.1	Electricity output, kWh/cap	819.8	97	
3.2.2	Electricity consumption, kWh/cap	644.5	100	
3.2.3	Logistics performance*	52.0	46	
3.2.4	Gross capital formation, % GDP	36.0	9	●
3.3	Ecological sustainability	22.5	102	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.4	78	
3.3.2	Environmental performance*	36.2	117	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.9	61	
4	**Market sophistication**	**49.5**	**49**	
4.1	Credit	35.5	76	
4.1.1	Ease of getting credit*	81.3	22	
4.1.2	Domestic credit to private sector, % GDP	50.6	64	
4.1.3	Microfinance gross loans, % GDP	0.2	58	
4.2	Investment	43.1	24	●
4.2.1	Ease of protecting investors*	61.5	49	
4.2.2	Market capitalization, % GDP	54.9	33	
4.2.3	Total value of stocks traded, % GDP	40.1	27	
4.2.4	Venture capital deals/tr PPP$ GDP	0.1	20	●
4.3	Trade & competition	69.9	106	
4.3.1	Applied tariff rate, weighted mean, %	8.2	108	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	99	
4.3.3	Intensity of local competition†	72.9	32	
5	**Business sophistication**	**28.3**	**94**	
5.1	Knowledge workers	37.4	95	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	15.9	96	○
5.1.3	R&D performed by business, % GDP	0.3	42	
5.1.4	R&D financed by business, %	33.9	48	
5.1.5	GMAT mean score	581.3	13	●
5.1.6	GMAT test takers/mn pop. 20–34	93.5	56	
5.2	Innovation linkages	30.9	51	
5.2.1	University/industry research collaboration†	47.5	49	
5.2.2	State of cluster development†	54.9	29	●
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	44	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	59	
5.3	Knowledge absorption	16.5	122	○
5.3.1	Royalty & license fees payments, % service imports	2.1	61	
5.3.2	High-tech imports less re-imports, %	7.2	81	
5.3.3	Comm., computer & info. services imports, %	2.3	97	
5.3.4	FDI net inflows, % GDP	1.7	95	
6	**Knowledge & technology outputs**	**34.5**	**37**	
6.1	Knowledge creation	17.1	53	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.0	55	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.3	54	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	9.6	76	
6.1.5	Citable documents H index	281.0	23	●
6.2	Knowledge impact	35.7	62	
6.2.1	Growth rate of PPP$ GDP/worker, %	5.2	14	●
6.2.2	New businesses/th pop. 15–64	0.1	99	○
6.2.3	Computer software spending, % GDP	0.2	64	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	6.7	56	
6.2.5	High- & medium-high-tech manufactures, %	32.4	31	
6.3	Knowledge diffusion	41.9	22	●
6.3.1	Royalty & license fees receipts, % service exports	0.1	83	
6.3.2	High-tech exports less re-exports, %	4.8	39	
6.3.3	Comm., computer & info. services exports, %	37.9	1	●
6.3.4	FDI net outflows, % GDP	0.8	51	
7	**Creative outputs**	**38.6**	**65**	
7.1	Intangible assets	48.8	44	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	27.7	55	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	66.5	35	
7.1.4	ICT & organizational model creation†	64.5	26	●
7.2	Creative goods & services	39.4	53	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	1.5	63	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	13.3	44	
7.2.4	Printing & publishing manufactures, %	0.6	85	○
7.2.5	Creative goods exports, %	6.0	11	●
7.3	Online creativity	17.5	105	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.3	95	
7.3.2	Country-code TLDs/th pop. 15–69	14.9	85	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	157.7	108	
7.3.4	Video uploads on YouTube/pop. 15–69	53.0	109	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Indonesia

Key indicators

Population (millions)	246.8
GDP (US$ billions)	894.9
GDP per capita, PPP$	4,957.6
Income group	Lower-middle income
Region	South East Asia and Oceania

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**32.0**	**85**	
Innovation Output Sub-Index		32.6	62	
Innovation Input Sub-Index		31.3	115	
Innovation Efficiency Ratio		1.0	6	●
Global Innovation Index 2012 (based on GII 2012 framework)		28.1	100	
1	**Institutions**	**37.2**	**138**	○
1.1	Political environment	45.6	103	
1.1.1	Political stability*	46.0	112	
1.1.2	Government effectiveness*	31.8	84	
1.1.3	Press freedom*	59.0	112	
1.2	Regulatory environment	17.7	139	○
1.2.1	Regulatory quality*	41.1	96	
1.2.2	Rule of law*	29.6	104	
1.2.3	Cost of redundancy dismissal, salary weeks	57.8	138	○
1.3	Business environment	48.5	121	
1.3.1	Ease of starting a business*	71.3	108	
1.3.2	Ease of resolving insolvency*	15.9	129	○
1.3.3	Ease of paying taxes*	58.2	106	
2	**Human capital & research**	**24.3**	**99**	
2.1	Education	40.0	104	
2.1.1	Current expenditure on education, % GNI	2.7	99	
2.1.2	Public expenditure/pupil, % GDP/cap	12.2	95	
2.1.3	School life expectancy, years	12.9	77	
2.1.4	PISA scales in reading, maths, & science	385.2	63	○
2.1.5	Pupil-teacher ratio, secondary	12.2	46	
2.2	Tertiary education	21.0	99	
2.2.1	Tertiary enrolment, % gross	23.1	86	
2.2.2	Graduates in science & engineering, %	22.8	34	●
2.2.3	Tertiary inbound mobility, %	0.1	102	○
2.2.4	Gross tertiary outbound enrolment, %	0.2	130	○
2.3	Research & development (R&D)	11.8	58	
2.3.1	Researchers, headcounts/mn pop.	173.3	82	
2.3.2	Gross expenditure on R&D, % GDP	0.1	98	○
2.3.3	QS university ranking, average score top 3*	32.6	35	●
3	**Infrastructure**	**29.1**	**82**	
3.1	Information & communication technologies (ICTs)	28.9	85	
3.1.1	ICT access*	33.7	96	
3.1.2	ICT use*	11.0	95	
3.1.3	Government's online service*	49.7	67	
3.1.4	E-participation*	21.1	64	
3.2	General infrastructure	32.5	54	
3.2.1	Electricity output, kWh/cap	707.8	100	
3.2.2	Electricity consumption, kWh/cap	641.3	102	
3.2.3	Logistics performance*	48.5	59	
3.2.4	Gross capital formation, % GDP	34.9	11	●
3.3	Ecological sustainability	25.9	87	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.5	90	
3.3.2	Environmental performance*	52.3	71	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.8	67	
4	**Market sophistication**	**41.2**	**99**	
4.1	Credit	23.3	119	
4.1.1	Ease of getting credit*	43.8	110	○
4.1.2	Domestic credit to private sector, % GDP	31.7	96	
4.1.3	Microfinance gross loans, % GDP	1.2	34	
4.2	Investment	25.8	70	
4.2.1	Ease of protecting investors*	61.9	42	●
4.2.2	Market capitalization, % GDP	46.1	39	
4.2.3	Total value of stocks traded, % GDP	16.5	32	●
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	72	
4.3	Trade & competition	74.5	86	
4.3.1	Applied tariff rate, weighted mean, %	2.5	52	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.9	95	
4.3.3	Intensity of local competition†	57.0	93	
5	**Business sophistication**	**25.0**	**112**	
5.1	Knowledge workers	18.2	141	○
5.1.1	Knowledge-intensive employment, %	8.5	96	○
5.1.2	Firms offering formal training, % firms	4.7	105	○
5.1.3	R&D performed by business, % GDP	0.0	79	○
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	509.8	69	
5.1.6	GMAT test takers/mn pop. 20–34	16.9	118	
5.2	Innovation linkages	29.5	55	
5.2.1	University/industry research collaboration†	53.0	38	●
5.2.2	State of cluster development†	54.4	32	●
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	68	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	27.2	69	
5.3.1	Royalty & license fees payments, % service imports	5.5	24	●
5.3.2	High-tech imports less re-imports, %	9.8	52	
5.3.3	Comm., computer & info. services imports, %	4.7	60	
5.3.4	FDI net inflows, % GDP	2.1	85	
6	**Knowledge & technology outputs**	**24.3**	**81**	
6.1	Knowledge creation	3.3	127	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.5	80	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	90	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.2	47	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.1	138	○
6.1.5	Citable documents H index	103.0	55	
6.2	Knowledge impact	36.1	58	
6.2.1	Growth rate of PPP$ GDP/worker, %	5.4	11	●
6.2.2	New businesses/th pop. 15–64	0.3	90	
6.2.3	Computer software spending, % GDP	0.3	43	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.6	76	
6.2.5	High- & medium-high-tech manufactures, %	32.0	33	●
6.3	Knowledge diffusion	23.1	87	
6.3.1	Royalty & license fees receipts, % service exports	0.4	61	
6.3.2	High-tech exports less re-exports, %	3.6	49	
6.3.3	Comm., computer & info. services exports, %	7.9	57	
6.3.4	FDI net outflows, % GDP	0.9	47	
7	**Creative outputs**	**40.8**	**57**	
7.1	Intangible assets	57.2	16	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	58.3	64	
7.1.4	ICT & organizational model creation†	56.2	53	
7.2	Creative goods & services	32.8	78	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	0.5	90	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	5.5	83	
7.2.4	Printing & publishing manufactures, %	1.0	78	
7.2.5	Creative goods exports, %	2.5	31	●
7.3	Online creativity	16.0	112	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.1	89	
7.3.2	Country-code TLDs/th pop. 15–69	5.9	109	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	247.9	105	
7.3.4	Video uploads on YouTube/pop. 15–69	54.5	105	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Iran (Islamic Republic of)

Key indicators

Population (millions)	76.4
GDP (US$ billions)	483.8
GDP per capita, PPP$	13,103.9
Income group	Upper-middle income
Region	Central and Southern Asia

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**27.3**	**113**	
	Innovation Output Sub-Index	22.2	120	
	Innovation Input Sub-Index	32.4	107	
	Innovation Efficiency Ratio	0.7	107	
	Global Innovation Index 2012 (based on GII 2012 framework)	27.3	104	
1	**Institutions**	**42.8**	**132**	○
1.1	Political environment	27.6	138	○
1.1.1	Political stability*	30.5	133	○
1.1.2	Government effectiveness*	25.7	97	
1.1.3	Press freedom*	26.6	139	○
1.2	Regulatory environment	41.9	128	○
1.2.1	Regulatory quality*	5.6	141	○
1.2.2	Rule of law*	22.9	121	
1.2.3	Cost of redundancy dismissal, salary weeks	23.1	106	
1.3	Business environment	58.8	88	
1.3.1	Ease of starting a business*	86.3	59	
1.3.2	Ease of resolving insolvency*	25.3	111	
1.3.3	Ease of paying taxes*	64.9	90	
2	**Human capital & research**	**35.0**	**56**	
2.1	Education	45.5	89	
2.1.1	Current expenditure on education, % GNI	4.1	70	
2.1.2	Public expenditure/pupil, % GDP/cap	19.8	56	
2.1.3	School life expectancy, years	13.9	54	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	21.7	96	
2.2	Tertiary education	45.5	26	●
2.2.1	Tertiary enrolment, % gross	48.6	49	●
2.2.2	Graduates in science & engineering, %	46.7	2	●
2.2.3	Tertiary inbound mobility, %	0.1	103	○
2.2.4	Gross tertiary outbound enrolment, %	0.5	99	
2.3	Research & development (R&D)	14.2	52	●
2.3.1	Researchers, headcounts/mn pop.	1,491.4	44	
2.3.2	Gross expenditure on R&D, % GDP	0.8	41	●
2.3.3	QS university ranking, average score top 3*	13.6	54	
3	**Infrastructure**	**29.4**	**79**	
3.1	Information & communication technologies (ICTs)	32.9	76	
3.1.1	ICT access*	44.7	72	
3.1.2	ICT use*	19.5	72	
3.1.3	Government's online service*	49.0	71	
3.1.4	E-participation*	18.4	72	
3.2	General infrastructure	34.2	47	●
3.2.1	Electricity output, kWh/cap	3,149.3	61	
3.2.2	Electricity consumption, kWh/cap	2,652.3	65	
3.2.3	Logistics performance*	37.3	107	
3.2.4	Gross capital formation, % GDP	38.4	6	●
3.3	Ecological sustainability	21.2	110	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.7	102	
3.3.2	Environmental performance*	42.7	109	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.6	72	
4	**Market sophistication**	**31.6**	**133**	○
4.1	Credit	36.0	74	
4.1.1	Ease of getting credit*	56.3	80	
4.1.2	Domestic credit to private sector, % GDP	36.7	88	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	12.7	136	○
4.2.1	Ease of protecting investors*	38.1	123	○
4.2.2	Market capitalization, % GDP	19.1	73	
4.2.3	Total value of stocks traded, % GDP	5.2	51	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	46.2	137	○
4.3.1	Applied tariff rate, weighted mean, %	19.6	142	○
4.3.2	Non-agricultural mkt access weighted tariff, %	1.4	86	
4.3.3	Intensity of local competition†	54.3	103	
5	**Business sophistication**	**23.2**	**120**	
5.1	Knowledge workers	34.2	107	
5.1.1	Knowledge-intensive employment, %	15.0	83	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	0.1	59	
5.1.4	R&D financed by business, %	30.9	51	
5.1.5	GMAT mean score	523.8	53	●
5.1.6	GMAT test takers/mn pop. 20–34	29.0	105	
5.2	Innovation linkages	20.0	99	
5.2.1	University/industry research collaboration†	39.5	85	
5.2.2	State of cluster development†	39.3	91	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	113	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	68	
5.3	Knowledge absorption	15.3	125	○
5.3.1	Royalty & license fees payments, % service imports	0.8	88	
5.3.2	High-tech imports less re-imports, %	7.3	78	
5.3.3	Comm., computer & info. services imports, %	2.7	93	
5.3.4	FDI net inflows, % GDP	0.9	123	○
6	**Knowledge & technology outputs**	**20.9**	**96**	
6.1	Knowledge creation	27.7	34	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	8.0	21	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	22.6	40	●
6.1.5	Citable documents H index	121.0	50	●
6.2	Knowledge impact	35.5	64	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.9	89	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.2	70	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.8	86	
6.2.5	High- & medium-high-tech manufactures, %	45.5	12	●
6.3	Knowledge diffusion	2.9	138	○
6.3.1	Royalty & license fees receipts, % service exports	0.1	82	
6.3.2	High-tech exports less re-exports, %	0.5	90	
6.3.3	Comm., computer & info. services exports, %	1.9	121	○
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**23.5**	**127**	○
7.1	Intangible assets	24.6	131	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	0.0	92	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.0	63	
7.1.3	ICT & business model creation†	52.1	89	
7.1.4	ICT & organizational model creation†	46.0	94	
7.2	Creative goods & services	28.7	90	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	7.2	20	●
7.2.3	Paid-for dailies, circulation, % pop. 15–69	2.9	100	
7.2.4	Printing & publishing manufactures, %	0.3	93	○
7.2.5	Creative goods exports, %	0.5	67	
7.3	Online creativity	16.0	111	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.3	85	
7.3.2	Country-code TLDs/th pop. 15–69	26.0	65	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	510.8	89	
7.3.4	Video uploads on YouTube/pop. 15–69	32.9	128	○

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ireland

Key indicators

Population (millions)	4.7
GDP (US$ billions)	204.7
GDP per capita, PPP$	41,739.4
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**57.9**	**10**	
	Innovation Output Sub-Index	51.7	11	
	Innovation Input Sub-Index	64.1	12	
	Innovation Efficiency Ratio	0.8	57	
	Global Innovation Index 2012 (based on GII 2012 framework)	58.7	9	
1	**Institutions**	**91.9**	**8**	●
1.1	Political environment	86.0	15	
1.1.1	Political stability*	90.6	19	
1.1.2	Government effectiveness*	77.4	20	
1.1.3	Press freedom*	89.9	13	
1.2	Regulatory environment	96.9	5	●
1.2.1	Regulatory quality*	92.6	11	
1.2.2	Rule of law*	95.0	10	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	
1.3	Business environment	93.0	3	●
1.3.1	Ease of starting a business*	92.7	16	
1.3.2	Ease of resolving insolvency*	92.8	9	
1.3.3	Ease of paying taxes*	93.5	6	●
2	**Human capital & research**	**59.3**	**9**	
2.1	Education	78.4	2	●
2.1.1	Current expenditure on education, % GNI	7.1	12	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	18.7	3	●
2.1.4	PISA scales in reading, maths, & science	496.9	21	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	Tertiary education	54.0	12	
2.2.1	Tertiary enrolment, % gross	66.2	22	
2.2.2	Graduates in science & engineering, %	23.2	30	
2.2.3	Tertiary inbound mobility, %	7.0	23	
2.2.4	Gross tertiary outbound enrolment, %	6.7	10	
2.3	Research & development (R&D)	45.4	21	
2.3.1	Researchers, headcounts/mn pop.	4,748.7	20	
2.3.2	Gross expenditure on R&D, % GDP	1.8	22	
2.3.3	QS university ranking, average score top 3*	60.2	16	
3	**Infrastructure**	**42.2**	**37**	
3.1	Information & communication technologies (ICTs)	49.7	41	
3.1.1	ICT access*	76.4	20	
3.1.2	ICT use*	55.7	20	
3.1.3	Government's online service*	53.6	55	
3.1.4	E-participation*	13.2	84	○
3.2	General infrastructure	29.8	68	○
3.2.1	Electricity output, kWh/cap	6,017.8	37	
3.2.2	Electricity consumption, kWh/cap	5,661.1	36	
3.2.3	Logistics performance*	63.0	24	
3.2.4	Gross capital formation, % GDP	9.8	141	○
3.3	Ecological sustainability	47.0	19	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	12.0	4	●
3.3.2	Environmental performance*	58.7	35	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.5	28	
4	**Market sophistication**	**73.2**	**8**	●
4.1	Credit	93.6	3	●
4.1.1	Ease of getting credit*	87.5	12	
4.1.2	Domestic credit to private sector, % GDP	207.6	3	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	47.1	20	
4.2.1	Ease of protecting investors*	85.6	9	
4.2.2	Market capitalization, % GDP	16.3	79	○
4.2.3	Total value of stocks traded, % GDP	7.2	48	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.3	5	●
4.3	Trade & competition	79.0	47	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	70.4	39	
5	**Business sophistication**	**53.8**	**6**	●
5.1	Knowledge workers	65.8	15	
5.1.1	Knowledge-intensive employment, %	29.3	37	
5.1.2	Firms offering formal training, % firms	73.2	3	●
5.1.3	R&D performed by business, % GDP	1.2	19	
5.1.4	R&D financed by business, %	48.1	23	
5.1.5	GMAT mean score	545.9	42	
5.1.6	GMAT test takers/mn pop. 20–34	343.7	13	
5.2	Innovation linkages	49.0	15	
5.2.1	University/industry research collaboration†	68.3	13	
5.2.2	State of cluster development†	59.1	23	
5.2.3	R&D financed by abroad, %	19.2	15	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	15	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	1.0	20	
5.3	Knowledge absorption	46.6	11	
5.3.1	Royalty & license fees payments, % service imports	35.7	1	●
5.3.2	High-tech imports less re-imports, %	19.3	7	●
5.3.3	Comm., computer & info. services imports, %	2.1	104	○
5.3.4	FDI net inflows, % GDP	5.3	41	
6	**Knowledge & technology outputs**	**55.6**	**4**	●
6.1	Knowledge creation	36.5	23	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	5.8	28	
6.1.2	PCT resident patent ap/bn PPP$ GDP	2.1	21	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	34.6	24	
6.1.5	Citable documents H index	254.0	27	
6.2	Knowledge impact	59.0	4	●
6.2.1	Growth rate of PPP$ GDP/worker, %	3.1	37	
6.2.2	New businesses/th pop. 15–64	4.8	22	
6.2.3	Computer software spending, % GDP	0.9	2	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	10.0	46	
6.2.5	High- & medium-high-tech manufactures, %	63.7	2	●
6.3	Knowledge diffusion	61.7	3	●
6.3.1	Royalty & license fees receipts, % service exports	2.3	24	
6.3.2	High-tech exports less re-exports, %	20.8	8	
6.3.3	Comm., computer & info. services exports, %	41.2	1	●
6.3.4	FDI net outflows, % GDP	–1.7	123	○
7	**Creative outputs**	**47.9**	**26**	
7.1	Intangible assets	38.2	93	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	11.4	80	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.6	37	○
7.1.3	ICT & business model creation†	70.5	23	
7.1.4	ICT & organizational model creation†	66.3	19	
7.2	Creative goods & services	47.1	27	
7.2.1	Audio-visual & related services exports, %	0.3	29	
7.2.2	National feature films/mn pop. 15–69	10.0	14	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	19.6	25	
7.2.4	Printing & publishing manufactures, %	1.6	54	○
7.2.5	Creative goods exports, %	3.8	19	
7.3	Online creativity	68.0	13	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	85.0	11	
7.3.2	Country-code TLDs/th pop. 15–69	55.5	30	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	7,534.8	18	
7.3.4	Video uploads on YouTube/pop. 15–69	87.6	13	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	7.9
GDP (US$ billions)	246.8
GDP per capita, PPP$	32,212.0
Income group	High income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**56.0**	**14**	
Innovation Output Sub-Index		52.1	9	
Innovation Input Sub-Index		59.8	19	
Innovation Efficiency Ratio		0.9	38	
Global Innovation Index 2012 (based on GII 2012 framework)		56.0	17	
1	**Institutions**	**65.7**	**56**	
1.1	Political environment	57.6	62	
1.1.1	Political stability*	34.3	126	○
1.1.2	Government effectiveness*	71.4	26	
1.1.3	Press freedom*	67.0	90	○
1.2	Regulatory environment	70.1	52	
1.2.1	Regulatory quality*	84.8	20	
1.2.2	Rule of law*	73.6	32	
1.2.3	Cost of redundancy dismissal, salary weeks	27.4	122	○
1.3	Business environment	69.5	50	
1.3.1	Ease of starting a business*	88.2	45	
1.3.2	Ease of resolving insolvency*	49.2	43	
1.3.3	Ease of paying taxes*	71.2	61	
2	**Human capital & research**	**59.5**	**8**	
2.1	Education	60.5	46	
2.1.1	Current expenditure on education, % GNI	5.7	27	
2.1.2	Public expenditure/pupil, % GDP/cap	19.3	59	○
2.1.3	School life expectancy, years	15.7	25	
2.1.4	PISA scales in reading, maths, & science	458.6	38	○
2.1.5	Pupil-teacher ratio, secondary	9.8	23	
2.2	Tertiary education	42.5	36	
2.2.1	Tertiary enrolment, % gross	62.5	30	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	2.4	41	
2.3	Research & development (R&D)	75.5	3	●
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	4.4	1	●
2.3.3	QS university ranking, average score top 3*	51.1	21	
3	**Infrastructure**	**49.4**	**23**	
3.1	Information & communication technologies (ICTs)	74.6	10	
3.1.1	ICT access*	73.4	24	
3.1.2	ICT use*	50.7	24	
3.1.3	Government's online service*	85.0	15	
3.1.4	E-participation*	89.5	7	●
3.2	General infrastructure	37.3	37	
3.2.1	Electricity output, kWh/cap	7,677.1	25	
3.2.2	Electricity consumption, kWh/cap	6,829.6	25	
3.2.3	Logistics performance*	60.3	31	
3.2.4	Gross capital formation, % GDP	19.9	93	○
3.3	Ecological sustainability	36.4	44	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.5	27	
3.3.2	Environmental performance*	54.6	59	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.0	42	
4	**Market sophistication**	**69.8**	**13**	
4.1	Credit	65.9	21	
4.1.1	Ease of getting credit*	87.5	12	
4.1.2	Domestic credit to private sector, % GDP	95.1	34	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	62.3	11	
4.2.1	Ease of protecting investors*	86.7	6	●
4.2.2	Market capitalization, % GDP	59.7	28	
4.2.3	Total value of stocks traded, % GDP	48.3	22	
4.2.4	Venture capital deals/tr PPP$ GDP	0.4	1	●
4.3	Trade & competition	81.1	29	
4.3.1	Applied tariff rate, weighted mean, %	3.5	59	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.4	46	
4.3.3	Intensity of local competition†	65.2	66	○
5	**Business sophistication**	**54.6**	**5**	●
5.1	Knowledge workers	69.9	11	
5.1.1	Knowledge-intensive employment, %	31.5	28	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	3.5	1	●
5.1.4	R&D financed by business, %	39.0	41	
5.1.5	GMAT mean score	486.3	89	○
5.1.6	GMAT test takers/mn pop. 20–34	1,461.6	3	●
5.2	Innovation linkages	67.6	2	●
5.2.1	University/industry research collaboration†	73.2	8	
5.2.2	State of cluster development†	52.6	35	
5.2.3	R&D financed by abroad, %	42.8	6	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	9	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	3.7	9	
5.3	Knowledge absorption	26.3	73	○
5.3.1	Royalty & license fees payments, % service imports	5.4	25	
5.3.2	High-tech imports less re-imports, %	11.4	35	
5.3.3	Comm., computer & info. services imports, %	1.5	115	○
5.3.4	FDI net inflows, % GDP	4.7	48	
6	**Knowledge & technology outputs**	**56.0**	**3**	●
6.1	Knowledge creation	51.9	11	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	5.7	29	
6.1.2	PCT resident patent ap/bn PPP$ GDP	5.6	11	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	46.6	10	
6.1.5	Citable documents H index	393.0	15	
6.2	Knowledge impact	50.6	20	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.5	70	○
6.2.2	New businesses/th pop. 15–64	4.5	26	
6.2.3	Computer software spending, % GDP	0.3	38	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	31.7	11	
6.2.5	High- & medium-high-tech manufactures, %	57.2	4	●
6.3	Knowledge diffusion	63.6	2	●
6.3.1	Royalty & license fees receipts, % service exports	4.0	17	
6.3.2	High-tech exports less re-exports, %	17.2	11	
6.3.3	Comm., computer & info. services exports, %	37.3	1	●
6.3.4	FDI net outflows, % GDP	1.4	43	
7	**Creative outputs**	**48.2**	**23**	
7.1	Intangible assets	39.1	88	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	14.2	74	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.6	36	○
7.1.3	ICT & business model creation†	71.8	20	
7.1.4	ICT & organizational model creation†	66.2	20	
7.2	Creative goods & services	49.2	21	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	5.3	30	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	14.5	37	
7.2.4	Printing & publishing manufactures, %	2.6	27	
7.2.5	Creative goods exports, %	2.5	30	
7.3	Online creativity	65.6	16	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	30.7	25	
7.3.2	Country-code TLDs/th pop. 15–69	53.1	32	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	14,159.1	4	●
7.3.4	Video uploads on YouTube/pop. 15–69	96.4	3	●

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Italy

Key indicators

Population (millions)	64.7
GDP (US$ billions)	1,980.4
GDP per capita, PPP$	30,116.2
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**47.8**	**29**	
	Innovation Output Sub-Index	42.4	29	
	Innovation Input Sub-Index	53.3	28	
	Innovation Efficiency Ratio	0.8	62	
	Global Innovation Index 2012 (based on GII 2012 framework)	44.5	36	
1	**Institutions**	**73.6**	**37**	
1.1	Political environment	68.3	47	
1.1.1	Political stability*	80.5	40	
1.1.2	Government effectiveness*	50.7	49	
1.1.3	Press freedom*	73.9	48	
1.2	Regulatory environment	81.9	28	
1.2.1	Regulatory quality*	69.2	38	
1.2.2	Rule of law*	58.3	50	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	
1.3	Business environment	70.7	43	
1.3.1	Ease of starting a business*	87.6	51	
1.3.2	Ease of resolving insolvency*	67.5	29	
1.3.3	Ease of paying taxes*	56.9	109	○
2	**Human capital & research**	**43.2**	**34**	
2.1	Education	62.0	41	
2.1.1	Current expenditure on education, % GNI	4.5	55	
2.1.2	Public expenditure/pupil, % GDP/cap	25.5	26	
2.1.3	School life expectancy, years	16.1	19	●
2.1.4	PISA scales in reading, maths, & science	485.9	31	
2.1.5	Pupil-teacher ratio, secondary	10.1	27	
2.2	Tertiary education	36.4	53	
2.2.1	Tertiary enrolment, % gross	65.0	26	
2.2.2	Graduates in science & engineering, %	19.1	55	
2.2.3	Tertiary inbound mobility, %	3.5	42	
2.2.4	Gross tertiary outbound enrolment, %	1.4	66	
2.3	Research & development (R&D)	31.3	29	
2.3.1	Researchers, headcounts/mn pop.	2,474.1	33	
2.3.2	Gross expenditure on R&D, % GDP	1.3	29	
2.3.3	QS university ranking, average score top 3*	46.7	23	
3	**Infrastructure**	**51.0**	**20**	●
3.1	Information & communication technologies (ICTs)	50.6	40	
3.1.1	ICT access*	71.1	29	
3.1.2	ICT use*	47.5	29	
3.1.3	Government's online service*	57.5	48	
3.1.4	E-participation*	26.3	55	
3.2	General infrastructure	35.3	43	
3.2.1	Electricity output, kWh/cap	4,954.7	45	
3.2.2	Electricity consumption, kWh/cap	5,401.5	39	
3.2.3	Logistics performance*	66.8	22	
3.2.4	Gross capital formation, % GDP	18.4	110	○
3.3	Ecological sustainability	67.1	1	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	10.0	15	●
3.3.2	Environmental performance*	68.9	8	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	11.4	6	●
4	**Market sophistication**	**54.7**	**33**	
4.1	Credit	53.9	36	
4.1.1	Ease of getting credit*	50.0	93	○
4.1.2	Domestic credit to private sector, % GDP	122.4	21	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	32.9	42	
4.2.1	Ease of protecting investors*	61.5	49	
4.2.2	Market capitalization, % GDP	19.7	72	○
4.2.3	Total value of stocks traded, % GDP	40.4	26	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	42	
4.3	Trade & competition	77.2	64	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	65.0	67	
5	**Business sophistication**	**44.1**	**31**	
5.1	Knowledge workers	63.0	26	
5.1.1	Knowledge-intensive employment, %	39.6	12	●
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	0.7	28	
5.1.4	R&D financed by business, %	44.7	32	
5.1.5	GMAT mean score	561.3	28	
5.1.6	GMAT test takers/mn pop. 20–34	196.3	31	
5.2	Innovation linkages	33.6	45	
5.2.1	University/industry research collaboration†	43.9	64	
5.2.2	State of cluster development†	62.0	17	●
5.2.3	R&D financed by abroad, %	9.8	40	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	70	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.9	22	
5.3	Knowledge absorption	35.9	33	
5.3.1	Royalty & license fees payments, % service imports	6.5	20	
5.3.2	High-tech imports less re-imports, %	9.8	51	
5.3.3	Comm., computer & info. services imports, %	9.6	11	●
5.3.4	FDI net inflows, % GDP	1.3	115	○
6	**Knowledge & technology outputs**	**41.7**	**21**	●
6.1	Knowledge creation	33.2	29	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	6.9	24	
6.1.2	PCT resident patent ap/bn PPP$ GDP	1.5	27	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.2	25	
6.1.4	Scientific & technical articles/bn PPP$ GDP	28.2	32	
6.1.5	Citable documents H index	550.0	7	●
6.2	Knowledge impact	52.1	14	●
6.2.1	Growth rate of PPP$ GDP/worker, %	0.3	95	○
6.2.2	New businesses/th pop. 15–64	1.6	51	
6.2.3	Computer software spending, % GDP	0.6	13	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	93.1	1	●
6.2.5	High- & medium-high-tech manufactures, %	36.0	26	
6.3	Knowledge diffusion	35.6	34	
6.3.1	Royalty & license fees receipts, % service exports	3.4	19	
6.3.2	High-tech exports less re-exports, %	6.4	31	
6.3.3	Comm., computer & info. services exports, %	8.6	52	
6.3.4	FDI net outflows, % GDP	2.5	26	
7	**Creative outputs**	**43.0**	**43**	
7.1	Intangible assets	41.5	81	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	79.1	15	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	1.5	23	
7.1.3	ICT & business model creation†	52.5	88	○
7.1.4	ICT & organizational model creation†	44.9	97	○
7.2	Creative goods & services	35.7	64	
7.2.1	Audio-visual & related services exports, %	0.1	51	○
7.2.2	National feature films/mn pop. 15–69	3.6	41	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	10.4	56	
7.2.4	Printing & publishing manufactures, %	1.6	57	○
7.2.5	Creative goods exports, %	2.6	29	
7.3	Online creativity	53.4	26	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	26.9	27	
7.3.2	Country-code TLDs/th pop. 15–69	55.9	28	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	8,406.5	13	●
7.3.4	Video uploads on YouTube/pop. 15–69	82.0	29	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Jamaica

Key indicators

Population (millions)	2.8
GDP (US$ billions)	15.3
GDP per capita, PPP$	9,119.0
Income group	Upper-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**32.9**	**82**	
Innovation Output Sub-Index		29.0	84	
Innovation Input Sub-Index		36.8	85	
Innovation Efficiency Ratio		0.8	65	●
Global Innovation Index 2012 (based on GII 2012 framework)		30.2	91	
1	**Institutions**	**67.8**	**54**	●
1.1	Political environment	65.7	48	●
1.1.1	Political stability*	63.2	77	
1.1.2	Government effectiveness*	43.8	57	●
1.1.3	Press freedom*	90.1	11	●
1.2	Regulatory environment	67.4	67	
1.2.1	Regulatory quality*	58.1	62	●
1.2.2	Rule of law*	35.5	85	
1.2.3	Cost of redundancy dismissal, salary weeks	14.0	64	●
1.3	Business environment	70.2	47	●
1.3.1	Ease of starting a business*	89.0	35	●
1.3.2	Ease of resolving insolvency*	67.2	30	●
1.3.3	Ease of paying taxes*	54.3	115	
2	**Human capital & research**	**26.0**	**92**	
2.1	Education	54.5	66	
2.1.1	Current expenditure on education, % GNI	6.0	19	●
2.1.2	Public expenditure/pupil, % GDP/cap	19.7	58	
2.1.3	School life expectancy, years	12.9	75	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	14.6	65	
2.2	Tertiary education	23.5	84	
2.2.1	Tertiary enrolment, % gross	26.0	81	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	2.2	48	●
2.3	Research & development (R&D)	0.0	123	○
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**24.2**	**103**	
3.1	Information & communication technologies (ICTs)	21.5	105	
3.1.1	ICT access*	39.6	82	
3.1.2	ICT use*	15.6	81	
3.1.3	Government's online service*	30.7	117	
3.1.4	E-participation*	0.0	129	○
3.2	General infrastructure	23.0	113	
3.2.1	Electricity output, kWh/cap	1,553.3	84	
3.2.2	Electricity consumption, kWh/cap	1,222.4	87	
3.2.3	Logistics performance*	35.5	118	○
3.2.4	Gross capital formation, % GDP	24.8	50	●
3.3	Ecological sustainability	28.1	77	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.1	67	
3.3.2	Environmental performance*	54.4	61	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	91	
4	**Market sophistication**	**38.9**	**111**	
4.1	Credit	20.8	126	○
4.1.1	Ease of getting credit*	50.0	93	
4.1.2	Domestic credit to private sector, % GDP	26.8	104	
4.1.3	Microfinance gross loans, % GDP	0.2	63	
4.2	Investment	20.3	97	
4.2.1	Ease of protecting investors*	56.3	67	
4.2.2	Market capitalization, % GDP	50.0	36	●
4.2.3	Total value of stocks traded, % GDP	1.5	69	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	75.7	76	
4.3.1	Applied tariff rate, weighted mean, %	7.5	103	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	4	●
4.3.3	Intensity of local competition†	65.4	65	
5	**Business sophistication**	**27.0**	**104**	
5.1	Knowledge workers	40.1	84	
5.1.1	Knowledge-intensive employment, %	20.1	64	
5.1.2	Firms offering formal training, % firms	25.9	72	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	434.4	119	○
5.1.6	GMAT test takers/mn pop. 20–34	284.9	22	●
5.2	Innovation linkages	21.3	89	
5.2.1	University/industry research collaboration†	41.3	75	
5.2.2	State of cluster development†	44.0	68	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	19.5	108	
5.3.1	Royalty & license fees payments, % service imports	2.0	64	
5.3.2	High-tech imports less re-imports, %	4.8	112	○
5.3.3	Comm., computer & info. services imports, %	5.8	45	●
5.3.4	FDI net inflows, % GDP	1.2	116	
6	**Knowledge & technology outputs**	**17.6**	**116**	
6.1	Knowledge creation	6.1	96	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.8	71	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.2	94	
6.1.5	Citable documents H index	54.0	99	
6.2	Knowledge impact	22.7	112	
6.2.1	Growth rate of PPP$ GDP/worker, %	–0.2	101	○
6.2.2	New businesses/th pop. 15–64	1.1	60	
6.2.3	Computer software spending, % GDP	0.3	31	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.6	123	○
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	18.1	113	
6.3.1	Royalty & license fees receipts, % service exports	0.2	73	
6.3.2	High-tech exports less re-exports, %	0.2	103	
6.3.3	Comm., computer & info. services exports, %	6.4	68	
6.3.4	FDI net outflows, % GDP	0.5	59	
7	**Creative outputs**	**40.4**	**58**	●
7.1	Intangible assets	54.0	27	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	54.0	81	
7.1.4	ICT & organizational model creation†	54.0	63	●
7.2	Creative goods & services	28.9	88	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	6.5	73	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.1	96	
7.3	Online creativity	24.8	78	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4.4	65	●
7.3.2	Country-code TLDs/th pop. 15–69	20.7	75	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	385.7	96	
7.3.4	Video uploads on YouTube/pop. 15–69	72.0	69	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Japan

Key indicators

Population (millions)	135.2
GDP (US$ billions)	5,984.4
GDP per capita, PPP$	36,179.4
Income group	High income
Region	South East Asia and Oceania

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**52.2**	**22**	
Innovation Output Sub-Index		41.6	33	
Innovation Input Sub-Index		62.8	14	
Innovation Efficiency Ratio		0.7	112	○
Global Innovation Index 2012 (based on GII 2012 framework)		51.7	25	
1	**Institutions**	**83.5**	**20**	
1.1	Political environment	80.0	22	
1.1.1	Political stability*	90.0	21	
1.1.2	Government effectiveness*	75.3	23	
1.1.3	Press freedom*	74.8	44	
1.2	Regulatory environment	88.6	20	
1.2.1	Regulatory quality*	73.0	35	
1.2.2	Rule of law*	81.5	23	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	
1.3	Business environment	81.9	18	
1.3.1	Ease of starting a business*	82.0	77	
1.3.2	Ease of resolving insolvency*	98.3	1	●
1.3.3	Ease of paying taxes*	65.3	85	
2	**Human capital & research**	**57.2**	**12**	
2.1	Education	66.7	25	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	22.8	43	
2.1.3	School life expectancy, years	15.3	32	
2.1.4	PISA scales in reading, maths, & science	529.4	6	
2.1.5	Pupil-teacher ratio, secondary	11.9	40	
2.2	Tertiary education	35.0	57	
2.2.1	Tertiary enrolment, % gross	59.7	36	
2.2.2	Graduates in science & engineering, %	20.5	44	
2.2.3	Tertiary inbound mobility, %	3.7	39	
2.2.4	Gross tertiary outbound enrolment, %	0.6	88	○
2.3	Research & development (R&D)	69.9	6	●
2.3.1	Researchers, headcounts/mn pop.	7,066.3	9	
2.3.2	Gross expenditure on R&D, % GDP	3.3	5	
2.3.3	QS university ranking, average score top 3*	81.7	7	
3	**Infrastructure**	**56.3**	**9**	
3.1	Information & communication technologies (ICTs)	74.4	11	
3.1.1	ICT access*	78.1	16	
3.1.2	ICT use*	59.6	16	
3.1.3	Government's online service*	86.3	9	
3.1.4	E-participation*	73.7	11	
3.2	General infrastructure	43.1	22	
3.2.1	Electricity output, kWh/cap	8,270.1	20	
3.2.2	Electricity consumption, kWh/cap	7,945.4	21	
3.2.3	Logistics performance*	73.3	8	
3.2.4	Gross capital formation, % GDP	20.3	89	○
3.3	Ecological sustainability	51.3	13	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.4	30	
3.3.2	Environmental performance*	63.4	23	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	6.8	16	
4	**Market sophistication**	**69.7**	**14**	
4.1	Credit	81.9	8	
4.1.1	Ease of getting credit*	81.3	22	
4.1.2	Domestic credit to private sector, % GDP	172.8	10	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	49.2	16	
4.2.1	Ease of protecting investors*	72.2	21	
4.2.2	Market capitalization, % GDP	60.3	26	
4.2.3	Total value of stocks traded, % GDP	70.9	13	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	30	
4.3	Trade & competition	78.1	57	
4.3.1	Applied tariff rate, weighted mean, %	1.6	10	
4.3.2	Non-agricultural mkt access weighted tariff, %	3.8	132	○
4.3.3	Intensity of local competition†	84.1	2	●
5	**Business sophistication**	**47.4**	**21**	
5.1	Knowledge workers	68.4	12	
5.1.1	Knowledge-intensive employment, %	28.4	40	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	2.5	4	
5.1.4	R&D financed by business, %	75.9	2	●
5.1.5	GMAT mean score	548.9	38	
5.1.6	GMAT test takers/mn pop. 20–34	132.2	43	
5.2	Innovation linkages	42.0	27	
5.2.1	University/industry research collaboration†	67.1	15	
5.2.2	State of cluster development†	69.4	3	●
5.2.3	R&D financed by abroad, %	0.4	84	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	43	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	5.5	2	●
5.3	Knowledge absorption	31.6	49	
5.3.1	Royalty & license fees payments, % service imports	11.4	5	●
5.3.2	High-tech imports less re-imports, %	14.4	20	
5.3.3	Comm., computer & info. services imports, %	3.1	84	○
5.3.4	FDI net inflows, % GDP	0.0	136	○
6	**Knowledge & technology outputs**	**44.6**	**16**	
6.1	Knowledge creation	51.0	12	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	64.7	1	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	9.5	4	●
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.4	22	
6.1.4	Scientific & technical articles/bn PPP$ GDP	15.9	53	
6.1.5	Citable documents H index	602.0	6	●
6.2	Knowledge impact	35.8	61	
6.2.1	Growth rate of PPP$ GDP/worker, %	–0.3	106	○
6.2.2	New businesses/th pop. 15–64	1.1	59	
6.2.3	Computer software spending, % GDP	0.3	42	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	12.8	36	
6.2.5	High- & medium-high-tech manufactures, %	52.2	8	
6.3	Knowledge diffusion	50.2	13	
6.3.1	Royalty & license fees receipts, % service exports	20.0	2	●
6.3.2	High-tech exports less re-exports, %	16.2	14	
6.3.3	Comm., computer & info. services exports, %	1.3	133	○
6.3.4	FDI net outflows, % GDP	2.0	33	
7	**Creative outputs**	**38.7**	**63**	
7.1	Intangible assets	33.3	108	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	0.0	93	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.4	41	
7.1.3	ICT & business model creation†	69.1	26	
7.1.4	ICT & organizational model creation†	57.4	49	
7.2	Creative goods & services	49.9	20	
7.2.1	Audio-visual & related services exports, %	0.1	50	○
7.2.2	National feature films/mn pop. 15–69	5.0	31	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	54.6	1	●
7.2.4	Printing & publishing manufactures, %	2.3	34	
7.2.5	Creative goods exports, %	3.3	23	
7.3	Online creativity	38.2	42	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	20.3	33	
7.3.2	Country-code TLDs/th pop. 15–69	38.0	48	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	2,875.7	46	
7.3.4	Video uploads on YouTube/pop. 15–69	77.9	47	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	6.5
GDP (US$ billions)	31.4
GDP per capita, PPP$	6,044.4
Income group	Upper-middle income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**37.3**	**61**	
Innovation Output Sub-Index		32.5	63	
Innovation Input Sub-Index		42.1	61	
Innovation Efficiency Ratio		0.8	73	
Global Innovation Index 2012 (based on GII 2012 framework)		37.1	56	
1	**Institutions**	**65.0**	**59**	
1.1	Political environment	52.4	81	
1.1.1	Political stability*	55.9	91	
1.1.2	Government effectiveness*	39.8	65	
1.1.3	Press freedom*	61.5	107	○
1.2	Regulatory environment	77.4	38	●
1.2.1	Regulatory quality*	56.1	66	
1.2.2	Rule of law*	53.4	52	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	Business environment	65.3	65	
1.3.1	Ease of starting a business*	85.4	63	
1.3.2	Ease of resolving insolvency*	29.8	101	
1.3.3	Ease of paying taxes*	80.8	31	●
2	**Human capital & research**	**36.0**	**53**	
2.1	Education	60.7	45	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	12.7	78	
2.1.4	PISA scales in reading, maths, & science	402.4	55	○
2.1.5	Pupil-teacher ratio, secondary	11.9	39	●
2.2	Tertiary education	35.4	56	
2.2.1	Tertiary enrolment, % gross	37.8	67	
2.2.2	Graduates in science & engineering, %	16.1	69	
2.2.3	Tertiary inbound mobility, %	9.9	17	●
2.2.4	Gross tertiary outbound enrolment, %	2.4	43	
2.3	Research & development (R&D)	11.8	57	
2.3.1	Researchers, headcounts/mn pop.	1,933.7	37	
2.3.2	Gross expenditure on R&D, % GDP	0.4	62	
2.3.3	QS university ranking, average score top 3*	11.2	55	
3	**Infrastructure**	**26.1**	**90**	
3.1	Information & communication technologies (ICTs)	29.2	82	
3.1.1	ICT access*	46.4	68	
3.1.2	ICT use*	20.6	68	
3.1.3	Government's online service*	39.2	96	
3.1.4	E-participation*	10.5	94	
3.2	General infrastructure	25.3	99	
3.2.1	Electricity output, kWh/cap	2,442.8	69	
3.2.2	Electricity consumption, kWh/cap	2,225.6	69	
3.2.3	Logistics performance*	39.0	98	○
3.2.4	Gross capital formation, % GDP	24.2	54	
3.3	Ecological sustainability	23.6	96	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.3	92	
3.3.2	Environmental performance*	42.2	112	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.3	54	
4	**Market sophistication**	**46.5**	**65**	
4.1	Credit	22.0	122	○
4.1.1	Ease of getting credit*	25.0	135	○
4.1.2	Domestic credit to private sector, % GDP	73.5	46	
4.1.3	Microfinance gross loans, % GDP	0.7	44	
4.2	Investment	41.2	26	●
4.2.1	Ease of protecting investors*	44.8	108	○
4.2.2	Market capitalization, % GDP	94.3	13	●
4.2.3	Total value of stocks traded, % GDP	13.9	37	
4.2.4	Venture capital deals/tr PPP$ GDP	0.1	14	●
4.3	Trade & competition	76.2	75	
4.3.1	Applied tariff rate, weighted mean, %	5.2	83	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.7	91	
4.3.3	Intensity of local competition†	73.2	29	●
5	**Business sophistication**	**36.8**	**47**	
5.1	Knowledge workers	40.7	79	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	23.9	82	○
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	456.0	106	○
5.1.6	GMAT test takers/mn pop. 20–34	166.2	37	●
5.2	Innovation linkages	46.8	18	●
5.2.1	University/industry research collaboration†	37.9	91	
5.2.2	State of cluster development†	49.4	49	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.3	1	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	22.9	91	
5.3.1	Royalty & license fees payments, % service imports	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	5.1	105	○
5.3.3	Comm., computer & info. services imports, %	n/a	n/a	
5.3.4	FDI net inflows, % GDP	5.1	42	●
6	**Knowledge & technology outputs**	**25.4**	**75**	
6.1	Knowledge creation	17.6	51	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.1	67	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	26.5	35	●
6.1.5	Citable documents H index	72.0	82	
6.2	Knowledge impact	27.6	92	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.4	92	○
6.2.2	New businesses/th pop. 15–64	0.8	70	
6.2.3	Computer software spending, % GDP	0.3	32	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	9.8	47	
6.2.5	High- & medium-high-tech manufactures, %	20.2	52	
6.3	Knowledge diffusion	27.1	59	
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	1.7	64	
6.3.3	Comm., computer & info. services exports, %	n/a	n/a	
6.3.4	FDI net outflows, % GDP	0.1	84	
7	**Creative outputs**	**39.7**	**59**	
7.1	Intangible assets	46.0	51	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	31.3	51	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	62.5	46	
7.1.4	ICT & organizational model creation†	58.0	45	
7.2	Creative goods & services	44.1	39	●
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	8.6	64	
7.2.4	Printing & publishing manufactures, %	2.1	37	
7.2.5	Creative goods exports, %	2.3	34	●
7.3	Online creativity	22.6	90	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	7.7	52	
7.3.2	Country-code TLDs/th pop. 15–69	10.1	102	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	755.9	80	
7.3.4	Video uploads on YouTube/pop. 15–69	68.2	80	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Kazakhstan

Key indicators

Population (millions)	16.6
GDP (US$ billions)	200.6
GDP per capita, PPP$	13,920.9
Income group	Upper-middle income
Region	Central and Southern Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**32.7**	**84**	
Innovation Output Sub-Index		24.7	106	
Innovation Input Sub-Index		40.7	69	
Innovation Efficiency Ratio		0.6	126	○
Global Innovation Index 2012 (based on GII 2012 framework)		31.9	83	
1	**Institutions**	**62.4**	**64**	
1.1	Political environment	46.0	101	
1.1.1	Political stability*	61.9	80	
1.1.2	Government effectiveness*	31.2	85	
1.1.3	Press freedom*	44.9	129	○
1.2	Regulatory environment	67.5	66	
1.2.1	Regulatory quality*	42.2	95	
1.2.2	Rule of law*	30.3	103	
1.2.3	Cost of redundancy dismissal, salary weeks	8.7	25	●
1.3	Business environment	73.9	33	●
1.3.1	Ease of starting a business*	87.2	53	
1.3.2	Ease of resolving insolvency*	46.2	51	
1.3.3	Ease of paying taxes*	88.2	14	●
2	**Human capital & research**	**32.3**	**64**	
2.1	Education	54.6	65	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	11.7	96	○
2.1.3	School life expectancy, years	15.3	34	●
2.1.4	PISA scales in reading, maths, & science	398.6	59	○
2.1.5	Pupil-teacher ratio, secondary	8.9	15	●
2.2	Tertiary education	29.5	74	
2.2.1	Tertiary enrolment, % gross	40.8	61	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	1.6	65	
2.2.4	Gross tertiary outbound enrolment, %	2.4	44	
2.3	Research & development (R&D)	12.8	53	
2.3.1	Researchers, headcounts/mn pop.	637.3	64	
2.3.2	Gross expenditure on R&D, % GDP	0.2	78	
2.3.3	QS university ranking, average score top 3*	28.7	40	
3	**Infrastructure**	**37.0**	**52**	
3.1	Information & communication technologies (ICTs)	65.8	23	●
3.1.1	ICT access*	59.7	50	
3.1.2	ICT use*	30.1	51	
3.1.3	Government's online service*	78.4	21	●
3.1.4	E-participation*	94.7	3	●
3.2	General infrastructure	29.6	70	
3.2.1	Electricity output, kWh/cap	5,064.1	44	
3.2.2	Electricity consumption, kWh/cap	4,729.7	43	
3.2.3	Logistics performance*	42.3	87	
3.2.4	Gross capital formation, % GDP	23.1	68	
3.3	Ecological sustainability	15.7	123	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	2.4	116	○
3.3.2	Environmental performance*	32.9	121	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.6	76	
4	**Market sophistication**	**43.0**	**89**	
4.1	Credit	24.3	111	
4.1.1	Ease of getting credit*	56.3	80	
4.1.2	Domestic credit to private sector, % GDP	36.0	89	
4.1.3	Microfinance gross loans, % GDP	0.1	68	
4.2	Investment	27.5	63	
4.2.1	Ease of protecting investors*	82.2	12	●
4.2.2	Market capitalization, % GDP	23.0	66	
4.2.3	Total value of stocks traded, % GDP	0.6	78	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	60	
4.3	Trade & competition	77.1	67	
4.3.1	Applied tariff rate, weighted mean, %	3.4	57	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.3	45	
4.3.3	Intensity of local competition†	52.1	111	
5	**Business sophistication**	**28.9**	**90**	
5.1	Knowledge workers	47.1	56	
5.1.1	Knowledge-intensive employment, %	28.3	42	
5.1.2	Firms offering formal training, % firms	40.9	43	
5.1.3	R&D performed by business, % GDP	0.1	61	
5.1.4	R&D financed by business, %	50.7	20	●
5.1.5	GMAT mean score	497.3	77	
5.1.6	GMAT test takers/mn pop. 20–34	75.3	66	
5.2	Innovation linkages	15.0	124	○
5.2.1	University/industry research collaboration†	39.0	88	
5.2.2	State of cluster development†	40.9	83	
5.2.3	R&D financed by abroad, %	1.0	78	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	78	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	24.5	82	
5.3.1	Royalty & license fees payments, % service imports	0.9	87	
5.3.2	High-tech imports less re-imports, %	9.5	56	
5.3.3	Comm., computer & info. services imports, %	2.1	101	
5.3.4	FDI net inflows, % GDP	7.0	25	●
6	**Knowledge & technology outputs**	**21.6**	**92**	
6.1	Knowledge creation	7.1	87	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	6.7	25	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	81	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.4	40	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.7	134	○
6.1.5	Citable documents H index	46.0	112	
6.2	Knowledge impact	33.1	76	
6.2.1	Growth rate of PPP$ GDP/worker, %	5.0	16	●
6.2.2	New businesses/th pop. 15–64	1.6	50	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.7	89	
6.2.5	High- & medium-high-tech manufactures, %	6.8	81	○
6.3	Knowledge diffusion	17.5	115	
6.3.1	Royalty & license fees receipts, % service exports	0.0	110	○
6.3.2	High-tech exports less re-exports, %	3.9	46	
6.3.3	Comm., computer & info. services exports, %	2.5	111	
6.3.4	FDI net outflows, % GDP	2.4	27	●
7	**Creative outputs**	**27.9**	**116**	
7.1	Intangible assets	31.6	113	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	31.0	52	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.3	48	
7.1.3	ICT & business model creation†	51.9	90	
7.1.4	ICT & organizational model creation†	52.5	69	
7.2	Creative goods & services	22.0	109	
7.2.1	Audio-visual & related services exports, %	0.0	65	○
7.2.2	National feature films/mn pop. 15–69	1.1	74	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	2.8	102	
7.2.4	Printing & publishing manufactures, %	1.7	52	
7.2.5	Creative goods exports, %	0.4	75	
7.3	Online creativity	26.2	74	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.8	109	
7.3.2	Country-code TLDs/th pop. 15–69	29.0	60	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,287.7	61	
7.3.4	Video uploads on YouTube/pop. 15–69	67.5	82	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Kenya

Key indicators

Population (millions)	42.9
GDP (US$ billions)	41.8
GDP per capita, PPP$	1,806.8
Income group	Low income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**30.3**	**99**	
Innovation Output Sub-Index		26.4	100	
Innovation Input Sub-Index		34.1	98	
Innovation Efficiency Ratio		0.8	71	
Global Innovation Index 2012 (based on GII 2012 framework)		28.9	96	
1	**Institutions**	**51.5**	**103**	
1.1	Political environment	43.3	114	
1.1.1	Political stability*	34.1	128	○
1.1.2	Government effectiveness*	23.6	102	
1.1.3	Press freedom*	72.2	58	
1.2	Regulatory environment	58.5	95	
1.2.1	Regulatory quality*	45.4	86	
1.2.2	Rule of law*	19.9	126	○
1.2.3	Cost of redundancy dismissal, salary weeks	15.8	74	
1.3	Business environment	52.8	107	
1.3.1	Ease of starting a business*	72.7	105	
1.3.2	Ease of resolving insolvency*	32.0	90	
1.3.3	Ease of paying taxes*	53.7	117	
2	**Human capital & research**	**16.2**	**122**	
2.1	Education	42.5	95	
2.1.1	Current expenditure on education, % GNI	5.9	20	●
2.1.2	Public expenditure/pupil, % GDP/cap	23.7	38	
2.1.3	School life expectancy, years	11.1	104	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	29.7	116	○
2.2	Tertiary education	2.9	140	○
2.2.1	Tertiary enrolment, % gross	4.0	127	○
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.3	114	
2.3	Research & development (R&D)	3.3	88	
2.3.1	Researchers, headcounts/mn pop.	93.6	93	
2.3.2	Gross expenditure on R&D, % GDP	0.4	66	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**20.2**	**117**	
3.1	Information & communication technologies (ICTs)	18.9	112	
3.1.1	ICT access*	23.4	116	
3.1.2	ICT use*	3.8	117	
3.1.3	Government's online service*	43.1	87	
3.1.4	E-participation*	5.3	111	
3.2	General infrastructure	19.8	128	○
3.2.1	Electricity output, kWh/cap	185.2	117	○
3.2.2	Electricity consumption, kWh/cap	156.0	117	○
3.2.3	Logistics performance*	35.8	117	
3.2.4	Gross capital formation, % GDP	22.3	73	
3.3	Ecological sustainability	21.9	106	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.1	110	○
3.3.2	Environmental performance*	49.3	80	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.5	83	
4	**Market sophistication**	**50.7**	**44**	
4.1	Credit	50.2	44	
4.1.1	Ease of getting credit*	87.5	12	●
4.1.2	Domestic credit to private sector, % GDP	38.1	86	
4.1.3	Microfinance gross loans, % GDP	4.3	13	●
4.2	Investment	29.0	53	
4.2.1	Ease of protecting investors*	50.7	94	
4.2.2	Market capitalization, % GDP	30.3	53	
4.2.3	Total value of stocks traded, % GDP	2.6	61	
4.2.4	Venture capital deals/tr PPP$ GDP	0.1	24	●
4.3	Trade & competition	73.0	96	
4.3.1	Applied tariff rate, weighted mean, %	9.2	119	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	5	●
4.3.3	Intensity of local competition†	65.5	63	
5	**Business sophistication**	**31.9**	**69**	
5.1	Knowledge workers	37.2	97	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	48.5	32	
5.1.3	R&D performed by business, % GDP	0.0	67	
5.1.4	R&D financed by business, %	16.8	66	
5.1.5	GMAT mean score	434.8	117	
5.1.6	GMAT test takers/mn pop. 20–34	54.2	79	
5.2	Innovation linkages	25.8	71	
5.2.1	University/industry research collaboration†	52.8	39	
5.2.2	State of cluster development†	47.4	56	
5.2.3	R&D financed by abroad, %	17.6	19	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	32.7	45	
5.3.1	Royalty & license fees payments, % service imports	0.9	84	
5.3.2	High-tech imports less re-imports, %	13.8	23	●
5.3.3	Comm., computer & info. services imports, %	8.3	22	●
5.3.4	FDI net inflows, % GDP	1.0	121	
6	**Knowledge & technology outputs**	**21.9**	**90**	
6.1	Knowledge creation	8.5	76	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.2	65	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	74	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.3	43	
6.1.4	Scientific & technical articles/bn PPP$ GDP	15.9	52	
6.1.5	Citable documents H index	125.0	46	
6.2	Knowledge impact	22.9	110	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.5	46	
6.2.2	New businesses/th pop. 15–64	0.9	68	
6.2.3	Computer software spending, % GDP	0.2	69	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.9	71	
6.2.5	High- & medium-high-tech manufactures, %	3.4	90	○
6.3	Knowledge diffusion	27.7	55	
6.3.1	Royalty & license fees receipts, % service exports	1.5	30	●
6.3.2	High-tech exports less re-exports, %	2.3	58	
6.3.3	Comm., computer & info. services exports, %	9.8	42	
6.3.4	FDI net outflows, % GDP	0.0	99	
7	**Creative outputs**	**31.0**	**98**	
7.1	Intangible assets	34.9	102	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	27.5	57	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.1	59	
7.1.3	ICT & business model creation†	63.0	45	
7.1.4	ICT & organizational model creation†	60.2	37	●
7.2	Creative goods & services	39.8	52	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	1.3	115	
7.2.4	Printing & publishing manufactures, %	2.5	29	
7.2.5	Creative goods exports, %	1.1	49	
7.3	Online creativity	14.4	117	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.1	98	
7.3.2	Country-code TLDs/th pop. 15–69	9.8	104	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	73.2	115	
7.3.4	Video uploads on YouTube/pop. 15–69	46.1	117	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Korea (Republic of)

Key indicators

Population (millions)	49.7
GDP (US$ billions)	1,151.3
GDP per capita, PPP$	32,431.0
Income group	High income
Region	South East Asia and Oceania

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**53.3**	**18**	
Innovation Output Sub-Index		44.5	24	
Innovation Input Sub-Index		62.1	16	
Innovation Efficiency Ratio		0.7	95	○
Global Innovation Index 2012 (based on GII 2012 framework)		53.9	21	
1	**Institutions**	**76.0**	**32**	
1.1	Political environment	73.2	39	
1.1.1	Political stability*	71.8	56	
1.1.2	Government effectiveness*	72.2	24	
1.1.3	Press freedom*	75.5	42	
1.2	Regulatory environment	67.7	65	
1.2.1	Regulatory quality*	74.4	33	
1.2.2	Rule of law*	74.4	31	
1.2.3	Cost of redundancy dismissal, salary weeks	27.4	118	○
1.3	Business environment	87.2	12	
1.3.1	Ease of starting a business*	89.9	30	
1.3.2	Ease of resolving insolvency*	86.8	14	
1.3.3	Ease of paying taxes*	85.0	22	
2	**Human capital & research**	**64.8**	**2**	●
2.1	Education	59.0	49	
2.1.1	Current expenditure on education, % GNI	4.2	65	
2.1.2	Public expenditure/pupil, % GDP/cap	22.1	44	
2.1.3	School life expectancy, years	17.2	6	
2.1.4	PISA scales in reading, maths, & science	541.2	5	
2.1.5	Pupil-teacher ratio, secondary	17.6	85	○
2.2	Tertiary education	56.0	7	
2.2.1	Tertiary enrolment, % gross	103.1	1	●
2.2.2	Graduates in science & engineering, %	30.9	10	
2.2.3	Tertiary inbound mobility, %	1.8	58	
2.2.4	Gross tertiary outbound enrolment, %	4.0	22	
2.3	Research & development (R&D)	79.3	2	●
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	3.7	3	●
2.3.3	QS university ranking, average score top 3*	73.6	11	
3	**Infrastructure**	**60.7**	**4**	●
3.1	Information & communication technologies (ICTs)	87.3	1	●
3.1.1	ICT access*	83.0	11	
3.1.2	ICT use*	66.2	11	
3.1.3	Government's online service*	100.0	1	●
3.1.4	E-participation*	100.0	1	●
3.2	General infrastructure	49.9	8	
3.2.1	Electricity output, kWh/cap	10,538.4	10	
3.2.2	Electricity consumption, kWh/cap	10,236.3	11	
3.2.3	Logistics performance*	67.5	19	
3.2.4	Gross capital formation, % GDP	29.0	24	
3.3	Ecological sustainability	44.8	21	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.3	79	○
3.3.2	Environmental performance*	57.2	42	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	7.0	14	
4	**Market sophistication**	**65.7**	**17**	
4.1	Credit	67.2	19	
4.1.1	Ease of getting credit*	87.5	12	
4.1.2	Domestic credit to private sector, % GDP	100.5	32	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	64.4	8	
4.2.1	Ease of protecting investors*	61.5	49	
4.2.2	Market capitalization, % GDP	89.1	14	
4.2.3	Total value of stocks traded, % GDP	182.1	1	●
4.2.4	Venture capital deals/tr PPP$ GDP	0.1	23	
4.3	Trade & competition	65.6	113	○
4.3.1	Applied tariff rate, weighted mean, %	8.7	114	○
4.3.2	Non-agricultural mkt access weighted tariff, %	3.5	130	○
4.3.3	Intensity of local competition†	79.1	10	
5	**Business sophistication**	**43.3**	**32**	
5.1	Knowledge workers	63.6	24	
5.1.1	Knowledge-intensive employment, %	22.4	53	
5.1.2	Firms offering formal training, % firms	39.5	44	
5.1.3	R&D performed by business, % GDP	2.8	2	●
5.1.4	R&D financed by business, %	71.8	3	●
5.1.5	GMAT mean score	590.1	8	
5.1.6	GMAT test takers/mn pop. 20–34	516.4	10	
5.2	Innovation linkages	38.0	34	
5.2.1	University/industry research collaboration†	61.7	24	
5.2.2	State of cluster development†	58.0	24	
5.2.3	R&D financed by abroad, %	0.2	85	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	61	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	5.2	4	●
5.3	Knowledge absorption	28.2	60	
5.3.1	Royalty & license fees payments, % service imports	7.3	16	
5.3.2	High-tech imports less re-imports, %	15.6	17	
5.3.3	Comm., computer & info. services imports, %	2.0	106	○
5.3.4	FDI net inflows, % GDP	0.4	130	○
6	**Knowledge & technology outputs**	**47.8**	**12**	
6.1	Knowledge creation	63.4	4	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	88.8	1	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	7.3	6	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	7.4	6	
6.1.4	Scientific & technical articles/bn PPP$ GDP	29.1	29	
6.1.5	Citable documents H index	309.0	19	
6.2	Knowledge impact	42.4	39	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.0	56	
6.2.2	New businesses/th pop. 15–64	1.8	46	
6.2.3	Computer software spending, % GDP	0.3	28	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	17.6	27	
6.2.5	High- & medium-high-tech manufactures, %	49.2	10	
6.3	Knowledge diffusion	45.4	19	
6.3.1	Royalty & license fees receipts, % service exports	4.5	15	
6.3.2	High-tech exports less re-exports, %	24.0	6	
6.3.3	Comm., computer & info. services exports, %	1.3	135	○
6.3.4	FDI net outflows, % GDP	1.8	35	
7	**Creative outputs**	**41.3**	**54**	
7.1	Intangible assets	43.6	68	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	41.7	41	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.3	45	○
7.1.3	ICT & business model creation†	80.1	3	●
7.1.4	ICT & organizational model creation†	66.1	22	
7.2	Creative goods & services	42.9	44	
7.2.1	Audio-visual & related services exports, %	0.3	33	
7.2.2	National feature films/mn pop. 15–69	5.9	28	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	33.9	8	
7.2.4	Printing & publishing manufactures, %	0.4	91	○
7.2.5	Creative goods exports, %	3.2	24	
7.3	Online creativity	35.0	47	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	11.1	47	
7.3.2	Country-code TLDs/th pop. 15–69	46.9	41	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,792.1	54	
7.3.4	Video uploads on YouTube/pop. 15–69	71.6	70	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	2.9
GDP (US$ billions)	174.6
GDP per capita, PPP$	43,846.7
Income group	High income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**40.0**	**50**	
Innovation Output Sub-Index		40.6	36	●
Innovation Input Sub-Index		39.5	74	
Innovation Efficiency Ratio		1.0	8	●
Global Innovation Index 2012 (based on GII 2012 framework)		37.2	55	
1	**Institutions**	**61.4**	**68**	
1.1	Political environment	61.1	57	
1.1.1	Political stability*	74.3	50	
1.1.2	Government effectiveness*	37.2	72	
1.1.3	Press freedom*	71.7	63	
1.2	Regulatory environment	57.8	97	
1.2.1	Regulatory quality*	51.6	71	
1.2.2	Rule of law*	60.6	46	
1.2.3	Cost of redundancy dismissal, salary weeks	28.1	124	○
1.3	Business environment	65.3	67	
1.3.1	Ease of starting a business*	71.0	109	
1.3.2	Ease of resolving insolvency*	34.3	82	
1.3.3	Ease of paying taxes*	90.5	10	●
2	**Human capital & research**	**31.2**	**72**	
2.1	Education	54.2	69	
2.1.1	Current expenditure on education, % GNI	3.2	87	
2.1.2	Public expenditure/pupil, % GDP/cap	22.0	47	
2.1.3	School life expectancy, years	14.2	50	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	7.8	6	●
2.2	Tertiary education	36.2	55	
2.2.1	Tertiary enrolment, % gross	21.9	87	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	5.0	13	●
2.3	Research & development (R&D)	3.2	89	
2.3.1	Researchers, headcounts/mn pop.	151.9	83	
2.3.2	Gross expenditure on R&D, % GDP	0.1	94	○
2.3.3	QS university ranking, average score top 3*	6.3	63	
3	**Infrastructure**	**35.3**	**59**	
3.1	Information & communication technologies (ICTs)	38.3	63	
3.1.1	ICT access*	n/a	n/a	
3.1.2	ICT use*	n/a	n/a	
3.1.3	Government's online service*	58.2	47	
3.1.4	E-participation*	18.4	72	
3.2	General infrastructure	49.5	10	●
3.2.1	Electricity output, kWh/cap	20,813.5	1	●
3.2.2	Electricity consumption, kWh/cap	18,317.9	3	●
3.2.3	Logistics performance*	45.8	69	
3.2.4	Gross capital formation, % GDP	17.3	115	
3.3	Ecological sustainability	18.2	121	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.7	103	
3.3.2	Environmental performance*	35.5	118	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	87	
4	**Market sophistication**	**45.4**	**75**	
4.1	Credit	37.6	68	
4.1.1	Ease of getting credit*	50.0	93	
4.1.2	Domestic credit to private sector, % GDP	56.3	55	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	25.4	76	
4.2.1	Ease of protecting investors*	65.9	33	●
4.2.2	Market capitalization, % GDP	57.1	31	
4.2.3	Total value of stocks traded, % GDP	12.1	41	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	73.2	95	
4.3.1	Applied tariff rate, weighted mean, %	4.1	73	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.9	97	
4.3.3	Intensity of local competition†	61.6	80	
5	**Business sophistication**	**24.0**	**114**	
5.1	Knowledge workers	35.6	105	
5.1.1	Knowledge-intensive employment, %	18.7	72	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	2.3	79	○
5.1.5	GMAT mean score	384.6	129	○
5.1.6	GMAT test takers/mn pop. 20–34	617.1	8	●
5.2	Innovation linkages	26.6	68	
5.2.1	University/industry research collaboration†	32.7	116	
5.2.2	State of cluster development†	38.3	97	
5.2.3	R&D financed by abroad, %	1.2	76	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	10	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	n/a	n/a	
5.3	Knowledge absorption	9.9	139	○
5.3.1	Royalty & license fees payments, % service imports	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Comm., computer & info. services imports, %	1.3	121	○
5.3.4	FDI net inflows, % GDP	0.2	132	○
6	**Knowledge & technology outputs**	**44.7**	**15**	●
6.1	Knowledge creation	7.1	86	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.4	119	
6.1.5	Citable documents H index	77.0	77	
6.2	Knowledge impact	32.6	78	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.5	33	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.4	23	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.2	92	
6.2.5	High- & medium-high-tech manufactures, %	7.0	79	
6.3	Knowledge diffusion	75.6	1	●
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Comm., computer & info. services exports, %	35.6	1	●
6.3.4	FDI net outflows, % GDP	1.7	39	
7	**Creative outputs**	**36.4**	**73**	
7.1	Intangible assets	38.6	91	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	42.1	124	○
7.1.4	ICT & organizational model creation†	35.1	126	○
7.2	Creative goods & services	39.3	54	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	50.6	3	●
7.2.4	Printing & publishing manufactures, %	1.0	80	
7.2.5	Creative goods exports, %	n/a	n/a	
7.3	Online creativity	29.0	64	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	14.6	39	●
7.3.2	Country-code TLDs/th pop. 15–69	13.2	89	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,688.8	55	
7.3.4	Video uploads on YouTube/pop. 15–69	78.4	42	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Kyrgyzstan

Key indicators

Population (millions)	5.5
GDP (US$ billions)	6.2
GDP per capita, PPP$	2,411.0
Income group	Low income
Region	Central and Southern Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**27.0**	**117**	
Innovation Output Sub-Index		19.4	133	
Innovation Input Sub-Index		34.6	97	
Innovation Efficiency Ratio		0.6	131	
Global Innovation Index 2012 (based on GII 2012 framework)		26.4	109	
1	**Institutions**	**49.1**	**109**	
1.1	Political environment	43.2	115	
1.1.1	Political stability*	40.4	121	
1.1.2	Government effectiveness*	21.4	111	
1.1.3	Press freedom*	67.8	84	
1.2	Regulatory environment	55.0	105	
1.2.1	Regulatory quality*	44.1	90	
1.2.2	Rule of law*	13.5	135	○
1.2.3	Cost of redundancy dismissal, salary weeks	17.3	82	
1.3	Business environment	49.0	119	
1.3.1	Ease of starting a business*	96.0	7	●
1.3.2	Ease of resolving insolvency*	10.6	134	
1.3.3	Ease of paying taxes*	40.3	131	
2	**Human capital & research**	**27.1**	**85**	
2.1	Education	48.7	80	
2.1.1	Current expenditure on education, % GNI	5.9	22	●
2.1.2	Public expenditure/pupil, % GDP/cap	23.2	41	
2.1.3	School life expectancy, years	12.5	80	
2.1.4	PISA scales in reading, maths, & science	324.9	70	○
2.1.5	Pupil-teacher ratio, secondary	15.2	71	
2.2	Tertiary education	30.3	70	
2.2.1	Tertiary enrolment, % gross	41.3	59	
2.2.2	Graduates in science & engineering, %	15.4	78	
2.2.3	Tertiary inbound mobility, %	6.9	25	●
2.2.4	Gross tertiary outbound enrolment, %	0.7	85	
2.3	Research & development (R&D)	2.2	95	
2.3.1	Researchers, headcounts/mn pop.	434.5	69	
2.3.2	Gross expenditure on R&D, % GDP	0.2	87	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**23.3**	**107**	
3.1	Information & communication technologies (ICTs)	25.9	95	
3.1.1	ICT access*	23.8	113	
3.1.2	ICT use*	8.2	104	
3.1.3	Government's online service*	42.5	89	
3.1.4	E-participation*	29.0	52	
3.2	General infrastructure	23.2	112	
3.2.1	Electricity output, kWh/cap	2,113.6	76	
3.2.2	Electricity consumption, kWh/cap	1,396.1	85	
3.2.3	Logistics performance*	33.8	121	
3.2.4	Gross capital formation, % GDP	25.0	47	●
3.3	Ecological sustainability	21.0	112	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.7	100	
3.3.2	Environmental performance*	46.3	96	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	126	
4	**Market sophistication**	**49.4**	**50**	
4.1	Credit	50.2	45	●
4.1.1	Ease of getting credit*	87.5	12	●
4.1.2	Domestic credit to private sector, % GDP	15.1	131	
4.1.3	Microfinance gross loans, % GDP	5.3	8	●
4.2	Investment	20.1	98	
4.2.1	Ease of protecting investors*	79.3	14	●
4.2.2	Market capitalization, % GDP	2.8	105	○
4.2.3	Total value of stocks traded, % GDP	0.1	103	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	78.0	58	
4.3.1	Applied tariff rate, weighted mean, %	2.3	47	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.4	49	●
4.3.3	Intensity of local competition†	50.2	120	
5	**Business sophistication**	**24.0**	**115**	
5.1	Knowledge workers	36.3	102	
5.1.1	Knowledge-intensive employment, %	18.3	74	
5.1.2	Firms offering formal training, % firms	29.7	66	
5.1.3	R&D performed by business, % GDP	0.0	70	
5.1.4	R&D financed by business, %	36.4	46	
5.1.5	GMAT mean score	522.9	54	
5.1.6	GMAT test takers/mn pop. 20–34	40.0	93	
5.2	Innovation linkages	9.5	138	○
5.2.1	University/industry research collaboration†	17.2	134	○
5.2.2	State of cluster development†	23.0	133	○
5.2.3	R&D financed by abroad, %	0.0	88	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	49	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	26.2	75	
5.3.1	Royalty & license fees payments, % service imports	0.5	98	
5.3.2	High-tech imports less re-imports, %	6.2	90	
5.3.3	Comm., computer & info. services imports, %	2.0	107	
5.3.4	FDI net inflows, % GDP	11.7	11	●
6	**Knowledge & technology outputs**	**18.7**	**111**	
6.1	Knowledge creation	5.4	104	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.6	76	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.3	51	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.8	34	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.8	109	
6.1.5	Citable documents H index	30.0	133	
6.2	Knowledge impact	29.7	83	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.8	17	●
6.2.2	New businesses/th pop. 15–64	0.9	65	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.4	130	
6.2.5	High- & medium-high-tech manufactures, %	3.8	89	
6.3	Knowledge diffusion	14.4	126	
6.3.1	Royalty & license fees receipts, % service exports	0.1	80	
6.3.2	High-tech exports less re-exports, %	0.6	84	
6.3.3	Comm., computer & info. services exports, %	1.5	127	
6.3.4	FDI net outflows, % GDP	–0.0	111	
7	**Creative outputs**	**20.0**	**133**	
7.1	Intangible assets	22.2	134	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	15.2	73	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.3	47	
7.1.3	ICT & business model creation†	37.3	129	○
7.1.4	ICT & organizational model creation†	38.1	123	
7.2	Creative goods & services	19.4	117	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	0.0	104	○
7.2.3	Paid-for dailies, circulation, % pop. 15–69	1.9	107	
7.2.4	Printing & publishing manufactures, %	1.1	73	
7.2.5	Creative goods exports, %	0.2	92	
7.3	Online creativity	16.4	109	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.8	106	
7.3.2	Country-code TLDs/th pop. 15–69	12.5	93	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	890.4	74	
7.3.4	Video uploads on YouTube/pop. 15–69	47.2	114	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	2.3
GDP (US$ billions)	27.2
GDP per capita, PPP$	18,140.1
Income group	Upper-middle income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**45.2**	**33**	
Innovation Output Sub-Index		39.4	37	
Innovation Input Sub-Index		51.1	33	
Innovation Efficiency Ratio		0.8	74	
Global Innovation Index 2012 (based on GII 2012 framework)		47.0	30	
1	**Institutions**	**77.2**	**29**	
1.1	Political environment	69.2	45	
1.1.1	Political stability*	73.3	52	
1.1.2	Government effectiveness*	57.2	40	
1.1.3	Press freedom*	77.1	35	
1.2	Regulatory environment	84.1	25	
1.2.1	Regulatory quality*	74.5	32	
1.2.2	Rule of law*	68.8	35	
1.2.3	Cost of redundancy dismissal, salary weeks	9.7	35	
1.3	Business environment	78.3	25	
1.3.1	Ease of starting a business*	91.2	25	
1.3.2	Ease of resolving insolvency*	63.7	31	
1.3.3	Ease of paying taxes*	79.9	33	
2	**Human capital & research**	**37.1**	**47**	
2.1	Education	67.2	22	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	25.3	27	
2.1.3	School life expectancy, years	14.5	42	
2.1.4	PISA scales in reading, maths, & science	486.6	30	
2.1.5	Pupil-teacher ratio, secondary	8.3	10	●
2.2	Tertiary education	32.6	63	
2.2.1	Tertiary enrolment, % gross	57.4	39	
2.2.2	Graduates in science & engineering, %	15.7	73	○
2.2.3	Tertiary inbound mobility, %	1.9	55	
2.2.4	Gross tertiary outbound enrolment, %	2.7	33	
2.3	Research & development (R&D)	11.6	59	
2.3.1	Researchers, headcounts/mn pop.	2,796.5	29	
2.3.2	Gross expenditure on R&D, % GDP	0.6	52	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**41.6**	**39**	
3.1	Information & communication technologies (ICTs)	43.3	52	
3.1.1	ICT access*	61.3	47	
3.1.2	ICT use*	31.9	48	
3.1.3	Government's online service*	58.8	45	
3.1.4	E-participation*	21.1	64	
3.2	General infrastructure	29.9	66	
3.2.1	Electricity output, kWh/cap	2,958.5	65	
3.2.2	Electricity consumption, kWh/cap	3,020.5	60	
3.2.3	Logistics performance*	44.5	77	
3.2.4	Gross capital formation, % GDP	27.1	30	
3.3	Ecological sustainability	51.5	12	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.6	58	
3.3.2	Environmental performance*	70.4	2	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	7.2	12	●
4	**Market sophistication**	**57.6**	**28**	
4.1	Credit	66.0	20	
4.1.1	Ease of getting credit*	93.8	4	●
4.1.2	Domestic credit to private sector, % GDP	82.7	41	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	29.8	49	
4.2.1	Ease of protecting investors*	58.1	60	
4.2.2	Market capitalization, % GDP	3.8	103	○
4.2.3	Total value of stocks traded, % GDP	0.2	94	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.1	18	
4.3	Trade & competition	77.0	69	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	64.3	69	
5	**Business sophistication**	**42.0**	**35**	
5.1	Knowledge workers	57.2	36	
5.1.1	Knowledge-intensive employment, %	40.2	11	●
5.1.2	Firms offering formal training, % firms	43.4	41	
5.1.3	R&D performed by business, % GDP	0.2	46	
5.1.4	R&D financed by business, %	38.8	42	
5.1.5	GMAT mean score	578.8	15	●
5.1.6	GMAT test takers/mn pop. 20–34	138.6	41	
5.2	Innovation linkages	35.5	42	
5.2.1	University/industry research collaboration†	45.6	58	
5.2.2	State of cluster development†	38.9	92	○
5.2.3	R&D financed by abroad, %	33.4	9	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	71	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.1	40	
5.3	Knowledge absorption	33.2	44	
5.3.1	Royalty & license fees payments, % service imports	1.9	67	
5.3.2	High-tech imports less re-imports, %	6.7	83	○
5.3.3	Comm., computer & info. services imports, %	9.3	15	●
5.3.4	FDI net inflows, % GDP	5.3	40	
6	**Knowledge & technology outputs**	**32.1**	**44**	
6.1	Knowledge creation	19.1	47	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	5.7	30	
6.1.2	PCT resident patent ap/bn PPP$ GDP	1.0	31	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	14.5	58	
6.1.5	Citable documents H index	79.0	73	
6.2	Knowledge impact	48.4	22	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.2	50	
6.2.2	New businesses/th pop. 15–64	11.2	5	●
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	22.6	20	
6.2.5	High- & medium-high-tech manufactures, %	7.0	80	○
6.3	Knowledge diffusion	22.3	92	○
6.3.1	Royalty & license fees receipts, % service exports	0.2	71	○
6.3.2	High-tech exports less re-exports, %	6.0	35	
6.3.3	Comm., computer & info. services exports, %	6.1	71	
6.3.4	FDI net outflows, % GDP	0.2	73	○
7	**Creative outputs**	**46.7**	**34**	
7.1	Intangible assets	45.4	58	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	63.5	26	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	2.3	12	
7.1.3	ICT & business model creation†	55.7	76	
7.1.4	ICT & organizational model creation†	52.1	70	
7.2	Creative goods & services	44.3	38	
7.2.1	Audio-visual & related services exports, %	0.2	43	
7.2.2	National feature films/mn pop. 15–69	3.7	39	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	13.2	45	
7.2.4	Printing & publishing manufactures, %	2.9	20	
7.2.5	Creative goods exports, %	4.5	17	
7.3	Online creativity	51.5	28	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	14.1	42	
7.3.2	Country-code TLDs/th pop. 15–69	56.8	27	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	6,606.6	24	
7.3.4	Video uploads on YouTube/pop. 15–69	96.9	2	●

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Lebanon

Key indicators

Population (millions)	4.3
GDP (US$ billions)	41.8
GDP per capita, PPP$	15,884.1
Income group	Upper-middle income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**35.5**	**75**	
Innovation Output Sub-Index		28.2	88	
Innovation Input Sub-Index		42.7	56	
Innovation Efficiency Ratio		0.7	114	○
Global Innovation Index 2012 (based on GII 2012 framework)		36.2	61	
1	**Institutions**	**57.9**	**79**	
1.1	Political environment	42.5	119	○
1.1.1	Political stability*	28.2	135	○
1.1.2	Government effectiveness*	29.4	88	
1.1.3	Press freedom*	69.9	80	
1.2	Regulatory environment	69.1	58	
1.2.1	Regulatory quality*	50.0	73	
1.2.2	Rule of law*	29.0	106	
1.2.3	Cost of redundancy dismissal, salary weeks	8.7	25	
1.3	Business environment	62.0	74	
1.3.1	Ease of starting a business*	81.7	80	
1.3.2	Ease of resolving insolvency*	23.0	116	○
1.3.3	Ease of paying taxes*	81.4	30	●
2	**Human capital & research**	**37.1**	**48**	
2.1	Education	39.2	105	
2.1.1	Current expenditure on education, % GNI	1.4	113	○
2.1.2	Public expenditure/pupil, % GDP/cap	5.7	111	○
2.1.3	School life expectancy, years	14.4	45	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	9.3	18	●
2.2	Tertiary education	49.9	16	●
2.2.1	Tertiary enrolment, % gross	57.7	38	
2.2.2	Graduates in science & engineering, %	23.3	29	
2.2.3	Tertiary inbound mobility, %	15.3	12	●
2.2.4	Gross tertiary outbound enrolment, %	3.6	26	●
2.3	Research & development (R&D)	22.2	37	
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	22.2	47	
3	**Infrastructure**	**32.0**	**69**	
3.1	Information & communication technologies (ICTs)	39.2	61	
3.1.1	ICT access*	54.4	59	
3.1.2	ICT use*	23.2	59	
3.1.3	Government's online service*	47.7	75	
3.1.4	E-participation*	31.6	47	
3.2	General infrastructure	27.7	82	
3.2.1	Electricity output, kWh/cap	3,714.4	55	
3.2.2	Electricity consumption, kWh/cap	3,568.6	53	
3.2.3	Logistics performance*	39.5	95	
3.2.4	Gross capital formation, % GDP	24.7	51	
3.3	Ecological sustainability	29.0	72	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.3	33	
3.3.2	Environmental performance*	47.4	90	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	100	
4	**Market sophistication**	**48.1**	**57**	
4.1	Credit	31.0	95	
4.1.1	Ease of getting credit*	50.0	93	○
4.1.2	Domestic credit to private sector, % GDP	89.6	38	
4.1.3	Microfinance gross loans, % GDP	0.1	66	
4.2	Investment	30.4	48	
4.2.1	Ease of protecting investors*	50.4	96	
4.2.2	Market capitalization, % GDP	25.3	60	
4.2.3	Total value of stocks traded, % GDP	1.3	70	
4.2.4	Venture capital deals/tr PPP$ GDP	0.1	19	●
4.3	Trade & competition	82.8	20	●
4.3.1	Applied tariff rate, weighted mean, %	4.8	78	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	9	●
4.3.3	Intensity of local competition†	72.9	33	
5	**Business sophistication**	**38.5**	**41**	
5.1	Knowledge workers	65.7	16	●
5.1.1	Knowledge-intensive employment, %	31.9	26	
5.1.2	Firms offering formal training, % firms	52.4	23	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	493.5	81	
5.1.6	GMAT test takers/mn pop. 20–34	1,237.6	4	●
5.2	Innovation linkages	28.5	58	
5.2.1	University/industry research collaboration†	37.6	93	
5.2.2	State of cluster development†	34.7	113	○
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	57	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	n/a	n/a	
5.3	Knowledge absorption	21.4	96	
5.3.1	Royalty & license fees payments, % service imports	0.1	118	○
5.3.2	High-tech imports less re-imports, %	4.0	118	○
5.3.3	Comm., computer & info. services imports, %	3.0	86	
5.3.4	FDI net inflows, % GDP	8.7	17	●
6	**Knowledge & technology outputs**	**19.0**	**109**	○
6.1	Knowledge creation	15.3	58	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	12.9	64	
6.1.5	Citable documents H index	91.0	65	
6.2	Knowledge impact	24.2	105	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.6	52	
6.2.5	High- & medium-high-tech manufactures, %	22.0	47	
6.3	Knowledge diffusion	15.8	123	○
6.3.1	Royalty & license fees receipts, % service exports	0.0	92	○
6.3.2	High-tech exports less re-exports, %	1.0	76	
6.3.3	Comm., computer & info. services exports, %	3.0	104	○
6.3.4	FDI net outflows, % GDP	1.9	34	
7	**Creative outputs**	**37.4**	**71**	
7.1	Intangible assets	34.7	103	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	38.0	128	○
7.1.4	ICT & organizational model creation†	31.4	131	○
7.2	Creative goods & services	55.3	13	●
7.2.1	Audio-visual & related services exports, %	0.6	18	
7.2.2	National feature films/mn pop. 15–69	4.6	32	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	8.8	62	
7.2.4	Printing & publishing manufactures, %	4.2	12	●
7.2.5	Creative goods exports, %	4.8	16	●
7.3	Online creativity	25.0	76	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	16.0	36	
7.3.2	Country-code TLDs/th pop. 15–69	10.3	101	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	734.4	81	
7.3.4	Video uploads on YouTube/pop. 15–69	69.5	76	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	2.2
GDP (US$ billions)	2.6
GDP per capita, PPP$	2,018.1
Income group	Lower-middle income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**26.3**	**124**	
Innovation Output Sub-Index		16.8	136	
Innovation Input Sub-Index		35.8	86	●
Innovation Efficiency Ratio		0.5	140	○
Global Innovation Index 2012 (based on GII 2012 framework)		25.7	116	
1	**Institutions**	**61.2**	**70**	●
1.1	Political environment	58.3	61	●
1.1.1	Political stability*	72.7	55	●
1.1.2	Government effectiveness*	30.6	87	●
1.1.3	Press freedom*	71.6	67	●
1.2	Regulatory environment	61.4	84	●
1.2.1	Regulatory quality*	33.7	115	
1.2.2	Rule of law*	39.8	74	●
1.2.3	Cost of redundancy dismissal, salary weeks	15.0	69	●
1.3	Business environment	64.0	70	●
1.3.1	Ease of starting a business*	82.9	72	●
1.3.2	Ease of resolving insolvency*	40.5	67	●
1.3.3	Ease of paying taxes*	68.6	76	●
2	**Human capital & research**	**27.4**	**83**	●
2.1	Education	70.9	12	●
2.1.1	Current expenditure on education, % GNI	9.7	1	●
2.1.2	Public expenditure/pupil, % GDP/cap	50.2	1	●
2.1.3	School life expectancy, years	10.0	114	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	24.0	102	
2.2	Tertiary education	10.8	123	
2.2.1	Tertiary enrolment, % gross	3.5	130	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	0.6	88	
2.2.4	Gross tertiary outbound enrolment, %	1.7	59	●
2.3	Research & development (R&D)	0.3	118	
2.3.1	Researchers, headcounts/mn pop.	106.6	91	
2.3.2	Gross expenditure on R&D, % GDP	0.0	106	○
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**31.3**	**71**	●
3.1	Information & communication technologies (ICTs)	16.4	119	
3.1.1	ICT access*	n/a	n/a	
3.1.2	ICT use*	n/a	n/a	
3.1.3	Government's online service*	30.1	118	
3.1.4	E-participation*	2.6	116	
3.2	General infrastructure	46.3	16	●
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Logistics performance*	31.0	133	○
3.2.4	Gross capital formation, % GDP	43.4	3	●
3.3	Ecological sustainability	n/a	n/a	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	n/a	n/a	
4	**Market sophistication**	**37.6**	**118**	
4.1	Credit	21.3	125	
4.1.1	Ease of getting credit*	37.5	129	
4.1.2	Domestic credit to private sector, % GDP	15.3	129	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	25.8	71	●
4.2.1	Ease of protecting investors*	51.5	90	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	65.7	112	
4.3.1	Applied tariff rate, weighted mean, %	10.5	125	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.1	21	●
4.3.3	Intensity of local competition†	51.1	115	
5	**Business sophistication**	**21.6**	**127**	
5.1	Knowledge workers	33.4	109	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	42.5	42	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	3.4	76	
5.1.5	GMAT mean score	390.0	127	
5.1.6	GMAT test takers/mn pop. 20–34	27.9	107	
5.2	Innovation linkages	14.7	126	
5.2.1	University/industry research collaboration†	25.7	125	
5.2.2	State of cluster development†	33.0	117	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	16.6	121	
5.3.1	Royalty & license fees payments, % service imports	0.7	92	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Comm., computer & info. services imports, %	0.8	131	
5.3.4	FDI net inflows, % GDP	5.4	36	●
6	**Knowledge & technology outputs**	**14.5**	**124**	
6.1	Knowledge creation	3.5	123	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.3	91	●
6.1.5	Citable documents H index	20.0	140	○
6.2	Knowledge impact	4.5	133	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	1.2	57	●
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.3	133	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	30.0	46	●
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Comm., computer & info. services exports, %	4.5	87	●
6.3.4	FDI net outflows, % GDP	–0.2	119	
7	**Creative outputs**	**19.1**	**136**	
7.1	Intangible assets	20.7	136	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.0	66	○
7.1.3	ICT & business model creation†	30.3	132	
7.1.4	ICT & organizational model creation†	31.9	130	
7.2	Creative goods & services	n/a	n/a	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	n/a	n/a	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	n/a	n/a	
7.3	Online creativity	15.8	114	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.0	140	○
7.3.2	Country-code TLDs/th pop. 15–69	5.2	111	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4	Video uploads on YouTube/pop. 15–69	42.1	122	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Lithuania

Key indicators

Population (millions)	3.4
GDP (US$ billions)	41.2
GDP per capita, PPP$	20,088.6
Income group	Upper-middle income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**41.4**	**40**	
Innovation Output Sub-Index		33.8	56	
Innovation Input Sub-Index		48.9	35	
Innovation Efficiency Ratio		0.7	105	○
Global Innovation Index 2012 (based on GII 2012 framework)		44.0	38	
1	**Institutions**	**71.4**	**43**	
1.1	Political environment	73.4	37	
1.1.1	Political stability*	81.5	35	
1.1.2	Government effectiveness*	57.1	41	
1.1.3	Press freedom*	81.8	30	
1.2	Regulatory environment	68.9	59	
1.2.1	Regulatory quality*	74.2	34	
1.2.2	Rule of law*	67.8	38	
1.2.3	Cost of redundancy dismissal, salary weeks	24.6	109	○
1.3	Business environment	72.0	39	
1.3.1	Ease of starting a business*	83.6	69	
1.3.2	Ease of resolving insolvency*	54.5	37	
1.3.3	Ease of paying taxes*	77.9	39	
2	**Human capital & research**	**41.6**	**35**	
2.1	Education	63.1	35	
2.1.1	Current expenditure on education, % GNI	5.4	34	
2.1.2	Public expenditure/pupil, % GDP/cap	23.8	37	
2.1.3	School life expectancy, years	15.5	29	
2.1.4	PISA scales in reading, maths, & science	478.8	34	
2.1.5	Pupil-teacher ratio, secondary	8.6	13	●
2.2	Tertiary education	40.1	45	
2.2.1	Tertiary enrolment, % gross	69.5	20	●
2.2.2	Graduates in science & engineering, %	21.5	37	
2.2.3	Tertiary inbound mobility, %	1.6	66	
2.2.4	Gross tertiary outbound enrolment, %	3.3	29	
2.3	Research & development (R&D)	21.7	39	
2.3.1	Researchers, headcounts/mn pop.	4,138.5	23	
2.3.2	Gross expenditure on R&D, % GDP	0.8	39	
2.3.3	QS university ranking, average score top 3*	15.7	52	
3	**Infrastructure**	**48.0**	**25**	●
3.1	Information & communication technologies (ICTs)	56.5	31	
3.1.1	ICT access*	66.0	37	
3.1.2	ICT use*	37.6	37	
3.1.3	Government's online service*	69.9	29	
3.1.4	E-participation*	52.6	30	
3.2	General infrastructure	25.4	98	
3.2.1	Electricity output, kWh/cap	1,504.2	86	
3.2.2	Electricity consumption, kWh/cap	3,237.0	58	
3.2.3	Logistics performance*	48.8	58	
3.2.4	Gross capital formation, % GDP	19.0	103	
3.3	Ecological sustainability	62.0	4	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.4	46	
3.3.2	Environmental performance*	65.5	17	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	11.4	5	●
4	**Market sophistication**	**50.7**	**45**	
4.1	Credit	46.4	48	
4.1.1	Ease of getting credit*	68.8	51	
4.1.2	Domestic credit to private sector, % GDP	53.7	61	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	27.3	64	
4.2.1	Ease of protecting investors*	58.1	60	
4.2.2	Market capitalization, % GDP	9.5	92	○
4.2.3	Total value of stocks traded, % GDP	0.6	80	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	28	●
4.3	Trade & competition	78.3	55	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	68.3	48	
5	**Business sophistication**	**33.0**	**62**	
5.1	Knowledge workers	51.0	46	
5.1.1	Knowledge-intensive employment, %	32.8	24	
5.1.2	Firms offering formal training, % firms	46.0	37	
5.1.3	R&D performed by business, % GDP	0.2	44	
5.1.4	R&D financed by business, %	24.1	60	
5.1.5	GMAT mean score	550.6	36	
5.1.6	GMAT test takers/mn pop. 20–34	145.3	39	
5.2	Innovation linkages	28.7	57	
5.2.1	University/industry research collaboration†	58.6	28	●
5.2.2	State of cluster development†	37.8	102	○
5.2.3	R&D financed by abroad, %	20.0	13	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	98	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.1	48	
5.3	Knowledge absorption	19.3	110	○
5.3.1	Royalty & license fees payments, % service imports	1.0	83	
5.3.2	High-tech imports less re-imports, %	5.0	108	○
5.3.3	Comm., computer & info. services imports, %	4.6	62	
5.3.4	FDI net inflows, % GDP	3.4	67	
6	**Knowledge & technology outputs**	**26.6**	**66**	
6.1	Knowledge creation	18.8	50	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.7	56	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.5	39	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	28.9	30	
6.1.5	Citable documents H index	102.0	56	
6.2	Knowledge impact	38.2	51	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.5	45	
6.2.2	New businesses/th pop. 15–64	2.2	45	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	19.0	24	●
6.2.5	High- & medium-high-tech manufactures, %	16.8	57	
6.3	Knowledge diffusion	18.9	107	○
6.3.1	Royalty & license fees receipts, % service exports	0.0	101	○
6.3.2	High-tech exports less re-exports, %	5.8	36	
6.3.3	Comm., computer & info. services exports, %	3.2	103	○
6.3.4	FDI net outflows, % GDP	0.4	62	
7	**Creative outputs**	**41.1**	**55**	
7.1	Intangible assets	45.6	55	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	40.5	42	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	1.6	22	
7.1.3	ICT & business model creation†	68.0	28	●
7.1.4	ICT & organizational model creation†	64.9	25	●
7.2	Creative goods & services	27.1	95	
7.2.1	Audio-visual & related services exports, %	0.0	64	○
7.2.2	National feature films/mn pop. 15–69	0.8	79	○
7.2.3	Paid-for dailies, circulation, % pop. 15–69	11.6	50	
7.2.4	Printing & publishing manufactures, %	1.1	74	○
7.2.5	Creative goods exports, %	1.9	39	
7.3	Online creativity	46.1	33	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	12.0	45	
7.3.2	Country-code TLDs/th pop. 15–69	57.1	26	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	5,785.0	29	
7.3.4	Video uploads on YouTube/pop. 15–69	81.8	31	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Luxembourg

Key indicators

Population (millions)	0.5
GDP (US$ billions)	55.3
GDP per capita, PPP$	80,679.1
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**56.6**	**12**	
Innovation Output Sub-Index		53.2	6	
Innovation Input Sub-Index		59.9	18	
Innovation Efficiency Ratio		0.9	33	
Global Innovation Index 2012 (based on GII 2012 framework)		57.7	11	
1	**Institutions**	**83.5**	**19**	
1.1	Political environment	92.7	7	
1.1.1	Political stability*	98.8	4	●
1.1.2	Government effectiveness*	86.0	11	
1.1.3	Press freedom*	93.3	4	●
1.2	Regulatory environment	84.8	24	
1.2.1	Regulatory quality*	98.3	4	●
1.2.2	Rule of law*	96.0	8	
1.2.3	Cost of redundancy dismissal, salary weeks	21.7	99	○
1.3	Business environment	73.1	36	
1.3.1	Ease of starting a business*	86.0	61	
1.3.2	Ease of resolving insolvency*	46.6	48	
1.3.3	Ease of paying taxes*	86.6	18	
2	**Human capital & research**	**54.8**	**17**	
2.1	Education	73.1	4	●
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	13.5	65	
2.1.4	PISA scales in reading, maths, & science	481.7	33	
2.1.5	Pupil-teacher ratio, secondary	8.5	12	
2.2	Tertiary education	65.5	2	●
2.2.1	Tertiary enrolment, % gross	10.5	107	○
2.2.2	Graduates in science & engineering, %	32.5	8	
2.2.3	Tertiary inbound mobility, %	41.4	1	●
2.2.4	Gross tertiary outbound enrolment, %	23.2	1	●
2.3	Research & development (R&D)	25.8	34	
2.3.1	Researchers, headcounts/mn pop.	5,930.0	13	
2.3.2	Gross expenditure on R&D, % GDP	1.4	26	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**51.1**	**19**	
3.1	Information & communication technologies (ICTs)	69.0	18	
3.1.1	ICT access*	88.7	3	●
3.1.2	ICT use*	77.9	3	●
3.1.3	Government's online service*	69.9	29	
3.1.4	E-participation*	39.5	38	
3.2	General infrastructure	46.5	15	
3.2.1	Electricity output, kWh/cap	5,082.7	43	
3.2.2	Electricity consumption, kWh/cap	15,671.8	5	
3.2.3	Logistics performance*	70.5	15	
3.2.4	Gross capital formation, % GDP	22.5	72	
3.3	Ecological sustainability	37.7	40	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.5	29	
3.3.2	Environmental performance*	69.2	4	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.7	71	
4	**Market sophistication**	**56.9**	**31**	
4.1	Credit	56.4	33	
4.1.1	Ease of getting credit*	31.3	132	○
4.1.2	Domestic credit to private sector, % GDP	170.7	11	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	36.5	34	
4.2.1	Ease of protecting investors*	44.8	108	○
4.2.2	Market capitalization, % GDP	114.2	8	
4.2.3	Total value of stocks traded, % GDP	0.2	92	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	27	
4.3	Trade & competition	77.7	60	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	66.5	58	
5	**Business sophistication**	**53.4**	**7**	
5.1	Knowledge workers	59.6	33	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	1.0	23	
5.1.4	R&D financed by business, %	46.1	27	
5.1.5	GMAT mean score	561.1	29	
5.1.6	GMAT test takers/mn pop. 20–34	264.1	24	
5.2	Innovation linkages	54.5	5	
5.2.1	University/industry research collaboration†	66.5	16	
5.2.2	State of cluster development†	60.5	21	
5.2.3	R&D financed by abroad, %	19.9	14	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	16	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	4.1	7	
5.3	Knowledge absorption	46.2	13	
5.3.1	Royalty & license fees payments, % service imports	1.0	80	○
5.3.2	High-tech imports less re-imports, %	10.9	41	
5.3.3	Comm., computer & info. services imports, %	4.3	66	
5.3.4	FDI net inflows, % GDP	31.0	1	
6	**Knowledge & technology outputs**	**32.7**	**43**	
6.1	Knowledge creation	35.3	24	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	11.0	16	
6.1.2	PCT resident patent ap/bn PPP$ GDP	6.4	8	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	15.8	54	
6.1.5	Citable documents H index	73.0	81	
6.2	Knowledge impact	26.4	96	○
6.2.1	Growth rate of PPP$ GDP/worker, %	–1.2	111	○
6.2.2	New businesses/th pop. 15–64	7.3	16	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.8	73	
6.2.5	High- & medium-high-tech manufactures, %	1.4	96	○
6.3	Knowledge diffusion	37.6	27	
6.3.1	Royalty & license fees receipts, % service exports	0.6	46	
6.3.2	High-tech exports less re-exports, %	7.7	28	
6.3.3	Comm., computer & info. services exports, %	4.6	85	○
6.3.4	FDI net outflows, % GDP	570.5	1	●
7	**Creative outputs**	**73.7**	**1**	●
7.1	Intangible assets	77.4	1	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	120.3	3	●
7.1.2	Madrid trademark registrations/bn PPP$ GDP	6.1	1	●
7.1.3	ICT & business model creation†	75.2	8	
7.1.4	ICT & organizational model creation†	67.0	16	
7.2	Creative goods & services	61.9	6	
7.2.1	Audio-visual & related services exports, %	3.4	4	
7.2.2	National feature films/mn pop. 15–69	42.9	2	●
7.2.3	Paid-for dailies, circulation, % pop. 15–69	29.9	13	
7.2.4	Printing & publishing manufactures, %	1.6	58	
7.2.5	Creative goods exports, %	0.9	52	
7.3	Online creativity	78.2	3	●
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	100.0	1	●
7.3.2	Country-code TLDs/th pop. 15–69	72.0	9	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	9,890.0	8	
7.3.4	Video uploads on YouTube/pop. 15–69	83.5	23	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Madagascar

Key indicators

Population (millions)	22.0
GDP (US$ billions)	10.1
GDP per capita, PPP$	953.8
Income group	Low income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**22.9**	**140**	○
Innovation Output Sub-Index		17.1	135	
Innovation Input Sub-Index		28.8	123	
Innovation Efficiency Ratio		0.6	128	
Global Innovation Index 2012 (based on GII 2012 framework)		24.2	126	
1	**Institutions**	**55.3**	**90**	
1.1	Political environment	43.5	113	
1.1.1	Political stability*	44.5	115	
1.1.2	Government effectiveness*	14.5	129	
1.1.3	Press freedom*	71.4	72	
1.2	Regulatory environment	60.7	85	
1.2.1	Regulatory quality*	35.2	112	
1.2.2	Rule of law*	24.6	115	
1.2.3	Cost of redundancy dismissal, salary weeks	12.3	54	●
1.3	Business environment	61.7	78	
1.3.1	Ease of starting a business*	95.5	10	●
1.3.2	Ease of resolving insolvency*	14.6	132	
1.3.3	Ease of paying taxes*	74.9	51	●
2	**Human capital & research**	**17.5**	**118**	
2.1	Education	29.0	125	
2.1.1	Current expenditure on education, % GNI	2.6	102	
2.1.2	Public expenditure/pupil, % GDP/cap	11.5	98	
2.1.3	School life expectancy, years	10.4	112	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	23.5	98	
2.2	Tertiary education	22.2	92	
2.2.1	Tertiary enrolment, % gross	4.1	126	
2.2.2	Graduates in science & engineering, %	23.0	33	●
2.2.3	Tertiary inbound mobility, %	1.7	64	
2.2.4	Gross tertiary outbound enrolment, %	0.2	124	
2.3	Research & development (R&D)	1.2	108	
2.3.1	Researchers, headcounts/mn pop.	90.3	94	
2.3.2	Gross expenditure on R&D, % GDP	0.1	92	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**16.1**	**137**	
3.1	Information & communication technologies (ICTs)	13.8	129	
3.1.1	ICT access*	18.7	125	
3.1.2	ICT use*	1.8	125	
3.1.3	Government's online service*	32.0	112	
3.1.4	E-participation*	2.6	116	
3.2	General infrastructure	33.9	48	●
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Logistics performance*	43.0	85	
3.2.4	Gross capital formation, % GDP	23.4	65	●
3.3	Ecological sustainability	0.6	134	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	122	
4	**Market sophistication**	**36.6**	**122**	
4.1	Credit	8.2	142	○
4.1.1	Ease of getting credit*	12.5	141	○
4.1.2	Domestic credit to private sector, % GDP	11.0	138	○
4.1.3	Microfinance gross loans, % GDP	0.8	41	●
4.2	Investment	29.5	50	●
4.2.1	Ease of protecting investors*	58.9	56	●
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	72.2	98	
4.3.1	Applied tariff rate, weighted mean, %	7.7	106	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	17	●
4.3.3	Intensity of local competition†	55.9	97	
5	**Business sophistication**	**18.7**	**137**	
5.1	Knowledge workers	19.6	136	
5.1.1	Knowledge-intensive employment, %	2.4	105	○
5.1.2	Firms offering formal training, % firms	27.0	70	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	447.6	110	
5.1.6	GMAT test takers/mn pop. 20–34	3.8	135	
5.2	Innovation linkages	15.9	118	
5.2.1	University/industry research collaboration†	36.8	101	
5.2.2	State of cluster development†	32.4	122	
5.2.3	R&D financed by abroad, %	8.4	44	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	20.6	101	
5.3.1	Royalty & license fees payments, % service imports	1.5	70	
5.3.2	High-tech imports less re-imports, %	4.8	110	
5.3.3	Comm., computer & info. services imports, %	1.1	123	
5.3.4	FDI net inflows, % GDP	9.2	15	●
6	**Knowledge & technology outputs**	**9.5**	**137**	
6.1	Knowledge creation	4.7	111	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.1	100	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	8.3	82	
6.1.5	Citable documents H index	54.0	99	
6.2	Knowledge impact	13.6	121	
6.2.1	Growth rate of PPP$ GDP/worker, %	–2.3	114	
6.2.2	New businesses/th pop. 15–64	0.1	101	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.4	108	
6.2.5	High- & medium-high-tech manufactures, %	2.4	93	
6.3	Knowledge diffusion	7.9	132	
6.3.1	Royalty & license fees receipts, % service exports	0.5	53	●
6.3.2	High-tech exports less re-exports, %	3.8	47	●
6.3.3	Comm., computer & info. services exports, %	0.5	138	○
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**24.6**	**124**	
7.1	Intangible assets	30.8	118	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	66.9	21	●
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.1	53	
7.1.3	ICT & business model creation†	42.8	123	
7.1.4	ICT & organizational model creation†	40.6	119	
7.2	Creative goods & services	27.4	93	
7.2.1	Audio-visual & related services exports, %	0.1	53	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	1.0	118	
7.2.4	Printing & publishing manufactures, %	2.1	39	●
7.2.5	Creative goods exports, %	0.4	71	
7.3	Online creativity	9.3	129	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.0	141	○
7.3.2	Country-code TLDs/th pop. 15–69	2.1	123	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	47.8	121	
7.3.4	Video uploads on YouTube/pop. 15–69	35.0	126	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	15.9
GDP (US$ billions)	4.5
GDP per capita, PPP$	876.7
Income group	Low income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**26.7**	**119**	
Innovation Output Sub-Index		24.8	105	
Innovation Input Sub-Index		28.6	125	
Innovation Efficiency Ratio		0.9	41	●
Global Innovation Index 2012 (based on GII 2012 framework)		25.4	120	
1	**Institutions**	**56.0**	**88**	
1.1	Political environment	54.3	74	●
1.1.1	Political stability*	64.4	74	●
1.1.2	Government effectiveness*	26.5	94	
1.1.3	Press freedom*	71.8	62	●
1.2	Regulatory environment	59.7	91	
1.2.1	Regulatory quality*	31.2	121	
1.2.2	Rule of law*	42.5	68	●
1.2.3	Cost of redundancy dismissal, salary weeks	16.7	79	
1.3	Business environment	53.9	104	
1.3.1	Ease of starting a business*	66.1	122	
1.3.2	Ease of resolving insolvency*	20.4	119	
1.3.3	Ease of paying taxes*	75.2	48	●
2	**Human capital & research**	**11.4**	**139**	
2.1	Education	27.2	130	
2.1.1	Current expenditure on education, % GNI	4.9	46	●
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	10.8	106	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	42.1	129	○
2.2	Tertiary education	6.8	132	
2.2.1	Tertiary enrolment, % gross	0.8	133	○
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	1.1	77	
2.2.4	Gross tertiary outbound enrolment, %	0.1	134	
2.3	Research & development (R&D)	0.2	122	
2.3.1	Researchers, headcounts/mn pop.	53.9	103	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**12.9**	**140**	
3.1	Information & communication technologies (ICTs)	9.4	140	
3.1.1	ICT access*	15.5	136	○
3.1.2	ICT use*	0.7	136	○
3.1.3	Government's online service*	21.6	132	
3.1.4	E-participation*	0.0	129	○
3.2	General infrastructure	28.8	73	●
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Logistics performance*	45.3	74	
3.2.4	Gross capital formation, % GDP	16.5	121	
3.3	Ecological sustainability	0.6	135	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	123	
4	**Market sophistication**	**35.9**	**124**	
4.1	Credit	18.9	131	
4.1.1	Ease of getting credit*	43.8	110	
4.1.2	Domestic credit to private sector, % GDP	19.8	119	
4.1.3	Microfinance gross loans, % GDP	0.5	50	
4.2	Investment	17.0	112	
4.2.1	Ease of protecting investors*	55.9	68	●
4.2.2	Market capitalization, % GDP	24.6	62	
4.2.3	Total value of stocks traded, % GDP	0.9	74	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	71.7	101	
4.3.1	Applied tariff rate, weighted mean, %	6.6	96	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	1	●
4.3.3	Intensity of local competition†	48.6	122	
5	**Business sophistication**	**27.0**	**103**	
5.1	Knowledge workers	37.4	96	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	48.4	33	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	383.5	130	
5.1.6	GMAT test takers/mn pop. 20–34	3.8	134	
5.2	Innovation linkages	19.9	101	
5.2.1	University/industry research collaboration†	41.6	73	
5.2.2	State of cluster development†	37.9	100	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	23.7	88	
5.3.1	Royalty & license fees payments, % service imports	0.4	105	
5.3.2	High-tech imports less re-imports, %	12.1	33	●
5.3.3	Comm., computer & info. services imports, %	4.1	69	●
5.3.4	FDI net inflows, % GDP	1.6	103	
6	**Knowledge & technology outputs**	**26.6**	**65**	●
6.1	Knowledge creation	13.7	61	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	21.5	43	●
6.1.5	Citable documents H index	75.0	79	
6.2	Knowledge impact	22.9	109	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.4	75	
6.2.2	New businesses/th pop. 15–64	0.1	102	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.7	121	
6.2.5	High- & medium-high-tech manufactures, %	7.9	77	
6.3	Knowledge diffusion	36.8	29	●
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	1.6	65	●
6.3.3	Comm., computer & info. services exports, %	20.3	14	●
6.3.4	FDI net outflows, % GDP	0.2	76	
7	**Creative outputs**	**23.1**	**129**	
7.1	Intangible assets	31.1	114	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	11.0	82	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	45.5	114	
7.1.4	ICT & organizational model creation†	41.7	111	
7.2	Creative goods & services	24.4	102	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	0.3	132	
7.2.4	Printing & publishing manufactures, %	1.9	45	●
7.2.5	Creative goods exports, %	0.1	99	
7.3	Online creativity	5.5	141	○
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.0	139	
7.3.2	Country-code TLDs/th pop. 15–69	2.9	117	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	85.3	113	
7.3.4	Video uploads on YouTube/pop. 15–69	18.8	140	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Malaysia

Key indicators

Population (millions)	29.5
GDP (US$ billions)	307.2
GDP per capita, PPP$	16,942.1
Income group	Upper-middle income
Region	South East Asia and Oceania

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**46.9**	**32**	
Innovation Output Sub-Index		42.1	30	
Innovation Input Sub-Index		51.7	32	
Innovation Efficiency Ratio		0.8	52	
Global Innovation Index 2012 (based on GII 2012 framework)		45.9	32	
1	**Institutions**	**69.0**	**49**	
1.1	Political environment	64.3	50	
1.1.1	Political stability*	69.9	59	
1.1.2	Government effectiveness*	65.8	31	
1.1.3	Press freedom*	57.3	117	○
1.2	Regulatory environment	66.0	74	
1.2.1	Regulatory quality*	66.7	40	
1.2.2	Rule of law*	61.2	45	
1.2.3	Cost of redundancy dismissal, salary weeks	23.9	108	○
1.3	Business environment	76.6	26	
1.3.1	Ease of starting a business*	93.6	14	
1.3.2	Ease of resolving insolvency*	47.9	45	
1.3.3	Ease of paying taxes*	88.3	13	
2	**Human capital & research**	**39.7**	**40**	
2.1	Education	47.8	84	○
2.1.1	Current expenditure on education, % GNI	4.4	56	
2.1.2	Public expenditure/pupil, % GDP/cap	19.2	61	○
2.1.3	School life expectancy, years	12.6	79	○
2.1.4	PISA scales in reading, maths, & science	413.4	53	○
2.1.5	Pupil-teacher ratio, secondary	13.7	56	
2.2	Tertiary education	49.9	15	
2.2.1	Tertiary enrolment, % gross	42.3	58	
2.2.2	Graduates in science & engineering, %	36.7	4	●
2.2.3	Tertiary inbound mobility, %	6.1	28	
2.2.4	Gross tertiary outbound enrolment, %	2.2	49	
2.3	Research & development (R&D)	21.3	41	
2.3.1	Researchers, headcounts/mn pop.	715.4	60	
2.3.2	Gross expenditure on R&D, % GDP	0.6	49	
2.3.3	QS university ranking, average score top 3*	44.2	29	
3	**Infrastructure**	**43.1**	**33**	
3.1	Information & communication technologies (ICTs)	54.3	34	
3.1.1	ICT access*	58.5	51	
3.1.2	ICT use*	29.8	52	
3.1.3	Government's online service*	79.1	20	
3.1.4	E-participation*	50.0	31	
3.2	General infrastructure	35.8	40	
3.2.1	Electricity output, kWh/cap	4,411.5	50	
3.2.2	Electricity consumption, kWh/cap	4,117.4	48	
3.2.3	Logistics performance*	62.3	28	
3.2.4	Gross capital formation, % GDP	24.0	59	
3.3	Ecological sustainability	39.1	35	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.2	80	○
3.3.2	Environmental performance*	62.5	25	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	4.2	27	
4	**Market sophistication**	**61.0**	**23**	
4.1	Credit	51.4	41	
4.1.1	Ease of getting credit*	100.0	1	●
4.1.2	Domestic credit to private sector, % GDP	112.2	26	
4.1.3	Microfinance gross loans, % GDP	0.1	67	○
4.2	Investment	49.1	17	
4.2.1	Ease of protecting investors*	90.0	4	●
4.2.2	Market capitalization, % GDP	137.2	4	●
4.2.3	Total value of stocks traded, % GDP	44.8	24	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	69	
4.3	Trade & competition	82.5	22	
4.3.1	Applied tariff rate, weighted mean, %	4.0	69	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.5	54	
4.3.3	Intensity of local competition†	72.7	34	
5	**Business sophistication**	**45.9**	**27**	
5.1	Knowledge workers	53.7	43	
5.1.1	Knowledge-intensive employment, %	19.6	65	○
5.1.2	Firms offering formal training, % firms	50.1	30	
5.1.3	R&D performed by business, % GDP	0.5	32	
5.1.4	R&D financed by business, %	84.5	1	●
5.1.5	GMAT mean score	533.7	49	
5.1.6	GMAT test takers/mn pop. 20–34	72.4	68	
5.2	Innovation linkages	30.9	52	
5.2.1	University/industry research collaboration†	66.4	17	
5.2.2	State of cluster development†	66.1	11	●
5.2.3	R&D financed by abroad, %	0.2	86	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	22	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.1	44	
5.3	Knowledge absorption	53.1	3	●
5.3.1	Royalty & license fees payments, % service imports	4.1	35	
5.3.2	High-tech imports less re-imports, %	27.8	3	●
5.3.3	Comm., computer & info. services imports, %	7.2	38	
5.3.4	FDI net inflows, % GDP	4.2	56	
6	**Knowledge & technology outputs**	**38.7**	**24**	
6.1	Knowledge creation	10.7	68	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.3	50	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.6	35	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.1	55	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	15.9	51	
6.1.5	Citable documents H index	116.0	52	
6.2	Knowledge impact	45.5	30	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.3	34	
6.2.2	New businesses/th pop. 15–64	2.4	42	
6.2.3	Computer software spending, % GDP	0.4	25	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	23.2	19	
6.2.5	High- & medium-high-tech manufactures, %	40.6	20	
6.3	Knowledge diffusion	45.9	17	
6.3.1	Royalty & license fees receipts, % service exports	0.9	38	
6.3.2	High-tech exports less re-exports, %	29.2	2	●
6.3.3	Comm., computer & info. services exports, %	7.0	63	
6.3.4	FDI net outflows, % GDP	5.3	11	
7	**Creative outputs**	**45.6**	**38**	
7.1	Intangible assets	53.0	32	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	22.0	60	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	74.6	12	
7.1.4	ICT & organizational model creation†	72.1	9	●
7.2	Creative goods & services	46.3	30	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	2.5	53	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	13.4	43	
7.2.4	Printing & publishing manufactures, %	1.1	72	○
7.2.5	Creative goods exports, %	11.5	4	●
7.3	Online creativity	29.9	59	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	7.1	54	
7.3.2	Country-code TLDs/th pop. 15–69	33.6	53	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,098.4	67	
7.3.4	Video uploads on YouTube/pop. 15–69	72.8	66	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Mali

Key indicators

Population (millions)	16.3
GDP (US$ billions)	9.6
GDP per capita, PPP$	1,061.8
Income group	Low income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**28.8**	**106**	
Innovation Output Sub-Index		30.6	73	●
Innovation Input Sub-Index		27.1	132	
Innovation Efficiency Ratio		1.1	1	●
Global Innovation Index 2012 (based on GII 2012 framework)		25.4	119	
1	**Institutions**	**51.9**	**101**	
1.1	Political environment	44.8	106	
1.1.1	Political stability*	48.7	107	
1.1.2	Government effectiveness*	15.7	125	
1.1.3	Press freedom*	70.0	78	
1.2	Regulatory environment	62.5	83	
1.2.1	Regulatory quality*	39.2	103	
1.2.2	Rule of law*	33.6	97	
1.2.3	Cost of redundancy dismissal, salary weeks	13.7	62	●
1.3	Business environment	48.5	121	
1.3.1	Ease of starting a business*	67.4	119	
1.3.2	Ease of resolving insolvency*	27.3	107	
1.3.3	Ease of paying taxes*	50.7	119	
2	**Human capital & research**	**14.5**	**125**	
2.1	Education	35.6	114	
2.1.1	Current expenditure on education, % GNI	4.3	59	●
2.1.2	Public expenditure/pupil, % GDP/cap	24.7	29	●
2.1.3	School life expectancy, years	7.5	124	○
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	24.7	106	
2.2	Tertiary education	6.1	134	
2.2.1	Tertiary enrolment, % gross	6.1	121	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	0.5	94	
2.2.4	Gross tertiary outbound enrolment, %	0.3	116	
2.3	Research & development (R&D)	1.9	98	
2.3.1	Researchers, headcounts/mn pop.	62.5	100	
2.3.2	Gross expenditure on R&D, % GDP	0.2	74	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**11.4**	**141**	○
3.1	Information & communication technologies (ICTs)	14.4	128	
3.1.1	ICT access*	21.9	118	
3.1.2	ICT use*	3.5	119	
3.1.3	Government's online service*	32.0	112	
3.1.4	E-participation*	0.0	129	○
3.2	General infrastructure	19.5	129	
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Logistics performance*	31.8	130	
3.2.4	Gross capital formation, % GDP	13.7	132	
3.3	Ecological sustainability	0.3	137	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	129	
4	**Market sophistication**	**31.4**	**134**	
4.1	Credit	19.8	129	
4.1.1	Ease of getting credit*	43.8	110	
4.1.2	Domestic credit to private sector, % GDP	21.0	117	
4.1.3	Microfinance gross loans, % GDP	0.7	42	●
4.2	Investment	18.5	104	
4.2.1	Ease of protecting investors*	37.0	124	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	56.0	132	
4.3.1	Applied tariff rate, weighted mean, %	8.4	111	
4.3.2	Non-agricultural mkt access weighted tariff, %	3.9	133	
4.3.3	Intensity of local competition†	53.2	108	
5	**Business sophistication**	**26.2**	**106**	
5.1	Knowledge workers	20.4	135	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	32.1	58	
5.1.3	R&D performed by business, % GDP	0.0	77	
5.1.4	R&D financed by business, %	10.1	70	
5.1.5	GMAT mean score	381.8	132	
5.1.6	GMAT test takers/mn pop. 20–34	4.6	133	
5.2	Innovation linkages	37.4	38	●
5.2.1	University/industry research collaboration†	35.1	108	
5.2.2	State of cluster development†	36.5	107	
5.2.3	R&D financed by abroad, %	49.0	4	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	20.8	98	
5.3.1	Royalty & license fees payments, % service imports	0.2	114	
5.3.2	High-tech imports less re-imports, %	4.2	116	
5.3.3	Comm., computer & info. services imports, %	7.4	32	●
5.3.4	FDI net inflows, % GDP	1.7	98	
6	**Knowledge & technology outputs**	**29.8**	**52**	●
6.1	Knowledge creation	5.2	106	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.2	93	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	9.8	74	●
6.1.5	Citable documents H index	49.0	109	
6.2	Knowledge impact	37.0	54	●
6.2.1	Growth rate of PPP$ GDP/worker, %	2.3	49	●
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.2	136	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	34.8	35	●
6.3.1	Royalty & license fees receipts, % service exports	0.1	91	
6.3.2	High-tech exports less re-exports, %	0.2	106	
6.3.3	Comm., computer & info. services exports, %	31.4	7	●
6.3.4	FDI net outflows, % GDP	0.1	80	
7	**Creative outputs**	**31.4**	**97**	
7.1	Intangible assets	55.8	20	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	56.0	72	●
7.1.4	ICT & organizational model creation†	55.7	57	●
7.2	Creative goods & services	8.3	132	
7.2.1	Audio-visual & related services exports, %	0.0	73	
7.2.2	National feature films/mn pop. 15–69	0.1	101	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	0.5	126	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.0	109	
7.3	Online creativity	5.6	140	○
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.0	138	○
7.3.2	Country-code TLDs/th pop. 15–69	0.0	140	○
7.3.3	Wikipedia monthly edits/mn pop. 15–69	59.2	118	
7.3.4	Video uploads on YouTube/pop. 15–69	22.0	139	○

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Malta

Key indicators

Population (millions)	0.4
GDP (US$ billions)	8.4
GDP per capita, PPP$	26,126.2
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**51.8**	**24**	
	Innovation Output Sub-Index	53.4	5	●
	Innovation Input Sub-Index	50.2	34	
	Innovation Efficiency Ratio	1.1	4	●
	Global Innovation Index 2012 (based on GII 2012 framework)	56.1	16	
1	**Institutions**	**79.0**	**23**	
1.1	Political environment	79.2	26	
1.1.1	Political stability*	90.5	20	
1.1.2	Government effectiveness*	70.3	28	
1.1.3	Press freedom*	76.7	40	
1.2	Regulatory environment	91.8	17	
1.2.1	Regulatory quality*	83.7	21	
1.2.2	Rule of law*	83.6	22	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	
1.3	Business environment	66.1	62	
1.3.1	Ease of starting a business*	72.8	104	○
1.3.2	Ease of resolving insolvency*	42.1	60	
1.3.3	Ease of paying taxes*	83.5	26	
2	**Human capital & research**	**33.6**	**62**	
2.1	Education	63.6	33	
2.1.1	Current expenditure on education, % GNI	5.7	28	
2.1.2	Public expenditure/pupil, % GDP/cap	27.1	18	
2.1.3	School life expectancy, years	15.1	36	
2.1.4	PISA scales in reading, maths, & science	455.4	39	
2.1.5	Pupil-teacher ratio, secondary	9.2	17	
2.2	Tertiary education	26.9	81	
2.2.1	Tertiary enrolment, % gross	35.3	69	
2.2.2	Graduates in science & engineering, %	16.2	67	
2.2.3	Tertiary inbound mobility, %	0.3	97	○
2.2.4	Gross tertiary outbound enrolment, %	4.0	23	
2.3	Research & development (R&D)	10.4	64	
2.3.1	Researchers, headcounts/mn pop.	2,275.9	34	
2.3.2	Gross expenditure on R&D, % GDP	0.6	50	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**40.5**	**42**	
3.1	Information & communication technologies (ICTs)	56.8	30	
3.1.1	ICT access*	79.0	14	
3.1.2	ICT use*	60.6	14	
3.1.3	Government's online service*	61.4	41	
3.1.4	E-participation*	26.3	55	
3.2	General infrastructure	27.0	89	
3.2.1	Electricity output, kWh/cap	5,153.7	40	
3.2.2	Electricity consumption, kWh/cap	4,181.6	47	
3.2.3	Logistics performance*	54.0	42	
3.2.4	Gross capital formation, % GDP	13.0	134	○
3.3	Ecological sustainability	37.8	39	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	11.3	8	●
3.3.2	Environmental performance*	48.5	84	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.7	47	
4	**Market sophistication**	**47.5**	**61**	
4.1	Credit	41.1	57	
4.1.1	Ease of getting credit*	18.8	139	○
4.1.2	Domestic credit to private sector, % GDP	133.7	17	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	19.4	100	○
4.2.1	Ease of protecting investors*	58.9	56	
4.2.2	Market capitalization, % GDP	38.5	47	
4.2.3	Total value of stocks traded, % GDP	0.5	81	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	82.0	27	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	79.4	9	●
5	**Business sophistication**	**50.1**	**13**	
5.1	Knowledge workers	60.4	30	
5.1.1	Knowledge-intensive employment, %	33.7	21	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	0.4	35	
5.1.4	R&D financed by business, %	51.5	18	
5.1.5	GMAT mean score	615.0	1	●
5.1.6	GMAT test takers/mn pop. 20–34	105.9	52	
5.2	Innovation linkages	39.9	31	
5.2.1	University/industry research collaboration†	44.5	63	
5.2.2	State of cluster development†	42.9	73	
5.2.3	R&D financed by abroad, %	18.0	18	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	20	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.9	23	
5.3	Knowledge absorption	50.1	5	●
5.3.1	Royalty & license fees payments, % service imports	6.9	17	
5.3.2	High-tech imports less re-imports, %	18.0	11	●
5.3.3	Comm., computer & info. services imports, %	9.5	13	
5.3.4	FDI net inflows, % GDP	5.3	38	
6	**Knowledge & technology outputs**	**44.8**	**14**	
6.1	Knowledge creation	19.0	49	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	3.8	36	
6.1.2	PCT resident patent ap/bn PPP$ GDP	1.6	26	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	16.0	50	
6.1.5	Citable documents H index	57.0	94	
6.2	Knowledge impact	65.7	1	●
6.2.1	Growth rate of PPP$ GDP/worker, %	1.1	82	○
6.2.2	New businesses/th pop. 15–64	9.5	8	●
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	40.4	5	●
6.2.5	High- & medium-high-tech manufactures, %	53.4	6	●
6.3	Knowledge diffusion	36.9	28	
6.3.1	Royalty & license fees receipts, % service exports	0.7	45	
6.3.2	High-tech exports less re-exports, %	24.9	4	●
6.3.3	Comm., computer & info. services exports, %	2.7	109	○
6.3.4	FDI net outflows, % GDP	0.0	102	○
7	**Creative outputs**	**62.0**	**6**	●
7.1	Intangible assets	60.9	9	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	80.3	13	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	73.5	14	
7.1.4	ICT & organizational model creation†	64.1	28	
7.2	Creative goods & services	69.9	1	●
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	3.2	47	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	32.2	10	●
7.2.4	Printing & publishing manufactures, %	6.6	4	●
7.2.5	Creative goods exports, %	1.6	40	
7.3	Online creativity	56.4	24	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	53.3	17	
7.3.2	Country-code TLDs/th pop. 15–69	41.5	46	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	7,909.2	17	
7.3.4	Video uploads on YouTube/pop. 15–69	84.8	18	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Mauritius

Key indicators

Population (millions)	1.3
GDP (US$ billions)	11.9
GDP per capita, PPP$	15,621.6
Income group	Upper-middle income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**38.0**	**53**	
Innovation Output Sub-Index		33.7	57	
Innovation Input Sub-Index		42.3	60	
Innovation Efficiency Ratio		0.8	59	
Global Innovation Index 2012 (based on GII 2012 framework)		39.2	49	
1	**Institutions**	**77.1**	**30**	●
1.1	Political environment	73.4	38	
1.1.1	Political stability*	87.6	28	●
1.1.2	Government effectiveness*	59.1	38	
1.1.3	Press freedom*	73.5	52	
1.2	Regulatory environment	82.9	26	●
1.2.1	Regulatory quality*	71.6	36	
1.2.2	Rule of law*	70.5	34	
1.2.3	Cost of redundancy dismissal, salary weeks	10.6	44	
1.3	Business environment	75.0	29	●
1.3.1	Ease of starting a business*	91.4	23	●
1.3.2	Ease of resolving insolvency*	43.9	58	
1.3.3	Ease of paying taxes*	89.6	12	●
2	**Human capital & research**	**25.3**	**95**	
2.1	Education	38.9	106	
2.1.1	Current expenditure on education, % GNI	3.4	82	
2.1.2	Public expenditure/pupil, % GDP/cap	14.7	83	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	414.6	50	
2.1.5	Pupil-teacher ratio, secondary	15.9	75	
2.2	Tertiary education	32.8	62	
2.2.1	Tertiary enrolment, % gross	32.4	72	
2.2.2	Graduates in science & engineering, %	11.9	90	○
2.2.3	Tertiary inbound mobility, %	1.8	60	
2.2.4	Gross tertiary outbound enrolment, %	6.7	11	●
2.3	Research & development (R&D)	4.1	85	
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	0.4	68	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**24.7**	**101**	
3.1	Information & communication technologies (ICTs)	30.5	81	
3.1.1	ICT access*	50.1	65	
3.1.2	ICT use*	20.7	65	
3.1.3	Government's online service*	43.1	87	
3.1.4	E-participation*	7.9	99	○
3.2	General infrastructure	38.2	33	
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Logistics performance*	45.5	72	
3.2.4	Gross capital formation, % GDP	26.7	32	●
3.3	Ecological sustainability	5.4	127	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.7	69	
4	**Market sophistication**	**57.1**	**30**	●
4.1	Credit	55.6	34	
4.1.1	Ease of getting credit*	68.8	51	
4.1.2	Domestic credit to private sector, % GDP	91.4	37	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	27.6	61	
4.2.1	Ease of protecting investors*	79.6	13	●
4.2.2	Market capitalization, % GDP	58.1	30	
4.2.3	Total value of stocks traded, % GDP	4.6	53	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	87.9	6	●
4.3.1	Applied tariff rate, weighted mean, %	1.1	7	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	12	●
4.3.3	Intensity of local competition†	69.2	42	
5	**Business sophistication**	**27.3**	**101**	
5.1	Knowledge workers	37.8	91	
5.1.1	Knowledge-intensive employment, %	12.5	91	○
5.1.2	Firms offering formal training, % firms	25.6	74	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	525.7	52	
5.1.6	GMAT test takers/mn pop. 20–34	114.8	49	
5.2	Innovation linkages	26.9	67	
5.2.1	University/industry research collaboration†	38.3	89	
5.2.2	State of cluster development†	46.9	58	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	66	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.1	46	
5.3	Knowledge absorption	17.1	120	○
5.3.1	Royalty & license fees payments, % service imports	0.6	95	
5.3.2	High-tech imports less re-imports, %	6.2	93	
5.3.3	Comm., computer & info. services imports, %	3.4	75	
5.3.4	FDI net inflows, % GDP	2.4	79	
6	**Knowledge & technology outputs**	**20.4**	**100**	
6.1	Knowledge creation	3.4	124	○
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.1	102	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.3	111	○
6.1.5	Citable documents H index	37.0	123	○
6.2	Knowledge impact	24.0	107	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	7.9	13	●
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.2	54	
6.2.5	High- & medium-high-tech manufactures, %	3.3	91	○
6.3	Knowledge diffusion	25.2	71	
6.3.1	Royalty & license fees receipts, % service exports	0.0	102	○
6.3.2	High-tech exports less re-exports, %	0.6	88	
6.3.3	Comm., computer & info. services exports, %	3.8	98	
6.3.4	FDI net outflows, % GDP	216.2	2	●
7	**Creative outputs**	**47.1**	**31**	●
7.1	Intangible assets	57.7	15	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	61.1	54	
7.1.4	ICT & organizational model creation†	54.3	61	
7.2	Creative goods & services	46.0	32	●
7.2.1	Audio-visual & related services exports, %	0.1	58	
7.2.2	National feature films/mn pop. 15–69	30.9	3	●
7.2.3	Paid-for dailies, circulation, % pop. 15–69	11.1	53	
7.2.4	Printing & publishing manufactures, %	2.9	19	●
7.2.5	Creative goods exports, %	3.3	22	●
7.3	Online creativity	27.0	68	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	11.5	46	
7.3.2	Country-code TLDs/th pop. 15–69	29.9	58	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	566.1	87	
7.3.4	Video uploads on YouTube/pop. 15–69	63.1	93	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Mexico

Key indicators

Population (millions)	117.8
GDP (US$ billions)	1,162.9
GDP per capita, PPP$	15,300.3
Income group	Upper-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**36.8**	**63**	
Innovation Output Sub-Index		32.9	60	
Innovation Input Sub-Index		40.7	68	
Innovation Efficiency Ratio		0.8	56	
Global Innovation Index 2012 (based on GII 2012 framework)		32.9	79	
1	**Institutions**	**61.8**	**66**	
1.1	Political environment	50.3	86	
1.1.1	Political stability*	49.1	105	○
1.1.2	Government effectiveness*	47.3	54	
1.1.3	Press freedom*	54.7	122	○
1.2	Regulatory environment	59.2	94	
1.2.1	Regulatory quality*	58.6	61	
1.2.2	Rule of law*	34.4	90	
1.2.3	Cost of redundancy dismissal, salary weeks	22.0	103	○
1.3	Business environment	75.8	27	●
1.3.1	Ease of starting a business*	88.2	45	
1.3.2	Ease of resolving insolvency*	71.6	24	●
1.3.3	Ease of paying taxes*	67.7	79	
2	**Human capital & research**	**31.9**	**66**	
2.1	Education	48.7	81	
2.1.1	Current expenditure on education, % GNI	5.2	38	
2.1.2	Public expenditure/pupil, % GDP/cap	17.7	71	
2.1.3	School life expectancy, years	13.7	58	
2.1.4	PISA scales in reading, maths, & science	419.9	49	
2.1.5	Pupil-teacher ratio, secondary	17.7	86	
2.2	Tertiary education	29.6	72	
2.2.1	Tertiary enrolment, % gross	28.0	79	
2.2.2	Graduates in science & engineering, %	25.4	20	●
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.2	123	○
2.3	Research & development (R&D)	17.5	45	
2.3.1	Researchers, headcounts/mn pop.	401.8	71	
2.3.2	Gross expenditure on R&D, % GDP	0.4	61	
2.3.3	QS university ranking, average score top 3*	39.8	32	●
3	**Infrastructure**	**35.5**	**57**	
3.1	Information & communication technologies (ICTs)	47.1	47	
3.1.1	ICT access*	40.8	78	
3.1.2	ICT use*	16.5	78	
3.1.3	Government's online service*	73.2	28	●
3.1.4	E-participation*	57.9	25	●
3.2	General infrastructure	29.8	69	
3.2.1	Electricity output, kWh/cap	2,490.2	68	
3.2.2	Electricity consumption, kWh/cap	2,078.4	70	
3.2.3	Logistics performance*	51.5	47	
3.2.4	Gross capital formation, % GDP	24.9	49	
3.3	Ecological sustainability	29.5	69	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.8	39	
3.3.2	Environmental performance*	49.1	81	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.5	77	
4	**Market sophistication**	**45.6**	**72**	
4.1	Credit	29.5	100	
4.1.1	Ease of getting credit*	75.0	38	
4.1.2	Domestic credit to private sector, % GDP	26.1	106	○
4.1.3	Microfinance gross loans, % GDP	0.3	56	
4.2	Investment	23.9	80	
4.2.1	Ease of protecting investors*	61.9	42	
4.2.2	Market capitalization, % GDP	35.4	49	
4.2.3	Total value of stocks traded, % GDP	9.7	42	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	68	
4.3	Trade & competition	83.3	16	●
4.3.1	Applied tariff rate, weighted mean, %	2.2	44	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.2	27	●
4.3.3	Intensity of local competition†	62.7	75	
5	**Business sophistication**	**28.9**	**89**	
5.1	Knowledge workers	41.0	75	
5.1.1	Knowledge-intensive employment, %	12.3	92	○
5.1.2	Firms offering formal training, % firms	50.8	29	
5.1.3	R&D performed by business, % GDP	0.2	50	
5.1.4	R&D financed by business, %	39.1	40	
5.1.5	GMAT mean score	509.8	70	
5.1.6	GMAT test takers/mn pop. 20–34	71.9	69	
5.2	Innovation linkages	20.0	98	
5.2.1	University/industry research collaboration†	52.1	40	
5.2.2	State of cluster development†	52.4	36	
5.2.3	R&D financed by abroad, %	1.8	71	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	103	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	51	
5.3	Knowledge absorption	25.7	79	
5.3.1	Royalty & license fees payments, % service imports	2.3	59	
5.3.2	High-tech imports less re-imports, %	18.4	9	●
5.3.3	Comm., computer & info. services imports, %	0.4	137	○
5.3.4	FDI net inflows, % GDP	1.8	94	
6	**Knowledge & technology outputs**	**23.4**	**84**	
6.1	Knowledge creation	8.1	78	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.6	75	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	66	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.3	42	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.9	99	
6.1.5	Citable documents H index	216.0	33	●
6.2	Knowledge impact	27.3	94	
6.2.1	Growth rate of PPP$ GDP/worker, %	–0.8	109	○
6.2.2	New businesses/th pop. 15–64	0.9	67	
6.2.3	Computer software spending, % GDP	0.2	66	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.8	87	
6.2.5	High- & medium-high-tech manufactures, %	42.1	17	●
6.3	Knowledge diffusion	27.2	58	
6.3.1	Royalty & license fees receipts, % service exports	0.4	62	
6.3.2	High-tech exports less re-exports, %	15.0	17	●
6.3.3	Comm., computer & info. services exports, %	1.5	125	○
6.3.4	FDI net outflows, % GDP	0.9	46	
7	**Creative outputs**	**42.4**	**48**	
7.1	Intangible assets	44.9	60	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	27.6	56	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	61.2	52	
7.1.4	ICT & organizational model creation†	58.1	44	
7.2	Creative goods & services	51.9	17	●
7.2.1	Audio-visual & related services exports, %	0.5	23	
7.2.2	National feature films/mn pop. 15–69	0.9	77	○
7.2.3	Paid-for dailies, circulation, % pop. 15–69	6.2	81	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	11.5	5	●
7.3	Online creativity	27.9	66	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.3	74	
7.3.2	Country-code TLDs/th pop. 15–69	30.0	57	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	818.2	78	
7.3.4	Video uploads on YouTube/pop. 15–69	73.7	61	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Moldova (Republic of)

Key indicators

Population (millions)	3.6
GDP (US$ billions)	7.6
GDP per capita, PPP$	3,534.7
Income group	Lower-middle income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**40.9**	**45**	
	Innovation Output Sub-Index	42.6	28	
	Innovation Input Sub-Index	39.3	76	
	Innovation Efficiency Ratio	1.1	2	●
	Global Innovation Index 2012 (based on GII 2012 framework)	39.2	50	
1	**Institutions**	**57.1**	**84**	
1.1	Political environment	53.1	78	
1.1.1	Political stability*	63.0	78	
1.1.2	Government effectiveness*	22.4	107	
1.1.3	Press freedom*	74.0	46	
1.2	Regulatory environment	56.6	102	
1.2.1	Regulatory quality*	47.4	78	
1.2.2	Rule of law*	37.5	79	
1.2.3	Cost of redundancy dismissal, salary weeks	22.6	104	
1.3	Business environment	61.5	79	
1.3.1	Ease of starting a business*	86.5	58	
1.3.2	Ease of resolving insolvency*	34.6	80	
1.3.3	Ease of paying taxes*	63.5	92	
2	**Human capital & research**	**36.8**	**49**	
2.1	Education	69.3	18	●
2.1.1	Current expenditure on education, % GNI	7.4	8	●
2.1.2	Public expenditure/pupil, % GDP/cap	45.2	2	●
2.1.3	School life expectancy, years	11.9	89	
2.1.4	PISA scales in reading, maths, & science	399.4	57	
2.1.5	Pupil-teacher ratio, secondary	9.9	24	●
2.2	Tertiary education	34.6	58	
2.2.1	Tertiary enrolment, % gross	39.4	63	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	1.2	76	
2.2.4	Gross tertiary outbound enrolment, %	4.3	19	●
2.3	Research & development (R&D)	6.4	75	
2.3.1	Researchers, headcounts/mn pop.	988.4	53	
2.3.2	Gross expenditure on R&D, % GDP	0.5	56	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**29.1**	**81**	
3.1	Information & communication technologies (ICTs)	43.9	50	
3.1.1	ICT access*	56.9	54	
3.1.2	ICT use*	27.6	55	
3.1.3	Government's online service*	51.6	61	
3.1.4	E-participation*	39.5	38	
3.2	General infrastructure	22.0	115	
3.2.1	Electricity output, kWh/cap	998.0	93	
3.2.2	Electricity consumption, kWh/cap	1,049.1	91	
3.2.3	Logistics performance*	33.3	123	○
3.2.4	Gross capital formation, % GDP	25.2	43	
3.3	Ecological sustainability	21.4	109	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.8	99	
3.3.2	Environmental performance*	45.2	103	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	93	
4	**Market sophistication**	**44.2**	**79**	
4.1	Credit	36.8	69	
4.1.1	Ease of getting credit*	75.0	38	
4.1.2	Domestic credit to private sector, % GDP	33.6	91	
4.1.3	Microfinance gross loans, % GDP	1.9	23	
4.2	Investment	18.2	107	
4.2.1	Ease of protecting investors*	54.4	77	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	0.2	90	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	77.7	62	
4.3.1	Applied tariff rate, weighted mean, %	2.5	51	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.8	62	
4.3.3	Intensity of local competition†	53.8	105	
5	**Business sophistication**	**29.3**	**85**	
5.1	Knowledge workers	45.2	60	
5.1.1	Knowledge-intensive employment, %	28.2	43	
5.1.2	Firms offering formal training, % firms	33.1	53	
5.1.3	R&D performed by business, % GDP	0.1	64	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	545.8	43	
5.1.6	GMAT test takers/mn pop. 20–34	98.4	55	
5.2	Innovation linkages	15.3	122	○
5.2.1	University/industry research collaboration†	29.2	119	○
5.2.2	State of cluster development†	26.0	131	○
5.2.3	R&D financed by abroad, %	6.5	52	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.1	38	
5.3	Knowledge absorption	27.4	67	
5.3.1	Royalty & license fees payments, % service imports	2.0	65	
5.3.2	High-tech imports less re-imports, %	6.2	92	
5.3.3	Comm., computer & info. services imports, %	7.3	36	
5.3.4	FDI net inflows, % GDP	4.2	55	
6	**Knowledge & technology outputs**	**38.1**	**26**	●
6.1	Knowledge creation	46.1	18	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	8.9	18	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.2	57	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	14.8	1	●
6.1.4	Scientific & technical articles/bn PPP$ GDP	17.4	49	
6.1.5	Citable documents H index	56.0	98	
6.2	Knowledge impact	40.6	45	
6.2.1	Growth rate of PPP$ GDP/worker, %	7.8	4	●
6.2.2	New businesses/th pop. 15–64	1.3	54	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.2	55	
6.2.5	High- & medium-high-tech manufactures, %	7.9	78	
6.3	Knowledge diffusion	31.7	41	
6.3.1	Royalty & license fees receipts, % service exports	0.6	50	
6.3.2	High-tech exports less re-exports, %	1.9	63	
6.3.3	Comm., computer & info. services exports, %	20.4	13	●
6.3.4	FDI net outflows, % GDP	0.3	68	
7	**Creative outputs**	**47.1**	**32**	
7.1	Intangible assets	65.9	6	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	178.5	1	●
7.1.2	Madrid trademark registrations/bn PPP$ GDP	4.5	4	●
7.1.3	ICT & business model creation†	45.6	112	○
7.1.4	ICT & organizational model creation†	44.1	99	
7.2	Creative goods & services	26.8	97	
7.2.1	Audio-visual & related services exports, %	0.0	60	
7.2.2	National feature films/mn pop. 15–69	0.4	95	○
7.2.3	Paid-for dailies, circulation, % pop. 15–69	14.7	35	
7.2.4	Printing & publishing manufactures, %	2.8	22	
7.2.5	Creative goods exports, %	0.2	91	
7.3	Online creativity	29.6	62	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.1	101	
7.3.2	Country-code TLDs/th pop. 15–69	30.5	56	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	940.0	73	
7.3.4	Video uploads on YouTube/pop. 15–69	81.6	33	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Mongolia

Key indicators

Population (millions)	2.9
GDP (US$ billions)	9.9
GDP per capita, PPP$	5,381.4
Income group	Lower-middle income
Region	South East Asia and Oceania

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**35.8**	**72**	
Innovation Output Sub-Index		27.5	93	
Innovation Input Sub-Index		44.0	49	
Innovation Efficiency Ratio		0.6	122	
Global Innovation Index 2012 (based on GII 2012 framework)		35.0	68	
1	**Institutions**	**62.5**	**63**	
1.1	Political environment	57.1	65	
1.1.1	Political stability*	79.7	42	
1.1.2	Government effectiveness*	21.5	110	
1.1.3	Press freedom*	70.1	77	
1.2	Regulatory environment	69.8	55	
1.2.1	Regulatory quality*	43.9	91	
1.2.2	Rule of law*	37.9	78	
1.2.3	Cost of redundancy dismissal, salary weeks	8.7	25	
1.3	Business environment	60.7	82	
1.3.1	Ease of starting a business*	86.7	56	
1.3.2	Ease of resolving insolvency*	24.8	112	
1.3.3	Ease of paying taxes*	70.7	63	
2	**Human capital & research**	**29.6**	**77**	
2.1	Education	53.3	72	
2.1.1	Current expenditure on education, % GNI	5.0	41	
2.1.2	Public expenditure/pupil, % GDP/cap	18.0	67	
2.1.3	School life expectancy, years	14.5	44	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	14.5	63	
2.2	Tertiary education	32.0	64	
2.2.1	Tertiary enrolment, % gross	57.2	40	
2.2.2	Graduates in science & engineering, %	17.6	60	
2.2.3	Tertiary inbound mobility, %	0.6	89	
2.2.4	Gross tertiary outbound enrolment, %	3.3	28	
2.3	Research & development (R&D)	3.3	86	
2.3.1	Researchers, headcounts/mn pop.	644.6	63	
2.3.2	Gross expenditure on R&D, % GDP	0.2	76	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**36.1**	**54**	
3.1	Information & communication technologies (ICTs)	42.7	55	
3.1.1	ICT access*	37.6	88	
3.1.2	ICT use*	14.0	88	
3.1.3	Government's online service*	58.8	45	
3.1.4	E-participation*	60.5	24	
3.2	General infrastructure	46.1	17	●
3.2.1	Electricity output, kWh/cap	1,623.6	82	
3.2.2	Electricity consumption, kWh/cap	1,530.1	82	
3.2.3	Logistics performance*	31.3	132	○
3.2.4	Gross capital formation, % GDP	64.5	1	●
3.3	Ecological sustainability	19.6	117	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.0	111	○
3.3.2	Environmental performance*	45.4	102	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	124	○
4	**Market sophistication**	**58.0**	**26**	
4.1	Credit	63.9	23	●
4.1.1	Ease of getting credit*	68.8	51	
4.1.2	Domestic credit to private sector, % GDP	51.6	63	
4.1.3	Microfinance gross loans, % GDP	16.8	1	●
4.2	Investment	33.2	39	
4.2.1	Ease of protecting investors*	69.6	25	
4.2.2	Market capitalization, % GDP	18.0	75	
4.2.3	Total value of stocks traded, % GDP	0.5	82	
4.2.4	Venture capital deals/tr PPP$ GDP	0.1	22	●
4.3	Trade & competition	76.9	72	
4.3.1	Applied tariff rate, weighted mean, %	5.1	81	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.3	43	
4.3.3	Intensity of local competition†	60.1	85	
5	**Business sophistication**	**34.0**	**56**	
5.1	Knowledge workers	42.3	70	
5.1.1	Knowledge-intensive employment, %	20.2	63	
5.1.2	Firms offering formal training, % firms	61.2	11	●
5.1.3	R&D performed by business, % GDP	0.0	75	○
5.1.4	R&D financed by business, %	3.6	75	
5.1.5	GMAT mean score	483.9	92	
5.1.6	GMAT test takers/mn pop. 20–34	117.2	47	
5.2	Innovation linkages	22.6	84	
5.2.1	University/industry research collaboration†	36.8	100	
5.2.2	State of cluster development†	32.3	123	○
5.2.3	R&D financed by abroad, %	1.8	70	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	18	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.1	39	
5.3	Knowledge absorption	37.0	29	
5.3.1	Royalty & license fees payments, % service imports	0.3	108	
5.3.2	High-tech imports less re-imports, %	5.8	96	
5.3.3	Comm., computer & info. services imports, %	2.7	94	
5.3.4	FDI net inflows, % GDP	53.8	1	●
6	**Knowledge & technology outputs**	**16.3**	**119**	
6.1	Knowledge creation	44.1	19	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	9.9	17	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	11.5	1	●
6.1.4	Scientific & technical articles/bn PPP$ GDP	11.2	69	
6.1.5	Citable documents H index	51.0	105	
6.2	Knowledge impact	2.5	137	○
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.2	135	○
6.2.5	High- & medium-high-tech manufactures, %	4.2	87	○
6.3	Knowledge diffusion	16.2	119	
6.3.1	Royalty & license fees receipts, % service exports	0.3	64	
6.3.2	High-tech exports less re-exports, %	0.4	92	
6.3.3	Comm., computer & info. services exports, %	2.0	119	
6.3.4	FDI net outflows, % GDP	1.1	44	
7	**Creative outputs**	**38.7**	**64**	
7.1	Intangible assets	51.1	40	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	316.9	1	●
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.1	54	
7.1.3	ICT & business model creation†	56.8	70	
7.1.4	ICT & organizational model creation†	45.6	96	
7.2	Creative goods & services	28.8	89	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	6.7	22	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	2.6	104	
7.2.4	Printing & publishing manufactures, %	3.2	16	●
7.2.5	Creative goods exports, %	0.0	114	○
7.3	Online creativity	23.6	83	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.3	126	
7.3.2	Country-code TLDs/th pop. 15–69	25.0	66	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	968.2	71	
7.3.4	Video uploads on YouTube/pop. 15–69	63.3	90	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	0.6
GDP (US$ billions)	4.3
GDP per capita, PPP$	11,717.2
Income group	Upper-middle income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**41.0**	**44**	
	Innovation Output Sub-Index	34.3	50	
	Innovation Input Sub-Index	47.7	40	
	Innovation Efficiency Ratio	0.7	94	
	Global Innovation Index 2012 (based on GII 2012 framework)	40.1	45	
1	**Institutions**	**67.9**	**52**	
1.1	Political environment	62.3	55	
1.1.1	Political stability*	78.8	46	
1.1.2	Government effectiveness*	41.1	61	
1.1.3	Press freedom*	67.0	90	
1.2	Regulatory environment	70.8	49	
1.2.1	Regulatory quality*	47.9	77	
1.2.2	Rule of law*	48.1	59	
1.2.3	Cost of redundancy dismissal, salary weeks	11.2	46	
1.3	Business environment	70.5	44	
1.3.1	Ease of starting a business*	89.0	35	
1.3.2	Ease of resolving insolvency*	51.7	40	
1.3.3	Ease of paying taxes*	70.9	62	
2	**Human capital & research**	**46.7**	**29**	
2.1	Education	65.1	30	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	15.0	37	
2.1.4	PISA scales in reading, maths, & science	403.8	54	
2.1.5	Pupil-teacher ratio, secondary	13.8	59	
2.2	Tertiary education	63.8	3	●
2.2.1	Tertiary enrolment, % gross	47.6	52	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	7.9	6	●
2.3	Research & development (R&D)	11.3	62	
2.3.1	Researchers, headcounts/mn pop.	1,068.5	50	
2.3.2	Gross expenditure on R&D, % GDP	1.1	32	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**34.0**	**65**	
3.1	Information & communication technologies (ICTs)	43.2	54	
3.1.1	ICT access*	55.5	58	
3.1.2	ICT use*	34.6	45	
3.1.3	Government's online service*	51.0	64	
3.1.4	E-participation*	31.6	47	
3.2	General infrastructure	27.7	83	
3.2.1	Electricity output, kWh/cap	6,617.5	32	
3.2.2	Electricity consumption, kWh/cap	5,551.5	37	
3.2.3	Logistics performance*	36.3	115	○
3.2.4	Gross capital formation, % GDP	20.3	88	
3.3	Ecological sustainability	31.0	65	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.8	40	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.5	30	
4	**Market sophistication**	**57.3**	**29**	
4.1	Credit	69.2	17	●
4.1.1	Ease of getting credit*	93.8	4	●
4.1.2	Domestic credit to private sector, % GDP	55.8	57	
4.1.3	Microfinance gross loans, % GDP	8.2	5	●
4.2	Investment	25.7	73	
4.2.1	Ease of protecting investors*	66.3	32	
4.2.2	Market capitalization, % GDP	73.9	19	
4.2.3	Total value of stocks traded, % GDP	1.7	65	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	77.0	71	
4.3.1	Applied tariff rate, weighted mean, %	3.5	58	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.2	34	
4.3.3	Intensity of local competition†	51.5	112	○
5	**Business sophistication**	**32.4**	**64**	
5.1	Knowledge workers	38.2	88	
5.1.1	Knowledge-intensive employment, %	35.9	17	●
5.1.2	Firms offering formal training, % firms	25.2	77	
5.1.3	R&D performed by business, % GDP	0.1	65	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	n/a	n/a	
5.1.6	GMAT test takers/mn pop. 20–34	n/a	n/a	
5.2	Innovation linkages	20.5	95	
5.2.1	University/industry research collaboration†	45.5	59	
5.2.2	State of cluster development†	36.6	106	○
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	38.6	22	●
5.3.1	Royalty & license fees payments, % service imports	0.6	93	
5.3.2	High-tech imports less re-imports, %	4.3	115	○
5.3.3	Comm., computer & info. services imports, %	9.5	12	●
5.3.4	FDI net inflows, % GDP	12.4	9	●
6	**Knowledge & technology outputs**	**26.8**	**64**	
6.1	Knowledge creation	10.9	67	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.8	44	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	21.4	44	
6.1.5	Citable documents H index	12.0	141	○
6.2	Knowledge impact	55.4	9	●
6.2.1	Growth rate of PPP$ GDP/worker, %	2.1	54	
6.2.2	New businesses/th pop. 15–64	10.4	6	●
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	20.4	22	●
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	6.2	133	○
6.3.1	Royalty & license fees receipts, % service exports	0.1	87	
6.3.2	High-tech exports less re-exports, %	2.0	62	
6.3.3	Comm., computer & info. services exports, %	4.1	92	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**41.7**	**50**	
7.1	Intangible assets	40.5	84	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.3	49	
7.1.3	ICT & business model creation†	60.5	56	
7.1.4	ICT & organizational model creation†	56.5	51	
7.2	Creative goods & services	36.4	63	
7.2.1	Audio-visual & related services exports, %	0.1	56	
7.2.2	National feature films/mn pop. 15–69	8.8	17	●
7.2.3	Paid-for dailies, circulation, % pop. 15–69	13.7	42	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.6	65	
7.3	Online creativity	49.3	31	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.1	100	
7.3.2	Country-code TLDs/th pop. 15–69	100.0	1	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	3,839.5	41	
7.3.4	Video uploads on YouTube/pop. 15–69	74.1	60	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Morocco

Key indicators

Population (millions)	32.9
GDP (US$ billions)	97.2
GDP per capita, PPP$	5,256.5
Income group	Lower-middle income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**30.9**	**92**	
Innovation Output Sub-Index		26.4	99	
Innovation Input Sub-Index		35.3	90	
Innovation Efficiency Ratio		0.7	83	
Global Innovation Index 2012 (based on GII 2012 framework)		30.7	88	
1	**Institutions**	**57.7**	**81**	
1.1	Political environment	49.3	88	
1.1.1	Political stability*	54.7	95	
1.1.2	Government effectiveness*	32.4	82	
1.1.3	Press freedom*	61.0	109	
1.2	Regulatory environment	59.4	92	
1.2.1	Regulatory quality*	47.1	80	
1.2.2	Rule of law*	41.6	70	
1.2.3	Cost of redundancy dismissal, salary weeks	20.7	95	
1.3	Business environment	64.3	68	
1.3.1	Ease of starting a business*	86.9	55	
1.3.2	Ease of resolving insolvency*	37.8	77	
1.3.3	Ease of paying taxes*	68.3	77	
2	**Human capital & research**	**30.5**	**74**	
2.1	Education	48.1	83	
2.1.1	Current expenditure on education, % GNI	5.2	37	●
2.1.2	Public expenditure/pupil, % GDP/cap	23.6	39	●
2.1.3	School life expectancy, years	10.8	108	○
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	17.9	88	
2.2	Tertiary education	36.2	54	
2.2.1	Tertiary enrolment, % gross	13.2	98	
2.2.2	Graduates in science & engineering, %	34.9	5	●
2.2.3	Tertiary inbound mobility, %	1.9	56	
2.2.4	Gross tertiary outbound enrolment, %	1.4	68	
2.3	Research & development (R&D)	7.1	73	
2.3.1	Researchers, headcounts/mn pop.	934.7	54	
2.3.2	Gross expenditure on R&D, % GDP	0.6	48	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**28.1**	**87**	
3.1	Information & communication technologies (ICTs)	22.5	101	
3.1.1	ICT access*	44.9	71	
3.1.2	ICT use*	20.1	71	
3.1.3	Government's online service*	24.8	128	○
3.1.4	E-participation*	0.0	129	○
3.2	General infrastructure	33.4	49	●
3.2.1	Electricity output, kWh/cap	698.2	101	○
3.2.2	Electricity consumption, kWh/cap	781.1	98	
3.2.3	Logistics performance*	50.8	50	●
3.2.4	Gross capital formation, % GDP	35.0	10	●
3.3	Ecological sustainability	28.4	75	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.3	32	●
3.3.2	Environmental performance*	45.8	100	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	109	
4	**Market sophistication**	**41.5**	**96**	
4.1	Credit	29.5	102	
4.1.1	Ease of getting credit*	50.0	93	
4.1.2	Domestic credit to private sector, % GDP	71.2	48	●
4.1.3	Microfinance gross loans, % GDP	0.5	49	
4.2	Investment	20.9	92	
4.2.1	Ease of protecting investors*	50.7	94	
4.2.2	Market capitalization, % GDP	60.0	27	●
4.2.3	Total value of stocks traded, % GDP	6.3	50	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	74.1	87	
4.3.1	Applied tariff rate, weighted mean, %	7.1	100	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.7	61	
4.3.3	Intensity of local competition†	66.6	57	
5	**Business sophistication**	**19.0**	**135**	○
5.1	Knowledge workers	26.7	123	○
5.1.1	Knowledge-intensive employment, %	6.8	100	○
5.1.2	Firms offering formal training, % firms	24.7	81	
5.1.3	R&D performed by business, % GDP	0.1	54	
5.1.4	R&D financed by business, %	22.7	61	
5.1.5	GMAT mean score	517.0	62	
5.1.6	GMAT test takers/mn pop. 20–34	35.8	100	
5.2	Innovation linkages	16.0	117	○
5.2.1	University/industry research collaboration†	33.5	113	○
5.2.2	State of cluster development†	46.1	61	
5.2.3	R&D financed by abroad, %	2.6	67	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	85	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	64	
5.3	Knowledge absorption	14.2	129	○
5.3.1	Royalty & license fees payments, % service imports	0.5	101	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Comm., computer & info. services imports, %	1.9	108	
5.3.4	FDI net inflows, % GDP	2.5	76	
6	**Knowledge & technology outputs**	**23.2**	**86**	
6.1	Knowledge creation	8.4	77	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.0	69	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.2	59	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	8.7	80	
6.1.5	Citable documents H index	90.0	66	
6.2	Knowledge impact	29.7	85	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.0	40	●
6.2.2	New businesses/th pop. 15–64	1.3	55	
6.2.3	Computer software spending, % GDP	0.3	54	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.6	104	
6.2.5	High- & medium-high-tech manufactures, %	23.9	42	
6.3	Knowledge diffusion	24.2	79	
6.3.1	Royalty & license fees receipts, % service exports	0.0	94	○
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Comm., computer & info. services exports, %	8.2	55	
6.3.4	FDI net outflows, % GDP	0.2	71	
7	**Creative outputs**	**29.7**	**107**	
7.1	Intangible assets	40.0	85	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	95.7	5	●
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.3	46	
7.1.3	ICT & business model creation†	53.2	85	
7.1.4	ICT & organizational model creation†	48.3	87	
7.2	Creative goods & services	18.2	119	○
7.2.1	Audio-visual & related services exports, %	0.2	37	
7.2.2	National feature films/mn pop. 15–69	1.1	72	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	1.5	111	
7.2.4	Printing & publishing manufactures, %	1.2	68	
7.2.5	Creative goods exports, %	n/a	n/a	
7.3	Online creativity	20.6	95	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.7	78	
7.3.2	Country-code TLDs/th pop. 15–69	14.7	86	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	299.9	103	
7.3.4	Video uploads on YouTube/pop. 15–69	63.2	92	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	24.6
GDP (US$ billions)	14.6
GDP per capita, PPP$	1,167.3
Income group	Low income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**26.5**	**121**	
Innovation Output Sub-Index		21.3	124	
Innovation Input Sub-Index		31.7	111	
Innovation Efficiency Ratio		0.7	111	
Global Innovation Index 2012 (based on GII 2012 framework)		26.3	110	
1	**Institutions**	**49.7**	**108**	
1.1	Political environment	56.1	70	●
1.1.1	Political stability*	72.8	53	●
1.1.2	Government effectiveness*	23.4	103	
1.1.3	Press freedom*	72.0	60	●
1.2	Regulatory environment	38.2	133	
1.2.1	Regulatory quality*	39.1	105	
1.2.2	Rule of law*	32.1	100	
1.2.3	Cost of redundancy dismissal, salary weeks	37.5	135	
1.3	Business environment	54.9	100	
1.3.1	Ease of starting a business*	80.9	83	
1.3.2	Ease of resolving insolvency*	16.8	128	
1.3.3	Ease of paying taxes*	67.0	81	
2	**Human capital & research**	**12.4**	**132**	
2.1	Education	28.4	126	
2.1.1	Current expenditure on education, % GNI	4.0	75	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	9.7	115	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	34.3	122	
2.2	Tertiary education	7.3	131	
2.2.1	Tertiary enrolment, % gross	4.9	124	
2.2.2	Graduates in science & engineering, %	8.9	97	
2.2.3	Tertiary inbound mobility, %	0.3	96	
2.2.4	Gross tertiary outbound enrolment, %	0.1	137	○
2.3	Research & development (R&D)	1.5	106	
2.3.1	Researchers, headcounts/mn pop.	23.9	109	○
2.3.2	Gross expenditure on R&D, % GDP	0.2	83	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**18.9**	**125**	
3.1	Information & communication technologies (ICTs)	16.8	117	
3.1.1	ICT access*	16.6	134	
3.1.2	ICT use*	0.8	134	
3.1.3	Government's online service*	36.6	101	
3.1.4	E-participation*	13.2	84	
3.2	General infrastructure	20.9	121	
3.2.1	Electricity output, kWh/cap	712.5	99	
3.2.2	Electricity consumption, kWh/cap	443.7	109	
3.2.3	Logistics performance*	32.3	126	
3.2.4	Gross capital formation, % GDP	25.0	46	●
3.3	Ecological sustainability	19.1	119	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	1.9	121	
3.3.2	Environmental performance*	47.8	86	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	103	
4	**Market sophistication**	**41.2**	**100**	
4.1	Credit	19.5	130	
4.1.1	Ease of getting credit*	43.8	110	
4.1.2	Domestic credit to private sector, % GDP	23.9	110	
4.1.3	Microfinance gross loans, % GDP	0.5	51	
4.2	Investment	30.8	47	●
4.2.1	Ease of protecting investors*	61.5	49	●
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	73.2	94	
4.3.1	Applied tariff rate, weighted mean, %	4.8	76	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.2	30	●
4.3.3	Intensity of local competition†	45.9	129	
5	**Business sophistication**	**36.4**	**49**	●
5.1	Knowledge workers	11.8	142	○
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	22.1	84	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	330.0	140	○
5.1.6	GMAT test takers/mn pop. 20–34	0.9	141	○
5.2	Innovation linkages	51.1	9	●
5.2.1	University/industry research collaboration†	41.3	76	
5.2.2	State of cluster development†	39.5	90	
5.2.3	R&D financed by abroad, %	64.3	1	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	36	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	46.2	12	●
5.3.1	Royalty & license fees payments, % service imports	0.3	107	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Comm., computer & info. services imports, %	5.1	56	●
5.3.4	FDI net inflows, % GDP	16.2	8	●
6	**Knowledge & technology outputs**	**27.6**	**60**	●
6.1	Knowledge creation	3.2	129	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.0	68	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.1	56	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.5	101	
6.1.5	Citable documents H index	50.0	107	
6.2	Knowledge impact	45.2	33	●
6.2.1	Growth rate of PPP$ GDP/worker, %	4.4	22	●
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.2	115	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	22.3	91	
6.3.1	Royalty & license fees receipts, % service exports	0.0	93	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Comm., computer & info. services exports, %	6.4	66	●
6.3.4	FDI net outflows, % GDP	0.0	101	
7	**Creative outputs**	**14.9**	**139**	○
7.1	Intangible assets	25.6	128	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	29.1	53	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.0	61	
7.1.3	ICT & business model creation†	46.8	109	
7.1.4	ICT & organizational model creation†	38.6	122	
7.2	Creative goods & services	2.0	135	
7.2.1	Audio-visual & related services exports, %	0.0	67	
7.2.2	National feature films/mn pop. 15–69	0.1	103	○
7.2.3	Paid-for dailies, circulation, % pop. 15–69	0.1	136	○
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	n/a	n/a	
7.3	Online creativity	6.6	139	○
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.1	132	
7.3.2	Country-code TLDs/th pop. 15–69	3.6	116	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	58.5	119	
7.3.4	Video uploads on YouTube/pop. 15–69	22.2	138	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Namibia

Key indicators

Population (millions)	2.4
GDP (US$ billions)	12.1
GDP per capita, PPP$	7,813.6
Income group	Upper-middle income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**28.4**	**109**	
Innovation Output Sub-Index		18.5	134	○
Innovation Input Sub-Index		38.2	79	
Innovation Efficiency Ratio		0.5	139	○
Global Innovation Index 2012 (based on GII 2012 framework)		34.1	73	
1	**Institutions**	**68.6**	**50**	
1.1	Political environment	71.8	42	
1.1.1	Political stability*	87.9	26	●
1.1.2	Government effectiveness*	40.1	64	
1.1.3	Press freedom*	87.5	17	●
1.2	Regulatory environment	74.3	44	
1.2.1	Regulatory quality*	51.6	70	
1.2.2	Rule of law*	52.4	53	
1.2.3	Cost of redundancy dismissal, salary weeks	9.7	35	●
1.3	Business environment	59.5	86	
1.3.1	Ease of starting a business*	68.0	116	
1.3.2	Ease of resolving insolvency*	45.4	54	
1.3.3	Ease of paying taxes*	65.2	87	
2	**Human capital & research**	**24.1**	**100**	
2.1	Education	51.2	77	
2.1.1	Current expenditure on education, % GNI	8.2	5	●
2.1.2	Public expenditure/pupil, % GDP/cap	19.9	55	
2.1.3	School life expectancy, years	11.3	101	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	24.6	105	
2.2	Tertiary education	21.0	98	
2.2.1	Tertiary enrolment, % gross	9.0	112	
2.2.2	Graduates in science & engineering, %	2.6	100	○
2.2.3	Tertiary inbound mobility, %	10.2	16	●
2.2.4	Gross tertiary outbound enrolment, %	3.2	32	●
2.3	Research & development (R&D)	0.0	123	○
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**25.9**	**92**	
3.1	Information & communication technologies (ICTs)	17.8	115	
3.1.1	ICT access*	30.3	104	
3.1.2	ICT use*	8.3	103	
3.1.3	Government's online service*	30.1	118	
3.1.4	E-participation*	2.6	116	○
3.2	General infrastructure	29.1	71	
3.2.1	Electricity output, kWh/cap	652.6	103	
3.2.2	Electricity consumption, kWh/cap	1,478.8	83	
3.2.3	Logistics performance*	41.3	89	
3.2.4	Gross capital formation, % GDP	32.4	16	●
3.3	Ecological sustainability	30.7	66	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.3	34	●
3.3.2	Environmental performance*	50.7	75	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.5	79	
4	**Market sophistication**	**42.4**	**92**	
4.1	Credit	32.4	91	
4.1.1	Ease of getting credit*	75.0	38	
4.1.2	Domestic credit to private sector, % GDP	49.8	66	
4.1.3	Microfinance gross loans, % GDP	0.0	79	
4.2	Investment	14.9	130	○
4.2.1	Ease of protecting investors*	55.2	73	
4.2.2	Market capitalization, % GDP	9.4	93	
4.2.3	Total value of stocks traded, % GDP	0.1	98	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	79.8	41	
4.3.1	Applied tariff rate, weighted mean, %	1.8	39	●
4.3.2	Non-agricultural mkt access weighted tariff, %	1.0	72	
4.3.3	Intensity of local competition†	58.9	88	
5	**Business sophistication**	**30.3**	**78**	
5.1	Knowledge workers	35.9	103	
5.1.1	Knowledge-intensive employment, %	16.9	79	
5.1.2	Firms offering formal training, % firms	44.5	38	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	364.4	139	○
5.1.6	GMAT test takers/mn pop. 20–34	21.1	114	
5.2	Innovation linkages	27.5	64	
5.2.1	University/industry research collaboration†	41.7	72	
5.2.2	State of cluster development†	41.2	80	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	35	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	27.4	68	
5.3.1	Royalty & license fees payments, % service imports	1.0	82	
5.3.2	High-tech imports less re-imports, %	6.4	88	
5.3.3	Comm., computer & info. services imports, %	5.0	59	
5.3.4	FDI net inflows, % GDP	7.9	20	●
6	**Knowledge & technology outputs**	**8.9**	**139**	○
6.1	Knowledge creation	10.4	70	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.7	33	●
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.2	93	
6.1.5	Citable documents H index	51.0	105	
6.2	Knowledge impact	3.6	135	○
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.8	96	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	13.6	130	○
6.3.1	Royalty & license fees receipts, % service exports	0.0	112	○
6.3.2	High-tech exports less re-exports, %	0.8	79	
6.3.3	Comm., computer & info. services exports, %	1.6	123	
6.3.4	FDI net outflows, % GDP	–0.0	114	○
7	**Creative outputs**	**28.1**	**115**	
7.1	Intangible assets	29.0	123	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.0	66	○
7.1.3	ICT & business model creation†	45.5	113	
7.1.4	ICT & organizational model creation†	41.3	115	
7.2	Creative goods & services	32.4	80	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	0.8	80	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	4.0	91	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.5	68	
7.3	Online creativity	21.9	91	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	30.1	26	●
7.3.2	Country-code TLDs/th pop. 15–69	1.9	124	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	415.3	93	
7.3.4	Video uploads on YouTube/pop. 15–69	53.3	108	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	31.2
GDP (US$ billions)	19.4
GDP per capita, PPP$	1,306.0
Income group	Low income
Region	Central and Southern Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**25.0**	**128**	
Innovation Output Sub-Index		21.6	123	
Innovation Input Sub-Index		28.3	129	
Innovation Efficiency Ratio		0.8	77	●
Global Innovation Index 2012 (based on GII 2012 framework)		26.0	113	
1	**Institutions**	**45.9**	**125**	
1.1	Political environment	36.7	129	
1.1.1	Political stability*	28.1	136	○
1.1.2	Government effectiveness*	16.7	122	
1.1.3	Press freedom*	65.4	96	
1.2	Regulatory environment	43.6	126	
1.2.1	Regulatory quality*	30.7	122	
1.2.2	Rule of law*	20.6	124	
1.2.3	Cost of redundancy dismissal, salary weeks	27.2	116	
1.3	Business environment	57.3	90	
1.3.1	Ease of starting a business*	79.5	86	
1.3.2	Ease of resolving insolvency*	26.7	108	
1.3.3	Ease of paying taxes*	65.6	83	
2	**Human capital & research**	**13.2**	**130**	
2.1	Education	30.4	124	
2.1.1	Current expenditure on education, % GNI	4.2	67	
2.1.2	Public expenditure/pupil, % GDP/cap	15.6	80	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	29.7	117	
2.2	Tertiary education	9.2	128	
2.2.1	Tertiary enrolment, % gross	7.3	119	
2.2.2	Graduates in science & engineering, %	11.8	92	○
2.2.3	Tertiary inbound mobility, %	0.0	110	○
2.2.4	Gross tertiary outbound enrolment, %	0.4	105	
2.3	Research & development (R&D)	0.0	123	○
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**19.3**	**122**	
3.1	Information & communication technologies (ICTs)	13.0	132	○
3.1.1	ICT access*	18.7	126	○
3.1.2	ICT use*	1.8	126	○
3.1.3	Government's online service*	28.8	124	
3.1.4	E-participation*	2.6	116	
3.2	General infrastructure	20.6	122	
3.2.1	Electricity output, kWh/cap	107.0	120	○
3.2.2	Electricity consumption, kWh/cap	92.7	123	○
3.2.3	Logistics performance*	26.0	136	○
3.2.4	Gross capital formation, % GDP	29.2	22	●
3.3	Ecological sustainability	24.4	94	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.2	109	
3.3.2	Environmental performance*	58.0	37	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	99	
4	**Market sophistication**	**35.9**	**123**	
4.1	Credit	32.7	89	
4.1.1	Ease of getting credit*	62.5	68	●
4.1.2	Domestic credit to private sector, % GDP	52.9	62	●
4.1.3	Microfinance gross loans, % GDP	1.1	36	●
4.2	Investment	16.3	121	
4.2.1	Ease of protecting investors*	53.7	79	
4.2.2	Market capitalization, % GDP	24.0	63	
4.2.3	Total value of stocks traded, % GDP	0.4	87	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	58.6	128	
4.3.1	Applied tariff rate, weighted mean, %	12.1	131	○
4.3.2	Non-agricultural mkt access weighted tariff, %	1.4	85	
4.3.3	Intensity of local competition†	52.6	110	
5	**Business sophistication**	**27.4**	**97**	
5.1	Knowledge workers	29.2	117	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	8.8	103	○
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	463.6	101	
5.1.6	GMAT test takers/mn pop. 20–34	75.1	67	●
5.2	Innovation linkages	26.4	70	●
5.2.1	University/industry research collaboration†	28.9	121	
5.2.2	State of cluster development†	38.2	99	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	62	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	n/a	n/a	
5.3	Knowledge absorption	26.6	72	●
5.3.1	Royalty & license fees payments, % service imports	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	6.2	91	
5.3.3	Comm., computer & info. services imports, %	8.2	23	●
5.3.4	FDI net inflows, % GDP	0.5	129	
6	**Knowledge & technology outputs**	**13.4**	**127**	
6.1	Knowledge creation	10.1	72	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	8.4	81	
6.1.5	Citable documents H index	66.0	89	
6.2	Knowledge impact	1.6	138	○
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.6	103	
6.2.5	High- & medium-high-tech manufactures, %	1.4	97	○
6.3	Knowledge diffusion	26.9	61	●
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.3	98	
6.3.3	Comm., computer & info. services exports, %	11.4	32	●
6.3.4	FDI net outflows, % GDP	0.0	109	
7	**Creative outputs**	**29.7**	**106**	
7.1	Intangible assets	32.7	110	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	20.7	66	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	43.6	120	
7.1.4	ICT & organizational model creation†	42.8	106	
7.2	Creative goods & services	37.8	57	●
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	3.9	93	
7.2.4	Printing & publishing manufactures, %	1.7	53	
7.2.5	Creative goods exports, %	1.6	41	●
7.3	Online creativity	15.8	113	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.7	110	
7.3.2	Country-code TLDs/th pop. 15–69	13.4	88	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	141.5	109	
7.3.4	Video uploads on YouTube/pop. 15–69	48.4	113	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Netherlands

Key indicators

Population (millions)	17.4
GDP (US$ billions)	770.2
GDP per capita, PPP$	42,321.6
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**61.1**	**4**	●
Innovation Output Sub-Index		58.1	2	●
Innovation Input Sub-Index		64.2	10	
Innovation Efficiency Ratio		0.9	26	
Global Innovation Index 2012 (based on GII 2012 framework)		60.5	6	
1	**Institutions**	**92.8**	**6**	●
1.1	Political environment	91.5	8	
1.1.1	Political stability*	93.6	12	
1.1.2	Government effectiveness*	87.5	8	
1.1.3	Press freedom*	93.5	2	●
1.2	Regulatory environment	97.9	3	●
1.2.1	Regulatory quality*	97.7	5	●
1.2.2	Rule of law*	96.4	6	●
1.2.3	Cost of redundancy dismissal, salary weeks	8.7	25	
1.3	Business environment	88.9	10	
1.3.1	Ease of starting a business*	89.1	34	
1.3.2	Ease of resolving insolvency*	94.1	6	●
1.3.3	Ease of paying taxes*	83.4	27	
2	**Human capital & research**	**50.6**	**23**	
2.1	Education	70.2	16	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	26.0	23	
2.1.3	School life expectancy, years	17.0	7	
2.1.4	PISA scales in reading, maths, & science	518.8	10	
2.1.5	Pupil-teacher ratio, secondary	13.7	57	○
2.2	Tertiary education	32.9	61	○
2.2.1	Tertiary enrolment, % gross	65.4	25	
2.2.2	Graduates in science & engineering, %	14.0	81	○
2.2.3	Tertiary inbound mobility, %	4.3	35	
2.2.4	Gross tertiary outbound enrolment, %	1.3	70	○
2.3	Research & development (R&D)	48.8	19	
2.3.1	Researchers, headcounts/mn pop.	3,902.3	24	
2.3.2	Gross expenditure on R&D, % GDP	2.0	18	
2.3.3	QS university ranking, average score top 3*	70.4	12	
3	**Infrastructure**	**55.5**	**10**	
3.1	Information & communication technologies (ICTs)	86.5	4	●
3.1.1	ICT access*	83.4	10	
3.1.2	ICT use*	66.3	10	
3.1.3	Government's online service*	96.1	5	●
3.1.4	E-participation*	100.0	1	●
3.2	General infrastructure	39.9	29	
3.2.1	Electricity output, kWh/cap	6,733.8	30	
3.2.2	Electricity consumption, kWh/cap	7,013.1	24	
3.2.3	Logistics performance*	75.5	5	
3.2.4	Gross capital formation, % GDP	16.9	119	○
3.3	Ecological sustainability	40.1	33	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.0	37	
3.3.2	Environmental performance*	65.7	16	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.4	38	
4	**Market sophistication**	**69.2**	**15**	
4.1	Credit	81.9	9	
4.1.1	Ease of getting credit*	68.8	51	○
4.1.2	Domestic credit to private sector, % GDP	198.1	6	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	41.9	25	
4.2.1	Ease of protecting investors*	48.1	99	○
4.2.2	Market capitalization, % GDP	71.1	22	
4.2.3	Total value of stocks traded, % GDP	66.3	15	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	38	
4.3	Trade & competition	83.7	15	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	84.6	1	●
5	**Business sophistication**	**52.9**	**9**	
5.1	Knowledge workers	63.1	25	
5.1.1	Knowledge-intensive employment, %	37.0	13	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	1.1	22	
5.1.4	R&D financed by business, %	45.1	30	
5.1.5	GMAT mean score	542.7	44	
5.1.6	GMAT test takers/mn pop. 20–34	323.8	18	
5.2	Innovation linkages	45.8	19	
5.2.1	University/industry research collaboration†	71.6	10	
5.2.2	State of cluster development†	65.5	13	
5.2.3	R&D financed by abroad, %	10.8	37	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	34	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	2.1	11	
5.3	Knowledge absorption	49.7	7	
5.3.1	Royalty & license fees payments, % service imports	17.4	1	●
5.3.2	High-tech imports less re-imports, %	16.0	16	
5.3.3	Comm., computer & info. services imports, %	8.3	21	
5.3.4	FDI net inflows, % GDP	1.7	100	○
6	**Knowledge & technology outputs**	**53.9**	**6**	●
6.1	Knowledge creation	63.4	5	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	11.7	12	
6.1.2	PCT resident patent ap/bn PPP$ GDP	5.6	10	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	45.6	11	
6.1.5	Citable documents H index	545.0	8	
6.2	Knowledge impact	46.2	26	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.1	53	○
6.2.2	New businesses/th pop. 15–64	3.2	35	
6.2.3	Computer software spending, % GDP	0.7	6	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	15.8	30	
6.2.5	High- & medium-high-tech manufactures, %	33.0	29	
6.3	Knowledge diffusion	56.8	4	●
6.3.1	Royalty & license fees receipts, % service exports	21.7	1	●
6.3.2	High-tech exports less re-exports, %	16.0	15	
6.3.3	Comm., computer & info. services exports, %	9.0	46	
6.3.4	FDI net outflows, % GDP	4.1	16	
7	**Creative outputs**	**62.3**	**4**	●
7.1	Intangible assets	53.6	28	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	64.2	25	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	1.8	18	
7.1.3	ICT & business model creation†	75.4	7	
7.1.4	ICT & organizational model creation†	73.3	5	●
7.2	Creative goods & services	60.5	8	
7.2.1	Audio-visual & related services exports, %	0.4	28	
7.2.2	National feature films/mn pop. 15–69	6.1	26	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	28.1	14	
7.2.4	Printing & publishing manufactures, %	4.4	10	
7.2.5	Creative goods exports, %	7.5	8	
7.3	Online creativity	81.5	2	●
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	92.8	6	●
7.3.2	Country-code TLDs/th pop. 15–69	83.1	2	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	10,288.3	7	
7.3.4	Video uploads on YouTube/pop. 15–69	90.3	6	●

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	4.6
GDP (US$ billions)	166.9
GDP per capita, PPP$	28,796.7
Income group	High income
Region	South East Asia and Oceania

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**54.5**	**17**	
Innovation Output Sub-Index		46.2	19	
Innovation Input Sub-Index		62.8	15	
Innovation Efficiency Ratio		0.7	90	○
Global Innovation Index 2012 (based on GII 2012 framework)		56.6	13	
1	**Institutions**	**95.0**	**3**	●
1.1	Political environment	94.0	3	●
1.1.1	Political stability*	99.2	2	●
1.1.2	Government effectiveness*	91.3	5	●
1.1.3	Press freedom*	91.6	6	●
1.2	Regulatory environment	99.5	2	●
1.2.1	Regulatory quality*	99.5	2	●
1.2.2	Rule of law*	98.7	4	●
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	
1.3	Business environment	91.6	5	●
1.3.1	Ease of starting a business*	100.0	1	●
1.3.2	Ease of resolving insolvency*	88.1	13	●
1.3.3	Ease of paying taxes*	86.6	18	
2	**Human capital & research**	**54.9**	**16**	
2.1	Education	72.9	7	●
2.1.1	Current expenditure on education, % GNI	7.2	11	
2.1.2	Public expenditure/pupil, % GDP/cap	24.1	35	
2.1.3	School life expectancy, years	19.7	1	●
2.1.4	PISA scales in reading, maths, & science	524.1	8	
2.1.5	Pupil-teacher ratio, secondary	14.5	64	
2.2	Tertiary education	46.3	24	
2.2.1	Tertiary enrolment, % gross	82.6	7	●
2.2.2	Graduates in science & engineering, %	18.9	56	○
2.2.3	Tertiary inbound mobility, %	14.2	13	
2.2.4	Gross tertiary outbound enrolment, %	1.5	65	
2.3	Research & development (R&D)	45.4	20	
2.3.1	Researchers, headcounts/mn pop.	6,338.7	11	
2.3.2	Gross expenditure on R&D, % GDP	1.3	28	
2.3.3	QS university ranking, average score top 3*	58.4	17	
3	**Infrastructure**	**47.6**	**26**	
3.1	Information & communication technologies (ICTs)	66.7	21	
3.1.1	ICT access*	76.1	21	
3.1.2	ICT use*	54.5	21	
3.1.3	Government's online service*	78.4	21	
3.1.4	E-participation*	57.9	25	
3.2	General infrastructure	41.0	28	
3.2.1	Electricity output, kWh/cap	10,066.7	13	
3.2.2	Electricity consumption, kWh/cap	9,375.4	14	
3.2.3	Logistics performance*	60.5	30	
3.2.4	Gross capital formation, % GDP	19.8	97	○
3.3	Ecological sustainability	35.1	52	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.3	63	○
3.3.2	Environmental performance*	66.0	14	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.5	50	
4	**Market sophistication**	**70.7**	**12**	●
4.1	Credit	81.9	10	●
4.1.1	Ease of getting credit*	93.8	4	●
4.1.2	Domestic credit to private sector, % GDP	147.2	13	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	43.3	23	
4.2.1	Ease of protecting investors*	100.0	1	●
4.2.2	Market capitalization, % GDP	44.9	42	
4.2.3	Total value of stocks traded, % GDP	13.4	39	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	33	
4.3	Trade & competition	87.0	8	●
4.3.1	Applied tariff rate, weighted mean, %	1.6	38	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.5	55	
4.3.3	Intensity of local competition†	75.1	22	
5	**Business sophistication**	**45.6**	**28**	
5.1	Knowledge workers	64.6	21	
5.1.1	Knowledge-intensive employment, %	42.9	6	●
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	0.5	31	
5.1.4	R&D financed by business, %	38.5	44	○
5.1.5	GMAT mean score	586.8	9	●
5.1.6	GMAT test takers/mn pop. 20–34	189.6	32	
5.2	Innovation linkages	37.2	39	
5.2.1	University/industry research collaboration†	64.4	22	
5.2.2	State of cluster development†	51.8	39	
5.2.3	R&D financed by abroad, %	5.4	57	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	17	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.5	27	
5.3	Knowledge absorption	34.8	39	
5.3.1	Royalty & license fees payments, % service imports	8.6	9	●
5.3.2	High-tech imports less re-imports, %	12.3	31	
5.3.3	Comm., computer & info. services imports, %	5.9	44	
5.3.4	FDI net inflows, % GDP	2.2	84	○
6	**Knowledge & technology outputs**	**37.2**	**29**	
6.1	Knowledge creation	53.3	9	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	12.1	11	
6.1.2	PCT resident patent ap/bn PPP$ GDP	2.2	18	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	59.7	6	●
6.1.5	Citable documents H index	264.0	26	
6.2	Knowledge impact	39.2	48	
6.2.1	Growth rate of PPP$ GDP/worker, %	–0.3	105	○
6.2.2	New businesses/th pop. 15–64	14.5	1	●
6.2.3	Computer software spending, % GDP	0.3	29	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.6	51	
6.2.5	High- & medium-high-tech manufactures, %	10.7	75	○
6.3	Knowledge diffusion	27.1	60	
6.3.1	Royalty & license fees receipts, % service exports	2.4	23	
6.3.2	High-tech exports less re-exports, %	2.1	59	
6.3.3	Comm., computer & info. services exports, %	4.7	83	○
6.3.4	FDI net outflows, % GDP	1.7	36	
7	**Creative outputs**	**55.1**	**13**	●
7.1	Intangible assets	53.4	30	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	44.7	38	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	70.2	24	
7.1.4	ICT & organizational model creation†	64.9	23	
7.2	Creative goods & services	53.1	16	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	8.0	19	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	19.9	24	
7.2.4	Printing & publishing manufactures, %	4.3	11	
7.2.5	Creative goods exports, %	0.4	70	○
7.3	Online creativity	60.7	21	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	42.1	21	
7.3.2	Country-code TLDs/th pop. 15–69	70.1	13	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	7,963.7	15	
7.3.4	Video uploads on YouTube/pop. 15–69	84.5	20	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Nicaragua

Key indicators

Population (millions)	6.0
GDP (US$ billions)	7.8
GDP per capita, PPP$	3,336.4
Income group	Lower-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**27.1**	**115**	
Innovation Output Sub-Index		20.7	128	○
Innovation Input Sub-Index		33.5	103	
Innovation Efficiency Ratio		0.6	125	○
Global Innovation Index 2012 (based on GII 2012 framework)		26.7	105	
1	**Institutions**	**53.0**	**97**	
1.1	Political environment	47.4	96	
1.1.1	Political stability*	56.8	89	
1.1.2	Government effectiveness*	13.9	131	○
1.1.3	Press freedom*	71.7	64	●
1.2	Regulatory environment	60.2	87	
1.2.1	Regulatory quality*	40.4	101	
1.2.2	Rule of law*	28.0	107	
1.2.3	Cost of redundancy dismissal, salary weeks	14.9	68	●
1.3	Business environment	51.4	110	
1.3.1	Ease of starting a business*	67.8	117	
1.3.2	Ease of resolving insolvency*	38.8	71	
1.3.3	Ease of paying taxes*	47.5	123	○
2	**Human capital & research**	**12.4**	**133**	○
2.1	Education	27.6	128	○
2.1.1	Current expenditure on education, % GNI	4.3	61	
2.1.2	Public expenditure/pupil, % GDP/cap	7.9	110	○
2.1.3	School life expectancy, years	10.8	107	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	30.8	118	○
2.2	Tertiary education	9.4	127	○
2.2.1	Tertiary enrolment, % gross	18.0	93	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.3	120	○
2.3	Research & development (R&D)	0.2	120	
2.3.1	Researchers, headcounts/mn pop.	60.9	101	○
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**25.5**	**96**	
3.1	Information & communication technologies (ICTs)	20.2	108	
3.1.1	ICT access*	28.3	105	
3.1.2	ICT use*	8.1	105	
3.1.3	Government's online service*	31.4	115	
3.1.4	E-participation*	13.2	84	
3.2	General infrastructure	28.6	76	
3.2.1	Electricity output, kWh/cap	632.0	105	
3.2.2	Electricity consumption, kWh/cap	473.2	106	
3.2.3	Logistics performance*	38.5	103	
3.2.4	Gross capital formation, % GDP	34.3	12	●
3.3	Ecological sustainability	27.6	79	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.8	85	
3.3.2	Environmental performance*	59.2	34	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	95	
4	**Market sophistication**	**45.7**	**71**	
4.1	Credit	33.5	83	
4.1.1	Ease of getting credit*	50.0	93	
4.1.2	Domestic credit to private sector, % GDP	25.3	107	
4.1.3	Microfinance gross loans, % GDP	3.7	17	●
4.2	Investment	26.0	69	
4.2.1	Ease of protecting investors*	51.9	85	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	77.7	61	●
4.3.1	Applied tariff rate, weighted mean, %	2.3	46	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.3	37	●
4.3.3	Intensity of local competition†	47.6	125	○
5	**Business sophistication**	**30.9**	**75**	
5.1	Knowledge workers	41.9	71	
5.1.1	Knowledge-intensive employment, %	14.8	84	
5.1.2	Firms offering formal training, % firms	47.2	36	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	463.6	100	
5.1.6	GMAT test takers/mn pop. 20–34	29.0	106	
5.2	Innovation linkages	21.3	88	
5.2.1	University/industry research collaboration†	35.7	105	
5.2.2	State of cluster development†	38.2	98	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	64	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	29.3	56	●
5.3.1	Royalty & license fees payments, % service imports	0.1	119	○
5.3.2	High-tech imports less re-imports, %	7.5	76	
5.3.3	Comm., computer & info. services imports, %	4.1	67	●
5.3.4	FDI net inflows, % GDP	10.4	13	●
6	**Knowledge & technology outputs**	**9.1**	**138**	○
6.1	Knowledge creation	4.3	117	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	67	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.8	115	
6.1.5	Citable documents H index	43.0	117	
6.2	Knowledge impact	4.4	134	○
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.2	93	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	16.1	121	○
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.3	96	
6.3.3	Comm., computer & info. services exports, %	11.4	31	●
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**32.4**	**92**	
7.1	Intangible assets	44.2	62	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	45.7	111	
7.1.4	ICT & organizational model creation†	42.8	108	
7.2	Creative goods & services	21.6	110	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	0.3	96	○
7.2.3	Paid-for dailies, circulation, % pop. 15–69	4.8	86	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.1	100	
7.3	Online creativity	19.5	97	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.3	96	
7.3.2	Country-code TLDs/th pop. 15–69	13.9	87	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	462.8	91	
7.3.4	Video uploads on YouTube/pop. 15–69	60.1	98	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	16.7
GDP (US$ billions)	6.6
GDP per capita, PPP$	869.9
Income group	Low income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**24.0**	**131**	
Innovation Output Sub-Index		19.9	131	
Innovation Input Sub-Index		28.2	130	
Innovation Efficiency Ratio		0.7	102	
Global Innovation Index 2012 (based on GII 2012 framework)		18.6	140	
1	**Institutions**	**51.5**	**104**	
1.1	Political environment	47.2	98	
1.1.1	Political stability*	44.5	114	
1.1.2	Government effectiveness*	20.1	114	
1.1.3	Press freedom*	76.9	38	●
1.2	Regulatory environment	65.4	75	●
1.2.1	Regulatory quality*	36.3	110	
1.2.2	Rule of law*	33.9	94	
1.2.3	Cost of redundancy dismissal, salary weeks	10.1	42	●
1.3	Business environment	41.8	135	
1.3.1	Ease of starting a business*	44.2	142	○
1.3.2	Ease of resolving insolvency*	23.8	114	
1.3.3	Ease of paying taxes*	57.5	107	
2	**Human capital & research**	**13.2**	**129**	
2.1	Education	27.2	129	
2.1.1	Current expenditure on education, % GNI	4.0	74	
2.1.2	Public expenditure/pupil, % GDP/cap	30.4	7	●
2.1.3	School life expectancy, years	5.3	127	○
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	34.7	123	
2.2	Tertiary education	12.4	118	
2.2.1	Tertiary enrolment, % gross	1.5	132	
2.2.2	Graduates in science & engineering, %	4.3	98	
2.2.3	Tertiary inbound mobility, %	6.6	27	●
2.2.4	Gross tertiary outbound enrolment, %	0.2	127	
2.3	Research & development (R&D)	0.0	123	○
2.3.1	Researchers, headcounts/mn pop.	9.9	110	○
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**20.0**	**118**	
3.1	Information & communication technologies (ICTs)	8.7	141	
3.1.1	ICT access*	14.4	137	○
3.1.2	ICT use*	0.6	137	○
3.1.3	Government's online service*	19.6	133	
3.1.4	E-participation*	0.0	129	○
3.2	General infrastructure	50.1	7	●
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Logistics performance*	42.3	87	
3.2.4	Gross capital formation, % GDP	41.4	4	●
3.3	Ecological sustainability	1.2	133	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	114	
4	**Market sophistication**	**34.6**	**128**	
4.1	Credit	17.4	134	
4.1.1	Ease of getting credit*	43.8	110	
4.1.2	Domestic credit to private sector, % GDP	14.2	134	
4.1.3	Microfinance gross loans, % GDP	0.3	53	
4.2	Investment	16.9	115	
4.2.1	Ease of protecting investors*	33.7	129	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	69.5	107	
4.3.1	Applied tariff rate, weighted mean, %	9.1	118	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.3	83	
4.3.3	Intensity of local competition†	n/a	n/a	
5	**Business sophistication**	**21.6**	**126**	
5.1	Knowledge workers	26.8	122	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	32.1	58	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	401.4	126	
5.1.6	GMAT test takers/mn pop. 20–34	2.1	139	
5.2	Innovation linkages	0.0	140	○
5.2.1	University/industry research collaboration†	n/a	n/a	
5.2.2	State of cluster development†	n/a	n/a	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	38.1	23	●
5.3.1	Royalty & license fees payments, % service imports	0.3	111	
5.3.2	High-tech imports less re-imports, %	7.9	69	●
5.3.3	Comm., computer & info. services imports, %	4.1	68	●
5.3.4	FDI net inflows, % GDP	16.8	7	●
6	**Knowledge & technology outputs**	**20.3**	**101**	
6.1	Knowledge creation	5.3	105	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.8	73	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	61	●
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.5	89	
6.1.5	Citable documents H index	43.0	117	
6.2	Knowledge impact	26.2	98	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.6	68	
6.2.2	New businesses/th pop. 15–64	0.0	106	○
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.4	129	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	21.9	93	
6.3.1	Royalty & license fees receipts, % service exports	0.0	109	
6.3.2	High-tech exports less re-exports, %	0.3	95	
6.3.3	Comm., computer & info. services exports, %	12.8	29	●
6.3.4	FDI net outflows, % GDP	1.7	38	●
7	**Creative outputs**	**19.5**	**135**	
7.1	Intangible assets	n/a	n/a	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	n/a	n/a	
7.1.4	ICT & organizational model creation†	n/a	n/a	
7.2	Creative goods & services	30.4	87	
7.2.1	Audio-visual & related services exports, %	0.0	68	
7.2.2	National feature films/mn pop. 15–69	0.7	82	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	0.1	138	○
7.2.4	Printing & publishing manufactures, %	9.7	1	●
7.2.5	Creative goods exports, %	0.0	116	
7.3	Online creativity	8.5	133	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.0	103	
7.3.2	Country-code TLDs/th pop. 15–69	0.2	136	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4	Video uploads on YouTube/pop. 15–69	24.3	137	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Nigeria

Key indicators

Population (millions)	167.3
GDP (US$ billions)	272.6
GDP per capita, PPP$	2,734.6
Income group	Lower-middle income
Region	Sub-Saharan Africa

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)	**26.6**	**120**	
Innovation Output Sub-Index	26.9	97	
Innovation Input Sub-Index	26.2	137	○
Innovation Efficiency Ratio	1.0	7	●
Global Innovation Index 2012 (based on GII 2012 framework)	24.6	123	
1 Institutions	**44.3**	**129**	
1.1 Political environment	30.7	137	○
1.1.1 Political stability*	18.6	139	○
1.1.2 Government effectiveness*	7.6	135	○
1.1.3 Press freedom*	65.9	93	
1.2 Regulatory environment	53.1	108	
1.2.1 Regulatory quality*	31.7	120	
1.2.2 Rule of law*	13.6	134	
1.2.3 Cost of redundancy dismissal, salary weeks	16.2	78	
1.3 Business environment	49.0	118	
1.3.1 Ease of starting a business*	73.5	103	
1.3.2 Ease of resolving insolvency*	30.6	94	
1.3.3 Ease of paying taxes*	42.9	129	
2 Human capital & research	**11.0**	**140**	○
2.1 Education	25.6	132	
2.1.1 Current expenditure on education, % GNI	n/a	n/a	
2.1.2 Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3 School life expectancy, years	9.0	120	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	33.1	120	
2.2 Tertiary education	5.6	135	○
2.2.1 Tertiary enrolment, % gross	10.3	109	
2.2.2 Graduates in science & engineering, %	n/a	n/a	
2.2.3 Tertiary inbound mobility, %	n/a	n/a	
2.2.4 Gross tertiary outbound enrolment, %	0.3	119	
2.3 Research & development (R&D)	1.8	100	
2.3.1 Researchers, headcounts/mn pop.	119.9	90	
2.3.2 Gross expenditure on R&D, % GDP	0.2	80	
2.3.3 QS university ranking, average score top 3*	0.0	68	○
3 Infrastructure	**17.6**	**133**	
3.1 Information & communication technologies (ICTs)	15.2	124	
3.1.1 ICT access*	18.6	127	
3.1.2 ICT use*	1.7	127	
3.1.3 Government's online service*	22.2	131	
3.1.4 E-participation*	18.4	72	
3.2 General infrastructure	19.8	127	
3.2.1 Electricity output, kWh/cap	164.9	119	○
3.2.2 Electricity consumption, kWh/cap	136.5	120	○
3.2.3 Logistics performance*	36.3	115	
3.2.4 Gross capital formation, % GDP	22.2	74	
3.3 Ecological sustainability	17.7	122	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	3.0	112	
3.3.2 Environmental performance*	40.1	113	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.1	128	○
4 Market sophistication	**38.9**	**112**	
4.1 Credit	30.0	99	
4.1.1 Ease of getting credit*	81.3	22	●
4.1.2 Domestic credit to private sector, % GDP	21.1	116	
4.1.3 Microfinance gross loans, % GDP	0.1	73	
4.2 Investment	21.2	90	
4.2.1 Ease of protecting investors*	59.3	55	●
4.2.2 Market capitalization, % GDP	16.1	80	
4.2.3 Total value of stocks traded, % GDP	1.7	66	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	59	●
4.3 Trade & competition	65.4	114	
4.3.1 Applied tariff rate, weighted mean, %	10.6	126	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.8	67	●
4.3.3 Intensity of local competition†	58.9	89	
5 Business sophistication	**19.3**	**134**	
5.1 Knowledge workers	27.9	119	
5.1.1 Knowledge-intensive employment, %	n/a	n/a	
5.1.2 Firms offering formal training, % firms	25.7	73	
5.1.3 R&D performed by business, % GDP	n/a	n/a	
5.1.4 R&D financed by business, %	0.2	86	○
5.1.5 GMAT mean score	434.6	118	
5.1.6 GMAT test takers/mn pop. 20–34	35.8	99	
5.2 Innovation linkages	15.8	120	
5.2.1 University/industry research collaboration†	41.8	71	
5.2.2 State of cluster development†	48.8	53	●
5.2.3 R&D financed by abroad, %	1.0	77	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	0.0	111	
5.2.5 Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3 Knowledge absorption	14.3	128	
5.3.1 Royalty & license fees payments, % service imports	0.9	86	
5.3.2 High-tech imports less re-imports, %	5.0	106	
5.3.3 Comm., computer & info. services imports, %	1.6	114	
5.3.4 FDI net inflows, % GDP	3.6	64	●
6 Knowledge & technology outputs	**17.7**	**114**	
6.1 Knowledge creation	5.5	101	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.0	87	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	3.9	114	
6.1.5 Citable documents H index	82.0	70	
6.2 Knowledge impact	24.0	106	
6.2.1 Growth rate of PPP$ GDP/worker, %	4.1	25	●
6.2.2 New businesses/th pop. 15–64	0.8	71	
6.2.3 Computer software spending, % GDP	0.2	71	○
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	0.1	138	○
6.2.5 High- & medium-high-tech manufactures, %	3.8	88	
6.3 Knowledge diffusion	17.4	116	
6.3.1 Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2 High-tech exports less re-exports, %	0.0	117	
6.3.3 Comm., computer & info. services exports, %	1.5	128	
6.3.4 FDI net outflows, % GDP	0.3	64	
7 Creative outputs	**36.2**	**74**	
7.1 Intangible assets	57.1	17	●
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	61.6	50	●
7.1.4 ICT & organizational model creation†	52.6	67	●
7.2 Creative goods & services	23.4	106	
7.2.1 Audio-visual & related services exports, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	11.1	10	●
7.2.3 Paid-for dailies, circulation, % pop. 15–69	0.5	125	
7.2.4 Printing & publishing manufactures, %	n/a	n/a	
7.2.5 Creative goods exports, %	0.0	112	
7.3 Online creativity	7.2	138	○
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.7	112	
7.3.2 Country-code TLDs/th pop. 15–69	1.7	126	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	7.2	134	○
7.3.4 Video uploads on YouTube/pop. 15–69	26.5	135	○

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Norway

Key indicators

Population (millions)	5.2
GDP (US$ billions)	499.8
GDP per capita, PPP$	55,264.5
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**55.6**	**16**	
Innovation Output Sub-Index		47.9	16	
Innovation Input Sub-Index		63.4	13	
Innovation Efficiency Ratio		0.8	81	○
Global Innovation Index 2012 (based on GII 2012 framework)		56.4	14	
1	**Institutions**	**93.4**	**4**	●
1.1	Political environment	93.1	5	●
1.1.1	Political stability*	99.2	3	●
1.1.2	Government effectiveness*	86.7	9	
1.1.3	Press freedom*	93.5	3	●
1.2	Regulatory environment	95.5	10	
1.2.1	Regulatory quality*	86.5	18	
1.2.2	Rule of law*	98.2	5	●
1.2.3	Cost of redundancy dismissal, salary weeks	8.7	25	
1.3	Business environment	91.5	7	●
1.3.1	Ease of starting a business*	91.1	26	
1.3.2	Ease of resolving insolvency*	96.2	3	●
1.3.3	Ease of paying taxes*	87.1	16	
2	**Human capital & research**	**55.2**	**15**	
2.1	Education	66.5	26	
2.1.1	Current expenditure on education, % GNI	6.6	15	
2.1.2	Public expenditure/pupil, % GDP/cap	28.3	12	
2.1.3	School life expectancy, years	17.5	5	●
2.1.4	PISA scales in reading, maths, & science	500.4	17	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	Tertiary education	45.3	27	
2.2.1	Tertiary enrolment, % gross	74.4	16	
2.2.2	Graduates in science & engineering, %	16.0	70	○
2.2.3	Tertiary inbound mobility, %	7.0	22	
2.2.4	Gross tertiary outbound enrolment, %	4.5	18	
2.3	Research & development (R&D)	53.7	15	
2.3.1	Researchers, headcounts/mn pop.	9,169.2	4	●
2.3.2	Gross expenditure on R&D, % GDP	1.7	24	
2.3.3	QS university ranking, average score top 3*	53.5	20	
3	**Infrastructure**	**60.7**	**3**	●
3.1	Information & communication technologies (ICTs)	75.1	9	
3.1.1	ICT access*	82.8	12	
3.1.2	ICT use*	63.7	12	
3.1.3	Government's online service*	85.6	13	
3.1.4	E-participation*	68.4	15	
3.2	General infrastructure	64.3	1	●
3.2.1	Electricity output, kWh/cap	25,632.7	1	●
3.2.2	Electricity consumption, kWh/cap	23,445.9	1	●
3.2.3	Logistics performance*	67.0	21	
3.2.4	Gross capital formation, % GDP	24.0	59	○
3.3	Ecological sustainability	42.7	27	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.8	40	
3.3.2	Environmental performance*	69.9	3	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.0	33	
4	**Market sophistication**	**62.5**	**22**	
4.1	Credit	51.2	42	
4.1.1	Ease of getting credit*	62.5	68	○
4.1.2	Domestic credit to private sector, % GDP	86.2	39	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	47.5	18	
4.2.1	Ease of protecting investors*	68.9	27	
4.2.2	Market capitalization, % GDP	45.1	41	
4.2.3	Total value of stocks traded, % GDP	42.9	25	
4.2.4	Venture capital deals/tr PPP$ GDP	0.1	12	
4.3	Trade & competition	88.7	3	●
4.3.1	Applied tariff rate, weighted mean, %	0.4	5	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.4	51	
4.3.3	Intensity of local competition†	73.1	30	
5	**Business sophistication**	**45.2**	**30**	
5.1	Knowledge workers	65.1	19	
5.1.1	Knowledge-intensive employment, %	43.5	4	●
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	0.9	25	
5.1.4	R&D financed by business, %	43.6	36	○
5.1.5	GMAT mean score	520.4	56	
5.1.6	GMAT test takers/mn pop. 20–34	342.9	14	
5.2	Innovation linkages	42.5	24	
5.2.1	University/industry research collaboration†	66.1	18	
5.2.2	State of cluster development†	63.5	15	
5.2.3	R&D financed by abroad, %	8.2	45	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	29	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	1.5	15	
5.3	Knowledge absorption	27.9	62	○
5.3.1	Royalty & license fees payments, % service imports	1.3	74	○
5.3.2	High-tech imports less re-imports, %	11.4	36	
5.3.3	Comm., computer & info. services imports, %	7.7	27	
5.3.4	FDI net inflows, % GDP	–0.2	138	○
6	**Knowledge & technology outputs**	**36.1**	**35**	
6.1	Knowledge creation	40.6	20	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	6.0	27	
6.1.2	PCT resident patent ap/bn PPP$ GDP	2.5	17	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	37.6	19	
6.1.5	Citable documents H index	308.0	20	
6.2	Knowledge impact	40.9	44	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.9	61	○
6.2.2	New businesses/th pop. 15–64	4.9	20	
6.2.3	Computer software spending, % GDP	0.6	15	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	6.6	58	
6.2.5	High- & medium-high-tech manufactures, %	24.5	40	○
6.3	Knowledge diffusion	28.9	48	
6.3.1	Royalty & license fees receipts, % service exports	1.3	33	
6.3.2	High-tech exports less re-exports, %	3.4	50	
6.3.3	Comm., computer & info. services exports, %	9.5	44	
6.3.4	FDI net outflows, % GDP	4.1	15	
7	**Creative outputs**	**59.7**	**7**	●
7.1	Intangible assets	48.0	47	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	48.0	35	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	1.1	27	
7.1.3	ICT & business model creation†	74.3	13	
7.1.4	ICT & organizational model creation†	72.7	8	●
7.2	Creative goods & services	64.7	4	●
7.2.1	Audio-visual & related services exports, %	0.5	24	
7.2.2	National feature films/mn pop. 15–69	10.0	15	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	51.6	2	●
7.2.4	Printing & publishing manufactures, %	5.8	7	
7.2.5	Creative goods exports, %	0.5	66	○
7.3	Online creativity	78.1	4	●
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	65.4	14	
7.3.2	Country-code TLDs/th pop. 15–69	69.8	14	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	15,391.9	3	●
7.3.4	Video uploads on YouTube/pop. 15–69	87.8	12	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Oman

Key indicators

Population (millions)	2.9
GDP (US$ billions)	80.0
GDP per capita, PPP$	28,511.9
Income group	High income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**33.3**	**80**	
Innovation Output Sub-Index		23.2	111	
Innovation Input Sub-Index		43.3	53	
Innovation Efficiency Ratio		0.5	134	○
Global Innovation Index 2012 (based on GII 2012 framework)		39.5	47	
1	**Institutions**	**71.6**	**41**	
1.1	Political environment	63.3	52	
1.1.1	Political stability*	81.3	36	●
1.1.2	Government effectiveness*	50.3	50	
1.1.3	Press freedom*	58.5	114	
1.2	Regulatory environment	80.9	32	●
1.2.1	Regulatory quality*	59.7	59	
1.2.2	Rule of law*	64.1	43	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	Business environment	70.4	45	
1.3.1	Ease of starting a business*	80.5	85	
1.3.2	Ease of resolving insolvency*	39.4	69	
1.3.3	Ease of paying taxes*	91.2	8	●
2	**Human capital & research**	**33.8**	**61**	
2.1	Education	44.5	91	
2.1.1	Current expenditure on education, % GNI	4.2	63	
2.1.2	Public expenditure/pupil, % GDP/cap	15.7	79	
2.1.3	School life expectancy, years	13.8	56	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	20.2	93	
2.2	Tertiary education	47.2	23	●
2.2.1	Tertiary enrolment, % gross	28.7	77	
2.2.2	Graduates in science & engineering, %	38.9	3	●
2.2.3	Tertiary inbound mobility, %	2.4	52	
2.2.4	Gross tertiary outbound enrolment, %	3.2	31	●
2.3	Research & development (R&D)	9.7	68	
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	9.7	57	
3	**Infrastructure**	**35.9**	**56**	
3.1	Information & communication technologies (ICTs)	48.1	45	
3.1.1	ICT access*	56.0	56	
3.1.2	ICT use*	25.2	57	
3.1.3	Government's online service*	66.7	35	●
3.1.4	E-participation*	44.7	36	●
3.2	General infrastructure	38.6	31	●
3.2.1	Electricity output, kWh/cap	7,129.1	29	●
3.2.2	Electricity consumption, kWh/cap	5,933.5	33	●
3.2.3	Logistics performance*	47.3	62	
3.2.4	Gross capital formation, % GDP	31.1	18	●
3.3	Ecological sustainability	20.8	113	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.4	107	
3.3.2	Environmental performance*	44.0	105	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.5	78	
4	**Market sophistication**	**44.1**	**81**	
4.1	Credit	36.5	70	
4.1.1	Ease of getting credit*	56.3	80	
4.1.2	Domestic credit to private sector, % GDP	39.0	84	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	16.8	118	
4.2.1	Ease of protecting investors*	51.9	85	
4.2.2	Market capitalization, % GDP	27.5	54	
4.2.3	Total value of stocks traded, % GDP	3.6	57	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	79.0	48	
4.3.1	Applied tariff rate, weighted mean, %	3.2	56	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.4	84	
4.3.3	Intensity of local competition†	68.3	47	
5	**Business sophistication**	**31.1**	**74**	
5.1	Knowledge workers	32.0	111	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	20.9	88	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	417.4	124	○
5.1.6	GMAT test takers/mn pop. 20–34	57.1	76	
5.2	Innovation linkages	49.5	14	●
5.2.1	University/industry research collaboration†	46.3	52	
5.2.2	State of cluster development†	51.8	38	●
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.2	1	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	11.7	135	○
5.3.1	Royalty & license fees payments, % service imports	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	6.5	86	
5.3.3	Comm., computer & info. services imports, %	0.5	136	○
5.3.4	FDI net inflows, % GDP	1.1	118	
6	**Knowledge & technology outputs**	**20.1**	**102**	
6.1	Knowledge creation	4.6	113	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.0	106	
6.1.5	Citable documents H index	58.0	92	
6.2	Knowledge impact	29.0	89	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.8	63	
6.2.2	New businesses/th pop. 15–64	1.7	48	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.5	79	
6.2.5	High- & medium-high-tech manufactures, %	14.6	62	
6.3	Knowledge diffusion	19.0	105	
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.0	116	○
6.3.3	Comm., computer & info. services exports, %	2.9	105	
6.3.4	FDI net outflows, % GDP	0.8	50	
7	**Creative outputs**	**26.3**	**119**	
7.1	Intangible assets	38.7	90	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.0	64	○
7.1.3	ICT & business model creation†	61.1	53	
7.1.4	ICT & organizational model creation†	54.8	59	
7.2	Creative goods & services	7.9	133	○
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	0.0	104	○
7.2.3	Paid-for dailies, circulation, % pop. 15–69	14.3	38	●
7.2.4	Printing & publishing manufactures, %	0.6	89	○
7.2.5	Creative goods exports, %	0.0	119	○
7.3	Online creativity	19.9	96	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4.7	62	
7.3.2	Country-code TLDs/th pop. 15–69	7.7	106	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	523.9	88	
7.3.4	Video uploads on YouTube/pop. 15–69	64.3	87	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	181.1
GDP (US$ billions)	230.5
GDP per capita, PPP$	2,876.1
Income group	Lower-middle income
Region	Central and Southern Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**23.3**	**137**	○
Innovation Output Sub-Index		23.0	113	
Innovation Input Sub-Index		23.7	142	○
Innovation Efficiency Ratio		1.0	16	●
Global Innovation Index 2012 (based on GII 2012 framework)		23.1	133	
1	**Institutions**	**40.2**	**135**	
1.1	Political environment	21.6	140	○
1.1.1	Political stability*	0.0	142	○
1.1.2	Government effectiveness*	16.0	123	
1.1.3	Press freedom*	48.7	128	
1.2	Regulatory environment	44.9	125	
1.2.1	Regulatory quality*	33.6	116	
1.2.2	Rule of law*	23.0	120	
1.2.3	Cost of redundancy dismissal, salary weeks	27.2	116	
1.3	Business environment	54.3	103	
1.3.1	Ease of starting a business*	78.5	92	
1.3.2	Ease of resolving insolvency*	39.0	70	
1.3.3	Ease of paying taxes*	45.4	126	
2	**Human capital & research**	**7.7**	**141**	○
2.1	Education	8.1	141	○
2.1.1	Current expenditure on education, % GNI	1.6	112	○
2.1.2	Public expenditure/pupil, % GDP/cap	11.7	97	
2.1.3	School life expectancy, years	7.5	125	○
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	41.9	128	○
2.2	Tertiary education	3.5	139	○
2.2.1	Tertiary enrolment, % gross	8.3	114	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	0.1	106	
2.2.4	Gross tertiary outbound enrolment, %	0.2	125	
2.3	Research & development (R&D)	11.3	61	●
2.3.1	Researchers, headcounts/mn pop.	320.8	74	
2.3.2	Gross expenditure on R&D, % GDP	0.5	60	
2.3.3	QS university ranking, average score top 3*	21.4	48	●
3	**Infrastructure**	**19.8**	**120**	
3.1	Information & communication technologies (ICTs)	19.8	109	
3.1.1	ICT access*	24.6	112	
3.1.2	ICT use*	4.9	114	
3.1.3	Government's online service*	36.6	101	
3.1.4	E-participation*	13.2	84	
3.2	General infrastructure	17.6	134	
3.2.1	Electricity output, kWh/cap	544.1	107	
3.2.2	Electricity consumption, kWh/cap	456.6	107	
3.2.3	Logistics performance*	45.8	69	
3.2.4	Gross capital formation, % GDP	12.5	136	○
3.3	Ecological sustainability	22.0	103	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.9	83	
3.3.2	Environmental performance*	39.6	114	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.6	75	
4	**Market sophistication**	**29.6**	**138**	○
4.1	Credit	23.6	115	
4.1.1	Ease of getting credit*	62.5	68	
4.1.2	Domestic credit to private sector, % GDP	18.4	121	
4.1.3	Microfinance gross loans, % GDP	0.2	61	
4.2	Investment	19.1	102	
4.2.1	Ease of protecting investors*	65.6	34	●
4.2.2	Market capitalization, % GDP	15.6	81	
4.2.3	Total value of stocks traded, % GDP	4.8	52	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	46.0	138	○
4.3.1	Applied tariff rate, weighted mean, %	9.5	120	
4.3.2	Non-agricultural mkt access weighted tariff, %	6.8	141	○
4.3.3	Intensity of local competition†	60.4	84	
5	**Business sophistication**	**21.1**	**131**	
5.1	Knowledge workers	30.4	114	
5.1.1	Knowledge-intensive employment, %	19.5	66	
5.1.2	Firms offering formal training, % firms	6.7	104	○
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	511.8	66	●
5.1.6	GMAT test takers/mn pop. 20–34	23.0	110	
5.2	Innovation linkages	15.1	123	
5.2.1	University/industry research collaboration†	40.7	79	
5.2.2	State of cluster development†	45.6	63	●
5.2.3	R&D financed by abroad, %	0.9	79	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	110	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	17.9	116	
5.3.1	Royalty & license fees payments, % service imports	1.6	68	
5.3.2	High-tech imports less re-imports, %	6.4	87	
5.3.3	Comm., computer & info. services imports, %	4.5	63	●
5.3.4	FDI net inflows, % GDP	0.6	128	
6	**Knowledge & technology outputs**	**19.7**	**105**	
6.1	Knowledge creation	9.8	73	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.2	97	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	10.8	71	
6.1.5	Citable documents H index	101.0	57	●
6.2	Knowledge impact	24.3	104	
6.2.1	Growth rate of PPP$ GDP/worker, %	–0.2	100	
6.2.2	New businesses/th pop. 15–64	0.0	104	○
6.2.3	Computer software spending, % GDP	0.3	49	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	5.3	64	●
6.2.5	High- & medium-high-tech manufactures, %	23.7	43	●
6.3	Knowledge diffusion	20.1	99	
6.3.1	Royalty & license fees receipts, % service exports	0.1	77	
6.3.2	High-tech exports less re-exports, %	1.3	71	
6.3.3	Comm., computer & info. services exports, %	8.7	50	●
6.3.4	FDI net outflows, % GDP	0.0	98	
7	**Creative outputs**	**26.3**	**120**	
7.1	Intangible assets	32.5	111	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	5.1	87	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	47.7	104	
7.1.4	ICT & organizational model creation†	47.0	89	
7.2	Creative goods & services	22.8	107	
7.2.1	Audio-visual & related services exports, %	0.0	59	
7.2.2	National feature films/mn pop. 15–69	0.3	98	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	5.5	82	
7.2.4	Printing & publishing manufactures, %	0.3	92	○
7.2.5	Creative goods exports, %	1.9	37	●
7.3	Online creativity	17.2	107	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.8	108	
7.3.2	Country-code TLDs/th pop. 15–69	4.3	112	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	141.4	110	
7.3.4	Video uploads on YouTube/pop. 15–69	63.0	94	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Panama

Key indicators

Population (millions)	3.7
GDP (US$ billions)	34.8
GDP per capita, PPP$	15,265.9
Income group	Upper-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**31.8**	**86**	
Innovation Output Sub-Index		24.0	108	
Innovation Input Sub-Index		39.6	73	
Innovation Efficiency Ratio		0.6	127	
Global Innovation Index 2012 (based on GII 2012 framework)		30.9	87	
1	**Institutions**	**58.8**	**74**	
1.1	Political environment	57.2	64	
1.1.1	Political stability*	63.3	76	
1.1.2	Government effectiveness*	41.1	62	
1.1.3	Press freedom*	67.1	89	
1.2	Regulatory environment	66.2	72	
1.2.1	Regulatory quality*	60.3	55	
1.2.2	Rule of law*	45.2	62	
1.2.3	Cost of redundancy dismissal, salary weeks	18.1	87	
1.3	Business environment	53.1	106	
1.3.1	Ease of starting a business*	88.8	39	●
1.3.2	Ease of resolving insolvency*	29.9	99	
1.3.3	Ease of paying taxes*	40.7	130	○
2	**Human capital & research**	**23.9**	**101**	
2.1	Education	41.2	101	
2.1.1	Current expenditure on education, % GNI	3.5	80	
2.1.2	Public expenditure/pupil, % GDP/cap	13.9	86	
2.1.3	School life expectancy, years	13.2	69	
2.1.4	PISA scales in reading, maths, & science	368.8	67	○
2.1.5	Pupil-teacher ratio, secondary	14.7	67	
2.2	Tertiary education	29.0	77	
2.2.1	Tertiary enrolment, % gross	45.7	53	
2.2.2	Graduates in science & engineering, %	19.3	54	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.6	87	
2.3	Research & development (R&D)	1.7	102	
2.3.1	Researchers, headcounts/mn pop.	142.5	85	
2.3.2	Gross expenditure on R&D, % GDP	0.2	85	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**35.1**	**62**	
3.1	Information & communication technologies (ICTs)	37.8	64	
3.1.1	ICT access*	51.6	63	
3.1.2	ICT use*	21.5	63	
3.1.3	Government's online service*	46.4	78	
3.1.4	E-participation*	31.6	47	
3.2	General infrastructure	30.2	65	
3.2.1	Electricity output, kWh/cap	2,128.4	75	
3.2.2	Electricity consumption, kWh/cap	1,832.2	74	
3.2.3	Logistics performance*	48.3	61	
3.2.4	Gross capital formation, % GDP	28.0	29	●
3.3	Ecological sustainability	37.4	43	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	11.4	7	●
3.3.2	Environmental performance*	57.9	38	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	101	
4	**Market sophistication**	**39.6**	**109**	
4.1	Credit	39.6	62	
4.1.1	Ease of getting credit*	68.8	51	
4.1.2	Domestic credit to private sector, % GDP	105.2	28	●
4.1.3	Microfinance gross loans, % GDP	0.1	74	
4.2	Investment	25.3	77	
4.2.1	Ease of protecting investors*	54.8	75	
4.2.2	Market capitalization, % GDP	39.9	46	
4.2.3	Total value of stocks traded, % GDP	0.2	91	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	46	
4.3	Trade & competition	53.8	135	○
4.3.1	Applied tariff rate, weighted mean, %	7.6	104	
4.3.2	Non-agricultural mkt access weighted tariff, %	6.1	140	○
4.3.3	Intensity of local competition†	66.9	55	
5	**Business sophistication**	**40.6**	**38**	●
5.1	Knowledge workers	22.6	130	○
5.1.1	Knowledge-intensive employment, %	13.1	88	
5.1.2	Firms offering formal training, % firms	11.0	100	○
5.1.3	R&D performed by business, % GDP	0.0	84	○
5.1.4	R&D financed by business, %	2.3	80	○
5.1.5	GMAT mean score	501.6	73	
5.1.6	GMAT test takers/mn pop. 20–34	69.7	71	
5.2	Innovation linkages	52.4	7	●
5.2.1	University/industry research collaboration†	51.7	41	●
5.2.2	State of cluster development†	49.4	50	
5.2.3	R&D financed by abroad, %	49.5	3	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	86	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	n/a	n/a	
5.3	Knowledge absorption	46.8	10	●
5.3.1	Royalty & license fees payments, % service imports	1.1	77	
5.3.2	High-tech imports less re-imports, %	24.6	4	●
5.3.3	Comm., computer & info. services imports, %	1.5	116	
5.3.4	FDI net inflows, % GDP	12.2	10	●
6	**Knowledge & technology outputs**	**5.3**	**142**	○
6.1	Knowledge creation	4.8	109	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.4	85	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.1	58	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.9	98	
6.1.5	Citable documents H index	100.0	59	
6.2	Knowledge impact	5.8	131	○
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	0.1	100	○
6.2.3	Computer software spending, % GDP	0.3	52	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.7	100	
6.2.5	High- & medium-high-tech manufactures, %	5.2	85	
6.3	Knowledge diffusion	5.1	134	○
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.1	113	○
6.3.3	Comm., computer & info. services exports, %	3.9	97	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**42.7**	**45**	
7.1	Intangible assets	52.2	35	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	66.2	23	●
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	61.8	49	
7.1.4	ICT & organizational model creation†	57.8	46	
7.2	Creative goods & services	31.6	83	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	0.4	92	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	10.0	57	
7.2.4	Printing & publishing manufactures, %	5.3	8	●
7.2.5	Creative goods exports, %	0.0	118	○
7.3	Online creativity	34.9	48	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	46.1	20	●
7.3.2	Country-code TLDs/th pop. 15–69	18.7	80	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	819.7	77	
7.3.4	Video uploads on YouTube/pop. 15–69	69.9	75	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Paraguay

Key indicators

Population (millions)	6.8
GDP (US$ billions)	26.1
GDP per capita, PPP$	6,108.1
Income group	Lower-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**30.3**	**100**	
Innovation Output Sub-Index		27.3	94	
Innovation Input Sub-Index		33.2	104	
Innovation Efficiency Ratio		0.8	48	●
Global Innovation Index 2012 (based on GII 2012 framework)		31.6	84	
1	**Institutions**	**48.1**	**115**	
1.1	Political environment	45.1	104	
1.1.1	Political stability*	48.5	108	
1.1.2	Government effectiveness*	15.6	126	
1.1.3	Press freedom*	71.2	74	
1.2	Regulatory environment	48.0	119	
1.2.1	Regulatory quality*	40.6	100	
1.2.2	Rule of law*	23.9	118	
1.2.3	Cost of redundancy dismissal, salary weeks	26.1	113	
1.3	Business environment	51.3	111	
1.3.1	Ease of starting a business*	76.6	97	
1.3.2	Ease of resolving insolvency*	17.1	126	
1.3.3	Ease of paying taxes*	60.2	99	
2	**Human capital & research**	**21.6**	**106**	
2.1	Education	45.8	88	
2.1.1	Current expenditure on education, % GNI	3.9	76	
2.1.2	Public expenditure/pupil, % GDP/cap	14.9	82	
2.1.3	School life expectancy, years	11.9	86	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	11.8	38	●
2.2	Tertiary education	18.4	106	
2.2.1	Tertiary enrolment, % gross	34.6	70	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.4	104	
2.3	Research & development (R&D)	0.7	111	
2.3.1	Researchers, headcounts/mn pop.	136.4	86	
2.3.2	Gross expenditure on R&D, % GDP	0.1	101	○
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**25.7**	**94**	
3.1	Information & communication technologies (ICTs)	27.4	89	
3.1.1	ICT access*	35.5	91	
3.1.2	ICT use*	12.5	91	
3.1.3	Government's online service*	45.8	81	
3.1.4	E-participation*	15.8	79	
3.2	General infrastructure	22.3	114	
3.2.1	Electricity output, kWh/cap	8,369.3	19	●
3.2.2	Electricity consumption, kWh/cap	1,133.8	88	
3.2.3	Logistics performance*	37.0	110	
3.2.4	Gross capital formation, % GDP	13.8	131	
3.3	Ecological sustainability	27.4	80	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.3	64	
3.3.2	Environmental performance*	52.4	70	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	105	
4	**Market sophistication**	**44.7**	**77**	
4.1	Credit	40.6	59	●
4.1.1	Ease of getting credit*	56.3	80	
4.1.2	Domestic credit to private sector, % GDP	41.1	78	
4.1.3	Microfinance gross loans, % GDP	4.4	12	●
4.2	Investment	15.1	128	
4.2.1	Ease of protecting investors*	58.5	59	●
4.2.2	Market capitalization, % GDP	4.0	102	○
4.2.3	Total value of stocks traded, % GDP	0.1	100	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	78.3	54	●
4.3.1	Applied tariff rate, weighted mean, %	3.7	62	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.9	70	
4.3.3	Intensity of local competition†	63.4	73	
5	**Business sophistication**	**26.0**	**107**	
5.1	Knowledge workers	36.9	99	
5.1.1	Knowledge-intensive employment, %	14.0	86	
5.1.2	Firms offering formal training, % firms	54.9	19	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	0.3	85	○
5.1.5	GMAT mean score	467.4	95	
5.1.6	GMAT test takers/mn pop. 20–34	13.2	121	
5.2	Innovation linkages	16.8	116	
5.2.1	University/industry research collaboration†	29.0	120	
5.2.2	State of cluster development†	33.8	116	
5.2.3	R&D financed by abroad, %	12.3	28	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	24.3	83	
5.3.1	Royalty & license fees payments, % service imports	0.3	110	
5.3.2	High-tech imports less re-imports, %	18.2	10	●
5.3.3	Comm., computer & info. services imports, %	0.7	132	○
5.3.4	FDI net inflows, % GDP	1.7	96	
6	**Knowledge & technology outputs**	**18.8**	**110**	
6.1	Knowledge creation	2.8	132	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.5	82	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.6	136	○
6.1.5	Citable documents H index	42.0	119	
6.2	Knowledge impact	9.9	126	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	4.9	67	●
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	35.8	33	●
6.3.1	Royalty & license fees receipts, % service exports	15.5	6	●
6.3.2	High-tech exports less re-exports, %	1.1	74	
6.3.3	Comm., computer & info. services exports, %	0.9	136	○
6.3.4	FDI net outflows, % GDP	0.0	97	
7	**Creative outputs**	**35.9**	**79**	
7.1	Intangible assets	47.9	48	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	50.0	97	
7.1.4	ICT & organizational model creation†	45.9	95	
7.2	Creative goods & services	24.7	101	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	1.3	68	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	2.9	101	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.1	98	
7.3	Online creativity	22.9	87	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.1	75	
7.3.2	Country-code TLDs/th pop. 15–69	19.9	77	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,054.0	68	
7.3.4	Video uploads on YouTube/pop. 15–69	62.5	95	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Peru

Key indicators

Population (millions)	30.1
GDP (US$ billions)	200.3
GDP per capita, PPP$	10,679.2
Income group	Upper-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**36.0**	**69**	
Innovation Output Sub-Index		31.4	70	
Innovation Input Sub-Index		40.5	70	
Innovation Efficiency Ratio		0.8	72	
Global Innovation Index 2012 (based on GII 2012 framework)		34.1	75	
1	**Institutions**	**61.5**	**67**	
1.1	Political environment	50.5	85	
1.1.1	Political stability*	49.2	104	
1.1.2	Government effectiveness*	34.3	79	
1.1.3	Press freedom*	68.1	83	
1.2	Regulatory environment	69.9	54	
1.2.1	Regulatory quality*	62.7	49	
1.2.2	Rule of law*	30.9	102	
1.2.3	Cost of redundancy dismissal, salary weeks	11.4	49	
1.3	Business environment	64.0	70	
1.3.1	Ease of starting a business*	86.3	59	
1.3.2	Ease of resolving insolvency*	30.5	95	
1.3.3	Ease of paying taxes*	75.2	48	
2	**Human capital & research**	**20.9**	**107**	
2.1	Education	34.2	117	○
2.1.1	Current expenditure on education, % GNI	2.2	105	○
2.1.2	Public expenditure/pupil, % GDP/cap	8.9	108	○
2.1.3	School life expectancy, years	13.2	70	
2.1.4	PISA scales in reading, maths, & science	368.1	68	○
2.1.5	Pupil-teacher ratio, secondary	16.5	79	
2.2	Tertiary education	23.5	85	
2.2.1	Tertiary enrolment, % gross	43.0	55	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.6	91	
2.3	Research & development (R&D)	5.1	82	
2.3.1	Researchers, headcounts/mn pop.	182.3	81	
2.3.2	Gross expenditure on R&D, % GDP	0.1	91	○
2.3.3	QS university ranking, average score top 3*	10.9	56	
3	**Infrastructure**	**34.0**	**64**	
3.1	Information & communication technologies (ICTs)	36.2	68	
3.1.1	ICT access*	38.7	84	
3.1.2	ICT use*	15.0	84	
3.1.3	Government's online service*	51.6	61	
3.1.4	E-participation*	39.5	38	●
3.2	General infrastructure	27.3	87	
3.2.1	Electricity output, kWh/cap	1,234.2	88	
3.2.2	Electricity consumption, kWh/cap	1,105.5	89	
3.2.3	Logistics performance*	48.5	59	
3.2.4	Gross capital formation, % GDP	25.2	44	
3.3	Ecological sustainability	38.6	37	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	12.8	2	●
3.3.2	Environmental performance*	50.3	78	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.8	65	
4	**Market sophistication**	**52.9**	**39**	●
4.1	Credit	48.6	46	
4.1.1	Ease of getting credit*	81.3	22	●
4.1.2	Domestic credit to private sector, % GDP	26.4	105	
4.1.3	Microfinance gross loans, % GDP	5.0	9	●
4.2	Investment	25.5	74	
4.2.1	Ease of protecting investors*	78.9	16	●
4.2.2	Market capitalization, % GDP	44.8	43	
4.2.3	Total value of stocks traded, % GDP	2.8	59	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	84.4	12	●
4.3.1	Applied tariff rate, weighted mean, %	2.5	53	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.2	31	●
4.3.3	Intensity of local competition†	68.2	49	
5	**Business sophistication**	**33.4**	**61**	
5.1	Knowledge workers	49.0	49	
5.1.1	Knowledge-intensive employment, %	18.5	73	
5.1.2	Firms offering formal training, % firms	60.1	15	●
5.1.3	R&D performed by business, % GDP	0.0	68	○
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	549.7	37	●
5.1.6	GMAT test takers/mn pop. 20–34	83.2	60	
5.2	Innovation linkages	21.1	91	
5.2.1	University/industry research collaboration†	35.4	107	○
5.2.2	State of cluster development†	42.9	74	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	95	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	63	
5.3	Knowledge absorption	30.0	54	
5.3.1	Royalty & license fees payments, % service imports	3.1	47	
5.3.2	High-tech imports less re-imports, %	9.6	53	
5.3.3	Comm., computer & info. services imports, %	5.7	46	
5.3.4	FDI net inflows, % GDP	4.7	50	
6	**Knowledge & technology outputs**	**19.3**	**107**	
6.1	Knowledge creation	3.4	125	○
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.1	101	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	85	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.2	44	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.1	132	○
6.1.5	Citable documents H index	98.0	61	
6.2	Knowledge impact	30.6	82	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.5	20	●
6.2.2	New businesses/th pop. 15–64	2.5	40	
6.2.3	Computer software spending, % GDP	0.3	57	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.8	88	
6.2.5	High- & medium-high-tech manufactures, %	11.0	73	
6.3	Knowledge diffusion	15.9	122	○
6.3.1	Royalty & license fees receipts, % service exports	0.2	76	
6.3.2	High-tech exports less re-exports, %	0.7	82	
6.3.3	Comm., computer & info. services exports, %	3.3	102	
6.3.4	FDI net outflows, % GDP	0.1	90	
7	**Creative outputs**	**43.5**	**41**	●
7.1	Intangible assets	58.5	14	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	59.2	60	
7.1.4	ICT & organizational model creation†	57.8	47	
7.2	Creative goods & services	30.7	85	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	0.4	93	○
7.2.3	Paid-for dailies, circulation, % pop. 15–69	8.5	65	
7.2.4	Printing & publishing manufactures, %	2.5	28	●
7.2.5	Creative goods exports, %	0.3	86	
7.3	Online creativity	26.3	71	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	5.5	59	
7.3.2	Country-code TLDs/th pop. 15–69	20.0	76	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,020.2	69	
7.3.4	Video uploads on YouTube/pop. 15–69	73.7	62	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Philippines

Key indicators

Population (millions)	96.9
GDP (US$ billions)	240.7
GDP per capita, PPP$	4,263.7
Income group	Lower-middle income
Region	South East Asia and Oceania

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**31.2**	**90**	
Innovation Output Sub-Index		30.0	77	
Innovation Input Sub-Index		32.3	108	
Innovation Efficiency Ratio		0.9	24	●
Global Innovation Index 2012 (based on GII 2012 framework)		29.0	95	
1	**Institutions**	**44.8**	**128**	○
1.1	Political environment	42.5	120	
1.1.1	Political stability*	32.2	130	○
1.1.2	Government effectiveness*	38.3	68	
1.1.3	Press freedom*	56.9	118	
1.2	Regulatory environment	49.5	118	
1.2.1	Regulatory quality*	42.6	93	
1.2.2	Rule of law*	33.4	98	
1.2.3	Cost of redundancy dismissal, salary weeks	27.4	122	
1.3	Business environment	42.6	132	○
1.3.1	Ease of starting a business*	65.3	125	○
1.3.2	Ease of resolving insolvency*	6.2	139	○
1.3.3	Ease of paying taxes*	56.3	111	
2	**Human capital & research**	**18.1**	**116**	
2.1	Education	21.3	134	○
2.1.1	Current expenditure on education, % GNI	2.4	103	○
2.1.2	Public expenditure/pupil, % GDP/cap	10.0	107	○
2.1.3	School life expectancy, years	11.3	100	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	34.8	124	○
2.2	Tertiary education	23.0	91	
2.2.1	Tertiary enrolment, % gross	28.2	78	
2.2.2	Graduates in science & engineering, %	24.3	27	●
2.2.3	Tertiary inbound mobility, %	0.1	104	○
2.2.4	Gross tertiary outbound enrolment, %	0.1	136	○
2.3	Research & development (R&D)	9.9	67	
2.3.1	Researchers, headcounts/mn pop.	129.6	88	
2.3.2	Gross expenditure on R&D, % GDP	0.1	95	○
2.3.3	QS university ranking, average score top 3*	26.5	44	
3	**Infrastructure**	**29.5**	**78**	
3.1	Information & communication technologies (ICTs)	28.6	86	
3.1.1	ICT access*	33.2	98	
3.1.2	ICT use*	10.5	97	
3.1.3	Government's online service*	49.7	67	
3.1.4	E-participation*	21.1	64	
3.2	General infrastructure	24.7	101	
3.2.1	Electricity output, kWh/cap	726.2	98	
3.2.2	Electricity consumption, kWh/cap	642.7	101	
3.2.3	Logistics performance*	50.5	52	
3.2.4	Gross capital formation, % GDP	21.1	82	
3.3	Ecological sustainability	35.1	53	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.2	35	●
3.3.2	Environmental performance*	57.4	41	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.4	51	
4	**Market sophistication**	**41.7**	**95**	
4.1	Credit	20.3	128	○
4.1.1	Ease of getting credit*	43.8	110	○
4.1.2	Domestic credit to private sector, % GDP	31.8	95	
4.1.3	Microfinance gross loans, % GDP	0.3	52	
4.2	Investment	26.0	68	
4.2.1	Ease of protecting investors*	44.4	113	
4.2.2	Market capitalization, % GDP	73.6	20	●
4.2.3	Total value of stocks traded, % GDP	14.6	36	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	64	
4.3	Trade & competition	78.8	52	
4.3.1	Applied tariff rate, weighted mean, %	4.8	77	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.7	59	
4.3.3	Intensity of local competition†	68.2	50	
5	**Business sophistication**	**27.5**	**96**	
5.1	Knowledge workers	41.4	73	
5.1.1	Knowledge-intensive employment, %	20.8	59	
5.1.2	Firms offering formal training, % firms	31.1	61	
5.1.3	R&D performed by business, % GDP	0.1	63	
5.1.4	R&D financed by business, %	62.0	8	●
5.1.5	GMAT mean score	546.6	41	●
5.1.6	GMAT test takers/mn pop. 20–34	16.8	119	
5.2	Innovation linkages	21.4	87	
5.2.1	University/industry research collaboration†	40.9	77	
5.2.2	State of cluster development†	50.4	44	
5.2.3	R&D financed by abroad, %	4.1	63	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	41	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	65	
5.3	Knowledge absorption	19.8	105	
5.3.1	Royalty & license fees payments, % service imports	3.7	40	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Comm., computer & info. services imports, %	3.8	72	
5.3.4	FDI net inflows, % GDP	0.8	125	○
6	**Knowledge & technology outputs**	**27.6**	**61**	
6.1	Knowledge creation	7.9	81	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.5	81	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	82	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.6	21	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.1	133	○
6.1.5	Citable documents H index	107.0	54	
6.2	Knowledge impact	33.8	70	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.3	48	
6.2.2	New businesses/th pop. 15–64	0.2	92	
6.2.3	Computer software spending, % GDP	0.3	59	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.9	72	
6.2.5	High- & medium-high-tech manufactures, %	46.7	11	●
6.3	Knowledge diffusion	31.2	42	●
6.3.1	Royalty & license fees receipts, % service exports	0.0	96	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Comm., computer & info. services exports, %	15.9	22	●
6.3.4	FDI net outflows, % GDP	0.0	105	
7	**Creative outputs**	**32.5**	**91**	
7.1	Intangible assets	46.0	52	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	20.8	65	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	63.6	42	●
7.1.4	ICT & organizational model creation†	62.6	31	●
7.2	Creative goods & services	16.2	120	
7.2.1	Audio-visual & related services exports, %	0.2	42	
7.2.2	National feature films/mn pop. 15–69	1.3	67	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	6.4	75	
7.2.4	Printing & publishing manufactures, %	0.8	84	○
7.2.5	Creative goods exports, %	n/a	n/a	
7.3	Online creativity	21.8	92	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.6	92	
7.3.2	Country-code TLDs/th pop. 15–69	11.7	96	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	599.3	86	
7.3.4	Video uploads on YouTube/pop. 15–69	70.5	74	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Poland

Key indicators

Population (millions)	39.7
GDP (US$ billions)	470.4
GDP per capita, PPP$	20,976.1
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**40.1**	**49**	
Innovation Output Sub-Index		32.4	64	
Innovation Input Sub-Index		47.8	39	
Innovation Efficiency Ratio		0.7	110	○
Global Innovation Index 2012 (based on GII 2012 framework)		40.4	44	
1	**Institutions**	**74.4**	**35**	
1.1	Political environment	78.9	27	●
1.1.1	Political stability*	92.8	16	●
1.1.2	Government effectiveness*	56.9	42	
1.1.3	Press freedom*	86.9	20	●
1.2	Regulatory environment	74.6	43	
1.2.1	Regulatory quality*	74.7	31	
1.2.2	Rule of law*	67.0	39	
1.2.3	Cost of redundancy dismissal, salary weeks	18.8	89	
1.3	Business environment	69.7	48	
1.3.1	Ease of starting a business*	82.2	75	
1.3.2	Ease of resolving insolvency*	58.2	34	
1.3.3	Ease of paying taxes*	68.8	74	
2	**Human capital & research**	**37.6**	**45**	
2.1	Education	61.6	43	
2.1.1	Current expenditure on education, % GNI	5.0	42	
2.1.2	Public expenditure/pupil, % GDP/cap	23.3	40	
2.1.3	School life expectancy, years	15.4	31	
2.1.4	PISA scales in reading, maths, & science	501.1	15	
2.1.5	Pupil-teacher ratio, secondary	10.4	30	
2.2	Tertiary education	29.6	73	
2.2.1	Tertiary enrolment, % gross	72.4	18	●
2.2.2	Graduates in science & engineering, %	15.7	72	○
2.2.3	Tertiary inbound mobility, %	0.9	82	○
2.2.4	Gross tertiary outbound enrolment, %	1.1	74	
2.3	Research & development (R&D)	21.5	40	
2.3.1	Researchers, headcounts/mn pop.	2,637.0	31	
2.3.2	Gross expenditure on R&D, % GDP	0.8	42	
2.3.3	QS university ranking, average score top 3*	27.3	41	
3	**Infrastructure**	**38.0**	**47**	
3.1	Information & communication technologies (ICTs)	43.3	51	
3.1.1	ICT access*	64.6	41	
3.1.2	ICT use*	36.5	41	
3.1.3	Government's online service*	53.6	55	
3.1.4	E-participation*	18.4	72	
3.2	General infrastructure	33.2	51	
3.2.1	Electricity output, kWh/cap	4,262.3	51	
3.2.2	Electricity consumption, kWh/cap	3,825.5	50	
3.2.3	Logistics performance*	60.8	29	
3.2.4	Gross capital formation, % GDP	21.0	83	
3.3	Ecological sustainability	37.5	42	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.7	53	
3.3.2	Environmental performance*	63.5	22	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.5	37	
4	**Market sophistication**	**50.5**	**46**	
4.1	Credit	39.6	63	
4.1.1	Ease of getting credit*	93.8	4	●
4.1.2	Domestic credit to private sector, % GDP	54.9	59	
4.1.3	Microfinance gross loans, % GDP	0.0	78	○
4.2	Investment	31.9	45	
4.2.1	Ease of protecting investors*	60.7	53	
4.2.2	Market capitalization, % GDP	26.9	55	
4.2.3	Total value of stocks traded, % GDP	18.6	31	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	35	
4.3	Trade & competition	80.1	39	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	73.6	28	
5	**Business sophistication**	**38.6**	**40**	
5.1	Knowledge workers	54.6	42	
5.1.1	Knowledge-intensive employment, %	32.8	23	
5.1.2	Firms offering formal training, % firms	60.9	14	●
5.1.3	R&D performed by business, % GDP	0.2	45	
5.1.4	R&D financed by business, %	28.1	56	
5.1.5	GMAT mean score	563.9	27	●
5.1.6	GMAT test takers/mn pop. 20–34	38.6	97	○
5.2	Innovation linkages	24.6	76	
5.2.1	University/industry research collaboration†	43.2	66	
5.2.2	State of cluster development†	38.6	95	○
5.2.3	R&D financed by abroad, %	13.4	27	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	88	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.1	35	
5.3	Knowledge absorption	36.7	32	
5.3.1	Royalty & license fees payments, % service imports	8.0	14	●
5.3.2	High-tech imports less re-imports, %	10.2	46	
5.3.3	Comm., computer & info. services imports, %	7.9	25	●
5.3.4	FDI net inflows, % GDP	3.0	71	
6	**Knowledge & technology outputs**	**29.0**	**55**	
6.1	Knowledge creation	21.5	42	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	5.4	33	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.3	48	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.2	26	
6.1.4	Scientific & technical articles/bn PPP$ GDP	25.7	37	
6.1.5	Citable documents H index	281.0	23	●
6.2	Knowledge impact	35.8	60	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.0	39	
6.2.2	New businesses/th pop. 15–64	0.5	85	○
6.2.3	Computer software spending, % GDP	0.3	44	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	14.2	32	
6.2.5	High- & medium-high-tech manufactures, %	32.3	32	
6.3	Knowledge diffusion	25.8	67	
6.3.1	Royalty & license fees receipts, % service exports	0.7	42	
6.3.2	High-tech exports less re-exports, %	5.2	38	
6.3.3	Comm., computer & info. services exports, %	7.3	61	
6.3.4	FDI net outflows, % GDP	1.4	42	
7	**Creative outputs**	**35.9**	**78**	
7.1	Intangible assets	31.1	115	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	35.8	46	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.5	39	
7.1.3	ICT & business model creation†	50.2	95	○
7.1.4	ICT & organizational model creation†	46.1	93	○
7.2	Creative goods & services	37.3	61	
7.2.1	Audio-visual & related services exports, %	0.2	39	
7.2.2	National feature films/mn pop. 15–69	1.8	61	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	9.8	58	
7.2.4	Printing & publishing manufactures, %	1.2	69	○
7.2.5	Creative goods exports, %	5.8	12	●
7.3	Online creativity	44.0	35	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	9.7	49	
7.3.2	Country-code TLDs/th pop. 15–69	60.8	19	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	4,476.2	32	
7.3.4	Video uploads on YouTube/pop. 15–69	79.4	37	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Portugal

Key indicators

Population (millions)	11.2
GDP (US$ billions)	210.6
GDP per capita, PPP$	22,991.2
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**45.1**	**34**	
Innovation Output Sub-Index		38.1	39	
Innovation Input Sub-Index		52.1	31	
Innovation Efficiency Ratio		0.7	92	○
Global Innovation Index 2012 (based on GII 2012 framework)		45.3	35	
1	**Institutions**	**72.9**	**39**	
1.1	Political environment	77.2	30	
1.1.1	Political stability*	83.3	34	
1.1.2	Government effectiveness*	65.1	33	
1.1.3	Press freedom*	83.3	26	
1.2	Regulatory environment	59.3	93	○
1.2.1	Regulatory quality*	66.7	41	
1.2.2	Rule of law*	74.5	29	
1.2.3	Cost of redundancy dismissal, salary weeks	33.9	132	○
1.3	Business environment	82.1	17	●
1.3.1	Ease of starting a business*	91.7	20	
1.3.2	Ease of resolving insolvency*	79.2	22	
1.3.3	Ease of paying taxes*	75.4	47	
2	**Human capital & research**	**51.9**	**22**	
2.1	Education	69.2	19	●
2.1.1	Current expenditure on education, % GNI	5.7	26	
2.1.2	Public expenditure/pupil, % GDP/cap	29.2	11	●
2.1.3	School life expectancy, years	16.2	18	
2.1.4	PISA scales in reading, maths, & science	489.7	27	
2.1.5	Pupil-teacher ratio, secondary	7.3	4	●
2.2	Tertiary education	41.9	41	
2.2.1	Tertiary enrolment, % gross	65.5	24	
2.2.2	Graduates in science & engineering, %	24.9	25	
2.2.3	Tertiary inbound mobility, %	2.9	49	
2.2.4	Gross tertiary outbound enrolment, %	2.2	47	
2.3	Research & development (R&D)	44.7	22	
2.3.1	Researchers, headcounts/mn pop.	9,014.4	5	●
2.3.2	Gross expenditure on R&D, % GDP	1.5	25	
2.3.3	QS university ranking, average score top 3*	31.3	37	
3	**Infrastructure**	**43.0**	**34**	
3.1	Information & communication technologies (ICTs)	54.3	35	
3.1.1	ICT access*	69.4	30	
3.1.2	ICT use*	45.7	30	
3.1.3	Government's online service*	65.4	38	
3.1.4	E-participation*	36.8	41	
3.2	General infrastructure	31.8	58	
3.2.1	Electricity output, kWh/cap	4,855.6	46	
3.2.2	Electricity consumption, kWh/cap	4,773.6	41	
3.2.3	Logistics performance*	62.5	27	
3.2.4	Gross capital formation, % GDP	15.9	124	○
3.3	Ecological sustainability	42.7	28	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	9.8	17	●
3.3.2	Environmental performance*	57.6	40	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.4	31	
4	**Market sophistication**	**59.0**	**25**	
4.1	Credit	71.1	13	●
4.1.1	Ease of getting credit*	50.0	93	○
4.1.2	Domestic credit to private sector, % GDP	192.3	8	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	28.7	56	
4.2.1	Ease of protecting investors*	61.9	42	
4.2.2	Market capitalization, % GDP	26.0	59	
4.2.3	Total value of stocks traded, % GDP	15.2	35	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	43	
4.3	Trade & competition	77.4	63	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	65.6	62	
5	**Business sophistication**	**33.7**	**57**	
5.1	Knowledge workers	45.1	61	
5.1.1	Knowledge-intensive employment, %	18.7	70	○
5.1.2	Firms offering formal training, % firms	31.9	60	
5.1.3	R&D performed by business, % GDP	0.7	29	
5.1.4	R&D financed by business, %	44.1	35	
5.1.5	GMAT mean score	548.7	39	
5.1.6	GMAT test takers/mn pop. 20–34	316.5	19	●
5.2	Innovation linkages	23.8	77	
5.2.1	University/industry research collaboration†	60.5	26	
5.2.2	State of cluster development†	47.9	54	
5.2.3	R&D financed by abroad, %	3.2	65	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	91	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.1	34	
5.3	Knowledge absorption	32.2	47	
5.3.1	Royalty & license fees payments, % service imports	3.4	42	
5.3.2	High-tech imports less re-imports, %	7.4	77	○
5.3.3	Comm., computer & info. services imports, %	7.5	29	
5.3.4	FDI net inflows, % GDP	5.5	35	
6	**Knowledge & technology outputs**	**28.5**	**57**	
6.1	Knowledge creation	21.3	43	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.6	46	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.5	37	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.4	39	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	45.5	12	●
6.1.5	Citable documents H index	218.0	32	
6.2	Knowledge impact	40.0	47	
6.2.1	Growth rate of PPP$ GDP/worker, %	–0.8	108	○
6.2.2	New businesses/th pop. 15–64	3.9	32	
6.2.3	Computer software spending, % GDP	0.7	9	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	18.7	25	
6.2.5	High- & medium-high-tech manufactures, %	23.7	44	
6.3	Knowledge diffusion	20.7	98	○
6.3.1	Royalty & license fees receipts, % service exports	0.2	69	
6.3.2	High-tech exports less re-exports, %	3.2	51	
6.3.3	Comm., computer & info. services exports, %	4.4	88	○
6.3.4	FDI net outflows, % GDP	5.2	12	●
7	**Creative outputs**	**47.7**	**27**	
7.1	Intangible assets	50.4	42	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	95.0	6	●
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.8	32	
7.1.3	ICT & business model creation†	71.2	21	
7.1.4	ICT & organizational model creation†	63.8	30	
7.2	Creative goods & services	43.1	43	
7.2.1	Audio-visual & related services exports, %	0.5	26	
7.2.2	National feature films/mn pop. 15–69	3.9	36	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	6.2	80	
7.2.4	Printing & publishing manufactures, %	1.8	48	
7.2.5	Creative goods exports, %	2.9	27	
7.3	Online creativity	46.7	32	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	23.2	31	
7.3.2	Country-code TLDs/th pop. 15–69	57.9	25	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	4,133.3	37	
7.3.4	Video uploads on YouTube/pop. 15–69	81.7	32	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Qatar

Key indicators

Population (millions)	1.9
GDP (US$ billions)	184.6
GDP per capita, PPP$	102,768.7
Income group	High income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**41.0**	**43**	
Innovation Output Sub-Index		34.2	52	
Innovation Input Sub-Index		47.8	38	
Innovation Efficiency Ratio		0.7	97	
Global Innovation Index 2012 (based on GII 2012 framework)		45.5	33	
1	**Institutions**	**73.8**	**36**	
1.1	Political environment	74.7	32	
1.1.1	Political stability*	95.8	9	●
1.1.2	Government effectiveness*	61.3	37	
1.1.3	Press freedom*	67.1	88	
1.2	Regulatory environment	67.0	68	
1.2.1	Regulatory quality*	61.0	52	
1.2.2	Rule of law*	68.1	36	
1.2.3	Cost of redundancy dismissal, salary weeks	23.2	107	
1.3	Business environment	79.6	24	
1.3.1	Ease of starting a business*	82.4	74	
1.3.2	Ease of resolving insolvency*	59.2	33	
1.3.3	Ease of paying taxes*	97.2	2	●
2	**Human capital & research**	**31.9**	**67**	
2.1	Education	40.4	103	
2.1.1	Current expenditure on education, % GNI	1.8	107	○
2.1.2	Public expenditure/pupil, % GDP/cap	16.1	76	
2.1.3	School life expectancy, years	12.9	76	
2.1.4	PISA scales in reading, maths, & science	373.1	66	○
2.1.5	Pupil-teacher ratio, secondary	10.1	28	
2.2	Tertiary education	47.9	21	
2.2.1	Tertiary enrolment, % gross	11.6	102	
2.2.2	Graduates in science & engineering, %	29.8	12	
2.2.3	Tertiary inbound mobility, %	40.3	2	●
2.2.4	Gross tertiary outbound enrolment, %	2.2	50	
2.3	Research & development (R&D)	7.4	71	
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	7.4	60	
3	**Infrastructure**	**46.0**	**28**	
3.1	Information & communication technologies (ICTs)	62.0	26	
3.1.1	ICT access*	69.0	32	
3.1.2	ICT use*	42.0	32	
3.1.3	Government's online service*	73.9	27	
3.1.4	E-participation*	63.2	22	
3.2	General infrastructure	52.7	5	●
3.2.1	Electricity output, kWh/cap	15,990.9	6	●
3.2.2	Electricity consumption, kWh/cap	14,995.5	7	●
3.2.3	Logistics performance*	58.0	33	
3.2.4	Gross capital formation, % GDP	26.0	37	
3.3	Ecological sustainability	23.3	99	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.5	88	
3.3.2	Environmental performance*	46.6	95	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.5	82	
4	**Market sophistication**	**47.4**	**62**	
4.1	Credit	33.3	85	
4.1.1	Ease of getting credit*	50.0	93	
4.1.2	Domestic credit to private sector, % GDP	38.6	85	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	26.9	65	
4.2.1	Ease of protecting investors*	52.2	82	
4.2.2	Market capitalization, % GDP	72.5	21	
4.2.3	Total value of stocks traded, % GDP	13.4	40	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	66	
4.3	Trade & competition	82.1	26	
4.3.1	Applied tariff rate, weighted mean, %	3.8	64	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.2	81	
4.3.3	Intensity of local competition†	78.9	11	●
5	**Business sophistication**	**40.1**	**39**	
5.1	Knowledge workers	29.3	116	
5.1.1	Knowledge-intensive employment, %	6.5	101	○
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	466.0	97	
5.1.6	GMAT test takers/mn pop. 20–34	42.9	90	
5.2	Innovation linkages	81.0	1	●
5.2.1	University/industry research collaboration†	73.2	9	●
5.2.2	State of cluster development†	69.9	2	●
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.2	1	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	n/a	n/a	
5.3	Knowledge absorption	10.0	138	○
5.3.1	Royalty & license fees payments, % service imports	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Comm., computer & info. services imports, %	1.5	117	○
5.3.4	FDI net inflows, % GDP	–0.1	137	○
6	**Knowledge & technology outputs**	**19.9**	**104**	
6.1	Knowledge creation	5.4	103	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.3	53	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.9	124	○
6.1.5	Citable documents H index	44.0	116	
6.2	Knowledge impact	45.4	31	
6.2.1	Growth rate of PPP$ GDP/worker, %	10.0	2	●
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.2	62	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.7	102	
6.2.5	High- & medium-high-tech manufactures, %	15.5	60	
6.3	Knowledge diffusion	1.5	140	○
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.0	123	○
6.3.3	Comm., computer & info. services exports, %	1.5	126	○
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**48.5**	**22**	
7.1	Intangible assets	75.0	2	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	74.8	11	●
7.1.4	ICT & organizational model creation†	75.2	3	●
7.2	Creative goods & services	13.4	126	○
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	8.8	63	
7.2.4	Printing & publishing manufactures, %	1.9	47	
7.2.5	Creative goods exports, %	0.0	122	○
7.3	Online creativity	30.5	57	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	5.7	56	
7.3.2	Country-code TLDs/th pop. 15–69	31.7	55	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	2,125.9	51	
7.3.4	Video uploads on YouTube/pop. 15–69	72.3	67	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Romania

Key indicators

Population (millions)	22.1
GDP (US$ billions)	171.4
GDP per capita, PPP$	12,838.4
Income group	Upper-middle income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**40.3**	**48**	
	Innovation Output Sub-Index	37.8	40	
	Innovation Input Sub-Index	42.8	55	
	Innovation Efficiency Ratio	0.9	34	
	Global Innovation Index 2012 (based on GII 2012 framework)	37.8	52	
1	**Institutions**	**66.3**	**55**	
1.1	Political environment	59.5	60	
1.1.1	Political stability*	69.1	63	
1.1.2	Government effectiveness*	32.4	83	
1.1.3	Press freedom*	77.0	37	
1.2	Regulatory environment	79.2	36	
1.2.1	Regulatory quality*	68.4	39	
1.2.2	Rule of law*	48.4	58	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	Business environment	60.1	85	
1.3.1	Ease of starting a business*	88.8	39	
1.3.2	Ease of resolving insolvency*	31.7	92	
1.3.3	Ease of paying taxes*	59.8	100	
2	**Human capital & research**	**29.5**	**78**	
2.1	Education	51.0	79	
2.1.1	Current expenditure on education, % GNI	3.7	77	
2.1.2	Public expenditure/pupil, % GDP/cap	20.5	52	
2.1.3	School life expectancy, years	14.5	43	
2.1.4	PISA scales in reading, maths, & science	426.6	47	
2.1.5	Pupil-teacher ratio, secondary	12.5	48	
2.2	Tertiary education	30.3	71	
2.2.1	Tertiary enrolment, % gross	58.8	37	
2.2.2	Graduates in science & engineering, %	17.1	62	
2.2.3	Tertiary inbound mobility, %	1.3	74	
2.2.4	Gross tertiary outbound enrolment, %	1.5	64	
2.3	Research & development (R&D)	7.4	72	
2.3.1	Researchers, headcounts/mn pop.	1,429.1	45	
2.3.2	Gross expenditure on R&D, % GDP	0.5	58	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**42.8**	**35**	
3.1	Information & communication technologies (ICTs)	36.6	67	
3.1.1	ICT access*	57.5	52	
3.1.2	ICT use*	29.4	53	
3.1.3	Government's online service*	51.6	61	
3.1.4	E-participation*	7.9	99	○
3.2	General infrastructure	32.2	56	
3.2.1	Electricity output, kWh/cap	2,810.6	66	
3.2.2	Electricity consumption, kWh/cap	2,391.9	66	
3.2.3	Logistics performance*	50.0	53	
3.2.4	Gross capital formation, % GDP	28.9	25	●
3.3	Ecological sustainability	59.5	8	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.7	55	
3.3.2	Environmental performance*	48.3	85	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	35.8	1	●
4	**Market sophistication**	**43.7**	**85**	
4.1	Credit	36.4	71	
4.1.1	Ease of getting credit*	87.5	12	●
4.1.2	Domestic credit to private sector, % GDP	45.2	73	
4.1.3	Microfinance gross loans, % GDP	0.2	60	
4.2	Investment	20.8	93	
4.2.1	Ease of protecting investors*	61.9	42	
4.2.2	Market capitalization, % GDP	11.8	88	○
4.2.3	Total value of stocks traded, % GDP	1.8	64	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	63	
4.3	Trade & competition	73.9	89	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	55.1	99	
5	**Business sophistication**	**31.8**	**70**	
5.1	Knowledge workers	40.6	80	
5.1.1	Knowledge-intensive employment, %	21.8	56	
5.1.2	Firms offering formal training, % firms	24.9	78	
5.1.3	R&D performed by business, % GDP	0.2	48	
5.1.4	R&D financed by business, %	37.4	45	
5.1.5	GMAT mean score	572.3	22	●
5.1.6	GMAT test takers/mn pop. 20–34	88.0	58	
5.2	Innovation linkages	19.2	108	○
5.2.1	University/industry research collaboration†	34.7	110	○
5.2.2	State of cluster development†	35.3	111	○
5.2.3	R&D financed by abroad, %	12.1	31	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	108	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	54	
5.3	Knowledge absorption	35.6	36	
5.3.1	Royalty & license fees payments, % service imports	4.5	30	
5.3.2	High-tech imports less re-imports, %	10.8	42	
5.3.3	Comm., computer & info. services imports, %	9.7	10	●
5.3.4	FDI net inflows, % GDP	1.4	113	○
6	**Knowledge & technology outputs**	**40.3**	**23**	●
6.1	Knowledge creation	13.5	63	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	5.4	32	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	75	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.2	46	
6.1.4	Scientific & technical articles/bn PPP$ GDP	24.6	38	
6.1.5	Citable documents H index	126.0	45	
6.2	Knowledge impact	52.6	13	●
6.2.1	Growth rate of PPP$ GDP/worker, %	1.5	71	
6.2.2	New businesses/th pop. 15–64	4.4	27	
6.2.3	Computer software spending, % GDP	0.4	20	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	72.6	1	●
6.2.5	High- & medium-high-tech manufactures, %	31.8	34	
6.3	Knowledge diffusion	41.5	23	●
6.3.1	Royalty & license fees receipts, % service exports	2.9	20	●
6.3.2	High-tech exports less re-exports, %	9.1	26	●
6.3.3	Comm., computer & info. services exports, %	16.9	20	●
6.3.4	FDI net outflows, % GDP	–0.0	112	○
7	**Creative outputs**	**35.4**	**80**	
7.1	Intangible assets	32.3	112	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	60.0	28	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.3	50	
7.1.3	ICT & business model creation†	47.8	103	○
7.1.4	ICT & organizational model creation†	43.8	100	
7.2	Creative goods & services	40.4	51	
7.2.1	Audio-visual & related services exports, %	0.8	10	●
7.2.2	National feature films/mn pop. 15–69	1.1	73	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	5.0	85	
7.2.4	Printing & publishing manufactures, %	1.4	65	
7.2.5	Creative goods exports, %	2.6	28	
7.3	Online creativity	36.3	46	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	5.5	57	
7.3.2	Country-code TLDs/th pop. 15–69	51.2	35	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,612.7	58	
7.3.4	Video uploads on YouTube/pop. 15–69	79.0	39	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Russian Federation

Key indicators

Population (millions)	147.0
GDP (US$ billions)	1,953.6
GDP per capita, PPP$	17,697.5
Income group	Upper-middle income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**37.2**	**62**	
Innovation Output Sub-Index		30.6	72	
Innovation Input Sub-Index		43.8	52	
Innovation Efficiency Ratio		0.7	104	
Global Innovation Index 2012 (based on GII 2012 framework)		37.9	51	
1	**Institutions**	**56.0**	**87**	
1.1	Political environment	42.9	117	○
1.1.1	Political stability*	44.7	113	○
1.1.2	Government effectiveness*	27.3	90	
1.1.3	Press freedom*	56.6	119	○
1.2	Regulatory environment	57.2	100	
1.2.1	Regulatory quality*	40.3	102	
1.2.2	Rule of law*	26.2	113	○
1.2.3	Cost of redundancy dismissal, salary weeks	17.3	82	
1.3	Business environment	68.0	55	
1.3.1	Ease of starting a business*	83.6	69	
1.3.2	Ease of resolving insolvency*	46.5	49	
1.3.3	Ease of paying taxes*	73.9	53	
2	**Human capital & research**	**44.1**	**33**	
2.1	Education	62.0	42	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	19.7	57	
2.1.3	School life expectancy, years	14.3	48	
2.1.4	PISA scales in reading, maths, & science	468.5	37	
2.1.5	Pupil-teacher ratio, secondary	8.5	11	●
2.2	Tertiary education	40.0	46	
2.2.1	Tertiary enrolment, % gross	75.9	13	●
2.2.2	Graduates in science & engineering, %	28.1	14	●
2.2.3	Tertiary inbound mobility, %	1.4	71	
2.2.4	Gross tertiary outbound enrolment, %	0.4	108	○
2.3	Research & development (R&D)	30.3	31	
2.3.1	Researchers, headcounts/mn pop.	2,580.6	32	
2.3.2	Gross expenditure on R&D, % GDP	1.1	33	
2.3.3	QS university ranking, average score top 3*	45.9	25	
3	**Infrastructure**	**37.2**	**49**	
3.1	Information & communication technologies (ICTs)	59.6	28	
3.1.1	ICT access*	66.9	34	
3.1.2	ICT use*	39.7	34	
3.1.3	Government's online service*	66.0	37	
3.1.4	E-participation*	65.8	19	●
3.2	General infrastructure	32.0	57	
3.2.1	Electricity output, kWh/cap	7,309.5	28	
3.2.2	Electricity consumption, kWh/cap	6,459.6	27	
3.2.3	Logistics performance*	39.5	95	
3.2.4	Gross capital formation, % GDP	23.5	63	
3.3	Ecological sustainability	20.1	115	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	2.9	113	○
3.3.2	Environmental performance*	45.4	101	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	90	
4	**Market sophistication**	**45.4**	**74**	
4.1	Credit	23.6	116	○
4.1.1	Ease of getting credit*	50.0	93	○
4.1.2	Domestic credit to private sector, % GDP	46.8	71	
4.1.3	Microfinance gross loans, % GDP	0.0	82	○
4.2	Investment	37.1	32	
4.2.1	Ease of protecting investors*	47.4	102	
4.2.2	Market capitalization, % GDP	42.9	45	
4.2.3	Total value of stocks traded, % GDP	61.7	17	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	39	
4.3	Trade & competition	75.6	78	
4.3.1	Applied tariff rate, weighted mean, %	3.8	65	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.3	41	
4.3.3	Intensity of local competition†	49.4	121	○
5	**Business sophistication**	**36.1**	**52**	
5.1	Knowledge workers	58.2	34	
5.1.1	Knowledge-intensive employment, %	40.7	10	●
5.1.2	Firms offering formal training, % firms	52.2	24	
5.1.3	R&D performed by business, % GDP	0.7	30	
5.1.4	R&D financed by business, %	27.7	57	
5.1.5	GMAT mean score	559.7	32	
5.1.6	GMAT test takers/mn pop. 20–34	66.7	72	
5.2	Innovation linkages	18.9	109	○
5.2.1	University/industry research collaboration†	40.3	83	
5.2.2	State of cluster development†	36.0	108	○
5.2.3	R&D financed by abroad, %	4.3	59	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	60	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.1	47	
5.3	Knowledge absorption	31.2	52	
5.3.1	Royalty & license fees payments, % service imports	6.8	18	●
5.3.2	High-tech imports less re-imports, %	10.3	45	
5.3.3	Comm., computer & info. services imports, %	5.5	49	
5.3.4	FDI net inflows, % GDP	2.8	73	
6	**Knowledge & technology outputs**	**30.4**	**48**	
6.1	Knowledge creation	34.6	25	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	11.3	13	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.4	42	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	5.3	9	●
6.1.4	Scientific & technical articles/bn PPP$ GDP	10.6	72	
6.1.5	Citable documents H index	308.0	20	●
6.2	Knowledge impact	33.0	77	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.4	21	
6.2.2	New businesses/th pop. 15–64	0.8	72	
6.2.3	Computer software spending, % GDP	0.3	45	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	5.3	63	
6.2.5	High- & medium-high-tech manufactures, %	22.3	46	
6.3	Knowledge diffusion	25.7	68	
6.3.1	Royalty & license fees receipts, % service exports	1.6	28	
6.3.2	High-tech exports less re-exports, %	1.1	75	
6.3.3	Comm., computer & info. services exports, %	6.0	72	
6.3.4	FDI net outflows, % GDP	3.6	19	●
7	**Creative outputs**	**30.8**	**101**	
7.1	Intangible assets	27.0	125	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	21.4	63	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.6	38	
7.1.3	ICT & business model creation†	43.6	121	○
7.1.4	ICT & organizational model creation†	43.6	103	○
7.2	Creative goods & services	32.2	81	
7.2.1	Audio-visual & related services exports, %	0.6	21	
7.2.2	National feature films/mn pop. 15–69	2.3	55	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	7.5	67	
7.2.4	Printing & publishing manufactures, %	1.6	59	
7.2.5	Creative goods exports, %	0.2	93	○
7.3	Online creativity	37.1	44	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4.1	68	
7.3.2	Country-code TLDs/th pop. 15–69	50.9	36	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	2,864.5	47	
7.3.4	Video uploads on YouTube/pop. 15–69	76.8	55	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	11.3
GDP (US$ billions)	7.0
GDP per capita, PPP$	1,430.4
Income group	Low income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**27.6**	**112**	
Innovation Output Sub-Index		21.7	121	
Innovation Input Sub-Index		33.6	102	
Innovation Efficiency Ratio		0.6	120	
Global Innovation Index 2012 (based on GII 2012 framework)		27.9	102	
1	**Institutions**	**59.4**	**72**	
1.1	Political environment	49.9	87	
1.1.1	Political stability*	65.0	72	
1.1.2	Government effectiveness*	40.2	63	
1.1.3	Press freedom*	44.5	130	
1.2	Regulatory environment	66.3	71	
1.2.1	Regulatory quality*	46.3	83	
1.2.2	Rule of law*	39.0	75	
1.2.3	Cost of redundancy dismissal, salary weeks	13.0	56	●
1.3	Business environment	61.9	76	
1.3.1	Ease of starting a business*	97.3	6	●
1.3.2	Ease of resolving insolvency*	4.4	140	○
1.3.3	Ease of paying taxes*	84.0	24	●
2	**Human capital & research**	**13.8**	**128**	
2.1	Education	37.4	109	
2.1.1	Current expenditure on education, % GNI	4.1	71	
2.1.2	Public expenditure/pupil, % GDP/cap	16.8	73	
2.1.3	School life expectancy, years	11.1	102	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	23.7	99	
2.2	Tertiary education	3.8	137	○
2.2.1	Tertiary enrolment, % gross	6.6	120	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.3	121	
2.3	Research & development (R&D)	0.2	121	
2.3.1	Researchers, headcounts/mn pop.	54.7	102	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**21.6**	**114**	
3.1	Information & communication technologies (ICTs)	14.4	127	
3.1.1	ICT access*	19.0	124	
3.1.2	ICT use*	2.1	124	
3.1.3	Government's online service*	34.0	108	
3.1.4	E-participation*	2.6	116	
3.2	General infrastructure	28.7	74	
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Logistics performance*	31.8	130	
3.2.4	Gross capital formation, % GDP	23.8	61	●
3.3	Ecological sustainability	n/a	n/a	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	n/a	n/a	
4	**Market sophistication**	**46.4**	**66**	
4.1	Credit	30.4	96	
4.1.1	Ease of getting credit*	81.3	22	●
4.1.2	Domestic credit to private sector, % GDP	11.2	137	○
4.1.3	Microfinance gross loans, % GDP	0.6	46	
4.2	Investment	33.4	38	●
4.2.1	Ease of protecting investors*	66.7	31	●
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	75.3	80	
4.3.1	Applied tariff rate, weighted mean, %	6.0	89	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	3	●
4.3.3	Intensity of local competition†	56.5	95	
5	**Business sophistication**	**27.0**	**105**	
5.1	Knowledge workers	26.5	124	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	27.6	69	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	377.8	134	
5.1.6	GMAT test takers/mn pop. 20–34	8.6	127	
5.2	Innovation linkages	31.0	50	●
5.2.1	University/industry research collaboration†	46.7	50	●
5.2.2	State of cluster development†	46.4	60	●
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	n/a	n/a	
5.3	Knowledge absorption	23.3	89	
5.3.1	Royalty & license fees payments, % service imports	0.0	126	○
5.3.2	High-tech imports less re-imports, %	10.4	44	●
5.3.3	Comm., computer & info. services imports, %	5.1	57	●
5.3.4	FDI net inflows, % GDP	1.7	99	
6	**Knowledge & technology outputs**	**8.0**	**140**	○
6.1	Knowledge creation	4.5	114	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	7.1	85	
6.1.5	Citable documents H index	33.0	131	
6.2	Knowledge impact	2.7	136	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	0.8	74	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.0	142	○
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	15.2	125	
6.3.1	Royalty & license fees receipts, % service exports	0.0	105	
6.3.2	High-tech exports less re-exports, %	0.3	97	
6.3.3	Comm., computer & info. services exports, %	4.4	89	
6.3.4	FDI net outflows, % GDP	–0.3	121	○
7	**Creative outputs**	**35.3**	**82**	
7.1	Intangible assets	58.9	12	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	63.0	44	●
7.1.4	ICT & organizational model creation†	54.7	60	●
7.2	Creative goods & services	14.7	123	
7.2.1	Audio-visual & related services exports, %	0.0	76	○
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	0.2	134	○
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.1	97	
7.3	Online creativity	8.7	132	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.1	135	
7.3.2	Country-code TLDs/th pop. 15–69	1.5	127	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	62.2	117	
7.3.4	Video uploads on YouTube/pop. 15–69	32.8	130	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Saudi Arabia

Key indicators

Population (millions)	28.9
GDP (US$ billions)	657.0
GDP per capita, PPP$	25,722.4
Income group	High income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**41.2**	**42**	
Innovation Output Sub-Index		36.5	44	
Innovation Input Sub-Index		45.9	44	
Innovation Efficiency Ratio		0.8	61	
Global Innovation Index 2012 (based on GII 2012 framework)		39.3	48	
1	**Institutions**	**58.4**	**77**	
1.1	Political environment	42.8	118	○
1.1.1	Political stability*	58.8	85	
1.1.2	Government effectiveness*	26.6	93	
1.1.3	Press freedom*	43.1	132	○
1.2	Regulatory environment	63.2	79	
1.2.1	Regulatory quality*	49.7	75	
1.2.2	Rule of law*	49.0	57	
1.2.3	Cost of redundancy dismissal, salary weeks	19.5	92	
1.3	Business environment	69.3	51	
1.3.1	Ease of starting a business*	80.9	83	
1.3.2	Ease of resolving insolvency*	30.4	96	
1.3.3	Ease of paying taxes*	96.6	3	●
2	**Human capital & research**	**39.8**	**39**	
2.1	Education	59.8	48	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	21.0	50	
2.1.3	School life expectancy, years	13.7	59	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	11.3	36	
2.2	Tertiary education	44.2	31	
2.2.1	Tertiary enrolment, % gross	41.2	60	
2.2.2	Graduates in science & engineering, %	34.4	7	●
2.2.3	Tertiary inbound mobility, %	3.4	44	
2.2.4	Gross tertiary outbound enrolment, %	1.6	61	
2.3	Research & development (R&D)	15.4	50	
2.3.1	Researchers, headcounts/mn pop.	47.4	107	○
2.3.2	Gross expenditure on R&D, % GDP	0.1	97	○
2.3.3	QS university ranking, average score top 3*	44.4	28	
3	**Infrastructure**	**40.6**	**41**	
3.1	Information & communication technologies (ICTs)	62.0	25	
3.1.1	ICT access*	66.3	36	
3.1.2	ICT use*	39.0	36	
3.1.3	Government's online service*	79.7	19	●
3.1.4	E-participation*	63.2	22	
3.2	General infrastructure	37.7	35	
3.2.1	Electricity output, kWh/cap	8,745.6	17	●
3.2.2	Electricity consumption, kWh/cap	7,967.0	20	●
3.2.3	Logistics performance*	54.5	37	
3.2.4	Gross capital formation, % GDP	21.2	80	
3.3	Ecological sustainability	21.9	105	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.3	108	○
3.3.2	Environmental performance*	50.0	79	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	107	○
4	**Market sophistication**	**53.5**	**38**	
4.1	Credit	42.9	51	
4.1.1	Ease of getting credit*	68.8	51	
4.1.2	Domestic credit to private sector, % GDP	39.7	80	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	34.2	37	
4.2.1	Ease of protecting investors*	73.0	19	●
4.2.2	Market capitalization, % GDP	58.7	29	
4.2.3	Total value of stocks traded, % GDP	50.8	20	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	83.2	17	●
4.3.1	Applied tariff rate, weighted mean, %	3.9	67	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.8	68	
4.3.3	Intensity of local competition†	78.4	13	●
5	**Business sophistication**	**37.2**	**46**	
5.1	Knowledge workers	40.4	83	
5.1.1	Knowledge-intensive employment, %	22.9	51	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	318.0	141	○
5.1.6	GMAT test takers/mn pop. 20–34	325.2	17	●
5.2	Innovation linkages	44.4	21	●
5.2.1	University/industry research collaboration†	58.3	30	
5.2.2	State of cluster development†	60.6	20	●
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	13	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	50	
5.3	Knowledge absorption	26.8	71	
5.3.1	Royalty & license fees payments, % service imports	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	11.6	34	
5.3.3	Comm., computer & info. services imports, %	3.3	78	
5.3.4	FDI net inflows, % GDP	2.8	74	
6	**Knowledge & technology outputs**	**24.8**	**78**	
6.1	Knowledge creation	10.2	71	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.5	79	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	9.3	77	
6.1.5	Citable documents H index	114.0	53	
6.2	Knowledge impact	38.6	49	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.9	27	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.3	47	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.4	90	
6.2.5	High- & medium-high-tech manufactures, %	30.1	35	
6.3	Knowledge diffusion	18.3	111	○
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.1	115	○
6.3.3	Comm., computer & info. services exports, %	2.3	114	○
6.3.4	FDI net outflows, % GDP	0.5	56	
7	**Creative outputs**	**48.2**	**24**	
7.1	Intangible assets	68.5	5	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	69.4	25	
7.1.4	ICT & organizational model creation†	67.7	15	●
7.2	Creative goods & services	31.1	84	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	11.3	51	
7.2.4	Printing & publishing manufactures, %	2.7	23	
7.2.5	Creative goods exports, %	0.1	104	○
7.3	Online creativity	24.8	77	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	5.2	60	
7.3.2	Country-code TLDs/th pop. 15–69	12.7	92	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	687.6	82	
7.3.4	Video uploads on YouTube/pop. 15–69	77.5	49	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Senegal

Key indicators

Population (millions)	13.1
GDP (US$ billions)	14.0
GDP per capita, PPP$	1,925.3
Income group	Lower-middle income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**30.5**	**96**	
Innovation Output Sub-Index		29.8	80	
Innovation Input Sub-Index		31.2	116	
Innovation Efficiency Ratio		1.0	18	●
Global Innovation Index 2012 (based on GII 2012 framework)		28.8	97	
1	**Institutions**	**54.7**	**91**	
1.1	Political environment	53.0	80	
1.1.1	Political stability*	58.6	86	
1.1.2	Government effectiveness*	26.5	95	
1.1.3	Press freedom*	73.8	50	●
1.2	Regulatory environment	64.0	76	
1.2.1	Regulatory quality*	43.8	92	
1.2.2	Rule of law*	35.0	86	
1.2.3	Cost of redundancy dismissal, salary weeks	13.7	63	
1.3	Business environment	47.1	129	
1.3.1	Ease of starting a business*	79.0	90	
1.3.2	Ease of resolving insolvency*	34.6	80	
1.3.3	Ease of paying taxes*	27.7	137	○
2	**Human capital & research**	**17.1**	**119**	
2.1	Education	38.6	107	
2.1.1	Current expenditure on education, % GNI	5.2	36	●
2.1.2	Public expenditure/pupil, % GDP/cap	26.3	20	●
2.1.3	School life expectancy, years	8.2	123	○
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	27.4	113	
2.2	Tertiary education	8.5	129	
2.2.1	Tertiary enrolment, % gross	7.9	116	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	1.0	77	
2.3	Research & development (R&D)	4.4	83	
2.3.1	Researchers, headcounts/mn pop.	666.7	62	
2.3.2	Gross expenditure on R&D, % GDP	0.4	69	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**24.1**	**104**	
3.1	Information & communication technologies (ICTs)	20.9	107	
3.1.1	ICT access*	23.6	114	
3.1.2	ICT use*	4.4	115	
3.1.3	Government's online service*	34.6	107	
3.1.4	E-participation*	21.1	64	
3.2	General infrastructure	25.6	96	
3.2.1	Electricity output, kWh/cap	239.5	115	○
3.2.2	Electricity consumption, kWh/cap	195.3	116	○
3.2.3	Logistics performance*	37.3	107	
3.2.4	Gross capital formation, % GDP	31.0	19	●
3.3	Ecological sustainability	25.8	88	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.4	62	
3.3.2	Environmental performance*	46.7	93	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	97	
4	**Market sophistication**	**35.5**	**127**	
4.1	Credit	30.3	98	
4.1.1	Ease of getting credit*	43.8	110	
4.1.2	Domestic credit to private sector, % GDP	29.0	100	
4.1.3	Microfinance gross loans, % GDP	3.2	18	●
4.2	Investment	15.2	126	
4.2.1	Ease of protecting investors*	30.4	136	○
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	61.2	124	
4.3.1	Applied tariff rate, weighted mean, %	8.9	117	
4.3.2	Non-agricultural mkt access weighted tariff, %	3.6	131	○
4.3.3	Intensity of local competition†	67.6	52	●
5	**Business sophistication**	**24.5**	**113**	
5.1	Knowledge workers	18.7	138	○
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	16.3	95	
5.1.3	R&D performed by business, % GDP	0.0	80	○
5.1.4	R&D financed by business, %	4.0	74	
5.1.5	GMAT mean score	430.1	120	
5.1.6	GMAT test takers/mn pop. 20–34	21.6	113	
5.2	Innovation linkages	34.6	44	●
5.2.1	University/industry research collaboration†	39.8	84	
5.2.2	State of cluster development†	40.0	86	
5.2.3	R&D financed by abroad, %	38.3	8	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	74	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	20.2	104	
5.3.1	Royalty & license fees payments, % service imports	0.5	100	
5.3.2	High-tech imports less re-imports, %	2.8	122	○
5.3.3	Comm., computer & info. services imports, %	7.5	30	●
5.3.4	FDI net inflows, % GDP	2.0	92	
6	**Knowledge & technology outputs**	**20.7**	**97**	
6.1	Knowledge creation	8.0	79	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.4	88	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	83	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	14.0	61	●
6.1.5	Citable documents H index	71.0	83	
6.2	Knowledge impact	22.3	113	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.9	88	
6.2.2	New businesses/th pop. 15–64	0.2	94	
6.2.3	Computer software spending, % GDP	0.3	60	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.7	98	
6.2.5	High- & medium-high-tech manufactures, %	15.1	61	
6.3	Knowledge diffusion	25.3	70	
6.3.1	Royalty & license fees receipts, % service exports	0.1	81	
6.3.2	High-tech exports less re-exports, %	0.3	94	
6.3.3	Comm., computer & info. services exports, %	17.3	19	●
6.3.4	FDI net outflows, % GDP	0.1	91	
7	**Creative outputs**	**38.9**	**62**	
7.1	Intangible assets	58.7	13	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	65.3	38	●
7.1.4	ICT & organizational model creation†	52.1	71	
7.2	Creative goods & services	24.7	100	
7.2.1	Audio-visual & related services exports, %	0.1	48	
7.2.2	National feature films/mn pop. 15–69	0.7	84	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	3.0	99	
7.2.4	Printing & publishing manufactures, %	1.7	51	
7.2.5	Creative goods exports, %	0.4	77	
7.3	Online creativity	13.3	119	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.3	125	
7.3.2	Country-code TLDs/th pop. 15–69	5.6	110	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	91.7	112	
7.3.4	Video uploads on YouTube/pop. 15–69	46.9	116	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Serbia

Key indicators

Population (millions)	10.2
GDP (US$ billions)	37.2
GDP per capita, PPP$	10,528.2
Income group	Upper-middle income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**37.9**	**54**	
Innovation Output Sub-Index		34.2	51	
Innovation Input Sub-Index		41.5	63	
Innovation Efficiency Ratio		0.8	49	
Global Innovation Index 2012 (based on GII 2012 framework)		40.0	46	
1	**Institutions**	**61.2**	**71**	
1.1	Political environment	55.3	71	
1.1.1	Political stability*	57.9	88	
1.1.2	Government effectiveness*	34.4	78	
1.1.3	Press freedom*	73.4	53	
1.2	Regulatory environment	72.0	47	
1.2.1	Regulatory quality*	49.7	74	
1.2.2	Rule of law*	38.3	77	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	Business environment	56.3	93	
1.3.1	Ease of starting a business*	87.8	50	
1.3.2	Ease of resolving insolvency*	31.6	93	
1.3.3	Ease of paying taxes*	49.5	120	○
2	**Human capital & research**	**36.7**	**50**	
2.1	Education	58.2	54	
2.1.1	Current expenditure on education, % GNI	4.7	51	
2.1.2	Public expenditure/pupil, % GDP/cap	27.3	16	●
2.1.3	School life expectancy, years	13.6	62	
2.1.4	PISA scales in reading, maths, & science	442.4	41	
2.1.5	Pupil-teacher ratio, secondary	9.3	19	●
2.2	Tertiary education	40.5	44	
2.2.1	Tertiary enrolment, % gross	50.4	47	
2.2.2	Graduates in science & engineering, %	25.1	23	●
2.2.3	Tertiary inbound mobility, %	3.6	40	
2.2.4	Gross tertiary outbound enrolment, %	2.4	40	
2.3	Research & development (R&D)	11.4	60	
2.3.1	Researchers, headcounts/mn pop.	1,218.7	47	
2.3.2	Gross expenditure on R&D, % GDP	0.9	35	
2.3.3	QS university ranking, average score top 3*	4.5	66	
3	**Infrastructure**	**37.2**	**50**	
3.1	Information & communication technologies (ICTs)	45.3	49	
3.1.1	ICT access*	63.7	44	
3.1.2	ICT use*	36.2	44	
3.1.3	Government's online service*	57.5	48	
3.1.4	E-participation*	23.7	59	
3.2	General infrastructure	27.6	85	
3.2.1	Electricity output, kWh/cap	5,133.5	42	
3.2.2	Electricity consumption, kWh/cap	4,357.9	46	
3.2.3	Logistics performance*	45.0	75	
3.2.4	Gross capital formation, % GDP	18.6	109	○
3.3	Ecological sustainability	38.7	36	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.5	89	
3.3.2	Environmental performance*	46.1	98	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	6.6	18	●
4	**Market sophistication**	**41.4**	**97**	
4.1	Credit	37.8	67	
4.1.1	Ease of getting credit*	75.0	38	
4.1.2	Domestic credit to private sector, % GDP	48.2	69	
4.1.3	Microfinance gross loans, % GDP	1.6	30	
4.2	Investment	16.2	122	○
4.2.1	Ease of protecting investors*	55.6	70	
4.2.2	Market capitalization, % GDP	18.3	74	
4.2.3	Total value of stocks traded, % GDP	0.7	76	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	70.3	104	○
4.3.1	Applied tariff rate, weighted mean, %	6.0	90	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.2	28	●
4.3.3	Intensity of local competition†	43.6	131	○
5	**Business sophistication**	**31.2**	**73**	
5.1	Knowledge workers	40.8	77	
5.1.1	Knowledge-intensive employment, %	28.7	38	
5.1.2	Firms offering formal training, % firms	36.5	48	
5.1.3	R&D performed by business, % GDP	0.1	56	
5.1.4	R&D financed by business, %	8.3	72	○
5.1.5	GMAT mean score	515.8	64	
5.1.6	GMAT test takers/mn pop. 20–34	81.3	61	
5.2	Innovation linkages	18.0	114	○
5.2.1	University/industry research collaboration†	37.1	97	
5.2.2	State of cluster development†	31.3	125	○
5.2.3	R&D financed by abroad, %	7.2	48	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	65	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	55	
5.3	Knowledge absorption	34.8	38	
5.3.1	Royalty & license fees payments, % service imports	4.6	29	
5.3.2	High-tech imports less re-imports, %	6.8	82	
5.3.3	Comm., computer & info. services imports, %	8.6	18	●
5.3.4	FDI net inflows, % GDP	5.9	34	
6	**Knowledge & technology outputs**	**33.6**	**41**	
6.1	Knowledge creation	22.7	39	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.3	48	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.3	55	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.9	32	
6.1.4	Scientific & technical articles/bn PPP$ GDP	66.3	2	●
6.1.5	Citable documents H index	53.0	103	○
6.2	Knowledge impact	44.4	35	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.1	54	
6.2.2	New businesses/th pop. 15–64	1.7	49	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	36.4	7	●
6.2.5	High- & medium-high-tech manufactures, %	19.4	55	
6.3	Knowledge diffusion	28.3	53	
6.3.1	Royalty & license fees receipts, % service exports	1.3	31	
6.3.2	High-tech exports less re-exports, %	2.8	54	
6.3.3	Comm., computer & info. services exports, %	10.5	38	
6.3.4	FDI net outflows, % GDP	0.4	63	
7	**Creative outputs**	**34.8**	**84**	
7.1	Intangible assets	30.9	117	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	21.3	64	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	2.4	9	●
7.1.3	ICT & business model creation†	39.9	126	○
7.1.4	ICT & organizational model creation†	32.9	128	○
7.2	Creative goods & services	43.8	40	
7.2.1	Audio-visual & related services exports, %	0.6	16	●
7.2.2	National feature films/mn pop. 15–69	4.1	35	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	14.8	34	
7.2.4	Printing & publishing manufactures, %	2.0	41	
7.2.5	Creative goods exports, %	1.1	47	
7.3	Online creativity	33.4	50	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.6	113	○
7.3.2	Country-code TLDs/th pop. 15–69	33.7	51	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	3,973.8	38	
7.3.4	Video uploads on YouTub/pop. 15–69	76.4	57	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	5.4
GDP (US$ billions)	267.9
GDP per capita, PPP$	60,883.3
Income group	High income
Region	South East Asia and Oceania

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**59.4**	**8**	
Innovation Output Sub-Index		46.6	18	
Innovation Input Sub-Index		72.3	1	●
Innovation Efficiency Ratio		0.6	121	○
Global Innovation Index 2012 (based on GII 2012 framework)		63.5	3	
1	**Institutions**	**92.2**	**7**	
1.1	Political environment	83.3	17	
1.1.1	Political stability*	95.8	10	
1.1.2	Government effectiveness*	97.5	3	●
1.1.3	Press freedom*	56.6	120	○
1.2	Regulatory environment	97.5	4	●
1.2.1	Regulatory quality*	97.2	7	
1.2.2	Rule of law*	92.9	13	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	
1.3	Business environment	95.9	1	●
1.3.1	Ease of starting a business*	95.9	8	
1.3.2	Ease of resolving insolvency*	96.8	2	●
1.3.3	Ease of paying taxes*	95.0	5	
2	**Human capital & research**	**63.2**	**3**	●
2.1	Education	55.7	61	
2.1.1	Current expenditure on education, % GNI	3.0	92	○
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	543.2	4	
2.1.5	Pupil-teacher ratio, secondary	14.9	68	○
2.2	Tertiary education	81.4	1	●
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	20.2	8	
2.2.4	Gross tertiary outbound enrolment, %	n/a	n/a	
2.3	Research & development (R&D)	52.4	17	
2.3.1	Researchers, headcounts/mn pop.	7,188.0	7	
2.3.2	Gross expenditure on R&D, % GDP	2.1	16	
2.3.3	QS university ranking, average score top 3*	55.0	19	
3	**Infrastructure**	**59.2**	**6**	
3.1	Information & communication technologies (ICTs)	87.3	2	●
3.1.1	ICT access*	83.8	8	
3.1.2	ICT use*	70.7	8	
3.1.3	Government's online service*	100.0	1	●
3.1.4	E-participation*	94.7	3	●
3.2	General infrastructure	47.1	14	
3.2.1	Electricity output, kWh/cap	8,930.9	16	
3.2.2	Electricity consumption, kWh/cap	8,306.3	17	
3.2.3	Logistics performance*	78.3	1	●
3.2.4	Gross capital formation, % GDP	22.9	71	○
3.3	Ecological sustainability	43.1	26	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.1	36	
3.3.2	Environmental performance*	56.4	50	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	4.8	22	
4	**Market sophistication**	**77.6**	**5**	
4.1	Credit	70.2	15	
4.1.1	Ease of getting credit*	87.5	12	
4.1.2	Domestic credit to private sector, % GDP	112.6	25	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	73.9	5	
4.2.1	Ease of protecting investors*	96.7	2	●
4.2.2	Market capitalization, % GDP	128.6	5	
4.2.3	Total value of stocks traded, % GDP	105.9	6	
4.2.4	Venture capital deals/tr PPP$ GDP	0.1	15	
4.3	Trade & competition	88.7	4	●
4.3.1	Applied tariff rate, weighted mean, %	0.0	1	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.9	69	○
4.3.3	Intensity of local competition†	75.7	19	
5	**Business sophistication**	**69.2**	**1**	●
5.1	Knowledge workers	81.5	1	●
5.1.1	Knowledge-intensive employment, %	51.0	1	●
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	1.3	18	
5.1.4	R&D financed by business, %	53.1	17	
5.1.5	GMAT mean score	601.3	2	●
5.1.6	GMAT test takers/mn pop. 20–34	1,230.5	5	
5.2	Innovation linkages	49.8	12	
5.2.1	University/industry research collaboration†	76.5	5	
5.2.2	State of cluster development†	69.1	4	
5.2.3	R&D financed by abroad, %	4.9	58	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.2	7	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	1.3	18	
5.3	Knowledge absorption	76.1	1	●
5.3.1	Royalty & license fees payments, % service imports	17.0	1	
5.3.2	High-tech imports less re-imports, %	28.1	1	●
5.3.3	Comm., computer & info. services imports, %	2.9	90	○
5.3.4	FDI net inflows, % GDP	26.7	1	
6	**Knowledge & technology outputs**	**48.5**	**11**	
6.1	Knowledge creation	32.3	30	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	3.4	40	
6.1.2	PCT resident patent ap/bn PPP$ GDP	2.2	19	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	31.0	27	
6.1.5	Citable documents H index	240.0	29	
6.2	Knowledge impact	56.0	6	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.8	41	
6.2.2	New businesses/th pop. 15–64	8.4	10	
6.2.3	Computer software spending, % GDP	0.4	24	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	17.9	26	
6.2.5	High- & medium-high-tech manufactures, %	64.0	1	●
6.3	Knowledge diffusion	49.2	14	
6.3.1	Royalty & license fees receipts, % service exports	1.7	27	
6.3.2	High-tech exports less re-exports, %	32.8	1	●
6.3.3	Comm., computer & info. services exports, %	2.7	108	○
6.3.4	FDI net outflows, % GDP	9.3	6	
7	**Creative outputs**	**44.6**	**40**	
7.1	Intangible assets	41.9	78	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	13.3	76	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.7	35	○
7.1.3	ICT & business model creation†	76.5	5	
7.1.4	ICT & organizational model creation†	73.0	7	
7.2	Creative goods & services	48.6	24	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	3.7	37	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	23.9	17	
7.2.4	Printing & publishing manufactures, %	1.1	71	○
7.2.5	Creative goods exports, %	7.0	10	
7.3	Online creativity	45.8	34	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	39.1	22	
7.3.2	Country-code TLDs/th pop. 15–69	49.3	37	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,594.7	59	
7.3.4	Video uploads on YouTube/pop. 15–69	85.6	16	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Slovakia

Key indicators

Population (millions)	5.6
GDP (US$ billions)	91.2
GDP per capita, PPP$	24,283.6
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**42.2**	**36**	
Innovation Output Sub-Index		36.2	45	
Innovation Input Sub-Index		48.3	37	
Innovation Efficiency Ratio		0.7	84	
Global Innovation Index 2012 (based on GII 2012 framework)		41.4	40	
1	**Institutions**	**77.4**	**27**	
1.1	Political environment	79.5	24	●
1.1.1	Political stability*	89.8	22	●
1.1.2	Government effectiveness*	61.9	36	
1.1.3	Press freedom*	86.8	21	●
1.2	Regulatory environment	81.7	30	
1.2.1	Regulatory quality*	76.5	29	
1.2.2	Rule of law*	64.6	42	
1.2.3	Cost of redundancy dismissal, salary weeks	11.6	50	
1.3	Business environment	71.0	41	
1.3.1	Ease of starting a business*	86.7	56	
1.3.2	Ease of resolving insolvency*	57.2	35	
1.3.3	Ease of paying taxes*	69.2	73	
2	**Human capital & research**	**39.5**	**41**	
2.1	Education	54.4	68	
2.1.1	Current expenditure on education, % GNI	4.1	73	
2.1.2	Public expenditure/pupil, % GDP/cap	19.0	62	
2.1.3	School life expectancy, years	14.7	41	
2.1.4	PISA scales in reading, maths, & science	488.1	28	
2.1.5	Pupil-teacher ratio, secondary	12.0	42	
2.2	Tertiary education	47.7	22	●
2.2.1	Tertiary enrolment, % gross	54.8	44	
2.2.2	Graduates in science & engineering, %	20.8	41	
2.2.3	Tertiary inbound mobility, %	3.4	45	
2.2.4	Gross tertiary outbound enrolment, %	7.2	9	●
2.3	Research & development (R&D)	16.5	47	
2.3.1	Researchers, headcounts/mn pop.	4,516.3	21	●
2.3.2	Gross expenditure on R&D, % GDP	0.7	45	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**42.2**	**38**	
3.1	Information & communication technologies (ICTs)	39.8	60	
3.1.1	ICT access*	63.2	45	
3.1.2	ICT use*	32.4	46	
3.1.3	Government's online service*	50.3	66	
3.1.4	E-participation*	13.2	84	
3.2	General infrastructure	31.4	60	
3.2.1	Electricity output, kWh/cap	4,716.1	47	
3.2.2	Electricity consumption, kWh/cap	4,764.4	42	
3.2.3	Logistics performance*	50.8	50	
3.2.4	Gross capital formation, % GDP	21.8	76	
3.3	Ecological sustainability	55.3	11	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.7	56	
3.3.2	Environmental performance*	66.6	12	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	9.1	9	●
4	**Market sophistication**	**49.1**	**52**	
4.1	Credit	50.5	43	
4.1.1	Ease of getting credit*	81.3	22	
4.1.2	Domestic credit to private sector, % GDP	45.0	75	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	16.4	120	○
4.2.1	Ease of protecting investors*	48.1	99	○
4.2.2	Market capitalization, % GDP	4.9	100	○
4.2.3	Total value of stocks traded, % GDP	0.5	86	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	62	
4.3	Trade & competition	80.4	35	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	74.6	25	●
5	**Business sophistication**	**33.4**	**59**	
5.1	Knowledge workers	47.4	55	
5.1.1	Knowledge-intensive employment, %	30.6	30	
5.1.2	Firms offering formal training, % firms	33.1	54	
5.1.3	R&D performed by business, % GDP	0.3	43	
5.1.4	R&D financed by business, %	33.9	49	
5.1.5	GMAT mean score	577.0	17	●
5.1.6	GMAT test takers/mn pop. 20–34	77.6	64	
5.2	Innovation linkages	23.6	78	
5.2.1	University/industry research collaboration†	37.1	98	○
5.2.2	State of cluster development†	43.0	72	
5.2.3	R&D financed by abroad, %	14.2	25	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	112	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.1	37	
5.3	Knowledge absorption	29.3	57	
5.3.1	Royalty & license fees payments, % service imports	2.2	60	
5.3.2	High-tech imports less re-imports, %	11.2	39	
5.3.3	Comm., computer & info. services imports, %	5.4	52	
5.3.4	FDI net inflows, % GDP	3.8	62	
6	**Knowledge & technology outputs**	**33.3**	**42**	
6.1	Knowledge creation	19.3	46	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.1	54	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.3	47	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	2.8	14	
6.1.4	Scientific & technical articles/bn PPP$ GDP	22.0	41	
6.1.5	Citable documents H index	138.0	41	
6.2	Knowledge impact	49.0	21	●
6.2.1	Growth rate of PPP$ GDP/worker, %	1.2	81	○
6.2.2	New businesses/th pop. 15–64	4.8	21	
6.2.3	Computer software spending, % GDP	0.3	33	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	29.8	14	●
6.2.5	High- & medium-high-tech manufactures, %	53.2	7	●
6.3	Knowledge diffusion	24.5	78	
6.3.1	Royalty & license fees receipts, % service exports	0.1	89	○
6.3.2	High-tech exports less re-exports, %	6.3	33	
6.3.3	Comm., computer & info. services exports, %	10.1	40	
6.3.4	FDI net outflows, % GDP	0.5	58	
7	**Creative outputs**	**39.1**	**61**	
7.1	Intangible assets	38.2	94	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	56.2	32	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.8	31	
7.1.3	ICT & business model creation†	55.8	75	
7.1.4	ICT & organizational model creation†	52.0	73	
7.2	Creative goods & services	38.5	56	
7.2.1	Audio-visual & related services exports, %	0.1	46	
7.2.2	National feature films/mn pop. 15–69	2.9	48	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	9.1	61	
7.2.4	Printing & publishing manufactures, %	0.9	81	○
7.2.5	Creative goods exports, %	12.3	2	●
7.3	Online creativity	41.3	39	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4.3	66	
7.3.2	Country-code TLDs/th pop. 15–69	58.6	23	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	4,163.8	36	
7.3.4	Video uploads on YouTube/pop. 15–69	78.3	43	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Slovenia

Key indicators

Population (millions)	2.1
GDP (US$ billions)	45.4
GDP per capita, PPP$	28,647.7
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**47.3**	**30**	
Innovation Output Sub-Index		41.4	34	
Innovation Input Sub-Index		53.2	29	
Innovation Efficiency Ratio		0.8	70	
Global Innovation Index 2012 (based on GII 2012 framework)		49.9	26	
1	**Institutions**	**78.4**	**25**	
1.1	Political environment	77.3	29	
1.1.1	Political stability*	86.8	31	
1.1.2	Government effectiveness*	65.4	32	
1.1.3	Press freedom*	79.5	31	
1.2	Regulatory environment	82.1	27	
1.2.1	Regulatory quality*	66.1	43	
1.2.2	Rule of law*	76.1	26	
1.2.3	Cost of redundancy dismissal, salary weeks	11.4	48	
1.3	Business environment	75.8	28	
1.3.1	Ease of starting a business*	95.1	11	●
1.3.2	Ease of resolving insolvency*	53.2	38	
1.3.3	Ease of paying taxes*	79.1	36	
2	**Human capital & research**	**48.6**	**26**	
2.1	Education	69.6	17	
2.1.1	Current expenditure on education, % GNI	5.4	32	
2.1.2	Public expenditure/pupil, % GDP/cap	28.2	13	
2.1.3	School life expectancy, years	17.0	8	●
2.1.4	PISA scales in reading, maths, & science	498.8	20	
2.1.5	Pupil-teacher ratio, secondary	7.2	3	●
2.2	Tertiary education	41.1	43	
2.2.1	Tertiary enrolment, % gross	89.6	4	●
2.2.2	Graduates in science & engineering, %	21.1	39	
2.2.3	Tertiary inbound mobility, %	1.7	63	
2.2.4	Gross tertiary outbound enrolment, %	1.9	55	
2.3	Research & development (R&D)	35.2	26	
2.3.1	Researchers, headcounts/mn pop.	5,447.2	16	
2.3.2	Gross expenditure on R&D, % GDP	2.5	12	
2.3.3	QS university ranking, average score top 3*	7.1	61	
3	**Infrastructure**	**45.9**	**29**	
3.1	Information & communication technologies (ICTs)	52.8	38	
3.1.1	ICT access*	72.9	25	
3.1.2	ICT use*	50.6	25	
3.1.3	Government's online service*	66.7	35	
3.1.4	E-participation*	21.1	64	
3.2	General infrastructure	35.5	42	
3.2.1	Electricity output, kWh/cap	7,724.3	24	
3.2.2	Electricity consumption, kWh/cap	6,728.6	26	
3.2.3	Logistics performance*	57.3	34	
3.2.4	Gross capital formation, % GDP	18.8	106	○
3.3	Ecological sustainability	49.5	16	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.1	49	
3.3.2	Environmental performance*	62.3	28	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	7.1	13	●
4	**Market sophistication**	**50.9**	**43**	
4.1	Credit	46.2	49	
4.1.1	Ease of getting credit*	50.0	93	○
4.1.2	Domestic credit to private sector, % GDP	91.4	36	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	27.5	62	
4.2.1	Ease of protecting investors*	76.7	17	
4.2.2	Market capitalization, % GDP	12.8	87	○
4.2.3	Total value of stocks traded, % GDP	1.0	73	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	47	
4.3	Trade & competition	78.9	51	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	70.0	40	
5	**Business sophistication**	**42.3**	**34**	
5.1	Knowledge workers	56.4	38	
5.1.1	Knowledge-intensive employment, %	24.8	48	
5.1.2	Firms offering formal training, % firms	47.5	35	
5.1.3	R&D performed by business, % GDP	1.9	11	
5.1.4	R&D financed by business, %	61.2	10	
5.1.5	GMAT mean score	518.3	59	
5.1.6	GMAT test takers/mn pop. 20–34	91.7	57	
5.2	Innovation linkages	31.0	49	
5.2.1	University/industry research collaboration†	48.1	47	
5.2.2	State of cluster development†	44.7	66	
5.2.3	R&D financed by abroad, %	7.0	49	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	40	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.7	25	
5.3	Knowledge absorption	39.4	20	
5.3.1	Royalty & license fees payments, % service imports	8.2	11	●
5.3.2	High-tech imports less re-imports, %	6.6	84	○
5.3.3	Comm., computer & info. services imports, %	12.5	4	●
5.3.4	FDI net inflows, % GDP	1.7	102	○
6	**Knowledge & technology outputs**	**36.4**	**34**	
6.1	Knowledge creation	25.7	38	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.2	51	
6.1.2	PCT resident patent ap/bn PPP$ GDP	2.0	22	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.2	49	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	60.1	5	●
6.1.5	Citable documents H index	141.0	40	
6.2	Knowledge impact	52.1	15	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.7	65	
6.2.2	New businesses/th pop. 15–64	4.0	31	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	28.4	17	
6.2.5	High- & medium-high-tech manufactures, %	45.2	13	
6.3	Knowledge diffusion	26.1	64	
6.3.1	Royalty & license fees receipts, % service exports	0.8	41	
6.3.2	High-tech exports less re-exports, %	5.3	37	
6.3.3	Comm., computer & info. services exports, %	7.8	59	
6.3.4	FDI net outflows, % GDP	0.2	74	○
7	**Creative outputs**	**46.4**	**35**	
7.1	Intangible assets	43.9	64	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	10.7	83	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	3.7	5	●
7.1.3	ICT & business model creation†	58.1	67	
7.1.4	ICT & organizational model creation†	51.2	78	
7.2	Creative goods & services	41.7	46	
7.2.1	Audio-visual & related services exports, %	0.2	41	
7.2.2	National feature films/mn pop. 15–69	12.6	8	●
7.2.3	Paid-for dailies, circulation, % pop. 15–69	16.5	28	
7.2.4	Printing & publishing manufactures, %	2.3	32	
7.2.5	Creative goods exports, %	1.0	51	
7.3	Online creativity	56.3	25	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	36.6	23	
7.3.2	Country-code TLDs/th pop. 15–69	58.5	24	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	8,306.3	14	●
7.3.4	Video uploads on YouTube/pop. 15–69	81.9	30	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

South Africa

Key indicators

Population (millions)	51.1
GDP (US$ billions)	390.9
GDP per capita, PPP$	11,302.2
Income group	Upper-middle income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**37.6**	**58**	
Innovation Output Sub-Index		31.3	71	
Innovation Input Sub-Index		43.9	51	
Innovation Efficiency Ratio		0.7	99	
Global Innovation Index 2012 (based on GII 2012 framework)		37.4	54	
1	**Institutions**	**70.1**	**44**	
1.1	Political environment	63.5	51	
1.1.1	Political stability*	66.6	68	
1.1.2	Government effectiveness*	48.5	52	
1.1.3	Press freedom*	75.4	43	
1.2	Regulatory environment	76.4	42	
1.2.1	Regulatory quality*	61.0	53	
1.2.2	Rule of law*	49.9	55	
1.2.3	Cost of redundancy dismissal, salary weeks	9.3	33	●
1.3	Business environment	70.4	45	
1.3.1	Ease of starting a business*	89.0	35	
1.3.2	Ease of resolving insolvency*	38.2	75	
1.3.3	Ease of paying taxes*	83.9	25	●
2	**Human capital & research**	**23.7**	**102**	
2.1	Education	48.6	82	
2.1.1	Current expenditure on education, % GNI	5.5	30	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	25.0	107	○
2.2	Tertiary education	0.6	141	○
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.1	135	○
2.3	Research & development (R&D)	21.8	38	
2.3.1	Researchers, headcounts/mn pop.	820.0	57	
2.3.2	Gross expenditure on R&D, % GDP	0.9	36	
2.3.3	QS university ranking, average score top 3*	39.5	33	●
3	**Infrastructure**	**28.5**	**83**	
3.1	Information & communication technologies (ICTs)	28.5	87	
3.1.1	ICT access*	37.9	86	
3.1.2	ICT use*	14.6	86	
3.1.3	Government's online service*	45.8	81	
3.1.4	E-participation*	15.8	79	
3.2	General infrastructure	36.6	39	
3.2.1	Electricity output, kWh/cap	5,134.0	41	
3.2.2	Electricity consumption, kWh/cap	4,802.6	40	
3.2.3	Logistics performance*	66.8	22	●
3.2.4	Gross capital formation, % GDP	21.0	84	
3.3	Ecological sustainability	20.3	114	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.5	105	○
3.3.2	Environmental performance*	34.5	120	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.5	48	
4	**Market sophistication**	**66.0**	**16**	●
4.1	Credit	56.9	31	●
4.1.1	Ease of getting credit*	100.0	1	●
4.1.2	Domestic credit to private sector, % GDP	135.0	16	●
4.1.3	Microfinance gross loans, % GDP	0.6	47	
4.2	Investment	63.9	10	●
4.2.1	Ease of protecting investors*	83.0	10	●
4.2.2	Market capitalization, % GDP	209.6	1	●
4.2.3	Total value of stocks traded, % GDP	91.2	10	●
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	71	
4.3	Trade & competition	77.1	65	
4.3.1	Applied tariff rate, weighted mean, %	4.4	75	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.3	82	
4.3.3	Intensity of local competition†	67.8	51	
5	**Business sophistication**	**31.5**	**71**	
5.1	Knowledge workers	37.9	90	
5.1.1	Knowledge-intensive employment, %	15.2	82	○
5.1.2	Firms offering formal training, % firms	36.8	47	
5.1.3	R&D performed by business, % GDP	0.5	34	
5.1.4	R&D financed by business, %	42.5	38	
5.1.5	GMAT mean score	472.7	94	
5.1.6	GMAT test takers/mn pop. 20–34	60.6	75	
5.2	Innovation linkages	28.3	59	
5.2.1	University/industry research collaboration†	58.5	29	●
5.2.2	State of cluster development†	50.1	47	
5.2.3	R&D financed by abroad, %	12.1	29	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	51	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	53	
5.3	Knowledge absorption	28.2	61	
5.3.1	Royalty & license fees payments, % service imports	10.8	6	●
5.3.2	High-tech imports less re-imports, %	11.0	40	
5.3.3	Comm., computer & info. services imports, %	2.6	95	
5.3.4	FDI net inflows, % GDP	1.4	114	○
6	**Knowledge & technology outputs**	**24.7**	**79**	
6.1	Knowledge creation	17.4	52	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.2	64	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.5	38	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	15.0	55	
6.1.5	Citable documents H index	216.0	33	●
6.2	Knowledge impact	34.1	68	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.5	31	
6.2.2	New businesses/th pop. 15–64	0.8	75	
6.2.3	Computer software spending, % GDP	0.4	26	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	6.1	60	
6.2.5	High- & medium-high-tech manufactures, %	26.2	38	
6.3	Knowledge diffusion	19.1	103	
6.3.1	Royalty & license fees receipts, % service exports	0.4	56	
6.3.2	High-tech exports less re-exports, %	2.5	56	
6.3.3	Comm., computer & info. services exports, %	3.6	100	
6.3.4	FDI net outflows, % GDP	–0.1	117	○
7	**Creative outputs**	**37.8**	**68**	
7.1	Intangible assets	45.9	54	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	31.9	50	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	63.3	43	
7.1.4	ICT & organizational model creation†	56.4	52	
7.2	Creative goods & services	33.2	75	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	0.6	86	○
7.2.3	Paid-for dailies, circulation, % pop. 15–69	4.5	87	
7.2.4	Printing & publishing manufactures, %	2.3	33	
7.2.5	Creative goods exports, %	0.7	62	
7.3	Online creativity	26.2	75	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4.5	64	
7.3.2	Country-code TLDs/th pop. 15–69	44.7	42	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	313.9	101	○
7.3.4	Video uploads on YouTube/pop. 15–69	53.7	107	○

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	49.2
GDP (US$ billions)	1,340.3
GDP per capita, PPP$	30,412.1
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**49.4**	**26**	
Innovation Output Sub-Index		41.0	35	
Innovation Input Sub-Index		57.9	24	
Innovation Efficiency Ratio		0.7	101	○
Global Innovation Index 2012 (based on GII 2012 framework)		47.2	29	
1	**Institutions**	**77.4**	**28**	
1.1	Political environment	71.8	43	
1.1.1	Political stability*	69.4	62	
1.1.2	Government effectiveness*	66.4	29	
1.1.3	Press freedom*	79.5	32	
1.2	Regulatory environment	80.0	34	
1.2.1	Regulatory quality*	78.1	27	
1.2.2	Rule of law*	79.6	24	
1.2.3	Cost of redundancy dismissal, salary weeks	17.4	86	○
1.3	Business environment	80.3	20	
1.3.1	Ease of starting a business*	77.0	96	○
1.3.2	Ease of resolving insolvency*	81.2	19	
1.3.3	Ease of paying taxes*	82.8	28	
2	**Human capital & research**	**47.9**	**27**	
2.1	Education	62.5	37	
2.1.1	Current expenditure on education, % GNI	4.6	54	
2.1.2	Public expenditure/pupil, % GDP/cap	24.7	31	
2.1.3	School life expectancy, years	16.8	10	●
2.1.4	PISA scales in reading, maths, & science	484.3	32	
2.1.5	Pupil-teacher ratio, secondary	10.8	31	
2.2	Tertiary education	42.1	40	
2.2.1	Tertiary enrolment, % gross	78.1	11	●
2.2.2	Graduates in science & engineering, %	25.1	22	
2.2.3	Tertiary inbound mobility, %	3.0	48	
2.2.4	Gross tertiary outbound enrolment, %	1.0	78	○
2.3	Research & development (R&D)	39.2	25	
2.3.1	Researchers, headcounts/mn pop.	4,861.4	19	
2.3.2	Gross expenditure on R&D, % GDP	1.3	27	
2.3.3	QS university ranking, average score top 3*	50.5	22	
3	**Infrastructure**	**54.6**	**12**	●
3.1	Information & communication technologies (ICTs)	61.2	27	
3.1.1	ICT access*	71.2	28	
3.1.2	ICT use*	47.7	28	
3.1.3	Government's online service*	75.8	23	
3.1.4	E-participation*	50.0	31	
3.2	General infrastructure	37.8	34	
3.2.1	Electricity output, kWh/cap	6,293.2	35	
3.2.2	Electricity consumption, kWh/cap	5,968.4	32	
3.2.3	Logistics performance*	67.5	19	
3.2.4	Gross capital formation, % GDP	19.6	99	○
3.3	Ecological sustainability	64.9	2	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	9.9	16	●
3.3.2	Environmental performance*	60.3	31	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	11.6	4	●
4	**Market sophistication**	**72.2**	**10**	●
4.1	Credit	83.8	7	●
4.1.1	Ease of getting credit*	68.8	51	
4.1.2	Domestic credit to private sector, % GDP	205.9	4	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	52.0	15	●
4.2.1	Ease of protecting investors*	52.2	82	○
4.2.2	Market capitalization, % GDP	69.8	23	
4.2.3	Total value of stocks traded, % GDP	96.1	8	●
4.2.4	Venture capital deals/tr PPP$ GDP	0.1	21	
4.3	Trade & competition	80.6	33	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	75.3	21	
5	**Business sophistication**	**37.2**	**45**	
5.1	Knowledge workers	57.7	35	
5.1.1	Knowledge-intensive employment, %	32.4	25	
5.1.2	Firms offering formal training, % firms	51.3	27	
5.1.3	R&D performed by business, % GDP	0.7	27	
5.1.4	R&D financed by business, %	43.0	37	
5.1.5	GMAT mean score	575.6	18	●
5.1.6	GMAT test takers/mn pop. 20–34	128.4	45	
5.2	Innovation linkages	27.8	63	
5.2.1	University/industry research collaboration†	50.9	43	
5.2.2	State of cluster development†	50.8	42	
5.2.3	R&D financed by abroad, %	5.7	56	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	76	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.4	28	
5.3	Knowledge absorption	26.1	76	○
5.3.1	Royalty & license fees payments, % service imports	2.8	53	
5.3.2	High-tech imports less re-imports, %	8.3	64	○
5.3.3	Comm., computer & info. services imports, %	6.3	40	
5.3.4	FDI net inflows, % GDP	2.1	87	○
6	**Knowledge & technology outputs**	**36.8**	**31**	
6.1	Knowledge creation	30.7	31	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	3.4	37	
6.1.2	PCT resident patent ap/bn PPP$ GDP	1.2	29	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.8	20	
6.1.4	Scientific & technical articles/bn PPP$ GDP	34.9	23	
6.1.5	Citable documents H index	448.0	12	●
6.2	Knowledge impact	51.5	17	●
6.2.1	Growth rate of PPP$ GDP/worker, %	1.7	66	○
6.2.2	New businesses/th pop. 15–64	2.6	39	
6.2.3	Computer software spending, % GDP	0.7	10	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	37.7	6	●
6.2.5	High- & medium-high-tech manufactures, %	33.4	28	
6.3	Knowledge diffusion	25.1	74	○
6.3.1	Royalty & license fees receipts, % service exports	0.7	43	
6.3.2	High-tech exports less re-exports, %	4.7	40	
6.3.3	Comm., computer & info. services exports, %	6.3	69	○
6.3.4	FDI net outflows, % GDP	2.5	25	
7	**Creative outputs**	**45.1**	**39**	
7.1	Intangible assets	41.5	83	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	55.7	33	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.8	33	
7.1.3	ICT & business model creation†	65.4	37	
7.1.4	ICT & organizational model creation†	56.8	50	
7.2	Creative goods & services	45.1	35	
7.2.1	Audio-visual & related services exports, %	0.7	14	
7.2.2	National feature films/mn pop. 15–69	5.9	27	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	10.5	55	
7.2.4	Printing & publishing manufactures, %	2.0	40	
7.2.5	Creative goods exports, %	1.5	43	
7.3	Online creativity	52.4	27	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	34.6	24	
7.3.2	Country-code TLDs/th pop. 15–69	53.3	31	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	6,438.1	25	
7.3.4	Video uploads on YouTube/pop. 15–69	84.2	21	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Sri Lanka

Key indicators

Population (millions)	21.6
GDP (US$ billions)	59.8
GDP per capita, PPP$	6,102.6
Income group	Lower-middle income
Region	Central and Southern Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**30.4**	**98**	
Innovation Output Sub-Index		30.3	76	
Innovation Input Sub-Index		30.6	118	
Innovation Efficiency Ratio		1.0	13	●
Global Innovation Index 2012 (based on GII 2012 framework)		29.1	94	
1	**Institutions**	**42.4**	**134**	○
1.1	Political environment	44.1	109	
1.1.1	Political stability*	52.8	99	
1.1.2	Government effectiveness*	36.1	73	
1.1.3	Press freedom*	43.4	131	○
1.2	Regulatory environment	23.1	138	○
1.2.1	Regulatory quality*	47.1	79	
1.2.2	Rule of law*	45.2	63	
1.2.3	Cost of redundancy dismissal, salary weeks	69.3	138	○
1.3	Business environment	60.1	84	
1.3.1	Ease of starting a business*	89.4	32	●
1.3.2	Ease of resolving insolvency*	47.1	47	●
1.3.3	Ease of paying taxes*	43.9	128	○
2	**Human capital & research**	**19.7**	**110**	
2.1	Education	35.3	115	
2.1.1	Current expenditure on education, % GNI	1.7	110	○
2.1.2	Public expenditure/pupil, % GDP/cap	8.4	109	○
2.1.3	School life expectancy, years	13.8	55	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	16.7	82	
2.2	Tertiary education	21.4	96	
2.2.1	Tertiary enrolment, % gross	15.5	96	
2.2.2	Graduates in science & engineering, %	18.1	57	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	1.0	76	
2.3	Research & development (R&D)	2.5	92	
2.3.1	Researchers, headcounts/mn pop.	197.2	79	
2.3.2	Gross expenditure on R&D, % GDP	0.1	93	○
2.3.3	QS university ranking, average score top 3*	3.9	67	
3	**Infrastructure**	**28.2**	**85**	
3.1	Information & communication technologies (ICTs)	22.2	103	
3.1.1	ICT access*	33.0	99	
3.1.2	ICT use*	10.0	98	
3.1.3	Government's online service*	37.9	97	
3.1.4	E-participation*	7.9	99	
3.2	General infrastructure	27.1	88	
3.2.1	Electricity output, kWh/cap	516.0	108	○
3.2.2	Electricity consumption, kWh/cap	444.7	108	○
3.2.3	Logistics performance*	43.8	81	
3.2.4	Gross capital formation, % GDP	29.2	23	●
3.3	Ecological sustainability	35.2	49	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	9.6	18	●
3.3.2	Environmental performance*	55.7	53	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.8	68	
4	**Market sophistication**	**40.6**	**103**	
4.1	Credit	28.9	103	
4.1.1	Ease of getting credit*	62.5	68	
4.1.2	Domestic credit to private sector, % GDP	30.6	98	
4.1.3	Microfinance gross loans, % GDP	1.1	37	
4.2	Investment	29.0	54	
4.2.1	Ease of protecting investors*	61.9	42	●
4.2.2	Market capitalization, % GDP	32.8	52	
4.2.3	Total value of stocks traded, % GDP	8.4	46	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	41	●
4.3	Trade & competition	64.0	116	
4.3.1	Applied tariff rate, weighted mean, %	6.9	98	
4.3.2	Non-agricultural mkt access weighted tariff, %	4.4	135	○
4.3.3	Intensity of local competition†	74.9	24	●
5	**Business sophistication**	**22.1**	**124**	○
5.1	Knowledge workers	33.0	110	
5.1.1	Knowledge-intensive employment, %	18.7	71	
5.1.2	Firms offering formal training, % firms	32.6	56	
5.1.3	R&D performed by business, % GDP	0.0	74	○
5.1.4	R&D financed by business, %	19.9	65	
5.1.5	GMAT mean score	491.9	83	
5.1.6	GMAT test takers/mn pop. 20–34	29.1	104	
5.2	Innovation linkages	20.1	96	
5.2.1	University/industry research collaboration†	33.0	115	○
5.2.2	State of cluster development†	55.5	27	●
5.2.3	R&D financed by abroad, %	4.3	60	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	52	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	60	
5.3	Knowledge absorption	13.1	134	○
5.3.1	Royalty & license fees payments, % service imports	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	5.5	98	
5.3.3	Comm., computer & info. services imports, %	1.4	119	○
5.3.4	FDI net inflows, % GDP	1.6	106	
6	**Knowledge & technology outputs**	**26.4**	**68**	
6.1	Knowledge creation	6.8	90	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.1	53	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	65	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.8	116	
6.1.5	Citable documents H index	78.0	75	
6.2	Knowledge impact	32.5	79	
6.2.1	Growth rate of PPP$ GDP/worker, %	6.2	5	●
6.2.2	New businesses/th pop. 15–64	0.6	83	
6.2.3	Computer software spending, % GDP	0.3	34	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.6	75	
6.2.5	High- & medium-high-tech manufactures, %	10.7	76	
6.3	Knowledge diffusion	30.2	44	●
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.7	81	
6.3.3	Comm., computer & info. services exports, %	14.3	26	●
6.3.4	FDI net outflows, % GDP	0.1	87	
7	**Creative outputs**	**34.2**	**87**	
7.1	Intangible assets	42.2	75	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	5.4	86	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	65.3	39	●
7.1.4	ICT & organizational model creation†	58.4	41	●
7.2	Creative goods & services	34.1	71	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	4.0	92	
7.2.4	Printing & publishing manufactures, %	1.9	44	
7.2.5	Creative goods exports, %	0.6	63	
7.3	Online creativity	18.1	100	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.5	79	
7.3.2	Country-code TLDs/th pop. 15–69	6.2	108	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	304.3	102	
7.3.4	Video uploads on YouTube/pop. 15–69	61.9	96	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	45.9
GDP (US$ billions)	51.6
GDP per capita, PPP$	2,400.2
Income group	Lower-middle income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**19.8**	**141**	○
	Innovation Output Sub-Index	13.1	142	○
	Innovation Input Sub-Index	26.5	136	
	Innovation Efficiency Ratio	0.5	138	
	Global Innovation Index 2012 (based on GII 2012 framework)	16.8	141	
1	**Institutions**	**36.2**	**139**	
1.1	Political environment	10.8	142	○
1.1.1	Political stability*	2.2	141	○
1.1.2	Government effectiveness*	0.2	141	○
1.1.3	Press freedom*	29.9	136	
1.2	Regulatory environment	39.2	132	
1.2.1	Regulatory quality*	15.7	138	
1.2.2	Rule of law*	13.3	137	
1.2.3	Cost of redundancy dismissal, salary weeks	26.0	111	
1.3	Business environment	58.6	89	●
1.3.1	Ease of starting a business*	74.2	102	●
1.3.2	Ease of resolving insolvency*	35.8	78	●
1.3.3	Ease of paying taxes*	65.7	82	●
2	**Human capital & research**	**35.9**	**54**	●
2.1	Education	71.8	9	●
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	16.6	80	●
2.2	Tertiary education	n/a	n/a	
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	n/a	n/a	
2.3	Research & development (R&D)	0.0	123	○
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**18.3**	**127**	
3.1	Information & communication technologies (ICTs)	16.7	118	
3.1.1	ICT access*	n/a	n/a	
3.1.2	ICT use*	n/a	n/a	
3.1.3	Government's online service*	25.5	125	
3.1.4	E-participation*	7.9	99	
3.2	General infrastructure	14.8	139	
3.2.1	Electricity output, kWh/cap	180.1	118	
3.2.2	Electricity consumption, kWh/cap	140.7	119	
3.2.3	Logistics performance*	27.5	135	○
3.2.4	Gross capital formation, % GDP	18.7	107	●
3.3	Ecological sustainability	23.5	97	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.5	77	●
3.3.2	Environmental performance*	46.0	99	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.0	131	
4	**Market sophistication**	**29.7**	**137**	
4.1	Credit	9.8	139	
4.1.1	Ease of getting credit*	25.0	135	
4.1.2	Domestic credit to private sector, % GDP	11.4	136	
4.1.3	Microfinance gross loans, % GDP	0.1	70	●
4.2	Investment	17.8	110	
4.2.1	Ease of protecting investors*	35.6	127	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	61.7	122	
4.3.1	Applied tariff rate, weighted mean, %	14.8	135	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.1	26	●
4.3.3	Intensity of local competition†	n/a	n/a	
5	**Business sophistication**	**12.4**	**140**	○
5.1	Knowledge workers	23.1	129	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	437.5	114	
5.1.6	GMAT test takers/mn pop. 20–34	1.5	140	○
5.2	Innovation linkages	0.0	140	○
5.2.1	University/industry research collaboration†	n/a	n/a	
5.2.2	State of cluster development†	n/a	n/a	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	14.1	130	
5.3.1	Royalty & license fees payments, % service imports	0.1	120	
5.3.2	High-tech imports less re-imports, %	8.3	65	●
5.3.3	Comm., computer & info. services imports, %	0.3	138	○
5.3.4	FDI net inflows, % GDP	3.0	69	●
6	**Knowledge & technology outputs**	**22.5**	**89**	●
6.1	Knowledge creation	2.4	135	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.0	112	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.1	121	
6.1.5	Citable documents H index	48.0	110	
6.2	Knowledge impact	18.7	117	
6.2.1	Growth rate of PPP$ GDP/worker, %	–3.1	115	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.9	120	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	36.4	30	●
6.3.1	Royalty & license fees receipts, % service exports	1.1	36	●
6.3.2	High-tech exports less re-exports, %	0.1	111	
6.3.3	Comm., computer & info. services exports, %	25.8	9	●
6.3.4	FDI net outflows, % GDP	0.2	77	●
7	**Creative outputs**	**3.7**	**142**	○
7.1	Intangible assets	3.2	139	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	11.4	79	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.0	66	○
7.1.3	ICT & business model creation†	n/a	n/a	
7.1.4	ICT & organizational model creation†	n/a	n/a	
7.2	Creative goods & services	1.0	139	○
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	0.4	131	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.0	121	
7.3	Online creativity	7.4	135	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.1	133	
7.3.2	Country-code TLDs/th pop. 15–69	0.2	135	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	31.2	129	
7.3.4	Video uploads on YouTube/pop. 15–69	29.3	133	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Swaziland

Key indicators

Population (millions)	1.2
GDP (US$ billions)	3.7
GDP per capita, PPP$	5,251.4
Income group	Lower-middle income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**29.6**	**104**	
Innovation Output Sub-Index		30.5	74	
Innovation Input Sub-Index		28.7	124	
Innovation Efficiency Ratio		1.1	5	●
Global Innovation Index 2012 (based on GII 2012 framework)		32.0	82	
1	**Institutions**	**54.4**	**92**	
1.1	Political environment	42.4	121	
1.1.1	Political stability*	54.5	96	
1.1.2	Government effectiveness*	19.5	115	
1.1.3	Press freedom*	53.2	124	
1.2	Regulatory environment	60.6	86	
1.2.1	Regulatory quality*	32.9	118	
1.2.2	Rule of law*	35.9	84	
1.2.3	Cost of redundancy dismissal, salary weeks	14.6	66	
1.3	Business environment	60.3	83	
1.3.1	Ease of starting a business*	65.9	123	
1.3.2	Ease of resolving insolvency*	41.2	66	
1.3.3	Ease of paying taxes*	73.8	54	●
2	**Human capital & research**	**23.6**	**103**	
2.1	Education	61.3	44	●
2.1.1	Current expenditure on education, % GNI	8.8	3	●
2.1.2	Public expenditure/pupil, % GDP/cap	24.5	33	●
2.1.3	School life expectancy, years	11.3	99	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	16.4	78	
2.2	Tertiary education	9.6	126	
2.2.1	Tertiary enrolment, % gross	5.9	123	
2.2.2	Graduates in science & engineering, %	2.7	99	○
2.2.3	Tertiary inbound mobility, %	0.9	81	
2.2.4	Gross tertiary outbound enrolment, %	2.6	35	●
2.3	Research & development (R&D)	0.0	123	○
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**6.2**	**142**	○
3.1	Information & communication technologies (ICTs)	12.4	135	
3.1.1	ICT access*	24.7	110	
3.1.2	ICT use*	5.4	111	
3.1.3	Government's online service*	14.4	138	○
3.1.4	E-participation*	5.3	111	
3.2	General infrastructure	1.4	142	○
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Logistics performance*	n/a	n/a	
3.2.4	Gross capital formation, % GDP	10.5	140	○
3.3	Ecological sustainability	4.8	128	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.6	73	
4	**Market sophistication**	**30.2**	**135**	
4.1	Credit	32.5	90	
4.1.1	Ease of getting credit*	68.8	51	
4.1.2	Domestic credit to private sector, % GDP	27.1	103	
4.1.3	Microfinance gross loans, % GDP	1.7	27	●
4.2	Investment	12.0	138	
4.2.1	Ease of protecting investors*	45.2	107	
4.2.2	Market capitalization, % GDP	6.7	97	
4.2.3	Total value of stocks traded, % GDP	0.0	108	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	46.0	139	○
4.3.1	Applied tariff rate, weighted mean, %	10.2	123	
4.3.2	Non-agricultural mkt access weighted tariff, %	5.8	139	○
4.3.3	Intensity of local competition†	52.9	109	
5	**Business sophistication**	**28.9**	**88**	
5.1	Knowledge workers	57.2	37	●
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	51.0	28	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	535.8	48	●
5.1.6	GMAT test takers/mn pop. 20–34	20.2	117	
5.2	Innovation linkages	15.8	119	
5.2.1	University/industry research collaboration†	26.7	123	
5.2.2	State of cluster development†	36.6	104	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	13.7	131	
5.3.1	Royalty & license fees payments, % service imports	2.4	58	●
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Comm., computer & info. services imports, %	0.9	129	
5.3.4	FDI net inflows, % GDP	2.4	80	
6	**Knowledge & technology outputs**	**36.5**	**33**	●
6.1	Knowledge creation	3.3	126	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.4	103	
6.1.5	Citable documents H index	27.0	135	
6.2	Knowledge impact	64.2	3	●
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	31.8	10	●
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	25.4	69	
6.3.1	Royalty & license fees receipts, % service exports	0.1	84	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Comm., computer & info. services exports, %	9.0	47	●
6.3.4	FDI net outflows, % GDP	0.1	85	
7	**Creative outputs**	**24.5**	**125**	
7.1	Intangible assets	20.8	135	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.0	66	○
7.1.3	ICT & business model creation†	32.2	131	
7.1.4	ICT & organizational model creation†	30.2	132	
7.2	Creative goods & services	34.0	73	
7.2.1	Audio-visual & related services exports, %	0.6	19	●
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	3.6	96	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	n/a	n/a	
7.3	Online creativity	22.7	89	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.5	114	
7.3.2	Country-code TLDs/th pop. 15–69	13.0	90	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4	Video uploads on YouTube/pop. 15–69	54.4	106	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	10.0
GDP (US$ billions)	520.3
GDP per capita, PPP$	41,749.6
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**61.4**	**2**	●
Innovation Output Sub-Index		54.9	3	●
Innovation Input Sub-Index		67.9	5	●
Innovation Efficiency Ratio		0.8	55	
Global Innovation Index 2012 (based on GII 2012 framework)		64.8	2	
1	**Institutions**	**89.9**	**10**	
1.1	Political environment	93.3	4	●
1.1.1	Political stability*	97.1	7	
1.1.2	Government effectiveness*	92.2	4	●
1.1.3	Press freedom*	90.8	8	
1.2	Regulatory environment	92.8	15	
1.2.1	Regulatory quality*	97.5	6	●
1.2.2	Rule of law*	99.7	2	●
1.2.3	Cost of redundancy dismissal, salary weeks	14.4	65	○
1.3	Business environment	83.6	16	
1.3.1	Ease of starting a business*	92.6	17	
1.3.2	Ease of resolving insolvency*	79.4	21	
1.3.3	Ease of paying taxes*	78.8	38	
2	**Human capital & research**	**62.5**	**4**	●
2.1	Education	71.5	10	
2.1.1	Current expenditure on education, % GNI	6.8	14	
2.1.2	Public expenditure/pupil, % GDP/cap	31.4	6	
2.1.3	School life expectancy, years	16.0	21	
2.1.4	PISA scales in reading, maths, & science	495.6	25	
2.1.5	Pupil-teacher ratio, secondary	9.7	21	
2.2	Tertiary education	48.4	19	
2.2.1	Tertiary enrolment, % gross	73.8	17	
2.2.2	Graduates in science & engineering, %	25.4	21	
2.2.3	Tertiary inbound mobility, %	6.9	24	
2.2.4	Gross tertiary outbound enrolment, %	2.5	37	
2.3	Research & development (R&D)	67.5	8	
2.3.1	Researchers, headcounts/mn pop.	7,807.0	6	
2.3.2	Gross expenditure on R&D, % GDP	3.4	4	●
2.3.3	QS university ranking, average score top 3*	66.1	14	
3	**Infrastructure**	**63.1**	**2**	●
3.1	Information & communication technologies (ICTs)	77.6	8	
3.1.1	ICT access*	85.0	6	●
3.1.2	ICT use*	72.4	6	●
3.1.3	Government's online service*	84.3	16	
3.1.4	E-participation*	68.4	15	
3.2	General infrastructure	52.1	6	●
3.2.1	Electricity output, kWh/cap	16,246.2	5	●
3.2.2	Electricity consumption, kWh/cap	14,359.8	8	
3.2.3	Logistics performance*	71.3	12	
3.2.4	Gross capital formation, % GDP	18.2	111	○
3.3	Ecological sustainability	59.8	7	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.7	54	○
3.3.2	Environmental performance*	68.8	10	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	10.5	7	
4	**Market sophistication**	**71.8**	**11**	
4.1	Credit	69.7	16	
4.1.1	Ease of getting credit*	75.0	38	
4.1.2	Domestic credit to private sector, % GDP	135.8	15	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	65.1	7	
4.2.1	Ease of protecting investors*	64.8	37	
4.2.2	Market capitalization, % GDP	87.1	16	
4.2.3	Total value of stocks traded, % GDP	93.7	9	
4.2.4	Venture capital deals/tr PPP$ GDP	0.2	7	
4.3	Trade & competition	80.7	32	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	75.6	20	
5	**Business sophistication**	**52.0**	**11**	
5.1	Knowledge workers	66.4	14	
5.1.1	Knowledge-intensive employment, %	32.9	22	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	2.3	5	
5.1.4	R&D financed by business, %	58.2	14	
5.1.5	GMAT mean score	500.1	76	○
5.1.6	GMAT test takers/mn pop. 20–34	307.4	21	
5.2	Innovation linkages	49.8	13	
5.2.1	University/industry research collaboration†	73.6	7	
5.2.2	State of cluster development†	66.3	10	
5.2.3	R&D financed by abroad, %	10.9	36	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	28	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	4.4	6	●
5.3	Knowledge absorption	39.8	19	
5.3.1	Royalty & license fees payments, % service imports	3.2	45	
5.3.2	High-tech imports less re-imports, %	14.1	21	
5.3.3	Comm., computer & info. services imports, %	10.5	7	
5.3.4	FDI net inflows, % GDP	1.5	109	○
6	**Knowledge & technology outputs**	**54.1**	**5**	●
6.1	Knowledge creation	70.6	2	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	14.6	9	
6.1.2	PCT resident patent ap/bn PPP$ GDP	9.1	5	●
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	53.6	7	
6.1.5	Citable documents H index	484.0	10	
6.2	Knowledge impact	48.4	23	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.7	64	○
6.2.2	New businesses/th pop. 15–64	7.2	18	
6.2.3	Computer software spending, % GDP	0.6	18	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	12.7	37	
6.2.5	High- & medium-high-tech manufactures, %	39.1	21	
6.3	Knowledge diffusion	51.6	9	
6.3.1	Royalty & license fees receipts, % service exports	7.9	9	
6.3.2	High-tech exports less re-exports, %	13.9	19	
6.3.3	Comm., computer & info. services exports, %	14.3	25	
6.3.4	FDI net outflows, % GDP	5.1	13	
7	**Creative outputs**	**55.6**	**12**	
7.1	Intangible assets	51.3	39	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	45.6	37	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	1.7	21	
7.1.3	ICT & business model creation†	78.5	4	●
7.1.4	ICT & organizational model creation†	74.1	4	●
7.2	Creative goods & services	48.5	25	
7.2.1	Audio-visual & related services exports, %	0.3	36	○
7.2.2	National feature films/mn pop. 15–69	6.4	23	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	44.0	5	●
7.2.4	Printing & publishing manufactures, %	1.6	55	○
7.2.5	Creative goods exports, %	2.4	33	
7.3	Online creativity	71.4	8	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	51.6	19	
7.3.2	Country-code TLDs/th pop. 15–69	71.9	10	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	12,681.1	6	●
7.3.4	Video uploads on YouTube/pop. 15–69	88.5	8	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Switzerland

Key indicators

Population (millions)	8.1
GDP (US$ billions)	622.9
GDP per capita, PPP$	45,285.8
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**66.6**	**1**	●
Innovation Output Sub-Index		66.7	1	●
Innovation Input Sub-Index		66.5	7	
Innovation Efficiency Ratio		1.0	12	
Global Innovation Index 2012 (based on GII 2012 framework)		68.2	1	
1	**Institutions**	**87.3**	**16**	
1.1	Political environment	92.7	6	
1.1.1	Political stability*	97.8	6	
1.1.2	Government effectiveness*	90.2	6	
1.1.3	Press freedom*	90.1	12	
1.2	Regulatory environment	94.6	12	
1.2.1	Regulatory quality*	92.3	12	
1.2.2	Rule of law*	94.7	11	
1.2.3	Cost of redundancy dismissal, salary weeks	10.1	39	
1.3	Business environment	74.6	31	
1.3.1	Ease of starting a business*	86.0	61	○
1.3.2	Ease of resolving insolvency*	50.8	41	
1.3.3	Ease of paying taxes*	87.0	17	
2	**Human capital & research**	**55.4**	**14**	
2.1	Education	57.5	56	
2.1.1	Current expenditure on education, % GNI	4.8	47	○
2.1.2	Public expenditure/pupil, % GDP/cap	27.6	15	
2.1.3	School life expectancy, years	15.7	26	
2.1.4	PISA scales in reading, maths, & science	517.0	11	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	Tertiary education	44.1	32	
2.2.1	Tertiary enrolment, % gross	54.8	45	
2.2.2	Graduates in science & engineering, %	19.8	50	○
2.2.3	Tertiary inbound mobility, %	15.4	11	
2.2.4	Gross tertiary outbound enrolment, %	2.5	39	
2.3	Research & development (R&D)	64.8	9	
2.3.1	Researchers, headcounts/mn pop.	6,057.4	12	
2.3.2	Gross expenditure on R&D, % GDP	2.9	7	
2.3.3	QS university ranking, average score top 3*	82.8	6	
3	**Infrastructure**	**57.0**	**8**	
3.1	Information & communication technologies (ICTs)	67.2	20	
3.1.1	ICT access*	88.9	2	●
3.1.2	ICT use*	78.4	2	●
3.1.3	Government's online service*	67.3	32	
3.1.4	E-participation*	34.2	44	
3.2	General infrastructure	42.9	23	
3.2.1	Electricity output, kWh/cap	8,049.7	23	
3.2.2	Electricity consumption, kWh/cap	8,074.6	18	
3.2.3	Logistics performance*	70.0	16	
3.2.4	Gross capital formation, % GDP	21.9	75	○
3.3	Ecological sustainability	61.0	5	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	11.7	6	
3.3.2	Environmental performance*	76.7	1	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	6.8	15	
4	**Market sophistication**	**77.5**	**6**	
4.1	Credit	81.1	11	
4.1.1	Ease of getting credit*	81.3	22	
4.1.2	Domestic credit to private sector, % GDP	169.4	12	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	66.2	6	
4.2.1	Ease of protecting investors*	31.9	133	○
4.2.2	Market capitalization, % GDP	141.4	3	
4.2.3	Total value of stocks traded, % GDP	140.8	1	
4.2.4	Venture capital deals/tr PPP$ GDP	0.1	13	
4.3	Trade & competition	85.1	11	
4.3.1	Applied tariff rate, weighted mean, %	0.0	1	●
4.3.2	Non-agricultural mkt access weighted tariff, %	1.9	98	○
4.3.3	Intensity of local competition†	76.4	18	
5	**Business sophistication**	**55.3**	**4**	
5.1	Knowledge workers	78.7	2	●
5.1.1	Knowledge-intensive employment, %	42.8	8	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	2.1	6	
5.1.4	R&D financed by business, %	68.2	5	
5.1.5	GMAT mean score	574.4	20	
5.1.6	GMAT test takers/mn pop. 20–34	385.6	11	
5.2	Innovation linkages	51.5	8	
5.2.1	University/industry research collaboration†	82.2	1	●
5.2.2	State of cluster development†	67.4	8	
5.2.3	R&D financed by abroad, %	6.0	55	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	21	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	6.5	1	●
5.3	Knowledge absorption	35.8	34	
5.3.1	Royalty & license fees payments, % service imports	37.6	1	
5.3.2	High-tech imports less re-imports, %	15.1	18	
5.3.3	Comm., computer & info. services imports, %	2.3	100	○
5.3.4	FDI net inflows, % GDP	0.1	134	○
6	**Knowledge & technology outputs**	**61.5**	**1**	●
6.1	Knowledge creation	87.3	1	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	22.6	5	
6.1.2	PCT resident patent ap/bn PPP$ GDP	11.6	3	●
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	65.4	3	●
6.1.5	Citable documents H index	537.0	9	
6.2	Knowledge impact	54.2	10	
6.2.1	Growth rate of PPP$ GDP/worker, %	–0.1	99	○
6.2.2	New businesses/th pop. 15–64	2.5	41	
6.2.3	Computer software spending, % GDP	0.7	4	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	28.8	16	
6.2.5	High- & medium-high-tech manufactures, %	61.3	3	
6.3	Knowledge diffusion	55.8	5	
6.3.1	Royalty & license fees receipts, % service exports	19.6	3	●
6.3.2	High-tech exports less re-exports, %	22.0	7	
6.3.3	Comm., computer & info. services exports, %	1.6	124	○
6.3.4	FDI net outflows, % GDP	6.5	8	
7	**Creative outputs**	**71.8**	**2**	●
7.1	Intangible assets	72.2	4	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	88.7	9	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	7.7	1	
7.1.3	ICT & business model creation†	72.5	17	
7.1.4	ICT & organizational model creation†	66.6	18	
7.2	Creative goods & services	69.5	2	●
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	15.0	6	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	38.3	7	
7.2.4	Printing & publishing manufactures, %	3.8	14	
7.2.5	Creative goods exports, %	5.0	14	
7.3	Online creativity	73.5	6	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	88.8	9	
7.3.2	Country-code TLDs/th pop. 15–69	78.8	3	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	7,373.7	20	
7.3.4	Video uploads on YouTube/pop. 15–69	83.5	22	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Syrian Arab Republic

Key indicators

Population (millions)	21.3
GDP (US$ billions)	60.0
GDP per capita, PPP$	5,040.6
Income group	Lower-middle income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**23.7**	**134**	
	Innovation Output Sub-Index	14.6	140	○
	Innovation Input Sub-Index	32.8	105	
	Innovation Efficiency Ratio	0.4	142	○
	Global Innovation Index 2012 (based on GII 2012 framework)	23.1	132	
1	**Institutions**	**48.3**	**114**	
1.1	Political environment	22.9	139	○
1.1.1	Political stability*	21.0	138	○
1.1.2	Government effectiveness*	26.2	96	
1.1.3	Press freedom*	21.5	140	○
1.2	Regulatory environment	62.7	82	
1.2.1	Regulatory quality*	24.2	130	
1.2.2	Rule of law*	29.4	105	
1.2.3	Cost of redundancy dismissal, salary weeks	8.7	25	●
1.3	Business environment	59.1	87	
1.3.1	Ease of starting a business*	79.1	89	
1.3.2	Ease of resolving insolvency*	29.9	99	
1.3.3	Ease of paying taxes*	68.3	77	
2	**Human capital & research**	**34.1**	**60**	●
2.1	Education	95.0	1	●
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	8.3	9	●
2.2	Tertiary education	7.4	130	
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.8	82	
2.3	Research & development (R&D)	0.0	123	○
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**22.9**	**108**	
3.1	Information & communication technologies (ICTs)	21.7	104	
3.1.1	ICT access*	41.9	73	●
3.1.2	ICT use*	19.5	73	●
3.1.3	Government's online service*	22.9	130	
3.1.4	E-participation*	2.6	116	
3.2	General infrastructure	25.3	100	
3.2.1	Electricity output, kWh/cap	2,269.6	74	
3.2.2	Electricity consumption, kWh/cap	1,905.3	72	
3.2.3	Logistics performance*	40.0	93	
3.2.4	Gross capital formation, % GDP	24.2	56	●
3.3	Ecological sustainability	21.9	107	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.5	91	
3.3.2	Environmental performance*	42.8	108	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	86	
4	**Market sophistication**	**37.6**	**117**	
4.1	Credit	9.3	140	○
4.1.1	Ease of getting credit*	18.8	139	○
4.1.2	Domestic credit to private sector, % GDP	22.5	114	
4.1.3	Microfinance gross loans, % GDP	0.0	76	
4.2	Investment	24.3	79	
4.2.1	Ease of protecting investors*	48.5	98	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	79.4	43	●
4.3.1	Applied tariff rate, weighted mean, %	6.1	92	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	14	●
4.3.3	Intensity of local competition†	69.5	41	●
5	**Business sophistication**	**21.2**	**130**	
5.1	Knowledge workers	37.6	92	
5.1.1	Knowledge-intensive employment, %	15.5	81	
5.1.2	Firms offering formal training, % firms	38.3	45	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	457.7	102	
5.1.6	GMAT test takers/mn pop. 20–34	21.0	115	
5.2	Innovation linkages	14.5	127	
5.2.1	University/industry research collaboration†	23.4	129	
5.2.2	State of cluster development†	34.6	114	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	11.5	136	
5.3.1	Royalty & license fees payments, % service imports	1.1	79	
5.3.2	High-tech imports less re-imports, %	4.6	113	
5.3.3	Comm., computer & info. services imports, %	1.0	126	
5.3.4	FDI net inflows, % GDP	2.5	77	●
6	**Knowledge & technology outputs**	**6.2**	**141**	○
6.1	Knowledge creation	4.8	108	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.5	59	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	64	●
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.8	127	
6.1.5	Citable documents H index	53.0	103	
6.2	Knowledge impact	11.2	124	
6.2.1	Growth rate of PPP$ GDP/worker, %	−4.3	116	○
6.2.2	New businesses/th pop. 15–64	0.0	103	○
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.2	114	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	1.9	139	○
6.3.1	Royalty & license fees receipts, % service exports	0.0	103	
6.3.2	High-tech exports less re-exports, %	0.3	93	
6.3.3	Comm., computer & info. services exports, %	1.9	120	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**23.1**	**128**	
7.1	Intangible assets	23.9	132	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.1	56	
7.1.3	ICT & business model creation†	28.7	133	○
7.1.4	ICT & organizational model creation†	41.3	116	
7.2	Creative goods & services	27.3	94	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	0.4	94	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	3.1	97	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.3	80	
7.3	Online creativity	17.2	106	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.9	104	
7.3.2	Country-code TLDs/th pop. 15–69	0.0	141	○
7.3.3	Wikipedia monthly edits/mn pop. 15–69	25.4	132	○
7.3.4	Video uploads on YouTube/pop. 15–69	67.9	81	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Tajikistan

Key indicators

Population (millions)	7.1
GDP (US$ billions)	7.3
GDP per capita, PPP$	2,210.6
Income group	Low income
Region	Central and Southern Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**30.0**	**101**	
Innovation Output Sub-Index		28.5	85	
Innovation Input Sub-Index		31.5	113	
Innovation Efficiency Ratio		0.9	27	●
Global Innovation Index 2012 (based on GII 2012 framework)		26.4	108	
1	**Institutions**	**46.8**	**120**	
1.1	Political environment	39.5	125	
1.1.1	Political stability*	41.5	118	
1.1.2	Government effectiveness*	12.7	132	
1.1.3	Press freedom*	64.3	100	
1.2	Regulatory environment	52.2	110	
1.2.1	Regulatory quality*	24.3	129	
1.2.2	Rule of law*	15.0	132	
1.2.3	Cost of redundancy dismissal, salary weeks	15.5	73	●
1.3	Business environment	48.8	120	
1.3.1	Ease of starting a business*	84.8	64	●
1.3.2	Ease of resolving insolvency*	38.8	71	●
1.3.3	Ease of paying taxes*	22.7	140	
2	**Human capital & research**	**20.3**	**109**	
2.1	Education	41.2	100	
2.1.1	Current expenditure on education, % GNI	3.7	78	
2.1.2	Public expenditure/pupil, % GDP/cap	14.0	85	
2.1.3	School life expectancy, years	11.5	95	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	15.4	73	
2.2	Tertiary education	18.4	105	
2.2.1	Tertiary enrolment, % gross	23.4	85	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	1.7	62	●
2.2.4	Gross tertiary outbound enrolment, %	0.7	84	
2.3	Research & development (R&D)	1.2	109	
2.3.1	Researchers, headcounts/mn pop.	253.9	75	
2.3.2	Gross expenditure on R&D, % GDP	0.1	96	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**21.5**	**115**	
3.1	Information & communication technologies (ICTs)	12.1	136	
3.1.1	ICT access*	n/a	n/a	
3.1.2	ICT use*	n/a	n/a	
3.1.3	Government's online service*	24.2	129	
3.1.4	E-participation*	0.0	129	○
3.2	General infrastructure	20.1	126	
3.2.1	Electricity output, kWh/cap	2,385.2	70	●
3.2.2	Electricity consumption, kWh/cap	2,004.4	71	
3.2.3	Logistics performance*	32.0	127	
3.2.4	Gross capital formation, % GDP	19.9	94	
3.3	Ecological sustainability	32.3	59	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.8	73	
3.3.2	Environmental performance*	38.8	115	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	n/a	n/a	
4	**Market sophistication**	**48.3**	**56**	●
4.1	Credit	41.4	56	●
4.1.1	Ease of getting credit*	12.5	141	○
4.1.2	Domestic credit to private sector, % GDP	28.9	101	
4.1.3	Microfinance gross loans, % GDP	9.2	1	●
4.2	Investment	34.5	35	●
4.2.1	Ease of protecting investors*	68.9	27	●
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	69.0	109	
4.3.1	Applied tariff rate, weighted mean, %	5.9	87	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.6	87	
4.3.3	Intensity of local competition†	53.9	104	
5	**Business sophistication**	**20.6**	**132**	
5.1	Knowledge workers	26.3	125	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	21.1	86	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	1.1	82	
5.1.5	GMAT mean score	495.8	78	●
5.1.6	GMAT test takers/mn pop. 20–34	9.1	126	
5.2	Innovation linkages	12.6	132	
5.2.1	University/industry research collaboration†	40.4	81	
5.2.2	State of cluster development†	32.9	118	
5.2.3	R&D financed by abroad, %	0.7	81	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	23.0	90	
5.3.1	Royalty & license fees payments, % service imports	0.0	125	○
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Comm., computer & info. services imports, %	7.3	34	●
5.3.4	FDI net inflows, % GDP	0.2	133	
6	**Knowledge & technology outputs**	**36.8**	**32**	●
6.1	Knowledge creation	26.3	36	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.4	89	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	8.6	5	●
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.2	120	
6.1.5	Citable documents H index	22.0	139	
6.2	Knowledge impact	24.7	103	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.1	35	●
6.2.2	New businesses/th pop. 15–64	0.3	89	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.1	140	
6.2.5	High- & medium-high-tech manufactures, %	2.4	94	
6.3	Knowledge diffusion	54.1	7	●
6.3.1	Royalty & license fees receipts, % service exports	0.3	66	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Comm., computer & info. services exports, %	37.0	1	●
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**20.2**	**132**	
7.1	Intangible assets	24.7	129	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	20.1	67	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.0	66	○
7.1.3	ICT & business model creation†	47.0	107	
7.1.4	ICT & organizational model creation†	40.4	120	
7.2	Creative goods & services	13.5	124	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	2.0	58	●
7.2.3	Paid-for dailies, circulation, % pop. 15–69	n/a	n/a	
7.2.4	Printing & publishing manufactures, %	0.6	88	
7.2.5	Creative goods exports, %	n/a	n/a	
7.3	Online creativity	18.0	101	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.0	142	○
7.3.2	Country-code TLDs/th pop. 15–69	12.1	94	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4	Video uploads on YouTube/pop. 15–69	41.9	123	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Tanzania (United Republic of)

Key indicators

Population (millions)	47.9
GDP (US$ billions)	28.0
GDP per capita, PPP$	1,708.5
Income group	Low income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**26.4**	**123**	
Innovation Output Sub-Index		21.0	127	
Innovation Input Sub-Index		31.7	110	
Innovation Efficiency Ratio		0.7	113	
Global Innovation Index 2012 (based on GII 2012 framework)		23.9	128	
1	**Institutions**	**57.8**	**80**	
1.1	Political environment	54.1	75	
1.1.1	Political stability*	66.0	70	
1.1.2	Government effectiveness*	23.7	101	
1.1.3	Press freedom*	72.7	57	
1.2	Regulatory environment	66.5	70	
1.2.1	Regulatory quality*	38.0	107	
1.2.2	Rule of law*	33.3	99	
1.2.3	Cost of redundancy dismissal, salary weeks	9.3	33	●
1.3	Business environment	52.8	108	
1.3.1	Ease of starting a business*	77.1	95	
1.3.2	Ease of resolving insolvency*	23.8	114	
1.3.3	Ease of paying taxes*	57.5	107	
2	**Human capital & research**	**13.9**	**127**	
2.1	Education	33.5	119	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	23.1	42	●
2.1.3	School life expectancy, years	9.3	118	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	Tertiary education	4.9	136	
2.2.1	Tertiary enrolment, % gross	2.1	131	○
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	0.6	87	
2.2.4	Gross tertiary outbound enrolment, %	0.1	133	
2.3	Research & development (R&D)	3.3	87	
2.3.1	Researchers, headcounts/mn pop.	67.1	99	
2.3.2	Gross expenditure on R&D, % GDP	0.4	63	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**23.4**	**106**	
3.1	Information & communication technologies (ICTs)	15.8	122	
3.1.1	ICT access*	18.5	129	
3.1.2	ICT use*	1.7	128	
3.1.3	Government's online service*	35.3	106	
3.1.4	E-participation*	7.9	99	
3.2	General infrastructure	32.3	55	●
3.2.1	Electricity output, kWh/cap	99.0	121	
3.2.2	Electricity consumption, kWh/cap	77.9	124	○
3.2.3	Logistics performance*	41.3	89	
3.2.4	Gross capital formation, % GDP	40.0	5	●
3.3	Ecological sustainability	22.0	104	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	2.8	114	
3.3.2	Environmental performance*	54.3	62	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.0	135	○
4	**Market sophistication**	**38.5**	**113**	
4.1	Credit	31.4	93	
4.1.1	Ease of getting credit*	43.8	110	
4.1.2	Domestic credit to private sector, % GDP	17.8	126	
4.1.3	Microfinance gross loans, % GDP	4.1	14	●
4.2	Investment	13.6	132	
4.2.1	Ease of protecting investors*	51.5	90	
4.2.2	Market capitalization, % GDP	6.4	98	
4.2.3	Total value of stocks traded, % GDP	0.1	97	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	70.5	103	
4.3.1	Applied tariff rate, weighted mean, %	8.2	110	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	10	●
4.3.3	Intensity of local competition†	53.5	107	
5	**Business sophistication**	**25.0**	**111**	
5.1	Knowledge workers	21.2	133	
5.1.1	Knowledge-intensive employment, %	2.6	103	○
5.1.2	Firms offering formal training, % firms	36.5	49	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	382.0	131	
5.1.6	GMAT test takers/mn pop. 20–34	6.7	129	
5.2	Innovation linkages	35.5	43	●
5.2.1	University/industry research collaboration†	46.1	54	●
5.2.2	State of cluster development†	40.5	84	
5.2.3	R&D financed by abroad, %	38.4	7	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	80	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	18.3	112	
5.3.1	Royalty & license fees payments, % service imports	0.0	123	
5.3.2	High-tech imports less re-imports, %	8.2	66	
5.3.3	Comm., computer & info. services imports, %	1.6	113	
5.3.4	FDI net inflows, % GDP	4.6	51	●
6	**Knowledge & technology outputs**	**16.4**	**118**	
6.1	Knowledge creation	7.6	82	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	8.1	83	
6.1.5	Citable documents H index	88.0	69	
6.2	Knowledge impact	33.5	74	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.0	38	●
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.0	141	○
6.2.5	High- & medium-high-tech manufactures, %	11.0	72	
6.3	Knowledge diffusion	3.7	136	
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.9	78	
6.3.3	Comm., computer & info. services exports, %	2.1	117	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**25.6**	**123**	
7.1	Intangible assets	29.7	122	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	0.7	91	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	46.7	110	
7.1.4	ICT & organizational model creation†	42.1	110	
7.2	Creative goods & services	35.4	65	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	12.3	9	●
7.2.3	Paid-for dailies, circulation, % pop. 15–69	0.7	120	
7.2.4	Printing & publishing manufactures, %	2.5	30	●
7.2.5	Creative goods exports, %	0.2	94	
7.3	Online creativity	7.4	137	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.4	118	
7.3.2	Country-code TLDs/th pop. 15–69	2.9	118	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	26.3	131	
7.3.4	Video uploads on YouTube/pop. 15–69	26.1	136	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Thailand

Key indicators

Population (millions)	71.2
GDP (US$ billions)	377.0
GDP per capita, PPP$	10,023.3
Income group	Upper-middle income
Region	South East Asia and Oceania

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**37.6**	**57**	
Innovation Output Sub-Index		32.6	61	
Innovation Input Sub-Index		42.7	57	
Innovation Efficiency Ratio		0.8	76	
Global Innovation Index 2012 (based on GII 2012 framework)		36.9	57	
1	**Institutions**	**54.1**	**93**	
1.1	Political environment	47.9	94	
1.1.1	Political stability*	41.1	119	○
1.1.2	Government effectiveness*	41.2	60	
1.1.3	Press freedom*	61.4	108	○
1.2	Regulatory environment	46.0	121	○
1.2.1	Regulatory quality*	55.7	67	
1.2.2	Rule of law*	40.7	72	
1.2.3	Cost of redundancy dismissal, salary weeks	36.0	133	○
1.3	Business environment	68.3	53	
1.3.1	Ease of starting a business*	87.9	48	
1.3.2	Ease of resolving insolvency*	45.5	53	
1.3.3	Ease of paying taxes*	71.4	59	
2	**Human capital & research**	**37.2**	**46**	
2.1	Education	42.7	94	
2.1.1	Current expenditure on education, % GNI	4.1	72	
2.1.2	Public expenditure/pupil, % GDP/cap	18.6	66	
2.1.3	School life expectancy, years	12.3	82	
2.1.4	PISA scales in reading, maths, & science	421.8	48	
2.1.5	Pupil-teacher ratio, secondary	19.9	92	
2.2	Tertiary education	53.1	13	●
2.2.1	Tertiary enrolment, % gross	47.7	51	
2.2.2	Graduates in science & engineering, %	53.2	1	●
2.2.3	Tertiary inbound mobility, %	0.8	83	○
2.2.4	Gross tertiary outbound enrolment, %	0.5	98	
2.3	Research & development (R&D)	15.7	49	
2.3.1	Researchers, headcounts/mn pop.	575.0	66	
2.3.2	Gross expenditure on R&D, % GDP	0.2	81	○
2.3.3	QS university ranking, average score top 3*	38.2	34	
3	**Infrastructure**	**35.3**	**60**	
3.1	Information & communication technologies (ICTs)	33.6	74	
3.1.1	ICT access*	37.8	87	
3.1.2	ICT use*	14.1	87	
3.1.3	Government's online service*	51.0	64	
3.1.4	E-participation*	31.6	47	
3.2	General infrastructure	34.7	45	
3.2.1	Electricity output, kWh/cap	2,307.8	72	
3.2.2	Electricity consumption, kWh/cap	2,243.4	68	
3.2.3	Logistics performance*	54.5	37	
3.2.4	Gross capital formation, % GDP	31.3	17	●
3.3	Ecological sustainability	37.7	41	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.5	87	
3.3.2	Environmental performance*	60.0	33	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	4.4	25	
4	**Market sophistication**	**53.5**	**37**	
4.1	Credit	43.0	50	
4.1.1	Ease of getting credit*	62.5	68	
4.1.2	Domestic credit to private sector, % GDP	140.1	14	●
4.1.3	Microfinance gross loans, % GDP	0.0	91	○
4.2	Investment	41.0	27	
4.2.1	Ease of protecting investors*	79.3	14	●
4.2.2	Market capitalization, % GDP	77.7	18	
4.2.3	Total value of stocks traded, % GDP	67.2	14	●
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	76.5	74	
4.3.1	Applied tariff rate, weighted mean, %	4.9	79	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.2	79	
4.3.3	Intensity of local competition†	67.2	54	
5	**Business sophistication**	**33.4**	**60**	
5.1	Knowledge workers	50.0	47	
5.1.1	Knowledge-intensive employment, %	10.8	93	○
5.1.2	Firms offering formal training, % firms	75.3	2	●
5.1.3	R&D performed by business, % GDP	0.1	57	
5.1.4	R&D financed by business, %	48.7	22	
5.1.5	GMAT mean score	504.7	71	
5.1.6	GMAT test takers/mn pop. 20–34	138.0	42	
5.2	Innovation linkages	22.3	85	
5.2.1	University/industry research collaboration†	50.2	44	
5.2.2	State of cluster development†	52.4	37	
5.2.3	R&D financed by abroad, %	1.8	69	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	37	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	66	
5.3	Knowledge absorption	27.9	63	
5.3.1	Royalty & license fees payments, % service imports	6.1	22	
5.3.2	High-tech imports less re-imports, %	16.2	15	●
5.3.3	Comm., computer & info. services imports, %	0.8	130	○
5.3.4	FDI net inflows, % GDP	2.3	83	
6	**Knowledge & technology outputs**	**29.2**	**53**	
6.1	Knowledge creation	13.0	64	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.5	58	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	68	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	2.0	17	
6.1.4	Scientific & technical articles/bn PPP$ GDP	9.0	79	
6.1.5	Citable documents H index	156.0	38	
6.2	Knowledge impact	37.9	52	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.7	42	
6.2.2	New businesses/th pop. 15–64	0.6	82	○
6.2.3	Computer software spending, % GDP	0.3	46	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	12.6	38	
6.2.5	High- & medium-high-tech manufactures, %	43.9	14	●
6.3	Knowledge diffusion	28.6	49	
6.3.1	Royalty & license fees receipts, % service exports	0.4	57	
6.3.2	High-tech exports less re-exports, %	16.2	13	●
6.3.3	Comm., computer & info. services exports, %	1.4	132	○
6.3.4	FDI net outflows, % GDP	1.7	37	
7	**Creative outputs**	**36.0**	**76**	
7.1	Intangible assets	37.7	95	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	19.4	69	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	53.9	83	
7.1.4	ICT & organizational model creation†	48.5	86	
7.2	Creative goods & services	44.4	37	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	1.0	75	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	14.9	33	
7.2.4	Printing & publishing manufactures, %	1.1	70	○
7.2.5	Creative goods exports, %	11.9	3	●
7.3	Online creativity	23.9	81	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	7.6	53	
7.3.2	Country-code TLDs/th pop. 15–69	11.1	99	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	628.3	84	
7.3.4	Video uploads on YouTube/pop. 15–69	73.5	64	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

The former Yugoslav Republic of Macedonia

Key indicators

Population (millions)	2.1
GDP (US$ billions)	10.2
GDP per capita, PPP$	10,717.5
Income group	Upper-middle income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**38.2**	**51**	
Innovation Output Sub-Index		31.9	66	
Innovation Input Sub-Index		44.5	48	
Innovation Efficiency Ratio		0.7	96	
Global Innovation Index 2012 (based on GII 2012 framework)		36.2	62	
1	**Institutions**	**65.4**	**58**	
1.1	Political environment	52.1	82	
1.1.1	Political stability*	55.0	94	
1.1.2	Government effectiveness*	35.4	76	
1.1.3	Press freedom*	65.7	94	
1.2	Regulatory environment	69.7	56	
1.2.1	Regulatory quality*	58.1	63	
1.2.2	Rule of law*	40.7	71	
1.2.3	Cost of redundancy dismissal, salary weeks	13.0	57	
1.3	Business environment	74.5	32	
1.3.1	Ease of starting a business*	97.8	4	●
1.3.2	Ease of resolving insolvency*	45.3	55	
1.3.3	Ease of paying taxes*	80.5	32	
2	**Human capital & research**	**36.1**	**52**	
2.1	Education	70.7	13	●
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	13.4	67	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	11.9	41	
2.2	Tertiary education	33.5	59	
2.2.1	Tertiary enrolment, % gross	38.6	65	
2.2.2	Graduates in science & engineering, %	19.4	52	
2.2.3	Tertiary inbound mobility, %	2.2	53	
2.2.4	Gross tertiary outbound enrolment, %	3.3	30	
2.3	Research & development (R&D)	4.1	84	
2.3.1	Researchers, headcounts/mn pop.	1,001.7	52	
2.3.2	Gross expenditure on R&D, % GDP	0.2	79	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**33.2**	**67**	
3.1	Information & communication technologies (ICTs)	36.0	69	
3.1.1	ICT access*	57.3	53	
3.1.2	ICT use*	28.5	54	
3.1.3	Government's online service*	45.1	84	
3.1.4	E-participation*	13.2	84	
3.2	General infrastructure	27.5	86	
3.2.1	Electricity output, kWh/cap	3,523.3	58	
3.2.2	Electricity consumption, kWh/cap	3,590.0	52	
3.2.3	Logistics performance*	39.0	98	
3.2.4	Gross capital formation, % GDP	n/a	n/a	
3.3	Ecological sustainability	36.2	45	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.6	59	
3.3.2	Environmental performance*	47.0	92	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	4.2	26	●
4	**Market sophistication**	**51.4**	**41**	
4.1	Credit	42.6	52	
4.1.1	Ease of getting credit*	81.3	22	
4.1.2	Domestic credit to private sector, % GDP	46.3	72	
4.1.3	Microfinance gross loans, % GDP	2.4	22	
4.2	Investment	32.6	43	
4.2.1	Ease of protecting investors*	72.6	20	●
4.2.2	Market capitalization, % GDP	24.6	61	
4.2.3	Total value of stocks traded, % GDP	0.5	84	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	29	●
4.3	Trade & competition	78.9	50	
4.3.1	Applied tariff rate, weighted mean, %	2.7	54	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.1	22	●
4.3.3	Intensity of local competition†	50.9	116	○
5	**Business sophistication**	**36.4**	**51**	
5.1	Knowledge workers	37.4	94	
5.1.1	Knowledge-intensive employment, %	25.5	47	
5.1.2	Firms offering formal training, % firms	19.0	92	○
5.1.3	R&D performed by business, % GDP	0.1	62	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	519.9	57	
5.1.6	GMAT test takers/mn pop. 20–34	100.7	53	
5.2	Innovation linkages	39.5	33	
5.2.1	University/industry research collaboration†	36.1	103	○
5.2.2	State of cluster development†	39.6	89	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.2	6	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	32.1	48	
5.3.1	Royalty & license fees payments, % service imports	2.5	57	
5.3.2	High-tech imports less re-imports, %	5.8	97	○
5.3.3	Comm., computer & info. services imports, %	9.3	14	●
5.3.4	FDI net inflows, % GDP	4.9	45	
6	**Knowledge & technology outputs**	**27.7**	**59**	
6.1	Knowledge creation	8.7	75	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.7	57	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	69	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	12.8	65	
6.1.5	Citable documents H index	54.0	99	
6.2	Knowledge impact	36.5	56	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.2	51	
6.2.2	New businesses/th pop. 15–64	4.1	30	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	13.4	34	
6.2.5	High- & medium-high-tech manufactures, %	11.6	69	
6.3	Knowledge diffusion	28.5	51	
6.3.1	Royalty & license fees receipts, % service exports	0.9	40	
6.3.2	High-tech exports less re-exports, %	2.9	53	
6.3.3	Comm., computer & info. services exports, %	13.3	28	●
6.3.4	FDI net outflows, % GDP	–0.0	110	○
7	**Creative outputs**	**36.0**	**75**	
7.1	Intangible assets	34.6	104	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	19.7	68	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	2.4	10	●
7.1.3	ICT & business model creation†	46.8	108	○
7.1.4	ICT & organizational model creation†	41.6	112	○
7.2	Creative goods & services	42.1	45	
7.2.1	Audio-visual & related services exports, %	0.8	11	●
7.2.2	National feature films/mn pop. 15–69	2.6	52	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	10.5	54	
7.2.4	Printing & publishing manufactures, %	3.3	15	●
7.2.5	Creative goods exports, %	0.2	90	
7.3	Online creativity	32.6	53	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4.8	61	
7.3.2	Country-code TLDs/th pop. 15–69	24.1	68	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	4,199.1	35	
7.3.4	Video uploads on YouTube/pop. 15–69	76.9	53	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Togo

Key indicators

Population (millions)	6.3
GDP (US$ billions)	3.6
GDP per capita, PPP$	1,094.5
Income group	Low income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**23.0**	**139**	○
Innovation Output Sub-Index		16.5	137	○
Innovation Input Sub-Index		29.5	122	
Innovation Efficiency Ratio		0.6	132	
Global Innovation Index 2012 (based on GII 2012 framework)		20.5	136	
1	**Institutions**	**48.5**	**112**	
1.1	Political environment	44.4	107	
1.1.1	Political stability*	60.4	82	●
1.1.2	Government effectiveness*	1.2	140	○
1.1.3	Press freedom*	71.6	68	●
1.2	Regulatory environment	56.8	101	
1.2.1	Regulatory quality*	23.7	132	
1.2.2	Rule of law*	24.3	116	
1.2.3	Cost of redundancy dismissal, salary weeks	13.1	60	●
1.3	Business environment	44.3	131	
1.3.1	Ease of starting a business*	52.0	140	○
1.3.2	Ease of resolving insolvency*	33.0	86	●
1.3.3	Ease of paying taxes*	47.8	122	
2	**Human capital & research**	**17.0**	**121**	
2.1	Education	38.2	108	
2.1.1	Current expenditure on education, % GNI	4.3	60	●
2.1.2	Public expenditure/pupil, % GDP/cap	14.4	84	
2.1.3	School life expectancy, years	12.9	74	●
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	26.2	110	
2.2	Tertiary education	12.4	119	
2.2.1	Tertiary enrolment, % gross	10.5	108	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	1.4	70	●
2.2.4	Gross tertiary outbound enrolment, %	0.5	97	
2.3	Research & development (R&D)	0.5	113	
2.3.1	Researchers, headcounts/mn pop.	147.5	84	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**19.8**	**119**	
3.1	Information & communication technologies (ICTs)	11.0	137	○
3.1.1	ICT access*	21.8	119	
3.1.2	ICT use*	3.3	120	
3.1.3	Government's online service*	13.7	139	○
3.1.4	E-participation*	5.3	111	
3.2	General infrastructure	20.1	125	
3.2.1	Electricity output, kWh/cap	21.6	124	○
3.2.2	Electricity consumption, kWh/cap	112.6	121	○
3.2.3	Logistics performance*	39.5	95	
3.2.4	Gross capital formation, % GDP	21.1	81	●
3.3	Ecological sustainability	28.3	76	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	2.0	120	○
3.3.2	Environmental performance*	48.7	82	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	n/a	n/a	
4	**Market sophistication**	**43.7**	**86**	●
4.1	Credit	32.8	86	●
4.1.1	Ease of getting credit*	43.8	110	
4.1.2	Domestic credit to private sector, % GDP	29.6	99	
4.1.3	Microfinance gross loans, % GDP	3.9	16	●
4.2	Investment	64.3	9	●
4.2.1	Ease of protecting investors*	37.0	124	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.3	4	●
4.3	Trade & competition	34.0	142	○
4.3.1	Applied tariff rate, weighted mean, %	14.2	133	
4.3.2	Non-agricultural mkt access weighted tariff, %	5.5	138	○
4.3.3	Intensity of local competition†	n/a	n/a	
5	**Business sophistication**	**18.7**	**136**	
5.1	Knowledge workers	36.6	100	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	31.0	62	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	428.1	121	
5.1.6	GMAT test takers/mn pop. 20–34	26.2	109	
5.2	Innovation linkages	0.0	140	○
5.2.1	University/industry research collaboration†	n/a	n/a	
5.2.2	State of cluster development†	n/a	n/a	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	19.6	107	
5.3.1	Royalty & license fees payments, % service imports	0.4	104	
5.3.2	High-tech imports less re-imports, %	5.2	103	
5.3.3	Comm., computer & info. services imports, %	6.1	42	●
5.3.4	FDI net inflows, % GDP	1.5	108	
6	**Knowledge & technology outputs**	**11.6**	**133**	
6.1	Knowledge creation	3.2	128	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.4	84	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.1	95	
6.1.5	Citable documents H index	28.0	134	
6.2	Knowledge impact	1.5	139	○
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	0.1	97	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.1	118	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	26.0	65	●
6.3.1	Royalty & license fees receipts, % service exports	0.0	108	
6.3.2	High-tech exports less re-exports, %	0.2	107	
6.3.3	Comm., computer & info. services exports, %	18.6	16	●
6.3.4	FDI net outflows, % GDP	2.0	32	●
7	**Creative outputs**	**21.4**	**130**	
7.1	Intangible assets	n/a	n/a	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	n/a	n/a	
7.1.4	ICT & organizational model creation†	n/a	n/a	
7.2	Creative goods & services	19.9	115	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	0.1	137	○
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.1	105	
7.3	Online creativity	22.9	86	●
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.2	130	
7.3.2	Country-code TLDs/th pop. 15–69	n/a	n/a	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4	Video uploads on YouTube/pop. 15–69	45.7	119	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Trinidad and Tobago

Key indicators

Population (millions)	1.4
GDP (US$ billions)	23.8
GDP per capita, PPP$	20,407.5
Income group	High income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**33.2**	**81**	
Innovation Output Sub-Index		28.4	87	
Innovation Input Sub-Index		38.0	82	
Innovation Efficiency Ratio		0.7	85	
Global Innovation Index 2012 (based on GII 2012 framework)		32.5	81	
1	**Institutions**	**61.3**	**69**	
1.1	Political environment	64.6	49	
1.1.1	Political stability*	69.9	60	
1.1.2	Government effectiveness*	46.9	55	
1.1.3	Press freedom*	76.9	39	
1.2	Regulatory environment	62.8	81	
1.2.1	Regulatory quality*	60.0	57	
1.2.2	Rule of law*	41.6	69	
1.2.3	Cost of redundancy dismissal, salary weeks	20.5	94	
1.3	Business environment	56.4	92	
1.3.1	Ease of starting a business*	78.9	91	
1.3.2	Ease of resolving insolvency*	20.3	120	
1.3.3	Ease of paying taxes*	70.0	67	
2	**Human capital & research**	**34.8**	**59**	
2.1	Education	58.5	52	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	11.8	92	
2.1.4	PISA scales in reading, maths, & science	413.6	51	
2.1.5	Pupil-teacher ratio, secondary	12.3	47	
2.2	Tertiary education	44.3	30	●
2.2.1	Tertiary enrolment, % gross	11.5	103	
2.2.2	Graduates in science & engineering, %	30.4	11	●
2.2.3	Tertiary inbound mobility, %	5.8	29	●
2.2.4	Gross tertiary outbound enrolment, %	4.9	14	●
2.3	Research & development (R&D)	1.8	101	
2.3.1	Researchers, headcounts/mn pop.	588.9	65	
2.3.2	Gross expenditure on R&D, % GDP	0.1	103	○
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**24.0**	**105**	
3.1	Information & communication technologies (ICTs)	34.0	73	
3.1.1	ICT access*	55.9	57	
3.1.2	ICT use*	23.8	58	
3.1.3	Government's online service*	48.4	73	
3.1.4	E-participation*	7.9	99	
3.2	General infrastructure	18.9	132	
3.2.1	Electricity output, kWh/cap	6,333.6	33	●
3.2.2	Electricity consumption, kWh/cap	5,896.3	35	
3.2.3	Logistics performance*	n/a	n/a	
3.2.4	Gross capital formation, % GDP	15.3	126	
3.3	Ecological sustainability	19.0	120	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	1.5	124	○
3.3.2	Environmental performance*	47.0	91	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.6	74	
4	**Market sophistication**	**42.5**	**91**	
4.1	Credit	32.8	88	
4.1.1	Ease of getting credit*	81.3	22	●
4.1.2	Domestic credit to private sector, % GDP	39.1	83	
4.1.3	Microfinance gross loans, % GDP	0.0	80	
4.2	Investment	25.4	75	
4.2.1	Ease of protecting investors*	70.0	24	●
4.2.2	Market capitalization, % GDP	65.5	24	●
4.2.3	Total value of stocks traded, % GDP	0.7	77	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	69.4	108	
4.3.1	Applied tariff rate, weighted mean, %	10.0	122	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	13	●
4.3.3	Intensity of local competition†	59.4	86	
5	**Business sophistication**	**27.4**	**98**	
5.1	Knowledge workers	44.3	62	
5.1.1	Knowledge-intensive employment, %	22.8	52	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	0.0	81	○
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	495.5	79	
5.1.6	GMAT test takers/mn pop. 20–34	338.8	16	●
5.2	Innovation linkages	20.6	94	
5.2.1	University/industry research collaboration†	41.3	74	
5.2.2	State of cluster development†	41.2	82	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	17.3	119	
5.3.1	Royalty & license fees payments, % service imports	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	7.2	80	
5.3.3	Comm., computer & info. services imports, %	1.7	111	
5.3.4	FDI net inflows, % GDP	2.6	75	
6	**Knowledge & technology outputs**	**23.1**	**87**	
6.1	Knowledge creation	3.0	131	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.0	111	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	84	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.1	57	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.3	92	
6.1.5	Citable documents H index	57.0	94	
6.2	Knowledge impact	36.5	55	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.6	69	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.1	84	
6.2.5	High- & medium-high-tech manufactures, %	24.1	41	
6.3	Knowledge diffusion	19.7	100	
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.0	118	○
6.3.3	Comm., computer & info. services exports, %	2.8	106	
6.3.4	FDI net outflows, % GDP	2.5	24	●
7	**Creative outputs**	**33.6**	**89**	
7.1	Intangible assets	43.7	67	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	44.0	117	
7.1.4	ICT & organizational model creation†	43.3	104	
7.2	Creative goods & services	20.9	113	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	14.0	41	
7.2.4	Printing & publishing manufactures, %	1.1	75	
7.2.5	Creative goods exports, %	0.1	106	
7.3	Online creativity	26.2	73	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	9.4	50	
7.3.2	Country-code TLDs/th pop. 15–69	17.0	82	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	877.4	75	
7.3.4	Video uploads on YouTube/pop. 15–69	73.3	65	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Tunisia

Key indicators

Population (millions)	10.8
GDP (US$ billions)	44.7
GDP per capita, PPP$	9,698.1
Income group	Upper-middle income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**35.8**	**70**	
Innovation Output Sub-Index		33.5	59	
Innovation Input Sub-Index		38.1	80	
Innovation Efficiency Ratio		0.9	36	●
Global Innovation Index 2012 (based on GII 2012 framework)		36.5	59	
1	**Institutions**	**63.4**	**61**	
1.1	Political environment	53.1	79	
1.1.1	Political stability*	60.5	81	
1.1.2	Government effectiveness*	38.9	66	
1.1.3	Press freedom*	60.1	111	○
1.2	Regulatory environment	68.2	62	
1.2.1	Regulatory quality*	44.9	87	
1.2.2	Rule of law*	44.5	66	
1.2.3	Cost of redundancy dismissal, salary weeks	12.1	53	
1.3	Business environment	68.9	52	
1.3.1	Ease of starting a business*	81.3	81	
1.3.2	Ease of resolving insolvency*	55.6	36	●
1.3.3	Ease of paying taxes*	69.8	70	
2	**Human capital & research**	**31.7**	**68**	
2.1	Education	56.7	60	
2.1.1	Current expenditure on education, % GNI	5.9	21	●
2.1.2	Public expenditure/pupil, % GDP/cap	23.8	36	
2.1.3	School life expectancy, years	14.9	39	
2.1.4	PISA scales in reading, maths, & science	391.9	61	○
2.1.5	Pupil-teacher ratio, secondary	13.6	55	
2.2	Tertiary education	21.8	93	
2.2.1	Tertiary enrolment, % gross	37.1	68	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	0.5	93	○
2.2.4	Gross tertiary outbound enrolment, %	1.9	56	
2.3	Research & development (R&D)	16.5	48	
2.3.1	Researchers, headcounts/mn pop.	3,239.8	27	●
2.3.2	Gross expenditure on R&D, % GDP	1.1	34	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**32.1**	**68**	
3.1	Information & communication technologies (ICTs)	34.7	72	
3.1.1	ICT access*	39.1	83	
3.1.2	ICT use*	15.3	83	
3.1.3	Government's online service*	47.7	75	
3.1.4	E-participation*	36.8	41	
3.2	General infrastructure	29.9	67	
3.2.1	Electricity output, kWh/cap	1,525.7	85	
3.2.2	Electricity consumption, kWh/cap	1,350.0	86	
3.2.3	Logistics performance*	54.3	39	
3.2.4	Gross capital formation, % GDP	25.6	41	
3.3	Ecological sustainability	31.6	62	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	9.4	21	●
3.3.2	Environmental performance*	46.7	94	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.7	70	
4	**Market sophistication**	**38.3**	**115**	○
4.1	Credit	29.5	101	
4.1.1	Ease of getting credit*	50.0	93	
4.1.2	Domestic credit to private sector, % GDP	76.4	42	
4.1.3	Microfinance gross loans, % GDP	0.3	55	
4.2	Investment	23.0	84	
4.2.1	Ease of protecting investors*	62.6	41	
4.2.2	Market capitalization, % GDP	21.1	68	
4.2.3	Total value of stocks traded, % GDP	2.4	62	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	58	
4.3	Trade & competition	62.2	120	○
4.3.1	Applied tariff rate, weighted mean, %	16.0	140	○
4.3.2	Non-agricultural mkt access weighted tariff, %	0.2	33	●
4.3.3	Intensity of local competition†	70.5	38	●
5	**Business sophistication**	**25.2**	**110**	○
5.1	Knowledge workers	35.7	104	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	0.2	47	
5.1.4	R&D financed by business, %	20.0	64	
5.1.5	GMAT mean score	511.1	67	
5.1.6	GMAT test takers/mn pop. 20–34	36.5	98	
5.2	Innovation linkages	22.2	86	
5.2.1	University/industry research collaboration†	45.8	57	
5.2.2	State of cluster development†	38.7	93	
5.2.3	R&D financed by abroad, %	14.9	24	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	107	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	17.6	117	○
5.3.1	Royalty & license fees payments, % service imports	0.5	102	○
5.3.2	High-tech imports less re-imports, %	9.3	58	
5.3.3	Comm., computer & info. services imports, %	2.9	91	
5.3.4	FDI net inflows, % GDP	0.9	122	○
6	**Knowledge & technology outputs**	**20.1**	**103**	
6.1	Knowledge creation	13.5	62	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.8	72	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	77	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	26.5	36	●
6.1.5	Citable documents H index	80.0	72	
6.2	Knowledge impact	19.9	116	○
6.2.1	Growth rate of PPP$ GDP/worker, %	–1.1	110	○
6.2.2	New businesses/th pop. 15–64	0.6	79	
6.2.3	Computer software spending, % GDP	0.3	50	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	4.8	68	
6.2.5	High- & medium-high-tech manufactures, %	11.8	68	
6.3	Knowledge diffusion	23.5	84	
6.3.1	Royalty & license fees receipts, % service exports	0.4	58	
6.3.2	High-tech exports less re-exports, %	6.1	34	●
6.3.3	Comm., computer & info. services exports, %	5.9	73	
6.3.4	FDI net outflows, % GDP	0.0	100	○
7	**Creative outputs**	**47.0**	**33**	●
7.1	Intangible assets	60.0	10	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	59.7	58	
7.1.4	ICT & organizational model creation†	60.3	36	●
7.2	Creative goods & services	48.7	23	●
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	1.4	64	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	5.4	84	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	3.8	18	●
7.3	Online creativity	19.1	98	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.4	84	
7.3.2	Country-code TLDs/th pop. 15–69	7.5	107	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	453.4	92	
7.3.4	Video uploads on YouTube/pop. 15–69	64.0	89	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	75.2
GDP (US$ billions)	783.1
GDP per capita, PPP$	15,028.6
Income group	Upper-middle income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**36.0**	**68**	
Innovation Output Sub-Index		34.1	53	
Innovation Input Sub-Index		38.0	81	
Innovation Efficiency Ratio		0.9	29	●
Global Innovation Index 2012 (based on GII 2012 framework)		34.1	74	
1	**Institutions**	**55.8**	**89**	
1.1	Political environment	48.8	90	
1.1.1	Political stability*	43.4	117	○
1.1.2	Government effectiveness*	49.6	51	
1.1.3	Press freedom*	53.4	123	○
1.2	Regulatory environment	55.6	104	○
1.2.1	Regulatory quality*	60.6	54	
1.2.2	Rule of law*	49.3	56	
1.2.3	Cost of redundancy dismissal, salary weeks	29.8	126	○
1.3	Business environment	63.1	72	
1.3.1	Ease of starting a business*	88.4	43	
1.3.2	Ease of resolving insolvency*	25.8	110	○
1.3.3	Ease of paying taxes*	75.0	50	
2	**Human capital & research**	**29.8**	**76**	
2.1	Education	40.8	102	○
2.1.1	Current expenditure on education, % GNI	2.6	101	○
2.1.2	Public expenditure/pupil, % GDP/cap	12.2	94	○
2.1.3	School life expectancy, years	13.8	57	
2.1.4	PISA scales in reading, maths, & science	454.5	40	
2.1.5	Pupil-teacher ratio, secondary	17.6	84	
2.2	Tertiary education	28.9	78	
2.2.1	Tertiary enrolment, % gross	55.4	43	
2.2.2	Graduates in science & engineering, %	20.3	45	
2.2.3	Tertiary inbound mobility, %	0.7	84	○
2.2.4	Gross tertiary outbound enrolment, %	0.8	80	
2.3	Research & development (R&D)	19.5	43	
2.3.1	Researchers, headcounts/mn pop.	1,715.4	41	
2.3.2	Gross expenditure on R&D, % GDP	0.8	38	
2.3.3	QS university ranking, average score top 3*	26.7	42	
3	**Infrastructure**	**31.2**	**73**	
3.1	Information & communication technologies (ICTs)	30.9	80	
3.1.1	ICT access*	51.2	64	
3.1.2	ICT use*	20.9	64	
3.1.3	Government's online service*	46.4	78	
3.1.4	E-participation*	5.3	111	○
3.2	General infrastructure	31.4	59	
3.2.1	Electricity output, kWh/cap	3,092.0	64	
3.2.2	Electricity consumption, kWh/cap	2,695.3	64	
3.2.3	Logistics performance*	62.8	26	●
3.2.4	Gross capital formation, % GDP	19.8	95	
3.3	Ecological sustainability	31.2	64	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.7	25	●
3.3.2	Environmental performance*	44.8	104	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.2	55	
4	**Market sophistication**	**47.5**	**60**	
4.1	Credit	26.2	108	○
4.1.1	Ease of getting credit*	56.3	80	
4.1.2	Domestic credit to private sector, % GDP	50.0	65	
4.1.3	Microfinance gross loans, % GDP	0.0	89	○
4.2	Investment	31.9	44	
4.2.1	Ease of protecting investors*	58.1	60	
4.2.2	Market capitalization, % GDP	26.0	57	
4.2.3	Total value of stocks traded, % GDP	53.4	18	●
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	56	
4.3	Trade & competition	84.4	13	●
4.3.1	Applied tariff rate, weighted mean, %	2.4	49	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.1	77	
4.3.3	Intensity of local competition†	78.1	15	●
5	**Business sophistication**	**25.7**	**108**	○
5.1	Knowledge workers	40.4	81	
5.1.1	Knowledge-intensive employment, %	17.6	76	○
5.1.2	Firms offering formal training, % firms	28.8	67	
5.1.3	R&D performed by business, % GDP	0.4	37	
5.1.4	R&D financed by business, %	45.1	31	
5.1.5	GMAT mean score	551.9	35	●
5.1.6	GMAT test takers/mn pop. 20–34	81.1	62	
5.2	Innovation linkages	18.8	111	○
5.2.1	University/industry research collaboration†	42.8	69	
5.2.2	State of cluster development†	49.2	51	
5.2.3	R&D financed by abroad, %	0.8	80	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	67	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	52	
5.3	Knowledge absorption	17.9	115	○
5.3.1	Royalty & license fees payments, % service imports	3.2	46	
5.3.2	High-tech imports less re-imports, %	8.0	67	
5.3.3	Comm., computer & info. services imports, %	1.8	109	○
5.3.4	FDI net inflows, % GDP	2.1	90	
6	**Knowledge & technology outputs**	**30.4**	**49**	
6.1	Knowledge creation	22.6	40	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	4.0	34	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.4	41	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	3.0	12	●
6.1.4	Scientific & technical articles/bn PPP$ GDP	20.9	46	
6.1.5	Citable documents H index	193.0	36	●
6.2	Knowledge impact	45.7	29	●
6.2.1	Growth rate of PPP$ GDP/worker, %	5.8	6	●
6.2.2	New businesses/th pop. 15–64	1.0	64	
6.2.3	Computer software spending, % GDP	0.7	7	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	8.8	48	
6.2.5	High- & medium-high-tech manufactures, %	26.5	37	
6.3	Knowledge diffusion	18.9	109	○
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	1.5	69	
6.3.3	Comm., computer & info. services exports, %	1.4	130	○
6.3.4	FDI net outflows, % GDP	0.3	66	
7	**Creative outputs**	**37.8**	**69**	
7.1	Intangible assets	39.5	87	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	57.4	30	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.8	34	
7.1.3	ICT & business model creation†	59.5	59	
7.1.4	ICT & organizational model creation†	53.9	64	
7.2	Creative goods & services	40.5	50	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	1.4	66	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	9.2	59	
7.2.4	Printing & publishing manufactures, %	1.6	56	
7.2.5	Creative goods exports, %	3.7	20	●
7.3	Online creativity	31.6	56	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	16.0	37	
7.3.2	Country-code TLDs/th pop. 15–69	27.0	63	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,172.5	63	
7.3.4	Video uploads on YouTube/pop. 15–69	76.7	56	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Uganda

Key indicators

Population (millions)	35.7
GDP (US$ billions)	20.5
GDP per capita, PPP$	1,419.2
Income group	Low income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**31.2**	**89**	
Innovation Output Sub-Index		30.5	75	
Innovation Input Sub-Index		32.0	109	
Innovation Efficiency Ratio		1.0	19	●
Global Innovation Index 2012 (based on GII 2012 framework)		25.6	117	
1	**Institutions**	**56.9**	**85**	
1.1	Political environment	44.0	110	
1.1.1	Political stability*	39.2	122	
1.1.2	Government effectiveness*	24.5	99	
1.1.3	Press freedom*	68.3	82	
1.2	Regulatory environment	70.0	53	
1.2.1	Regulatory quality*	46.7	81	
1.2.2	Rule of law*	36.0	82	
1.2.3	Cost of redundancy dismissal, salary weeks	8.7	25	●
1.3	Business environment	56.8	91	
1.3.1	Ease of starting a business*	59.3	131	
1.3.2	Ease of resolving insolvency*	41.8	62	
1.3.3	Ease of paying taxes*	69.4	71	
2	**Human capital & research**	**18.1**	**115**	
2.1	Education	34.5	116	
2.1.1	Current expenditure on education, % GNI	2.9	95	
2.1.2	Public expenditure/pupil, % GDP/cap	10.6	103	
2.1.3	School life expectancy, years	11.1	103	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	17.9	89	
2.2	Tertiary education	16.8	112	
2.2.1	Tertiary enrolment, % gross	9.1	111	
2.2.2	Graduates in science & engineering, %	9.5	95	○
2.2.3	Tertiary inbound mobility, %	5.2	31	●
2.2.4	Gross tertiary outbound enrolment, %	0.1	139	○
2.3	Research & development (R&D)	3.1	90	
2.3.1	Researchers, headcounts/mn pop.	52.6	105	○
2.3.2	Gross expenditure on R&D, % GDP	0.4	67	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**18.3**	**128**	
3.1	Information & communication technologies (ICTs)	14.6	126	
3.1.1	ICT access*	19.1	123	
3.1.2	ICT use*	2.2	123	
3.1.3	Government's online service*	29.4	122	
3.1.4	E-participation*	7.9	99	
3.2	General infrastructure	38.4	32	●
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Logistics performance*	45.5	72	
3.2.4	Gross capital formation, % GDP	26.9	31	●
3.3	Ecological sustainability	2.0	131	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	98	
4	**Market sophistication**	**43.3**	**88**	
4.1	Credit	33.3	84	
4.1.1	Ease of getting credit*	75.0	38	●
4.1.2	Domestic credit to private sector, % GDP	17.9	124	
4.1.3	Microfinance gross loans, % GDP	1.7	26	●
4.2	Investment	23.2	83	
4.2.1	Ease of protecting investors*	41.9	116	
4.2.2	Market capitalization, % GDP	46.0	40	
4.2.3	Total value of stocks traded, % GDP	0.1	102	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	44	●
4.3	Trade & competition	73.4	93	
4.3.1	Applied tariff rate, weighted mean, %	8.2	108	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	6	●
4.3.3	Intensity of local competition†	62.1	76	
5	**Business sophistication**	**23.1**	**121**	
5.1	Knowledge workers	18.2	139	○
5.1.1	Knowledge-intensive employment, %	4.3	102	○
5.1.2	Firms offering formal training, % firms	35.0	52	
5.1.3	R&D performed by business, % GDP	0.0	71	
5.1.4	R&D financed by business, %	8.2	73	
5.1.5	GMAT mean score	377.7	135	○
5.1.6	GMAT test takers/mn pop. 20–34	10.8	125	
5.2	Innovation linkages	27.0	66	
5.2.1	University/industry research collaboration†	43.0	67	
5.2.2	State of cluster development†	37.8	101	
5.2.3	R&D financed by abroad, %	26.1	11	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	24.2	86	
5.3.1	Royalty & license fees payments, % service imports	0.4	106	
5.3.2	High-tech imports less re-imports, %	10.5	43	●
5.3.3	Comm., computer & info. services imports, %	3.2	82	
5.3.4	FDI net inflows, % GDP	4.7	47	●
6	**Knowledge & technology outputs**	**23.3**	**85**	
6.1	Knowledge creation	7.9	80	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.2	98	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	13.4	62	
6.1.5	Citable documents H index	90.0	66	
6.2	Knowledge impact	29.7	84	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.3	47	
6.2.2	New businesses/th pop. 15–64	0.7	76	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.3	111	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	24.6	77	
6.3.1	Royalty & license fees receipts, % service exports	2.0	25	●
6.3.2	High-tech exports less re-exports, %	0.6	87	
6.3.3	Comm., computer & info. services exports, %	5.2	79	
6.3.4	FDI net outflows, % GDP	–0.0	113	
7	**Creative outputs**	**37.6**	**70**	
7.1	Intangible assets	53.2	31	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	56.0	73	
7.1.4	ICT & organizational model creation†	50.5	80	
7.2	Creative goods & services	34.5	68	
7.2.1	Audio-visual & related services exports, %	0.3	32	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	0.6	123	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.4	72	
7.3	Online creativity	9.5	128	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.4	122	
7.3.2	Country-code TLDs/th pop. 15–69	2.5	120	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	18.6	133	○
7.3.4	Video uploads on YouTube/pop. 15–69	35.0	127	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	46.5
GDP (US$ billions)	180.2
GDP per capita, PPP$	7,598.1
Income group	Lower-middle income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**35.8**	**71**	
Innovation Output Sub-Index		33.7	58	
Innovation Input Sub-Index		37.9	83	
Innovation Efficiency Ratio		0.9	31	
Global Innovation Index 2012 (based on GII 2012 framework)		36.1	63	
1	**Institutions**	**51.4**	**105**	
1.1	Political environment	47.2	99	
1.1.1	Political stability*	62.5	79	
1.1.2	Government effectiveness*	15.7	124	○
1.1.3	Press freedom*	63.2	102	
1.2	Regulatory environment	59.7	90	
1.2.1	Regulatory quality*	35.0	113	○
1.2.2	Rule of law*	23.9	117	○
1.2.3	Cost of redundancy dismissal, salary weeks	13.0	57	
1.3	Business environment	47.3	127	○
1.3.1	Ease of starting a business*	84.7	65	
1.3.2	Ease of resolving insolvency*	10.2	135	○
1.3.3	Ease of paying taxes*	47.0	125	○
2	**Human capital & research**	**37.9**	**44**	
2.1	Education	55.3	64	
2.1.1	Current expenditure on education, % GNI	5.9	23	●
2.1.2	Public expenditure/pupil, % GDP/cap	26.0	22	●
2.1.3	School life expectancy, years	14.8	40	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	Tertiary education	41.6	42	
2.2.1	Tertiary enrolment, % gross	81.7	8	●
2.2.2	Graduates in science & engineering, %	26.3	17	●
2.2.3	Tertiary inbound mobility, %	1.5	68	
2.2.4	Gross tertiary outbound enrolment, %	1.1	72	
2.3	Research & development (R&D)	16.9	46	
2.3.1	Researchers, headcounts/mn pop.	1,665.7	42	
2.3.2	Gross expenditure on R&D, % GDP	0.9	37	
2.3.3	QS university ranking, average score top 3*	18.8	50	
3	**Infrastructure**	**26.0**	**91**	
3.1	Information & communication technologies (ICTs)	31.9	79	
3.1.1	ICT access*	48.6	66	
3.1.2	ICT use*	20.7	66	
3.1.3	Government's online service*	42.5	89	
3.1.4	E-participation*	15.8	79	
3.2	General infrastructure	26.6	93	
3.2.1	Electricity output, kWh/cap	4,111.3	52	
3.2.2	Electricity consumption, kWh/cap	3,549.8	56	
3.2.3	Logistics performance*	46.3	66	
3.2.4	Gross capital formation, % GDP	18.7	108	○
3.3	Ecological sustainability	19.4	118	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	2.1	119	○
3.3.2	Environmental performance*	46.3	97	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.5	80	
4	**Market sophistication**	**44.0**	**82**	
4.1	Credit	35.9	75	
4.1.1	Ease of getting credit*	81.3	22	
4.1.2	Domestic credit to private sector, % GDP	55.9	56	
4.1.3	Microfinance gross loans, % GDP	0.1	65	
4.2	Investment	19.3	101	
4.2.1	Ease of protecting investors*	47.4	102	
4.2.2	Market capitalization, % GDP	15.5	82	○
4.2.3	Total value of stocks traded, % GDP	2.8	60	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	54	
4.3	Trade & competition	76.9	73	
4.3.1	Applied tariff rate, weighted mean, %	2.8	55	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.9	71	
4.3.3	Intensity of local competition†	54.7	101	○
5	**Business sophistication**	**30.2**	**79**	
5.1	Knowledge workers	40.8	78	
5.1.1	Knowledge-intensive employment, %	27.5	44	
5.1.2	Firms offering formal training, % firms	24.8	80	○
5.1.3	R&D performed by business, % GDP	0.5	33	
5.1.4	R&D financed by business, %	25.9	58	
5.1.5	GMAT mean score	547.5	40	
5.1.6	GMAT test takers/mn pop. 20–34	47.8	84	
5.2	Innovation linkages	25.7	72	
5.2.1	University/industry research collaboration†	42.8	68	
5.2.2	State of cluster development†	35.4	110	○
5.2.3	R&D financed by abroad, %	22.3	12	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	94	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	61	
5.3	Knowledge absorption	24.2	85	
5.3.1	Royalty & license fees payments, % service imports	5.1	26	●
5.3.2	High-tech imports less re-imports, %	7.6	75	
5.3.3	Comm., computer & info. services imports, %	3.0	87	
5.3.4	FDI net inflows, % GDP	4.4	53	
6	**Knowledge & technology outputs**	**32.0**	**45**	
6.1	Knowledge creation	46.9	17	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	8.0	20	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.3	49	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	31.2	1	●
6.1.4	Scientific & technical articles/bn PPP$ GDP	14.4	60	
6.1.5	Citable documents H index	132.0	42	
6.2	Knowledge impact	33.5	73	
6.2.1	Growth rate of PPP$ GDP/worker, %	5.3	12	●
6.2.2	New businesses/th pop. 15–64	0.6	81	○
6.2.3	Computer software spending, % GDP	0.3	39	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.7	74	
6.2.5	High- & medium-high-tech manufactures, %	20.8	51	
6.3	Knowledge diffusion	23.0	89	
6.3.1	Royalty & license fees receipts, % service exports	0.6	51	
6.3.2	High-tech exports less re-exports, %	3.9	45	
6.3.3	Comm., computer & info. services exports, %	6.6	64	
6.3.4	FDI net outflows, % GDP	0.1	81	
7	**Creative outputs**	**35.3**	**81**	
7.1	Intangible assets	36.2	97	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	68.1	20	●
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.9	29	
7.1.3	ICT & business model creation†	48.3	101	○
7.1.4	ICT & organizational model creation†	43.8	101	○
7.2	Creative goods & services	32.6	79	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	0.1	102	○
7.2.3	Paid-for dailies, circulation, % pop. 15–69	7.3	68	
7.2.4	Printing & publishing manufactures, %	2.1	38	
7.2.5	Creative goods exports, %	0.9	54	
7.3	Online creativity	36.3	45	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	5.5	58	
7.3.2	Country-code TLDs/th pop. 15–69	42.5	45	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	3,297.8	43	
7.3.4	Video uploads on YouTube/pop. 15–69	78.1	46	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

United Arab Emirates

Key indicators

Population (millions)	8.1
GDP (US$ billions)	361.9
GDP per capita, PPP$	48,992.5
Income group	High income
Region	Northern Africa and Western Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**41.9**	**38**	
Innovation Output Sub-Index		29.8	81	
Innovation Input Sub-Index		54.0	26	
Innovation Efficiency Ratio		0.6	133	○
Global Innovation Index 2012 (based on GII 2012 framework)		44.4	37	
1	**Institutions**	**75.6**	**33**	
1.1	Political environment	73.5	36	
1.1.1	Political stability*	89.6	24	
1.1.2	Government effectiveness*	64.5	34	
1.1.3	Press freedom*	66.5	92	○
1.2	Regulatory environment	79.9	35	
1.2.1	Regulatory quality*	60.0	58	
1.2.2	Rule of law*	59.7	47	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	
1.3	Business environment	73.2	35	
1.3.1	Ease of starting a business*	88.9	38	
1.3.2	Ease of resolving insolvency*	31.9	91	
1.3.3	Ease of paying taxes*	98.9	1	●
2	**Human capital & research**	**50.0**	**24**	
2.1	Education	70.2	15	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	430.1	44	
2.1.5	Pupil-teacher ratio, secondary	12.0	43	
2.2	Tertiary education	50.7	14	●
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	24.4	26	
2.2.3	Tertiary inbound mobility, %	38.2	3	●
2.2.4	Gross tertiary outbound enrolment, %	1.9	57	
2.3	Research & development (R&D)	29.0	32	
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	29.0	39	
3	**Infrastructure**	**49.7**	**22**	
3.1	Information & communication technologies (ICTs)	67.3	19	
3.1.1	ICT access*	68.9	33	
3.1.2	ICT use*	40.2	33	
3.1.3	Government's online service*	86.3	9	●
3.1.4	E-participation*	73.7	11	●
3.2	General infrastructure	49.7	9	●
3.2.1	Electricity output, kWh/cap	13,013.0	9	●
3.2.2	Electricity consumption, kWh/cap	11,043.9	10	●
3.2.3	Logistics performance*	69.5	17	
3.2.4	Gross capital formation, % GDP	23.3	66	
3.3	Ecological sustainability	32.3	60	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.1	81	○
3.3.2	Environmental performance*	50.9	74	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.1	32	
4	**Market sophistication**	**47.3**	**63**	
4.1	Credit	42.2	53	
4.1.1	Ease of getting credit*	56.3	80	○
4.1.2	Domestic credit to private sector, % GDP	61.9	52	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	20.3	96	○
4.2.1	Ease of protecting investors*	45.9	106	○
4.2.2	Market capitalization, % GDP	26.0	58	
4.2.3	Total value of stocks traded, % GDP	4.4	55	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	55	
4.3	Trade & competition	79.4	42	
4.3.1	Applied tariff rate, weighted mean, %	3.7	63	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.9	96	○
4.3.3	Intensity of local competition†	78.2	14	●
5	**Business sophistication**	**47.3**	**22**	
5.1	Knowledge workers	63.8	23	
5.1.1	Knowledge-intensive employment, %	36.1	15	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	518.1	60	
5.1.6	GMAT test takers/mn pop. 20–34	39.8	95	○
5.2	Innovation linkages	57.5	4	●
5.2.1	University/industry research collaboration†	60.6	25	
5.2.2	State of cluster development†	68.5	7	●
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.3	1	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	67	
5.3	Knowledge absorption	20.7	99	○
5.3.1	Royalty & license fees payments, % service imports	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	7.3	79	
5.3.3	Comm., computer & info. services imports, %	n/a	n/a	
5.3.4	FDI net inflows, % GDP	2.1	86	
6	**Knowledge & technology outputs**	**12.0**	**131**	○
6.1	Knowledge creation	7.2	85	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.2	58	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.3	112	○
6.1.5	Citable documents H index	81.0	71	
6.2	Knowledge impact	25.9	100	○
6.2.1	Growth rate of PPP$ GDP/worker, %	–0.1	98	○
6.2.2	New businesses/th pop. 15–64	1.4	52	
6.2.3	Computer software spending, % GDP	0.3	61	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	11.7	42	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	0.4	141	○
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.1	110	○
6.3.3	Comm., computer & info. services exports, %	n/a	n/a	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**47.6**	**28**	
7.1	Intangible assets	73.0	3	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	75.1	10	●
7.1.4	ICT & organizational model creation†	70.9	10	●
7.2	Creative goods & services	9.7	129	○
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	15.7	30	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.0	123	○
7.3	Online creativity	34.6	49	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	17.7	34	
7.3.2	Country-code TLDs/th pop. 15–69	37.9	49	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,189.1	62	
7.3.4	Video uploads on YouTube/pop. 15–69	75.8	58	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

United Kingdom

Key indicators

Population (millions)	65.8
GDP (US$ billions)	2,433.8
GDP per capita, PPP$	36,727.8
Income group	High income
Region	Europe

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**61.2**	**3**	●
Innovation Output Sub-Index		54.3	4	●
Innovation Input Sub-Index		68.2	4	●
Innovation Efficiency Ratio		0.8	60	○
Global Innovation Index 2012 (based on GII 2012 framework)		61.2	5	
1	**Institutions**	**88.4**	**14**	
1.1	Political environment	79.7	23	
1.1.1	Political stability*	75.3	48	
1.1.2	Government effectiveness*	80.8	16	
1.1.3	Press freedom*	83.1	27	
1.2	Regulatory environment	95.7	8	
1.2.1	Regulatory quality*	91.9	13	
1.2.2	Rule of law*	92.2	15	
1.2.3	Cost of redundancy dismissal, salary weeks	8.4	24	
1.3	Business environment	89.9	9	
1.3.1	Ease of starting a business*	88.4	43	
1.3.2	Ease of resolving insolvency*	93.9	8	
1.3.3	Ease of paying taxes*	87.4	15	
2	**Human capital & research**	**56.2**	**13**	
2.1	Education	62.8	36	
2.1.1	Current expenditure on education, % GNI	5.1	39	
2.1.2	Public expenditure/pupil, % GDP/cap	25.7	25	
2.1.3	School life expectancy, years	16.7	12	
2.1.4	PISA scales in reading, maths, & science	500.1	18	
2.1.5	Pupil-teacher ratio, secondary	14.3	62	○
2.2	Tertiary education	43.2	35	
2.2.1	Tertiary enrolment, % gross	59.7	35	
2.2.2	Graduates in science & engineering, %	22.4	35	
2.2.3	Tertiary inbound mobility, %	15.7	10	
2.2.4	Gross tertiary outbound enrolment, %	0.6	94	○
2.3	Research & development (R&D)	62.6	11	
2.3.1	Researchers, headcounts/mn pop.	6,363.4	10	
2.3.2	Gross expenditure on R&D, % GDP	1.8	20	
2.3.3	QS university ranking, average score top 3*	99.0	1	●
3	**Infrastructure**	**59.4**	**5**	●
3.1	Information & communication technologies (ICTs)	86.2	5	●
3.1.1	ICT access*	84.7	7	
3.1.2	ICT use*	70.7	7	
3.1.3	Government's online service*	97.4	4	●
3.1.4	E-participation*	92.1	5	
3.2	General infrastructure	35.7	41	
3.2.1	Electricity output, kWh/cap	5,807.4	38	
3.2.2	Electricity consumption, kWh/cap	5,523.3	38	
3.2.3	Logistics performance*	72.5	10	
3.2.4	Gross capital formation, % GDP	14.7	127	○
3.3	Ecological sustainability	56.4	10	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	10.8	10	
3.3.2	Environmental performance*	68.8	9	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	6.7	17	
4	**Market sophistication**	**84.6**	**3**	●
4.1	Credit	94.7	2	●
4.1.1	Ease of getting credit*	100.0	1	●
4.1.2	Domestic credit to private sector, % GDP	186.8	9	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	76.0	3	●
4.2.1	Ease of protecting investors*	82.6	11	
4.2.2	Market capitalization, % GDP	118.7	7	
4.2.3	Total value of stocks traded, % GDP	121.5	5	
4.2.4	Venture capital deals/tr PPP$ GDP	0.2	9	
4.3	Trade & competition	83.1	19	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.3	102	○
4.3.3	Intensity of local competition†	82.6	4	●
5	**Business sophistication**	**52.3**	**10**	
5.1	Knowledge workers	72.2	6	
5.1.1	Knowledge-intensive employment, %	49.5	2	●
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	1.1	21	
5.1.4	R&D financed by business, %	44.6	34	○
5.1.5	GMAT mean score	586.2	10	
5.1.6	GMAT test takers/mn pop. 20–34	139.2	40	
5.2	Innovation linkages	50.3	11	
5.2.1	University/industry research collaboration†	79.2	2	●
5.2.2	State of cluster development†	68.8	5	●
5.2.3	R&D financed by abroad, %	17.0	20	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	27	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	1.5	16	
5.3	Knowledge absorption	34.4	40	
5.3.1	Royalty & license fees payments, % service imports	5.8	23	
5.3.2	High-tech imports less re-imports, %	13.1	28	
5.3.3	Comm., computer & info. services imports, %	7.2	37	
5.3.4	FDI net inflows, % GDP	1.2	117	○
6	**Knowledge & technology outputs**	**51.1**	**8**	
6.1	Knowledge creation	58.7	8	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	8.8	19	
6.1.2	PCT resident patent ap/bn PPP$ GDP	2.1	20	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	41.9	15	
6.1.5	Citable documents H index	802.0	1	●
6.2	Knowledge impact	52.7	12	
6.2.1	Growth rate of PPP$ GDP/worker, %	–0.2	102	○
6.2.2	New businesses/th pop. 15–64	10.4	7	
6.2.3	Computer software spending, % GDP	0.7	5	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	19.0	23	
6.2.5	High- & medium-high-tech manufactures, %	37.2	24	
6.3	Knowledge diffusion	45.6	18	
6.3.1	Royalty & license fees receipts, % service exports	4.9	14	
6.3.2	High-tech exports less re-exports, %	15.9	16	
6.3.3	Comm., computer & info. services exports, %	8.6	53	○
6.3.4	FDI net outflows, % GDP	4.4	14	
7	**Creative outputs**	**57.5**	**9**	
7.1	Intangible assets	48.1	46	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	38.4	44	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.9	30	○
7.1.3	ICT & business model creation†	80.9	2	●
7.1.4	ICT & organizational model creation†	76.1	1	●
7.2	Creative goods & services	58.4	10	
7.2.1	Audio-visual & related services exports, %	1.0	8	
7.2.2	National feature films/mn pop. 15–69	6.8	21	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	30.6	12	
7.2.4	Printing & publishing manufactures, %	2.4	31	
7.2.5	Creative goods exports, %	5.3	13	
7.3	Online creativity	75.5	5	●
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	83.9	12	
7.3.2	Country-code TLDs/th pop. 15–69	74.8	7	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	9,225.8	11	
7.3.4	Video uploads on YouTube/pop. 15–69	89.6	7	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

United States of America

Key indicators

Population (millions)	327.9
GDP (US$ billions)	15,653.4
GDP per capita, PPP$	49,802.1
Income group	High income
Region	Northern America

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**60.3**	**5**	
Innovation Output Sub-Index		51.4	12	
Innovation Input Sub-Index		69.2	3	●
Innovation Efficiency Ratio		0.7	86	○
Global Innovation Index 2012 (based on GII 2012 framework)		57.7	10	
1	**Institutions**	**86.0**	**17**	
1.1	Political environment	79.3	25	
1.1.1	Political stability*	79.3	44	
1.1.2	Government effectiveness*	77.0	21	
1.1.3	Press freedom*	81.8	29	
1.2	Regulatory environment	94.6	13	
1.2.1	Regulatory quality*	88.3	16	
1.2.2	Rule of law*	90.2	17	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	
1.3	Business environment	84.2	15	
1.3.1	Ease of starting a business*	89.8	31	
1.3.2	Ease of resolving insolvency*	86.5	15	
1.3.3	Ease of paying taxes*	76.2	43	
2	**Human capital & research**	**61.1**	**6**	
2.1	Education	65.6	27	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	21.8	48	
2.1.3	School life expectancy, years	16.8	11	
2.1.4	PISA scales in reading, maths, & science	496.4	23	
2.1.5	Pupil-teacher ratio, secondary	13.8	58	
2.2	Tertiary education	36.7	52	
2.2.1	Tertiary enrolment, % gross	94.8	2	●
2.2.2	Graduates in science & engineering, %	15.5	77	○
2.2.3	Tertiary inbound mobility, %	3.4	46	
2.2.4	Gross tertiary outbound enrolment, %	0.2	122	○
2.3	Research & development (R&D)	80.9	1	●
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	2.8	10	
2.3.3	QS university ranking, average score top 3*	98.9	2	●
3	**Infrastructure**	**52.5**	**17**	
3.1	Information & communication technologies (ICTs)	80.2	6	
3.1.1	ICT access*	75.0	23	
3.1.2	ICT use*	53.8	23	
3.1.3	Government's online service*	100.0	1	●
3.1.4	E-participation*	92.1	5	
3.2	General infrastructure	48.7	12	
3.2.1	Electricity output, kWh/cap	13,797.6	7	
3.2.2	Electricity consumption, kWh/cap	13,156.2	9	
3.2.3	Logistics performance*	73.3	8	
3.2.4	Gross capital formation, % GDP	16.2	123	○
3.3	Ecological sustainability	28.6	74	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.0	69	
3.3.2	Environmental performance*	56.6	48	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	94	○
4	**Market sophistication**	**87.1**	**2**	●
4.1	Credit	93.4	4	●
4.1.1	Ease of getting credit*	93.8	4	
4.1.2	Domestic credit to private sector, % GDP	194.4	7	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	82.6	2	●
4.2.1	Ease of protecting investors*	86.7	6	
4.2.2	Market capitalization, % GDP	104.3	12	
4.2.3	Total value of stocks traded, % GDP	205.1	1	
4.2.4	Venture capital deals/tr PPP$ GDP	0.3	3	●
4.3	Trade & competition	85.3	10	
4.3.1	Applied tariff rate, weighted mean, %	1.8	41	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.2	78	
4.3.3	Intensity of local competition†	77.4	16	
5	**Business sophistication**	**59.2**	**2**	●
5.1	Knowledge workers	72.7	5	
5.1.1	Knowledge-intensive employment, %	36.3	14	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	1.9	9	
5.1.4	R&D financed by business, %	60.0	12	
5.1.5	GMAT mean score	531.3	51	
5.1.6	GMAT test takers/mn pop. 20–34	1,807.1	1	●
5.2	Innovation linkages	63.6	3	●
5.2.1	University/industry research collaboration†	77.2	3	●
5.2.2	State of cluster development†	67.1	9	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	25	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	1.9	13	
5.3	Knowledge absorption	41.4	16	
5.3.1	Royalty & license fees payments, % service imports	8.1	13	
5.3.2	High-tech imports less re-imports, %	16.6	14	
5.3.3	Comm., computer & info. services imports, %	7.5	31	
5.3.4	FDI net inflows, % GDP	1.7	97	○
6	**Knowledge & technology outputs**	**53.6**	**7**	
6.1	Knowledge creation	61.6	7	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	16.4	7	
6.1.2	PCT resident patent ap/bn PPP$ GDP	3.3	15	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	21.3	45	
6.1.5	Citable documents H index	1,305.0	1	●
6.2	Knowledge impact	54.1	11	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.2	80	○
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	1.0	1	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.7	99	○
6.2.5	High- & medium-high-tech manufactures, %	43.3	15	
6.3	Knowledge diffusion	49.2	15	
6.3.1	Royalty & license fees receipts, % service exports	17.3	5	
6.3.2	High-tech exports less re-exports, %	12.8	22	
6.3.3	Comm., computer & info. services exports, %	4.7	84	○
6.3.4	FDI net outflows, % GDP	2.7	23	
7	**Creative outputs**	**49.2**	**19**	
7.1	Intangible assets	39.6	86	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	11.9	77	○
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.3	43	○
7.1.3	ICT & business model creation†	73.3	15	
7.1.4	ICT & organizational model creation†	73.0	6	
7.2	Creative goods & services	55.6	12	
7.2.1	Audio-visual & related services exports, %	2.5	6	
7.2.2	National feature films/mn pop. 15–69	3.7	38	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	20.1	22	
7.2.4	Printing & publishing manufactures, %	1.9	46	
7.2.5	Creative goods exports, %	3.2	25	
7.3	Online creativity	62.1	18	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	100.0	1	●
7.3.2	Country-code TLDs/th pop. 15–69	29.8	59	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	4,374.9	34	
7.3.4	Video uploads on YouTube/pop. 15–69	93.1	4	●

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Uruguay

Key indicators

Population (millions)	3.5
GDP (US$ billions)	49.7
GDP per capita, PPP$	15,839.5
Income group	Upper-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**38.1**	**52**	
Innovation Output Sub-Index		34.9	46	
Innovation Input Sub-Index		41.2	64	
Innovation Efficiency Ratio		0.8	45	
Global Innovation Index 2012 (based on GII 2012 framework)		35.1	67	
1	**Institutions**	**70.0**	**45**	
1.1	Political environment	75.8	31	●
1.1.1	Political stability*	89.1	25	●
1.1.2	Government effectiveness*	54.2	44	
1.1.3	Press freedom*	84.1	25	●
1.2	Regulatory environment	68.8	60	
1.2.1	Regulatory quality*	60.2	56	
1.2.2	Rule of law*	66.3	40	
1.2.3	Cost of redundancy dismissal, salary weeks	20.8	96	
1.3	Business environment	65.3	65	
1.3.1	Ease of starting a business*	88.8	39	
1.3.2	Ease of resolving insolvency*	46.4	50	
1.3.3	Ease of paying taxes*	60.8	96	
2	**Human capital & research**	**31.6**	**69**	
2.1	Education	53.8	70	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	10.3	105	○
2.1.3	School life expectancy, years	15.5	28	●
2.1.4	PISA scales in reading, maths, & science	426.6	46	
2.1.5	Pupil-teacher ratio, secondary	11.3	35	●
2.2	Tertiary education	30.7	69	
2.2.1	Tertiary enrolment, % gross	63.2	29	●
2.2.2	Graduates in science & engineering, %	15.6	76	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	1.1	73	
2.3	Research & development (R&D)	10.3	66	
2.3.1	Researchers, headcounts/mn pop.	853.3	56	
2.3.2	Gross expenditure on R&D, % GDP	0.4	64	
2.3.3	QS university ranking, average score top 3*	14.8	53	
3	**Infrastructure**	**36.5**	**53**	
3.1	Information & communication technologies (ICTs)	41.8	56	
3.1.1	ICT access*	61.5	46	
3.1.2	ICT use*	32.4	47	
3.1.3	Government's online service*	54.9	52	
3.1.4	E-participation*	18.4	72	
3.2	General infrastructure	27.0	90	
3.2.1	Electricity output, kWh/cap	3,217.6	59	
3.2.2	Electricity consumption, kWh/cap	2,762.9	63	
3.2.3	Logistics performance*	49.5	56	
3.2.4	Gross capital formation, % GDP	19.6	100	
3.3	Ecological sustainability	40.6	32	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	10.4	11	●
3.3.2	Environmental performance*	57.1	45	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.2	39	
4	**Market sophistication**	**37.4**	**119**	○
4.1	Credit	24.0	113	○
4.1.1	Ease of getting credit*	62.5	68	
4.1.2	Domestic credit to private sector, % GDP	23.7	111	○
4.1.3	Microfinance gross loans, % GDP	0.0	81	○
4.2	Investment	12.9	135	○
4.2.1	Ease of protecting investors*	51.5	90	
4.2.2	Market capitalization, % GDP	0.4	108	○
4.2.3	Total value of stocks traded, % GDP	0.0	109	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	75.4	79	
4.3.1	Applied tariff rate, weighted mean, %	3.6	60	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.1	74	
4.3.3	Intensity of local competition†	56.0	96	
5	**Business sophistication**	**30.6**	**77**	
5.1	Knowledge workers	48.7	50	
5.1.1	Knowledge-intensive employment, %	21.4	58	
5.1.2	Firms offering formal training, % firms	48.6	31	
5.1.3	R&D performed by business, % GDP	0.2	52	
5.1.4	R&D financed by business, %	39.3	39	
5.1.5	GMAT mean score	597.1	4	●
5.1.6	GMAT test takers/mn pop. 20–34	71.8	70	
5.2	Innovation linkages	18.8	110	
5.2.1	University/industry research collaboration†	45.3	60	
5.2.2	State of cluster development†	43.5	71	
5.2.3	R&D financed by abroad, %	1.9	68	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.1	36	
5.3	Knowledge absorption	24.3	84	
5.3.1	Royalty & license fees payments, % service imports	1.1	78	
5.3.2	High-tech imports less re-imports, %	10.2	47	
5.3.3	Comm., computer & info. services imports, %	3.2	83	
5.3.4	FDI net inflows, % GDP	4.7	49	
6	**Knowledge & technology outputs**	**23.6**	**82**	
6.1	Knowledge creation	8.8	74	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.4	86	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.7	35	
6.1.4	Scientific & technical articles/bn PPP$ GDP	12.3	67	
6.1.5	Citable documents H index	99.0	60	
6.2	Knowledge impact	37.1	53	
6.2.1	Growth rate of PPP$ GDP/worker, %	5.2	13	●
6.2.2	New businesses/th pop. 15–64	3.4	34	
6.2.3	Computer software spending, % GDP	0.3	55	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	15.2	31	●
6.2.5	High- & medium-high-tech manufactures, %	11.1	71	
6.3	Knowledge diffusion	17.5	114	○
6.3.1	Royalty & license fees receipts, % service exports	0.0	107	○
6.3.2	High-tech exports less re-exports, %	1.5	70	
6.3.3	Comm., computer & info. services exports, %	6.2	70	
6.3.4	FDI net outflows, % GDP	–0.0	115	○
7	**Creative outputs**	**46.3**	**36**	●
7.1	Intangible assets	54.8	25	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	70.9	18	●
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	63.8	41	
7.1.4	ICT & organizational model creation†	61.0	34	●
7.2	Creative goods & services	33.3	74	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	3.5	44	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	6.4	74	
7.2.4	Printing & publishing manufactures, %	1.1	76	○
7.2.5	Creative goods exports, %	0.8	57	
7.3	Online creativity	42.3	37	●
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	11.0	48	
7.3.2	Country-code TLDs/th pop. 15–69	48.0	39	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	5,527.7	30	●
7.3.4	Video uploads on YouTube/pop. 15–69	78.1	45	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Uzbekistan

Key indicators

Population (millions)	28.3
GDP (US$ billions)	51.6
GDP per capita, PPP$	3,528.6
Income group	Lower-middle income
Region	Central and Southern Asia

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)		**23.9**	**133**	○
Innovation Output Sub-Index		16.2	138	○
Innovation Input Sub-Index		31.5	114	
Innovation Efficiency Ratio		0.5	135	○
Global Innovation Index 2012 (based on GII 2012 framework)		23.9	127	
1	**Institutions**	**45.4**	**126**	
1.1	Political environment	36.1	131	○
1.1.1	Political stability*	51.2	101	
1.1.2	Government effectiveness*	17.3	120	
1.1.3	Press freedom*	39.6	133	○
1.2	Regulatory environment	45.0	123	
1.2.1	Regulatory quality*	8.0	140	○
1.2.2	Rule of law*	9.7	139	○
1.2.3	Cost of redundancy dismissal, salary weeks	17.3	82	
1.3	Business environment	55.0	99	
1.3.1	Ease of starting a business*	87.0	54	●
1.3.2	Ease of resolving insolvency*	41.4	64	
1.3.3	Ease of paying taxes*	36.7	135	○
2	**Human capital & research**	**26.9**	**86**	
2.1	Education	62.5	38	●
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	11.6	94	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	13.3	53	●
2.2	Tertiary education	18.2	108	
2.2.1	Tertiary enrolment, % gross	8.9	113	
2.2.2	Graduates in science & engineering, %	21.1	38	●
2.2.3	Tertiary inbound mobility, %	0.1	101	
2.2.4	Gross tertiary outbound enrolment, %	0.8	81	
2.3	Research & development (R&D)	0.0	123	○
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**22.4**	**111**	
3.1	Information & communication technologies (ICTs)	26.2	92	
3.1.1	ICT access*	25.2	108	
3.1.2	ICT use*	6.4	108	
3.1.3	Government's online service*	49.7	67	
3.1.4	E-participation*	23.7	59	
3.2	General infrastructure	27.6	84	
3.2.1	Electricity output, kWh/cap	1,836.3	80	
3.2.2	Electricity consumption, kWh/cap	1,671.7	77	
3.2.3	Logistics performance*	36.5	113	
3.2.4	Gross capital formation, % GDP	30.9	20	●
3.3	Ecological sustainability	13.3	124	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	1.8	123	○
3.3.2	Environmental performance*	32.2	122	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	121	
4	**Market sophistication**	**39.8**	**108**	
4.1	Credit	23.3	118	
4.1.1	Ease of getting credit*	37.5	129	○
4.1.2	Domestic credit to private sector, % GDP	n/a	n/a	
4.1.3	Microfinance gross loans, % GDP	0.8	40	●
4.2	Investment	15.1	127	
4.2.1	Ease of protecting investors*	40.4	122	
4.2.2	Market capitalization, % GDP	4.2	101	○
4.2.3	Total value of stocks traded, % GDP	0.2	93	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	57	●
4.3	Trade & competition	80.9	31	●
4.3.1	Applied tariff rate, weighted mean, %	6.9	99	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.3	38	●
4.3.3	Intensity of local competition†	n/a	n/a	
5	**Business sophistication**	**23.1**	**122**	
5.1	Knowledge workers	30.8	113	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	9.6	102	○
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	539.1	45	●
5.1.6	GMAT test takers/mn pop. 20–34	15.5	120	
5.2	Innovation linkages	12.1	133	○
5.2.1	University/industry research collaboration†	n/a	n/a	
5.2.2	State of cluster development†	n/a	n/a	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	38	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	26.3	74	
5.3.1	Royalty & license fees payments, % service imports	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Comm., computer & info. services imports, %	n/a	n/a	
5.3.4	FDI net inflows, % GDP	3.1	68	
6	**Knowledge & technology outputs**	**26.4**	**69**	
6.1	Knowledge creation	6.5	93	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	3.0	43	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	91	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.0	30	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.8	128	
6.1.5	Citable documents H index	50.0	107	
6.2	Knowledge impact	36.3	57	●
6.2.1	Growth rate of PPP$ GDP/worker, %	4.7	19	●
6.2.2	New businesses/th pop. 15–64	0.8	73	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.6	105	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	n/a	n/a	
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Comm., computer & info. services exports, %	n/a	n/a	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**6.1**	**141**	○
7.1	Intangible assets	7.2	138	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	25.7	59	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.0	66	○
7.1.3	ICT & business model creation†	n/a	n/a	
7.1.4	ICT & organizational model creation†	n/a	n/a	
7.2	Creative goods & services	0.2	141	○
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	0.2	135	○
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	n/a	n/a	
7.3	Online creativity	9.8	127	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.1	131	○
7.3.2	Country-code TLDs/th pop. 15–69	8.2	105	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	34.7	128	○
7.3.4	Video uploads on YouTube/pop. 15–69	30.7	131	○

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Venezuela (Bolivarian Republic of)

Key indicators

Population (millions)	30.2
GDP (US$ billions)	338.0
GDP per capita, PPP$	13,241.8
Income group	Upper-middle income
Region	Latin America and the Caribbean

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**27.3**	**114**	
	Innovation Output Sub-Index	27.6	92	
	Innovation Input Sub-Index	27.0	134	○
	Innovation Efficiency Ratio	1.0	10	●
	Global Innovation Index 2012 (based on GII 2012 framework)	25.4	118	
1	**Institutions**	**20.6**	**142**	○
1.1	Political environment	36.0	132	○
1.1.1	Political stability*	34.2	127	○
1.1.2	Government effectiveness*	8.2	134	○
1.1.3	Press freedom*	65.6	95	
1.2	Regulatory environment	3.5	141	○
1.2.1	Regulatory quality*	10.6	139	○
1.2.2	Rule of law*	3.5	141	○
1.2.3	Cost of redundancy dismissal, salary weeks	82.3	138	○
1.3	Business environment	22.4	142	○
1.3.1	Ease of starting a business*	46.8	141	○
1.3.2	Ease of resolving insolvency*	7.8	138	○
1.3.3	Ease of paying taxes*	12.7	142	○
2	**Human capital & research**	**26.5**	**91**	
2.1	Education	42.3	96	
2.1.1	Current expenditure on education, % GNI	3.5	81	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	14.3	47	●
2.1.4	PISA scales in reading, maths, & science	413.4	52	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	Tertiary education	26.9	82	
2.2.1	Tertiary enrolment, % gross	78.1	12	●
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	0.1	108	○
2.2.4	Gross tertiary outbound enrolment, %	0.4	106	
2.3	Research & development (R&D)	10.4	65	
2.3.1	Researchers, headcounts/mn pop.	239.4	77	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	19.0	49	●
3	**Infrastructure**	**28.2**	**86**	
3.1	Information & communication technologies (ICTs)	32.8	77	
3.1.1	ICT access*	40.1	80	
3.1.2	ICT use*	16.2	79	
3.1.3	Government's online service*	48.4	73	
3.1.4	E-participation*	26.3	55	●
3.2	General infrastructure	26.9	91	
3.2.1	Electricity output, kWh/cap	4,102.4	53	
3.2.2	Electricity consumption, kWh/cap	3,286.6	57	
3.2.3	Logistics performance*	37.3	107	
3.2.4	Gross capital formation, % GDP	24.4	52	●
3.3	Ecological sustainability	24.8	93	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.1	97	
3.3.2	Environmental performance*	55.6	54	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	120	
4	**Market sophistication**	**25.9**	**142**	○
4.1	Credit	13.2	138	○
4.1.1	Ease of getting credit*	31.3	132	○
4.1.2	Domestic credit to private sector, % GDP	20.4	118	
4.1.3	Microfinance gross loans, % GDP	0.1	75	
4.2	Investment	6.2	142	○
4.2.1	Ease of protecting investors*	24.1	142	○
4.2.2	Market capitalization, % GDP	1.6	106	○
4.2.3	Total value of stocks traded, % GDP	0.0	105	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3	Trade & competition	58.4	129	○
4.3.1	Applied tariff rate, weighted mean, %	10.6	127	○
4.3.2	Non-agricultural mkt access weighted tariff, %	0.8	63	
4.3.3	Intensity of local competition†	37.8	134	○
5	**Business sophistication**	**33.5**	**58**	●
5.1	Knowledge workers	54.9	41	●
5.1.1	Knowledge-intensive employment, %	23.9	49	
5.1.2	Firms offering formal training, % firms	56.0	18	●
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	490.1	86	
5.1.6	GMAT test takers/mn pop. 20–34	62.0	74	
5.2	Innovation linkages	26.5	69	
5.2.1	University/industry research collaboration†	43.8	65	
5.2.2	State of cluster development†	33.9	115	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	109	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	n/a	n/a	
5.3	Knowledge absorption	19.1	111	
5.3.1	Royalty & license fees payments, % service imports	2.9	50	●
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Comm., computer & info. services imports, %	3.4	77	
5.3.4	FDI net inflows, % GDP	1.7	101	
6	**Knowledge & technology outputs**	**25.9**	**73**	
6.1	Knowledge creation	6.4	94	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.1	108	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.2	131	○
6.1.5	Citable documents H index	123.0	47	●
6.2	Knowledge impact	27.4	93	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.7	90	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.3	53	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.3	109	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	34.1	37	●
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Comm., computer & info. services exports, %	7.2	62	
6.3.4	FDI net outflows, % GDP	0.1	92	
7	**Creative outputs**	**29.2**	**113**	
7.1	Intangible assets	32.7	109	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	17.3	70	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	44.9	116	
7.1.4	ICT & organizational model creation†	43.7	102	
7.2	Creative goods & services	25.0	99	
7.2.1	Audio-visual & related services exports, %	0.3	31	●
7.2.2	National feature films/mn pop. 15–69	0.8	81	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	9.2	60	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	n/a	n/a	
7.3	Online creativity	26.4	70	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.4	81	
7.3.2	Country-code TLDs/th pop. 15–69	33.6	52	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	780.3	79	
7.3.4	Video uploads on YouTube/pop. 15–69	65.0	86	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Viet Nam

Key indicators

Population (millions)	91.0
GDP (US$ billions)	137.7
GDP per capita, PPP$	3,545.3
Income group	Lower-middle income
Region	South East Asia and Oceania

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**34.8**	**76**	
	Innovation Output Sub-Index	34.0	54	
	Innovation Input Sub-Index	35.6	89	
	Innovation Efficiency Ratio	1.0	17	●
	Global Innovation Index 2012 (based on GII 2012 framework)	33.9	76	
1	**Institutions**	**46.6**	**122**	○
1.1	Political environment	43.1	116	○
1.1.1	Political stability*	70.3	58	
1.1.2	Government effectiveness*	30.8	86	
1.1.3	Press freedom*	28.2	137	○
1.2	Regulatory environment	50.4	115	○
1.2.1	Regulatory quality*	33.6	117	○
1.2.2	Rule of law*	34.4	91	
1.2.3	Cost of redundancy dismissal, salary weeks	24.6	109	○
1.3	Business environment	46.3	130	○
1.3.1	Ease of starting a business*	75.9	100	
1.3.2	Ease of resolving insolvency*	15.6	130	○
1.3.3	Ease of paying taxes*	47.3	124	○
2	**Human capital & research**	**24.7**	**98**	
2.1	Education	56.8	58	
2.1.1	Current expenditure on education, % GNI	5.6	29	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	11.9	87	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	15.9	74	
2.2	Tertiary education	17.4	111	○
2.2.1	Tertiary enrolment, % gross	24.4	84	
2.2.2	Graduates in science & engineering, %	16.8	64	
2.2.3	Tertiary inbound mobility, %	0.2	100	○
2.2.4	Gross tertiary outbound enrolment, %	0.5	96	
2.3	Research & development (R&D)	0.0	123	○
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**29.2**	**80**	
3.1	Information & communication technologies (ICTs)	27.3	90	
3.1.1	ICT access*	40.0	81	
3.1.2	ICT use*	16.0	80	
3.1.3	Government's online service*	42.5	89	
3.1.4	E-participation*	10.5	94	
3.2	General infrastructure	33.1	52	
3.2.1	Electricity output, kWh/cap	1,091.6	92	
3.2.2	Electricity consumption, kWh/cap	1,034.6	92	
3.2.3	Logistics performance*	50.0	53	
3.2.4	Gross capital formation, % GDP	34.1	13	●
3.3	Ecological sustainability	27.2	81	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.2	96	○
3.3.2	Environmental performance*	50.6	76	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.7	46	
4	**Market sophistication**	**45.5**	**73**	
4.1	Credit	58.6	28	●
4.1.1	Ease of getting credit*	75.0	38	
4.1.2	Domestic credit to private sector, % GDP	111.6	27	●
4.1.3	Microfinance gross loans, % GDP	4.5	11	●
4.2	Investment	16.4	119	○
4.2.1	Ease of protecting investors*	30.4	136	○
4.2.2	Market capitalization, % GDP	14.8	84	○
4.2.3	Total value of stocks traded, % GDP	4.6	54	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	50	
4.3	Trade & competition	61.4	123	○
4.3.1	Applied tariff rate, weighted mean, %	5.7	86	
4.3.2	Non-agricultural mkt access weighted tariff, %	5.2	137	○
4.3.3	Intensity of local competition†	69.1	44	
5	**Business sophistication**	**32.0**	**67**	
5.1	Knowledge workers	40.9	76	
5.1.1	Knowledge-intensive employment, %	7.4	97	○
5.1.2	Firms offering formal training, % firms	43.6	40	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	538.4	46	
5.1.6	GMAT test takers/mn pop. 20–34	54.0	81	
5.2	Innovation linkages	27.4	65	
5.2.1	University/industry research collaboration†	37.3	95	
5.2.2	State of cluster development†	54.5	30	●
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	45	
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	27.7	64	
5.3.1	Royalty & license fees payments, % service imports	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	13.2	27	●
5.3.3	Comm., computer & info. services imports, %	0.6	135	○
5.3.4	FDI net inflows, % GDP	6.0	32	
6	**Knowledge & technology outputs**	**30.0**	**51**	
6.1	Knowledge creation	6.1	97	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.0	70	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	79	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.6	36	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.4	102	
6.1.5	Citable documents H index	101.0	57	
6.2	Knowledge impact	42.0	40	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.0	26	●
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.3	35	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	15.9	28	●
6.2.5	High- & medium-high-tech manufactures, %	21.1	50	
6.3	Knowledge diffusion	30.0	45	
6.3.1	Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	12.1	23	●
6.3.3	Comm., computer & info. services exports, %	1.6	122	○
6.3.4	FDI net outflows, % GDP	0.8	52	
7	**Creative outputs**	**38.1**	**66**	
7.1	Intangible assets	42.5	73	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	79.6	14	●
7.1.2	Madrid trademark registrations/bn PPP$ GDP	0.2	51	
7.1.3	ICT & business model creation†	66.3	36	
7.1.4	ICT & organizational model creation†	55.9	55	
7.2	Creative goods & services	38.7	55	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	1.2	71	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	6.3	78	
7.2.4	Printing & publishing manufactures, %	1.3	67	
7.2.5	Creative goods exports, %	4.9	15	●
7.3	Online creativity	28.5	65	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.2	86	
7.3.2	Country-code TLDs/th pop. 15–69	40.7	47	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	332.8	100	
7.3.4	Video uploads on YouTube/pop. 15–69	69.4	77	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	25.6
GDP (US$ billions)	36.4
GDP per capita, PPP$	2,231.7
Income group	Lower-middle income
Region	Northern Africa and Western Asia

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)	**19.3**	**142**	○
Innovation Output Sub-Index	14.8	139	
Innovation Input Sub-Index	23.9	141	○
Innovation Efficiency Ratio	0.6	124	
Global Innovation Index 2012 (based on GII 2012 framework)	19.2	139	
1 Institutions	**37.3**	**137**	
1.1 Political environment	16.0	141	○
1.1.1 Political stability*	10.0	140	
1.1.2 Government effectiveness*	7.3	136	
1.1.3 Press freedom*	30.8	135	
1.2 Regulatory environment	41.1	129	
1.2.1 Regulatory quality*	28.9	125	
1.2.2 Rule of law*	13.5	136	
1.2.3 Cost of redundancy dismissal, salary weeks	27.4	118	
1.3 Business environment	54.7	101	
1.3.1 Ease of starting a business*	74.4	101	
1.3.2 Ease of resolving insolvency*	26.3	109	
1.3.3 Ease of paying taxes*	63.3	93	
2 Human capital & research	**19.7**	**111**	
2.1 Education	43.5	92	
2.1.1 Current expenditure on education, % GNI	4.1	69	●
2.1.2 Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3 School life expectancy, years	8.7	121	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	16.1	76	●
2.2 Tertiary education	15.5	113	
2.2.1 Tertiary enrolment, % gross	10.2	110	
2.2.2 Graduates in science & engineering, %	n/a	n/a	
2.2.3 Tertiary inbound mobility, %	2.7	51	●
2.2.4 Gross tertiary outbound enrolment, %	0.3	112	
2.3 Research & development (R&D)	0.0	123	○
2.3.1 Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3 QS university ranking, average score top 3*	0.0	68	○
3 Infrastructure	**16.9**	**135**	
3.1 Information & communication technologies (ICTs)	9.8	139	
3.1.1 ICT access*	19.2	121	
3.1.2 ICT use*	2.3	122	
3.1.3 Government's online service*	17.7	137	
3.1.4 E-participation*	0.0	129	○
3.2 General infrastructure	17.1	136	
3.2.1 Electricity output, kWh/cap	322.5	110	
3.2.2 Electricity consumption, kWh/cap	248.6	113	
3.2.3 Logistics performance*	47.3	62	●
3.2.4 Gross capital formation, % GDP	11.3	139	
3.3 Ecological sustainability	23.9	95	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	8.0	38	●
3.3.2 Environmental performance*	35.5	119	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.0	134	○
4 Market sophistication	**34.3**	**130**	
4.1 Credit	8.4	141	○
4.1.1 Ease of getting credit*	25.0	135	
4.1.2 Domestic credit to private sector, % GDP	4.9	141	○
4.1.3 Microfinance gross loans, % GDP	0.0	77	
4.2 Investment	20.8	94	
4.2.1 Ease of protecting investors*	41.5	121	
4.2.2 Market capitalization, % GDP	n/a	n/a	
4.2.3 Total value of stocks traded, % GDP	n/a	n/a	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	74	○
4.3 Trade & competition	73.7	91	
4.3.1 Applied tariff rate, weighted mean, %	4.2	74	●
4.3.2 Non-agricultural mkt access weighted tariff, %	1.8	92	
4.3.3 Intensity of local competition†	61.7	79	●
5 Business sophistication	**11.1**	**142**	○
5.1 Knowledge workers	20.7	134	
5.1.1 Knowledge-intensive employment, %	17.0	78	
5.1.2 Firms offering formal training, % firms	12.9	99	
5.1.3 R&D performed by business, % GDP	n/a	n/a	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	374.6	136	
5.1.6 GMAT test takers/mn pop. 20–34	6.2	130	
5.2 Innovation linkages	9.8	137	
5.2.1 University/industry research collaboration†	14.4	135	○
5.2.2 State of cluster development†	20.9	134	
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	0.0	96	
5.2.5 Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3 Knowledge absorption	2.9	142	○
5.3.1 Royalty & license fees payments, % service imports	0.2	113	
5.3.2 High-tech imports less re-imports, %	2.3	123	○
5.3.3 Comm., computer & info. services imports, %	1.3	120	
5.3.4 FDI net inflows, % GDP	−2.1	140	
6 Knowledge & technology outputs	**12.0**	**130**	
6.1 Knowledge creation	2.5	134	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	0.1	103	
6.1.2 PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	2.8	126	
6.1.5 Citable documents H index	34.0	128	
6.2 Knowledge impact	7.3	127	
6.2.1 Growth rate of PPP$ GDP/worker, %	−5.8	117	○
6.2.2 New businesses/th pop. 15–64	n/a	n/a	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	0.4	128	
6.2.5 High- & medium-high-tech manufactures, %	2.9	92	
6.3 Knowledge diffusion	21.4	95	
6.3.1 Royalty & license fees receipts, % service exports	2.7	21	●
6.3.2 High-tech exports less re-exports, %	0.0	121	
6.3.3 Comm., computer & info. services exports, %	8.4	54	●
6.3.4 FDI net outflows, % GDP	n/a	n/a	
7 Creative outputs	**17.6**	**138**	
7.1 Intangible assets	24.6	130	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	35.9	45	●
7.1.2 Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	25.8	135	○
7.1.4 ICT & organizational model creation†	27.9	134	
7.2 Creative goods & services	8.5	131	
7.2.1 Audio-visual & related services exports, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation, % pop. 15–69	1.4	114	
7.2.4 Printing & publishing manufactures, %	0.4	90	
7.2.5 Creative goods exports, %	0.0	111	
7.3 Online creativity	12.6	121	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.3	124	
7.3.2 Country-code TLDs/th pop. 15–69	0.8	130	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	44.6	124	
7.3.4 Video uploads on YouTube/pop. 15–69	48.8	112	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Zambia

Key indicators

Population (millions)	13.9
GDP (US$ billions)	20.7
GDP per capita, PPP$	1,700.7
Income group	Lower-middle income
Region	Sub-Saharan Africa

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index (out of 142)	**26.8**	**118**	
Innovation Output Sub-Index	25.2	103	
Innovation Input Sub-Index	28.4	128	
Innovation Efficiency Ratio	0.9	32	●
Global Innovation Index 2012 (based on GII 2012 framework)	26.4	107	
1 Institutions	**48.8**	**111**	
1.1 Political environment	56.8	68	
1.1.1 Political stability*	77.7	47	●
1.1.2 Government effectiveness*	20.5	112	
1.1.3 Press freedom*	72.1	59	
1.2 Regulatory environment	25.5	137	○
1.2.1 Regulatory quality*	38.4	106	
1.2.2 Rule of law*	34.6	88	
1.2.3 Cost of redundancy dismissal, salary weeks	50.6	137	○
1.3 Business environment	64.2	69	
1.3.1 Ease of starting a business*	84.6	66	
1.3.2 Ease of resolving insolvency*	32.3	89	
1.3.3 Ease of paying taxes*	75.7	45	●
2 Human capital & research	**6.8**	**142**	○
2.1 Education	14.1	139	○
2.1.1 Current expenditure on education, % GNI	1.3	114	○
2.1.2 Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3 School life expectancy, years	n/a	n/a	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	32.1	119	
2.2 Tertiary education	3.8	138	○
2.2.1 Tertiary enrolment, % gross	n/a	n/a	
2.2.2 Graduates in science & engineering, %	n/a	n/a	
2.2.3 Tertiary inbound mobility, %	n/a	n/a	
2.2.4 Gross tertiary outbound enrolment, %	0.4	103	
2.3 Research & development (R&D)	2.6	91	
2.3.1 Researchers, headcounts/mn pop.	49.4	106	○
2.3.2 Gross expenditure on R&D, % GDP	0.3	70	
2.3.3 QS university ranking, average score top 3*	0.0	68	○
3 Infrastructure	**18.9**	**124**	
3.1 Information & communication technologies (ICTs)	13.1	131	
3.1.1 ICT access*	17.4	132	○
3.1.2 ICT use*	1.1	132	○
3.1.3 Government's online service*	31.4	115	
3.1.4 E-participation*	2.6	116	
3.2 General infrastructure	21.0	119	
3.2.1 Electricity output, kWh/cap	874.5	96	
3.2.2 Electricity consumption, kWh/cap	623.2	103	
3.2.3 Logistics performance*	32.0	127	
3.2.4 Gross capital formation, % GDP	24.9	48	●
3.3 Ecological sustainability	22.6	101	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	2.2	118	
3.3.2 Environmental performance*	55.6	55	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.5	85	
4 Market sophistication	**46.1**	**68**	
4.1 Credit	30.4	97	
4.1.1 Ease of getting credit*	87.5	12	●
4.1.2 Domestic credit to private sector, % GDP	12.3	135	○
4.1.3 Microfinance gross loans, % GDP	0.0	83	
4.2 Investment	27.7	60	
4.2.1 Ease of protecting investors*	55.6	70	
4.2.2 Market capitalization, % GDP	20.9	70	
4.2.3 Total value of stocks traded, % GDP	1.6	67	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	31	●
4.3 Trade & competition	80.2	37	●
4.3.1 Applied tariff rate, weighted mean, %	3.8	66	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.5	56	●
4.3.3 Intensity of local competition†	65.9	61	
5 Business sophistication	**21.3**	**129**	
5.1 Knowledge workers	21.8	131	
5.1.1 Knowledge-intensive employment, %	n/a	n/a	
5.1.2 Firms offering formal training, % firms	26.0	71	
5.1.3 R&D performed by business, % GDP	0.0	78	
5.1.4 R&D financed by business, %	3.2	78	
5.1.5 GMAT mean score	439.3	113	
5.1.6 GMAT test takers/mn pop. 20–34	11.5	123	
5.2 Innovation linkages	20.0	97	
5.2.1 University/industry research collaboration†	46.3	53	●
5.2.2 State of cluster development†	49.8	48	●
5.2.3 R&D financed by abroad, %	1.6	73	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	0.0	42	●
5.2.5 Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3 Knowledge absorption	22.0	95	
5.3.1 Royalty & license fees payments, % service imports	0.4	103	
5.3.2 High-tech imports less re-imports, %	5.0	107	
5.3.3 Comm., computer & info. services imports, %	1.5	118	
5.3.4 FDI net inflows, % GDP	10.3	14	●
6 Knowledge & technology outputs	**26.2**	**71**	
6.1 Knowledge creation	6.8	89	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	9.1	78	
6.1.5 Citable documents H index	61.0	91	
6.2 Knowledge impact	33.7	72	
6.2.1 Growth rate of PPP$ GDP/worker, %	3.5	32	●
6.2.2 New businesses/th pop. 15–64	1.3	56	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	1.4	107	
6.2.5 High- & medium-high-tech manufactures, %	n/a	n/a	
6.3 Knowledge diffusion	28.3	52	●
6.3.1 Royalty & license fees receipts, % service exports	n/a	n/a	
6.3.2 High-tech exports less re-exports, %	2.5	55	
6.3.3 Comm., computer & info. services exports, %	8.0	56	
6.3.4 FDI net outflows, % GDP	6.0	10	●
7 Creative outputs	**24.2**	**126**	
7.1 Intangible assets	35.8	99	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid trademark registrations/bn PPP$ GDP	0.0	66	○
7.1.3 ICT & business model creation†	55.0	79	
7.1.4 ICT & organizational model creation†	52.6	68	
7.2 Creative goods & services	16.0	121	
7.2.1 Audio-visual & related services exports, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation, % pop. 15–69	1.2	116	
7.2.4 Printing & publishing manufactures, %	n/a	n/a	
7.2.5 Creative goods exports, %	0.0	108	
7.3 Online creativity	9.1	131	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.4	119	
7.3.2 Country-code TLDs/th pop. 15–69	0.0	138	○
7.3.3 Wikipedia monthly edits/mn pop. 15–69	54.3	120	
7.3.4 Video uploads on YouTube/pop. 15–69	35.5	125	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Key indicators

Population (millions)	13.1
GDP (US$ billions)	10.8
GDP per capita, PPP$	549.4
Income group	Low income
Region	Sub-Saharan Africa

		Score (0–100) or value (hard data)	Rank	
	Global Innovation Index (out of 142)	**24.0**	**132**	○
	Innovation Output Sub-Index	22.8	116	
	Innovation Input Sub-Index	25.1	138	○
	Innovation Efficiency Ratio	0.9	25	●
	Global Innovation Index 2012 (based on GII 2012 framework)	25.7	115	
1	**Institutions**	**24.2**	**141**	○
1.1	Political environment	34.2	135	○
1.1.1	Political stability*	40.6	120	
1.1.2	Government effectiveness*	0.0	142	○
1.1.3	Press freedom*	61.9	106	
1.2	Regulatory environment	0.0	142	○
1.2.1	Regulatory quality*	0.0	142	○
1.2.2	Rule of law*	0.0	142	○
1.2.3	Cost of redundancy dismissal, salary weeks	82.3	138	○
1.3	Business environment	38.3	138	○
1.3.1	Ease of starting a business*	54.4	136	○
1.3.2	Ease of resolving insolvency*	1.2	141	○
1.3.3	Ease of paying taxes*	59.3	102	
2	**Human capital & research**	**12.1**	**136**	○
2.1	Education	13.2	140	○
2.1.1	Current expenditure on education, % GNI	2.4	104	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	Tertiary education	23.1	90	
2.2.1	Tertiary enrolment, % gross	6.0	122	
2.2.2	Graduates in science & engineering, %	23.1	31	●
2.2.3	Tertiary inbound mobility, %	0.7	86	
2.2.4	Gross tertiary outbound enrolment, %	1.6	63	●
2.3	Research & development (R&D)	0.0	123	○
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	QS university ranking, average score top 3*	0.0	68	○
3	**Infrastructure**	**17.9**	**132**	○
3.1	Information & communication technologies (ICTs)	10.3	138	○
3.1.1	ICT access*	22.5	117	
3.1.2	ICT use*	3.6	118	
3.1.3	Government's online service*	12.7	140	○
3.1.4	E-participation*	2.6	116	
3.2	General infrastructure	23.4	111	
3.2.1	Electricity output, kWh/cap	643.7	104	
3.2.2	Electricity consumption, kWh/cap	1,022.2	94	
3.2.3	Logistics performance*	38.8	102	
3.2.4	Gross capital formation, % GDP	25.1	45	●
3.3	Ecological sustainability	19.9	116	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	0.3	125	○
3.3.2	Environmental performance*	52.8	66	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.9	62	
4	**Market sophistication**	**40.9**	**102**	
4.1	Credit	21.5	124	
4.1.1	Ease of getting credit*	43.8	110	
4.1.2	Domestic credit to private sector, % GDP	44.5	76	
4.1.3	Microfinance gross loans, % GDP	0.1	69	
4.2	Investment	45.5	22	●
4.2.1	Ease of protecting investors*	43.7	114	
4.2.2	Market capitalization, % GDP	112.9	9	●
4.2.3	Total value of stocks traded, % GDP	15.4	34	●
4.2.4	Venture capital deals/tr PPP$ GDP	0.1	10	●
4.3	Trade & competition	55.5	134	○
4.3.1	Applied tariff rate, weighted mean, %	17.3	141	○
4.3.2	Non-agricultural mkt access weighted tariff, %	0.2	35	●
4.3.3	Intensity of local competition†	57.5	91	
5	**Business sophistication**	**30.6**	**76**	
5.1	Knowledge workers	53.3	44	●
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, % GDP	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	487.3	88	
5.1.6	GMAT test takers/mn pop. 20–34	41.0	92	
5.2	Innovation linkages	25.2	73	
5.2.1	University/industry research collaboration†	35.0	109	
5.2.2	State of cluster development†	32.8	119	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.1	30	●
5.2.5	Patent families filed in 3+ offices/bn PPP$ GDP	0.0	69	○
5.3	Knowledge absorption	13.4	133	○
5.3.1	Royalty & license fees payments, % service imports	1.4	71	
5.3.2	High-tech imports less re-imports, %	4.2	117	○
5.3.3	Comm., computer & info. services imports, %	1.1	122	
5.3.4	FDI net inflows, % GDP	4.0	59	●
6	**Knowledge & technology outputs**	**13.3**	**128**	
6.1	Knowledge creation	14.1	60	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.4	38	
6.1.4	Scientific & technical articles/bn PPP$ GDP	37.2	20	●
6.1.5	Citable documents H index	69.0	85	
6.2	Knowledge impact	22.9	111	
6.2.1	Growth rate of PPP$ GDP/worker, %	–0.2	103	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.2	72	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.7	101	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	Knowledge diffusion	3.4	137	○
6.3.1	Royalty & license fees receipts, % service exports	0.3	65	
6.3.2	High-tech exports less re-exports, %	0.3	100	
6.3.3	Comm., computer & info. services exports, %	0.6	137	○
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**32.3**	**93**	
7.1	Intangible assets	41.9	77	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid trademark registrations/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	43.9	118	
7.1.4	ICT & organizational model creation†	40.0	121	
7.2	Creative goods & services	33.1	76	
7.2.1	Audio-visual & related services exports, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation, % pop. 15–69	0.5	124	
7.2.4	Printing & publishing manufactures, %	n/a	n/a	
7.2.5	Creative goods exports, %	0.4	76	
7.3	Online creativity	12.3	122	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.2	129	
7.3.2	Country-code TLDs/th pop. 15–69	1.7	125	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	44.1	125	○
7.3.4	Video uploads on YouTube/pop. 15–69	47.2	115	

NOTE: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Appendix II

Data Tables

Data Tables

This appendix provides tables for each of the 84 indicators that make up the Global Innovation Index 2013 (GII).

Structure

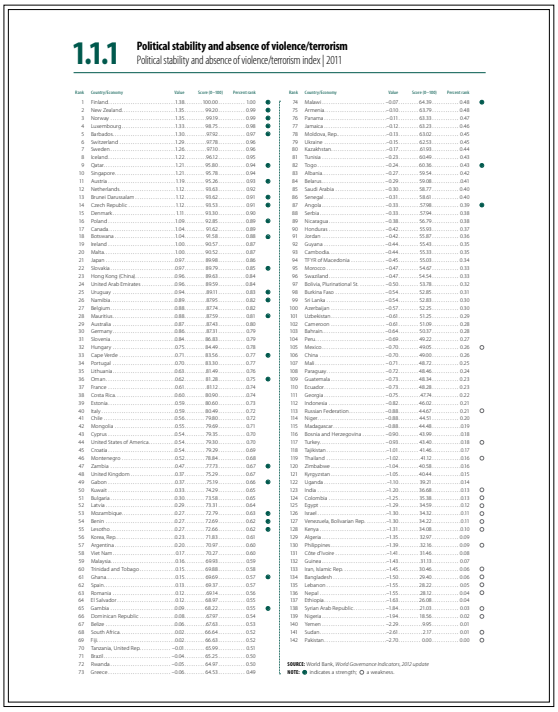
Each table is identified by indicator number, with the first digit representing the pillar, the second representing the sub-pillar, and the final digit representing the indicator within that particular sub-pillar. For example, Table **2.1.4** shows results for **indicator 2.1.4, Assessment in reading, mathematics, and science,** which is the fourth indicator of **sub-pillar 2.1, Education, within pillar 2, Human capital and research.**

The subheading text provides a detailed description of each indicator, with information on the units of each variable, the scaling factor (if any), the question asked (for survey questions), and the most frequent year for which data were available.

For each indicator for each economy, the most recent value within the period 2003–12 was used. In instances where this base year does not correspond to the most frequent year reported in the sub-heading, the year of the value appears in parentheses after the economy name.

A total of 60 variables are hard data. A total of 19 variables are composite indicators and 5 are survey questions from the World Economic Forum's Executive Opinion Survey.

The source of each indicator is indicated at the bottom of the page; details for each can be found in Appendix III, Sources and Definitions.



1.1.1 **Political stability and absence of violence/terrorism**

Political stability and absence of violence/terrorism index | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Finland	1.38	100.00	1.00	●
2	New Zealand	1.35	99.20	0.99	●
3	Norway	1.35	99.19	0.99	●
4	Luxembourg	1.33	98.75	0.98	●
5	Barbados	1.30	97.92	0.97	●
6	Switzerland	1.29	97.78	0.96	
7	Sweden	1.26	97.10	0.96	
8	Iceland	1.22	96.12	0.95	
9	Qatar	1.21	95.80	0.94	
10	Singapore	1.21	95.78	0.94	
11	Austria	1.19	95.26	0.93	●
12	Netherlands	1.12	93.63	0.92	
13	Brunei Darussalam	1.12	93.62	0.91	●
14	Czech Republic	1.12	93.53	0.91	●
15	Denmark	1.11	93.30	0.90	
16	Poland	1.09	92.85	0.89	●
17	Canada	1.04	91.62	0.89	
18	Botswana	1.04	91.58	0.88	●
19	Ireland	1.00	90.57	0.87	
20	Malta	1.00	90.52	0.87	
21	Japan	0.97	89.98	0.86	
22	Slovakia	0.97	89.79	0.85	●
23	Hong Kong (China)	0.96	89.63	0.84	
24	United Arab Emirates	0.96	89.59	0.84	
25	Uruguay	0.94	89.01	0.83	●
26	Namibia	0.89	87.95	0.82	●
27	Belgium	0.88	87.74	0.82	
28	Mauritius	0.88	87.59	0.81	●
29	Australia	0.87	87.43	0.80	
30	Germany	0.86	87.31	0.79	
31	Slovenia	0.84	86.83	0.79	
32	Hungary	0.75	84.49	0.78	
33	Cape Verde	0.71	83.56	0.77	●
34	Portugal	0.70	83.30	0.77	
35	Lithuania	0.63	81.49	0.76	
36	Oman	0.62	81.28	0.75	●
37	France	0.61	81.12	0.74	
38	Costa Rica	0.60	80.90	0.74	
39	Estonia	0.59	80.60	0.73	
40	Italy	0.59	80.49	0.72	
41	Chile	0.58	79.80	0.72	
42	Mongolia	0.55	79.69	0.71	
43	Cyprus	0.54	79.35	0.70	
44	United States of America	0.54	79.30	0.70	
45	Croatia	0.54	79.29	0.69	
46	Montenegro	0.52	78.84	0.68	
47	Zambia	0.47	77.73	0.67	●
48	United Kingdom	0.37	75.29	0.67	
49	Gabon	0.37	75.19	0.66	●
50	Kuwait	0.33	74.29	0.65	
51	Bulgaria	0.30	73.58	0.65	
52	Latvia	0.29	73.31	0.64	
53	Mozambique	0.27	72.79	0.63	●
54	Benin	0.27	72.69	0.62	●
55	Lesotho	0.27	72.66	0.62	●
56	Korea, Rep.	0.23	71.83	0.61	
57	Argentina	0.20	70.97	0.60	
58	Viet Nam	0.17	70.27	0.60	
59	Malaysia	0.16	69.93	0.59	
60	Trinidad and Tobago	0.15	69.88	0.58	
61	Ghana	0.15	69.69	0.57	●
62	Spain	0.11	69.37	0.57	
63	Romania	0.12	69.14	0.56	
64	El Salvador	0.12	68.97	0.55	
65	Gambia	0.09	68.22	0.55	●
66	Dominican Republic	0.08	67.97	0.54	
67	Belize	0.06	67.63	0.53	
68	South Africa	0.02	66.64	0.52	
69	Fiji	0.02	66.63	0.52	
70	Tanzania, United Rep.	−0.01	65.99	0.51	
71	Brazil	−0.04	65.25	0.50	
72	Rwanda	−0.05	64.97	0.50	
73	Greece	−0.06	64.53	0.49	
74	Malawi	−0.07	64.39	0.48	●
75	Armenia	−0.10	63.79	0.48	
76	Panama	−0.11	63.33	0.47	
77	Jamaica	−0.12	63.23	0.46	
78	Moldova, Rep.	−0.13	63.02	0.45	
79	Ukraine	−0.15	62.53	0.45	
80	Kazakhstan	−0.17	61.93	0.44	
81	Tunisia	−0.23	60.49	0.43	
82	Togo	−0.24	60.36	0.43	●
83	Albania	−0.27	59.54	0.42	
84	Belarus	−0.29	59.08	0.41	
85	Saudi Arabia	−0.30	58.77	0.40	
86	Senegal	−0.31	58.61	0.40	
87	Angola	−0.33	57.98	0.39	●
88	Serbia	−0.33	57.94	0.38	
89	Nicaragua	−0.38	56.79	0.38	
90	Honduras	−0.42	55.93	0.37	
91	Jordan	−0.42	55.87	0.36	
92	Guyana	−0.44	55.43	0.35	
93	Cambodia	−0.44	55.33	0.35	
94	TFYR of Macedonia	−0.45	55.03	0.34	
95	Morocco	−0.47	54.67	0.33	
96	Swaziland	−0.47	54.54	0.33	
97	Bolivia, Plurinational St.	−0.50	53.78	0.32	
98	Burkina Faso	−0.54	52.85	0.31	
99	Sri Lanka	−0.54	52.83	0.30	
100	Azerbaijan	−0.57	52.25	0.30	
101	Uzbekistan	−0.60	51.25	0.29	
102	Cameroon	−0.61	51.09	0.28	
103	Bahrain	−0.64	50.37	0.28	
104	Peru	−0.69	49.22	0.27	
105	Mexico	−0.70	49.05	0.26	○
106	China	−0.70	49.00	0.26	
107	Mali	−0.71	48.72	0.25	
108	Paraguay	−0.72	48.46	0.24	
109	Guatemala	−0.73	48.34	0.23	
110	Ecuador	−0.73	48.28	0.23	
111	Georgia	−0.75	47.74	0.22	
112	Indonesia	−0.82	46.02	0.21	
113	Russian Federation	−0.88	44.67	0.21	○
114	Niger	−0.88	44.51	0.20	
115	Madagascar	−0.88	44.48	0.19	
116	Bosnia and Herzegovina	−0.90	43.99	0.18	
117	Turkey	−0.93	43.40	0.18	○
118	Tajikistan	−1.01	41.46	0.17	
119	Thailand	−1.02	41.12	0.16	○
120	Zimbabwe	−1.04	40.58	0.16	
121	Kyrgyzstan	−1.05	40.44	0.15	
122	Uganda	−1.10	39.21	0.14	
123	India	−1.20	36.68	0.13	○
124	Colombia	−1.25	35.38	0.13	○
125	Egypt	−1.29	34.59	0.12	○
126	Israel	−1.30	34.52	0.11	○
127	Venezuela, Bolivarian Rep.	−1.30	34.22	0.11	○
128	Kenya	−1.31	34.08	0.10	○
129	Algeria	−1.35	32.97	0.09	
130	Philippines	−1.39	32.16	0.09	○
131	Côte d'Ivoire	−1.40	32.06	0.08	
132	Guinea	−1.43	31.13	0.07	
133	Iran, Islamic Rep.	−1.45	30.46	0.06	○
134	Bangladesh	−1.50	29.40	0.06	○
135	Lebanon	−1.55	28.22	0.05	○
136	Nepal	−1.55	28.12	0.04	○
137	Ethiopia	−1.63	26.08	0.04	
138	Syrian Arab Republic	−1.84	21.03	0.03	○
139	Nigeria	−1.94	18.56	0.02	○
140	Yemen	−2.29	9.95	0.01	○
141	Sudan	−2.61	2.17	0.01	○
142	Pakistan	−2.70	0.00	0.00	○

SOURCE: World Bank, *World Governance Indicators, 2012 update*

NOTE: ● Indicates a strength; ○ a weakness.

Explanation of scores

The tables list the economies by their rank order, with the best performers at the top. After the rank comes the country/economy name, the original value of the specific indicator for that country (in the units specified in the sub-heading), the normalized score in the [0, 100] range, and the percentage of economies with scores that fall below the normalized score (i.e., percent ranks). To the far right of each column, a solid circle indicates that an indicator is a strength for the country/economy in question, and a hollow circle indicates that it is a weakness (refer to Appendix I Country/Economy Profiles for details).

Strengths (●) are all ranks of 1, as well as all scores with percent ranks greater than the 10th highest percent rank among the 84 indicators in a specific economy.

Weaknesses (○) are all scores with percent ranks lower than the 10th smallest percent rank among the 84 indicators in a specific economy.

For three hard data series 7.3.1, 7.3.2, and 7.3.4, the raw data were provided under the condition that only the normalized scores be published and therefore the original value equals the normalized score. For indicators 1.1.3, 1.3.1, 1.3.2, 1.3.3, 2.3.3, 3.3.2, 4.1.1, and 4.2.1, the range for both measures is the same, [0, 100], and therefore both measures are also identical.

Details on the computation methodology can be found in Appendix IV, Technical Notes.

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5.2 Innovation linkages

5.3 Knowledge absorption

6 Knowledge and technology outputs

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7 Creative outputs

7.1 Intangible assets

7.2 Creative goods and services

7.3 Online creativity

1.1.1 Political stability and absence of violence/terrorism

Political stability and absence of violence/terrorism index | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Finland	1.38	100.00	1.00	●
2	New Zealand	1.35	99.20	0.99	●
3	Norway	1.35	99.19	0.99	●
4	Luxembourg	1.33	98.75	0.98	●
5	Barbados	1.30	97.92	0.97	●
6	Switzerland	1.29	97.78	0.96	
7	Sweden	1.26	97.10	0.96	
8	Iceland	1.22	96.12	0.95	
9	Qatar	1.21	95.80	0.94	●
10	Singapore	1.21	95.78	0.94	
11	Austria	1.19	95.26	0.93	●
12	Netherlands	1.12	93.63	0.92	
13	Brunei Darussalam	1.12	93.62	0.91	●
14	Czech Republic	1.12	93.53	0.91	●
15	Denmark	1.11	93.30	0.90	
16	Poland	1.09	92.85	0.89	●
17	Canada	1.04	91.62	0.89	
18	Botswana	1.04	91.58	0.88	●
19	Ireland	1.00	90.57	0.87	
20	Malta	1.00	90.52	0.87	
21	Japan	0.97	89.98	0.86	
22	Slovakia	0.97	89.79	0.85	●
23	Hong Kong (China)	0.96	89.63	0.84	
24	United Arab Emirates	0.96	89.59	0.84	
25	Uruguay	0.94	89.11	0.83	●
26	Namibia	0.89	87.95	0.82	●
27	Belgium	0.88	87.74	0.82	
28	Mauritius	0.88	87.59	0.81	●
29	Australia	0.87	87.43	0.80	
30	Germany	0.86	87.31	0.79	
31	Slovenia	0.84	86.83	0.79	
32	Hungary	0.75	84.49	0.78	
33	Cape Verde	0.71	83.56	0.77	●
34	Portugal	0.70	83.30	0.77	
35	Lithuania	0.63	81.49	0.76	
36	Oman	0.62	81.28	0.75	●
37	France	0.61	81.12	0.74	
38	Costa Rica	0.60	80.90	0.74	
39	Estonia	0.59	80.60	0.73	
40	Italy	0.59	80.49	0.72	
41	Chile	0.56	79.80	0.72	
42	Mongolia	0.55	79.69	0.71	
43	Cyprus	0.54	79.35	0.70	
44	United States of America	0.54	79.30	0.70	
45	Croatia	0.54	79.29	0.69	
46	Montenegro	0.52	78.84	0.68	
47	Zambia	0.47	77.73	0.67	●
48	United Kingdom	0.37	75.29	0.67	
49	Gabon	0.37	75.19	0.66	●
50	Kuwait	0.33	74.29	0.65	
51	Bulgaria	0.30	73.58	0.65	
52	Latvia	0.29	73.31	0.64	
53	Mozambique	0.27	72.79	0.63	●
54	Benin	0.27	72.69	0.62	●
55	Lesotho	0.27	72.66	0.62	●
56	Korea, Rep.	0.23	71.83	0.61	
57	Argentina	0.20	70.97	0.60	
58	Viet Nam	0.17	70.27	0.60	
59	Malaysia	0.16	69.93	0.59	
60	Trinidad and Tobago	0.15	69.88	0.58	
61	Ghana	0.15	69.69	0.57	●
62	Spain	0.13	69.37	0.57	
63	Romania	0.12	69.14	0.56	
64	El Salvador	0.12	68.97	0.55	
65	Gambia	0.09	68.22	0.55	●
66	Dominican Republic	0.08	67.97	0.54	
67	Belize	0.06	67.63	0.53	
68	South Africa	0.02	66.64	0.52	
69	Fiji	0.02	66.63	0.52	
70	Tanzania, United Rep.	–0.01	65.99	0.51	
71	Brazil	–0.04	65.25	0.50	
72	Rwanda	–0.05	64.97	0.50	
73	Greece	–0.06	64.53	0.49	
74	Malawi	–0.07	64.39	0.48	●
75	Armenia	–0.10	63.79	0.48	
76	Panama	–0.11	63.33	0.47	
77	Jamaica	–0.12	63.23	0.46	
78	Moldova, Rep.	–0.13	63.02	0.45	
79	Ukraine	–0.15	62.53	0.45	
80	Kazakhstan	–0.17	61.93	0.44	
81	Tunisia	–0.23	60.49	0.43	
82	Togo	–0.24	60.36	0.43	●
83	Albania	–0.27	59.54	0.42	
84	Belarus	–0.29	59.08	0.41	
85	Saudi Arabia	–0.30	58.77	0.40	
86	Senegal	–0.31	58.61	0.40	
87	Angola	–0.33	57.98	0.39	●
88	Serbia	–0.33	57.94	0.38	
89	Nicaragua	–0.38	56.79	0.38	
90	Honduras	–0.42	55.93	0.37	
91	Jordan	–0.42	55.87	0.36	
92	Guyana	–0.44	55.43	0.35	
93	Cambodia	–0.44	55.33	0.35	
94	TFYR of Macedonia	–0.45	55.03	0.34	
95	Morocco	–0.47	54.67	0.33	
96	Swaziland	–0.47	54.54	0.33	
97	Bolivia, Plurinational St.	–0.50	53.78	0.32	
98	Burkina Faso	–0.54	52.85	0.31	
99	Sri Lanka	–0.54	52.83	0.30	
100	Azerbaijan	–0.57	52.25	0.30	
101	Uzbekistan	–0.61	51.25	0.29	
102	Cameroon	–0.61	51.09	0.28	
103	Bahrain	–0.64	50.37	0.28	
104	Peru	–0.69	49.22	0.27	
105	Mexico	–0.70	49.05	0.26	○
106	China	–0.70	49.00	0.26	
107	Mali	–0.71	48.72	0.25	
108	Paraguay	–0.72	48.46	0.24	
109	Guatemala	–0.73	48.34	0.23	
110	Ecuador	–0.73	48.28	0.23	
111	Georgia	–0.75	47.74	0.22	
112	Indonesia	–0.82	46.02	0.21	
113	Russian Federation	–0.88	44.67	0.21	○
114	Niger	–0.88	44.51	0.20	
115	Madagascar	–0.88	44.48	0.19	
116	Bosnia and Herzegovina	–0.90	43.99	0.18	
117	Turkey	–0.93	43.40	0.18	○
118	Tajikistan	–1.01	41.46	0.17	
119	Thailand	–1.02	41.12	0.16	○
120	Zimbabwe	–1.04	40.58	0.16	
121	Kyrgyzstan	–1.05	40.44	0.15	
122	Uganda	–1.10	39.21	0.14	
123	India	–1.20	36.68	0.13	○
124	Colombia	–1.25	35.38	0.13	○
125	Egypt	–1.29	34.59	0.12	○
126	Israel	–1.30	34.32	0.11	○
127	Venezuela, Bolivarian Rep.	–1.30	34.22	0.11	○
128	Kenya	–1.31	34.08	0.10	○
129	Algeria	–1.35	32.97	0.09	
130	Philippines	–1.39	32.16	0.09	○
131	Côte d'Ivoire	–1.41	31.46	0.08	
132	Guinea	–1.43	31.13	0.07	
133	Iran, Islamic Rep.	–1.45	30.46	0.06	○
134	Bangladesh	–1.50	29.40	0.06	○
135	Lebanon	–1.55	28.22	0.05	○
136	Nepal	–1.55	28.12	0.04	○
137	Ethiopia	–1.63	26.08	0.04	
138	Syrian Arab Republic	–1.84	21.03	0.03	○
139	Nigeria	–1.94	18.56	0.02	○
140	Yemen	–2.29	9.95	0.01	
141	Sudan	–2.61	2.17	0.01	○
142	Pakistan	–2.70	0.00	0.00	○

SOURCE: World Bank, *World Governance Indicators, 2012 update*

NOTE: ● indicates a strength; ○ a weakness.

1.1.2 Government effectiveness

Government effectiveness index | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Finland	2.25	100.00	1.00	●
2	Denmark	2.17	97.90	0.99	●
3	Singapore	2.16	97.53	0.99	●
4	Sweden	1.96	92.16	0.98	●
5	New Zealand	1.93	91.31	0.97	●
6	Switzerland	1.89	90.25	0.96	
7	Canada	1.85	89.10	0.96	
8	Netherlands	1.79	87.48	0.95	
9	Norway	1.76	86.73	0.94	
10	Australia	1.74	86.09	0.94	●
11	Luxembourg	1.73	85.96	0.93	
12	Hong Kong (China)	1.70	85.06	0.92	
13	Belgium	1.67	84.09	0.91	
14	Austria	1.66	83.93	0.91	
15	Iceland	1.57	81.36	0.90	
16	United Kingdom	1.55	80.84	0.89	
17	Germany	1.53	80.45	0.89	
18	Cyprus	1.53	80.33	0.88	
19	Barbados	1.46	78.55	0.87	
20	Ireland	1.42	77.36	0.87	
21	United States of America	1.41	76.95	0.86	
22	France	1.36	75.80	0.85	
23	Japan	1.35	75.29	0.84	
24	Korea, Rep.	1.23	72.19	0.84	
25	Estonia	1.20	71.42	0.83	
26	Israel	1.20	71.39	0.82	
27	Chile	1.17	70.56	0.82	●
28	Malta	1.16	70.32	0.81	
29	Spain	1.02	66.41	0.80	
30	Czech Republic	1.02	66.32	0.79	
31	Malaysia	1.00	65.81	0.79	
32	Slovenia	0.99	65.41	0.78	
33	Portugal	0.97	65.12	0.77	
34	United Arab Emirates	0.95	64.50	0.77	
35	Brunei Darussalam	0.88	62.44	0.76	●
36	Slovakia	0.86	61.88	0.75	
37	Qatar	0.83	61.27	0.74	
38	Mauritius	0.76	59.11	0.74	
39	Hungary	0.71	57.74	0.73	
40	Latvia	0.68	57.17	0.72	
41	Lithuania	0.68	57.09	0.72	
42	Poland	0.68	56.94	0.71	
43	Bahrain	0.65	56.31	0.70	
44	Uruguay	0.58	54.21	0.70	
45	Croatia	0.55	53.59	0.69	
46	Georgia	0.55	53.35	0.68	
47	Botswana	0.53	53.07	0.67	●
48	Greece	0.48	51.51	0.67	
49	Italy	0.45	50.65	0.66	
50	Oman	0.43	50.28	0.65	
51	Turkey	0.41	49.63	0.65	
52	South Africa	0.37	48.52	0.64	
53	Costa Rica	0.35	48.03	0.63	
54	Mexico	0.32	47.29	0.62	
55	Trinidad and Tobago	0.31	46.92	0.62	
56	Colombia	0.24	45.10	0.61	
57	Jamaica	0.20	43.83	0.60	●
58	China	0.12	41.68	0.60	
59	Cape Verde	0.11	41.53	0.59	●
60	Thailand	0.10	41.22	0.58	
61	Montenegro	0.10	41.13	0.57	
62	Panama	0.10	41.12	0.57	
63	Rwanda	0.07	40.20	0.56	
64	Namibia	0.06	40.09	0.55	
65	Jordan	0.05	39.77	0.55	
66	Tunisia	0.02	38.86	0.54	
67	Bulgaria	0.01	38.68	0.53	
68	Philippines	–0.00	38.33	0.52	
69	Brazil	–0.01	38.18	0.52	
70	India	–0.03	37.62	0.51	
71	Ghana	–0.03	37.56	0.50	
72	Kuwait	–0.04	37.22	0.50	
73	Sri Lanka	–0.08	36.10	0.49	
74	Armenia	–0.09	36.04	0.48	
75	El Salvador	–0.11	35.45	0.48	
76	TFYR of Macedonia	–0.11	35.44	0.47	
77	Guyana	–0.11	35.32	0.46	
78	Serbia	–0.15	34.43	0.45	
79	Peru	–0.15	34.27	0.45	
80	Argentina	–0.16	34.05	0.44	
81	Albania	–0.20	32.94	0.43	
82	Morocco	–0.22	32.41	0.43	
83	Romania	–0.22	32.41	0.42	
84	Indonesia	–0.24	31.80	0.41	
85	Kazakhstan	–0.26	31.18	0.40	
86	Viet Nam	–0.28	30.77	0.40	
87	Lesotho	–0.28	30.64	0.39	●
88	Lebanon	–0.33	29.45	0.38	
89	Belize	–0.36	28.60	0.38	
90	Russian Federation	–0.40	27.34	0.37	
91	Ethiopia	–0.40	27.34	0.36	
92	Bolivia, Plurinational St.	–0.41	27.04	0.35	
93	Saudi Arabia	–0.43	26.59	0.35	
94	Malawi	–0.43	26.55	0.34	
95	Senegal	–0.44	26.47	0.33	
96	Syrian Arab Republic	–0.44	26.24	0.33	
97	Iran, Islamic Rep.	–0.46	25.74	0.32	
98	Benin	–0.46	25.71	0.31	
99	Uganda	–0.51	24.46	0.30	
100	Burkina Faso	–0.53	23.80	0.30	
101	Tanzania, United Rep.	–0.54	23.70	0.29	
102	Kenya	–0.54	23.60	0.28	
103	Mozambique	–0.55	23.43	0.28	
104	Ecuador	–0.55	23.38	0.27	
105	Dominican Republic	–0.55	23.30	0.26	
106	Honduras	–0.58	22.61	0.26	
107	Moldova, Rep.	–0.58	22.42	0.25	
108	Egypt	–0.60	21.91	0.24	
109	Gambia	–0.61	21.59	0.23	
110	Mongolia	–0.62	21.47	0.23	
111	Kyrgyzstan	–0.62	21.43	0.22	
112	Zambia	–0.65	20.49	0.21	
113	Algeria	–0.66	20.44	0.21	
114	Niger	–0.67	20.10	0.20	
115	Swaziland	–0.69	19.47	0.19	
116	Guatemala	–0.70	19.20	0.18	
117	Fiji	–0.71	18.82	0.18	
118	Cambodia	–0.75	17.90	0.17	
119	Bosnia and Herzegovina	–0.76	17.57	0.16	
120	Uzbekistan	–0.77	17.31	0.16	
121	Azerbaijan	–0.79	16.81	0.15	
122	Nepal	–0.79	16.72	0.14	
123	Pakistan	–0.82	16.01	0.13	
124	Ukraine	–0.83	15.73	0.13	○
125	Mali	–0.83	15.71	0.12	
126	Paraguay	–0.83	15.63	0.11	
127	Bangladesh	–0.85	14.98	0.11	
128	Gabon	–0.87	14.55	0.10	
129	Madagascar	–0.87	14.52	0.09	
130	Cameroon	–0.88	14.30	0.09	
131	Nicaragua	–0.90	13.86	0.08	○
132	Tajikistan	–0.94	12.71	0.07	
133	Belarus	–1.09	8.43	0.06	○
134	Venezuela, Bolivarian Rep.	–1.10	8.17	0.06	○
135	Nigeria	–1.12	7.60	0.05	○
136	Yemen	–1.14	7.30	0.04	
137	Angola	–1.15	7.02	0.04	
138	Guinea	–1.15	6.89	0.03	
139	Côte d'Ivoire	–1.19	5.85	0.02	○
140	Togo	–1.36	1.24	0.01	○
141	Sudan	–1.39	0.24	0.01	○
142	Zimbabwe	–1.40	0.00	0.00	○

SOURCE: World Bank, *World Governance Indicators, 2012 update*

NOTE: ● indicates a strength; ○ a weakness.

1.1.3 Press freedom

Press freedom index | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Finland	6.38	93.62	1.00	●
2	Netherlands	6.48	93.52	0.99	●
3	Norway	6.52	93.48	0.99	●
4	Luxembourg	6.68	93.32	0.98	●
5	Denmark	7.08	92.92	0.97	●
6	New Zealand	8.38	91.62	0.96	●
7	Iceland	8.49	91.51	0.96	
8	Sweden	9.23	90.77	0.95	
9	Estonia	9.26	90.74	0.94	●
10	Austria	9.40	90.60	0.94	●
11	Jamaica	9.88	90.12	0.93	●
12	Switzerland	9.94	90.06	0.92	
13	Ireland	10.06	89.94	0.91	
14	Czech Republic	10.17	89.83	0.91	●
15	Germany	10.24	89.76	0.90	
16	Costa Rica	12.08	87.92	0.89	●
17	Namibia	12.50	87.50	0.88	●
18	Canada	12.69	87.31	0.88	
19	Belgium	12.94	87.06	0.87	
20	Poland	13.11	86.89	0.86	●
21	Slovakia	13.25	86.75	0.86	●
22	Cyprus	13.83	86.17	0.85	
23	Cape Verde	14.33	85.67	0.84	●
24	Australia	15.24	84.76	0.83	
25	Uruguay	15.92	84.08	0.83	●
26	Portugal	16.75	83.25	0.82	
27	United Kingdom	16.89	83.11	0.81	
28	Ghana	17.27	82.73	0.81	●
29	United States of America	18.22	81.78	0.80	
30	Lithuania	18.24	81.76	0.79	
31	Slovenia	20.49	79.51	0.78	
32	Spain	20.50	79.50	0.78	
33	France	21.60	78.40	0.77	
34	El Salvador	22.86	77.14	0.76	●
35	Latvia	22.89	77.11	0.76	
36	Botswana	22.91	77.09	0.75	●
37	Romania	23.05	76.95	0.74	
38	Niger	23.08	76.92	0.73	●
39	Trinidad and Tobago	23.12	76.88	0.73	
40	Malta	23.30	76.70	0.72	
41	Burkina Faso	23.70	76.30	0.71	●
42	Korea, Rep.	24.48	75.52	0.71	
43	South Africa	24.56	75.44	0.70	
44	Japan	25.17	74.83	0.69	
45	Argentina	25.67	74.33	0.68	
46	Moldova, Rep.	26.01	73.99	0.68	
47	Hungary	26.09	73.91	0.67	
48	Italy	26.11	73.89	0.66	
49	Hong Kong (China)	26.16	73.84	0.65	
50	Senegal	26.19	73.81	0.65	●
51	Chile	26.24	73.76	0.64	
52	Mauritius	26.47	73.53	0.63	
53	Serbia	26.59	73.41	0.63	
54	Croatia	26.61	73.39	0.62	
55	Bosnia and Herzegovina	26.86	73.14	0.61	
56	Guyana	27.08	72.92	0.60	
57	Tanzania, United Rep.	27.34	72.66	0.60	
58	Kenya	27.80	72.20	0.59	
59	Zambia	27.93	72.07	0.58	
60	Mozambique	28.01	71.99	0.58	●
61	Armenia	28.04	71.96	0.57	
62	Malawi	28.18	71.82	0.56	●
63	Kuwait	28.28	71.72	0.55	
64	Nicaragua	28.31	71.69	0.55	●
65	Benin	28.33	71.67	0.54	●
66	Dominican Republic	28.34	71.66	0.53	
67	Lesotho	28.36	71.64	0.53	●
68	Togo	28.45	71.55	0.52	●
69	Greece	28.46	71.54	0.51	
70	Guinea	28.49	71.51	0.50	●
71	Bulgaria	28.58	71.42	0.50	
72	Madagascar	28.62	71.38	0.49	
73	Gabon	28.69	71.31	0.48	
74	Paraguay	28.78	71.22	0.47	
75	Guatemala	29.39	70.61	0.47	
76	Côte d'Ivoire	29.77	70.23	0.46	●
77	Mongolia	29.93	70.07	0.45	
78	Mali	30.03	69.97	0.45	
79	Georgia	30.09	69.91	0.44	
80	Lebanon	30.15	69.85	0.43	
81	Albania	30.88	69.12	0.42	
82	Uganda	31.69	68.31	0.42	
83	Peru	31.87	68.13	0.41	
84	Kyrgyzstan	32.20	67.80	0.40	
85	Fiji	32.69	67.31	0.40	
86	Brazil	32.75	67.25	0.39	
87	Bolivia, Plurinational St.	32.80	67.20	0.38	
88	Qatar	32.86	67.14	0.37	
89	Panama	32.95	67.05	0.37	
90	Israel	32.97	67.03	0.35	○
90	Montenegro	32.97	67.03	0.35	
92	United Arab Emirates	33.49	66.51	0.35	○
93	Nigeria	34.11	65.89	0.34	
94	TFYR of Macedonia	34.27	65.73	0.33	
95	Venezuela, Bolivarian Rep.	34.44	65.56	0.32	
96	Nepal	34.61	65.39	0.32	
97	Ecuador	34.69	65.31	0.31	
98	Cameroon	34.78	65.22	0.30	
99	Brunei Darussalam	35.45	64.55	0.29	
100	Tajikistan	35.71	64.29	0.29	
101	Algeria	36.54	63.46	0.28	
102	Ukraine	36.79	63.21	0.27	
103	Honduras	36.92	63.08	0.27	
104	Colombia	37.48	62.52	0.26	○
105	Angola	37.80	62.20	0.25	
106	Zimbabwe	38.12	61.88	0.24	
107	Jordan	38.47	61.53	0.24	○
108	Thailand	38.60	61.40	0.23	○
109	Morocco	39.04	60.96	0.22	
110	Ethiopia	39.57	60.43	0.22	
111	Tunisia	39.93	60.07	0.21	○
112	Indonesia	41.05	58.95	0.20	
113	India	41.22	58.78	0.19	
114	Oman	41.51	58.49	0.19	
115	Cambodia	41.81	58.19	0.18	
116	Bangladesh	42.01	57.99	0.17	
117	Malaysia	42.73	57.27	0.17	○
118	Philippines	43.11	56.89	0.16	
119	Russian Federation	43.42	56.58	0.15	○
120	Singapore	43.43	56.57	0.14	○
121	Gambia	45.09	54.91	0.14	
122	Mexico	45.30	54.70	0.13	○
123	Turkey	46.56	53.44	0.12	○
124	Swaziland	46.76	53.24	0.12	
125	Azerbaijan	47.73	52.27	0.11	○
126	Belarus	48.35	51.65	0.10	○
127	Egypt	48.66	51.34	0.09	○
128	Pakistan	51.31	48.69	0.09	
129	Kazakhstan	55.08	44.92	0.08	○
130	Rwanda	55.46	44.54	0.07	
131	Sri Lanka	56.59	43.41	0.06	○
132	Saudi Arabia	56.88	43.12	0.06	○
133	Uzbekistan	60.39	39.61	0.05	○
134	Bahrain	62.75	37.25	0.04	○
135	Yemen	69.22	30.78	0.04	
136	Sudan	70.06	29.94	0.03	
137	Viet Nam	71.78	28.22	0.02	○
138	China	73.07	26.93	0.01	○
139	Iran, Islamic Rep.	73.40	26.60	0.01	○
140	Syrian Arab Republic	78.53	21.47	0.00	○
n/a	Barbados	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	

SOURCE: Reporters Without Borders, *Press Freedom Index 2013*

NOTE: ● indicates a strength; ○ a weakness.

1.2.1 Regulatory quality

Regulatory quality index | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Denmark	1.93	100.00	1.00	●
2	New Zealand	1.91	99.47	0.99	●
3	Hong Kong (China)	1.88	98.55	0.99	●
4	Luxembourg	1.86	98.25	0.98	●
5	Netherlands	1.84	97.74	0.97	●
6	Sweden	1.84	97.49	0.96	●
7	Singapore	1.83	97.22	0.96	
8	Australia	1.79	96.29	0.95	●
9	Finland	1.77	95.86	0.94	
10	Canada	1.68	93.51	0.94	
11	Ireland	1.65	92.58	0.93	
12	Switzerland	1.64	92.32	0.92	
13	United Kingdom	1.62	91.86	0.91	
14	Chile	1.54	89.73	0.91	●
15	Germany	1.51	89.03	0.90	
16	United States of America	1.49	88.34	0.89	
17	Austria	1.41	86.49	0.89	
18	Norway	1.41	86.46	0.88	
19	Estonia	1.40	86.00	0.87	
20	Israel	1.35	84.75	0.87	
21	Malta	1.31	83.73	0.86	
22	Belgium	1.25	82.27	0.85	
23	Czech Republic	1.25	82.25	0.84	
24	Cyprus	1.22	81.41	0.84	
25	Brunei Darussalam	1.17	80.21	0.83	●
26	France	1.11	78.54	0.82	
27	Spain	1.09	78.09	0.82	
28	Hungary	1.05	76.88	0.81	
29	Slovakia	1.03	76.50	0.80	
30	Iceland	1.01	75.97	0.79	
31	Poland	0.96	74.66	0.79	
32	Latvia	0.95	74.49	0.78	
33	Korea, Rep.	0.95	74.44	0.77	
34	Lithuania	0.94	74.16	0.77	
35	Japan	0.90	73.00	0.76	
36	Mauritius	0.84	71.58	0.75	
37	Bahrain	0.80	70.48	0.74	
38	Italy	0.75	69.24	0.74	
39	Romania	0.72	68.42	0.73	
40	Malaysia	0.66	66.75	0.72	
41	Portugal	0.66	66.70	0.72	
42	Georgia	0.66	66.70	0.71	
43	Slovenia	0.63	66.08	0.70	
44	Barbados	0.61	65.49	0.70	
45	Bulgaria	0.56	64.19	0.69	
46	Croatia	0.56	64.11	0.68	
47	Greece	0.51	62.87	0.67	
48	Botswana	0.50	62.68	0.67	
49	Peru	0.50	62.65	0.66	
50	El Salvador	0.49	62.26	0.65	
51	Costa Rica	0.45	61.27	0.65	
52	Qatar	0.44	61.01	0.64	
53	South Africa	0.44	60.95	0.63	
54	Turkey	0.42	60.58	0.62	
55	Panama	0.41	60.30	0.62	
56	Uruguay	0.41	60.25	0.61	
57	Trinidad and Tobago	0.40	60.01	0.60	
58	United Arab Emirates	0.40	59.99	0.60	
59	Oman	0.39	59.71	0.59	
60	Colombia	0.35	58.79	0.58	
61	Mexico	0.35	58.65	0.57	
62	Jamaica	0.33	58.13	0.57	●
63	TFYR of Macedonia	0.33	58.06	0.56	
64	Albania	0.28	56.88	0.55	
65	Armenia	0.26	56.43	0.55	
66	Jordan	0.25	56.09	0.54	
67	Thailand	0.24	55.74	0.53	
68	Brazil	0.17	53.90	0.52	
69	Ghana	0.14	53.22	0.52	
70	Namibia	0.08	51.56	0.51	
71	Kuwait	0.08	51.55	0.50	
72	Cape Verde	0.07	51.39	0.50	●
73	Lebanon	0.02	50.00	0.49	
74	Serbia	0.01	49.71	0.48	
75	Saudi Arabia	0.00	49.68	0.48	
76	Bosnia and Herzegovina	–0.04	48.47	0.47	
77	Montenegro	–0.06	47.94	0.46	
78	Moldova, Rep.	–0.08	47.40	0.45	
79	Sri Lanka	–0.09	47.11	0.45	
80	Morocco	–0.09	47.10	0.44	
81	Uganda	–0.11	46.71	0.43	
82	Honduras	–0.11	46.70	0.43	
83	Rwanda	–0.12	46.30	0.42	
84	Guatemala	–0.13	46.19	0.41	
85	Burkina Faso	–0.14	45.79	0.40	
86	Kenya	–0.16	45.39	0.40	
87	Tunisia	–0.18	44.91	0.39	
88	Dominican Republic	–0.19	44.54	0.38	
89	China	–0.20	44.25	0.38	
90	Kyrgyzstan	–0.21	44.08	0.37	
91	Mongolia	–0.22	43.87	0.36	
92	Senegal	–0.22	43.81	0.35	
93	Philippines	–0.26	42.65	0.35	
94	Gambia	–0.27	42.52	0.34	
95	Kazakhstan	–0.28	42.19	0.33	
96	Indonesia	–0.33	41.07	0.33	
97	Egypt	–0.33	40.87	0.32	
98	Benin	–0.34	40.72	0.31	
99	India	–0.34	40.68	0.30	
100	Paraguay	–0.34	40.62	0.30	
101	Nicaragua	–0.35	40.45	0.29	
102	Russian Federation	–0.35	40.31	0.28	
103	Mali	–0.40	39.20	0.28	
104	Azerbaijan	–0.40	39.19	0.27	
105	Mozambique	–0.40	39.11	0.26	
106	Zambia	–0.43	38.36	0.26	
107	Tanzania, United Rep.	–0.44	38.03	0.25	
108	Cambodia	–0.45	37.77	0.24	
109	Fiji	–0.50	36.40	0.23	
110	Niger	–0.51	36.30	0.23	
111	Belize	–0.54	35.52	0.22	
112	Madagascar	–0.55	35.20	0.21	
113	Ukraine	–0.56	35.00	0.21	○
114	Gabon	–0.60	33.78	0.20	
115	Lesotho	–0.61	33.69	0.19	
116	Pakistan	–0.61	33.62	0.18	
117	Viet Nam	–0.61	33.57	0.18	○
118	Swaziland	–0.64	32.89	0.17	
119	Guyana	–0.66	32.32	0.16	
120	Nigeria	–0.69	31.66	0.16	
121	Malawi	–0.70	31.18	0.15	
122	Nepal	–0.72	30.73	0.14	
123	Argentina	–0.74	30.35	0.13	○
124	Bolivia, Plurinational St.	–0.75	30.08	0.13	○
125	Yemen	–0.79	28.94	0.12	
126	Cameroon	–0.79	28.88	0.11	
127	Bangladesh	–0.81	28.35	0.11	
128	Côte d'Ivoire	–0.86	27.07	0.10	
129	Tajikistan	–0.97	24.26	0.09	
130	Syrian Arab Republic	–0.97	24.21	0.09	
131	Ethiopia	–0.99	23.81	0.08	
132	Togo	–0.99	23.72	0.07	
133	Guinea	–1.00	23.34	0.06	
134	Ecuador	–1.02	22.99	0.06	○
135	Angola	–1.10	20.77	0.05	
136	Algeria	–1.16	19.32	0.04	
137	Belarus	–1.21	18.03	0.04	○
138	Sudan	–1.30	15.71	0.03	
139	Venezuela, Bolivarian Rep.	–1.49	10.59	0.02	○
140	Uzbekistan	–1.59	8.00	0.01	○
141	Iran, Islamic Rep.	–1.68	5.63	0.01	○
142	Zimbabwe	–1.90	0.00	0.00	○

SOURCE: World Bank, *World Governance Indicators, 2012 update*

NOTE: ● indicates a strength; ○ a weakness.

1.2.2 Rule of law

Rule of law index | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Finland	1.96	100.00	1.00	●
2	Sweden	1.95	99.67	0.99	●
3	Denmark	1.92	98.85	0.99	●
4	New Zealand	1.91	98.68	0.98	●
5	Norway	1.89	98.18	0.97	●
6	Netherlands	1.82	96.37	0.96	●
7	Austria	1.81	96.00	0.96	●
8	Luxembourg	1.81	95.98	0.95	
9	Australia	1.78	95.15	0.94	●
10	Ireland	1.77	94.99	0.94	
11	Switzerland	1.76	94.69	0.93	
12	Canada	1.76	94.51	0.92	
13	Singapore	1.69	92.88	0.91	
14	Iceland	1.69	92.65	0.91	
15	United Kingdom	1.67	92.25	0.90	
16	Germany	1.62	90.78	0.89	
17	United States of America	1.59	90.17	0.89	
18	Hong Kong (China)	1.54	88.62	0.88	
19	France	1.50	87.50	0.87	
20	Belgium	1.45	86.25	0.87	
21	Chile	1.37	84.14	0.86	●
22	Malta	1.35	83.56	0.85	
23	Japan	1.27	81.55	0.84	
24	Spain	1.20	79.64	0.84	
25	Estonia	1.18	78.92	0.83	
26	Slovenia	1.07	76.10	0.82	
27	Cyprus	1.06	75.81	0.82	
28	Barbados	1.04	75.12	0.81	
29	Portugal	1.01	74.52	0.80	
30	Czech Republic	1.01	74.51	0.79	
31	Korea, Rep.	1.01	74.42	0.79	
32	Israel	0.98	73.64	0.78	
33	Brunei Darussalam	0.88	70.95	0.77	●
34	Mauritius	0.86	70.48	0.77	
35	Latvia	0.80	68.76	0.76	
36	Qatar	0.78	68.14	0.75	
37	Hungary	0.77	68.05	0.74	
38	Lithuania	0.77	67.84	0.74	
39	Poland	0.73	66.95	0.73	
40	Uruguay	0.71	66.35	0.72	
41	Botswana	0.66	64.86	0.72	●
42	Slovakia	0.65	64.60	0.71	
43	Oman	0.63	64.07	0.70	
44	Greece	0.57	62.67	0.70	
45	Malaysia	0.52	61.16	0.69	
46	Kuwait	0.50	60.62	0.68	
47	United Arab Emirates	0.46	59.69	0.67	
48	Costa Rica	0.46	59.68	0.67	
49	Cape Verde	0.44	59.03	0.66	●
50	Italy	0.41	58.26	0.65	
51	Bahrain	0.35	56.53	0.65	
52	Jordan	0.23	53.36	0.64	
53	Namibia	0.19	52.43	0.63	
54	Croatia	0.18	51.98	0.62	
55	South Africa	0.10	49.90	0.62	
56	Turkey	0.08	49.27	0.61	
57	Saudi Arabia	0.07	49.04	0.60	
58	Romania	0.04	48.41	0.60	
59	Montenegro	0.03	48.11	0.59	
60	Brazil	0.01	47.55	0.58	
61	Ghana	–0.06	45.67	0.57	●
62	Panama	–0.07	45.19	0.57	
63	Sri Lanka	–0.07	45.18	0.56	
64	India	–0.08	45.09	0.55	
65	Bulgaria	–0.09	44.73	0.55	
66	Tunisia	–0.10	44.53	0.54	
67	Georgia	–0.16	42.82	0.53	
68	Malawi	–0.18	42.48	0.52	●
69	Trinidad and Tobago	–0.21	41.59	0.52	
70	Morocco	–0.21	41.56	0.51	
71	TFYR of Macedonia	–0.24	40.70	0.50	
72	Thailand	–0.24	40.70	0.50	
73	Colombia	–0.26	40.10	0.49	
74	Lesotho	–0.27	39.84	0.48	●
75	Rwanda	–0.31	38.96	0.48	
76	Bosnia and Herzegovina	–0.31	38.73	0.47	
77	Serbia	–0.33	38.35	0.46	
78	Mongolia	–0.34	37.90	0.45	
79	Moldova, Rep.	–0.36	37.51	0.45	
80	Burkina Faso	–0.36	37.46	0.44	●
81	Armenia	–0.40	36.44	0.43	
82	Uganda	–0.41	36.04	0.43	
83	Egypt	–0.42	35.90	0.42	
84	Swaziland	–0.42	35.88	0.41	
85	Jamaica	–0.43	35.51	0.40	
86	Senegal	–0.45	35.00	0.40	
87	China	–0.46	34.82	0.39	
88	Zambia	–0.47	34.62	0.38	
89	Guyana	–0.47	34.62	0.38	
90	Mexico	–0.48	34.39	0.37	
91	Viet Nam	–0.48	34.37	0.36	
92	Gabon	–0.49	33.98	0.35	
93	Albania	–0.49	33.91	0.35	
94	Niger	–0.50	33.85	0.34	
95	Gambia	–0.50	33.72	0.33	
96	Belize	–0.50	33.64	0.33	
97	Mali	–0.50	33.63	0.32	
98	Philippines	–0.51	33.41	0.31	
99	Tanzania, United Rep.	–0.52	33.29	0.30	
100	Mozambique	–0.56	32.11	0.30	
101	Argentina	–0.56	32.09	0.29	
102	Peru	–0.60	30.90	0.28	
103	Kazakhstan	–0.63	30.34	0.28	
104	Indonesia	–0.65	29.59	0.27	
105	Syrian Arab Republic	–0.66	29.44	0.26	
106	Lebanon	–0.68	28.98	0.26	
107	Nicaragua	–0.71	27.99	0.25	
108	Ethiopia	–0.71	27.95	0.24	
109	Bangladesh	–0.72	27.82	0.23	
110	El Salvador	–0.73	27.62	0.23	
111	Benin	–0.74	27.36	0.22	
112	Dominican Republic	–0.76	26.77	0.21	
113	Russian Federation	–0.78	26.18	0.21	○
114	Algeria	–0.83	24.88	0.20	
115	Madagascar	–0.84	24.65	0.19	
116	Togo	–0.85	24.30	0.18	
117	Ukraine	–0.86	23.93	0.18	○
118	Paraguay	–0.86	23.91	0.17	
119	Azerbaijan	–0.88	23.57	0.16	
120	Pakistan	–0.90	22.96	0.16	
121	Iran, Islamic Rep.	–0.90	22.88	0.15	
122	Fiji	–0.91	22.79	0.14	
123	Honduras	–0.91	22.73	0.13	
124	Nepal	–0.99	20.59	0.13	
125	Bolivia, Plurinational St.	–1.01	20.10	0.12	○
126	Kenya	–1.01	19.94	0.11	○
127	Cambodia	–1.03	19.47	0.11	
128	Guatemala	–1.03	19.43	0.10	
129	Cameroon	–1.04	19.22	0.09	
130	Belarus	–1.08	18.18	0.09	○
131	Ecuador	–1.14	16.47	0.08	○
132	Tajikistan	–1.20	14.96	0.07	
133	Angola	–1.23	14.03	0.06	
134	Nigeria	–1.25	13.56	0.06	
135	Kyrgyzstan	–1.25	13.51	0.05	○
136	Yemen	–1.25	13.51	0.04	
137	Sudan	–1.26	13.26	0.04	
138	Côte d'Ivoire	–1.26	13.18	0.03	○
139	Uzbekistan	–1.39	9.69	0.02	○
140	Guinea	–1.47	7.46	0.01	○
141	Venezuela, Bolivarian Rep.	–1.62	3.49	0.01	○
142	Zimbabwe	–1.75	0.00	0.00	○

SOURCE: World Bank, *World Governance Indicators, 2012 update*

NOTE: ● indicates a strength; ○ a weakness.

1.2.3 Cost of redundancy dismissal

Sum of notice period and severance pay for redundancy dismissal (in salary weeks, averages for workers with 1, 5, and 10 years of tenure, with a minimum threshold of 8 weeks) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Austria	8.00	100.00	0.85	
1	Bahrain	8.00	100.00	0.85	
1	Belgium	8.00	100.00	0.85	
1	Brunei Darussalam	8.00	100.00	0.85	●
1	Bulgaria	8.00	100.00	0.85	●
1	Cyprus	8.00	100.00	0.85	
1	Denmark	8.00	100.00	0.85	
1	Georgia	8.00	100.00	0.85	●
1	Guinea	8.00	100.00	0.85	●
1	Hong Kong (China)	8.00	100.00	0.85	
1	Ireland	8.00	100.00	0.85	
1	Italy	8.00	100.00	0.85	
1	Japan	8.00	100.00	0.85	
1	Jordan	8.00	100.00	0.85	●
1	Malta	8.00	100.00	0.85	
1	New Zealand	8.00	100.00	0.85	
1	Oman	8.00	100.00	0.85	●
1	Romania	8.00	100.00	0.85	●
1	Serbia	8.00	100.00	0.85	●
1	Singapore	8.00	100.00	0.85	
1	United Arab Emirates	8.00	100.00	0.85	
1	United States of America	8.00	100.00	0.85	
23	Belize	8.33	99.33	0.84	●
24	United Kingdom	8.35	99.29	0.84	
25	Kazakhstan	8.67	98.66	0.79	●
25	Lebanon	8.67	98.66	0.79	
25	Mongolia	8.67	98.66	0.79	
25	Netherlands	8.67	98.66	0.79	
25	Norway	8.67	98.66	0.79	
25	Syrian Arab Republic	8.67	98.66	0.79	●
25	Uganda	8.67	98.66	0.79	●
32	Bosnia and Herzegovina	9.22	97.54	0.78	●
33	South Africa	9.33	97.32	0.77	●
33	Tanzania, United Rep.	9.33	97.32	0.77	●
35	Fiji	9.67	96.65	0.74	●
35	Latvia	9.67	96.65	0.74	
35	Namibia	9.67	96.65	0.74	●
38	Canada	10.00	95.98	0.74	
39	Finland	10.11	95.76	0.72	
39	Iceland	10.11	95.76	0.72	
39	Switzerland	10.11	95.76	0.72	
42	Niger	10.12	95.74	0.71	●
43	Burkina Faso	10.47	95.03	0.70	●
44	Mauritius	10.62	94.74	0.70	
45	Armenia	11.00	93.97	0.69	
46	Montenegro	11.22	93.53	0.68	
47	Australia	11.33	93.30	0.67	
48	Slovenia	11.42	93.13	0.67	
49	Peru	11.43	93.11	0.66	
50	Slovakia	11.56	92.86	0.65	
51	Benin	11.63	92.71	0.65	●
52	France	11.84	92.28	0.64	
53	Tunisia	12.10	91.77	0.63	
54	Madagascar	12.25	91.45	0.62	●
55	Estonia	12.90	90.15	0.62	
56	Rwanda	12.95	90.05	0.61	●
57	TFYR of Macedonia	13.00	89.96	0.60	
57	Ukraine	13.00	89.96	0.60	
59	Côte d'Ivoire	13.07	89.81	0.59	●
60	Togo	13.14	89.67	0.58	●
61	Hungary	13.41	89.13	0.57	
62	Mali	13.65	88.65	0.57	●
63	Senegal	13.69	88.56	0.56	
64	Jamaica	14.00	87.95	0.55	●
65	Sweden	14.44	87.05	0.55	○
66	Swaziland	14.57	86.80	0.54	
67	Gabon	14.78	86.38	0.53	
68	Nicaragua	14.93	86.09	0.52	●
69	Lesotho	15.00	85.94	0.52	●
70	Croatia	15.11	85.71	0.51	
71	Cameroon	15.31	85.31	0.50	●
72	Brazil	15.45	85.04	0.50	
73	Tajikistan	15.53	84.88	0.49	●
74	India	15.76	84.41	0.48	
74	Kenya	15.76	84.41	0.48	
76	Greece	15.89	84.15	0.47	
77	Barbados	16.00	83.93	0.46	
78	Nigeria	16.20	83.53	0.45	
79	Colombia	16.67	82.59	0.43	
79	Guyana	16.67	82.59	0.43	
79	Malawi	16.67	82.59	0.43	
82	Algeria	17.33	81.25	0.40	
82	Kyrgyzstan	17.33	81.25	0.40	
82	Russian Federation	17.33	81.25	0.40	
82	Uzbekistan	17.33	81.25	0.40	
86	Spain	17.38	81.15	0.40	○
87	Panama	18.13	79.64	0.39	
88	Costa Rica	18.70	78.50	0.38	
89	Poland	18.78	78.35	0.38	
90	Ethiopia	19.14	77.61	0.37	
91	Cambodia	19.37	77.17	0.36	
92	Saudi Arabia	19.45	76.99	0.35	
93	Czech Republic	20.22	75.45	0.35	○
94	Trinidad and Tobago	20.51	74.86	0.34	
95	Morocco	20.69	74.51	0.33	
96	Uruguay	20.80	74.29	0.33	
97	Albania	20.83	74.23	0.32	
98	Germany	21.56	72.77	0.31	○
99	Azerbaijan	21.67	72.54	0.29	
99	Belarus	21.67	72.54	0.29	○
99	Luxembourg	21.67	72.54	0.29	○
102	Botswana	21.69	72.50	0.28	
103	Mexico	22.00	71.88	0.28	○
104	Moldova, Rep.	22.60	70.67	0.27	
105	El Salvador	22.86	70.15	0.26	
106	Iran, Islamic Rep.	23.11	69.64	0.26	
107	Qatar	23.22	69.42	0.25	
108	Malaysia	23.89	68.08	0.24	○
109	Lithuania	24.56	66.74	0.23	○
109	Viet Nam	24.56	66.74	0.23	○
111	Gambia	26.00	63.84	0.21	
111	Sudan	26.00	63.84	0.21	
113	Paraguay	26.07	63.70	0.21	
114	Dominican Republic	26.18	63.47	0.20	○
115	Guatemala	26.96	61.90	0.19	
116	Nepal	27.19	61.45	0.18	
116	Pakistan	27.19	61.45	0.18	
118	Chile	27.40	61.03	0.15	○
118	China	27.40	61.03	0.15	○
118	Korea, Rep.	27.40	61.03	0.15	○
118	Yemen	27.40	61.03	0.15	
122	Israel	27.44	60.94	0.13	○
122	Philippines	27.44	60.94	0.13	
124	Kuwait	28.12	59.58	0.13	○
125	Cape Verde	29.54	56.73	0.12	
126	Turkey	29.78	56.25	0.11	○
127	Argentina	30.33	55.13	0.10	○
127	Honduras	30.33	55.13	0.10	
129	Bangladesh	31.00	53.79	0.09	
130	Angola	31.01	53.78	0.09	
131	Ecuador	31.78	52.23	0.08	○
132	Portugal	33.86	48.05	0.07	○
133	Thailand	36.00	43.75	0.06	○
134	Egypt	36.83	42.08	0.06	○
135	Mozambique	37.51	40.72	0.05	
136	Ghana	49.78	16.07	0.04	○
137	Zambia	50.56	14.51	0.04	○
138	Indonesia	57.78	0.00	0.00	○
138	Sri Lanka	69.33	0.00	0.00	○
138	Bolivia, Plurinational St.	82.33	0.00	0.00	○
138	Venezuela, Bolivarian Rep.	82.33	0.00	0.00	○
138	Zimbabwe	82.33	0.00	0.00	○

SOURCE: World Bank, *Doing Business 2013, Employing Workers*

NOTE: ● indicates a strength; ○ a weakness.

1.3.1 Ease of starting a business

Ease of starting a business (distance to frontier) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	New Zealand	100.00	100.00	1.00	●
2	Canada	99.10	99.10	0.99	●
3	Australia	97.90	97.90	0.99	●
4	TFYR of Macedonia	97.80	97.80	0.98	●
5	Georgia	97.60	97.60	0.97	●
6	Rwanda	97.30	97.30	0.96	●
7	Kyrgyzstan	96.00	96.00	0.96	●
8	Singapore	95.90	95.90	0.95	
9	Hong Kong (China)	95.80	95.80	0.94	
10	Madagascar	95.50	95.50	0.94	●
11	Slovenia	95.10	95.10	0.93	●
12	Armenia	94.70	94.70	0.92	●
13	Belgium	94.30	94.30	0.91	
14	Malaysia	93.60	93.60	0.91	
15	Finland	93.20	93.20	0.90	
16	Ireland	92.70	92.70	0.89	
17	Sweden	92.60	92.60	0.89	
18	Denmark	92.40	92.40	0.88	
19	Hungary	92.30	92.30	0.87	
20	Belarus	91.70	91.70	0.86	●
20	Portugal	91.70	91.70	0.86	
22	France	91.50	91.50	0.85	
23	Albania	91.40	91.40	0.84	●
23	Mauritius	91.40	91.40	0.84	●
25	Latvia	91.20	91.20	0.83	
26	Iceland	91.10	91.10	0.82	
26	Norway	91.10	91.10	0.82	
28	Bulgaria	90.90	90.90	0.81	
29	Estonia	90.40	90.40	0.80	
30	Korea, Rep.	89.90	89.90	0.79	
31	United States of America	89.80	89.80	0.79	
32	Sri Lanka	89.40	89.40	0.78	●
33	Azerbaijan	89.30	89.30	0.77	●
34	Netherlands	89.10	89.10	0.77	
35	Jamaica	89.00	89.00	0.74	●
35	Montenegro	89.00	89.00	0.74	
35	South Africa	89.00	89.00	0.74	
38	United Arab Emirates	88.90	88.90	0.74	
39	Panama	88.80	88.80	0.72	●
39	Romania	88.80	88.80	0.72	
39	Uruguay	88.80	88.80	0.72	
42	Egypt	88.60	88.60	0.71	●
43	Turkey	88.40	88.40	0.70	
43	United Kingdom	88.40	88.40	0.70	
45	Israel	88.20	88.20	0.68	
45	Mexico	88.20	88.20	0.68	
47	Cyprus	88.10	88.10	0.67	
48	Croatia	87.90	87.90	0.66	
48	Thailand	87.90	87.90	0.66	
50	Serbia	87.80	87.80	0.65	
51	Italy	87.60	87.60	0.65	
52	Chile	87.30	87.30	0.64	
53	Kazakhstan	87.20	87.20	0.63	
54	Uzbekistan	87.00	87.00	0.62	●
55	Morocco	86.90	86.90	0.62	
56	Mongolia	86.70	86.70	0.60	
56	Slovakia	86.70	86.70	0.60	
58	Moldova, Rep.	86.50	86.50	0.60	
59	Iran, Islamic Rep.	86.30	86.30	0.58	
59	Peru	86.30	86.30	0.58	
61	Luxembourg	86.00	86.00	0.57	
61	Switzerland	86.00	86.00	0.57	○
63	Jordan	85.40	85.40	0.56	
64	Tajikistan	84.80	84.80	0.55	●
65	Ukraine	84.70	84.70	0.55	
66	Ghana	84.60	84.60	0.53	
66	Zambia	84.60	84.60	0.53	
68	Colombia	84.10	84.10	0.52	
69	Lithuania	83.60	83.60	0.51	
69	Russian Federation	83.60	83.60	0.51	
71	Barbados	83.10	83.10	0.50	
72	Lesotho	82.90	82.90	0.50	●
73	Bangladesh	82.60	82.60	0.49	
74	Qatar	82.40	82.40	0.48	
75	Germany	82.20	82.20	0.47	○
75	Poland	82.20	82.20	0.47	
77	Cape Verde	82.00	82.00	0.45	
77	Japan	82.00	82.00	0.45	
79	Guyana	81.90	81.90	0.45	
80	Lebanon	81.70	81.70	0.44	
81	Tunisia	81.30	81.30	0.43	
82	Dominican Republic	81.10	81.10	0.43	
83	Mozambique	80.90	80.90	0.41	
83	Saudi Arabia	80.90	80.90	0.41	
85	Oman	80.50	80.50	0.40	
86	Austria	79.50	79.50	0.39	○
86	Nepal	79.50	79.50	0.39	
88	Czech Republic	79.30	79.30	0.38	○
89	Syrian Arab Republic	79.10	79.10	0.38	
90	Senegal	79.00	79.00	0.37	
91	Trinidad and Tobago	78.90	78.90	0.36	
92	El Salvador	78.50	78.50	0.35	
92	Pakistan	78.50	78.50	0.35	
94	Cameroon	77.80	77.80	0.34	
95	Tanzania, United Rep.	77.10	77.10	0.33	
96	Spain	77.00	77.00	0.33	○
97	Bahrain	76.60	76.60	0.31	
97	Paraguay	76.60	76.60	0.31	
99	Greece	76.50	76.50	0.30	
100	Viet Nam	75.90	75.90	0.30	
101	Yemen	74.40	74.40	0.29	
102	Sudan	74.20	74.20	0.28	●
103	Nigeria	73.50	73.50	0.28	
104	Malta	72.80	72.80	0.27	○
105	Kenya	72.70	72.70	0.26	
106	Burkina Faso	71.70	71.70	0.26	
107	Bosnia and Herzegovina	71.40	71.40	0.25	
108	Indonesia	71.30	71.30	0.24	
109	Botswana	71.00	71.00	0.23	
109	Kuwait	71.00	71.00	0.23	
111	Gabon	70.90	70.90	0.22	
112	Belize	70.60	70.60	0.21	
113	Argentina	69.80	69.80	0.21	
114	Honduras	69.70	69.70	0.20	
115	Algeria	69.00	69.00	0.19	
116	Namibia	68.00	68.00	0.18	
117	Nicaragua	67.80	67.80	0.18	
118	China	67.50	67.50	0.17	○
119	Mali	67.40	67.40	0.16	
120	Fiji	67.30	67.30	0.16	
121	Costa Rica	66.50	66.50	0.15	○
122	Malawi	66.10	66.10	0.14	
123	Swaziland	65.90	65.90	0.13	
124	Guatemala	65.50	65.50	0.13	
125	Philippines	65.30	65.30	0.12	○
126	Gambia	63.50	63.50	0.11	
127	Ecuador	63.20	63.20	0.11	○
128	India	62.40	62.40	0.10	○
129	Benin	60.30	60.30	0.09	
130	Angola	59.90	59.90	0.09	
131	Uganda	59.30	59.30	0.08	
132	Guinea	57.20	57.20	0.07	
133	Bolivia, Plurinational St.	55.90	55.90	0.06	○
134	Ethiopia	55.20	55.20	0.06	
135	Cambodia	54.90	54.90	0.05	
136	Zimbabwe	54.40	54.40	0.04	○
137	Côte d'Ivoire	53.50	53.50	0.04	○
138	Brazil	53.00	53.00	0.03	○
139	Brunei Darussalam	52.60	52.60	0.02	○
140	Togo	52.00	52.00	0.01	○
141	Venezuela, Bolivarian Rep.	46.80	46.80	0.01	○
142	Niger	44.20	44.20	0.00	○

SOURCE: World Bank, Ease of Doing Business Index 2013, *Doing Business 2013*

NOTE: ● indicates a strength; ○ a weakness.

1.3.2 Ease of resolving insolvency

Ease of resolving insolvency (distance to frontier) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Japan	98.30	98.30	1.00	●
2	Singapore	96.80	96.80	0.99	●
3	Norway	96.20	96.20	0.99	●
4	Canada	96.10	96.10	0.98	●
5	Finland	95.10	95.10	0.97	
6	Netherlands	94.10	94.10	0.96	●
7	Belgium	94.00	94.00	0.96	●
8	United Kingdom	93.90	93.90	0.95	
9	Ireland	92.80	92.80	0.94	
10	Denmark	92.30	92.30	0.94	
11	Iceland	90.10	90.10	0.93	
12	Austria	88.40	88.40	0.92	
13	New Zealand	88.10	88.10	0.91	●
14	Korea, Rep.	86.80	86.80	0.91	
15	United States of America	86.50	86.50	0.90	
16	Hong Kong (China)	86.20	86.20	0.89	
17	Australia	85.70	85.70	0.89	
18	Germany	82.90	82.90	0.88	
19	Spain	81.20	81.20	0.87	
20	Colombia	80.90	80.90	0.87	●
21	Sweden	79.40	79.40	0.86	
22	Portugal	79.20	79.20	0.85	
23	Cyprus	75.20	75.20	0.84	
24	Mexico	71.60	71.60	0.84	●
25	Bahrain	70.40	70.40	0.83	
26	Barbados	69.30	69.30	0.82	
27	Botswana	69.00	69.00	0.82	●
28	Belize	68.10	68.10	0.81	●
29	Italy	67.50	67.50	0.80	
30	Jamaica	67.20	67.20	0.79	●
31	Latvia	63.70	63.70	0.79	
32	Czech Republic	60.10	60.10	0.78	
33	Qatar	59.20	59.20	0.77	
34	Poland	58.20	58.20	0.77	
35	Slovakia	57.20	57.20	0.76	
36	Tunisia	55.60	55.60	0.75	●
37	Lithuania	54.50	54.50	0.74	
38	Slovenia	53.20	53.20	0.74	
39	France	51.80	51.80	0.73	
40	Montenegro	51.70	51.70	0.72	
41	Switzerland	50.80	50.80	0.72	
42	Brunei Darussalam	50.50	50.50	0.71	
43	Israel	49.20	49.20	0.70	
44	Fiji	48.40	48.40	0.70	●
45	Malaysia	47.90	47.90	0.69	
46	Greece	47.70	47.70	0.68	
47	Sri Lanka	47.10	47.10	0.67	●
48	Luxembourg	46.60	46.60	0.67	
49	Russian Federation	46.50	46.50	0.66	
50	Uruguay	46.40	46.40	0.65	
51	Kazakhstan	46.20	46.20	0.65	
52	Belarus	46.10	46.10	0.64	
53	Thailand	45.50	45.50	0.63	
54	Namibia	45.40	45.40	0.62	
55	TFYR of Macedonia	45.30	45.30	0.62	
56	Algeria	44.80	44.80	0.61	●
57	Armenia	44.20	44.20	0.60	
58	Mauritius	43.90	43.90	0.60	
59	Albania	42.60	42.60	0.59	
60	Malta	42.10	42.10	0.58	
61	Bolivia, Plurinational St.	41.90	41.90	0.57	
62	Uganda	41.80	41.80	0.57	
63	Hungary	41.70	41.70	0.56	
64	Estonia	41.40	41.40	0.55	
64	Uzbekistan	41.40	41.40	0.55	
66	Swaziland	41.20	41.20	0.54	
67	Côte d'Ivoire	40.50	40.50	0.52	●
67	Lesotho	40.50	40.50	0.52	●
69	Oman	39.40	39.40	0.52	
70	Pakistan	39.00	39.00	0.51	
71	Nicaragua	38.80	38.80	0.50	
71	Tajikistan	38.80	38.80	0.50	●
73	China	38.50	38.50	0.48	
73	Georgia	38.50	38.50	0.48	
75	Bosnia and Herzegovina	38.20	38.20	0.47	
75	South Africa	38.20	38.20	0.47	
77	Morocco	37.80	37.80	0.46	
78	Sudan	35.80	35.80	0.45	●
79	El Salvador	34.80	34.80	0.45	
80	Moldova, Rep.	34.60	34.60	0.43	
80	Senegal	34.60	34.60	0.43	
82	Bulgaria	34.30	34.30	0.42	
82	Kuwait	34.30	34.30	0.42	
84	Argentina	33.30	33.30	0.41	
85	Azerbaijan	33.10	33.10	0.40	
86	Togo	33.00	33.00	0.40	●
87	Croatia	32.60	32.60	0.39	
88	Chile	32.50	32.50	0.38	
89	Zambia	32.30	32.30	0.38	
90	Kenya	32.00	32.00	0.37	
91	United Arab Emirates	31.90	31.90	0.36	
92	Romania	31.70	31.70	0.35	
93	Serbia	31.60	31.60	0.35	
94	Nigeria	30.60	30.60	0.34	
95	Peru	30.50	30.50	0.33	
96	Saudi Arabia	30.40	30.40	0.33	
97	Gambia	30.20	30.20	0.31	
97	Guatemala	30.20	30.20	0.31	
99	Panama	29.90	29.90	0.30	
99	Syrian Arab Republic	29.90	29.90	0.30	
101	Jordan	29.80	29.80	0.29	
102	Burkina Faso	29.70	29.70	0.28	
103	Ghana	29.20	29.20	0.28	
104	India	28.30	28.30	0.27	
105	Ethiopia	28.20	28.20	0.26	
106	Bangladesh	27.80	27.80	0.26	
107	Mali	27.30	27.30	0.25	
108	Nepal	26.70	26.70	0.24	
109	Yemen	26.30	26.30	0.23	
110	Turkey	25.80	25.80	0.23	○
111	Iran, Islamic Rep.	25.30	25.30	0.22	
112	Mongolia	24.80	24.80	0.21	
113	Costa Rica	24.60	24.60	0.21	○
114	Niger	23.80	23.80	0.19	
114	Tanzania, United Rep.	23.80	23.80	0.19	
116	Lebanon	23.00	23.00	0.18	○
117	Benin	22.20	22.20	0.18	
118	Honduras	21.40	21.40	0.17	
119	Malawi	20.40	20.40	0.16	
120	Trinidad and Tobago	20.30	20.30	0.16	
121	Ecuador	19.70	19.70	0.15	
122	Egypt	19.50	19.50	0.13	
122	Guyana	19.50	19.50	0.13	
124	Guinea	19.00	19.00	0.13	
125	Brazil	17.70	17.70	0.12	○
126	Paraguay	17.10	17.10	0.11	
127	Gabon	17.00	17.00	0.11	
128	Mozambique	16.80	16.80	0.10	
129	Indonesia	15.90	15.90	0.09	○
130	Viet Nam	15.60	15.60	0.09	○
131	Cameroon	15.30	15.30	0.08	
132	Madagascar	14.60	14.60	0.07	
133	Cambodia	14.50	14.50	0.06	
134	Kyrgyzstan	10.60	10.60	0.06	
135	Dominican Republic	10.20	10.20	0.04	○
135	Ukraine	10.20	10.20	0.04	○
137	Angola	9.40	9.40	0.04	
138	Venezuela, Bolivarian Rep.	7.80	7.80	0.03	○
139	Philippines	6.20	6.20	0.02	○
140	Rwanda	4.40	4.40	0.01	○
141	Zimbabwe	1.20	1.20	0.01	○
142	Cape Verde	0.00	0.00	0.00	○

SOURCE: World Bank, Ease of Doing Business Index 2013, *Doing Business 2013*

NOTE: ● indicates a strength; ○ a weakness.

1.3.3 Ease of paying taxes

Ease of paying taxes (distance to frontier) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	United Arab Emirates	98.90	98.90	1.00	●
2	Qatar	97.20	97.20	0.99	●
3	Saudi Arabia	96.60	96.60	0.99	●
4	Hong Kong (China)	96.30	96.30	0.98	
5	Singapore	95.00	95.00	0.97	
6	Ireland	93.50	93.50	0.96	●
7	Bahrain	93.00	93.00	0.96	●
8	Oman	91.20	91.20	0.95	●
9	Canada	91.10	91.10	0.94	
10	Kuwait	90.50	90.50	0.94	●
11	Denmark	90.00	90.00	0.93	
12	Mauritius	89.60	89.60	0.92	●
13	Malaysia	88.30	88.30	0.91	
14	Kazakhstan	88.20	88.20	0.91	●
15	United Kingdom	87.40	87.40	0.90	
16	Norway	87.10	87.10	0.89	
17	Switzerland	87.00	87.00	0.89	
18	Luxembourg	86.60	86.60	0.87	
18	New Zealand	86.60	86.60	0.87	
20	Georgia	85.50	85.50	0.87	●
21	Finland	85.30	85.30	0.86	
22	Korea, Rep.	85.00	85.00	0.85	
23	Chile	84.10	84.10	0.84	●
24	Rwanda	84.00	84.00	0.84	●
25	South Africa	83.90	83.90	0.83	●
26	Malta	83.50	83.50	0.82	
27	Netherlands	83.40	83.40	0.82	
28	Spain	82.80	82.80	0.81	
29	Brunei Darussalam	82.70	82.70	0.80	●
30	Lebanon	81.40	81.40	0.79	●
31	Jordan	80.80	80.80	0.79	●
32	TFYR of Macedonia	80.50	80.50	0.78	
33	Latvia	79.90	79.90	0.77	
34	Cyprus	79.70	79.70	0.77	
35	Croatia	79.60	79.60	0.76	
36	Slovenia	79.10	79.10	0.75	
37	Australia	78.90	78.90	0.74	
38	Sweden	78.80	78.80	0.74	
39	Lithuania	77.90	77.90	0.73	
40	Greece	77.70	77.70	0.72	
41	Botswana	77.40	77.40	0.72	●
42	Iceland	76.40	76.40	0.71	
43	United States of America	76.20	76.20	0.70	
44	Belize	75.90	75.90	0.70	●
45	Germany	75.70	75.70	0.68	
45	Zambia	75.70	75.70	0.68	●
47	Portugal	75.40	75.40	0.67	
48	Malawi	75.20	75.20	0.66	●
48	Peru	75.20	75.20	0.66	
50	Turkey	75.00	75.00	0.65	
51	Madagascar	74.90	74.90	0.65	●
52	Azerbaijan	74.60	74.60	0.64	
53	Russian Federation	73.90	73.90	0.63	
54	Swaziland	73.80	73.80	0.62	●
55	Dominican Republic	72.50	72.50	0.62	●
56	Bangladesh	72.20	72.20	0.61	●
57	Austria	72.10	72.10	0.60	
57	Cambodia	72.10	72.10	0.60	●
59	Thailand	71.40	71.40	0.59	
60	Bulgaria	71.30	71.30	0.58	
61	Israel	71.20	71.20	0.57	
62	Montenegro	70.90	70.90	0.57	
63	Mongolia	70.70	70.70	0.56	
64	Belgium	70.60	70.60	0.55	
65	Ghana	70.40	70.40	0.55	
66	Estonia	70.10	70.10	0.54	
67	Trinidad and Tobago	70.00	70.00	0.53	
68	Armenia	69.90	69.90	0.52	
68	Fiji	69.90	69.90	0.52	
70	Tunisia	69.80	69.80	0.51	
71	Uganda	69.40	69.40	0.50	
72	France	69.30	69.30	0.50	
73	Slovakia	69.20	69.20	0.49	
74	Poland	68.80	68.80	0.48	
75	Hungary	68.70	68.70	0.48	
76	Lesotho	68.60	68.60	0.47	●
77	Morocco	68.30	68.30	0.45	
77	Syrian Arab Republic	68.30	68.30	0.45	
79	Mexico	67.70	67.70	0.45	
80	Ethiopia	67.20	67.20	0.44	
81	Mozambique	67.00	67.00	0.43	
82	Sudan	65.70	65.70	0.43	●
83	Nepal	65.60	65.60	0.42	
84	Guyana	65.50	65.50	0.41	
85	Cape Verde	65.30	65.30	0.40	
85	Japan	65.30	65.30	0.40	
87	Guatemala	65.20	65.20	0.38	
87	Namibia	65.20	65.20	0.38	
89	Barbados	65.00	65.00	0.38	
90	Czech Republic	64.90	64.90	0.36	○
90	Iran, Islamic Rep.	64.90	64.90	0.36	
92	Moldova, Rep.	63.50	63.50	0.35	
93	Yemen	63.30	63.30	0.35	
94	Costa Rica	62.60	62.60	0.34	
95	Ecuador	61.90	61.90	0.33	
96	Uruguay	60.80	60.80	0.33	
97	Belarus	60.70	60.70	0.32	
98	China	60.50	60.50	0.31	
99	Paraguay	60.20	60.20	0.30	
100	Romania	59.80	59.80	0.30	
101	Colombia	59.70	59.70	0.29	
102	Zimbabwe	59.30	59.30	0.28	
103	Bosnia and Herzegovina	58.80	58.80	0.28	
104	Egypt	58.60	58.60	0.27	
105	Honduras	58.50	58.50	0.26	
106	Indonesia	58.20	58.20	0.26	
107	Niger	57.50	57.50	0.24	
107	Tanzania, United Rep.	57.50	57.50	0.24	
109	Italy	56.90	56.90	0.23	○
110	Angola	56.70	56.70	0.23	
111	Philippines	56.30	56.30	0.22	
112	Gabon	55.10	55.10	0.21	
113	Burkina Faso	54.90	54.90	0.21	
114	Albania	54.70	54.70	0.20	
115	Jamaica	54.30	54.30	0.19	
116	El Salvador	53.90	53.90	0.18	
117	Kenya	53.70	53.70	0.18	
118	India	52.50	52.50	0.17	
119	Mali	50.70	50.70	0.16	
120	Serbia	49.50	49.50	0.16	○
121	Côte d'Ivoire	48.80	48.80	0.15	
122	Togo	47.80	47.80	0.14	
123	Nicaragua	47.50	47.50	0.13	○
124	Viet Nam	47.30	47.30	0.13	○
125	Ukraine	47.00	47.00	0.12	○
126	Pakistan	45.40	45.40	0.11	
127	Argentina	44.10	44.10	0.11	○
128	Sri Lanka	43.90	43.90	0.10	○
129	Nigeria	42.90	42.90	0.09	
130	Panama	40.70	40.70	0.09	○
131	Kyrgyzstan	40.30	40.30	0.08	
132	Brazil	39.10	39.10	0.07	○
133	Algeria	38.60	38.60	0.06	
134	Benin	37.10	37.10	0.06	
135	Uzbekistan	36.70	36.70	0.05	○
136	Cameroon	34.40	34.40	0.04	○
137	Senegal	27.70	27.70	0.04	○
138	Guinea	24.30	24.30	0.03	
139	Gambia	23.80	23.80	0.02	○
140	Tajikistan	22.70	22.70	0.01	
141	Bolivia, Plurinational St.	13.40	13.40	0.01	○
142	Venezuela, Bolivarian Rep.	12.70	12.70	0.00	○

SOURCE: World Bank, Ease of Doing Business Index 2013, *Doing Business 2013*

NOTE: ● indicates a strength; ○ a weakness.

2.1.1 Expenditure on education

Current expenditure on education (% of GNI) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Lesotho (2008)	9.73	100.00	1.00	●
2	Iceland	8.96	90.79	0.99	●
3	Swaziland (2011)	8.78	88.62	0.98	●
4	Ghana (2011)	8.24	82.28	0.97	●
5	Namibia (2010)	8.21	81.84	0.96	●
6	Denmark	8.15	81.15	0.96	●
7	Botswana	7.63	74.98	0.95	●
8	Moldova, Rep. (2011)	7.39	72.12	0.94	●
9	Barbados (2010)	7.23	70.23	0.93	●
10	Bolivia, Plurinational St. (2010)	7.20	69.93	0.92	●
11	New Zealand (2010)	7.16	69.43	0.91	
12	Ireland	7.11	68.82	0.90	
13	Cyprus (2008)	6.86	65.81	0.89	●
14	Sweden	6.79	64.98	0.88	
15	Norway	6.58	62.50	0.88	
16	Belgium	6.42	60.57	0.87	
17	Finland	6.30	59.13	0.86	
18	Costa Rica	6.21	58.07	0.85	●
19	Jamaica	6.03	55.94	0.84	●
20	Kenya (2010)	5.91	54.54	0.83	●
21	Tunisia (2010)	5.88	54.22	0.82	●
22	Kyrgyzstan (2010)	5.86	53.97	0.81	●
23	Ukraine (2006)	5.86	53.96	0.81	●
24	Austria	5.80	53.27	0.80	
25	Argentina (2010)	5.73	52.40	0.79	●
26	Portugal	5.72	52.29	0.78	
27	Israel	5.67	51.66	0.77	
28	Malta	5.65	51.47	0.76	
29	Viet Nam (2010)	5.58	50.57	0.75	
30	South Africa	5.46	49.21	0.74	
31	Brazil	5.40	48.47	0.73	
32	Slovenia	5.39	48.30	0.73	
33	Estonia	5.36	48.01	0.72	
34	Lithuania	5.35	47.90	0.71	
35	France	5.26	46.81	0.70	
36	Senegal (2010)	5.22	46.32	0.69	●
37	Morocco (2006)	5.20	46.09	0.68	●
38	Mexico	5.18	45.80	0.67	
39	United Kingdom	5.12	45.16	0.66	
40	Belize (2004)	5.09	44.79	0.65	●
41	Mongolia (2011)	5.04	44.19	0.65	
42	Poland	5.00	43.70	0.64	
43	Belarus (2011)	4.99	43.56	0.63	
44	Hungary	4.94	42.94	0.62	
45	Cape Verde (2010)	4.92	42.80	0.61	●
46	Malawi (2011)	4.92	42.79	0.60	●
47	Switzerland	4.84	41.76	0.59	○
48	Australia	4.83	41.64	0.58	
49	Germany	4.80	41.38	0.58	
50	Benin (2010)	4.74	40.60	0.57	●
51	Serbia (2010)	4.70	40.16	0.56	
52	Canada	4.69	40.02	0.55	○
53	Ecuador (2010)	4.67	39.75	0.54	
54	Spain	4.57	38.64	0.53	
55	Italy	4.45	37.21	0.52	
56	Malaysia	4.41	36.68	0.51	
57	Bulgaria	4.37	36.18	0.50	
58	Côte d'Ivoire (2007)	4.32	35.67	0.50	●
59	Mali (2011)	4.29	35.26	0.49	●
60	Togo (2011)	4.28	35.14	0.48	●
61	Nicaragua (2010)	4.27	35.08	0.47	
62	Chile (2010)	4.26	34.86	0.46	
63	Oman	4.23	34.52	0.45	
64	Croatia	4.22	34.38	0.44	
65	Korea, Rep.	4.22	34.38	0.43	
66	Fiji (2011)	4.21	34.32	0.42	
67	Nepal	4.20	34.22	0.42	
68	Czech Republic	4.13	33.33	0.41	○
69	Yemen (2008)	4.12	33.21	0.40	●
70	Iran, Islamic Rep. (2010)	4.11	33.12	0.39	
71	Rwanda (2011)	4.06	32.55	0.38	
72	Thailand	4.06	32.51	0.37	
73	Slovakia	4.06	32.51	0.36	
74	Niger (2011)	4.04	32.34	0.35	
75	Mozambique (2006)	4.02	32.03	0.35	
76	Paraguay (2010)	3.93	31.01	0.34	
77	Romania	3.70	28.24	0.33	
78	Tajikistan (2011)	3.68	28.01	0.32	
79	Angola (2010)	3.56	26.56	0.31	●
80	Panama (2011)	3.51	26.02	0.30	
81	Venezuela, Bolivarian Rep. (2007)	3.49	25.77	0.29	
82	Mauritius (2010)	3.38	24.44	0.28	
83	Burkina Faso (2010)	3.37	24.36	0.27	
84	Colombia (2011)	3.29	23.36	0.27	○
85	Guinea (2011)	3.25	22.90	0.26	●
86	Greece (2005)	3.25	22.85	0.25	
87	Kuwait (2006)	3.19	22.12	0.24	
88	El Salvador (2011)	3.17	21.88	0.23	
89	Guyana (2011)	3.14	21.56	0.22	
90	India (2006)	3.08	20.88	0.21	
91	Bahrain (2008)	3.03	20.25	0.20	
92	Singapore (2011)	2.96	19.49	0.19	○
93	Cameroon (2011)	2.96	19.43	0.19	
94	Azerbaijan (2010)	2.90	18.73	0.18	
95	Uganda (2011)	2.90	18.72	0.17	
96	Guatemala (2010)	2.88	18.51	0.16	
97	Ethiopia (2010)	2.88	18.51	0.15	
98	Hong Kong (China) (2011)	2.81	17.67	0.14	○
99	Indonesia (2010)	2.72	16.60	0.13	
100	Gambia (2011)	2.68	16.13	0.12	
101	Turkey (2006)	2.64	15.68	0.12	○
102	Madagascar (2011)	2.56	14.73	0.11	
103	Philippines	2.44	13.28	0.10	○
104	Zimbabwe (2010)	2.44	13.22	0.09	
105	Peru (2011)	2.24	10.89	0.08	○
106	Brunei Darussalam (2010)	2.03	8.32	0.07	○
107	Qatar (2008)	1.82	5.90	0.06	○
108	Bangladesh	1.81	5.77	0.05	○
109	Georgia (2011)	1.76	5.14	0.04	○
110	Sri Lanka (2010)	1.70	4.46	0.04	○
111	Cambodia (2007)	1.63	3.67	0.03	○
112	Pakistan (2010)	1.56	2.84	0.02	○
113	Lebanon (2011)	1.44	1.41	0.01	○
114	Zambia (2007)	1.33	0.00	0.00	○
n/a	Albania	n/a	n/a	n/a	
n/a	Algeria	n/a	n/a	n/a	
n/a	Armenia	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	China	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Egypt	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Japan	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Kazakhstan	n/a	n/a	n/a	
n/a	Latvia	n/a	n/a	n/a	
n/a	Luxembourg	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Netherlands	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Russian Federation	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	TFYR of Macedonia	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	United States of America	n/a	n/a	n/a	
n/a	Uruguay	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2004–11)

NOTE: ● indicates a strength; ○ a weakness.

2.1.2 Public expenditure on education per pupil

Public expenditure per pupil, all levels (% of GDP per capita) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Lesotho (2006)	50.19	100.00	1.00	●
2	Moldova, Rep. (2011)	45.24	88.88	0.99	●
3	Cyprus	36.99	70.32	0.98	●
4	Denmark	34.81	65.40	0.97	●
5	Barbados (2010)	31.67	58.33	0.96	●
6	Sweden	31.36	57.64	0.95	
7	Niger (2011)	30.42	55.53	0.95	●
8	Finland	29.63	53.75	0.94	
9	Austria	29.37	53.17	0.93	●
10	Belgium	29.29	52.98	0.92	●
11	Portugal	29.22	52.83	0.91	●
12	Norway	28.27	50.69	0.90	
13	Slovenia	28.25	50.65	0.89	
14	Botswana (2007)	27.91	49.89	0.88	●
15	Switzerland	27.62	49.23	0.87	
16	Serbia (2010)	27.26	48.43	0.86	●
17	Estonia	27.25	48.39	0.85	
18	Malta	27.11	48.09	0.85	
19	Bulgaria	26.57	46.87	0.84	●
20	Senegal (2010)	26.34	46.36	0.83	●
21	Iceland	26.29	46.24	0.82	
22	Ukraine (2007)	26.04	45.69	0.81	●
23	Netherlands	25.98	45.55	0.80	
24	France	25.85	45.24	0.79	
25	United Kingdom	25.68	44.86	0.78	
26	Italy	25.47	44.39	0.77	
27	Latvia (2010)	25.26	43.91	0.76	
28	Belarus (2011)	25.04	43.42	0.75	
29	Mali (2011)	24.74	42.76	0.75	●
30	Hungary	24.73	42.72	0.74	
31	Spain	24.70	42.66	0.73	
32	Burkina Faso (2010)	24.63	42.51	0.72	●
33	Swaziland (2005)	24.52	42.27	0.71	●
34	Croatia	24.46	42.13	0.70	
35	New Zealand (2010)	24.15	41.42	0.69	
36	Tunisia (2007)	23.79	40.62	0.68	
37	Lithuania	23.75	40.54	0.67	
38	Kenya (2006)	23.73	40.49	0.66	
39	Morocco	23.60	40.19	0.65	●
40	Poland	23.26	39.42	0.65	
41	Kyrgyzstan	23.20	39.30	0.64	
42	Tanzania, United Rep. (2010)	23.12	39.12	0.63	●
43	Japan (2010)	22.81	38.40	0.62	
44	Korea, Rep.	22.12	36.87	0.61	
45	Czech Republic	22.10	36.82	0.60	
46	Belize (2010)	22.08	36.76	0.59	
47	Kuwait (2004)	22.02	36.65	0.58	
48	United States of America	21.78	36.09	0.57	
49	Fiji (2004)	21.32	35.05	0.56	
50	Saudi Arabia (2008)	20.96	34.25	0.55	
51	Greece (2005)	20.74	33.75	0.55	
52	Romania	20.54	33.30	0.54	
53	Ethiopia (2010)	20.28	32.73	0.53	●
54	Brazil	20.12	32.36	0.52	
55	Namibia (2003)	19.92	31.90	0.51	
56	Iran, Islamic Rep. (2010)	19.81	31.65	0.50	
57	Russian Federation (2008)	19.69	31.40	0.49	
58	Jamaica (2010)	19.66	31.33	0.48	
59	Israel	19.34	30.61	0.47	○
60	Australia	19.19	30.26	0.46	○
61	Malaysia (2010)	19.17	30.22	0.45	○
62	Slovakia	19.01	29.86	0.45	
63	Hong Kong (China) (2011)	18.93	29.68	0.44	○
64	Argentina (2010)	18.85	29.50	0.43	
65	Costa Rica (2004)	18.69	29.15	0.42	
66	Thailand	18.61	28.97	0.41	
67	Mongolia (2011)	18.01	27.61	0.40	
68	Ghana	18.00	27.60	0.39	
69	Bolivia, Plurinational St. (2003)	17.89	27.34	0.38	
70	Egypt (2004)	17.72	26.96	0.37	
71	Mexico	17.65	26.81	0.36	
72	Benin (2005)	17.03	25.41	0.35	
73	Rwanda (2011)	16.83	24.96	0.35	
74	Cape Verde (2010)	16.74	24.77	0.34	
75	Armenia (2010)	16.34	23.86	0.33	
76	Qatar (2008)	16.14	23.42	0.32	
77	Colombia (2011)	15.95	22.97	0.31	
78	Chile (2010)	15.75	22.53	0.30	○
79	Oman	15.72	22.47	0.29	
80	Nepal (2010)	15.60	22.19	0.28	
81	Georgia (2008)	15.40	21.73	0.27	
82	Paraguay (2010)	14.93	20.69	0.26	
83	Mauritius (2010)	14.72	20.21	0.25	
84	Togo (2011)	14.42	19.55	0.25	
85	Tajikistan (2011)	13.96	18.49	0.24	
86	Panama (2008)	13.86	18.29	0.23	
87	Azerbaijan (2010)	13.57	17.63	0.22	
88	Bahrain (2006)	13.34	17.11	0.21	
89	Albania (2007)	13.22	16.85	0.20	
90	Brunei Darussalam (2011)	13.14	16.65	0.19	
91	Guinea (2011)	12.89	16.10	0.18	
92	India (2006)	12.85	16.01	0.17	
93	Guyana (2011)	12.26	14.67	0.16	
94	Turkey (2006)	12.18	14.50	0.15	○
95	Indonesia (2010)	12.16	14.45	0.15	
96	Kazakhstan	11.71	13.44	0.14	○
97	Pakistan (2005)	11.67	13.35	0.13	
98	Madagascar	11.50	12.97	0.12	
99	El Salvador (2011)	11.34	12.62	0.11	
100	Angola (2010)	11.32	12.58	0.10	
101	Cameroon (2011)	11.22	12.33	0.09	
102	Bangladesh	10.75	11.28	0.08	
103	Uganda	10.55	10.84	0.07	
104	Cambodia (2010)	10.34	10.37	0.06	
105	Uruguay (2006)	10.34	10.36	0.05	○
106	Guatemala (2007)	10.14	9.91	0.05	○
107	Philippines (2008)	10.02	9.63	0.04	○
108	Peru (2010)	8.88	7.09	0.03	○
109	Sri Lanka (2010)	8.40	6.01	0.02	○
110	Nicaragua (2003)	7.87	4.81	0.01	○
111	Lebanon (2011)	5.73	0.00	0.00	○
n/a	Algeria	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Canada	n/a	n/a	n/a	
n/a	China	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Ecuador	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Germany	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Ireland	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Luxembourg	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Singapore	n/a	n/a	n/a	
n/a	South Africa	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	TFYR of Macedonia	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Viet Nam	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2003–11)

NOTE: ● indicates a strength; ○ a weakness.

2.1.3 School life expectancy

School life expectancy, primary to tertiary education (years) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	New Zealand	19.67	100.00	1.00	●
2	Australia	19.62	99.65	0.99	●
3	Ireland	18.67	93.10	0.98	●
4	Iceland	18.54	92.21	0.98	
5	Norway	17.47	84.75	0.97	●
6	Korea, Rep.	17.16	82.57	0.96	
7	Netherlands	17.04	81.78	0.95	
8	Slovenia	17.02	81.62	0.94	●
9	Finland	16.94	81.07	0.94	
10	Spain	16.84	80.41	0.93	●
11	United States of America	16.76	79.83	0.92	
12	United Kingdom	16.72	79.57	0.91	
13	Barbados (2011)	16.60	78.75	0.90	●
14	Belgium	16.48	77.88	0.90	
15	Argentina	16.43	77.56	0.89	●
16	France	16.27	76.39	0.88	
17	Greece (2007)	16.25	76.30	0.87	●
18	Portugal	16.18	75.80	0.87	
19	Italy	16.15	75.57	0.86	●
20	Estonia	16.01	74.63	0.85	
21	Sweden	15.98	74.40	0.84	
22	Czech Republic	15.84	73.46	0.83	
23	Hong Kong (China) (2011)	15.76	72.89	0.83	
24	Fiji (2011)	15.72	72.63	0.82	●
25	Israel (2009)	15.70	72.48	0.81	
26	Switzerland	15.65	72.14	0.80	
27	Austria	15.60	71.75	0.79	
28	Uruguay	15.51	71.17	0.79	●
29	Lithuania (2011)	15.47	70.84	0.78	
30	Hungary	15.46	70.80	0.77	
31	Poland	15.36	70.10	0.76	
32	Japan	15.30	69.66	0.75	
33	Belarus (2011)	15.29	69.65	0.75	
34	Kazakhstan (2011)	15.28	69.56	0.74	●
35	Brunei Darussalam (2011)	15.11	68.39	0.73	
36	Malta	15.10	68.27	0.72	
37	Montenegro	14.99	67.54	0.71	
38	Chile	14.95	67.24	0.71	
39	Tunisia (2011)	14.91	67.00	0.70	
40	Ukraine (2011)	14.79	66.15	0.69	
41	Slovakia	14.72	65.63	0.68	
42	Latvia (2011)	14.54	64.39	0.67	
43	Romania	14.52	64.31	0.67	
44	Mongolia (2011)	14.47	63.93	0.66	
45	Lebanon (2011)	14.37	63.25	0.65	
46	Bahrain (2006)	14.36	63.16	0.64	
47	Venezuela, Bolivarian Rep. (2009)	14.26	62.46	0.63	●
48	Russian Federation (2009)	14.26	62.44	0.63	
49	Brazil (2005)	14.23	62.27	0.62	
50	Kuwait (2004)	14.17	61.84	0.61	
51	Croatia	14.11	61.43	0.60	
52	Cyprus	14.00	60.67	0.60	
53	Bulgaria	13.98	60.55	0.59	
54	Iran, Islamic Rep. (2011)	13.87	59.79	0.58	
55	Sri Lanka	13.81	59.35	0.57	
56	Oman (2011)	13.79	59.24	0.56	
57	Turkey	13.75	58.96	0.56	
58	Mexico	13.74	58.87	0.55	
59	Saudi Arabia (2009)	13.69	58.51	0.54	
60	Colombia (2011)	13.64	58.16	0.53	
61	Algeria (2009)	13.62	57.99	0.52	●
62	Serbia (2011)	13.61	57.99	0.52	
63	Bosnia and Herzegovina (2011)	13.58	57.72	0.51	
64	Costa Rica (2011)	13.52	57.34	0.50	
65	Luxembourg (2008)	13.48	57.09	0.49	
66	Bolivia, Plurinational St. (2007)	13.48	57.09	0.48	
67	TFYR of Macedonia	13.40	56.47	0.48	
68	Denmark	13.25	55.45	0.47	○
69	Panama	13.22	55.29	0.46	
70	Peru	13.21	55.20	0.45	
71	Georgia (2009)	13.18	54.98	0.44	
72	Belize (2011)	13.09	54.31	0.44	
73	Cape Verde (2011)	12.99	53.68	0.43	
74	Togo (2011)	12.94	53.34	0.42	●
75	Jamaica	12.94	53.31	0.41	
76	Qatar (2011)	12.91	53.10	0.40	
77	Indonesia	12.86	52.72	0.40	
78	Jordan	12.65	51.32	0.39	
79	Malaysia (2005)	12.60	50.96	0.38	○
80	Kyrgyzstan (2011)	12.51	50.34	0.37	
81	Egypt	12.40	49.59	0.37	
82	Thailand (2009)	12.30	48.90	0.36	
83	Dominican Republic (2004)	12.28	48.70	0.35	
84	El Salvador (2011)	12.22	48.34	0.34	
85	Armenia (2011)	12.04	47.06	0.33	
86	Paraguay	11.93	46.27	0.33	
87	Viet Nam	11.92	46.25	0.32	
88	China (2011)	11.88	45.92	0.31	
89	Moldova, Rep. (2011)	11.85	45.77	0.30	
90	Botswana (2006)	11.84	45.69	0.29	
91	Azerbaijan (2011)	11.76	45.13	0.29	
92	Trinidad and Tobago (2004)	11.75	45.07	0.28	
93	Honduras	11.67	44.51	0.27	
94	Uzbekistan (2011)	11.60	43.99	0.26	
95	Tajikistan (2011)	11.51	43.36	0.25	
96	Cameroon (2011)	11.50	43.29	0.25	
97	Ghana (2011)	11.34	42.22	0.24	
98	Albania (2003)	11.34	42.21	0.23	
99	Swaziland (2011)	11.33	42.15	0.22	
100	Philippines (2009)	11.30	41.89	0.21	
101	Namibia (2006)	11.27	41.71	0.21	
102	Rwanda (2011)	11.08	40.38	0.20	
103	Uganda (2009)	11.07	40.32	0.19	
104	Kenya (2009)	11.05	40.19	0.18	
105	Cambodia (2011)	11.05	40.18	0.17	
106	Malawi (2011)	10.85	38.78	0.17	
107	Nicaragua (2003)	10.83	38.69	0.16	
108	Morocco (2009)	10.75	38.12	0.15	○
109	India (2008)	10.74	38.06	0.14	○
110	Guatemala (2007)	10.66	37.50	0.13	
111	Guyana (2011)	10.56	36.78	0.13	
112	Madagascar (2009)	10.44	35.96	0.12	
113	Angola	10.24	34.59	0.11	
114	Lesotho (2006)	9.98	32.80	0.10	
115	Mozambique (2011)	9.74	31.07	0.10	
116	Guinea (2011)	9.47	29.21	0.09	
117	Benin (2005)	9.36	28.43	0.08	
118	Tanzania, United Rep.	9.27	27.85	0.07	
119	Ethiopia (2011)	9.08	26.53	0.06	
120	Nigeria (2005)	8.98	25.80	0.06	
121	Yemen (2005)	8.74	24.13	0.05	
122	Gambia (2008)	8.65	23.52	0.04	
123	Senegal	8.18	20.27	0.03	○
124	Mali (2011)	7.51	15.58	0.02	○
125	Pakistan (2011)	7.49	15.47	0.02	○
126	Burkina Faso (2011)	6.88	11.26	0.01	○
127	Niger (2011)	5.26	0.00	0.00	○
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Canada	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Ecuador	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Germany	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Singapore	n/a	n/a	n/a	
n/a	South Africa	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2003–11)

NOTE: ● indicates a strength; ○ a weakness.

2.1.4 Assessment in reading, mathematics, and science

PISA average scales in reading, mathematics, and science | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	China	576.84	100.00	1.00	●
2	Hong Kong (China)	545.57	87.59	0.99	●
3	Finland	543.49	86.76	0.97	
4	Singapore	543.20	86.65	0.96	
5	Korea, Rep.	541.16	85.84	0.94	
6	Japan	529.43	81.18	0.93	
7	Canada	526.58	80.05	0.91	
8	New Zealand	524.06	79.05	0.90	
9	Australia	518.84	76.98	0.88	
10	Netherlands	518.82	76.97	0.87	
11	Switzerland	517.01	76.25	0.86	
12	Estonia	513.63	74.91	0.84	
13	Germany	510.16	73.53	0.83	
14	Belgium	509.26	73.18	0.81	
15	Poland	501.12	69.94	0.80	
16	Iceland	500.85	69.84	0.78	
17	Norway	500.35	69.64	0.77	
18	United Kingdom	500.10	69.54	0.75	
19	Denmark	499.18	69.17	0.74	
20	Slovenia	498.77	69.01	0.72	
21	Ireland	496.92	68.28	0.71	
22	France	496.88	68.26	0.70	
23	United States of America	496.41	68.07	0.68	
24	Hungary	495.66	67.78	0.67	
25	Sweden	495.60	67.75	0.65	
26	Czech Republic	490.50	65.73	0.64	
27	Portugal	489.72	65.42	0.62	
28	Slovakia	488.13	64.79	0.61	
29	Austria	486.84	64.28	0.59	
30	Latvia	486.60	64.18	0.58	
31	Italy	485.93	63.91	0.57	
32	Spain	484.26	63.25	0.55	
33	Luxembourg	481.72	62.24	0.54	
34	Lithuania	478.82	61.09	0.52	
35	Croatia	474.02	59.19	0.51	
36	Greece	473.00	58.78	0.49	
37	Russian Federation	468.50	57.00	0.48	
38	Israel	458.57	53.05	0.46	○
39	Malta (2010)	455.42	51.81	0.45	
40	Turkey	454.52	51.45	0.43	
41	Serbia	442.39	46.63	0.42	
42	Chile	439.30	45.41	0.41	
43	Bulgaria	432.15	42.57	0.39	
44	United Arab Emirates (2010)	430.13	41.76	0.38	
45	Costa Rica (2010)	427.48	40.72	0.36	
46	Uruguay	426.58	40.36	0.35	
47	Romania	426.57	40.35	0.33	
48	Thailand	421.75	38.44	0.32	
49	Mexico	419.89	37.70	0.30	
50	Mauritius (2010)	414.59	35.60	0.29	
51	Trinidad and Tobago	413.56	35.19	0.28	
52	Venezuela, Bolivarian Rep. (2010)	413.44	35.14	0.26	
53	Malaysia (2010)	413.43	35.14	0.25	○
54	Montenegro	403.78	31.31	0.23	
55	Jordan	402.35	30.74	0.22	○
56	Brazil	400.99	30.20	0.20	○
57	Moldova, Rep. (2010)	399.45	29.59	0.19	
58	Colombia	398.59	29.25	0.17	○
59	Kazakhstan	398.56	29.23	0.16	○
60	Argentina	395.72	28.11	0.14	○
61	Tunisia	391.93	26.60	0.13	○
62	Azerbaijan	388.56	25.27	0.12	○
63	Indonesia	385.19	23.93	0.10	○
64	Albania	384.32	23.58	0.09	○
65	Georgia (2010)	375.47	20.07	0.07	○
66	Qatar	373.09	19.13	0.06	○
67	Panama	368.79	17.42	0.04	○
68	Peru	368.05	17.13	0.03	○
69	India (2010)	336.00	4.40	0.01	○
70	Kyrgyzstan	324.91	0.00	0.00	○
n/a	Algeria	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Armenia	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Belarus	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Cyprus	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Ecuador	n/a	n/a	n/a	
n/a	Egypt	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Guatemala	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Kenya	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mongolia	n/a	n/a	n/a	
n/a	Morocco	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Pakistan	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Philippines	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Senegal	n/a	n/a	n/a	
n/a	South Africa	n/a	n/a	n/a	
n/a	Sri Lanka	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	TFYR of Macedonia	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	
n/a	Ukraine	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Viet Nam	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: OECD Programme for International Student Assessment (PISA) 2009 and 2010 (2009–10)

NOTE: ● indicates a strength; ○ a weakness.

2.1.5 Pupil-teacher ratio, secondary

Pupil-teacher ratio, secondary | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Belgium	6.52	100.00	1.00	●
2	Armenia	6.67	99.58	0.99	●
3	Slovenia	7.17	98.17	0.98	●
4	Portugal	7.35	97.67	0.98	●
5	Georgia (2009)	7.57	97.05	0.97	●
6	Kuwait (2011)	7.82	96.35	0.96	●
7	Greece (2007)	7.88	96.16	0.95	●
8	Croatia	8.15	95.41	0.95	●
9	Syrian Arab Republic (2011)	8.30	95.00	0.94	●
10	Latvia (2011)	8.33	94.91	0.93	●
11	Russian Federation (2009)	8.47	94.53	0.92	●
12	Luxembourg	8.50	94.44	0.91	
13	Lithuania (2011)	8.56	94.25	0.91	●
14	Estonia	8.76	93.70	0.90	
15	Kazakhstan (2011)	8.87	93.40	0.89	●
16	Azerbaijan (2007)	9.00	93.04	0.88	●
17	Malta	9.20	92.46	0.88	
18	Lebanon (2011)	9.31	92.17	0.87	●
19	Serbia (2011)	9.33	92.09	0.86	●
20	Finland	9.65	91.21	0.85	
21	Sweden	9.71	91.03	0.84	
22	Cyprus	9.76	90.91	0.84	
23	Israel (2009)	9.76	90.88	0.83	
24	Moldova, Rep. (2011)	9.90	90.50	0.82	●
25	Brunei Darussalam (2011)	9.94	90.39	0.81	●
26	Austria	9.97	90.30	0.80	
27	Italy (2007)	10.10	89.93	0.80	
28	Qatar (2011)	10.13	89.86	0.79	
29	Hungary	10.20	89.67	0.78	
30	Poland	10.39	89.11	0.77	
31	Spain	10.80	87.96	0.77	
32	Argentina (2008)	10.90	87.69	0.76	
33	Ecuador (2011)	10.94	87.58	0.75	●
34	Czech Republic	10.98	87.48	0.74	
35	Uruguay	11.32	86.52	0.73	●
36	Saudi Arabia (2009)	11.32	86.51	0.73	
37	Honduras (2008)	11.32	86.50	0.72	●
38	Paraguay (2004)	11.84	85.06	0.71	●
39	Jordan (2008)	11.86	84.98	0.70	●
40	Japan	11.89	84.92	0.70	
41	TFYR of Macedonia	11.91	84.85	0.69	
42	Slovakia	12.03	84.51	0.68	
43	United Arab Emirates (2011)	12.05	84.47	0.67	
44	Bulgaria	12.08	84.37	0.66	
45	Iceland	12.13	84.25	0.66	
46	Indonesia	12.18	84.11	0.65	
47	Trinidad and Tobago	12.33	83.66	0.64	
48	Romania	12.48	83.26	0.63	
49	Bosnia and Herzegovina (2011)	12.48	83.24	0.63	
50	Canada (2009)	12.55	83.05	0.62	
51	France	12.68	82.69	0.61	
52	Germany	12.91	82.06	0.60	
53	Uzbekistan (2011)	13.28	81.02	0.59	●
54	Egypt	13.52	80.34	0.59	●
55	Tunisia (2011)	13.62	80.04	0.58	
56	Malaysia	13.72	79.76	0.57	
57	Netherlands	13.73	79.75	0.56	○
58	United States of America	13.76	79.66	0.55	
59	Montenegro (2011)	13.78	79.61	0.55	
60	Botswana (2007)	13.88	79.33	0.54	
61	Guatemala	13.98	79.04	0.53	
62	United Kingdom (2008)	14.27	78.23	0.52	○
63	Mongolia	14.49	77.60	0.52	
64	New Zealand	14.50	77.58	0.51	
65	Jamaica	14.55	77.44	0.50	
66	Barbados (2006)	14.58	77.35	0.49	
67	Panama (2011)	14.69	77.06	0.48	
68	Singapore (2009)	14.91	76.43	0.48	○
69	Costa Rica (2011)	14.92	76.40	0.47	
70	China (2011)	15.15	75.75	0.46	
71	Kyrgyzstan	15.21	75.59	0.45	
72	Albania (2011)	15.24	75.49	0.45	
73	Tajikistan (2011)	15.44	74.95	0.44	
74	Viet Nam (2011)	15.89	73.69	0.43	
75	Mauritius	15.93	73.58	0.42	
76	Yemen (2011)	16.09	73.13	0.41	●
77	Belize (2011)	16.32	72.48	0.41	
78	Swaziland (2011)	16.40	72.26	0.40	
79	Peru (2011)	16.50	71.98	0.39	
80	Sudan	16.55	71.82	0.38	●
81	Brazil	16.66	71.51	0.38	
82	Sri Lanka	16.68	71.45	0.37	
83	Cape Verde (2011)	17.22	69.95	0.36	
84	Turkey	17.59	68.90	0.35	
85	Korea, Rep.	17.60	68.89	0.34	○
86	Mexico (2011)	17.68	68.66	0.34	
87	Hong Kong (China) (2005)	17.76	68.44	0.33	○
88	Morocco (2009)	17.89	68.07	0.32	
89	Uganda (2009)	17.91	68.01	0.31	
90	Bolivia, Plurinational St. (2007)	18.17	67.29	0.30	
91	Ghana (2011)	18.67	65.88	0.30	
92	Thailand (2011)	19.91	62.40	0.29	
93	Oman (2009)	20.18	61.64	0.28	
94	Algeria (2004)	20.85	59.76	0.27	
95	Guyana (2011)	20.86	59.71	0.27	
96	Iran, Islamic Rep. (2008)	21.69	57.38	0.26	
97	Chile	21.87	56.90	0.25	○
98	Madagascar (2009)	23.48	52.36	0.24	
99	Rwanda (2011)	23.70	51.74	0.23	
100	Cambodia	23.91	51.17	0.23	
101	Benin (2004)	23.93	51.09	0.22	
102	Lesotho	23.99	50.92	0.21	
103	Cameroon (2011)	24.13	50.55	0.20	
104	El Salvador (2011)	24.35	49.94	0.20	
105	Namibia (2007)	24.62	49.15	0.19	
106	Mali (2011)	24.72	48.89	0.18	
107	South Africa (2009)	25.05	47.96	0.17	○
108	India	25.33	47.18	0.16	○
109	Colombia (2011)	25.58	46.47	0.16	○
110	Togo (2011)	26.25	44.60	0.15	
111	Fiji (2011)	26.47	43.98	0.14	○
112	Burkina Faso (2011)	26.49	43.92	0.13	
113	Senegal (2011)	27.35	41.49	0.13	
114	Bangladesh	28.33	38.74	0.12	
115	Dominican Republic (2011)	28.72	37.65	0.11	○
116	Kenya (2009)	29.68	34.96	0.10	○
117	Nepal (2011)	29.70	34.90	0.09	
118	Nicaragua	30.83	31.73	0.09	○
119	Zambia (2011)	32.11	28.13	0.08	
120	Nigeria	33.08	25.41	0.07	
121	Guinea (2011)	33.14	25.25	0.06	
122	Mozambique (2011)	34.27	22.07	0.05	
123	Niger (2011)	34.68	20.92	0.05	
124	Philippines (2009)	34.81	20.54	0.04	○
125	Gambia (2011)	37.83	12.06	0.03	○
126	Angola	38.67	9.70	0.02	
127	Ethiopia (2011)	40.33	5.05	0.02	
128	Pakistan (2004)	41.86	0.76	0.01	○
129	Malawi (2011)	42.13	0.00	0.00	○
n/a	Australia	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Belarus	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Denmark	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Ireland	n/a	n/a	n/a	
n/a	Norway	n/a	n/a	n/a	
n/a	Switzerland	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	Ukraine	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2004–11)

NOTE: ● indicates a strength; ○ a weakness.

2.2.1 Tertiary enrolment

School enrolment, tertiary (% gross) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank		
1	Korea, Rep. (2010)	103.11	100.00	1.00	●	
2	United States of America (2010)	94.81	91.88	0.99	●	
3	Finland (2010)	93.68	90.78	0.98	●	
4	Slovenia (2010)	89.58	86.78	0.98	●	
5	Greece (2007)	89.38	86.58	0.97	●	
6	Belarus	85.17	82.46	0.96	●	
7	New Zealand (2010)	82.56	79.90	0.95	●	
8	Ukraine	81.70	79.07	0.95	●	
9	Australia (2010)	79.92	77.33	0.94	●	
10	Iceland (2010)	78.56	76.00	0.93		
11	Spain (2010)	78.15	75.60	0.92	●	
12	Venezuela, Bolivarian Rep. (2009)	78.13	75.58	0.92	●	
13	Russian Federation (2009)	75.89	73.39	0.91	●	
14	Argentina (2010)	74.80	72.33	0.90	●	
15	Denmark (2009)	74.40	71.93	0.89		
16	Norway (2010)	74.36	71.89	0.89		
17	Sweden (2010)	73.77	71.31	0.88		
18	Poland (2010)	72.35	69.93	0.87	●	
19	Belgium (2010)	70.59	68.21	0.86		
20	Lithuania	69.49	67.13	0.86	●	
21	Austria (2010)	68.19	65.86	0.85		
22	Ireland (2010)	66.17	63.89	0.84		
23	Chile (2010)	66.12	63.84	0.83	●	
24	Portugal (2010)	65.49	63.22	0.83		
25	Netherlands (2010)	65.41	63.14	0.82		
26	Italy (2010)	64.98	62.73	0.81		
27	Estonia (2010)	64.27	62.03	0.80		
28	Czech Republic (2010)	63.54	61.32	0.80		
29	Uruguay (2010)	63.20	60.98	0.79	●	
30	Israel (2009)	62.48	60.28	0.78		
31	Fiji	61.84	59.65	0.77	●	
32	Barbados	61.83	59.64	0.77		
33	Hungary (2010)	60.65	58.49	0.76		
34	Hong Kong (China)	60.38	58.23	0.75		
35	United Kingdom (2010)	59.75	57.61	0.74		
36	Japan (2010)	59.74	57.60	0.73		
37	Romania (2010)	58.84	56.72	0.73		
38	Lebanon	57.65	55.56	0.72		
39	Latvia	57.38	55.29	0.71		
40	Mongolia	57.16	55.07	0.70		
41	Bulgaria (2010)	56.86	54.79	0.70		
42	France (2010)	56.69	54.62	0.69		
43	Turkey (2010)	55.42	53.38	0.68		
44	Slovakia (2010)	54.84	52.81	0.67		
45	Switzerland (2010)	54.82	52.79	0.67		
46	Croatia (2010)	54.13	52.12	0.66		
47	Serbia	50.37	48.44	0.65		
48	Armenia	48.94	47.04	0.64		
49	Iran, Islamic Rep.	48.58	46.69	0.64	●	
50	Cyprus (2010)	48.31	46.43	0.63		
51	Thailand	47.70	45.83	0.62		
52	Montenegro (2010)	47.64	45.78	0.61		
53	Panama (2010)	45.75	43.92	0.61		
54	Albania	43.91	42.13	0.60		
55	Peru (2010)	42.99	41.22	0.59		
56	Costa Rica	42.98	41.22	0.58		
57	Colombia	42.90	41.13	0.58		
58	Malaysia (2010)	42.28	40.54	0.57		
59	Kyrgyzstan	41.35	39.62	0.56		
60	Saudi Arabia	41.18	39.46	0.55		
61	Kazakhstan	40.81	39.10	0.55		
62	Ecuador (2008)	39.84	38.14	0.54		
63	Moldova, Rep.	39.45	37.76	0.53		
64	Bolivia, Plurinational St. (2007)	38.65	36.98	0.52		
65	TFYR of Macedonia (2010)	38.62	36.95	0.52		
66	Bosnia and Herzegovina	38.09	36.43	0.51		
67	Jordan	37.82	36.17	0.50		
68	Tunisia	37.08	35.45	0.49		
69	Malta (2010)	35.31	33.72	0.48		
70	Paraguay (2010)	34.56	32.99	0.48		
71	Dominican Republic (2004)	34.00	32.44	0.47		
72	Mauritius	32.45	30.92	0.46		
73	Egypt (2010)	32.37	30.84	0.45		
74	Algeria	32.09	30.57	0.45		
75	Georgia	30.02	28.55	0.44		
76	Bahrain (2006)	29.80	28.33	0.43		
77	Oman	28.68	27.23	0.42		
78	Philippines (2009)	28.23	26.79	0.42		
79	Mexico (2010)	28.03	26.60	0.41		
80	China	26.79	25.39	0.40		
81	Jamaica (2010)	26.01	24.63	0.39		
82	Brazil (2005)	25.63	24.26	0.39		
83	El Salvador	24.58	23.23	0.38		
84	Viet Nam	24.38	23.04	0.37		
85	Tajikistan	23.37	22.05	0.36		
86	Indonesia (2010)	23.12	21.80	0.36		
87	Kuwait (2004)	21.86	20.57	0.35		
88	Belize	21.37	20.09	0.34		
89	Honduras (2010)	20.62	19.36	0.33		
90	Cape Verde	20.43	19.17	0.33		
91	Azerbaijan	19.65	18.41	0.32		
92	Brunei Darussalam	19.63	18.39	0.31		
93	Nicaragua (2003)	17.97	16.77	0.30		
94	India (2010)	17.87	16.67	0.30		
95	Guatemala (2007)	17.83	16.63	0.29		
96	Sri Lanka (2010)	15.46	14.31	0.28		
97	Cambodia	14.50	13.37	0.27		
98	Morocco (2009)	13.22	12.12	0.27		
99	Cameroon	12.45	11.37	0.26		
100	Ghana	12.14	11.07	0.25		
101	Guyana	12.03	10.96	0.24		
102	Qatar	11.61	10.55	0.23		
103	Trinidad and Tobago (2005)	11.52	10.46	0.23		
104	Guinea	11.27	10.22	0.22		
105	Benin (2009)	10.62	9.58	0.21		
106	Bangladesh (2009)	10.59	9.55	0.20		
107	Luxembourg (2008)	10.53	9.50	0.20		○
108	Togo	10.50	9.46	0.19		
109	Nigeria (2005)	10.26	9.23	0.18		
110	Yemen (2007)	10.19	9.16	0.17		
111	Uganda	9.15	8.14	0.17		
112	Namibia (2008)	8.96	7.95	0.16		
113	Uzbekistan	8.87	7.87	0.15		
114	Pakistan	8.32	7.33	0.14		
115	Côte d'Ivoire (2009)	8.28	7.29	0.14		
116	Senegal (2010)	7.92	6.94	0.13		
117	Ethiopia	7.64	6.67	0.12		
118	Botswana (2006)	7.44	6.47	0.11		○
119	Nepal (2006)	7.26	6.30	0.11		
120	Rwanda	6.60	5.65	0.10		
121	Mali	6.10	5.16	0.09		
122	Zimbabwe	6.00	5.06	0.08		
123	Swaziland	5.94	5.01	0.08		
124	Mozambique	4.89	3.97	0.07		
125	Gambia (2008)	4.12	3.22	0.06		
126	Madagascar	4.09	3.20	0.05		
127	Kenya (2009)	4.03	3.14	0.05		○
128	Burkina Faso	3.86	2.97	0.04		○
129	Angola (2010)	3.71	2.83	0.03		
130	Lesotho (2006)	3.52	2.64	0.02		
131	Tanzania, United Rep. (2010)	2.11	1.26	0.02		○
132	Niger	1.51	0.67	0.01		
133	Malawi	0.82	0.00	0.00		○
n/a	Canada	n/a	n/a	n/a		
n/a	Gabon	n/a	n/a	n/a		
n/a	Germany	n/a	n/a	n/a		
n/a	Singapore	n/a	n/a	n/a		
n/a	South Africa	n/a	n/a	n/a		
n/a	Sudan	n/a	n/a	n/a		
n/a	Syrian Arab Republic	n/a	n/a	n/a		
n/a	United Arab Emirates	n/a	n/a	n/a		
n/a	Zambia	n/a	n/a	n/a		

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2003–11)

NOTE: ● indicates a strength; ○ a weakness.

2.2.2 Graduates in science and engineering

Tertiary graduates in engineering, manufacturing, and construction (% of total tertiary graduates) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Thailand	53.22	100.00	1.00	●
2	Iran, Islamic Rep.	46.69	87.09	0.99	●
3	Oman	38.94	71.77	0.98	●
4	Malaysia	36.66	67.26	0.97	●
5	Morocco	34.91	63.79	0.96	●
6	Hong Kong (China) (2006)	34.67	63.32	0.95	
7	Saudi Arabia (2011)	34.37	62.74	0.94	●
8	Luxembourg (2008)	32.54	59.12	0.93	
9	Finland	31.80	57.65	0.92	
10	Korea, Rep. (2009)	30.86	55.79	0.91	
11	Trinidad and Tobago (2004)	30.38	54.85	0.90	●
12	Qatar (2011)	29.81	53.71	0.89	
13	Austria	28.96	52.03	0.88	
14	Russian Federation (2009)	28.11	50.35	0.87	●
15	Greece	27.54	49.22	0.86	●
16	Belarus (2011)	26.46	47.09	0.85	●
17	Ukraine (2011)	26.31	46.79	0.84	●
18	France (2009)	26.06	46.30	0.83	
19	Germany	25.59	45.38	0.82	
20	Mexico	25.40	44.99	0.81	●
21	Sweden	25.39	44.97	0.80	
22	Spain	25.07	44.35	0.79	
23	Serbia (2011)	25.07	44.34	0.78	●
24	Algeria (2011)	24.95	44.11	0.77	●
25	Portugal	24.87	43.95	0.76	
26	United Arab Emirates (2011)	24.43	43.09	0.75	
27	Philippines (2004)	24.31	42.85	0.74	●
28	Czech Republic	23.40	41.05	0.73	
29	Lebanon (2011)	23.35	40.94	0.72	
30	Ireland	23.20	40.65	0.71	
31	Zimbabwe (2011)	23.14	40.52	0.70	●
32	El Salvador (2011)	23.11	40.47	0.69	●
33	Madagascar (2011)	23.03	40.31	0.68	●
34	Indonesia	22.77	39.79	0.67	●
35	United Kingdom	22.35	38.97	0.66	
36	Colombia (2011)	22.32	38.91	0.65	
37	Lithuania (2011)	21.47	37.22	0.64	
38	Uzbekistan (2011)	21.14	36.56	0.63	●
39	Slovenia	21.12	36.53	0.62	
40	Cameroon	21.02	36.34	0.61	●
41	Slovakia	20.77	35.84	0.60	
42	Brunei Darussalam (2011)	20.74	35.78	0.59	
43	Estonia	20.55	35.41	0.58	
44	Japan	20.51	35.32	0.57	
45	Turkey	20.28	34.87	0.56	
46	Croatia	20.11	34.54	0.55	
47	Chile	20.02	34.36	0.54	
48	Gambia (2004)	20.00	34.32	0.53	●
49	Bulgaria	19.83	33.99	0.52	
50	Switzerland	19.78	33.89	0.51	○
51	Ghana (2011)	19.36	33.06	0.49	
52	TFYR of Macedonia	19.36	33.05	0.48	
53	Denmark	19.33	32.98	0.47	○
54	Panama	19.28	32.89	0.46	
55	Italy (2008)	19.07	32.48	0.45	
56	New Zealand	18.95	32.24	0.44	○
57	Sri Lanka	18.08	30.53	0.43	
58	Bahrain (2006)	17.91	30.19	0.42	
59	Burkina Faso (2011)	17.80	29.97	0.41	●
60	Mongolia (2011)	17.59	29.55	0.40	
61	Georgia	17.44	29.25	0.39	
62	Romania	17.12	28.62	0.38	
63	Guatemala (2007)	16.76	27.92	0.37	
64	Viet Nam	16.76	27.92	0.36	
65	Australia (2009)	16.64	27.67	0.35	○
66	Azerbaijan (2011)	16.18	26.76	0.34	
67	Malta	16.17	26.74	0.33	
68	Belgium	16.13	26.66	0.32	○
69	Jordan (2011)	16.12	26.65	0.31	
70	Norway	15.96	26.32	0.30	○
71	Armenia	15.92	26.24	0.29	
72	Poland	15.74	25.89	0.28	○
73	Latvia (2011)	15.69	25.80	0.27	○
74	Iceland	15.64	25.69	0.26	○
75	Hungary	15.63	25.68	0.25	○
76	Uruguay	15.60	25.62	0.24	
77	United States of America	15.47	25.36	0.23	○
78	Kyrgyzstan (2011)	15.42	25.27	0.22	
79	Ethiopia	15.23	24.90	0.21	
80	Barbados (2011)	14.99	24.40	0.20	
81	Netherlands	14.01	22.47	0.19	○
82	Guyana (2011)	13.87	22.21	0.18	
83	Albania (2011)	13.79	22.03	0.17	
84	Argentina	13.51	21.48	0.16	○
85	Bangladesh (2003)	13.35	21.17	0.15	
86	Cyprus	13.30	21.07	0.14	○
87	Ecuador (2008)	12.81	20.10	0.13	
88	Cambodia (2008)	12.49	19.47	0.12	
89	Angola	11.94	18.39	0.11	
90	Mauritius (2011)	11.94	18.39	0.10	○
91	Honduras	11.92	18.34	0.09	
92	Nepal (2011)	11.78	18.06	0.08	○
93	Costa Rica (2011)	11.43	17.38	0.07	○
94	Brazil	11.26	17.03	0.06	○
95	Uganda (2004)	9.53	13.62	0.05	○
96	Benin (2009)	9.17	12.90	0.04	○
97	Mozambique (2011)	8.90	12.37	0.03	
98	Niger (2008)	4.28	3.23	0.02	
99	Swaziland (2006)	2.71	0.14	0.01	○
100	Namibia (2008)	2.64	0.00	0.00	○
n/a	Belize	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Canada	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	China	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Egypt	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	India	n/a	n/a	n/a	
n/a	Israel	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Kazakhstan	n/a	n/a	n/a	
n/a	Kenya	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Moldova, Rep.	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Pakistan	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Peru	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Senegal	n/a	n/a	n/a	
n/a	Singapore	n/a	n/a	n/a	
n/a	South Africa	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Tunisia	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2003–11)

NOTE: ● indicates a strength; ○ a weakness.

2.2.3 Tertiary inbound mobility

Tertiary inbound mobility ratio (%) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Luxembourg (2010)	41.41	100.00	1.00	●
2	Qatar	40.31	99.29	0.99	●
3	United Arab Emirates	38.19	97.88	0.98	●
4	Fiji (2004)	32.94	94.02	0.97	●
5	Cyprus (2010)	31.93	93.21	0.96	●
6	Australia (2010)	21.25	82.67	0.95	●
7	Bahrain	20.52	81.78	0.94	●
8	Singapore	20.23	81.41	0.94	
9	Austria (2010)	19.59	80.60	0.93	●
10	United Kingdom (2010)	15.73	75.02	0.92	
11	Switzerland (2010)	15.36	74.42	0.91	
12	Lebanon	15.30	74.32	0.90	●
13	New Zealand (2010)	14.23	72.49	0.89	
14	Barbados	13.80	71.72	0.88	
15	France (2010)	11.58	67.35	0.87	
16	Namibia (2008)	10.17	64.16	0.86	●
17	Jordan	9.93	63.59	0.85	●
18	Angola (2010)	9.86	63.40	0.84	●
19	Belgium (2010)	8.11	58.70	0.83	
20	Czech Republic (2010)	8.00	58.36	0.83	
21	Denmark (2010)	7.54	56.94	0.82	
22	Norway (2010)	7.00	55.21	0.81	
23	Ireland (2010)	6.95	55.04	0.80	
24	Sweden (2010)	6.93	54.96	0.79	
25	Kyrgyzstan (2009)	6.87	54.77	0.78	●
26	Hong Kong (China)	6.64	53.96	0.77	
27	Niger	6.60	53.83	0.76	●
28	Malaysia (2010)	6.10	51.99	0.75	
29	Trinidad and Tobago (2004)	5.78	50.77	0.74	●
30	Brunei Darussalam	5.61	50.09	0.73	●
31	Uganda	5.19	48.32	0.72	●
32	Iceland (2010)	4.92	47.13	0.72	
33	Bosnia and Herzegovina	4.82	46.67	0.71	●
34	Finland (2010)	4.64	45.82	0.70	
35	Netherlands (2010)	4.30	44.12	0.69	
36	Greece (2010)	4.18	43.52	0.68	
37	Botswana (2005)	4.16	43.43	0.67	●
38	Hungary (2010)	4.01	42.63	0.66	
39	Japan (2010)	3.69	40.85	0.65	
40	Serbia	3.61	40.36	0.64	
41	Burkina Faso	3.59	40.24	0.63	●
42	Italy (2010)	3.53	39.91	0.62	
43	Bulgaria (2010)	3.50	39.76	0.61	
44	Saudi Arabia	3.42	39.25	0.61	
45	Slovakia (2010)	3.39	39.06	0.60	
46	United States of America (2010)	3.35	38.84	0.59	
47	Armenia	2.99	36.51	0.58	
48	Spain (2010)	2.98	36.44	0.57	
49	Portugal (2010)	2.88	35.72	0.56	
50	Azerbaijan	2.80	35.21	0.55	
51	Yemen (2007)	2.71	34.55	0.54	●
52	Oman	2.36	31.90	0.53	
53	TFYR of Macedonia (2009)	2.19	30.53	0.52	
54	Ghana	1.99	28.72	0.51	
55	Latvia	1.91	27.97	0.50	
56	Morocco (2009)	1.89	27.84	0.50	
57	Egypt (2010)	1.85	27.48	0.49	
58	Korea, Rep. (2010)	1.81	27.08	0.48	
59	Estonia (2010)	1.78	26.81	0.47	○
60	Mauritius	1.77	26.67	0.46	
61	Belarus	1.74	26.42	0.45	
62	Tajikistan (2010)	1.73	26.27	0.44	●
63	Slovenia (2010)	1.68	25.84	0.43	
64	Madagascar	1.67	25.74	0.42	
65	Kazakhstan	1.62	25.23	0.41	
66	Lithuania	1.61	25.04	0.40	
67	Georgia	1.55	24.42	0.39	
68	Ukraine	1.51	24.05	0.39	
69	Costa Rica (2004)	1.43	23.21	0.38	
70	Togo (2007)	1.41	22.97	0.37	●
71	Russian Federation (2009)	1.39	22.72	0.36	
72	Cameroon	1.39	22.67	0.35	
73	Cape Verde	1.35	22.28	0.34	
74	Romania (2010)	1.35	22.23	0.33	
75	Guinea	1.31	21.81	0.32	●
76	Moldova, Rep.	1.25	21.09	0.31	
77	Malawi (2010)	1.14	19.70	0.30	
78	Côte d'Ivoire (2009)	1.11	19.42	0.29	
79	Albania	1.10	19.21	0.28	
80	Chile (2010)	0.97	17.57	0.28	○
81	Swaziland	0.89	16.37	0.27	
82	Poland (2010)	0.85	15.89	0.26	○
83	Thailand	0.81	15.20	0.25	○
84	Turkey (2010)	0.73	14.06	0.24	○
85	Honduras (2010)	0.73	14.01	0.23	
86	Zimbabwe	0.69	13.47	0.22	
87	Tanzania, United Rep. (2004)	0.64	12.59	0.21	
88	Lesotho (2006)	0.62	12.32	0.20	
89	Mongolia	0.61	12.04	0.19	
90	Croatia (2010)	0.56	11.23	0.18	○
91	Algeria	0.55	11.06	0.17	
92	Guyana	0.54	10.86	0.17	
93	Tunisia	0.53	10.70	0.16	○
94	Mali	0.53	10.67	0.15	
95	El Salvador	0.49	9.98	0.14	
96	Mozambique	0.35	7.33	0.13	
97	Malta (2010)	0.30	6.23	0.12	○
98	China	0.25	5.37	0.11	○
99	Brazil (2010)	0.22	4.73	0.10	○
100	Viet Nam (2010)	0.16	3.29	0.09	○
101	Uzbekistan	0.14	2.70	0.08	
102	Indonesia (2010)	0.13	2.53	0.07	○
103	Iran, Islamic Rep.	0.11	1.96	0.06	○
104	Philippines (2008)	0.10	1.84	0.06	○
105	Bangladesh (2009)	0.10	1.84	0.05	○
106	Pakistan (2003)	0.10	1.76	0.04	
107	India (2006)	0.10	1.74	0.03	○
108	Venezuela, Bolivarian Rep. (2008)	0.09	1.60	0.02	○
109	Cambodia (2006)	0.09	1.57	0.01	○
110	Nepal	0.03	0.00	0.00	○
n/a	Argentina	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Canada	n/a	n/a	n/a	
n/a	Colombia	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Ecuador	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Germany	n/a	n/a	n/a	
n/a	Guatemala	n/a	n/a	n/a	
n/a	Israel	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Kenya	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Mexico	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Panama	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Peru	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Senegal	n/a	n/a	n/a	
n/a	South Africa	n/a	n/a	n/a	
n/a	Sri Lanka	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	Uruguay	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2003–11)

NOTE: ● indicates a strength; ○ a weakness.

2.2.4 Gross tertiary outbound enrolment

Gross tertiary outbound enrolment ratio (%) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Cyprus (2010)	40.54	100.00	0.98	●
1	Luxembourg (2009)	23.21	100.00	0.98	●
1	Iceland (2010)	12.16	100.00	0.98	●
1	Brunei Darussalam	9.59	100.00	0.98	●
5	Cape Verde	9.02	94.03	0.97	●
6	Montenegro (2010)	7.85	81.76	0.96	●
7	Albania	7.70	80.22	0.96	●
8	Hong Kong (China)	7.33	76.26	0.95	
9	Slovakia (2010)	7.20	74.96	0.94	●
10	Ireland (2010)	6.73	70.02	0.94	
11	Mauritius	6.72	69.85	0.93	●
12	Barbados	6.32	65.65	0.92	●
13	Kuwait (2008)	5.01	51.89	0.91	●
14	Trinidad and Tobago	4.86	50.35	0.91	●
15	Bulgaria (2010)	4.82	49.90	0.90	●
16	Bahrain (2007)	4.72	48.84	0.89	●
17	Greece (2009)	4.60	47.59	0.88	●
18	Norway (2010)	4.53	46.94	0.88	
19	Moldova, Rep.	4.33	44.84	0.87	●
20	Belarus	4.25	43.96	0.86	●
21	Bosnia and Herzegovina	4.20	43.47	0.86	●
22	Korea, Rep. (2010)	4.00	41.34	0.85	
23	Malta (2010)	3.98	41.13	0.84	
24	Gabon	3.73	38.51	0.83	●
25	Estonia (2010)	3.71	38.27	0.83	
26	Lebanon	3.64	37.51	0.82	●
27	Botswana (2010)	3.60	37.18	0.81	●
28	Mongolia	3.30	34.02	0.81	
29	Lithuania	3.27	33.72	0.80	
30	TFYR of Macedonia (2010)	3.27	33.70	0.79	
31	Oman	3.24	33.30	0.78	●
32	Namibia (2010)	3.21	33.00	0.78	●
33	Latvia	2.75	28.17	0.77	
34	Belize	2.60	26.61	0.76	●
35	Swaziland	2.56	26.19	0.76	●
36	Croatia (2010)	2.52	25.79	0.75	
37	Sweden (2010)	2.50	25.60	0.74	
38	Austria (2010)	2.49	25.51	0.73	
39	Switzerland (2010)	2.48	25.39	0.73	
40	Serbia	2.44	24.92	0.72	
41	Israel (2009)	2.43	24.81	0.71	
42	Guyana	2.39	24.39	0.71	
43	Jordan	2.36	24.14	0.70	
44	Kazakhstan	2.36	24.06	0.69	
45	Georgia	2.33	23.78	0.68	
46	Finland (2010)	2.27	23.13	0.68	
47	Portugal (2010)	2.21	22.52	0.67	
48	Jamaica (2010)	2.20	22.39	0.66	●
49	Malaysia	2.19	22.32	0.65	
50	Qatar	2.18	22.23	0.65	
51	Fiji	2.12	21.61	0.64	
52	Germany (2010)	2.08	21.16	0.63	
53	Armenia	2.00	20.35	0.63	
54	Canada (2010)	1.99	20.27	0.62	
55	Slovenia (2010)	1.93	19.65	0.61	
56	Tunisia	1.90	19.31	0.60	
57	United Arab Emirates (2006)	1.86	18.87	0.60	
58	Belgium (2010)	1.75	17.73	0.59	
59	Lesotho (2010)	1.73	17.50	0.58	●
60	Czech Republic (2010)	1.67	16.86	0.58	
61	Saudi Arabia	1.64	16.58	0.57	
62	Denmark (2009)	1.63	16.50	0.56	○
63	Zimbabwe	1.59	16.04	0.55	○
64	Romania (2010)	1.51	15.22	0.55	
65	New Zealand (2010)	1.46	14.72	0.54	
66	Italy (2010)	1.44	14.50	0.53	
67	France (2010)	1.40	14.02	0.53	
68	Morocco (2010)	1.36	13.65	0.52	
69	Hungary (2010)	1.26	12.61	0.51	
70	Netherlands (2010)	1.26	12.55	0.50	○
71	Azerbaijan	1.23	12.24	0.50	
72	Ukraine	1.15	11.38	0.49	
73	Uruguay	1.09	10.76	0.48	
74	Poland (2010)	1.06	10.48	0.47	
75	Cameroon	1.04	10.21	0.47	●
76	Sri Lanka	1.02	10.07	0.46	
77	Senegal	1.01	9.99	0.45	
78	Spain (2010)	0.98	9.62	0.45	○
79	Bolivia, Plurinational St.	0.96	9.39	0.44	
80	Turkey (2010)	0.78	7.50	0.43	
81	Uzbekistan	0.77	7.47	0.42	
82	Syrian Arab Republic (2010)	0.77	7.45	0.42	
83	Ecuador	0.77	7.39	0.41	
84	Tajikistan	0.73	6.98	0.40	
85	Kyrgyzstan	0.70	6.73	0.40	
86	Australia (2010)	0.66	6.24	0.39	○
87	Panama	0.65	6.13	0.38	
88	Japan (2010)	0.63	5.98	0.37	○
89	Guinea	0.62	5.83	0.37	●
90	Algeria	0.61	5.79	0.36	
91	Peru	0.61	5.70	0.35	
92	Chile	0.59	5.56	0.35	○
93	Gambia (2010)	0.58	5.48	0.34	
94	United Kingdom (2010)	0.57	5.29	0.33	○
95	Colombia	0.53	4.94	0.32	
96	Viet Nam	0.52	4.81	0.32	
97	Togo	0.51	4.67	0.31	
98	Thailand	0.50	4.56	0.30	
99	Iran, Islamic Rep.	0.49	4.49	0.29	
100	China	0.48	4.41	0.29	
101	Benin	0.47	4.22	0.28	
102	Costa Rica	0.45	4.02	0.27	
103	Zambia	0.42	3.76	0.27	
104	Paraguay	0.42	3.74	0.26	
105	Nepal (2006)	0.41	3.60	0.25	
106	Venezuela, Bolivarian Rep.	0.40	3.53	0.24	
107	Angola	0.39	3.43	0.24	
108	Russian Federation (2009)	0.39	3.38	0.23	○
109	Dominican Republic	0.36	3.15	0.22	
110	El Salvador	0.35	3.07	0.22	
111	Ghana	0.34	2.87	0.21	
112	Yemen (2010)	0.33	2.85	0.20	
113	Côte d'Ivoire	0.32	2.70	0.19	
114	Kenya	0.32	2.70	0.19	
115	Argentina	0.29	2.35	0.18	○
116	Mali	0.29	2.34	0.17	
117	Cambodia	0.27	2.12	0.17	
118	Honduras	0.26	2.10	0.16	
119	Nigeria (2010)	0.26	2.05	0.15	
120	Nicaragua	0.25	1.99	0.14	○
121	Rwanda	0.25	1.98	0.14	
122	United States of America (2010)	0.24	1.91	0.13	○
123	Mexico	0.24	1.91	0.12	○
124	Madagascar	0.21	1.50	0.12	
125	Pakistan	0.20	1.42	0.11	
126	Burkina Faso	0.20	1.40	0.10	
127	Niger	0.18	1.27	0.09	
128	India	0.17	1.16	0.09	○
129	Egypt (2010)	0.17	1.13	0.08	○
130	Indonesia	0.16	1.04	0.07	○
131	Guatemala	0.15	0.94	0.06	○
132	Bangladesh	0.14	0.83	0.06	○
133	Tanzania, United Rep. (2010)	0.14	0.82	0.05	
134	Malawi	0.14	0.81	0.04	
135	South Africa (2010)	0.12	0.62	0.04	○
136	Philippines	0.12	0.57	0.03	○
137	Mozambique	0.12	0.56	0.02	○
138	Brazil (2006)	0.11	0.54	0.01	○
139	Uganda	0.11	0.50	0.01	○
140	Ethiopia	0.06	0.00	0.00	○
n/a	Singapore	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2006–11)

NOTE: ● indicates a strength; ○ a weakness.

2.3.1 Researchers

Researchers, headcounts (per million population) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Iceland	13,101.23	100.00	1.00	●
2	Finland (2010)	10,655.79	81.32	0.99	●
3	Denmark (2010)	9,861.15	75.25	0.98	●
4	Norway (2010)	9,169.15	69.96	0.97	●
5	Portugal (2010)	9,014.41	68.78	0.96	●
6	Sweden	7,807.02	59.56	0.95	
7	Singapore (2010)	7,187.97	54.83	0.94	
8	Austria	7,090.03	54.08	0.94	●
9	Japan (2010)	7,066.28	53.90	0.93	
10	United Kingdom (2010)	6,363.37	48.53	0.92	
11	New Zealand	6,338.74	48.34	0.91	
12	Switzerland (2008)	6,057.41	46.19	0.90	
13	Luxembourg	5,930.03	45.22	0.89	
14	Germany	5,880.28	44.84	0.88	
15	Estonia (2010)	5,585.55	42.59	0.87	
16	Slovenia (2010)	5,447.16	41.53	0.86	
17	Belgium	5,239.50	39.95	0.85	
18	France (2010)	5,081.45	38.74	0.84	
19	Spain (2010)	4,861.43	37.06	0.83	
20	Ireland (2010)	4,748.72	36.20	0.83	
21	Slovakia (2011)	4,516.31	34.42	0.82	●
22	Czech Republic (2011)	4,357.34	33.21	0.81	
23	Lithuania	4,138.46	31.54	0.80	
24	Netherlands (2010)	3,902.31	29.73	0.79	
25	Hungary (2010)	3,575.85	27.24	0.78	
26	Hong Kong (China)	3,293.37	25.08	0.77	
27	Tunisia (2008)	3,239.77	24.67	0.76	●
28	Greece (2005)	2,986.29	22.74	0.75	
29	Latvia	2,796.52	21.29	0.74	
30	Croatia	2,745.04	20.89	0.73	
31	Poland (2010)	2,636.96	20.07	0.72	
32	Russian Federation (2010)	2,580.58	19.64	0.72	
33	Italy (2010)	2,474.07	18.82	0.71	
34	Malta	2,275.90	17.31	0.70	
35	Belarus	2,134.80	16.23	0.69	
36	Bulgaria	1,948.78	14.81	0.68	
37	Jordan (2008)	1,933.68	14.69	0.67	
38	Argentina (2010)	1,831.62	13.92	0.66	
39	Georgia (2005)	1,811.93	13.76	0.65	
40	Armenia	1,796.45	13.65	0.64	
41	Turkey (2010)	1,715.35	13.03	0.63	
42	Ukraine	1,665.69	12.65	0.62	
43	Cyprus	1,555.29	11.80	0.61	
44	Iran, Islamic Rep. (2008)	1,491.37	11.32	0.61	
45	Romania (2010)	1,429.14	10.84	0.60	
46	China (2010)	1,302.87	9.88	0.59	
47	Serbia	1,218.71	9.23	0.58	
48	Azerbaijan	1,217.77	9.23	0.57	
49	Brazil (2010)	1,189.61	9.01	0.56	
50	Montenegro (2007)	1,068.54	8.09	0.55	
51	Egypt	1,017.53	7.70	0.54	
52	TFYR of Macedonia (2008)	1,001.69	7.58	0.53	
53	Moldova, Rep.	988.38	7.47	0.52	
54	Morocco (2008)	934.69	7.06	0.51	
55	Botswana (2005)	923.40	6.98	0.50	
56	Uruguay	853.34	6.44	0.50	
57	South Africa	820.02	6.19	0.49	
58	Bosnia and Herzegovina (2007)	781.42	5.89	0.48	
59	Costa Rica	763.70	5.76	0.47	
60	Malaysia (2006)	715.44	5.39	0.46	
61	Brunei Darussalam (2004)	685.50	5.16	0.45	
62	Senegal (2008)	666.74	5.02	0.44	
63	Mongolia	644.62	4.85	0.43	
64	Kazakhstan	637.27	4.79	0.42	
65	Trinidad and Tobago	588.92	4.42	0.41	
66	Thailand (2007)	574.99	4.32	0.40	
67	Chile (2010)	552.36	4.14	0.39	
68	Albania (2008)	540.96	4.06	0.39	
69	Kyrgyzstan	434.46	3.24	0.38	
70	Algeria (2005)	419.75	3.13	0.37	
71	Mexico (2011)	401.81	2.99	0.36	
72	Gabon	359.39	2.67	0.35	
73	Colombia	347.53	2.58	0.34	
74	Pakistan	320.77	2.37	0.33	
75	Tajikistan	253.86	1.86	0.32	
76	Cameroon (2008)	243.19	1.78	0.31	
77	Venezuela, Bolivarian Rep.	239.45	1.75	0.30	
78	Bolivia, Plurinational St.	199.21	1.45	0.29	
79	Sri Lanka (2008)	197.18	1.43	0.28	
80	Ecuador (2008)	186.60	1.35	0.28	
81	Peru (2004)	182.26	1.32	0.27	
82	Indonesia	173.30	1.25	0.26	
83	Kuwait	151.91	1.08	0.25	
84	Togo (2007)	147.54	1.05	0.24	
85	Panama (2010)	142.46	1.01	0.23	
86	Paraguay (2008)	136.43	0.97	0.22	
87	Côte d'Ivoire (2005)	133.01	0.94	0.21	
88	Philippines (2007)	129.61	0.91	0.20	
89	Benin (2007)	123.27	0.87	0.19	
90	Nigeria (2007)	119.93	0.84	0.18	
91	Lesotho	106.55	0.74	0.17	
92	Gambia	106.44	0.74	0.17	
93	Kenya (2007)	93.61	0.64	0.16	
94	Madagascar	90.29	0.61	0.15	
95	Ethiopia (2010)	87.80	0.59	0.14	
96	El Salvador (2010)	83.32	0.56	0.13	
97	Honduras (2003)	81.55	0.55	0.12	
98	Burkina Faso (2010)	69.47	0.45	0.11	
99	Tanzania, United Rep. (2007)	67.08	0.44	0.10	
100	Mali (2007)	62.55	0.40	0.09	
101	Nicaragua (2004)	60.87	0.39	0.08	○
102	Rwanda	54.70	0.34	0.07	
103	Malawi (2007)	53.94	0.34	0.06	
104	Guatemala	53.87	0.34	0.06	○
105	Uganda	52.61	0.33	0.05	○
106	Zambia (2008)	49.44	0.30	0.04	○
107	Saudi Arabia	47.41	0.29	0.03	○
108	Ghana (2007)	28.00	0.14	0.02	○
109	Mozambique (2007)	23.93	0.11	0.01	○
110	Niger (2005)	9.93	0.00	0.00	○
n/a	Angola	n/a	n/a	n/a	
n/a	Australia	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Canada	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	India	n/a	n/a	n/a	
n/a	Israel	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Korea, Rep.	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	United States of America	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Viet Nam	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2003–11)

NOTE: ● indicates a strength; ○ a weakness.

2.3.2 Gross expenditure on R&D (GERD)

GERD: Gross expenditure on R&D (% of GDP) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Israel (2011)	4.39	100.00	1.00	●
2	Finland (2011)	3.78	86.11	0.99	●
3	Korea, Rep. (2010)	3.74	85.08	0.98	●
4	Sweden (2011)	3.37	76.71	0.97	●
5	Japan (2010)	3.26	74.11	0.96	
6	Denmark (2011)	3.09	70.34	0.95	●
7	Switzerland (2008)	2.87	65.25	0.94	
8	Germany (2011)	2.84	64.61	0.93	
9	Austria (2012)	2.79	63.42	0.93	●
10	United States of America (2011)	2.77	62.95	0.92	
11	Iceland (2008)	2.65	60.12	0.91	
12	Slovenia (2011)	2.51	56.99	0.90	
13	Australia (2010)	2.38	54.12	0.89	
14	Estonia (2011)	2.38	53.96	0.88	
15	France (2011)	2.25	51.07	0.87	
16	Singapore (2010)	2.09	47.48	0.86	
17	Belgium (2011)	2.04	46.34	0.85	
18	Netherlands (2011)	2.04	46.31	0.84	
19	Czech Republic (2011)	1.84	41.70	0.83	
20	United Kingdom (2011)	1.77	40.19	0.82	
21	China (2010)	1.76	39.84	0.81	
22	Ireland (2011)	1.75	39.69	0.80	
23	Canada (2011)	1.74	39.47	0.79	
24	Norway (2011)	1.66	37.62	0.79	
25	Portugal (2011)	1.50	33.83	0.78	
26	Luxembourg (2011)	1.43	32.23	0.77	
27	Spain (2011)	1.33	30.13	0.76	
28	New Zealand	1.30	29.38	0.75	
29	Italy (2011)	1.25	28.22	0.74	
30	Hungary (2011)	1.20	26.96	0.73	
31	Brazil (2010)	1.16	26.16	0.72	
32	Montenegro (2007)	1.15	25.90	0.71	
33	Russian Federation (2011)	1.12	25.20	0.70	
34	Tunisia	1.10	24.88	0.69	
35	Serbia	0.92	20.65	0.68	
36	South Africa	0.87	19.61	0.67	
37	Ukraine	0.86	19.21	0.66	
38	Turkey (2010)	0.84	18.91	0.65	
39	Lithuania (2010)	0.80	17.89	0.64	
40	Hong Kong (China)	0.79	17.72	0.64	
41	Iran, Islamic Rep. (2008)	0.79	17.65	0.63	●
42	Poland (2011)	0.77	17.16	0.62	
43	India (2007)	0.76	16.95	0.61	
44	Croatia (2010)	0.73	16.33	0.60	
45	Slovakia (2011)	0.68	15.14	0.59	
46	Belarus	0.64	14.32	0.58	
47	Gabon	0.64	14.23	0.57	
48	Morocco (2006)	0.64	14.17	0.56	
49	Malaysia (2006)	0.63	14.15	0.55	
50	Malta (2010)	0.63	13.95	0.54	
51	Argentina (2010)	0.62	13.75	0.53	
52	Latvia (2010)	0.60	13.45	0.52	
53	Greece (2007)	0.60	13.38	0.51	
54	Bulgaria (2010)	0.60	13.25	0.50	
55	Costa Rica	0.54	12.01	0.50	
56	Moldova, Rep.	0.53	11.65	0.49	
57	Botswana (2005)	0.52	11.43	0.48	
58	Romania (2011)	0.51	11.26	0.47	
59	Cyprus (2010)	0.50	10.96	0.46	
60	Pakistan	0.46	10.26	0.45	
61	Mexico	0.44	9.65	0.44	
62	Jordan (2008)	0.43	9.57	0.43	
63	Tanzania, United Rep. (2007)	0.43	9.56	0.42	
64	Uruguay	0.43	9.55	0.41	
65	Chile (2010)	0.42	9.23	0.40	
66	Kenya (2007)	0.42	9.16	0.39	
67	Uganda	0.41	9.04	0.38	
68	Mauritius (2005)	0.37	8.14	0.37	
69	Senegal (2008)	0.37	8.05	0.36	
70	Zambia (2008)	0.34	7.41	0.36	
71	Armenia	0.27	5.80	0.35	
72	Ecuador (2008)	0.26	5.57	0.34	
73	Azerbaijan	0.25	5.34	0.33	
74	Mali (2007)	0.25	5.33	0.32	
75	Ethiopia (2010)	0.24	5.19	0.31	
76	Mongolia	0.24	5.18	0.30	
77	Ghana (2007)	0.23	4.93	0.29	
78	Kazakhstan	0.23	4.87	0.28	
79	TFYR of Macedonia (2008)	0.23	4.78	0.27	
80	Nigeria (2007)	0.22	4.66	0.26	
81	Thailand (2007)	0.21	4.52	0.25	○
82	Egypt	0.21	4.46	0.24	
83	Mozambique (2007)	0.21	4.34	0.23	
84	Burkina Faso	0.20	4.22	0.22	
85	Panama (2010)	0.19	4.06	0.21	
86	Georgia (2005)	0.18	3.67	0.21	
87	Kyrgyzstan	0.16	3.27	0.20	
88	Bolivia, Plurinational St.	0.16	3.22	0.19	
89	Colombia (2010)	0.16	3.18	0.18	○
90	Albania (2008)	0.15	3.13	0.17	
91	Peru (2004)	0.15	3.05	0.16	○
92	Madagascar	0.15	3.01	0.15	
93	Sri Lanka (2008)	0.11	2.25	0.14	○
94	Kuwait	0.11	2.20	0.13	○
95	Philippines (2007)	0.11	2.14	0.12	○
96	Tajikistan	0.09	1.59	0.11	
97	Saudi Arabia	0.08	1.54	0.10	○
98	Indonesia	0.08	1.54	0.09	○
99	El Salvador	0.08	1.40	0.08	○
100	Algeria (2005)	0.07	1.16	0.07	
101	Paraguay (2008)	0.06	1.00	0.07	○
102	Guatemala	0.06	0.90	0.06	○
103	Trinidad and Tobago	0.05	0.84	0.05	○
104	Honduras (2004)	0.04	0.58	0.04	○
105	Brunei Darussalam (2004)	0.04	0.48	0.03	○
106	Lesotho	0.03	0.31	0.02	○
107	Bosnia and Herzegovina	0.02	0.13	0.01	○
108	Gambia	0.02	0.00	0.00	○
n/a	Angola	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Viet Nam	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2004–12)

NOTE: ● indicates a strength; ○ a weakness.

2.3.3 QS university ranking average score of top 3 universities

Average score of the top 3 universities at the QS world university ranking | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	United Kingdom	99.01	99.01	1.00	●
2	United States of America	98.88	98.88	0.99	●
3	Canada	86.21	86.21	0.99	●
4	Australia	84.03	84.03	0.98	●
5	Hong Kong (China)	83.82	83.82	0.97	
6	Switzerland	82.84	82.84	0.96	
7	Japan	81.69	81.69	0.96	
8	Germany	74.93	74.93	0.95	●
9	China	74.86	74.86	0.94	
10	France	74.14	74.14	0.94	●
11	Korea, Rep.	73.58	73.58	0.93	
12	Netherlands	70.41	70.41	0.92	
13	Denmark	68.02	68.02	0.91	
14	Sweden	66.10	66.10	0.91	
15	Belgium	61.97	61.97	0.90	
16	Ireland	60.18	60.18	0.89	
17	New Zealand	58.41	58.41	0.89	
18	Finland	55.03	55.03	0.88	
19	Singapore	54.98	54.98	0.87	
20	Norway	53.47	53.47	0.87	
21	Israel	51.08	51.08	0.86	
22	Spain	50.55	50.55	0.85	
23	Italy	46.75	46.75	0.84	
24	Brazil	46.48	46.48	0.84	●
25	Russian Federation	45.93	45.93	0.83	
26	Austria	45.18	45.18	0.82	
27	India	44.78	44.78	0.82	●
28	Saudi Arabia	44.40	44.40	0.81	
29	Malaysia	44.25	44.25	0.80	
30	Chile	40.84	40.84	0.79	
31	Argentina	39.90	39.90	0.79	●
32	Mexico	39.80	39.80	0.78	●
33	South Africa	39.54	39.54	0.77	●
34	Thailand	38.20	38.20	0.77	
35	Indonesia	32.62	32.62	0.76	●
36	Colombia	32.49	32.49	0.75	
37	Portugal	31.34	31.34	0.74	
38	Czech Republic	29.07	29.07	0.74	
39	United Arab Emirates	29.03	29.03	0.73	
40	Kazakhstan	28.65	28.65	0.72	
41	Poland	27.30	27.30	0.72	
42	Turkey	26.70	26.70	0.71	
43	Greece	26.53	26.53	0.70	
44	Philippines	26.50	26.50	0.70	
45	Egypt	26.04	26.04	0.69	●
46	Hungary	22.25	22.25	0.68	
47	Lebanon	22.22	22.22	0.67	
48	Pakistan	21.39	21.39	0.67	●
49	Venezuela, Bolivarian Rep.	19.01	19.01	0.66	●
50	Ukraine	18.84	18.84	0.65	
51	Azerbaijan	18.66	18.66	0.65	●
52	Lithuania	15.74	15.74	0.64	
53	Uruguay	14.78	14.78	0.63	
54	Iran, Islamic Rep.	13.58	13.58	0.62	
55	Jordan	11.16	11.16	0.62	
56	Peru	10.92	10.92	0.61	
57	Oman	9.74	9.74	0.60	
58	Estonia	8.21	8.21	0.60	
59	Belarus	7.69	7.69	0.59	
60	Qatar	7.39	7.39	0.58	
61	Slovenia	7.11	7.11	0.57	
62	Croatia	7.07	7.07	0.57	
63	Kuwait	6.30	6.30	0.56	
64	Bahrain	6.13	6.13	0.55	
65	Bangladesh	5.45	5.45	0.55	●
66	Serbia	4.46	4.46	0.54	
67	Sri Lanka	3.92	3.92	0.53	
68	Albania	0.00	0.00	0.00	○
68	Algeria	0.00	0.00	0.00	○
68	Angola	0.00	0.00	0.00	○
68	Armenia	0.00	0.00	0.00	○
68	Barbados	0.00	0.00	0.00	○
68	Belize	0.00	0.00	0.00	○
68	Benin	0.00	0.00	0.00	○
68	Bolivia, Plurinational St.	0.00	0.00	0.00	○
68	Bosnia and Herzegovina	0.00	0.00	0.00	○
68	Botswana	0.00	0.00	0.00	○
68	Brunei Darussalam	0.00	0.00	0.00	○
68	Bulgaria	0.00	0.00	0.00	○
68	Burkina Faso	0.00	0.00	0.00	○
68	Cambodia	0.00	0.00	0.00	○
68	Cameroon	0.00	0.00	0.00	○
68	Cape Verde	0.00	0.00	0.00	○
68	Costa Rica	0.00	0.00	0.00	○
68	Côte d'Ivoire	0.00	0.00	0.00	○
68	Cyprus	0.00	0.00	0.00	○
68	Dominican Republic	0.00	0.00	0.00	○
68	Ecuador	0.00	0.00	0.00	○
68	El Salvador	0.00	0.00	0.00	○
68	Ethiopia	0.00	0.00	0.00	○
68	Fiji	0.00	0.00	0.00	○
68	Gabon	0.00	0.00	0.00	○
68	Gambia	0.00	0.00	0.00	○
68	Georgia	0.00	0.00	0.00	○
68	Ghana	0.00	0.00	0.00	○
68	Guatemala	0.00	0.00	0.00	○
68	Guinea	0.00	0.00	0.00	○
68	Guyana	0.00	0.00	0.00	○
68	Honduras	0.00	0.00	0.00	○
68	Iceland	0.00	0.00	0.00	○
68	Jamaica	0.00	0.00	0.00	○
68	Kenya	0.00	0.00	0.00	○
68	Kyrgyzstan	0.00	0.00	0.00	○
68	Latvia	0.00	0.00	0.00	○
68	Lesotho	0.00	0.00	0.00	○
68	Luxembourg	0.00	0.00	0.00	○
68	TFYR of Macedonia	0.00	0.00	0.00	○
68	Madagascar	0.00	0.00	0.00	○
68	Malawi	0.00	0.00	0.00	○
68	Mali	0.00	0.00	0.00	○
68	Malta	0.00	0.00	0.00	○
68	Mauritius	0.00	0.00	0.00	○
68	Moldova, Rep.	0.00	0.00	0.00	○
68	Mongolia	0.00	0.00	0.00	○
68	Montenegro	0.00	0.00	0.00	○
68	Morocco	0.00	0.00	0.00	○
68	Mozambique	0.00	0.00	0.00	○
68	Namibia	0.00	0.00	0.00	○
68	Nepal	0.00	0.00	0.00	○
68	Nicaragua	0.00	0.00	0.00	○
68	Niger	0.00	0.00	0.00	○
68	Nigeria	0.00	0.00	0.00	○
68	Panama	0.00	0.00	0.00	○
68	Paraguay	0.00	0.00	0.00	○
68	Romania	0.00	0.00	0.00	○
68	Rwanda	0.00	0.00	0.00	○
68	Senegal	0.00	0.00	0.00	○
68	Slovakia	0.00	0.00	0.00	○
68	Sudan	0.00	0.00	0.00	○
68	Swaziland	0.00	0.00	0.00	○
68	Syrian Arab Republic	0.00	0.00	0.00	○
68	Tajikistan	0.00	0.00	0.00	○
68	Tanzania, United Rep.	0.00	0.00	0.00	○
68	Togo	0.00	0.00	0.00	○
68	Trinidad and Tobago	0.00	0.00	0.00	○
68	Tunisia	0.00	0.00	0.00	○
68	Uganda	0.00	0.00	0.00	○
68	Uzbekistan	0.00	0.00	0.00	○
68	Viet Nam	0.00	0.00	0.00	○
68	Yemen	0.00	0.00	0.00	○
68	Zambia	0.00	0.00	0.00	○
68	Zimbabwe	0.00	0.00	0.00	○

SOURCE: QS Quacquarelli Symonds Ltd, QS World University Ranking 2012/2013, Top Universities

NOTE: ● indicates a strength; ○ a weakness.

3.1.1 ICT access

ICT access index | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Hong Kong (China)	9.21	92.07	1.00	●
2	Switzerland	8.89	88.85	0.99	●
3	Luxembourg	8.87	88.68	0.99	●
4	Iceland	8.81	88.14	0.98	
5	Germany	8.66	86.64	0.97	●
6	Sweden	8.50	85.04	0.96	●
7	United Kingdom	8.47	84.70	0.96	
8	Singapore	8.38	83.77	0.95	
9	Denmark	8.37	83.72	0.94	
10	Netherlands	8.34	83.40	0.93	
11	Korea, Rep.	8.30	82.97	0.93	
12	Norway	8.28	82.84	0.92	
13	France	7.92	79.17	0.91	
14	Malta	7.90	79.00	0.90	
15	Austria	7.88	78.75	0.90	
16	Japan	7.81	78.06	0.89	
17	Finland	7.74	77.36	0.88	
18	Belgium	7.72	77.24	0.88	
19	Australia	7.66	76.64	0.87	
20	Ireland	7.64	76.45	0.86	
21	New Zealand	7.61	76.07	0.85	
22	Canada	7.54	75.36	0.85	
23	United States of America	7.50	75.00	0.84	
24	Israel	7.34	73.40	0.83	
25	Slovenia	7.29	72.90	0.82	
26	Estonia	7.20	71.99	0.82	
27	Barbados	7.15	71.54	0.81	
28	Spain	7.12	71.22	0.80	
29	Italy	7.11	71.06	0.79	
30	Portugal	6.94	69.39	0.79	
31	Bahrain	6.94	69.39	0.78	
32	Qatar	6.90	69.03	0.77	
33	United Arab Emirates	6.89	68.85	0.76	
34	Russian Federation	6.69	66.91	0.76	
35	Croatia	6.67	66.69	0.75	
36	Saudi Arabia	6.63	66.27	0.74	
37	Lithuania	6.60	66.05	0.74	
38	Greece	6.56	65.62	0.73	
39	Czech Republic	6.53	65.28	0.72	
40	Hungary	6.48	64.80	0.71	
41	Poland	6.46	64.64	0.71	
42	Brunei Darussalam	6.46	64.61	0.70	
43	Cyprus	6.46	64.56	0.69	
44	Serbia	6.37	63.72	0.68	
45	Slovakia	6.32	63.19	0.68	
46	Uruguay	6.15	61.49	0.67	
47	Latvia	6.13	61.32	0.66	
48	Belarus	6.13	61.28	0.65	
49	Bulgaria	5.97	59.75	0.65	
50	Kazakhstan	5.97	59.74	0.64	
51	Malaysia	5.85	58.47	0.63	
52	Romania	5.75	57.54	0.63	
53	TFYR of Macedonia	5.73	57.27	0.62	
54	Moldova, Rep.	5.69	56.94	0.61	
55	Argentina	5.66	56.60	0.60	
56	Oman	5.60	56.01	0.60	
57	Trinidad and Tobago	5.59	55.87	0.59	
58	Montenegro (2010)	5.55	55.47	0.58	
59	Lebanon	5.44	54.39	0.57	
60	Chile	5.42	54.15	0.57	
61	Brazil	5.35	53.54	0.56	
62	Costa Rica	5.28	52.79	0.55	
63	Panama	5.16	51.56	0.54	
64	Turkey	5.12	51.17	0.54	
65	Mauritius	5.01	50.10	0.53	
66	Ukraine	4.86	48.58	0.52	
67	Bosnia and Herzegovina	4.67	46.74	0.51	
68	Jordan	4.64	46.37	0.51	
69	Azerbaijan	4.63	46.25	0.50	
70	Georgia	4.61	46.08	0.49	
71	Morocco	4.49	44.89	0.49	
72	Iran, Islamic Rep.	4.47	44.75	0.48	
73	Syrian Arab Republic	4.19	41.92	0.47	●
74	Egypt	4.18	41.78	0.46	
75	Colombia	4.17	41.72	0.46	
76	Ecuador	4.16	41.60	0.45	
77	China	4.12	41.18	0.44	
78	Mexico	4.08	40.80	0.43	
79	Armenia (2010)	4.07	40.68	0.43	
80	Venezuela, Bolivarian Rep.	4.01	40.11	0.42	
81	Viet Nam	4.00	40.01	0.41	
82	Jamaica	3.96	39.56	0.40	
83	Tunisia	3.91	39.09	0.40	
84	Peru	3.87	38.74	0.39	
85	Fiji	3.85	38.50	0.38	
86	South Africa	3.79	37.92	0.38	
87	Thailand	3.78	37.76	0.37	
88	Mongolia	3.76	37.61	0.36	
89	El Salvador	3.72	37.22	0.35	
90	Albania	3.59	35.89	0.35	
91	Paraguay	3.55	35.47	0.34	
92	Algeria	3.53	35.31	0.33	
93	Botswana	3.50	35.03	0.32	
94	Guatemala (2010)	3.44	34.40	0.32	
95	Dominican Republic	3.37	33.72	0.31	
96	Indonesia	3.37	33.72	0.30	
97	Gabon	3.35	33.49	0.29	
98	Philippines	3.32	33.22	0.29	
99	Sri Lanka	3.30	32.98	0.28	
100	Guyana	3.23	32.29	0.27	
101	Bolivia, Plurinational St.	3.23	32.29	0.26	
102	Honduras	3.21	32.12	0.26	
103	Cape Verde	3.13	31.31	0.25	
104	Namibia	3.03	30.29	0.24	
105	Nicaragua	2.83	28.33	0.24	
106	Côte d'Ivoire	2.59	25.86	0.23	
107	Cambodia	2.53	25.27	0.22	
108	Uzbekistan	2.52	25.16	0.21	
109	India	2.48	24.76	0.21	
110	Swaziland	2.47	24.70	0.20	
111	Gambia	2.47	24.67	0.19	
112	Pakistan	2.46	24.57	0.18	
113	Kyrgyzstan (2010)	2.38	23.77	0.18	
114	Senegal	2.36	23.62	0.17	
115	Benin	2.36	23.55	0.16	
116	Kenya	2.34	23.41	0.15	
117	Zimbabwe	2.25	22.49	0.15	
118	Mali	2.19	21.90	0.14	
119	Togo	2.18	21.84	0.13	
120	Ghana	2.10	21.03	0.13	
121	Yemen	1.92	19.21	0.12	
122	Bangladesh (2010)	1.91	19.13	0.11	
123	Uganda	1.91	19.09	0.10	
124	Rwanda	1.90	19.02	0.10	
125	Madagascar	1.87	18.69	0.09	
126	Nepal	1.87	18.69	0.08	○
127	Nigeria	1.86	18.58	0.07	
128	Angola (2010)	1.86	18.56	0.07	
129	Tanzania, United Rep.	1.85	18.52	0.06	
130	Burkina Faso	1.82	18.25	0.05	
131	Cameroon	1.77	17.70	0.04	○
132	Zambia	1.74	17.43	0.04	○
133	Guinea	1.71	17.08	0.03	
134	Mozambique	1.66	16.56	0.02	
135	Ethiopia	1.64	16.42	0.01	○
136	Malawi	1.55	15.50	0.01	○
137	Niger	1.44	14.39	0.00	○
n/a	Belize	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	

SOURCE: International Telecommunication Union, *Measuring the Information Society 2012*, ICT Development Index 2012 (2010–11)

NOTE: ● indicates a strength; ○ a weakness.

3.1.2 ICT use

ICT use index | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Hong Kong (China)	8.17	81.69	1.00	●
2	Switzerland	7.84	78.42	0.99	●
3	Luxembourg	7.79	77.90	0.99	●
4	Iceland	7.51	75.14	0.98	
5	Germany	7.29	72.86	0.97	●
6	Sweden	7.24	72.43	0.96	●
7	United Kingdom	7.07	70.73	0.96	
8	Singapore	7.07	70.67	0.95	
9	Denmark	6.86	68.62	0.94	
10	Netherlands	6.63	66.34	0.93	
11	Korea, Rep.	6.62	66.22	0.93	
12	Norway	6.37	63.69	0.92	
13	France	6.12	61.18	0.91	
14	Malta	6.06	60.60	0.90	
15	Austria	5.97	59.69	0.90	
16	Japan	5.96	59.57	0.89	
17	Finland	5.76	57.61	0.88	
18	Belgium	5.73	57.25	0.88	
19	Australia	5.64	56.37	0.87	
20	Ireland	5.57	55.70	0.86	
21	New Zealand	5.45	54.51	0.85	
22	Canada	5.39	53.85	0.85	
23	United States of America	5.38	53.83	0.84	
24	Israel	5.07	50.71	0.83	
25	Slovenia	5.06	50.59	0.82	
26	Estonia	5.02	50.17	0.82	
27	Barbados	4.92	49.19	0.81	
28	Spain	4.77	47.69	0.80	
29	Italy	4.75	47.46	0.79	
30	Portugal	4.57	45.70	0.79	
31	Bahrain	4.30	42.99	0.78	
32	Qatar	4.20	42.00	0.77	
33	United Arab Emirates	4.02	40.24	0.76	
34	Russian Federation	3.97	39.68	0.76	
35	Croatia	3.92	39.15	0.75	
36	Saudi Arabia	3.90	39.03	0.74	
37	Lithuania	3.76	37.58	0.74	
38	Greece	3.73	37.26	0.73	
39	Czech Republic	3.66	36.64	0.72	
40	Hungary	3.66	36.56	0.71	
41	Poland	3.65	36.49	0.71	
42	Brunei Darussalam	3.63	36.35	0.70	
43	Cyprus	3.63	36.26	0.69	
44	Serbia	3.62	36.18	0.68	
45	Montenegro (2010)	3.46	34.57	0.68	
46	Slovakia	3.24	32.44	0.67	
47	Uruguay	3.24	32.40	0.66	
48	Latvia	3.19	31.94	0.65	
49	Belarus	3.17	31.66	0.65	
50	Bulgaria	3.04	30.42	0.64	
51	Kazakhstan	3.01	30.12	0.63	
52	Malaysia	2.98	29.76	0.63	
53	Romania	2.94	29.42	0.62	
54	TFYR of Macedonia	2.85	28.53	0.61	
55	Moldova, Rep.	2.76	27.59	0.60	
56	Argentina	2.67	26.70	0.60	
57	Oman	2.52	25.15	0.59	
58	Trinidad and Tobago	2.38	23.83	0.58	
59	Lebanon	2.32	23.24	0.57	
60	Chile	2.26	22.65	0.57	
61	Brazil	2.24	22.35	0.56	
62	Costa Rica	2.17	21.66	0.55	
63	Panama	2.15	21.48	0.54	
64	Turkey	2.09	20.91	0.54	
65	Mauritius	2.07	20.72	0.53	
66	Ukraine	2.07	20.71	0.52	
67	Bosnia and Herzegovina	2.07	20.67	0.51	
68	Jordan	2.06	20.65	0.51	
69	Azerbaijan	2.02	20.19	0.50	
70	Georgia	2.01	20.09	0.49	
71	Morocco	2.01	20.08	0.49	
72	Iran, Islamic Rep.	1.95	19.51	0.48	
73	Syrian Arab Republic	1.95	19.47	0.47	●
74	Egypt	1.93	19.31	0.46	
75	Colombia	1.85	18.53	0.46	
76	Ecuador	1.67	16.67	0.45	
77	China	1.66	16.60	0.44	
78	Mexico	1.65	16.47	0.43	
79	Venezuela, Bolivarian Rep.	1.62	16.23	0.43	
80	Viet Nam	1.60	15.99	0.42	
81	Jamaica	1.56	15.55	0.41	
82	Armenia (2010)	1.55	15.54	0.40	
83	Tunisia	1.53	15.27	0.40	
84	Peru	1.50	15.02	0.39	
85	Fiji	1.46	14.59	0.38	
86	South Africa	1.46	14.55	0.38	
87	Thailand	1.41	14.06	0.37	
88	Mongolia	1.40	14.01	0.36	
89	El Salvador	1.31	13.15	0.35	
90	Albania	1.25	12.53	0.35	
91	Paraguay	1.25	12.50	0.34	
92	Algeria	1.25	12.45	0.33	
93	Botswana	1.20	12.03	0.32	
94	Dominican Republic	1.18	11.82	0.32	
95	Indonesia	1.10	11.01	0.31	
96	Gabon	1.09	10.88	0.30	
97	Philippines	1.05	10.48	0.29	
98	Sri Lanka	1.00	9.98	0.29	
99	Guyana	0.95	9.49	0.28	
100	Bolivia, Plurinational St.	0.90	9.05	0.27	
101	Honduras	0.89	8.92	0.26	
102	Cape Verde	0.83	8.31	0.26	
103	Namibia	0.83	8.31	0.25	
104	Kyrgyzstan (2010)	0.82	8.20	0.24	
105	Nicaragua	0.81	8.14	0.24	
106	Côte d'Ivoire	0.67	6.71	0.23	
107	Cambodia	0.65	6.53	0.22	
108	Uzbekistan	0.64	6.38	0.21	
109	Guatemala (2010)	0.57	5.74	0.21	
110	India	0.56	5.65	0.20	
111	Swaziland	0.54	5.42	0.19	
112	Angola (2010)	0.53	5.27	0.18	
113	Gambia	0.52	5.24	0.18	
114	Pakistan	0.49	4.85	0.17	
115	Senegal	0.44	4.41	0.16	
116	Benin	0.40	3.98	0.15	
117	Kenya	0.38	3.80	0.15	
118	Zimbabwe	0.36	3.55	0.14	
119	Mali	0.35	3.52	0.13	
120	Togo	0.33	3.32	0.13	
121	Ghana	0.32	3.17	0.12	
122	Yemen	0.23	2.27	0.11	
123	Uganda	0.22	2.17	0.10	
124	Rwanda	0.21	2.07	0.10	
125	Madagascar	0.18	1.82	0.09	
126	Nepal	0.18	1.76	0.08	○
127	Nigeria	0.17	1.68	0.07	
128	Tanzania, United Rep.	0.17	1.67	0.07	
129	Burkina Faso	0.14	1.35	0.06	
130	Bangladesh (2010)	0.13	1.32	0.05	○
131	Cameroon	0.12	1.19	0.04	○
132	Zambia	0.11	1.06	0.04	○
133	Guinea	0.10	1.04	0.03	
134	Mozambique	0.08	0.79	0.02	
135	Ethiopia	0.08	0.78	0.01	○
136	Malawi	0.07	0.73	0.01	○
137	Niger	0.06	0.63	0.00	○
n/a	Belize	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	

SOURCE: International Telecommunication Union, *Measuring the Information Society 2012*, ICT Development Index 2012 (2010–11)

NOTE: ● indicates a strength; ○ a weakness.

3.1.3 Government's online service

Government's online service index | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Korea, Rep.	1.00	100.00	0.99	●
1	Singapore	1.00	100.00	0.99	●
1	United States of America	1.00	100.00	0.99	●
4	United Kingdom	0.97	97.39	0.98	●
5	Netherlands	0.96	96.08	0.97	●
6	Canada	0.89	88.89	0.96	●
7	Finland	0.88	88.24	0.96	
8	France	0.88	87.58	0.95	●
9	Australia	0.86	86.27	0.92	
9	Bahrain	0.86	86.27	0.92	●
9	Japan	0.86	86.27	0.92	
9	United Arab Emirates	0.86	86.27	0.92	●
13	Denmark	0.86	85.62	0.91	
13	Norway	0.86	85.62	0.91	
15	Israel	0.85	84.97	0.90	
16	Colombia	0.84	84.31	0.89	●
16	Sweden	0.84	84.31	0.89	
18	Estonia	0.82	82.35	0.88	
19	Saudi Arabia	0.80	79.74	0.87	●
20	Malaysia	0.79	79.08	0.86	
21	Kazakhstan	0.78	78.43	0.85	●
21	New Zealand	0.78	78.43	0.85	
23	Spain	0.76	75.82	0.84	
24	Chile	0.75	75.16	0.83	●
24	Germany	0.75	75.16	0.83	
26	Austria	0.75	74.51	0.82	
27	Qatar	0.74	73.86	0.81	
28	Mexico	0.73	73.20	0.81	●
29	Lithuania	0.70	69.93	0.79	
29	Luxembourg	0.70	69.93	0.79	
31	Hungary	0.69	68.63	0.79	
32	Brazil	0.67	67.32	0.76	
32	El Salvador	0.67	67.32	0.76	●
32	Switzerland	0.67	67.32	0.76	
35	Oman	0.67	66.67	0.75	●
35	Slovenia	0.67	66.67	0.75	
37	Russian Federation	0.66	66.01	0.74	
38	Portugal	0.65	65.36	0.74	
39	Belgium	0.65	64.71	0.73	
40	Croatia	0.64	64.05	0.72	
41	Malta	0.61	61.44	0.71	
42	Egypt	0.60	60.13	0.70	●
42	Georgia	0.60	60.13	0.70	
44	Brunei Darussalam	0.59	59.48	0.69	
45	Latvia	0.59	58.82	0.68	
45	Mongolia	0.59	58.82	0.68	
47	Kuwait	0.58	58.17	0.67	
48	Greece	0.58	57.52	0.65	
48	Italy	0.58	57.52	0.65	
48	Serbia	0.58	57.52	0.65	
51	Cyprus	0.56	56.21	0.64	
52	Uruguay	0.55	54.90	0.64	
53	Czech Republic	0.54	54.25	0.62	
53	Iceland	0.54	54.25	0.62	
55	Dominican Republic	0.54	53.59	0.59	
55	India	0.54	53.59	0.59	
55	Ireland	0.54	53.59	0.59	
55	Poland	0.54	53.59	0.59	
59	Argentina	0.53	52.94	0.58	
59	China	0.53	52.94	0.58	
61	Moldova, Rep.	0.52	51.63	0.56	
61	Peru	0.52	51.63	0.56	
61	Romania	0.52	51.63	0.56	
64	Montenegro	0.51	50.98	0.54	
64	Thailand	0.51	50.98	0.54	
66	Slovakia	0.50	50.33	0.54	
67	Costa Rica	0.50	49.67	0.51	
67	Indonesia	0.50	49.67	0.51	
67	Philippines	0.50	49.67	0.51	
67	Uzbekistan	0.50	49.67	0.51	
71	Bulgaria	0.49	49.02	0.49	
71	Iran, Islamic Rep.	0.49	49.02	0.49	
73	Trinidad and Tobago	0.48	48.37	0.48	
73	Venezuela, Bolivarian Rep.	0.48	48.37	0.48	
75	Lebanon	0.48	47.71	0.46	
75	Tunisia	0.48	47.71	0.46	
77	Ethiopia	0.47	47.06	0.46	
78	Guatemala	0.46	46.41	0.44	
78	Panama	0.46	46.41	0.44	
78	Turkey	0.46	46.41	0.44	
81	Ecuador	0.46	45.75	0.41	
81	Paraguay	0.46	45.75	0.41	
81	South Africa	0.46	45.75	0.41	
84	TFYR of Macedonia	0.45	45.10	0.41	
85	Bangladesh	0.44	44.44	0.40	
86	Cape Verde	0.44	43.79	0.39	
87	Kenya	0.43	43.14	0.38	
87	Mauritius	0.43	43.14	0.38	
89	Albania	0.42	42.48	0.35	
89	Kyrgyzstan	0.42	42.48	0.35	
89	Ukraine	0.42	42.48	0.35	
89	Viet Nam	0.42	42.48	0.35	
93	Belarus	0.41	41.18	0.34	
93	Bolivia, Plurinational St.	0.41	41.18	0.34	
95	Belize	0.40	39.87	0.33	
96	Jordan	0.39	39.22	0.32	
97	Honduras	0.38	37.91	0.31	
97	Sri Lanka	0.38	37.91	0.31	
99	Barbados	0.37	37.25	0.29	
99	Bosnia and Herzegovina	0.37	37.25	0.29	
101	Azerbaijan	0.37	36.60	0.27	
101	Mozambique	0.37	36.60	0.27	
101	Pakistan	0.37	36.60	0.27	
104	Botswana	0.36	35.95	0.26	
104	Fiji	0.36	35.95	0.26	
106	Tanzania, United Rep.	0.35	35.29	0.25	
107	Senegal	0.35	34.64	0.24	
108	Rwanda	0.34	33.99	0.24	
109	Angola	0.33	33.33	0.22	
109	Côte d'Ivoire	0.33	33.33	0.22	
111	Armenia	0.33	32.68	0.21	
112	Gambia	0.32	32.03	0.19	
112	Madagascar	0.32	32.03	0.19	
112	Mali	0.32	32.03	0.19	
115	Nicaragua	0.31	31.37	0.18	
115	Zambia	0.31	31.37	0.18	
117	Jamaica	0.31	30.72	0.17	
118	Cameroon	0.30	30.07	0.14	
118	Ghana	0.30	30.07	0.14	
118	Lesotho	0.30	30.07	0.14	
118	Namibia	0.30	30.07	0.14	
122	Burkina Faso	0.29	29.41	0.13	
122	Uganda	0.29	29.41	0.13	
124	Nepal	0.29	28.76	0.12	
125	Algeria	0.25	25.49	0.10	
125	Guyana	0.25	25.49	0.10	○
125	Sudan	0.25	25.49	0.10	
128	Morocco	0.25	24.84	0.09	○
129	Tajikistan	0.24	24.18	0.09	
130	Syrian Arab Republic	0.23	22.88	0.08	
131	Nigeria	0.22	22.22	0.07	
132	Malawi	0.22	21.57	0.06	
133	Benin	0.20	19.61	0.05	
133	Niger	0.20	19.61	0.05	
135	Cambodia	0.19	18.95	0.04	○
135	Gabon	0.19	18.95	0.04	○
137	Yemen	0.18	17.65	0.03	
138	Swaziland	0.14	14.38	0.02	○
139	Togo	0.14	13.73	0.01	○
140	Zimbabwe (2010)	0.13	12.70	0.01	○
141	Guinea	0.00	0.00	0.00	○
n/a	Hong Kong (China)	n/a	n/a	n/a	

SOURCE: United Nations Public Administration Network, *e-Government Survey 2012* (2010–12)

NOTE: ● indicates a strength; ○ a weakness.

3.1.4 Online e-participation

E-Participation Index | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Korea, Rep.	1.00	100.00	0.99	●
1	Netherlands	1.00	100.00	0.99	●
3	Kazakhstan	0.95	94.74	0.98	●
3	Singapore	0.95	94.74	0.98	●
5	United Kingdom	0.92	92.11	0.96	
5	United States of America	0.92	92.11	0.96	
7	Israel	0.89	89.47	0.96	●
8	Australia	0.76	76.32	0.94	●
8	Estonia	0.76	76.32	0.94	●
8	Germany	0.76	76.32	0.94	
11	Colombia	0.74	73.68	0.91	●
11	Finland	0.74	73.68	0.91	
11	Japan	0.74	73.68	0.91	
11	United Arab Emirates	0.74	73.68	0.91	●
15	Canada	0.68	68.42	0.88	
15	Egypt	0.68	68.42	0.88	●
15	Norway	0.68	68.42	0.88	
15	Sweden	0.68	68.42	0.88	
19	Bahrain	0.66	65.79	0.86	●
19	Chile	0.66	65.79	0.86	●
19	Russian Federation	0.66	65.79	0.86	●
22	Qatar	0.63	63.16	0.84	
22	Saudi Arabia	0.63	63.16	0.84	
24	Mongolia	0.61	60.53	0.84	
25	France	0.58	57.89	0.81	
25	Mexico	0.58	57.89	0.81	●
25	New Zealand	0.58	57.89	0.81	
28	Denmark	0.55	55.26	0.80	
28	El Salvador	0.55	55.26	0.80	●
30	Lithuania	0.53	52.63	0.79	
31	Brazil	0.50	50.00	0.77	●
31	Malaysia	0.50	50.00	0.77	
31	Spain	0.50	50.00	0.77	
34	Brunei Darussalam	0.47	47.37	0.76	●
34	Dominican Republic	0.47	47.37	0.76	●
36	Hungary	0.45	44.74	0.74	
36	Oman	0.45	44.74	0.74	●
38	Luxembourg	0.39	39.47	0.72	
38	Moldova, Rep.	0.39	39.47	0.72	
38	Peru	0.39	39.47	0.72	●
41	Austria	0.37	36.84	0.70	
41	Portugal	0.37	36.84	0.70	
41	Tunisia	0.37	36.84	0.70	
44	Ethiopia	0.34	34.21	0.68	●
44	Greece	0.34	34.21	0.68	
44	Switzerland	0.34	34.21	0.68	
47	Costa Rica	0.32	31.58	0.64	
47	Lebanon	0.32	31.58	0.64	
47	Montenegro	0.32	31.58	0.64	
47	Panama	0.32	31.58	0.64	
47	Thailand	0.32	31.58	0.64	
52	Argentina	0.29	28.95	0.62	
52	Croatia	0.29	28.95	0.62	
52	Kyrgyzstan	0.29	28.95	0.62	
55	Czech Republic	0.26	26.32	0.59	
55	Italy	0.26	26.32	0.59	
55	Malta	0.26	26.32	0.59	
55	Venezuela, Bolivarian Rep.	0.26	26.32	0.59	●
59	Cape Verde	0.24	23.68	0.56	●
59	Ecuador	0.24	23.68	0.56	
59	Guatemala	0.24	23.68	0.56	
59	Serbia	0.24	23.68	0.56	
59	Uzbekistan	0.24	23.68	0.56	
64	Bolivia, Plurinational St.	0.21	21.05	0.50	
64	China	0.21	21.05	0.50	
64	Georgia	0.21	21.05	0.50	
64	Indonesia	0.21	21.05	0.50	
64	Latvia	0.21	21.05	0.50	
64	Philippines	0.21	21.05	0.50	
64	Senegal	0.21	21.05	0.50	
64	Slovenia	0.21	21.05	0.50	
72	Belize	0.18	18.42	0.45	
72	India	0.18	18.42	0.45	
72	Iran, Islamic Rep.	0.18	18.42	0.45	
72	Kuwait	0.18	18.42	0.45	
72	Nigeria	0.18	18.42	0.45	
72	Poland	0.18	18.42	0.45	
72	Uruguay	0.18	18.42	0.45	
79	Burkina Faso	0.16	15.79	0.41	●
79	Iceland	0.16	15.79	0.41	
79	Paraguay	0.16	15.79	0.41	
79	South Africa	0.16	15.79	0.41	
79	Ukraine	0.16	15.79	0.41	
84	Azerbaijan	0.13	13.16	0.34	
84	Belgium	0.13	13.16	0.34	○
84	Côte d'Ivoire	0.13	13.16	0.34	
84	Honduras	0.13	13.16	0.34	
84	Ireland	0.13	13.16	0.34	○
84	TFYR of Macedonia	0.13	13.16	0.34	
84	Mozambique	0.13	13.16	0.34	
84	Nicaragua	0.13	13.16	0.34	
84	Pakistan	0.13	13.16	0.34	
84	Slovakia	0.13	13.16	0.34	
94	Albania	0.11	10.53	0.31	
94	Gabon	0.11	10.53	0.31	
94	Ghana	0.11	10.53	0.31	
94	Jordan	0.11	10.53	0.31	
94	Viet Nam	0.11	10.53	0.31	
99	Bangladesh	0.08	7.89	0.22	
99	Belarus	0.08	7.89	0.22	○
99	Benin	0.08	7.89	0.22	
99	Cyprus	0.08	7.89	0.22	○
99	Fiji	0.08	7.89	0.22	
99	Mauritius	0.08	7.89	0.22	○
99	Romania	0.08	7.89	0.22	○
99	Sri Lanka	0.08	7.89	0.22	
99	Sudan	0.08	7.89	0.22	
99	Tanzania, United Rep.	0.08	7.89	0.22	
99	Trinidad and Tobago	0.08	7.89	0.22	
99	Uganda	0.08	7.89	0.22	
111	Algeria	0.05	5.26	0.19	
111	Kenya	0.05	5.26	0.19	
111	Swaziland	0.05	5.26	0.19	
111	Togo	0.05	5.26	0.19	
111	Turkey	0.05	5.26	0.19	○
116	Angola	0.03	2.63	0.09	
116	Barbados	0.03	2.63	0.09	○
116	Botswana	0.03	2.63	0.09	○
116	Bulgaria	0.03	2.63	0.09	○
116	Cameroon	0.03	2.63	0.09	
116	Lesotho	0.03	2.63	0.09	
116	Madagascar	0.03	2.63	0.09	
116	Namibia	0.03	2.63	0.09	○
116	Nepal	0.03	2.63	0.09	
116	Rwanda	0.03	2.63	0.09	
116	Syrian Arab Republic	0.03	2.63	0.09	
116	Zambia	0.03	2.63	0.09	
116	Zimbabwe	0.03	2.63	0.09	
129	Armenia	0.00	0.00	0.00	○
129	Bosnia and Herzegovina	0.00	0.00	0.00	○
129	Cambodia	0.00	0.00	0.00	○
129	Gambia	0.00	0.00	0.00	○
129	Guinea	0.00	0.00	0.00	○
129	Guyana	0.00	0.00	0.00	○
129	Jamaica	0.00	0.00	0.00	○
129	Malawi	0.00	0.00	0.00	○
129	Mali	0.00	0.00	0.00	○
129	Morocco	0.00	0.00	0.00	○
129	Niger	0.00	0.00	0.00	○
129	Tajikistan	0.00	0.00	0.00	○
129	Yemen	0.00	0.00	0.00	○
n/a	Hong Kong (China)	n/a	n/a	n/a	

SOURCE: United Nations Public Administration Network, *e-Government Survey 2012*

NOTE: ● indicates a strength; ○ a weakness.

3.2.1 Electricity output

Electricity output (kWh per capita) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Iceland (2011)	53,781.25	100.00	0.98	●
1	Norway (2011)	25,632.73	100.00	0.98	●
1	Kuwait	20,813.50	100.00	0.98	●
4	Canada (2011)	18,462.08	88.69	0.98	●
5	Sweden (2011)	16,246.23	78.04	0.97	●
6	Qatar	15,990.91	76.81	0.96	●
7	United States of America (2011)	13,797.59	66.26	0.95	
8	Finland (2011)	13,721.27	65.90	0.94	
9	United Arab Emirates	13,013.05	62.49	0.94	●
10	Korea, Rep. (2011)	10,538.43	50.59	0.93	
11	Bahrain	10,500.00	50.41	0.92	●
12	Australia (2011)	10,430.97	50.08	0.91	
13	New Zealand (2011)	10,066.74	48.32	0.90	
14	Brunei Darussalam	9,655.00	46.34	0.90	●
15	Estonia (2011)	9,621.64	46.18	0.89	
16	Singapore	8,930.91	42.86	0.88	
17	Saudi Arabia	8,745.61	41.97	0.87	●
18	France (2011)	8,575.31	41.15	0.86	
19	Paraguay	8,369.35	40.16	0.85	●
20	Japan (2011)	8,270.09	39.69	0.85	
21	Czech Republic (2011)	8,249.19	39.58	0.84	
22	Belgium (2011)	8,050.50	38.63	0.83	
23	Switzerland (2011)	8,049.68	38.63	0.82	
24	Slovenia (2011)	7,724.27	37.06	0.81	
25	Israel (2011)	7,677.06	36.83	0.81	
26	Germany (2011)	7,452.49	35.75	0.80	
27	Austria (2011)	7,426.61	35.63	0.79	
28	Russian Federation	7,309.46	35.07	0.78	
29	Oman	7,129.14	34.20	0.77	●
30	Netherlands (2011)	6,733.81	32.30	0.77	
31	Cyprus	6,725.00	32.26	0.76	
32	Montenegro	6,617.46	31.74	0.75	
33	Trinidad and Tobago	6,333.58	30.37	0.74	●
34	Denmark (2011)	6,293.69	30.18	0.73	
35	Spain (2011)	6,293.16	30.18	0.73	
36	Bulgaria	6,103.05	29.26	0.72	
37	Ireland (2011)	6,017.76	28.85	0.71	
38	United Kingdom (2011)	5,807.36	27.84	0.70	
39	Hong Kong (China)	5,416.55	25.96	0.69	
40	Malta	5,153.66	24.70	0.69	
41	South Africa	5,133.99	24.61	0.68	
42	Serbia	5,133.47	24.60	0.67	
43	Luxembourg (2011)	5,082.69	24.36	0.66	
44	Kazakhstan	5,064.09	24.27	0.65	
45	Italy (2011)	4,954.68	23.74	0.65	
46	Portugal (2011)	4,855.63	23.27	0.64	
47	Slovakia (2011)	4,716.15	22.60	0.63	
48	Greece (2011)	4,694.26	22.49	0.62	
49	Bosnia and Herzegovina	4,554.26	21.82	0.61	
50	Malaysia	4,411.55	21.13	0.60	
51	Poland (2011)	4,262.33	20.41	0.60	
52	Ukraine	4,111.27	19.69	0.59	
53	Venezuela, Bolivarian Rep.	4,102.39	19.64	0.58	
54	Chile (2011)	3,802.49	18.20	0.57	
55	Lebanon	3,714.42	17.78	0.56	
56	Belarus	3,677.03	17.60	0.56	
57	Hungary (2011)	3,635.01	17.40	0.55	
58	TFYR of Macedonia	3,523.30	16.86	0.54	
59	Uruguay	3,217.56	15.39	0.53	
60	Croatia	3,167.19	15.15	0.52	
61	Iran, Islamic Rep.	3,149.32	15.06	0.52	
62	China	3,118.66	14.91	0.51	
63	Argentina	3,099.80	14.82	0.50	
64	Turkey (2011)	3,092.00	14.79	0.49	
65	Latvia	2,958.48	14.14	0.48	
66	Romania	2,810.59	13.43	0.48	
67	Brazil	2,645.52	12.64	0.47	
68	Mexico (2011)	2,490.18	11.89	0.46	
69	Jordan	2,442.81	11.66	0.45	
70	Tajikistan	2,385.17	11.39	0.44	●
71	Albania	2,368.75	11.31	0.44	
72	Thailand	2,307.84	11.02	0.43	
73	Georgia	2,275.06	10.86	0.42	
74	Syrian Arab Republic	2,269.58	10.83	0.41	
75	Panama	2,128.41	10.15	0.40	
76	Kyrgyzstan	2,113.59	10.08	0.40	
77	Armenia	2,100.65	10.02	0.39	
78	Azerbaijan	2,067.40	9.86	0.38	
79	Costa Rica	2,056.65	9.81	0.37	
80	Uzbekistan	1,836.29	8.75	0.36	
81	Egypt	1,809.60	8.62	0.35	
82	Mongolia	1,623.55	7.73	0.35	
83	Dominican Republic	1,602.42	7.62	0.34	
84	Jamaica	1,553.33	7.39	0.33	
85	Tunisia	1,525.69	7.25	0.32	
86	Lithuania	1,504.22	7.15	0.31	
87	Algeria	1,284.47	6.09	0.31	
88	Peru	1,234.18	5.85	0.30	
89	Colombia	1,226.61	5.82	0.29	
90	Gabon	1,223.18	5.80	0.28	
91	Ecuador	1,222.39	5.80	0.27	
92	Viet Nam	1,091.59	5.17	0.27	
93	Moldova, Rep.	998.03	4.72	0.26	
94	El Salvador	966.07	4.56	0.25	
95	Honduras	886.05	4.18	0.24	
96	Zambia	874.48	4.12	0.23	
97	India	819.78	3.86	0.23	
98	Philippines	726.23	3.41	0.22	
99	Mozambique	712.53	3.34	0.21	
100	Indonesia	707.82	3.32	0.20	
101	Morocco	698.22	3.28	0.19	○
102	Bolivia, Plurinational St.	693.25	3.25	0.19	
103	Namibia	652.63	3.06	0.18	
104	Zimbabwe	643.68	3.01	0.17	
105	Nicaragua	631.95	2.96	0.16	
106	Guatemala	613.76	2.87	0.15	
107	Pakistan	544.12	2.53	0.15	
108	Sri Lanka	516.01	2.40	0.14	○
109	Ghana	342.97	1.57	0.13	
110	Yemen	322.54	1.47	0.12	
111	Côte d'Ivoire	303.60	1.38	0.11	
112	Cameroon	300.97	1.37	0.10	
113	Bangladesh	284.80	1.29	0.10	
114	Angola	275.47	1.24	0.09	
115	Senegal	239.50	1.07	0.08	○
116	Botswana	227.36	1.01	0.07	○
117	Kenya	185.16	0.81	0.06	○
118	Sudan	180.07	0.78	0.06	
119	Nigeria	164.88	0.71	0.05	○
120	Nepal	107.04	0.43	0.04	○
121	Tanzania, United Rep.	99.02	0.39	0.03	
122	Cambodia	70.30	0.26	0.02	○
123	Ethiopia	60.04	0.21	0.02	
124	Togo	21.56	0.02	0.01	○
125	Benin	16.95	0.00	0.00	○
n/a	Barbados	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	

SOURCE: International Energy Agency, *World Energy Balances* online data service (2010–11)

NOTE: ● indicates a strength; ○ a weakness.

3.2.2 Electricity consumption

Electricity consumption (kWh per capita) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Iceland (2011)	51,921.40	100.00	0.99	●
1	Norway (2011)	23,445.90	100.00	0.99	●
3	Kuwait	18,317.90	78.08	0.98	●
4	Finland (2011)	15,795.30	67.29	0.98	
5	Luxembourg (2011)	15,671.80	66.77	0.97	
6	Canada (2011)	15,473.80	65.92	0.96	
7	Qatar	14,995.50	63.87	0.95	●
8	Sweden (2011)	14,359.80	61.16	0.94	
9	United States of America (2011)	13,156.20	56.01	0.94	
10	United Arab Emirates	11,043.90	46.98	0.93	●
11	Korea, Rep. (2011)	10,236.30	43.53	0.92	
12	Bahrain	9,813.00	41.72	0.91	●
13	Australia (2011)	9,792.50	41.63	0.90	
14	New Zealand (2011)	9,375.40	39.85	0.90	
15	Brunei Darussalam	8,756.90	37.20	0.89	●
16	Austria (2011)	8,433.70	35.82	0.88	
17	Singapore	8,306.30	35.28	0.87	
18	Switzerland (2011)	8,074.60	34.29	0.86	
19	Belgium (2011)	8,005.30	33.99	0.85	
20	Saudi Arabia	7,967.00	33.83	0.85	●
21	Japan (2011)	7,945.40	33.73	0.84	
22	France (2011)	7,240.30	30.72	0.83	
23	Germany (2011)	7,188.60	30.50	0.82	
24	Netherlands (2011)	7,013.10	29.75	0.81	
25	Israel (2011)	6,829.60	28.96	0.81	
26	Slovenia (2011)	6,728.60	28.53	0.80	
27	Russian Federation	6,459.60	27.38	0.79	
28	Cyprus	6,425.90	27.24	0.78	
29	Czech Republic (2011)	6,275.60	26.60	0.77	
30	Estonia (2011)	6,182.10	26.20	0.77	
31	Denmark (2011)	6,068.40	25.71	0.76	
32	Spain (2011)	5,968.40	25.28	0.75	
33	Oman	5,933.50	25.13	0.74	●
34	Hong Kong (China)	5,923.30	25.09	0.73	
35	Trinidad and Tobago	5,896.30	24.97	0.73	
36	Ireland (2011)	5,661.10	23.97	0.72	
37	Montenegro	5,551.50	23.50	0.71	
38	United Kingdom (2011)	5,523.30	23.38	0.70	
39	Italy (2011)	5,401.50	22.86	0.69	
40	South Africa	4,802.60	20.30	0.69	
41	Portugal (2011)	4,773.60	20.18	0.68	
42	Slovakia (2011)	4,764.40	20.14	0.67	
43	Kazakhstan	4,729.70	19.99	0.66	
44	Greece (2011)	4,670.40	19.73	0.65	
45	Bulgaria	4,471.30	18.88	0.65	
46	Serbia	4,357.90	18.40	0.64	
47	Malta	4,181.60	17.64	0.63	
48	Malaysia	4,117.40	17.37	0.62	
49	Hungary (2011)	3,921.10	16.53	0.61	
50	Poland (2011)	3,825.50	16.12	0.60	
51	Croatia	3,808.30	16.05	0.60	
52	TFYR of Macedonia	3,590.00	15.12	0.59	
53	Lebanon	3,568.60	15.02	0.58	
54	Belarus	3,563.50	15.00	0.57	
55	Chile (2011)	3,557.00	14.97	0.56	
56	Ukraine	3,549.80	14.94	0.56	
57	Venezuela, Bolivarian Rep.	3,286.60	13.82	0.55	
58	Lithuania	3,237.00	13.61	0.54	
59	Bosnia and Herzegovina	3,109.80	13.06	0.53	
60	Latvia	3,020.50	12.68	0.52	
61	China	2,942.30	12.35	0.52	
62	Argentina	2,904.50	12.18	0.51	
63	Uruguay	2,762.90	11.58	0.50	
64	Turkey (2011)	2,695.30	11.29	0.49	
65	Iran, Islamic Rep.	2,652.30	11.11	0.48	
66	Romania	2,391.90	9.99	0.48	
67	Brazil	2,383.70	9.96	0.47	
68	Thailand	2,243.40	9.36	0.46	
69	Jordan	2,225.60	9.28	0.45	
70	Mexico (2011)	2,078.40	8.65	0.44	
71	Tajikistan	2,004.40	8.34	0.44	
72	Syrian Arab Republic	1,905.30	7.91	0.43	
73	Costa Rica	1,855.10	7.70	0.42	
74	Panama	1,832.20	7.60	0.41	
75	Albania	1,770.60	7.34	0.40	
76	Georgia	1,742.90	7.22	0.40	
77	Uzbekistan	1,671.70	6.91	0.39	
78	Egypt	1,607.90	6.64	0.38	
79	Armenia	1,606.40	6.64	0.37	
80	Azerbaijan	1,604.60	6.63	0.36	
81	Botswana	1,586.40	6.55	0.35	
82	Mongolia	1,530.10	6.31	0.35	
83	Namibia	1,478.80	6.09	0.34	
84	Dominican Republic	1,442.20	5.93	0.33	
85	Kyrgyzstan	1,396.10	5.74	0.32	
86	Tunisia	1,350.00	5.54	0.31	
87	Jamaica	1,222.40	4.99	0.31	
88	Paraguay	1,133.80	4.61	0.30	
89	Peru	1,105.50	4.49	0.29	
90	Ecuador	1,055.00	4.28	0.28	
91	Moldova, Rep.	1,049.10	4.25	0.27	
92	Viet Nam	1,034.60	4.19	0.27	
93	Algeria	1,026.30	4.16	0.26	
94	Zimbabwe	1,022.20	4.14	0.25	
95	Colombia	1,012.40	4.10	0.24	○
96	Gabon	1,004.70	4.06	0.23	
97	El Salvador	855.20	3.42	0.23	
98	Morocco	781.10	3.11	0.22	
99	Honduras	670.70	2.64	0.21	
100	India	644.50	2.52	0.20	
101	Philippines	642.70	2.52	0.19	
102	Indonesia	641.30	2.51	0.19	
103	Zambia	623.20	2.43	0.18	
104	Bolivia, Plurinational St.	616.40	2.40	0.17	
105	Guatemala	567.30	2.19	0.16	
106	Nicaragua	473.20	1.79	0.15	
107	Pakistan	456.60	1.72	0.15	
108	Sri Lanka	444.70	1.67	0.14	○
109	Mozambique	443.70	1.66	0.13	
110	Ghana	297.80	1.04	0.12	
111	Bangladesh	278.90	0.96	0.11	
112	Cameroon	271.40	0.93	0.10	
113	Yemen	248.60	0.83	0.10	
114	Angola	247.90	0.83	0.09	
115	Côte d'Ivoire	209.60	0.66	0.08	
116	Senegal	195.30	0.60	0.07	○
117	Kenya	156.00	0.43	0.06	○
118	Cambodia	146.10	0.39	0.06	
119	Sudan	140.70	0.37	0.05	
120	Nigeria	136.50	0.35	0.04	○
121	Togo	112.60	0.25	0.03	○
122	Benin	99.20	0.19	0.02	○
123	Nepal	92.70	0.16	0.02	○
124	Tanzania, United Rep.	77.90	0.10	0.01	○
125	Ethiopia	54.30	0.00	0.00	○
n/a	Barbados	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	

SOURCE: International Energy Agency, *World Energy Balances* online data service (2010–11)

NOTE: ● indicates a strength; ○ a weakness.

3.2.3 Logistics performance

Logistics Performance Index | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Singapore	4.13	78.25	1.00	●
2	Hong Kong (China)	4.12	78.00	0.99	●
3	Finland	4.05	76.25	0.99	●
4	Germany	4.03	75.75	0.98	●
5	Denmark	4.02	75.50	0.96	●
5	Netherlands	4.02	75.50	0.96	
7	Belgium	3.98	74.50	0.96	●
8	Japan	3.93	73.25	0.94	
8	United States of America	3.93	73.25	0.94	
10	United Kingdom	3.90	72.50	0.93	
11	Austria	3.89	72.25	0.93	●
12	Canada	3.85	71.25	0.90	
12	France	3.85	71.25	0.90	
12	Sweden	3.85	71.25	0.90	
15	Luxembourg	3.82	70.50	0.90	
16	Switzerland	3.80	70.00	0.89	
17	United Arab Emirates	3.78	69.50	0.88	
18	Australia	3.73	68.25	0.87	
19	Korea, Rep.	3.70	67.50	0.86	
19	Spain	3.70	67.50	0.86	
21	Norway	3.68	67.00	0.85	
22	Italy	3.67	66.75	0.84	
22	South Africa	3.67	66.75	0.84	●
24	China	3.52	63.00	0.82	
24	Ireland	3.52	63.00	0.82	
26	Turkey	3.51	62.75	0.81	●
27	Portugal	3.50	62.50	0.81	
28	Malaysia	3.49	62.25	0.80	
29	Poland	3.43	60.75	0.79	
30	New Zealand	3.42	60.50	0.79	
31	Israel (2010)	3.41	60.25	0.78	
32	Iceland	3.39	59.75	0.77	
33	Qatar	3.32	58.00	0.76	
34	Slovenia	3.29	57.25	0.76	
35	Cyprus	3.24	56.00	0.75	
36	Bulgaria	3.21	55.25	0.74	
37	Saudi Arabia	3.18	54.50	0.73	
37	Thailand	3.18	54.50	0.73	
39	Chile	3.17	54.25	0.70	
39	Hungary	3.17	54.25	0.70	
39	Tunisia	3.17	54.25	0.70	
42	Croatia	3.16	54.00	0.69	
42	Malta	3.16	54.00	0.69	
44	Czech Republic	3.14	53.50	0.68	
45	Brazil	3.13	53.25	0.67	
46	India	3.08	52.00	0.67	
47	Mexico	3.06	51.50	0.66	
48	Argentina	3.05	51.25	0.64	
48	Bahrain	3.05	51.25	0.64	
50	Morocco	3.03	50.75	0.63	●
50	Slovakia	3.03	50.75	0.63	
52	Philippines	3.02	50.50	0.62	
53	Romania	3.00	50.00	0.61	
53	Viet Nam	3.00	50.00	0.61	
55	Bosnia and Herzegovina	2.99	49.75	0.60	
56	Egypt	2.98	49.50	0.59	●
56	Uruguay	2.98	49.50	0.59	
58	Lithuania	2.95	48.75	0.58	
59	Indonesia	2.94	48.50	0.56	
59	Peru	2.94	48.50	0.56	
61	Panama	2.93	48.25	0.56	
62	Oman	2.89	47.25	0.54	
62	Yemen	2.89	47.25	0.54	●
64	Colombia	2.87	46.75	0.53	
65	Estonia	2.86	46.50	0.53	
66	Benin	2.85	46.25	0.51	●
66	Ukraine	2.85	46.25	0.51	
68	Botswana	2.84	46.00	0.50	
69	Greece	2.83	45.75	0.48	
69	Kuwait	2.83	45.75	0.48	
69	Pakistan	2.83	45.75	0.48	
72	Mauritius	2.82	45.50	0.47	
72	Uganda (2010)	2.82	45.50	0.47	
74	Malawi	2.81	45.25	0.46	
75	Guatemala	2.80	45.00	0.44	
75	Serbia	2.80	45.00	0.44	
77	Latvia	2.78	44.50	0.44	
78	Albania	2.77	44.25	0.42	
78	Georgia	2.77	44.25	0.42	
80	Ecuador	2.76	44.00	0.41	
81	Costa Rica	2.75	43.75	0.40	
81	Sri Lanka	2.75	43.75	0.40	
83	Bangladesh (2010)	2.74	43.50	0.39	
84	Côte d'Ivoire	2.73	43.25	0.39	●
85	Madagascar	2.72	43.00	0.38	
86	Dominican Republic	2.70	42.50	0.37	
87	Kazakhstan	2.69	42.25	0.36	
87	Niger	2.69	42.25	0.36	
89	Namibia	2.65	41.25	0.34	
89	Tanzania, United Rep.	2.65	41.25	0.34	
91	Belarus	2.61	40.25	0.33	
91	Bolivia, Plurinational St.	2.61	40.25	0.33	
93	El Salvador	2.60	40.00	0.31	
93	Syrian Arab Republic	2.60	40.00	0.31	
95	Lebanon	2.58	39.50	0.29	
95	Russian Federation	2.58	39.50	0.29	
95	Togo	2.58	39.50	0.29	
98	Armenia	2.56	39.00	0.26	
98	Cambodia	2.56	39.00	0.26	
98	Jordan	2.56	39.00	0.26	○
98	TFYR of Macedonia	2.56	39.00	0.26	
102	Zimbabwe	2.55	38.75	0.25	
103	Nicaragua (2010)	2.54	38.50	0.24	
104	Cameroon	2.53	38.25	0.23	
104	Honduras	2.53	38.25	0.23	
106	Ghana	2.51	37.75	0.22	
107	Iran, Islamic Rep.	2.49	37.25	0.20	
107	Senegal	2.49	37.25	0.20	
107	Venezuela, Bolivarian Rep.	2.49	37.25	0.20	
110	Azerbaijan	2.48	37.00	0.18	
110	Guinea	2.48	37.00	0.18	
110	Paraguay	2.48	37.00	0.18	
113	Gambia	2.46	36.50	0.16	
113	Uzbekistan	2.46	36.50	0.16	
115	Montenegro	2.45	36.25	0.15	○
115	Nigeria	2.45	36.25	0.15	
117	Kenya	2.43	35.75	0.14	
118	Fiji	2.42	35.50	0.13	○
118	Jamaica	2.42	35.50	0.13	○
120	Algeria	2.41	35.25	0.12	
121	Kyrgyzstan	2.35	33.75	0.11	
122	Gabon	2.34	33.50	0.10	
123	Guyana	2.33	33.25	0.09	○
123	Moldova, Rep.	2.33	33.25	0.09	○
125	Burkina Faso	2.32	33.00	0.08	
126	Mozambique (2010)	2.29	32.25	0.07	
127	Angola	2.28	32.00	0.05	
127	Tajikistan	2.28	32.00	0.05	
127	Zambia (2010)	2.28	32.00	0.05	
130	Mali (2010)	2.27	31.75	0.04	
130	Rwanda	2.27	31.75	0.04	
132	Mongolia	2.25	31.25	0.03	○
133	Ethiopia	2.24	31.00	0.01	○
133	Lesotho	2.24	31.00	0.01	○
135	Sudan	2.10	27.50	0.01	○
136	Nepal	2.04	26.00	0.00	○
n/a	Barbados	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	

SOURCE: World Bank and Turku School of Economics, *Logistics Performance Index 2012*; Arvis et al., 2012, *Connecting to Compete 2012* (2010–12)

NOTE: ● indicates a strength; ○ a weakness.

3.2.4 Gross capital formation

Gross capital formation (% of GDP) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Mongolia	64.46	100.00	1.00	●
2	China	47.78	69.51	0.99	●
3	Lesotho	43.42	61.54	0.99	●
4	Niger	41.43	57.90	0.98	●
5	Tanzania, United Rep.	40.02	55.32	0.97	●
6	Iran, Islamic Rep.	38.36	52.29	0.96	●
7	Algeria	38.11	51.84	0.96	●
8	Guinea	37.27	50.30	0.95	●
9	India	36.00	47.97	0.94	●
10	Morocco	35.02	46.18	0.94	●
11	Indonesia	34.90	45.96	0.93	●
12	Nicaragua	34.31	44.89	0.92	●
13	Viet Nam	34.09	44.49	0.91	●
14	Cape Verde	33.90	44.13	0.91	●
15	Belarus	32.46	41.51	0.90	●
16	Namibia	32.39	41.38	0.89	●
17	Thailand	31.28	39.34	0.89	●
18	Oman	31.08	38.98	0.88	●
19	Senegal	30.98	38.79	0.87	●
20	Uzbekistan	30.85	38.56	0.86	●
21	Armenia	30.72	38.33	0.86	●
22	Nepal	29.21	35.56	0.85	●
23	Sri Lanka	29.19	35.52	0.84	●
24	Korea, Rep.	29.04	35.25	0.84	
25	Romania	28.87	34.94	0.83	●
26	Ecuador	28.82	34.85	0.82	●
27	Australia	28.42	34.11	0.81	
28	Gabon	28.26	33.82	0.81	●
29	Panama	28.00	33.35	0.80	●
30	Latvia	27.13	31.76	0.79	
31	Uganda	26.87	31.28	0.79	●
32	Mauritius	26.70	30.97	0.78	●
33	Honduras	26.67	30.92	0.77	●
34	Bahrain	26.56	30.72	0.76	
35	Georgia	26.23	30.12	0.76	
36	Ethiopia	26.22	30.09	0.75	●
37	Qatar	26.04	29.77	0.74	
38	Botswana	25.81	29.34	0.74	●
39	Bangladesh	25.75	29.25	0.73	●
40	Chile	25.65	29.06	0.72	
41	Tunisia	25.60	28.96	0.71	
42	Estonia	25.24	28.31	0.71	
43	Moldova, Rep.	25.21	28.25	0.70	
44	Peru	25.19	28.21	0.69	
45	Zimbabwe	25.08	28.00	0.69	●
46	Mozambique	25.00	27.87	0.68	●
47	Kyrgyzstan	24.96	27.80	0.67	●
48	Zambia	24.87	27.63	0.66	●
49	Mexico	24.86	27.61	0.66	
50	Jamaica	24.78	27.46	0.65	●
51	Lebanon	24.66	27.25	0.64	
52	Venezuela, Bolivarian Rep.	24.43	26.82	0.64	●
53	Albania	24.26	26.51	0.63	
54	Jordan	24.25	26.49	0.62	
55	Argentina	24.22	26.43	0.61	
56	Syrian Arab Republic (2010)	24.20	26.40	0.61	●
57	Bulgaria	24.14	26.29	0.60	
58	Czech Republic	24.12	26.25	0.59	
59	Malaysia	24.00	26.04	0.58	
59	Norway	24.00	26.04	0.58	○
61	Rwanda	23.78	25.64	0.57	●
62	Canada	23.69	25.47	0.56	○
63	Russian Federation	23.54	25.20	0.56	
64	Cambodia	23.50	25.13	0.55	●
65	Madagascar	23.37	24.89	0.54	●
66	United Arab Emirates	23.33	24.81	0.54	
67	Hong Kong (China)	23.29	24.74	0.53	
68	Kazakhstan	23.13	24.46	0.52	
69	Colombia	23.13	24.44	0.51	
70	Austria	22.97	24.15	0.51	○
71	Singapore	22.91	24.05	0.50	○
72	Luxembourg	22.53	23.35	0.49	
73	Kenya	22.29	22.91	0.49	
74	Nigeria	22.18	22.70	0.48	
75	Switzerland	21.89	22.19	0.47	○
76	Slovakia	21.81	22.04	0.46	
77	Croatia	21.80	22.01	0.46	
78	Gambia	21.42	21.33	0.45	
79	Belgium	21.16	20.85	0.44	○
80	Saudi Arabia	21.15	20.84	0.44	
81	Togo	21.14	20.80	0.43	●
82	Philippines	21.11	20.75	0.42	
83	Poland	20.96	20.48	0.41	
84	South Africa	20.95	20.47	0.41	
85	Costa Rica	20.86	20.30	0.40	
86	Guyana	20.37	19.40	0.39	
87	Finland	20.32	19.32	0.39	○
88	Montenegro	20.30	19.27	0.38	
89	Japan	20.28	19.25	0.37	○
90	France	20.24	19.16	0.36	○
91	Brazil	20.19	19.08	0.36	
92	Bolivia, Plurinational St.	19.94	18.62	0.35	
93	Israel	19.94	18.62	0.34	○
94	Tajikistan	19.85	18.46	0.34	
95	Turkey	19.84	18.43	0.33	
96	Ghana	19.83	18.41	0.32	
97	New Zealand	19.79	18.35	0.31	○
98	Cameroon	19.71	18.20	0.31	
99	Spain	19.62	18.04	0.30	○
100	Uruguay	19.60	17.99	0.29	
101	Azerbaijan	19.43	17.69	0.29	
102	Benin	19.09	17.06	0.28	
103	Lithuania	19.03	16.96	0.27	
104	Belize	19.00	16.90	0.26	
105	Bosnia and Herzegovina	18.84	16.60	0.26	
106	Slovenia	18.76	16.46	0.25	○
107	Sudan	18.69	16.33	0.24	●
108	Ukraine	18.66	16.28	0.24	○
109	Serbia	18.61	16.18	0.23	○
110	Italy	18.37	15.75	0.22	○
111	Sweden	18.19	15.42	0.21	○
112	Germany	17.98	15.04	0.21	○
113	Burkina Faso	17.98	15.03	0.20	
114	Hungary	17.83	14.75	0.19	○
115	Kuwait	17.29	13.78	0.19	
116	Denmark	17.26	13.72	0.18	○
117	Egypt	17.23	13.66	0.17	
118	Dominican Republic	17.21	13.62	0.16	○
119	Netherlands	16.94	13.13	0.16	○
120	Fiji	16.71	12.72	0.15	
121	Malawi	16.48	12.29	0.14	
122	Barbados	16.25	11.88	0.14	○
123	United States of America	16.22	11.82	0.13	○
124	Portugal	15.94	11.30	0.12	○
125	Iceland	15.52	10.53	0.11	○
126	Trinidad and Tobago	15.26	10.05	0.11	
127	United Kingdom	14.75	9.13	0.10	○
128	El Salvador	14.54	8.74	0.09	
129	Guatemala	14.42	8.53	0.09	
130	Brunei Darussalam	13.87	7.52	0.08	○
131	Paraguay	13.79	7.37	0.07	
132	Mali	13.67	7.15	0.06	
133	Cyprus	13.31	6.50	0.06	○
134	Malta	12.96	5.85	0.05	○
135	Greece	12.91	5.76	0.04	○
136	Pakistan	12.52	5.06	0.04	○
137	Côte d'Ivoire	12.12	4.32	0.03	○
138	Angola	11.65	3.47	0.02	○
139	Yemen	11.28	2.79	0.01	
140	Swaziland	10.51	1.38	0.01	○
141	Ireland	9.76	0.00	0.00	○
n/a	TFYR of Macedonia	n/a	n/a	n/a	

SOURCE: International Monetary Fund, *World Economic Outlook 2012* database (2010–12)

NOTE: ● indicates a strength; ○ a weakness.

3.3.1 GDP per unit of energy use

GDP per unit of energy use (2000 PPP$ per kg of oil equivalent) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Hong Kong (China)	21.37	100.00	1.00	●
2	Peru	12.82	59.34	0.99	●
3	Colombia	12.20	56.36	0.98	●
4	Ireland (2011)	12.00	55.46	0.98	●
5	Albania	11.82	54.58	0.97	●
6	Switzerland (2011)	11.74	54.18	0.96	
7	Panama	11.38	52.47	0.95	●
8	Malta	11.33	52.22	0.94	●
9	Botswana	11.05	50.91	0.94	●
10	United Kingdom (2011)	10.76	49.55	0.93	
11	Costa Rica	10.40	47.80	0.91	●
11	Uruguay	10.40	47.80	0.91	●
13	Denmark (2011)	10.31	47.39	0.90	
14	Dominican Republic	9.98	45.82	0.90	●
15	Italy (2011)	9.96	45.73	0.89	●
16	Spain (2011)	9.94	45.63	0.88	●
17	Portugal (2011)	9.79	44.94	0.87	●
18	Sri Lanka	9.62	44.13	0.86	●
19	Greece (2011)	9.61	44.04	0.85	●
20	Gabon	9.52	43.65	0.85	●
21	Austria (2011)	9.38	42.97	0.83	
21	Tunisia	9.38	42.97	0.83	●
23	Germany (2011)	9.17	41.95	0.82	
24	El Salvador	8.83	40.37	0.81	●
25	Turkey (2011)	8.67	39.60	0.81	●
26	Ecuador	8.61	39.32	0.80	●
27	Cyprus	8.53	38.94	0.78	
27	Israel (2011)	8.53	38.94	0.78	
29	Luxembourg (2011)	8.53	38.90	0.77	
30	Japan (2011)	8.44	38.49	0.77	
31	Croatia	8.35	38.09	0.76	
32	Morocco	8.32	37.92	0.75	●
33	Lebanon	8.27	37.69	0.74	
34	Namibia	8.26	37.66	0.73	●
35	Philippines	8.20	37.37	0.73	●
36	Singapore	8.05	36.65	0.72	
37	Netherlands (2011)	8.02	36.49	0.71	
38	Yemen	7.97	36.28	0.70	●
39	Mexico (2011)	7.82	35.54	0.69	
40	Montenegro	7.80	35.45	0.68	
40	Norway (2011)	7.80	35.45	0.68	
42	Argentina	7.78	35.34	0.66	
42	France (2011)	7.78	35.34	0.66	
44	Angola	7.75	35.19	0.65	●
45	Chile (2011)	7.61	34.55	0.65	
46	Brazil	7.38	33.45	0.63	
46	Lithuania	7.38	33.45	0.63	
48	Bangladesh	7.13	32.25	0.62	●
49	Slovenia (2011)	7.08	32.01	0.61	
50	Australia (2011)	7.03	31.80	0.60	
51	Hungary (2011)	6.88	31.08	0.60	
52	Azerbaijan	6.82	30.77	0.59	
53	Poland (2011)	6.74	30.40	0.58	
54	Sweden (2011)	6.71	30.25	0.57	○
55	Romania	6.70	30.21	0.56	
56	Slovakia (2011)	6.67	30.06	0.56	
57	Algeria	6.61	29.79	0.55	●
58	Latvia	6.57	29.62	0.54	
59	TFYR of Macedonia	6.56	29.54	0.53	
60	Belgium (2011)	6.51	29.32	0.52	○
61	Georgia	6.50	29.25	0.52	
62	Senegal	6.38	28.70	0.51	
63	New Zealand (2011)	6.32	28.40	0.50	○
64	Paraguay	6.27	28.15	0.49	
65	Armenia	6.20	27.82	0.48	
66	Egypt	6.14	27.55	0.48	
67	Jamaica	6.09	27.32	0.47	
68	Guatemala	6.02	26.98	0.46	
69	United States of America (2011)	6.01	26.95	0.45	
70	Bolivia, Plurinational St.	5.90	26.41	0.44	
71	Czech Republic (2011)	5.89	26.38	0.44	○
72	Honduras	5.85	26.20	0.43	
73	Tajikistan	5.78	25.86	0.42	
74	Cameroon	5.68	25.34	0.41	●
75	Brunei Darussalam	5.56	24.77	0.40	
76	Cambodia	5.54	24.68	0.40	
77	Sudan	5.46	24.30	0.39	●
78	India	5.43	24.18	0.38	
79	Korea, Rep. (2011)	5.31	23.62	0.37	○
80	Malaysia	5.17	22.92	0.36	○
81	United Arab Emirates	5.12	22.70	0.35	○
82	Finland (2011)	5.07	22.47	0.35	○
83	Pakistan	4.95	21.88	0.34	
84	Bulgaria	4.85	21.43	0.33	
85	Nicaragua	4.82	21.28	0.32	
86	Canada (2011)	4.81	21.23	0.31	○
87	Thailand	4.52	19.83	0.31	
88	Qatar	4.50	19.74	0.30	
89	Serbia	4.49	19.69	0.29	
90	Indonesia	4.48	19.65	0.28	
91	Syrian Arab Republic	4.46	19.56	0.27	
92	Jordan	4.33	18.94	0.27	
93	Estonia (2011)	4.32	18.89	0.26	○
94	Bosnia and Herzegovina	4.31	18.86	0.25	
95	Belarus	4.28	18.68	0.24	○
96	Viet Nam	4.22	18.42	0.23	○
97	Venezuela, Bolivarian Rep.	4.11	17.90	0.23	
98	Ghana	3.86	16.70	0.22	
99	Moldova, Rep.	3.82	16.51	0.21	
100	Kyrgyzstan	3.75	16.18	0.20	
101	China	3.71	16.01	0.19	○
102	Iran, Islamic Rep.	3.71	15.99	0.19	
103	Kuwait	3.68	15.87	0.18	
104	Côte d'Ivoire	3.51	15.06	0.17	
105	South Africa	3.46	14.81	0.16	○
106	Benin	3.45	14.75	0.15	
107	Oman	3.43	14.64	0.15	
108	Saudi Arabia	3.30	14.06	0.14	○
109	Nepal	3.15	13.34	0.13	
110	Kenya	3.07	12.94	0.12	○
111	Mongolia	3.05	12.83	0.11	○
112	Nigeria	2.99	12.58	0.10	
113	Russian Federation	2.87	11.97	0.10	○
114	Tanzania, United Rep.	2.80	11.67	0.09	
115	Bahrain	2.74	11.37	0.08	○
116	Kazakhstan	2.38	9.64	0.07	○
117	Ethiopia	2.33	9.44	0.06	
118	Zambia	2.23	8.96	0.06	
119	Ukraine	2.12	8.42	0.05	○
120	Togo	2.01	7.89	0.04	○
121	Mozambique	1.94	7.56	0.03	
122	Iceland (2011)	1.87	7.25	0.02	○
123	Uzbekistan	1.80	6.89	0.02	○
124	Trinidad and Tobago	1.45	5.24	0.01	○
125	Zimbabwe	0.35	0.00	0.00	○
n/a	Barbados	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	

SOURCE: International Energy Agency, *World Energy Balances* online data service (2010–11)

NOTE: ● indicates a strength; ○ a weakness.

3.3.2 Environmental performance

Environmental Performance Index | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Switzerland	76.69	76.69	1.00	●
2	Latvia	70.37	70.37	0.99	●
3	Norway	69.92	69.92	0.98	●
4	Luxembourg	69.20	69.20	0.98	●
5	Costa Rica	69.03	69.03	0.97	●
6	France	69.00	69.00	0.96	●
7	Austria	68.92	68.92	0.95	●
8	Italy	68.90	68.90	0.94	●
9	United Kingdom	68.82	68.82	0.93	
10	Sweden	68.82	68.82	0.93	
11	Germany	66.91	66.91	0.92	
12	Slovakia	66.62	66.62	0.91	●
13	Iceland	66.28	66.28	0.90	
14	New Zealand	66.05	66.05	0.89	
15	Albania	65.85	65.85	0.88	●
16	Netherlands	65.65	65.65	0.88	
17	Lithuania	65.50	65.50	0.87	●
18	Czech Republic	64.79	64.79	0.86	
19	Finland	64.44	64.44	0.85	
20	Croatia	64.16	64.16	0.84	●
21	Denmark	63.61	63.61	0.83	
22	Poland	63.47	63.47	0.83	●
23	Japan	63.36	63.36	0.82	
24	Belgium	63.02	63.02	0.81	
25	Malaysia	62.51	62.51	0.80	
26	Brunei Darussalam	62.49	62.49	0.79	●
27	Colombia	62.33	62.33	0.79	●
28	Slovenia	62.25	62.25	0.78	
29	Brazil	60.90	60.90	0.77	●
30	Ecuador	60.55	60.55	0.76	●
31	Spain	60.31	60.31	0.75	
32	Greece	60.04	60.04	0.74	
33	Thailand	59.98	59.98	0.74	
34	Nicaragua	59.23	59.23	0.73	●
35	Ireland	58.69	58.69	0.72	
36	Canada	58.41	58.41	0.71	
37	Nepal	57.97	57.97	0.70	●
38	Panama	57.94	57.94	0.69	
39	Gabon	57.91	57.91	0.69	●
40	Portugal	57.64	57.64	0.68	
41	Philippines	57.40	57.40	0.67	
42	Korea, Rep.	57.20	57.20	0.66	
43	Cyprus	57.15	57.15	0.65	
44	Hungary	57.12	57.12	0.64	
45	Uruguay	57.06	57.06	0.64	
46	Georgia	56.84	56.84	0.63	
47	Australia	56.61	56.61	0.62	
48	United States of America	56.59	56.59	0.61	
49	Argentina	56.48	56.48	0.60	
50	Singapore	56.36	56.36	0.60	
51	Bulgaria	56.28	56.28	0.59	
52	Estonia	56.09	56.09	0.58	
53	Sri Lanka	55.72	55.72	0.57	
54	Venezuela, Bolivarian Rep.	55.62	55.62	0.56	
55	Zambia	55.56	55.56	0.55	
56	Chile	55.34	55.34	0.55	
57	Cambodia	55.29	55.29	0.54	●
58	Egypt	55.18	55.18	0.53	
59	Israel	54.64	54.64	0.52	
60	Bolivia, Plurinational St.	54.57	54.57	0.51	
61	Jamaica	54.36	54.36	0.50	
62	Tanzania, United Rep.	54.26	54.26	0.50	
63	Belarus	53.88	53.88	0.49	
64	Botswana	53.74	53.74	0.48	
65	Côte d'Ivoire	53.55	53.55	0.47	●
66	Zimbabwe	52.76	52.76	0.46	
67	Ethiopia	52.71	52.71	0.45	
68	Honduras	52.54	52.54	0.45	
69	Dominican Republic	52.44	52.44	0.44	
70	Paraguay	52.40	52.40	0.43	
71	Indonesia	52.29	52.29	0.42	
72	El Salvador	52.08	52.08	0.41	
73	Guatemala	51.88	51.88	0.40	
74	United Arab Emirates	50.91	50.91	0.40	
75	Namibia	50.68	50.68	0.39	
76	Viet Nam	50.64	50.64	0.38	
77	Benin	50.38	50.38	0.37	●
78	Peru	50.29	50.29	0.36	
79	Saudi Arabia	49.97	49.97	0.36	
80	Kenya	49.28	49.28	0.35	
81	Mexico	49.11	49.11	0.34	
82	Togo	48.66	48.66	0.33	
83	Algeria	48.56	48.56	0.32	
84	Malta	48.51	48.51	0.31	
85	Romania	48.34	48.34	0.31	
86	Mozambique	47.82	47.82	0.30	
87	Angola	47.57	47.57	0.29	●
88	Ghana	47.50	47.50	0.28	
89	Armenia	47.48	47.48	0.27	
90	Lebanon	47.35	47.35	0.26	
91	Trinidad and Tobago	47.04	47.04	0.26	
92	TFYR of Macedonia	46.96	46.96	0.25	
93	Senegal	46.73	46.73	0.24	
94	Tunisia	46.66	46.66	0.23	○
95	Qatar	46.59	46.59	0.22	
96	Kyrgyzstan	46.33	46.33	0.21	
97	Ukraine	46.31	46.31	0.21	○
98	Serbia	46.14	46.14	0.20	○
99	Sudan	46.00	46.00	0.19	
100	Morocco	45.76	45.76	0.18	○
101	Russian Federation	45.43	45.43	0.17	○
102	Mongolia	45.37	45.37	0.17	
103	Moldova, Rep.	45.21	45.21	0.16	○
104	Turkey	44.80	44.80	0.15	○
105	Oman	44.00	44.00	0.14	
106	Azerbaijan	43.11	43.11	0.13	
107	Cameroon	42.97	42.97	0.12	
108	Syrian Arab Republic	42.75	42.75	0.12	
109	Iran, Islamic Rep.	42.73	42.73	0.11	○
110	Bangladesh	42.55	42.55	0.10	
111	China	42.24	42.24	0.09	○
112	Jordan	42.16	42.16	0.08	○
113	Nigeria	40.14	40.14	0.07	
114	Pakistan	39.56	39.56	0.07	
115	Tajikistan	38.78	38.78	0.06	
116	Bosnia and Herzegovina	36.76	36.76	0.05	○
117	India	36.23	36.23	0.04	○
118	Kuwait	35.54	35.54	0.03	○
119	Yemen	35.49	35.49	0.02	
120	South Africa	34.55	34.55	0.02	○
121	Kazakhstan	32.94	32.94	0.01	○
122	Uzbekistan	32.24	32.24	0.00	○
n/a	Bahrain	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Hong Kong (China)	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	

SOURCE: Yale University and Columbia University *Environmental Performance Index 2012*

NOTE: ● indicates a strength; ○ a weakness.

3.3.3 ISO 14001 environmental certificates

ISO 14001 Environmental management systems—Requirements with guidance for use: Number of certificates issued (per billion PPP$ GDP) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Romania	35.77	100.00	0.99	●
1	Czech Republic	15.62	100.00	0.99	●
1	Estonia	13.11	100.00	0.99	●
4	Spain	11.62	88.67	0.98	●
5	Lithuania	11.41	87.05	0.97	●
6	Italy	11.38	86.77	0.96	●
7	Sweden	10.52	80.26	0.96	
8	Bulgaria	9.18	69.96	0.95	●
9	Slovakia	9.08	69.21	0.94	●
10	Hungary	8.08	61.57	0.93	●
11	China	7.26	55.31	0.93	
12	Latvia	7.16	54.61	0.92	●
13	Slovenia	7.10	54.12	0.91	●
14	Korea, Rep.	7.03	53.58	0.90	
15	Switzerland	6.85	52.18	0.90	
16	Japan	6.84	52.13	0.89	
17	United Kingdom	6.66	50.73	0.88	
18	Serbia	6.60	50.32	0.87	●
19	Croatia	6.15	46.89	0.87	●
20	Finland	6.02	45.83	0.86	
21	Denmark	4.83	36.74	0.85	
22	Singapore	4.78	36.41	0.84	
23	Bosnia and Herzegovina	4.69	35.69	0.84	●
24	Cyprus	4.51	34.34	0.83	
25	Thailand	4.36	33.17	0.82	
26	TFYR of Macedonia	4.22	32.09	0.81	●
27	Malaysia	4.17	31.74	0.81	
28	Ireland	3.54	26.95	0.80	
29	France	3.51	26.70	0.79	
30	Montenegro	3.49	26.57	0.78	
31	Portugal	3.36	25.58	0.78	
32	United Arab Emirates	3.05	23.20	0.77	
33	Norway	3.00	22.81	0.76	
34	Hong Kong (China)	2.80	21.29	0.75	
35	Colombia	2.79	21.20	0.75	
36	Austria	2.75	20.91	0.74	
37	Poland	2.46	18.71	0.73	
38	Netherlands	2.40	18.19	0.72	
39	Uruguay	2.22	16.84	0.72	
40	Chile	2.06	15.62	0.71	
41	Australia	2.06	15.60	0.70	
42	Israel	2.04	15.49	0.69	
43	Germany	2.01	15.22	0.69	
44	Greece	1.85	14.00	0.68	
45	Belgium	1.75	13.25	0.67	
46	Viet Nam	1.67	12.62	0.66	
47	Malta	1.66	12.58	0.66	
48	South Africa	1.54	11.68	0.65	
49	Brazil	1.53	11.60	0.64	
50	New Zealand	1.46	11.00	0.63	
51	Philippines	1.38	10.45	0.63	
52	Costa Rica	1.33	10.02	0.62	
53	Bahrain	1.31	9.89	0.61	
54	Jordan	1.30	9.81	0.60	
55	Turkey	1.21	9.11	0.60	
56	Canada	1.17	8.85	0.59	
57	Argentina	1.09	8.25	0.58	
58	Belize	1.08	8.11	0.57	
59	Egypt	1.01	7.63	0.57	
60	Brunei Darussalam	1.00	7.51	0.56	
61	India	0.94	7.05	0.55	
62	Zimbabwe	0.93	6.97	0.54	
63	Bolivia, Plurinational St.	0.90	6.78	0.54	
64	Ecuador	0.89	6.66	0.53	
65	Peru	0.82	6.16	0.52	
66	Iceland	0.81	6.04	0.51	
67	Indonesia	0.78	5.82	0.51	
68	Sri Lanka	0.77	5.80	0.50	
69	Mauritius	0.73	5.43	0.49	
70	Tunisia	0.68	5.08	0.49	
71	Luxembourg	0.68	5.05	0.48	
72	Iran, Islamic Rep.	0.64	4.81	0.47	
73	Swaziland	0.64	4.79	0.46	
74	Trinidad and Tobago	0.64	4.79	0.46	
75	Pakistan	0.61	4.56	0.45	
76	Kazakhstan	0.61	4.54	0.44	
77	Mexico	0.52	3.88	0.43	
78	Oman	0.52	3.84	0.43	
79	Namibia	0.50	3.72	0.42	
80	Ukraine	0.49	3.60	0.41	
81	Fiji	0.48	3.57	0.40	
82	Qatar	0.48	3.55	0.40	
83	Kenya	0.46	3.43	0.39	
84	Dominican Republic	0.46	3.40	0.38	
85	Zambia	0.46	3.38	0.37	
86	Syrian Arab Republic (2010)	0.45	3.29	0.37	
87	Kuwait	0.44	3.27	0.36	
88	Albania	0.43	3.21	0.35	
89	Belarus	0.42	3.07	0.34	
90	Russian Federation	0.39	2.83	0.34	
91	Jamaica	0.37	2.69	0.33	
92	Honduras	0.34	2.45	0.32	
93	Moldova, Rep.	0.33	2.43	0.31	
94	United States of America	0.33	2.40	0.31	○
95	Nicaragua	0.32	2.32	0.30	
96	Barbados	0.29	2.09	0.29	
97	Senegal	0.28	2.01	0.28	
98	Uganda	0.27	1.97	0.28	
99	Nepal	0.26	1.89	0.27	
100	Lebanon	0.26	1.88	0.26	
101	Panama	0.26	1.85	0.25	
102	Algeria	0.25	1.80	0.25	
103	Mozambique	0.25	1.80	0.24	
104	El Salvador	0.25	1.77	0.23	
105	Paraguay	0.25	1.77	0.22	
106	Guatemala	0.24	1.72	0.22	
107	Saudi Arabia	0.24	1.71	0.21	○
108	Cambodia	0.24	1.69	0.20	
109	Morocco	0.23	1.66	0.19	
110	Armenia	0.22	1.59	0.19	○
111	Côte d'Ivoire	0.22	1.58	0.18	
112	Azerbaijan	0.21	1.53	0.17	
113	Guyana (2010)	0.18	1.29	0.16	
114	Niger	0.17	1.20	0.16	
115	Cameroon	0.17	1.18	0.15	
116	Botswana	0.17	1.17	0.14	○
117	Ethiopia (2009)	0.16	1.15	0.13	
118	Gabon	0.16	1.12	0.13	
119	Georgia	0.12	0.82	0.12	○
120	Venezuela, Bolivarian Rep.	0.12	0.79	0.11	
121	Uzbekistan	0.12	0.77	0.10	
122	Madagascar	0.10	0.63	0.10	
123	Malawi (2008)	0.09	0.59	0.09	
124	Mongolia (2010)	0.09	0.58	0.08	○
125	Guinea	0.09	0.55	0.07	
126	Kyrgyzstan	0.08	0.47	0.07	
127	Bangladesh	0.07	0.45	0.06	
128	Nigeria	0.07	0.42	0.05	○
129	Mali	0.06	0.31	0.04	
130	Burkina Faso	0.05	0.23	0.04	○
131	Sudan	0.04	0.23	0.03	
132	Ghana	0.03	0.09	0.02	○
133	Angola	0.03	0.08	0.01	○
134	Yemen (2010)	0.02	0.01	0.01	○
135	Tanzania, United Rep.	0.01	0.00	0.00	○
n/a	Benin	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	

SOURCE: International Organization for Standardization, *The ISO Survey of Certifications 2011*; International Monetary Fund, *World Economic Outlook 2012* (2008–11)

NOTE: ● indicates a strength; ○ a weakness.

4.1.1 Ease of getting credit

Ease of getting credit (distance to frontier) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Malaysia	100.00	100.00	0.99	●
1	South Africa	100.00	100.00	0.99	●
1	United Kingdom	100.00	100.00	0.99	●
4	Australia	93.80	93.80	0.93	
4	Georgia	93.80	93.80	0.93	●
4	Hong Kong (China)	93.80	93.80	0.93	
4	Latvia	93.80	93.80	0.93	●
4	Montenegro	93.80	93.80	0.93	●
4	New Zealand	93.80	93.80	0.93	●
4	Poland	93.80	93.80	0.93	●
4	United States of America	93.80	93.80	0.93	
12	Guatemala	87.50	87.50	0.86	●
12	Honduras	87.50	87.50	0.86	●
12	Ireland	87.50	87.50	0.86	
12	Israel	87.50	87.50	0.86	
12	Kenya	87.50	87.50	0.86	●
12	Korea, Rep.	87.50	87.50	0.86	
12	Kyrgyzstan	87.50	87.50	0.86	●
12	Romania	87.50	87.50	0.86	●
12	Singapore	87.50	87.50	0.86	
12	Zambia	87.50	87.50	0.86	●
22	Albania	81.30	81.30	0.74	●
22	Austria	81.30	81.30	0.74	
22	Canada	81.30	81.30	0.74	
22	Denmark	81.30	81.30	0.74	
22	Germany	81.30	81.30	0.74	
22	Ghana	81.30	81.30	0.74	●
22	India	81.30	81.30	0.74	
22	Japan	81.30	81.30	0.74	
22	TFYR of Macedonia	81.30	81.30	0.74	
22	Nigeria	81.30	81.30	0.74	●
22	Peru	81.30	81.30	0.74	●
22	Rwanda	81.30	81.30	0.74	●
22	Slovakia	81.30	81.30	0.74	
22	Switzerland	81.30	81.30	0.74	
22	Trinidad and Tobago	81.30	81.30	0.74	●
22	Ukraine	81.30	81.30	0.74	
38	Armenia	75.00	75.00	0.65	
38	Bulgaria	75.00	75.00	0.65	
38	Croatia	75.00	75.00	0.65	
38	Estonia	75.00	75.00	0.65	
38	Finland	75.00	75.00	0.65	
38	Iceland	75.00	75.00	0.65	
38	Mexico	75.00	75.00	0.65	
38	Moldova, Rep.	75.00	75.00	0.65	
38	Namibia	75.00	75.00	0.65	
38	Serbia	75.00	75.00	0.65	
38	Sweden	75.00	75.00	0.65	
38	Uganda	75.00	75.00	0.65	●
38	Viet Nam	75.00	75.00	0.65	
51	Azerbaijan	68.80	68.80	0.53	
51	Botswana	68.80	68.80	0.53	
51	Cambodia	68.80	68.80	0.53	●
51	Chile	68.80	68.80	0.53	
51	Cyprus	68.80	68.80	0.53	
51	Czech Republic	68.80	68.80	0.53	
51	El Salvador	68.80	68.80	0.53	
51	France	68.80	68.80	0.53	
51	Hungary	68.80	68.80	0.53	
51	Lithuania	68.80	68.80	0.53	
51	Mauritius	68.80	68.80	0.53	
51	Mongolia	68.80	68.80	0.53	
51	Netherlands	68.80	68.80	0.53	○
51	Panama	68.80	68.80	0.53	
51	Saudi Arabia	68.80	68.80	0.53	
51	Spain	68.80	68.80	0.53	
51	Swaziland	68.80	68.80	0.53	
68	Argentina	62.50	62.50	0.45	
68	Belgium	62.50	62.50	0.45	○
68	Bosnia and Herzegovina	62.50	62.50	0.45	
68	China	62.50	62.50	0.45	
68	Colombia	62.50	62.50	0.45	
68	Fiji	62.50	62.50	0.45	
68	Nepal	62.50	62.50	0.45	●
68	Norway	62.50	62.50	0.45	○
68	Pakistan	62.50	62.50	0.45	
68	Sri Lanka	62.50	62.50	0.45	
68	Thailand	62.50	62.50	0.45	
68	Uruguay	62.50	62.50	0.45	
80	Bangladesh	56.30	56.30	0.35	
80	Barbados	56.30	56.30	0.35	
80	Costa Rica	56.30	56.30	0.35	
80	Dominican Republic	56.30	56.30	0.35	
80	Ecuador	56.30	56.30	0.35	
80	Egypt	56.30	56.30	0.35	
80	Greece	56.30	56.30	0.35	
80	Iran, Islamic Rep.	56.30	56.30	0.35	
80	Kazakhstan	56.30	56.30	0.35	
80	Oman	56.30	56.30	0.35	
80	Paraguay	56.30	56.30	0.35	
80	Turkey	56.30	56.30	0.35	
80	United Arab Emirates	56.30	56.30	0.35	○
93	Belarus	50.00	50.00	0.23	○
93	Brazil	50.00	50.00	0.23	
93	Cameroon	50.00	50.00	0.23	
93	Cape Verde	50.00	50.00	0.23	
93	Ethiopia	50.00	50.00	0.23	
93	Gabon	50.00	50.00	0.23	
93	Italy	50.00	50.00	0.23	○
93	Jamaica	50.00	50.00	0.23	
93	Kuwait	50.00	50.00	0.23	
93	Lebanon	50.00	50.00	0.23	○
93	Morocco	50.00	50.00	0.23	
93	Nicaragua	50.00	50.00	0.23	
93	Portugal	50.00	50.00	0.23	○
93	Qatar	50.00	50.00	0.23	
93	Russian Federation	50.00	50.00	0.23	○
93	Slovenia	50.00	50.00	0.23	○
93	Tunisia	50.00	50.00	0.23	
110	Algeria	43.80	43.80	0.10	
110	Angola	43.80	43.80	0.10	
110	Bahrain	43.80	43.80	0.10	○
110	Belize	43.80	43.80	0.10	
110	Benin	43.80	43.80	0.10	
110	Bolivia, Plurinational St.	43.80	43.80	0.10	○
110	Brunei Darussalam	43.80	43.80	0.10	○
110	Burkina Faso	43.80	43.80	0.10	
110	Côte d'Ivoire	43.80	43.80	0.10	
110	Indonesia	43.80	43.80	0.10	○
110	Malawi	43.80	43.80	0.10	
110	Mali	43.80	43.80	0.10	
110	Mozambique	43.80	43.80	0.10	
110	Niger	43.80	43.80	0.10	
110	Philippines	43.80	43.80	0.10	○
110	Senegal	43.80	43.80	0.10	
110	Tanzania, United Rep.	43.80	43.80	0.10	
110	Togo	43.80	43.80	0.10	
110	Zimbabwe	43.80	43.80	0.10	
129	Guinea	37.50	37.50	0.08	
129	Lesotho	37.50	37.50	0.08	
129	Uzbekistan	37.50	37.50	0.08	○
132	Gambia	31.30	31.30	0.06	
132	Luxembourg	31.30	31.30	0.06	○
132	Venezuela, Bolivarian Rep.	31.30	31.30	0.06	○
135	Guyana	25.00	25.00	0.03	○
135	Jordan	25.00	25.00	0.03	○
135	Sudan	25.00	25.00	0.03	
135	Yemen	25.00	25.00	0.03	
139	Malta	18.80	18.80	0.01	○
139	Syrian Arab Republic	18.80	18.80	0.01	○
141	Madagascar	12.50	12.50	0.00	○
141	Tajikistan	12.50	12.50	0.00	○

SOURCE: World Bank, Ease of Doing Business Index 2013, *Doing Business 2013*

NOTE: ● indicates a strength; ○ a weakness.

4.1.2 Domestic credit to private sector

Domestic credit to private sector (% of GDP) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Cyprus	298.40	100.00	0.99	●
1	Denmark	208.41	100.00	0.99	●
3	Ireland	207.60	99.60	0.99	●
4	Spain	205.89	98.76	0.98	●
5	Hong Kong (China)	202.21	96.96	0.97	
6	Netherlands	198.12	94.94	0.96	●
7	United States of America	194.36	93.10	0.96	
8	Portugal	192.34	92.11	0.95	●
9	United Kingdom	186.82	89.39	0.94	
10	Japan	172.83	82.52	0.94	
11	Luxembourg	170.69	81.47	0.93	
12	Switzerland	169.36	80.81	0.92	
13	New Zealand (2010)	147.16	69.90	0.91	●
14	Thailand	140.11	66.44	0.91	●
15	Sweden	135.78	64.31	0.90	
16	South Africa	134.96	63.91	0.89	●
17	Malta	133.74	63.31	0.89	
18	Canada (2008)	128.25	60.61	0.88	
19	Australia	127.80	60.39	0.87	
20	China	127.02	60.00	0.86	
21	Italy	122.40	57.73	0.86	●
22	Greece	121.88	57.48	0.85	●
23	Austria	119.76	56.44	0.84	
24	France	116.17	54.68	0.84	
25	Singapore	112.57	52.90	0.83	
26	Malaysia	112.20	52.72	0.82	
27	Viet Nam	111.63	52.44	0.81	●
28	Panama	105.16	49.26	0.81	●
29	Germany	104.51	48.94	0.80	
30	Iceland	103.35	48.37	0.79	
31	Barbados (2009)	102.92	48.16	0.79	
32	Korea, Rep.	100.48	46.96	0.78	
33	Finland	96.72	45.11	0.77	
34	Israel	95.09	44.32	0.76	
35	Belgium	92.61	43.10	0.76	
36	Slovenia	91.36	42.48	0.75	
37	Mauritius	91.36	42.48	0.74	
38	Lebanon	89.61	41.62	0.74	
39	Norway (2006)	86.19	39.94	0.73	
40	Estonia	84.72	39.22	0.72	
41	Latvia	82.68	38.22	0.71	
42	Tunisia	76.41	35.13	0.71	
43	Bahrain (2010)	75.86	34.87	0.70	
44	Fiji	74.56	34.22	0.69	●
45	Croatia	73.79	33.85	0.69	
46	Jordan	73.53	33.72	0.68	
47	Bulgaria	72.09	33.01	0.67	
48	Morocco	71.21	32.58	0.66	●
49	Chile	71.18	32.56	0.66	
50	Hungary	65.02	29.54	0.65	
51	Cape Verde	64.49	29.27	0.64	●
52	United Arab Emirates	61.92	28.01	0.64	
53	Brazil	61.42	27.77	0.63	
54	Belize	60.26	27.20	0.62	
55	Kuwait	56.26	25.23	0.61	
56	Ukraine	55.87	25.04	0.61	
57	Montenegro	55.82	25.02	0.60	
58	Czech Republic	55.37	24.80	0.59	
59	Poland	54.94	24.58	0.59	
60	Bosnia and Herzegovina	54.76	24.50	0.58	
61	Lithuania	53.69	23.97	0.57	
62	Nepal	52.86	23.56	0.56	●
63	Mongolia	51.64	22.96	0.56	
64	India	50.60	22.45	0.55	
65	Turkey	49.96	22.14	0.54	
66	Namibia	49.76	22.04	0.54	
67	Honduras	49.12	21.72	0.53	●
68	Bangladesh	48.82	21.58	0.52	●
69	Serbia	48.23	21.29	0.51	
70	Costa Rica	47.57	20.96	0.51	
71	Russian Federation	46.83	20.60	0.50	
72	TFYR of Macedonia	46.31	20.34	0.49	
73	Romania	45.20	19.80	0.49	
74	Colombia	45.02	19.71	0.48	
75	Slovakia (2008)	44.99	19.69	0.47	
76	Zimbabwe (2006)	44.48	19.44	0.46	
77	Belarus	42.00	18.22	0.46	
78	Paraguay	41.08	17.77	0.45	
79	Bolivia, Plurinational St.	40.86	17.66	0.44	
80	Saudi Arabia	39.68	17.09	0.44	
81	El Salvador	39.61	17.05	0.43	
82	Albania	39.25	16.87	0.42	
83	Trinidad and Tobago (2009)	39.13	16.81	0.41	
84	Oman	38.98	16.74	0.41	
85	Qatar	38.56	16.53	0.40	
86	Kenya	38.15	16.33	0.39	
87	Guyana	37.88	16.20	0.39	
88	Iran, Islamic Rep. (2009)	36.66	15.60	0.38	
89	Kazakhstan	36.00	15.28	0.37	
90	Armenia	35.00	14.79	0.36	
91	Moldova, Rep.	33.63	14.11	0.36	
92	Ecuador	32.95	13.78	0.35	
93	Georgia	32.84	13.72	0.34	
94	Brunei Darussalam	31.84	13.23	0.34	
95	Philippines	31.78	13.20	0.33	
96	Indonesia	31.72	13.17	0.32	
97	Egypt	31.27	12.95	0.31	
98	Sri Lanka	30.65	12.65	0.31	
99	Togo	29.62	12.14	0.30	
100	Senegal	28.96	11.82	0.29	
101	Tajikistan (2007)	28.93	11.80	0.29	
102	Cambodia	28.25	11.47	0.28	
103	Swaziland	27.12	10.91	0.27	
104	Jamaica	26.77	10.74	0.26	
105	Peru	26.44	10.58	0.26	
106	Mexico	26.08	10.40	0.25	○
107	Nicaragua	25.25	10.00	0.24	
108	Benin	24.55	9.65	0.24	
109	Botswana	24.29	9.52	0.23	
110	Mozambique	23.90	9.33	0.22	
111	Uruguay	23.68	9.22	0.21	○
112	Guatemala	23.40	9.08	0.21	
113	Dominican Republic	22.51	8.65	0.20	○
114	Syrian Arab Republic (2010)	22.51	8.65	0.19	
115	Angola	21.10	7.96	0.19	
116	Nigeria	21.09	7.95	0.18	
117	Mali	21.00	7.90	0.17	
118	Venezuela, Bolivarian Rep.	20.44	7.63	0.16	
119	Malawi	19.84	7.33	0.16	
120	Burkina Faso	19.77	7.30	0.15	
121	Pakistan	18.37	6.61	0.14	
122	Côte d'Ivoire	18.06	6.46	0.14	
123	Azerbaijan	17.98	6.42	0.13	
124	Uganda	17.90	6.38	0.12	
125	Ethiopia (2008)	17.85	6.36	0.11	
126	Tanzania, United Rep.	17.77	6.32	0.11	
127	Argentina	16.57	5.73	0.10	○
128	Gambia	16.33	5.61	0.09	
129	Lesotho	15.25	5.08	0.09	
130	Ghana	15.19	5.05	0.08	○
131	Kyrgyzstan (2007)	15.05	4.98	0.07	
132	Cameroon	14.94	4.93	0.06	
133	Algeria	14.78	4.85	0.06	
134	Niger	14.18	4.55	0.05	
135	Zambia	12.27	3.61	0.04	○
136	Sudan	11.37	3.17	0.04	
137	Rwanda (2005)	11.21	3.09	0.03	○
138	Madagascar	10.99	2.99	0.02	○
139	Gabon	10.16	2.58	0.01	○
140	Guinea	9.14	2.08	0.01	○
141	Yemen	4.91	0.00	0.00	○
n/a	Uzbekistan	n/a	n/a	n/a	

SOURCE: International Monetary Fund (with World Bank and OECD GDP estimates), extracted from World Bank *World Development Indicators* database (2005–11)

NOTE: ● indicates a strength; ○ a weakness.

4.1.3 Microfinance institutions' gross loan portfolio

Microfinance institutions: Gross loan portfolio (% of GDP) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Mongolia	16.83	100.00	0.97	●
1	Cambodia (2012)	13.72	100.00	0.97	●
1	Bolivia, Plurinational St. (2012)	13.54	100.00	0.97	●
1	Tajikistan	9.21	100.00	0.97	●
5	Montenegro	8.17	88.70	0.96	●
6	Albania	7.09	76.99	0.94	●
7	Armenia	6.79	73.77	0.93	●
8	Kyrgyzstan (2012)	5.35	58.07	0.92	●
9	Peru (2012)	4.97	54.00	0.91	●
10	Georgia	4.87	52.82	0.90	●
11	Viet Nam	4.46	48.45	0.89	●
12	Paraguay (2012)	4.39	47.61	0.88	●
13	Kenya (2012)	4.31	46.83	0.87	●
14	Tanzania, United Rep.	4.07	44.21	0.86	●
15	Ecuador (2012)	4.06	44.02	0.84	●
16	Togo	3.92	42.59	0.83	●
17	Nicaragua	3.74	40.60	0.82	●
18	Senegal	3.25	35.25	0.81	●
19	Bosnia and Herzegovina	3.09	33.52	0.80	●
20	Azerbaijan (2012)	2.81	30.55	0.79	●
21	Bangladesh (2012)	2.47	26.86	0.78	●
22	TFYR of Macedonia	2.41	26.18	0.77	
23	Moldova, Rep.	1.95	21.14	0.76	
24	Colombia	1.85	20.10	0.74	
25	Benin	1.80	19.49	0.73	●
26	Uganda	1.71	18.61	0.72	●
27	Swaziland	1.65	17.92	0.71	●
28	El Salvador	1.62	17.58	0.70	●
29	Burkina Faso (2010)	1.60	17.33	0.69	●
30	Serbia	1.58	17.18	0.68	
31	Honduras	1.50	16.33	0.67	●
32	Ethiopia	1.37	14.82	0.66	●
33	Bulgaria	1.30	14.12	0.64	
34	Indonesia	1.19	12.92	0.63	
35	Dominican Republic	1.16	12.55	0.62	●
36	Nepal	1.11	12.08	0.61	●
37	Sri Lanka	1.05	11.42	0.60	
38	Belize	1.00	10.81	0.59	
39	Cameroon	0.91	9.89	0.58	●
40	Uzbekistan	0.84	9.11	0.57	●
41	Madagascar	0.83	9.05	0.56	●
42	Mali	0.70	7.62	0.54	●
43	Ghana	0.69	7.47	0.53	
44	Jordan (2012)	0.67	7.32	0.52	
45	Chile	0.66	7.16	0.51	
46	Rwanda	0.64	6.89	0.50	
47	South Africa	0.63	6.78	0.49	
48	Guatemala	0.55	5.95	0.48	
49	Morocco	0.53	5.80	0.47	
50	Malawi	0.50	5.45	0.46	
51	Mozambique (2012)	0.48	5.25	0.44	
52	Philippines	0.35	3.77	0.43	
53	Niger	0.34	3.70	0.42	
54	Gambia (2010)	0.32	3.50	0.41	
55	Tunisia	0.31	3.35	0.40	
56	Mexico	0.30	3.24	0.39	
57	Côte d'Ivoire	0.29	3.10	0.38	
58	India	0.25	2.70	0.37	
59	China	0.18	1.97	0.36	
60	Romania	0.18	1.92	0.34	
61	Pakistan (2012)	0.17	1.80	0.33	
62	Costa Rica	0.16	1.76	0.32	
63	Jamaica (2010)	0.16	1.72	0.31	
64	Guinea (2010)	0.15	1.61	0.30	●
65	Ukraine	0.14	1.51	0.29	
66	Lebanon	0.13	1.46	0.28	
67	Malaysia	0.13	1.44	0.27	○
68	Kazakhstan	0.13	1.37	0.26	
69	Zimbabwe (2010)	0.12	1.33	0.24	
70	Sudan	0.10	1.09	0.23	●
71	Egypt	0.09	0.99	0.22	
72	Brazil (2010)	0.09	0.97	0.21	○
73	Nigeria	0.08	0.83	0.20	
74	Panama	0.07	0.78	0.19	
75	Venezuela, Bolivarian Rep. (2012)	0.06	0.66	0.18	
76	Syrian Arab Republic (2010)	0.05	0.49	0.17	
77	Yemen	0.03	0.30	0.16	
78	Poland	0.03	0.27	0.14	○
79	Namibia	0.02	0.23	0.13	
80	Trinidad and Tobago (2008)	0.02	0.17	0.12	
81	Uruguay	0.02	0.17	0.11	○
82	Russian Federation	0.02	0.16	0.10	○
83	Zambia	0.01	0.15	0.09	
84	Fiji	0.01	0.15	0.08	○
85	Angola	0.01	0.13	0.07	
86	Croatia (2007)	0.01	0.12	0.06	○
87	Argentina	0.01	0.10	0.04	○
88	Gabon (2010)	0.01	0.09	0.03	○
89	Turkey (2010)	0.00	0.01	0.02	○
90	Hungary (2007)	0.00	0.01	0.01	○
91	Thailand	0.00	0.00	0.00	○
n/a	Algeria	n/a	n/a	n/a	
n/a	Australia	n/a	n/a	n/a	
n/a	Austria	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Belarus	n/a	n/a	n/a	
n/a	Belgium	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Canada	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Cyprus	n/a	n/a	n/a	
n/a	Czech Republic	n/a	n/a	n/a	
n/a	Denmark	n/a	n/a	n/a	
n/a	Estonia	n/a	n/a	n/a	
n/a	Finland	n/a	n/a	n/a	
n/a	France	n/a	n/a	n/a	
n/a	Germany	n/a	n/a	n/a	
n/a	Greece	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Hong Kong (China)	n/a	n/a	n/a	
n/a	Iceland	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Ireland	n/a	n/a	n/a	
n/a	Israel	n/a	n/a	n/a	
n/a	Italy	n/a	n/a	n/a	
n/a	Japan	n/a	n/a	n/a	
n/a	Korea, Rep.	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Latvia	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Lithuania	n/a	n/a	n/a	
n/a	Luxembourg	n/a	n/a	n/a	
n/a	Malta	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Netherlands	n/a	n/a	n/a	
n/a	New Zealand	n/a	n/a	n/a	
n/a	Norway	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Portugal	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Singapore	n/a	n/a	n/a	
n/a	Slovakia	n/a	n/a	n/a	
n/a	Slovenia	n/a	n/a	n/a	
n/a	Spain	n/a	n/a	n/a	
n/a	Sweden	n/a	n/a	n/a	
n/a	Switzerland	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	United Kingdom	n/a	n/a	n/a	
n/a	United States of America	n/a	n/a	n/a	

SOURCE: Microfinance Information Exchange, *Mix Market database*; International Monetary Fund *World Economic Outlook 2012* (current US$ GDP) (2007–12)

NOTE: ● indicates a strength; ○ a weakness.

4.2.1 Ease of protecting investors

Ease of protecting investors (distance to frontier) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	New Zealand	100.00	100.00	1.00	●
2	Singapore	96.70	96.70	0.99	●
3	Hong Kong (China)	93.00	93.00	0.99	●
4	Canada	90.00	90.00	0.97	●
4	Malaysia	90.00	90.00	0.97	●
6	Israel	86.70	86.70	0.96	●
6	United States of America	86.70	86.70	0.96	
8	Colombia	86.30	86.30	0.95	●
9	Ireland	85.60	85.60	0.94	
10	South Africa	83.00	83.00	0.94	●
11	United Kingdom	82.60	82.60	0.93	
12	Kazakhstan	82.20	82.20	0.92	●
13	Mauritius	79.60	79.60	0.91	●
14	Kyrgyzstan	79.30	79.30	0.90	●
14	Thailand	79.30	79.30	0.90	●
16	Peru	78.90	78.90	0.89	●
17	Albania	76.70	76.70	0.88	●
17	Slovenia	76.70	76.70	0.88	
19	Saudi Arabia	73.00	73.00	0.87	●
20	TFYR of Macedonia	72.60	72.60	0.87	●
21	Belgium	72.20	72.20	0.84	
21	Georgia	72.20	72.20	0.84	●
21	Japan	72.20	72.20	0.84	
24	Trinidad and Tobago	70.00	70.00	0.84	●
25	Mongolia	69.60	69.60	0.83	
26	Bangladesh	69.30	69.30	0.82	●
27	Armenia	68.90	68.90	0.80	●
27	Norway	68.90	68.90	0.80	
27	Tajikistan	68.90	68.90	0.80	●
30	Azerbaijan	68.50	68.50	0.79	●
31	Rwanda	66.70	66.70	0.79	●
32	Montenegro	66.30	66.30	0.78	
33	Kuwait	65.90	65.90	0.77	●
34	Chile	65.60	65.60	0.76	
34	Pakistan	65.60	65.60	0.76	●
36	Denmark	65.20	65.20	0.75	
37	Cyprus	64.80	64.80	0.74	
37	Sweden	64.80	64.80	0.74	
39	Botswana	63.00	63.00	0.72	●
39	Fiji	63.00	63.00	0.72	●
41	Tunisia	62.60	62.60	0.72	
42	Ghana	61.90	61.90	0.67	●
42	Iceland	61.90	61.90	0.67	
42	Indonesia	61.90	61.90	0.67	●
42	Mexico	61.90	61.90	0.67	
42	Portugal	61.90	61.90	0.67	
42	Romania	61.90	61.90	0.67	
42	Sri Lanka	61.90	61.90	0.67	●
49	India	61.50	61.50	0.64	
49	Italy	61.50	61.50	0.64	
49	Korea, Rep.	61.50	61.50	0.64	
49	Mozambique	61.50	61.50	0.64	●
53	Poland	60.70	60.70	0.63	
54	Bulgaria	60.40	60.40	0.62	
55	Nigeria	59.30	59.30	0.62	●
56	Angola	58.90	58.90	0.60	●
56	Madagascar	58.90	58.90	0.60	●
56	Malta	58.90	58.90	0.60	
59	Paraguay	58.50	58.50	0.59	●
60	Finland	58.10	58.10	0.56	○
60	Latvia	58.10	58.10	0.56	
60	Lithuania	58.10	58.10	0.56	
60	Turkey	58.10	58.10	0.56	
64	Estonia	57.80	57.80	0.55	
65	Australia	57.40	57.40	0.55	
66	Cambodia	56.70	56.70	0.54	●
67	Jamaica	56.30	56.30	0.53	
68	Brazil	55.90	55.90	0.52	
68	Malawi	55.90	55.90	0.52	●
70	Algeria	55.60	55.60	0.50	●
70	Serbia	55.60	55.60	0.50	
70	Zambia	55.60	55.60	0.50	
73	Guyana	55.20	55.20	0.48	
73	Namibia	55.20	55.20	0.48	
75	Bahrain	54.80	54.80	0.47	
75	Panama	54.80	54.80	0.47	
77	Egypt	54.40	54.40	0.45	
77	Moldova, Rep.	54.40	54.40	0.45	
79	Belarus	53.70	53.70	0.43	
79	France	53.70	53.70	0.43	○
79	Nepal	53.70	53.70	0.43	
82	Bosnia and Herzegovina	52.20	52.20	0.41	
82	Qatar	52.20	52.20	0.41	
82	Spain	52.20	52.20	0.41	○
85	Austria	51.90	51.90	0.38	○
85	Czech Republic	51.90	51.90	0.38	○
85	Germany	51.90	51.90	0.38	○
85	Nicaragua	51.90	51.90	0.38	
85	Oman	51.90	51.90	0.38	
90	Dominican Republic	51.50	51.50	0.35	
90	Lesotho	51.50	51.50	0.35	
90	Tanzania, United Rep.	51.50	51.50	0.35	
90	Uruguay	51.50	51.50	0.35	
94	Kenya	50.70	50.70	0.33	
94	Morocco	50.70	50.70	0.33	
96	China	50.40	50.40	0.32	
96	Lebanon	50.40	50.40	0.32	
98	Syrian Arab Republic	48.50	48.50	0.31	
99	Greece	48.10	48.10	0.29	
99	Netherlands	48.10	48.10	0.29	○
99	Slovakia	48.10	48.10	0.29	○
102	Argentina	47.40	47.40	0.26	
102	Brunei Darussalam	47.40	47.40	0.26	
102	Russian Federation	47.40	47.40	0.26	
102	Ukraine	47.40	47.40	0.26	
106	United Arab Emirates	45.90	45.90	0.26	○
107	Swaziland	45.20	45.20	0.25	
108	Belize	44.80	44.80	0.21	
108	Ethiopia	44.80	44.80	0.21	
108	Hungary	44.80	44.80	0.21	○
108	Jordan	44.80	44.80	0.21	○
108	Luxembourg	44.80	44.80	0.21	○
113	Philippines	44.40	44.40	0.21	
114	Cameroon	43.70	43.70	0.19	
114	Zimbabwe	43.70	43.70	0.19	
116	Bolivia, Plurinational St.	41.90	41.90	0.16	
116	Cape Verde	41.90	41.90	0.16	
116	Croatia	41.90	41.90	0.16	○
116	Ecuador	41.90	41.90	0.16	
116	Uganda	41.90	41.90	0.16	
121	Yemen	41.50	41.50	0.15	
122	Uzbekistan	40.40	40.40	0.14	
123	Iran, Islamic Rep.	38.10	38.10	0.13	○
124	Burkina Faso	37.00	37.00	0.11	
124	Mali	37.00	37.00	0.11	
124	Togo	37.00	37.00	0.11	
127	Sudan	35.60	35.60	0.11	
128	Guatemala	34.10	34.10	0.10	
129	Benin	33.70	33.70	0.07	
129	Côte d'Ivoire	33.70	33.70	0.07	
129	Gabon	33.70	33.70	0.07	
129	Niger	33.70	33.70	0.07	
133	Costa Rica	31.90	31.90	0.05	○
133	Honduras	31.90	31.90	0.05	○
133	Switzerland	31.90	31.90	0.05	○
136	Barbados	30.40	30.40	0.03	○
136	Senegal	30.40	30.40	0.03	○
136	Viet Nam	30.40	30.40	0.03	○
139	El Salvador	30.00	30.00	0.02	○
140	Gambia	27.00	27.00	0.01	○
140	Guinea	27.00	27.00	0.01	○
142	Venezuela, Bolivarian Rep.	24.10	24.10	0.00	○

SOURCE: World Bank, Ease of Doing Business Index 2013, *Doing Business 2013*

NOTE: ● indicates a strength; ○ a weakness.

4.2.2 Market capitalization

Market capitalization of listed companies (% of GDP) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Hong Kong (China)	357.83	100.00	0.99	●
1	South Africa	209.61	100.00	0.99	●
3	Switzerland	141.39	67.40	0.98	
4	Malaysia	137.21	65.40	0.97	●
5	Singapore	128.63	61.30	0.96	
6	Barbados	124.05	59.11	0.95	●
7	United Kingdom	118.72	56.56	0.94	
8	Luxembourg	114.23	54.41	0.93	
9	Zimbabwe	112.91	53.78	0.93	●
10	Canada	109.82	52.31	0.92	
11	Chile	108.73	51.79	0.91	●
12	United States of America	104.33	49.68	0.90	
13	Jordan	94.25	44.87	0.89	●
14	Korea, Rep.	89.08	42.39	0.88	
15	Bahrain (2010)	89.03	42.37	0.87	●
16	Sweden	87.11	41.45	0.86	
17	Australia	86.86	41.34	0.85	
18	Thailand	77.67	36.94	0.84	
19	Montenegro	73.89	35.13	0.83	
20	Philippines	73.58	34.99	0.82	●
21	Qatar	72.50	34.47	0.81	
22	Netherlands	71.13	33.82	0.80	
23	Spain	69.81	33.18	0.79	
24	Trinidad and Tobago	65.49	31.12	0.79	●
25	Colombia	60.38	28.68	0.78	
26	Japan	60.35	28.66	0.77	
27	Morocco	59.96	28.48	0.76	●
28	Israel	59.68	28.34	0.75	
29	Saudi Arabia	58.75	27.90	0.74	
30	Mauritius	58.08	27.58	0.73	
31	Kuwait	57.12	27.12	0.72	
32	France	56.57	26.86	0.71	
33	India	54.94	26.08	0.70	
34	Finland	54.40	25.82	0.69	
35	Denmark	53.81	25.54	0.68	
36	Jamaica	50.02	23.73	0.67	●
37	Brazil	49.62	23.54	0.66	
38	China	46.31	21.95	0.65	
39	Indonesia	46.07	21.84	0.64	
40	Uganda	45.97	21.79	0.64	
41	Norway	45.13	21.39	0.63	
42	New Zealand	44.87	21.27	0.62	
43	Peru	44.84	21.25	0.61	
44	Belgium	44.76	21.21	0.60	
45	Russian Federation	42.87	20.31	0.59	
46	Panama	39.89	18.89	0.58	
47	Malta	38.53	18.24	0.57	
48	Fiji	35.93	17.00	0.56	
49	Mexico	35.44	16.76	0.55	
50	Croatia	34.88	16.49	0.54	
51	Germany	32.89	15.54	0.53	○
52	Sri Lanka	32.85	15.52	0.52	
53	Kenya	30.35	14.32	0.51	
54	Oman	27.47	12.95	0.50	
55	Poland	26.87	12.66	0.50	
56	Côte d'Ivoire	26.12	12.30	0.49	●
57	Turkey	26.04	12.27	0.48	
58	United Arab Emirates	26.03	12.26	0.47	
59	Portugal	25.99	12.24	0.46	
60	Lebanon	25.35	11.94	0.45	
61	TFYR of Macedonia	24.64	11.60	0.44	
62	Malawi	24.63	11.59	0.43	
63	Nepal	23.98	11.28	0.42	
64	El Salvador	23.74	11.17	0.41	
65	Botswana	23.70	11.15	0.40	
66	Kazakhstan	23.03	10.83	0.39	
67	Egypt	21.21	9.96	0.38	
68	Tunisia	21.07	9.89	0.37	
69	Bangladesh	21.05	9.88	0.36	
70	Zambia	20.87	9.80	0.36	
71	Austria	19.72	9.25	0.35	○
72	Italy	19.67	9.22	0.34	○
73	Iran, Islamic Rep. (2009)	19.12	8.96	0.33	
74	Serbia	18.26	8.55	0.32	
75	Mongolia	18.02	8.43	0.31	
76	Czech Republic	17.67	8.27	0.30	○
77	Bolivia, Plurinational St.	17.22	8.05	0.29	
78	Guyana	17.09	7.99	0.28	
79	Ireland	16.28	7.60	0.27	○
80	Nigeria	16.10	7.51	0.26	
81	Pakistan	15.59	7.27	0.25	
82	Ukraine	15.47	7.21	0.24	○
83	Bulgaria	15.42	7.19	0.23	○
84	Viet Nam	14.82	6.90	0.22	○
85	Iceland	14.41	6.71	0.21	○
86	Hungary	13.41	6.23	0.21	○
87	Slovenia	12.77	5.92	0.20	○
88	Romania	11.79	5.46	0.19	○
89	Greece	11.62	5.37	0.18	
90	Cyprus	11.56	5.34	0.17	○
91	Argentina	9.77	4.49	0.16	○
92	Lithuania	9.54	4.38	0.15	○
93	Namibia	9.37	4.30	0.14	
94	Ecuador	8.76	4.01	0.13	○
95	Ghana	7.90	3.60	0.12	
96	Estonia	7.27	3.30	0.11	○
97	Swaziland (2007)	6.65	3.00	0.10	
98	Tanzania, United Rep.	6.45	2.90	0.09	
99	Georgia	5.54	2.47	0.08	○
100	Slovakia	4.93	2.18	0.07	○
101	Uzbekistan (2006)	4.20	1.83	0.07	○
102	Paraguay	4.02	1.74	0.06	○
103	Latvia	3.81	1.64	0.05	○
104	Costa Rica	3.53	1.51	0.04	○
105	Kyrgyzstan	2.79	1.15	0.03	○
106	Venezuela, Bolivarian Rep.	1.63	0.60	0.02	○
107	Armenia	0.42	0.02	0.01	○
108	Uruguay	0.37	0.00	0.00	○
n/a	Albania	n/a	n/a	n/a	
n/a	Algeria	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Azerbaijan	n/a	n/a	n/a	
n/a	Belarus	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Guatemala	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Moldova, Rep.	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Senegal	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	

SOURCE: Standard and Poor's and World Bank and OECD GDP estimates; extracted from World Bank *World Development Indicators* database (2006–11)

NOTE: ● indicates a strength; ○ a weakness.

4.2.3 Total value of stocks traded

Stocks traded, total value (% of GDP) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Hong Kong (China)	624.12	100.00	0.97	
1	United States of America	205.12	100.00	0.97	
1	Korea, Rep.	182.12	100.00	0.97	●
1	Switzerland	140.77	100.00	0.97	
5	United Kingdom	121.53	86.33	0.96	
6	Singapore	105.87	75.21	0.95	
7	China	104.82	74.46	0.94	
8	Spain	96.10	68.26	0.94	●
9	Sweden	93.69	66.56	0.93	
10	South Africa	91.17	64.76	0.92	●
11	Australia	90.36	64.19	0.91	
12	Canada	87.55	62.20	0.90	
13	Japan	70.91	50.37	0.89	
14	Thailand	67.24	47.77	0.88	●
15	Netherlands	66.30	47.10	0.87	
16	Finland	66.29	47.09	0.86	
17	Russian Federation	61.71	43.84	0.85	
18	Turkey	53.38	37.92	0.84	●
19	France	53.16	37.76	0.83	
20	Saudi Arabia	50.80	36.08	0.82	
21	Germany	48.83	34.68	0.81	
22	Israel	48.31	34.32	0.81	
23	Denmark	45.10	32.04	0.80	
24	Malaysia	44.77	31.80	0.79	
25	Norway	42.90	30.47	0.78	
26	Italy	40.45	28.73	0.77	
27	India	40.05	28.45	0.76	
28	Brazil	38.81	27.57	0.75	
29	Chile	22.89	16.26	0.74	
30	Belgium	20.88	14.83	0.73	
31	Poland	18.64	13.24	0.72	
32	Indonesia	16.49	11.71	0.71	●
33	Bangladesh	16.23	11.53	0.70	●
34	Zimbabwe (2010)	15.40	10.94	0.69	●
35	Portugal	15.23	10.82	0.69	
36	Philippines	14.62	10.38	0.68	
37	Jordan	13.95	9.91	0.67	
38	Hungary	13.92	9.89	0.66	
39	New Zealand	13.38	9.51	0.65	
40	Qatar	13.37	9.50	0.64	
41	Kuwait	12.12	8.61	0.63	
42	Mexico	9.71	6.90	0.62	
43	Egypt	9.58	6.81	0.61	●
44	Austria	9.27	6.59	0.60	
45	Greece	8.53	6.06	0.59	
46	Sri Lanka	8.35	5.93	0.58	
47	Colombia	8.17	5.80	0.57	
48	Ireland	7.20	5.11	0.56	○
49	Czech Republic	7.13	5.06	0.56	
50	Morocco	6.31	4.48	0.55	
51	Iran, Islamic Rep. (2009)	5.15	3.66	0.54	
52	Pakistan	4.82	3.43	0.53	
53	Mauritius	4.64	3.30	0.52	
54	Viet Nam	4.63	3.29	0.51	
55	United Arab Emirates	4.39	3.12	0.50	
56	Iceland	4.06	2.88	0.49	
57	Oman	3.59	2.55	0.48	
58	Barbados	3.27	2.32	0.47	
59	Peru	2.78	1.97	0.46	
60	Ukraine	2.77	1.96	0.45	
61	Kenya	2.61	1.85	0.44	
62	Tunisia	2.44	1.73	0.44	
63	Cyprus	1.96	1.39	0.43	
64	Romania	1.78	1.26	0.42	
65	Montenegro	1.73	1.23	0.41	
66	Nigeria	1.70	1.21	0.40	
67	Zambia (2010)	1.59	1.13	0.39	
68	Croatia	1.54	1.10	0.38	○
69	Jamaica	1.47	1.04	0.37	
70	Lebanon	1.28	0.90	0.36	
71	Bahrain (2010)	1.25	0.89	0.35	
72	Estonia	1.10	0.78	0.34	○
73	Slovenia	1.03	0.73	0.33	○
74	Malawi	0.95	0.67	0.32	
75	Botswana	0.84	0.60	0.31	
76	Serbia	0.73	0.52	0.31	
77	Trinidad and Tobago	0.72	0.51	0.30	
78	Kazakhstan	0.58	0.41	0.29	
79	Argentina	0.57	0.41	0.28	
80	Lithuania	0.57	0.41	0.27	○
81	Malta	0.55	0.39	0.26	○
82	Mongolia	0.52	0.37	0.25	
83	Côte d'Ivoire	0.51	0.36	0.24	
84	TFYR of Macedonia	0.50	0.36	0.23	○
85	Bulgaria	0.49	0.35	0.22	○
86	Slovakia	0.47	0.33	0.21	○
87	Nepal	0.42	0.30	0.20	
88	Ghana	0.35	0.25	0.19	
89	El Salvador	0.34	0.24	0.19	
90	Moldova, Rep. (2009)	0.24	0.17	0.18	○
91	Panama	0.24	0.17	0.17	
92	Luxembourg	0.21	0.15	0.16	○
93	Uzbekistan	0.18	0.13	0.15	
94	Latvia	0.18	0.13	0.14	○
95	Fiji	0.17	0.12	0.13	○
96	Ecuador	0.16	0.11	0.12	○
97	Tanzania, United Rep.	0.14	0.10	0.11	
98	Namibia	0.12	0.08	0.10	○
99	Costa Rica	0.09	0.06	0.09	○
100	Paraguay	0.06	0.04	0.08	
101	Bolivia, Plurinational St.	0.06	0.04	0.07	○
102	Uganda (2010)	0.06	0.04	0.06	
103	Kyrgyzstan	0.06	0.04	0.06	
104	Guyana (2008)	0.04	0.03	0.05	○
105	Venezuela, Bolivarian Rep.	0.01	0.01	0.04	○
106	Georgia	0.01	0.01	0.03	○
107	Armenia	0.01	0.00	0.02	○
108	Swaziland (2006)	0.00	0.00	0.01	○
109	Uruguay	0.00	0.00	0.00	○
n/a	Albania	n/a	n/a	n/a	
n/a	Algeria	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Azerbaijan	n/a	n/a	n/a	
n/a	Belarus	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Guatemala	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Senegal	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	

SOURCE: Standard and Poor's and World Bank and OECD GDP estimates; extracted from World Bank *World Development Indicators* database (2006–11)

NOTE: ● indicates a strength; ○ a weakness.

4.2.4 Venture capital deals

Venture capital per investment location: Number of deals (per trillion PPP$ GDP) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Israel	0.40	100.00	1.00	●
2	Canada	0.34	96.05	0.99	●
3	United States of America	0.32	93.84	0.99	●
4	Togo	0.29	91.57	0.98	●
5	Ireland	0.27	89.96	0.97	●
6	Denmark	0.27	89.33	0.96	●
7	Sweden	0.25	87.45	0.96	
8	Finland	0.18	78.76	0.95	
9	United Kingdom	0.17	78.46	0.94	
10	Zimbabwe	0.14	73.65	0.94	●
11	France	0.13	70.08	0.93	●
12	Norway	0.12	69.39	0.92	
13	Switzerland	0.10	65.58	0.91	
14	Jordan	0.10	65.25	0.91	●
15	Singapore	0.09	62.32	0.90	
16	Germany	0.09	61.88	0.89	
17	Cyprus	0.08	60.41	0.89	●
18	Latvia	0.08	59.28	0.88	
19	Lebanon	0.08	58.53	0.87	●
20	India	0.07	56.31	0.87	●
21	Spain	0.07	54.45	0.86	
22	Mongolia	0.07	54.31	0.85	●
23	Korea, Rep.	0.06	53.51	0.84	
24	Kenya	0.05	49.16	0.84	●
25	Austria	0.05	48.09	0.83	
26	Australia	0.05	48.01	0.82	
27	Luxembourg	0.05	46.83	0.82	
28	Lithuania	0.05	46.47	0.81	●
29	TFYR of Macedonia	0.05	45.75	0.80	●
30	Japan	0.04	45.38	0.79	
31	Zambia	0.04	44.28	0.79	●
32	Belgium	0.04	43.33	0.78	
33	New Zealand	0.04	42.50	0.77	
34	Georgia	0.04	41.79	0.77	
35	Poland	0.04	40.95	0.76	
36	Hong Kong (China)	0.03	39.03	0.75	
37	China	0.03	39.00	0.74	
38	Netherlands	0.03	38.67	0.74	
39	Russian Federation	0.03	36.72	0.73	
40	Croatia	0.03	33.57	0.72	
41	Sri Lanka	0.02	32.52	0.72	●
42	Italy	0.02	32.27	0.71	
43	Portugal	0.02	29.71	0.70	
44	Uganda	0.02	29.13	0.70	●
45	Ethiopia	0.02	28.79	0.69	●
46	Panama	0.02	27.41	0.68	
47	Slovenia	0.02	26.77	0.67	
48	Costa Rica	0.02	26.57	0.67	
49	Brazil	0.02	25.56	0.66	
50	Viet Nam	0.02	25.08	0.65	
51	Guatemala	0.01	21.91	0.65	
52	Chile	0.01	21.64	0.64	
53	Ghana	0.01	21.04	0.63	●
54	Ukraine	0.01	20.52	0.62	
55	United Arab Emirates	0.01	19.84	0.62	
56	Turkey	0.01	19.33	0.61	
57	Uzbekistan	0.01	17.95	0.60	●
58	Tunisia	0.01	17.89	0.60	
59	Nigeria	0.01	16.91	0.59	●
60	Kazakhstan	0.01	16.53	0.58	
61	Argentina	0.01	15.69	0.57	
62	Slovakia	0.01	14.97	0.57	
63	Romania	0.01	14.57	0.56	
64	Philippines	0.01	14.42	0.55	
65	Egypt	0.01	11.78	0.55	
66	Qatar	0.01	11.28	0.54	
67	Hungary	0.01	10.91	0.53	
68	Mexico	0.00	9.96	0.52	
69	Malaysia	0.00	9.05	0.52	
70	Czech Republic	0.00	7.94	0.51	
71	South Africa	0.00	7.88	0.50	
72	Indonesia	0.00	7.57	0.50	
73	Colombia	0.00	4.83	0.49	
74	Albania	0.00	0.00	0.00	○
74	Algeria	0.00	0.00	0.00	○
74	Angola	0.00	0.00	0.00	○
74	Armenia	0.00	0.00	0.00	○
74	Azerbaijan	0.00	0.00	0.00	○
74	Bahrain	0.00	0.00	0.00	○
74	Bangladesh	0.00	0.00	0.00	○
74	Barbados	0.00	0.00	0.00	○
74	Belarus	0.00	0.00	0.00	○
74	Belize	0.00	0.00	0.00	○
74	Benin	0.00	0.00	0.00	○
74	Bolivia, Plurinational St.	0.00	0.00	0.00	○
74	Bosnia and Herzegovina	0.00	0.00	0.00	○
74	Botswana	0.00	0.00	0.00	○
74	Brunei Darussalam	0.00	0.00	0.00	○
74	Bulgaria	0.00	0.00	0.00	○
74	Burkina Faso	0.00	0.00	0.00	○
74	Cambodia	0.00	0.00	0.00	○
74	Cameroon	0.00	0.00	0.00	○
74	Cape Verde	0.00	0.00	0.00	○
74	Côte d'Ivoire	0.00	0.00	0.00	○
74	Dominican Republic	0.00	0.00	0.00	○
74	Ecuador	0.00	0.00	0.00	○
74	El Salvador	0.00	0.00	0.00	○
74	Estonia	0.00	0.00	0.00	○
74	Fiji	0.00	0.00	0.00	○
74	Gabon	0.00	0.00	0.00	○
74	Gambia	0.00	0.00	0.00	○
74	Greece	0.00	0.00	0.00	○
74	Guinea	0.00	0.00	0.00	○
74	Guyana	0.00	0.00	0.00	○
74	Honduras	0.00	0.00	0.00	○
74	Iceland	0.00	0.00	0.00	○
74	Iran, Islamic Rep.	0.00	0.00	0.00	○
74	Jamaica	0.00	0.00	0.00	○
74	Kuwait	0.00	0.00	0.00	○
74	Kyrgyzstan	0.00	0.00	0.00	○
74	Lesotho	0.00	0.00	0.00	○
74	Madagascar	0.00	0.00	0.00	○
74	Malawi	0.00	0.00	0.00	○
74	Mali	0.00	0.00	0.00	○
74	Malta	0.00	0.00	0.00	○
74	Mauritius	0.00	0.00	0.00	○
74	Moldova, Rep.	0.00	0.00	0.00	○
74	Montenegro	0.00	0.00	0.00	○
74	Morocco	0.00	0.00	0.00	○
74	Mozambique	0.00	0.00	0.00	○
74	Namibia	0.00	0.00	0.00	○
74	Nepal	0.00	0.00	0.00	○
74	Nicaragua	0.00	0.00	0.00	○
74	Niger	0.00	0.00	0.00	○
74	Oman	0.00	0.00	0.00	○
74	Pakistan	0.00	0.00	0.00	○
74	Paraguay	0.00	0.00	0.00	○
74	Peru	0.00	0.00	0.00	○
74	Rwanda	0.00	0.00	0.00	○
74	Saudi Arabia	0.00	0.00	0.00	○
74	Senegal	0.00	0.00	0.00	○
74	Serbia	0.00	0.00	0.00	○
74	Sudan	0.00	0.00	0.00	○
74	Swaziland	0.00	0.00	0.00	○
74	Syrian Arab Republic	0.00	0.00	0.00	○
74	Tajikistan	0.00	0.00	0.00	○
74	Tanzania, United Rep.	0.00	0.00	0.00	○
74	Thailand	0.00	0.00	0.00	○
74	Trinidad and Tobago	0.00	0.00	0.00	○
74	Uruguay	0.00	0.00	0.00	○
74	Venezuela, Bolivarian Rep.	0.00	0.00	0.00	○
74	Yemen	0.00	0.00	0.00	○

SOURCE: Thomson Reuters, *Thomson One Banker Private Equity* database; International Monetary Fund *World Economic Outlook 2012* database (PPP$ GDP)

NOTE: ● indicates a strength; ○ a weakness.

4.3.1 Applied tariff rate, weighted mean

Tariff rate, applied, weighted mean, all products (%) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Hong Kong (China)	0.00	100.00	0.99	●
1	Singapore	0.00	100.00	0.99	●
1	Switzerland	0.00	100.00	0.99	●
4	Georgia	0.39	98.01	0.98	●
5	Norway	0.44	97.76	0.97	●
6	Canada	0.86	95.62	0.96	●
7	Mauritius	1.05	94.65	0.96	●
8	Iceland	1.07	94.55	0.95	
9	Croatia	1.24	93.69	0.94	●
10	Japan	1.60	91.85	0.94	
11	Austria	1.61	91.80	0.74	
11	Belgium	1.61	91.80	0.74	
11	Bulgaria	1.61	91.80	0.74	
11	Cyprus	1.61	91.80	0.74	
11	Czech Republic	1.61	91.80	0.74	
11	Denmark	1.61	91.80	0.74	
11	Estonia	1.61	91.80	0.74	
11	Finland	1.61	91.80	0.74	
11	France	1.61	91.80	0.74	
11	Germany	1.61	91.80	0.74	
11	Greece	1.61	91.80	0.74	
11	Hungary	1.61	91.80	0.74	
11	Ireland	1.61	91.80	0.74	
11	Italy	1.61	91.80	0.74	
11	Latvia	1.61	91.80	0.74	
11	Lithuania	1.61	91.80	0.74	
11	Luxembourg	1.61	91.80	0.74	
11	Malta	1.61	91.80	0.74	
11	Netherlands	1.61	91.80	0.74	
11	Poland	1.61	91.80	0.74	
11	Portugal	1.61	91.80	0.74	
11	Romania	1.61	91.80	0.74	
11	Slovakia	1.61	91.80	0.74	
11	Slovenia	1.61	91.80	0.74	
11	Spain	1.61	91.80	0.74	
11	Sweden	1.61	91.80	0.74	
11	United Kingdom	1.61	91.80	0.74	
38	New Zealand	1.62	91.75	0.74	
39	Namibia	1.75	91.09	0.73	●
40	Bosnia and Herzegovina	1.77	90.99	0.72	●
41	United States of America	1.78	90.94	0.72	
42	Australia	1.90	90.33	0.71	
43	Belarus	2.13	89.15	0.70	
44	Mexico	2.19	88.85	0.70	
45	Armenia (2008)	2.27	88.44	0.69	
46	Nicaragua	2.30	88.29	0.68	●
47	Kyrgyzstan	2.33	88.14	0.67	●
48	Guatemala	2.41	87.73	0.67	●
49	Turkey	2.42	87.68	0.66	
50	Costa Rica (2009)	2.43	87.63	0.65	
51	Moldova, Rep.	2.46	87.47	0.65	
52	Indonesia	2.49	87.32	0.64	
53	Peru	2.52	87.17	0.63	
54	TFYR of Macedonia	2.65	86.51	0.62	
55	Ukraine	2.78	85.85	0.62	
56	Oman (2009)	3.17	83.86	0.61	
57	Kazakhstan	3.38	82.79	0.60	
58	Montenegro	3.52	82.08	0.60	
59	Israel (2009)	3.54	81.98	0.59	
60	Uruguay	3.57	81.82	0.58	
61	Bahrain (2009)	3.60	81.67	0.57	
62	Paraguay	3.66	81.36	0.57	●
63	United Arab Emirates (2009)	3.73	81.01	0.56	
64	Qatar (2009)	3.76	80.86	0.55	
65	Russian Federation	3.81	80.60	0.55	
66	Zambia (2009)	3.83	80.50	0.54	
67	Saudi Arabia (2009)	3.87	80.30	0.53	
68	Azerbaijan (2009)	3.93	79.99	0.52	
69	Malaysia (2009)	3.95	79.89	0.52	
70	Chile	4.02	79.53	0.51	
71	China	4.04	79.43	0.50	
72	Brunei Darussalam	4.12	79.02	0.50	
73	Kuwait (2009)	4.13	78.97	0.49	
74	Yemen (2009)	4.24	78.41	0.48	●
75	South Africa	4.36	77.80	0.48	
76	Mozambique	4.75	75.81	0.47	●
77	Philippines	4.77	75.71	0.46	
78	Lebanon (2007)	4.81	75.51	0.45	
79	Thailand (2009)	4.92	74.95	0.45	
80	Albania (2009)	5.08	74.13	0.44	
81	Mongolia (2009)	5.10	74.03	0.43	
82	Botswana	5.15	73.78	0.43	
83	Jordan (2009)	5.18	73.63	0.42	
84	Bolivia, Plurinational St.	5.36	72.71	0.41	
85	El Salvador	5.49	72.05	0.40	
86	Viet Nam	5.66	71.18	0.40	
87	Tajikistan	5.86	70.16	0.39	
88	Ecuador	5.95	69.70	0.38	
89	Rwanda	5.99	69.50	0.38	
90	Serbia (2005)	6.03	69.30	0.37	
91	Dominican Republic	6.09	68.99	0.36	
92	Syrian Arab Republic	6.12	68.84	0.35	
93	Argentina	6.22	68.33	0.35	
94	Belize	6.38	67.52	0.34	
95	Honduras (2009)	6.46	67.11	0.33	
96	Malawi	6.59	66.45	0.33	
97	Guyana	6.87	65.02	0.32	
98	Sri Lanka	6.92	64.77	0.31	
99	Uzbekistan (2009)	6.93	64.71	0.30	
100	Morocco (2009)	7.13	63.70	0.30	
101	Côte d'Ivoire	7.34	62.63	0.29	
102	Angola (2009)	7.44	62.12	0.28	
103	Jamaica	7.49	61.86	0.28	
104	Panama (2009)	7.61	61.25	0.27	
105	Brazil	7.64	61.10	0.26	
106	Madagascar	7.65	61.05	0.26	
107	Egypt (2009)	8.05	59.01	0.25	
108	India (2009)	8.22	58.15	0.23	
108	Uganda	8.22	58.15	0.23	
110	Tanzania, United Rep.	8.23	58.10	0.23	
111	Mali	8.40	57.23	0.22	
112	Ghana (2009)	8.58	56.31	0.21	
113	Algeria (2009)	8.61	56.16	0.21	
114	Korea, Rep.	8.71	55.65	0.20	○
115	Burkina Faso	8.77	55.35	0.19	
116	Colombia	8.90	54.68	0.18	○
117	Senegal	8.91	54.63	0.18	
118	Niger	9.13	53.51	0.17	
119	Kenya	9.15	53.41	0.16	
120	Pakistan (2009)	9.53	51.48	0.16	
121	Cambodia (2008)	9.91	49.54	0.15	
122	Trinidad and Tobago (2008)	10.03	48.93	0.14	
123	Swaziland	10.15	48.32	0.13	
124	Ethiopia	10.45	46.79	0.13	
125	Lesotho	10.47	46.69	0.12	
126	Nigeria	10.55	46.28	0.11	
127	Venezuela, Bolivarian Rep.	10.60	46.03	0.11	○
128	Fiji	11.03	43.84	0.10	○
129	Cape Verde	11.57	41.09	0.09	○
130	Guinea	11.91	39.36	0.09	
131	Nepal	12.06	38.59	0.08	○
132	Bangladesh (2008)	13.00	33.81	0.07	
133	Togo	14.17	27.85	0.06	
134	Gabon (2009)	14.45	26.43	0.06	○
135	Gambia (2009)	14.75	24.90	0.04	
135	Sudan	14.75	24.90	0.04	
137	Barbados (2007)	14.77	24.80	0.04	○
138	Cameroon (2009)	15.04	23.42	0.03	○
139	Benin	15.37	21.74	0.02	○
140	Tunisia (2008)	15.95	18.79	0.01	○
141	Zimbabwe (2003)	17.33	11.76	0.01	○
142	Iran, Islamic Rep. (2008)	19.64	0.00	0.00	○

SOURCE: World Bank, based on WITS, UNCTAD TRAINS, and UN COMTRADE; extracted from World Bank *World Development Indicators* database (2003–10)

NOTE: ● indicates a strength; ○ a weakness.

4.3.2 Market access for non-agricultural exports

Non-agricultural market access: Five major export markets weighted actual applied tariff (%) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Malawi	0.00	100.00	1.00	●
2	Guatemala	0.00	100.00	0.99	●
3	Rwanda	0.00	100.00	0.99	●
4	Jamaica	0.00	99.99	0.98	●
5	Kenya	0.00	99.97	0.97	●
6	Uganda	0.00	99.96	0.96	●
7	Azerbaijan	0.01	99.93	0.96	●
8	Guyana	0.01	99.92	0.95	●
9	Lebanon	0.01	99.92	0.94	●
10	Tanzania, United Rep.	0.01	99.91	0.94	●
11	Bolivia, Plurinational St.	0.01	99.89	0.93	●
12	Mauritius	0.01	99.85	0.92	●
13	Trinidad and Tobago	0.01	99.85	0.91	●
14	Syrian Arab Republic (2009)	0.02	99.82	0.91	●
15	Barbados	0.02	99.81	0.90	●
16	El Salvador	0.03	99.64	0.89	●
17	Madagascar	0.03	99.63	0.89	●
18	Honduras	0.04	99.58	0.88	●
19	Costa Rica	0.04	99.55	0.87	●
20	Bosnia and Herzegovina	0.05	99.49	0.87	●
21	Lesotho	0.06	99.38	0.86	●
22	TFYR of Macedonia	0.06	99.35	0.85	●
23	Albania	0.08	99.10	0.84	●
24	Armenia	0.09	99.00	0.84	●
25	Colombia	0.10	98.95	0.83	●
26	Sudan	0.14	98.46	0.82	●
27	Mexico	0.17	98.18	0.82	●
28	Serbia	0.17	98.11	0.81	●
29	Canada	0.18	98.00	0.80	
30	Mozambique	0.18	97.99	0.79	●
31	Peru	0.19	97.89	0.79	●
32	Algeria	0.22	97.62	0.78	●
33	Tunisia	0.23	97.47	0.77	●
34	Montenegro	0.24	97.34	0.77	
35	Zimbabwe	0.25	97.30	0.76	●
36	Chile	0.25	97.28	0.75	
37	Nicaragua	0.26	97.20	0.74	●
38	Uzbekistan (2009)	0.26	97.16	0.74	●
39	Georgia	0.26	97.14	0.73	
40	Argentina	0.28	97.00	0.72	
41	Russian Federation	0.29	96.83	0.72	
42	Ecuador	0.31	96.66	0.71	
43	Mongolia	0.31	96.61	0.70	
44	Cameroon	0.33	96.39	0.70	●
45	Kazakhstan	0.34	96.29	0.69	
46	Israel	0.36	96.12	0.68	
47	Brazil	0.38	95.86	0.67	
48	Croatia	0.41	95.56	0.67	
49	Kyrgyzstan	0.41	95.54	0.66	●
50	Dominican Republic	0.42	95.48	0.65	●
51	Norway	0.43	95.35	0.65	
52	Brunei Darussalam	0.44	95.16	0.64	
53	Gabon	0.46	94.99	0.63	●
54	Malaysia	0.48	94.81	0.62	
55	New Zealand	0.53	94.26	0.62	
56	Zambia	0.55	94.07	0.61	●
57	Angola	0.55	94.07	0.60	●
58	Australia	0.61	93.36	0.60	
59	Philippines	0.69	92.52	0.59	
60	Fiji	0.73	92.06	0.58	
61	Morocco	0.74	91.92	0.57	
62	Moldova, Rep.	0.76	91.75	0.57	
63	Venezuela, Bolivarian Rep.	0.79	91.41	0.56	
64	Belarus	0.81	91.24	0.55	
65	Iceland	0.81	91.23	0.55	
66	Gambia	0.81	91.17	0.54	●
67	Nigeria	0.82	91.08	0.53	●
68	Saudi Arabia	0.84	90.88	0.52	
69	Singapore	0.88	90.41	0.52	○
70	Paraguay	0.89	90.27	0.51	
71	Ukraine	0.90	90.16	0.50	
72	Namibia	0.97	89.41	0.50	
73	Belize	1.02	88.89	0.49	
74	Uruguay	1.08	88.21	0.48	
75	Cape Verde	1.12	87.77	0.48	
76	Côte d'Ivoire	1.13	87.71	0.47	●
77	Turkey	1.15	87.51	0.46	
78	United States of America	1.16	87.42	0.45	
79	Thailand	1.17	87.31	0.45	
80	Botswana	1.22	86.77	0.44	
81	Qatar	1.23	86.62	0.43	
82	South Africa	1.31	85.80	0.43	
83	Niger	1.34	85.43	0.42	
84	Oman	1.40	84.79	0.41	
85	Nepal	1.40	84.72	0.40	
86	Iran, Islamic Rep.	1.44	84.35	0.40	
87	Tajikistan	1.57	82.96	0.39	
88	Ethiopia	1.61	82.48	0.38	
89	Hong Kong (China)	1.61	82.45	0.38	○
90	Bahrain	1.63	82.25	0.37	
91	Jordan	1.69	81.66	0.36	
92	Yemen	1.76	80.84	0.35	
93	Ghana	1.79	80.56	0.35	
94	Egypt	1.81	80.29	0.34	
95	Indonesia	1.92	79.09	0.33	
96	United Arab Emirates	1.92	79.08	0.33	○
97	Kuwait	1.93	79.03	0.32	
98	Switzerland	1.93	78.98	0.31	○
99	India	1.96	78.66	0.30	
100	Guinea	2.19	76.19	0.30	●
101	Burkina Faso	2.23	75.72	0.29	
102	Austria	2.31	74.86	0.10	○
102	Belgium	2.31	74.86	0.10	○
102	Bulgaria	2.31	74.86	0.10	○
102	Cyprus	2.31	74.86	0.10	○
102	Czech Republic	2.31	74.86	0.10	○
102	Denmark	2.31	74.86	0.10	○
102	Estonia	2.31	74.86	0.10	○
102	Finland	2.31	74.86	0.10	○
102	France	2.31	74.86	0.10	○
102	Germany	2.31	74.86	0.10	○
102	Greece	2.31	74.86	0.10	○
102	Hungary	2.31	74.86	0.10	○
102	Ireland	2.31	74.86	0.10	○
102	Italy	2.31	74.86	0.10	○
102	Latvia	2.31	74.86	0.10	○
102	Lithuania	2.31	74.86	0.10	○
102	Luxembourg	2.31	74.86	0.10	○
102	Malta	2.31	74.86	0.10	○
102	Netherlands	2.31	74.86	0.10	○
102	Poland	2.31	74.86	0.10	○
102	Portugal	2.31	74.86	0.10	○
102	Romania	2.31	74.86	0.10	○
102	Slovakia	2.31	74.86	0.10	○
102	Slovenia	2.31	74.86	0.10	○
102	Spain	2.31	74.86	0.10	○
102	Sweden	2.31	74.86	0.10	○
102	United Kingdom	2.31	74.86	0.10	○
129	China	2.49	72.96	0.09	○
130	Korea, Rep.	3.49	62.03	0.09	○
131	Senegal	3.56	61.23	0.08	○
132	Japan	3.84	58.17	0.07	○
133	Mali	3.90	57.56	0.06	
134	Bangladesh	4.36	52.55	0.06	○
135	Sri Lanka	4.39	52.23	0.05	○
136	Benin	4.74	48.47	0.04	
137	Viet Nam	5.16	43.91	0.04	○
138	Togo	5.51	40.08	0.03	○
139	Swaziland	5.82	36.64	0.02	○
140	Panama	6.13	33.33	0.01	○
141	Pakistan	6.79	26.14	0.01	○
142	Cambodia	9.19	0.00	0.00	○

SOURCE: World Trade Organization, International Trade Centre, and United Nations Conference on Trade and Development World Tariff Profiles 2012 (2009–10)

NOTE: ● indicates a strength; ○ a weakness.

4.3.3 Intensity of local competition

Average answer to the question: How would you assess the intensity of competition in the local markets in your country? [1 = limited in most industries; 7 = intense in most industries] | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Netherlands	6.07	84.56	1.00	●
2	Japan	6.05	84.13	0.99	●
3	Belgium	5.96	82.70	0.99	●
4	United Kingdom	5.96	82.64	0.98	●
5	Australia	5.85	80.86	0.97	●
6	Austria	5.83	80.50	0.96	●
7	Germany	5.79	79.77	0.96	●
8	Hong Kong (China)	5.78	79.60	0.95	
9	Malta	5.76	79.39	0.94	●
10	Korea, Rep.	5.75	79.09	0.93	
11	Qatar	5.74	78.93	0.93	●
12	Czech Republic	5.71	78.50	0.92	●
13	Saudi Arabia	5.71	78.45	0.91	●
14	United Arab Emirates	5.69	78.24	0.90	●
15	Turkey	5.69	78.09	0.90	●
16	United States of America	5.65	77.44	0.89	
17	Canada	5.63	77.12	0.88	
18	Switzerland	5.59	76.45	0.87	
19	Singapore	5.54	75.73	0.87	
20	Sweden	5.53	75.58	0.86	
21	Spain	5.52	75.27	0.85	
22	New Zealand	5.51	75.12	0.84	
23	Estonia	5.50	75.03	0.84	
24	Sri Lanka	5.50	74.93	0.83	●
25	Slovakia	5.48	74.63	0.82	●
26	France	5.47	74.57	0.81	
27	Denmark	5.42	73.73	0.81	
28	Poland	5.42	73.61	0.80	
29	Jordan	5.39	73.25	0.79	●
30	Norway	5.39	73.14	0.79	
31	Bahrain	5.38	72.95	0.78	
32	India	5.38	72.95	0.77	
33	Lebanon	5.37	72.91	0.76	
34	Malaysia	5.36	72.71	0.76	
35	China	5.30	71.71	0.75	
36	Hungary	5.27	71.23	0.74	
37	Chile	5.26	71.01	0.73	
38	Tunisia (2011)	5.23	70.47	0.73	●
39	Ireland	5.23	70.42	0.72	
40	Slovenia	5.20	70.00	0.71	
41	Syrian Arab Republic (2011)	5.17	69.50	0.70	●
42	Mauritius	5.15	69.19	0.70	
43	Cyprus	5.15	69.14	0.69	
44	Viet Nam	5.15	69.14	0.68	
45	Brazil	5.14	69.01	0.67	
46	Guatemala	5.11	68.52	0.67	●
47	Oman	5.10	68.35	0.66	
48	Lithuania	5.10	68.34	0.65	
49	Peru	5.09	68.25	0.64	
50	Philippines	5.09	68.23	0.64	
51	South Africa	5.07	67.77	0.63	
52	Senegal	5.06	67.60	0.62	●
53	Ghana	5.04	67.35	0.61	●
54	Thailand	5.03	67.16	0.61	
55	Panama	5.01	66.91	0.60	
56	Dominican Republic	5.00	66.69	0.59	
57	Morocco	4.99	66.58	0.59	
58	Luxembourg	4.99	66.53	0.58	
59	Guyana	4.96	66.01	0.57	
60	Costa Rica	4.96	65.92	0.56	
61	Zambia	4.95	65.90	0.56	
62	Portugal	4.94	65.61	0.55	
63	Kenya	4.93	65.53	0.54	
64	El Salvador	4.92	65.41	0.53	
65	Jamaica	4.92	65.36	0.53	
66	Israel	4.91	65.23	0.52	○
67	Italy	4.90	64.97	0.51	
68	Finland	4.87	64.52	0.50	○
69	Latvia	4.86	64.33	0.50	
70	Barbados	4.86	64.29	0.49	
71	Brunei Darussalam	4.83	63.84	0.48	
72	Cambodia	4.81	63.47	0.47	
73	Paraguay	4.80	63.41	0.47	
74	Botswana	4.80	63.33	0.46	
75	Mexico	4.76	62.73	0.45	
76	Uganda	4.73	62.12	0.44	
77	Côte d'Ivoire	4.72	62.02	0.44	●
78	Colombia	4.72	61.94	0.43	
79	Yemen	4.70	61.71	0.42	●
80	Kuwait	4.70	61.59	0.41	
81	Gambia	4.66	61.08	0.41	
82	Bangladesh	4.66	60.97	0.40	
83	Iceland	4.64	60.63	0.39	
84	Pakistan	4.62	60.36	0.39	
85	Mongolia	4.61	60.09	0.38	
86	Trinidad and Tobago	4.56	59.37	0.37	
87	Honduras	4.55	59.24	0.36	
88	Namibia	4.54	58.94	0.36	
89	Nigeria	4.53	58.91	0.35	
90	Benin	4.48	57.92	0.34	
91	Zimbabwe	4.45	57.50	0.33	
92	Greece	4.42	57.08	0.33	
93	Indonesia	4.42	56.99	0.32	
94	Cameroon	4.42	56.94	0.31	
95	Rwanda	4.39	56.54	0.30	
96	Uruguay	4.36	56.05	0.30	
97	Madagascar	4.36	55.95	0.29	
98	Bulgaria	4.33	55.45	0.28	○
99	Romania	4.30	55.07	0.27	
100	Ecuador	4.29	54.88	0.27	
101	Ukraine	4.28	54.67	0.26	○
102	Burkina Faso	4.26	54.31	0.25	
103	Iran, Islamic Rep.	4.26	54.26	0.24	
104	Tajikistan	4.23	53.89	0.24	
105	Moldova, Rep.	4.23	53.81	0.23	
106	Belize (2011)	4.22	53.73	0.22	
107	Tanzania, United Rep.	4.21	53.51	0.21	
108	Mali	4.19	53.22	0.21	
109	Swaziland	4.18	52.93	0.20	
110	Nepal	4.15	52.58	0.19	
111	Kazakhstan	4.13	52.09	0.19	
112	Montenegro	4.09	51.52	0.18	○
113	Guinea	4.08	51.29	0.17	
114	Argentina	4.07	51.22	0.16	○
115	Lesotho	4.06	51.07	0.16	
116	TFYR of Macedonia	4.05	50.90	0.15	○
117	Croatia	4.04	50.74	0.14	○
118	Egypt	4.02	50.40	0.13	○
119	Cape Verde	4.02	50.32	0.13	
120	Kyrgyzstan	4.01	50.22	0.12	
121	Russian Federation	3.96	49.40	0.11	○
122	Malawi	3.91	48.58	0.10	
123	Georgia	3.87	47.81	0.10	○
124	Albania	3.86	47.62	0.09	
125	Nicaragua	3.86	47.61	0.08	○
126	Armenia	3.85	47.47	0.07	○
127	Azerbaijan	3.82	47.07	0.07	○
128	Gabon	3.80	46.64	0.06	○
129	Mozambique	3.76	45.94	0.05	
130	Bolivia, Plurinational St.	3.71	45.09	0.04	○
131	Serbia	3.61	43.58	0.04	○
132	Bosnia and Herzegovina	3.60	43.36	0.03	○
133	Ethiopia	3.59	43.20	0.02	
134	Venezuela, Bolivarian Rep.	3.27	37.82	0.01	○
135	Angola (2011)	3.17	36.09	0.01	○
136	Algeria	3.15	35.75	0.00	○
n/a	Belarus	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	

SOURCE: World Economic Forum, *Executive Opinion Survey 2011–2012* (2011–12)

NOTE: ● indicates a strength; ○ a weakness.

5.1.1 Employment in knowledge-intensive services

Employment in knowledge-intensive services (% of workforce) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Singapore (2008)	51.02	100.00	1.00	●
2	United Kingdom	49.47	96.82	0.99	●
3	Iceland (2008)	46.02	89.73	0.98	●
4	Norway (2008)	43.46	84.47	0.97	●
5	France	43.17	83.87	0.96	●
6	New Zealand (2008)	42.92	83.36	0.95	●
7	Australia (2008)	42.87	83.25	0.94	●
8	Switzerland	42.78	83.07	0.93	
9	Canada (2008)	42.39	82.26	0.92	
10	Russian Federation (2008)	40.69	78.77	0.91	●
11	Latvia (2008)	40.19	77.74	0.90	●
12	Italy (2008)	39.65	76.63	0.89	●
13	Netherlands	37.00	71.18	0.88	
14	United States of America (2008)	36.30	69.74	0.88	
15	United Arab Emirates (2008)	36.09	69.32	0.87	
16	Hong Kong (China) (2008)	35.95	69.04	0.86	
17	Montenegro (2005)	35.94	69.00	0.85	●
18	Estonia	35.25	67.59	0.84	
19	Finland	35.06	67.20	0.83	
20	Denmark	33.96	64.94	0.82	
21	Malta	33.67	64.35	0.81	
22	Sweden	32.90	62.77	0.80	
23	Poland (2008)	32.79	62.54	0.79	
24	Lithuania	32.77	62.49	0.78	
25	Spain (2008)	32.44	61.83	0.77	
26	Lebanon (2007)	31.85	60.61	0.76	
27	Belgium	31.82	60.54	0.75	
28	Israel	31.49	59.86	0.74	
29	Chile (2008)	30.63	58.10	0.73	
30	Slovakia	30.59	58.01	0.72	
31	Czech Republic	30.53	57.90	0.71	
32	Barbados (2004)	30.30	57.43	0.70	
33	Belarus (2009)	30.28	57.38	0.69	
34	Egypt (2007)	30.26	57.35	0.68	●
35	Croatia (2008)	30.09	56.98	0.67	
36	Germany	29.58	55.94	0.66	
37	Ireland	29.27	55.31	0.65	
38	Serbia (2008)	28.72	54.18	0.64	
39	Greece	28.56	53.84	0.63	
40	Japan	28.44	53.59	0.63	
41	Brunei Darussalam (2003)	28.35	53.42	0.62	
42	Kazakhstan (2008)	28.33	53.38	0.61	
43	Moldova, Rep. (2008)	28.18	53.06	0.60	
44	Ukraine	27.49	51.65	0.59	
45	Hungary	26.89	50.42	0.58	
46	Austria	25.53	47.61	0.57	
47	TFYR of Macedonia (2008)	25.52	47.60	0.56	
48	Slovenia	24.76	46.05	0.55	
49	Venezuela, Bolivarian Rep. (2008)	23.87	44.22	0.54	
50	Bulgaria	23.48	43.42	0.53	
51	Saudi Arabia (2008)	22.88	42.18	0.52	
52	Trinidad and Tobago (2005)	22.75	41.91	0.51	
53	Korea, Rep. (2008)	22.44	41.26	0.50	
54	Georgia (2007)	22.25	40.88	0.49	
55	Costa Rica	22.20	40.77	0.48	
56	Romania (2008)	21.80	39.96	0.47	
57	Colombia (2008)	21.58	39.50	0.46	
58	Uruguay (2007)	21.40	39.12	0.45	
59	Philippines	20.82	37.95	0.44	
60	Bahrain (2008)	20.73	37.76	0.43	
61	Belize (2005)	20.41	37.09	0.42	
62	Azerbaijan (2008)	20.26	36.80	0.41	
63	Mongolia (2008)	20.21	36.68	0.40	
64	Jamaica (2008)	20.11	36.49	0.39	
65	Malaysia	19.62	35.48	0.38	○
66	Pakistan (2008)	19.48	35.19	0.38	
67	Brazil (2007)	19.31	34.84	0.37	
68	Algeria (2004)	19.10	34.41	0.36	
69	Argentina	19.04	34.29	0.35	
70	Portugal	18.72	33.63	0.34	○
71	Sri Lanka	18.70	33.59	0.33	
72	Kuwait (2005)	18.70	33.58	0.32	
73	Peru (2008)	18.55	33.27	0.31	
74	Kyrgyzstan (2006)	18.31	32.78	0.30	
75	Ecuador (2006)	18.08	32.32	0.29	
76	Turkey	17.59	31.30	0.28	○
77	Botswana (2006)	17.10	30.31	0.27	
78	Yemen (2005)	16.97	30.03	0.26	
79	Namibia (2004)	16.91	29.91	0.25	
80	Cyprus	16.26	28.56	0.24	○
81	Syrian Arab Republic (2007)	15.52	27.05	0.23	
82	South Africa	15.22	26.43	0.22	○
83	Iran, Islamic Rep. (2008)	15.04	26.06	0.21	
84	Nicaragua (2006)	14.82	25.62	0.20	
85	Bolivia, Plurinational St. (2007)	14.32	24.59	0.19	
86	Paraguay (2008)	14.01	23.94	0.18	
87	Dominican Republic	13.66	23.23	0.17	○
88	Panama	13.05	21.98	0.16	
89	Honduras (2005)	12.83	21.53	0.15	
90	Ethiopia	12.62	21.10	0.14	
91	Mauritius (2009)	12.52	20.90	0.13	○
92	Mexico	12.25	20.34	0.13	○
93	Thailand (2008)	10.77	17.28	0.12	○
94	El Salvador	10.04	15.80	0.11	
95	Albania (2009)	9.32	14.31	0.10	
96	Indonesia	8.45	12.52	0.09	○
97	Viet Nam (2004)	7.41	10.38	0.08	○
98	China (2005)	7.37	10.31	0.07	○
99	Bangladesh (2005)	7.33	10.21	0.06	○
100	Morocco (2008)	6.79	9.10	0.05	○
101	Qatar	6.50	8.51	0.04	○
102	Uganda (2003)	4.30	3.99	0.03	○
103	Tanzania, United Rep. (2006)	2.57	0.44	0.02	○
104	Cambodia (2004)	2.52	0.33	0.01	○
105	Madagascar (2005)	2.36	0.00	0.00	○
n/a	Angola	n/a	n/a	n/a	
n/a	Armenia	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Guatemala	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	India	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Kenya	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Luxembourg	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Senegal	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Tunisia	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: International Labour Organization, *LABORSTA Database of Labour Statistics* (2003–08), and *ILOSTAT Database of Labour Statistics* Beta version (2009–10)

NOTE: ● indicates a strength; ○ a weakness.

5.1.2 Firms offering formal training

Firms offering formal training (% of firms) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	China (2003)	84.78	100.00	1.00	●
2	Thailand (2006)	75.34	88.21	0.99	●
3	Ireland (2005)	73.16	85.48	0.98	●
4	Czech Republic	70.72	82.44	0.97	●
5	Estonia	69.26	80.61	0.96	●
6	Bosnia and Herzegovina	66.45	77.10	0.95	●
7	Ecuador (2010)	65.89	76.40	0.94	●
8	Colombia (2010)	65.15	75.48	0.93	●
9	Argentina (2010)	63.60	73.54	0.92	●
10	Guyana (2010)	63.01	72.80	0.91	●
11	Mongolia	61.22	70.57	0.90	●
12	Fiji	61.00	70.29	0.89	●
13	El Salvador (2010)	60.97	70.26	0.88	●
14	Poland	60.92	70.19	0.88	●
15	Peru (2010)	60.08	69.14	0.87	●
16	Chile (2010)	57.53	65.96	0.86	●
17	Bolivia, Plurinational St. (2010)	57.10	65.42	0.85	●
18	Venezuela, Bolivarian Rep. (2010)	55.95	63.99	0.84	●
19	Paraguay (2010)	54.94	62.72	0.83	●
20	Costa Rica (2010)	54.68	62.40	0.82	●
21	Dominican Republic (2005)	53.33	60.71	0.81	●
22	Brazil	52.94	60.22	0.80	●
23	Lebanon	52.36	59.50	0.79	●
24	Russian Federation	52.17	59.26	0.78	
25	Guatemala (2010)	51.94	58.98	0.77	●
26	Botswana (2010)	51.92	58.95	0.76	●
27	Spain (2005)	51.26	58.13	0.75	
28	Swaziland (2006)	50.95	57.74	0.74	●
29	Mexico (2010)	50.75	57.49	0.73	
30	Malaysia (2007)	50.14	56.73	0.72	
31	Uruguay (2010)	48.60	54.80	0.71	
32	Kenya (2003)	48.45	54.62	0.70	
33	Malawi	48.42	54.58	0.69	●
34	Cambodia (2007)	48.35	54.49	0.68	●
35	Slovenia	47.46	53.38	0.67	
36	Nicaragua (2010)	47.21	53.07	0.66	●
37	Lithuania	45.98	51.53	0.65	
38	Namibia (2006)	44.51	49.69	0.64	
39	Belarus (2008)	44.42	49.58	0.63	
40	Viet Nam	43.55	48.49	0.63	
41	Latvia	43.44	48.36	0.62	
42	Lesotho	42.47	47.15	0.61	●
43	Kazakhstan	40.87	45.15	0.60	
44	Korea, Rep. (2005)	39.45	43.37	0.59	
45	Syrian Arab Republic	38.29	41.92	0.58	●
46	Ethiopia (2006)	38.20	41.81	0.57	●
47	South Africa (2007)	36.76	40.01	0.56	
48	Serbia	36.53	39.73	0.55	
49	Tanzania, United Rep. (2006)	36.48	39.66	0.54	
50	Honduras (2010)	35.79	38.80	0.53	●
51	Germany (2005)	35.38	38.29	0.52	○
52	Uganda (2006)	34.95	37.75	0.51	
53	Moldova, Rep.	33.11	35.45	0.50	
54	Slovakia	33.05	35.38	0.49	
55	Ghana (2007)	32.99	35.30	0.48	
56	Sri Lanka (2004)	32.55	34.75	0.47	
57	Benin	32.41	34.58	0.46	●
58	Mali (2010)	32.09	34.18	0.44	
58	Niger	32.09	34.18	0.44	●
60	Portugal (2005)	31.89	33.93	0.43	
61	Philippines	31.11	32.95	0.42	
62	Togo	30.96	32.77	0.41	●
63	Gabon	30.89	32.68	0.40	
64	Bulgaria	30.65	32.38	0.39	
65	Armenia	30.35	32.00	0.38	
66	Kyrgyzstan	29.67	31.16	0.38	
67	Turkey (2008)	28.75	30.01	0.37	
68	Croatia (2007)	28.02	29.09	0.36	○
69	Rwanda (2006)	27.58	28.54	0.35	
70	Madagascar	27.03	27.86	0.34	
71	Zambia (2007)	26.02	26.60	0.33	
72	Jamaica (2010)	25.94	26.50	0.32	
73	Nigeria (2007)	25.73	26.23	0.31	
74	Mauritius	25.58	26.05	0.30	
75	Gambia (2006)	25.57	26.03	0.29	
76	Cameroon	25.51	25.96	0.28	
77	Montenegro	25.21	25.58	0.27	
78	Romania	24.91	25.21	0.26	
79	Burkina Faso	24.83	25.11	0.25	
80	Ukraine (2008)	24.82	25.10	0.24	○
81	Morocco (2007)	24.68	24.92	0.23	
82	Jordan (2006)	23.93	23.99	0.22	○
83	Angola (2010)	23.53	23.49	0.21	
84	Mozambique (2007)	22.08	21.67	0.20	
85	Egypt (2008)	21.70	21.20	0.19	
86	Tajikistan (2008)	21.11	20.46	0.18	
87	Guinea (2006)	21.09	20.44	0.17	
88	Oman (2003)	20.92	20.22	0.16	
89	Greece (2005)	19.96	19.03	0.15	○
90	Albania (2007)	19.94	19.00	0.14	
91	Côte d'Ivoire	19.11	17.96	0.13	
92	TFYR of Macedonia	18.95	17.76	0.13	○
93	Algeria (2007)	17.30	15.70	0.12	
94	Cape Verde	16.64	14.88	0.11	
95	Senegal (2007)	16.30	14.45	0.10	
96	India (2006)	15.93	13.99	0.09	○
97	Hungary	14.80	12.58	0.08	○
98	Georgia (2008)	14.53	12.24	0.07	○
99	Yemen (2010)	12.92	10.23	0.06	
100	Panama (2010)	10.98	7.81	0.05	○
101	Azerbaijan	10.54	7.26	0.04	○
102	Uzbekistan (2008)	9.63	6.12	0.03	○
103	Nepal	8.79	5.07	0.02	○
104	Pakistan (2007)	6.70	2.46	0.01	○
105	Indonesia	4.73	0.00	0.00	○
n/a	Australia	n/a	n/a	n/a	
n/a	Austria	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Belgium	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Canada	n/a	n/a	n/a	
n/a	Cyprus	n/a	n/a	n/a	
n/a	Denmark	n/a	n/a	n/a	
n/a	Finland	n/a	n/a	n/a	
n/a	France	n/a	n/a	n/a	
n/a	Hong Kong (China)	n/a	n/a	n/a	
n/a	Iceland	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Israel	n/a	n/a	n/a	
n/a	Italy	n/a	n/a	n/a	
n/a	Japan	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Luxembourg	n/a	n/a	n/a	
n/a	Malta	n/a	n/a	n/a	
n/a	Netherlands	n/a	n/a	n/a	
n/a	New Zealand	n/a	n/a	n/a	
n/a	Norway	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Singapore	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Sweden	n/a	n/a	n/a	
n/a	Switzerland	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	Tunisia	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	United Kingdom	n/a	n/a	n/a	
n/a	United States of America	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: International Finance Corporation and World Bank, *Enterprise Surveys* (2003–10)

NOTE: ● indicates a strength; ○ a weakness.

5.1.3 GERD performed by business enterprise

GERD: Performed by business enterprise (% of GDP) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Israel	3.52	100.00	1.00	●
2	Korea, Rep. (2010)	2.80	79.36	0.99	●
3	Finland	2.67	75.65	0.98	
4	Japan (2010)	2.49	70.75	0.96	
5	Sweden	2.34	66.31	0.95	
6	Switzerland (2008)	2.11	59.88	0.94	
7	Denmark	2.09	59.31	0.93	
8	Germany	1.90	54.02	0.92	
9	United States of America	1.89	53.73	0.90	
10	Austria	1.87	53.10	0.89	
11	Slovenia	1.85	52.60	0.88	
12	Estonia	1.49	42.25	0.87	
13	Iceland (2008)	1.44	40.97	0.86	
14	France	1.43	40.51	0.84	
15	Australia (2010)	1.38	39.23	0.83	
16	Belgium	1.37	38.92	0.82	
17	China (2010)	1.29	36.65	0.81	
18	Singapore (2010)	1.27	36.13	0.80	
19	Ireland	1.19	33.66	0.78	
20	Czech Republic	1.11	31.51	0.77	
21	United Kingdom	1.09	30.95	0.76	
22	Netherlands	1.07	30.25	0.75	
23	Luxembourg	0.98	27.71	0.73	
24	Canada	0.89	25.36	0.72	
25	Norway	0.86	24.38	0.71	
26	Hungary	0.75	21.17	0.70	
27	Spain	0.70	19.73	0.69	
28	Italy (2012)	0.69	19.69	0.67	
29	Portugal	0.69	19.48	0.66	
30	Russian Federation	0.68	19.34	0.65	
31	New Zealand (2009)	0.54	15.30	0.64	
32	Malaysia (2006)	0.54	15.29	0.63	
33	Ukraine (2009)	0.47	13.31	0.61	
34	South Africa (2009)	0.46	13.18	0.60	
35	Malta (2010)	0.37	10.54	0.59	
36	Brazil (2004)	0.36	10.25	0.58	
37	Turkey (2010)	0.36	10.18	0.57	
38	Hong Kong (China) (2009)	0.34	9.57	0.55	
39	Belarus (2009)	0.33	9.47	0.54	
40	Croatia (2010)	0.32	9.13	0.53	
41	Bulgaria (2010)	0.30	8.47	0.52	
42	India (2007)	0.26	7.28	0.51	
43	Slovakia	0.25	7.15	0.49	
44	Lithuania (2010)	0.23	6.60	0.48	
45	Poland	0.23	6.55	0.47	
46	Latvia (2010)	0.22	6.34	0.46	
47	Tunisia (2009)	0.22	6.27	0.45	
48	Romania	0.18	5.19	0.43	
49	Greece (2007)	0.17	4.87	0.42	
50	Mexico (2010)	0.16	4.63	0.41	
51	Chile (2010)	0.16	4.60	0.40	
52	Uruguay (2009)	0.15	4.28	0.39	
53	Argentina (2010)	0.14	4.06	0.37	
54	Morocco (2006)	0.14	3.97	0.36	
55	Costa Rica (2009)	0.14	3.94	0.35	
56	Serbia (2009)	0.13	3.73	0.34	
57	Thailand (2007)	0.10	2.72	0.33	
58	Cyprus (2010)	0.09	2.44	0.31	
59	Iran, Islamic Rep. (2008)	0.08	2.36	0.30	
60	Botswana (2005)	0.08	2.27	0.29	
61	Kazakhstan (2009)	0.08	2.12	0.28	
62	TFYR of Macedonia (2008)	0.06	1.81	0.27	
63	Philippines (2007)	0.06	1.76	0.25	
64	Moldova, Rep. (2009)	0.06	1.68	0.24	
65	Montenegro (2007)	0.06	1.67	0.23	
66	Azerbaijan (2009)	0.05	1.55	0.22	
67	Kenya (2007)	0.05	1.37	0.20	
68	Peru (2004)	0.04	1.23	0.19	○
69	Ethiopia (2010)	0.04	1.06	0.18	
70	Kyrgyzstan (2009)	0.04	1.04	0.17	
71	Uganda (2009)	0.03	0.95	0.16	
72	Colombia (2010)	0.02	0.70	0.14	○
73	Ecuador (2008)	0.02	0.62	0.13	
74	Sri Lanka (2008)	0.02	0.58	0.12	○
75	Mongolia (2009)	0.02	0.47	0.11	○
76	Ghana (2007)	0.01	0.31	0.10	○
77	Mali (2007)	0.01	0.20	0.08	
78	Zambia (2008)	0.01	0.18	0.07	
79	Indonesia (2008)	0.00	0.10	0.06	○
80	Senegal (2008)	0.00	0.08	0.05	○
81	Trinidad and Tobago (2009)	0.00	0.02	0.04	○
82	Guatemala (2009)	0.00	0.02	0.02	○
83	Brunei Darussalam (2003)	0.00	0.00	0.01	○
84	Panama (2010)	0.00	0.00	0.00	○
n/a	Albania	n/a	n/a	n/a	
n/a	Algeria	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Armenia	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Egypt	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Georgia	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Pakistan	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Viet Nam	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2003–12)

NOTE: ● indicates a strength; ○ a weakness.

5.1.4 GERD financed by business enterprise

GERD: Financed by business enterprise (% of total GERD) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Malaysia (2006)	84.49	100.00	1.00	●
2	Japan (2010)	75.93	89.85	0.99	●
3	Korea, Rep. (2010)	71.80	84.96	0.98	●
4	China (2010)	71.69	84.82	0.96	●
5	Switzerland (2008)	68.19	80.67	0.95	
6	Finland (2011)	67.01	79.27	0.94	
7	Germany (2010)	65.59	77.58	0.93	
8	Philippines (2007)	61.96	73.28	0.92	●
9	Australia (2008)	61.91	73.22	0.91	
10	Slovenia (2011)	61.23	72.42	0.89	
11	Denmark (2011)	60.17	71.16	0.88	
12	United States of America (2011)	59.96	70.91	0.87	
13	Belgium	58.62	69.33	0.86	
14	Sweden (2011)	58.15	68.77	0.85	
15	France (2010)	53.50	63.26	0.84	
16	Estonia (2011)	53.19	62.89	0.82	
17	Singapore (2010)	53.12	62.81	0.81	
18	Malta (2010)	51.51	60.89	0.80	
19	Ghana (2007)	50.86	60.12	0.79	●
20	Kazakhstan (2008)	50.74	59.98	0.78	●
21	Iceland (2008)	50.35	59.52	0.76	
22	Thailand (2005)	48.65	57.50	0.75	
23	Ireland (2011)	48.06	56.80	0.74	
24	Hungary (2011)	47.46	56.09	0.73	
25	Czech Republic (2011)	46.91	55.43	0.72	
26	Canada (2011)	46.52	54.97	0.71	
27	Luxembourg (2011)	46.12	54.50	0.69	
28	Hong Kong (China)	45.83	54.16	0.68	
29	Brazil (2010)	45.43	53.69	0.67	
30	Netherlands	45.15	53.35	0.66	
31	Turkey (2010)	45.12	53.32	0.65	
32	Italy (2010)	44.66	52.77	0.64	
33	Austria (2012)	44.62	52.72	0.62	
34	United Kingdom (2011)	44.60	52.70	0.61	○
35	Portugal (2010)	44.09	52.09	0.60	
36	Norway	43.61	51.53	0.59	○
37	Spain (2010)	42.99	50.79	0.58	
38	South Africa	42.51	50.22	0.56	
39	Uruguay	39.30	46.41	0.55	
40	Mexico	39.06	46.13	0.54	
41	Israel	39.01	46.07	0.53	
42	Latvia (2010)	38.83	45.86	0.52	
43	Croatia (2010)	38.82	45.84	0.51	
44	New Zealand	38.46	45.42	0.49	○
45	Romania (2011)	37.41	44.17	0.48	
46	Kyrgyzstan (2005)	36.37	42.94	0.47	
47	Chile (2010)	35.37	41.76	0.46	
48	India (2007)	33.92	40.04	0.45	
49	Slovakia (2011)	33.85	39.95	0.44	
50	Greece (2005)	31.06	36.65	0.42	
51	Iran, Islamic Rep. (2008)	30.92	36.47	0.41	
52	Bulgaria	30.23	35.66	0.40	
53	Gabon	29.26	34.51	0.39	
54	Belarus	28.81	33.97	0.38	
55	Costa Rica	28.73	33.89	0.36	
56	Poland (2011)	28.12	33.15	0.35	
57	Russian Federation (2011)	27.68	32.63	0.34	
58	Ukraine	25.90	30.53	0.33	
59	Azerbaijan	24.76	29.18	0.32	
60	Lithuania (2010)	24.13	28.42	0.31	
61	Morocco (2006)	22.70	26.73	0.29	
62	Argentina (2010)	22.32	26.28	0.28	
63	Colombia (2010)	22.08	25.99	0.27	
64	Tunisia	20.03	23.56	0.26	
65	Sri Lanka (2008)	19.89	23.40	0.25	
66	Kenya (2007)	16.83	19.77	0.24	
67	Cyprus	15.73	18.46	0.22	○
68	Burkina Faso	11.93	13.96	0.21	
69	Ethiopia (2010)	10.77	12.58	0.20	
70	Mali (2007)	10.10	11.79	0.19	
71	Ecuador (2008)	8.53	9.93	0.18	
72	Serbia	8.33	9.69	0.16	○
73	Uganda	8.23	9.57	0.15	
74	Senegal (2008)	4.04	4.60	0.14	
75	Mongolia	3.64	4.13	0.13	
76	Lesotho	3.38	3.82	0.12	
77	Albania (2008)	3.26	3.68	0.11	
78	Zambia (2008)	3.23	3.64	0.09	
79	Kuwait	2.33	2.58	0.08	○
80	Panama (2010)	2.31	2.55	0.07	○
81	Brunei Darussalam (2004)	1.58	1.69	0.06	○
82	Tajikistan	1.08	1.10	0.05	
83	El Salvador	0.69	0.63	0.04	○
84	Bolivia, Plurinational St.	0.52	0.43	0.02	○
85	Paraguay (2008)	0.25	0.11	0.01	○
86	Nigeria (2007)	0.16	0.00	0.00	○
n/a	Algeria	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Armenia	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Egypt	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Georgia	n/a	n/a	n/a	
n/a	Guatemala	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Indonesia	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Moldova, Rep.	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Pakistan	n/a	n/a	n/a	
n/a	Peru	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	TFYR of Macedonia	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Viet Nam	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2004–12)

NOTE: ● indicates a strength; ○ a weakness.

5.1.5 GMAT mean score

Weighted mean score at the Graduate Management Admission Test (GMAT) by residency and by citizenship (weighted by the total number of test takers) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Malta	615.00	100.00	1.00	●
2	Singapore	601.32	95.39	0.99	●
3	Argentina	597.71	94.18	0.99	●
4	Uruguay	597.10	93.97	0.98	●
5	Belgium	592.75	92.51	0.97	●
6	Australia	591.71	92.16	0.96	●
7	China	590.97	91.91	0.96	●
8	Korea, Rep.	590.09	91.61	0.95	
9	New Zealand	586.78	90.50	0.94	●
10	United Kingdom	586.21	90.31	0.94	
11	Hong Kong (China)	583.05	89.24	0.93	
12	Hungary	581.79	88.82	0.92	●
13	India	581.26	88.64	0.91	●
14	Austria	579.93	88.19	0.91	
15	Latvia	578.84	87.83	0.90	●
16	Bulgaria	578.73	87.79	0.89	●
17	Slovakia	576.96	87.19	0.89	●
18	Spain	575.65	86.75	0.88	●
19	Estonia	574.71	86.43	0.87	
20	Switzerland	574.36	86.32	0.86	
21	Chile	572.51	85.69	0.86	●
22	Romania	572.25	85.61	0.85	●
23	Georgia	572.11	85.56	0.84	●
24	Czech Republic	572.07	85.55	0.84	
25	Germany	570.58	85.04	0.83	
26	Brazil	564.30	82.93	0.82	●
27	Poland	563.90	82.80	0.81	●
28	Italy	561.29	81.92	0.81	
29	Luxembourg	561.12	81.86	0.80	
30	Belarus	560.28	81.58	0.79	
31	Canada	560.04	81.49	0.79	
32	Russian Federation	559.71	81.38	0.78	
33	Denmark	557.07	80.50	0.77	
34	France	553.46	79.28	0.76	
35	Turkey	551.91	78.76	0.76	●
36	Lithuania	550.62	78.32	0.75	
37	Peru	549.66	78.00	0.74	●
38	Japan	548.91	77.75	0.74	
39	Portugal	548.73	77.69	0.73	
40	Ukraine	547.46	77.26	0.72	
41	Philippines	546.62	76.98	0.71	●
42	Ireland	545.87	76.72	0.71	
43	Moldova, Rep.	545.79	76.70	0.70	
44	Netherlands	542.73	75.67	0.69	
45	Uzbekistan	539.15	74.46	0.69	●
46	Viet Nam	538.45	74.23	0.68	
47	Iceland	537.76	73.99	0.67	
48	Swaziland	535.83	73.34	0.66	●
49	Malaysia	533.72	72.63	0.66	
50	Greece	531.91	72.02	0.65	
51	United States of America	531.31	71.82	0.64	
52	Mauritius	525.71	69.94	0.64	
53	Iran, Islamic Rep.	523.78	69.29	0.63	●
54	Kyrgyzstan	522.93	69.00	0.62	
55	Azerbaijan	521.82	68.63	0.61	
56	Norway	520.40	68.15	0.61	
57	TFYR of Macedonia	519.87	67.97	0.60	
58	Cyprus	518.89	67.64	0.59	
59	Slovenia	518.25	67.43	0.59	
60	United Arab Emirates	518.07	67.36	0.58	
61	Finland	517.10	67.04	0.57	
62	Morocco	517.04	67.02	0.56	
63	Albania	516.82	66.94	0.56	
64	Serbia (2011)	515.82	66.60	0.55	
65	Colombia	513.96	65.98	0.54	
66	Pakistan	511.83	65.26	0.54	●
67	Tunisia	511.15	65.03	0.53	
68	Barbados	510.97	64.97	0.52	
69	Indonesia	509.81	64.58	0.51	
70	Mexico	509.77	64.57	0.51	
71	Thailand	504.67	62.85	0.50	
72	Costa Rica	503.15	62.34	0.49	
73	Panama	501.56	61.80	0.49	
74	Bolivia, Plurinational St.	501.09	61.65	0.48	
75	Guatemala	500.80	61.55	0.47	
76	Sweden	500.11	61.32	0.46	○
77	Kazakhstan	497.33	60.38	0.46	
78	Tajikistan	495.77	59.86	0.45	●
79	Trinidad and Tobago	495.49	59.76	0.44	
80	Belize	494.76	59.52	0.44	
81	Lebanon	493.47	59.08	0.43	
82	Bangladesh	492.54	58.77	0.42	
83	Sri Lanka	491.89	58.55	0.41	
84	Brunei Darussalam	491.43	58.39	0.41	
85	Armenia	490.13	57.96	0.40	
86	Venezuela, Bolivarian Rep.	490.12	57.95	0.39	
87	Croatia	489.64	57.79	0.39	○
88	Zimbabwe	487.34	57.02	0.38	
89	Israel	486.26	56.65	0.37	○
90	El Salvador	485.67	56.46	0.36	
91	Ecuador	484.78	56.15	0.36	
92	Mongolia	483.88	55.85	0.35	
93	Egypt	477.74	53.79	0.34	
94	South Africa	472.67	52.08	0.34	
95	Paraguay	467.37	50.29	0.33	
96	Benin	467.05	50.18	0.32	
97	Qatar	465.98	49.82	0.31	
98	Gambia	464.29	49.25	0.31	
99	Bahrain	464.24	49.24	0.30	
100	Nicaragua	463.64	49.04	0.29	
101	Nepal	463.64	49.04	0.29	
102	Syrian Arab Republic	457.73	47.05	0.28	
103	Guyana	457.33	46.91	0.27	
104	Gabon	456.88	46.76	0.26	
105	Côte d'Ivoire	456.56	46.65	0.26	
106	Jordan	455.96	46.45	0.25	○
107	Algeria	455.95	46.45	0.24	
108	Dominican Republic	450.68	44.67	0.24	
109	Bosnia and Herzegovina	450.18	44.51	0.23	
110	Madagascar	447.60	43.64	0.22	
111	Botswana	445.37	42.89	0.21	
112	Fiji	444.00	42.42	0.21	
113	Zambia	439.32	40.85	0.20	
114	Sudan	437.50	40.24	0.19	
115	Ethiopia	437.45	40.22	0.19	
116	Cameroon	434.79	39.32	0.18	
117	Kenya	434.77	39.32	0.17	
118	Nigeria	434.61	39.26	0.16	
119	Jamaica	434.43	39.20	0.16	○
120	Senegal	430.11	37.75	0.15	
121	Togo	428.10	37.07	0.14	
122	Ghana	426.07	36.39	0.14	
123	Honduras	418.60	33.87	0.13	
124	Oman	417.36	33.46	0.12	○
125	Burkina Faso	414.81	32.60	0.11	
126	Niger	401.43	28.09	0.11	
127	Lesotho	390.00	24.24	0.10	
128	Guinea	386.15	22.95	0.09	
129	Kuwait	384.58	22.42	0.09	○
130	Malawi	383.50	22.05	0.08	
131	Tanzania, United Rep.	381.97	21.54	0.07	
132	Mali	381.76	21.47	0.06	
133	Cambodia	378.39	20.33	0.06	
134	Rwanda	377.80	20.14	0.05	
135	Uganda	377.65	20.09	0.04	○
136	Yemen	374.57	19.05	0.04	
137	Angola	370.00	17.51	0.03	
138	Cape Verde (2005)	368.00	16.84	0.02	○
139	Namibia	364.40	15.62	0.01	○
140	Mozambique	330.00	4.04	0.01	○
141	Saudi Arabia	318.00	0.00	0.00	○
n/a	Montenegro	n/a	n/a	n/a	

SOURCE: Graduate Management Admission Council (GMAC) (2005–12)

NOTE: ● indicates a strength; ○ a weakness.

5.1.6 GMAT test takers

Number of test takers of the Graduate Management Admission Test (GMAT) by citizenship (scaled by million population 20–34 years old) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	United States of America	1,807.10	100.00	1.00	●
2	Hong Kong (China)	1,521.04	97.70	0.99	●
3	Israel	1,461.59	97.17	0.99	●
4	Lebanon	1,237.64	94.95	0.98	●
5	Singapore	1,230.49	94.88	0.97	
6	Canada	1,101.52	93.40	0.96	●
7	Iceland	626.24	85.87	0.96	
8	Kuwait	617.06	85.67	0.95	●
9	Greece	598.18	85.26	0.94	●
10	Korea, Rep.	516.44	83.30	0.94	
11	Switzerland	385.61	79.41	0.93	
12	Bulgaria	358.71	78.44	0.92	●
13	Ireland	343.68	77.87	0.91	
14	Norway	342.90	77.84	0.91	
15	Barbados	339.48	77.71	0.90	●
16	Trinidad and Tobago	338.82	77.68	0.89	●
17	Saudi Arabia	325.17	77.13	0.89	●
18	Netherlands	323.79	77.08	0.88	
19	Portugal	316.54	76.78	0.87	●
20	France	315.82	76.75	0.86	
21	Sweden	307.44	76.39	0.86	
22	Jamaica	284.88	75.37	0.85	●
23	Germany	283.49	75.31	0.84	
24	Luxembourg	264.08	74.36	0.84	
25	Finland	250.90	73.68	0.83	
26	Belize	247.20	73.48	0.82	●
27	Cyprus	220.38	71.95	0.81	
28	Estonia	217.73	71.79	0.81	
29	Armenia	210.73	71.35	0.80	
30	Austria	210.22	71.32	0.79	
31	Italy	196.28	70.41	0.79	
32	New Zealand	189.65	69.95	0.78	
33	Australia	188.19	69.84	0.77	
34	China	183.53	69.51	0.76	
35	Belgium	178.57	69.15	0.76	
36	Guyana	175.61	68.92	0.75	●
37	Jordan	166.19	68.19	0.74	●
38	Albania	145.35	66.40	0.74	●
39	Lithuania	145.26	66.39	0.73	
40	United Kingdom	139.23	65.83	0.72	
41	Latvia	138.61	65.77	0.71	
42	Thailand	138.03	65.71	0.71	
43	Japan	132.16	65.14	0.70	
44	Croatia	128.50	64.76	0.69	
45	Spain	128.43	64.75	0.69	
46	Denmark	117.58	63.58	0.68	
47	Mongolia	117.17	63.53	0.67	
48	Bahrain	116.17	63.42	0.66	
49	Mauritius	114.84	63.26	0.66	
50	Chile	110.77	62.78	0.65	
51	Georgia	106.44	62.25	0.64	
52	Malta	105.91	62.19	0.64	
53	TFYR of Macedonia	100.66	61.51	0.63	
54	Hungary	98.71	61.25	0.62	
55	Moldova, Rep.	98.37	61.20	0.61	
56	India	93.50	60.53	0.61	
57	Slovenia	91.74	60.27	0.60	
58	Romania	88.04	59.72	0.59	
59	Colombia	84.70	59.21	0.59	
60	Peru	83.16	58.96	0.58	
61	Serbia (2011)	81.30	58.66	0.57	
62	Turkey	81.08	58.63	0.56	
63	Costa Rica	79.73	58.40	0.56	
64	Slovakia	77.60	58.04	0.55	
65	Ghana	77.01	57.94	0.54	
66	Kazakhstan	75.31	57.65	0.54	
67	Nepal	75.10	57.61	0.53	●
68	Malaysia	72.41	57.12	0.52	
69	Mexico	71.88	57.03	0.51	
70	Uruguay	71.85	57.02	0.51	
71	Panama	69.68	56.61	0.50	
72	Russian Federation	66.69	56.03	0.49	
73	Brunei Darussalam	62.12	55.08	0.49	
74	Venezuela, Bolivarian Rep.	62.00	55.06	0.48	
75	South Africa	60.62	54.76	0.47	
76	Oman	57.07	53.95	0.46	
77	El Salvador	55.38	53.55	0.46	
78	Belarus	54.54	53.35	0.45	
79	Kenya	54.15	53.25	0.44	
80	Botswana	54.09	53.24	0.44	
81	Viet Nam	54.01	53.22	0.43	
82	Dominican Republic	49.70	52.11	0.42	
83	Azerbaijan	49.21	51.98	0.41	
84	Ukraine	47.76	51.58	0.41	
85	Bosnia and Herzegovina	47.71	51.57	0.40	
86	Gambia	46.29	51.17	0.39	
87	Czech Republic	44.48	50.64	0.39	○
88	Honduras	43.65	50.39	0.38	
89	Ecuador	43.34	50.29	0.37	
90	Qatar	42.90	50.16	0.36	
91	Egypt	42.43	50.01	0.36	
92	Zimbabwe	40.95	49.54	0.35	
93	Kyrgyzstan	39.98	49.22	0.34	
94	Cameroon	39.82	49.17	0.34	
95	United Arab Emirates	39.79	49.16	0.33	○
96	Gabon	39.69	49.12	0.32	
97	Poland	38.61	48.75	0.31	○
98	Tunisia	36.48	48.00	0.31	
99	Nigeria	35.85	47.77	0.30	
100	Morocco	35.79	47.75	0.29	
101	Brazil	35.33	47.57	0.29	
102	Argentina	31.20	45.92	0.28	
103	Bolivia, Plurinational St.	29.24	45.06	0.27	
104	Sri Lanka	29.07	44.99	0.26	
105	Iran, Islamic Rep.	28.99	44.95	0.26	
106	Nicaragua	28.97	44.94	0.25	
107	Lesotho	27.90	44.44	0.24	
108	Côte d'Ivoire	27.36	44.18	0.24	
109	Togo	26.23	43.62	0.23	
110	Pakistan	22.96	41.85	0.22	
111	Guatemala	22.77	41.74	0.21	
112	Fiji	22.60	41.64	0.21	
113	Senegal	21.59	41.04	0.20	
114	Namibia	21.08	40.72	0.19	
115	Syrian Arab Republic	20.98	40.65	0.19	
116	Benin	20.36	40.26	0.18	
117	Swaziland	20.22	40.16	0.17	
118	Indonesia	16.87	37.76	0.16	
119	Philippines	16.81	37.72	0.16	
120	Uzbekistan	15.47	36.62	0.15	
121	Paraguay	13.20	34.52	0.14	
122	Burkina Faso	12.66	33.97	0.14	
123	Zambia	11.52	32.72	0.13	
124	Bangladesh	11.08	32.20	0.12	
125	Uganda	10.83	31.90	0.11	
126	Tajikistan	9.11	29.63	0.11	
127	Rwanda	8.56	28.81	0.10	
128	Cape Verde	7.06	26.27	0.09	○
129	Tanzania, United Rep.	6.74	25.67	0.09	
130	Yemen	6.18	24.53	0.08	
131	Cambodia	5.72	23.51	0.07	
132	Guinea	5.32	22.56	0.06	
133	Mali	4.56	20.55	0.06	
134	Malawi	3.84	18.34	0.05	
135	Madagascar	3.84	18.31	0.04	
136	Ethiopia	3.48	17.06	0.04	
137	Algeria	2.98	15.07	0.03	○
138	Angola	2.63	13.46	0.02	○
139	Niger	2.11	10.64	0.01	
140	Sudan	1.45	6.00	0.01	○
141	Mozambique	0.89	0.00	0.00	○
n/a	Montenegro	n/a	n/a	n/a	

SOURCE: Graduate Management Admission Council; United Nations, *World Population Prospects: The 2010 Revision* (population data) (2011–12)

NOTE: ● indicates a strength; ○ a weakness.

5.2.1 University/industry research collaboration

Average answer to the survey question: To what extent do business and universities collaborate on research and development (R&D) in your country? (1 = Do not collaborate at all; 7 = Collaborate extensively) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Switzerland	5.93	82.23	1.00	●
2	United Kingdom	5.75	79.22	0.99	●
3	United States of America	5.63	77.19	0.99	●
4	Finland	5.60	76.70	0.98	
5	Singapore	5.59	76.49	0.97	
6	Belgium	5.52	75.39	0.96	●
7	Sweden	5.42	73.59	0.96	
8	Israel	5.39	73.22	0.95	
9	Qatar	5.39	73.18	0.94	●
10	Netherlands	5.30	71.60	0.93	
11	Germany	5.25	70.82	0.93	
12	Australia	5.10	68.31	0.92	
13	Ireland	5.10	68.26	0.91	
14	Canada	5.09	68.16	0.90	
15	Japan	5.03	67.11	0.90	
16	Luxembourg	4.99	66.53	0.89	
17	Malaysia	4.98	66.35	0.88	
18	Norway	4.97	66.12	0.87	
19	Iceland	4.92	65.31	0.87	
20	Denmark	4.92	65.28	0.86	
21	Austria	4.89	64.76	0.85	
22	New Zealand	4.86	64.37	0.84	
23	Hong Kong (China)	4.85	64.11	0.84	
24	Korea, Rep.	4.70	61.74	0.83	
25	United Arab Emirates	4.64	60.63	0.82	
26	Portugal	4.63	60.53	0.81	
27	Czech Republic	4.54	58.98	0.81	
28	Lithuania	4.51	58.58	0.80	●
29	South Africa	4.51	58.49	0.79	●
30	Saudi Arabia	4.50	58.33	0.79	
31	France	4.44	57.36	0.78	
32	Estonia	4.41	56.90	0.77	
33	China	4.37	56.21	0.76	
34	Costa Rica	4.35	55.88	0.76	
35	Hungary	4.30	55.06	0.75	
36	Barbados	4.27	54.57	0.74	
37	Chile	4.20	53.36	0.73	
38	Indonesia	4.18	53.04	0.73	●
39	Kenya	4.17	52.78	0.72	
40	Mexico	4.13	52.13	0.71	
41	Panama	4.10	51.73	0.70	●
42	Brazil	4.10	51.68	0.70	
43	Spain	4.05	50.88	0.69	
44	Thailand	4.01	50.22	0.68	
45	Colombia	3.99	49.77	0.67	
46	Bosnia and Herzegovina	3.90	48.31	0.67	
47	Slovenia	3.89	48.12	0.66	
48	Brunei Darussalam	3.87	47.77	0.65	
49	India	3.85	47.48	0.64	
50	Rwanda	3.80	46.74	0.64	●
51	Guatemala	3.78	46.39	0.63	
52	Oman	3.78	46.34	0.62	
53	Zambia	3.78	46.29	0.61	●
54	Tanzania, United Rep.	3.77	46.11	0.61	●
55	Argentina	3.76	46.01	0.60	
56	Gambia	3.76	45.99	0.59	●
57	Tunisia (2011)	3.75	45.79	0.59	
58	Latvia	3.74	45.63	0.58	
59	Montenegro	3.73	45.46	0.57	
60	Uruguay	3.72	45.28	0.56	
61	Cyprus	3.71	45.15	0.56	
62	Botswana	3.68	44.63	0.55	
63	Malta	3.67	44.51	0.54	
64	Italy	3.63	43.87	0.53	
65	Venezuela, Bolivarian Rep.	3.63	43.85	0.53	
66	Poland	3.59	43.19	0.52	
67	Uganda	3.58	43.01	0.51	
68	Ukraine	3.57	42.78	0.50	
69	Turkey	3.57	42.76	0.50	
70	Cambodia	3.52	41.98	0.49	
71	Nigeria	3.51	41.76	0.48	
72	Namibia	3.50	41.70	0.47	
73	Malawi	3.49	41.58	0.47	
74	Trinidad and Tobago	3.48	41.33	0.46	
75	Jamaica	3.48	41.30	0.45	
76	Mozambique	3.48	41.26	0.44	
77	Philippines	3.46	40.94	0.44	
78	Croatia	3.45	40.91	0.43	
79	Pakistan	3.44	40.65	0.42	
80	Azerbaijan	3.43	40.52	0.41	
81	Tajikistan	3.43	40.42	0.41	
82	Ecuador	3.42	40.32	0.40	
83	Russian Federation	3.42	40.31	0.39	
84	Senegal	3.39	39.76	0.39	
85	Iran, Islamic Rep.	3.37	39.54	0.38	
86	Bolivia, Plurinational St.	3.35	39.09	0.37	
87	Dominican Republic	3.34	39.02	0.36	
88	Kazakhstan	3.34	38.96	0.36	
89	Mauritius	3.30	38.32	0.35	
90	El Salvador	3.28	38.01	0.34	
91	Jordan	3.27	37.85	0.33	
92	Guyana	3.26	37.64	0.33	
93	Lebanon	3.25	37.58	0.32	
94	Honduras	3.24	37.26	0.31	
95	Viet Nam	3.24	37.26	0.30	
96	Cameroon	3.23	37.15	0.30	
97	Serbia	3.23	37.14	0.29	
98	Slovakia	3.22	37.05	0.28	○
99	Ethiopia	3.21	36.80	0.27	
100	Mongolia	3.21	36.80	0.27	
101	Madagascar	3.21	36.77	0.26	
102	Burkina Faso	3.17	36.13	0.25	
103	TFYR of Macedonia	3.17	36.10	0.24	○
104	Ghana	3.15	35.86	0.24	
105	Nicaragua	3.14	35.73	0.23	
106	Cape Verde	3.13	35.55	0.22	
107	Peru	3.12	35.39	0.21	○
108	Mali	3.11	35.15	0.21	
109	Zimbabwe	3.10	34.98	0.20	
110	Romania	3.08	34.70	0.19	○
111	Benin	3.04	34.06	0.19	
112	Bahrain	3.02	33.71	0.18	
113	Morocco	3.01	33.50	0.17	○
114	Bulgaria	3.00	33.38	0.16	○
115	Sri Lanka	2.98	33.01	0.16	○
116	Kuwait	2.96	32.75	0.15	
117	Armenia	2.89	31.56	0.14	○
118	Greece	2.86	30.96	0.13	○
119	Moldova, Rep.	2.75	29.19	0.13	○
120	Paraguay	2.74	29.02	0.12	
121	Nepal	2.74	28.92	0.11	
122	Egypt	2.68	28.05	0.10	○
123	Swaziland	2.60	26.73	0.10	
124	Bangladesh	2.58	26.27	0.09	
125	Lesotho	2.54	25.67	0.08	
126	Georgia	2.51	25.17	0.07	○
127	Belize (2011)	2.45	24.23	0.07	○
128	Guinea	2.42	23.73	0.06	
129	Syrian Arab Republic (2011)	2.40	23.36	0.05	
130	Côte d'Ivoire	2.37	22.80	0.04	○
131	Albania	2.28	21.26	0.04	○
132	Gabon	2.17	19.47	0.03	○
133	Angola (2011)	2.07	17.82	0.02	
134	Kyrgyzstan	2.03	17.23	0.01	○
135	Yemen	1.86	14.37	0.01	○
136	Algeria	1.85	14.22	0.00	○
n/a	Belarus	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	

SOURCE: World Economic Forum, *Executive Opinion Survey 2011–2012* (2011–12)

NOTE: ● indicates a strength; ○ a weakness.

5.2.2 State of cluster development

Mean of the average responses to two survey questions on the role of clusters in the economy. 'Clusters' are defined as geographic concentrations of firms, suppliers, producers of related products and services, and specialized institutions in a particular field. The questions are: (1) In your country, how prevalent are well-developed and deep clusters? [1 = nonexistent; 7 = widespread in many fields]; and (2) In your country, how extensive is collaboration among firms (e.g., suppliers, competitors, clients) in order to promote knowledge flows and innovation? [1 = collaboration is nonexistent; 7 = collaboration is extensive] | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Finland	5.27	71.12	1.00	●
2	Qatar	5.19	69.91	0.99	●
3	Japan	5.17	69.45	0.99	●
4	Singapore	5.15	69.08	0.98	
5	United Kingdom	5.13	68.82	0.97	●
6	Germany	5.11	68.56	0.96	●
7	United Arab Emirates	5.11	68.46	0.96	●
8	Switzerland	5.05	67.45	0.95	
9	United States of America	5.03	67.12	0.94	
10	Sweden	4.98	66.26	0.93	
11	Malaysia	4.97	66.10	0.93	●
12	Hong Kong (China)	4.96	65.93	0.92	
13	Netherlands	4.93	65.47	0.91	
14	Canada	4.82	63.59	0.90	
15	Norway	4.81	63.50	0.90	
16	Austria	4.74	62.30	0.89	
17	Italy	4.72	61.98	0.88	●
18	Denmark	4.69	61.43	0.87	
19	Belgium	4.67	61.16	0.87	
20	Saudi Arabia	4.63	60.57	0.86	●
21	Luxembourg	4.63	60.49	0.85	
22	China	4.58	59.67	0.84	
23	Ireland	4.55	59.11	0.84	
24	Korea, Rep.	4.48	57.99	0.83	
25	France	4.37	56.18	0.82	
26	Bahrain	4.36	56.02	0.81	
27	Sri Lanka	4.33	55.47	0.81	●
28	Chile	4.30	55.00	0.80	●
29	India	4.30	54.92	0.79	●
30	Viet Nam	4.27	54.50	0.79	●
31	Brazil	4.27	54.47	0.78	●
32	Indonesia	4.26	54.41	0.77	●
33	Iceland	4.26	54.30	0.76	
34	Australia	4.24	53.92	0.76	
35	Israel	4.16	52.64	0.75	
36	Mexico	4.15	52.43	0.74	
37	Thailand	4.14	52.40	0.73	
38	Oman	4.11	51.84	0.73	●
39	New Zealand	4.11	51.81	0.72	
40	Cyprus	4.08	51.26	0.71	
41	Costa Rica	4.06	50.96	0.70	
42	Spain	4.05	50.76	0.70	
43	Czech Republic	4.04	50.58	0.69	
44	Philippines	4.03	50.44	0.68	
45	Guatemala	4.03	50.42	0.67	●
46	Cambodia	4.02	50.36	0.67	●
47	South Africa	4.01	50.10	0.66	
48	Zambia	3.99	49.77	0.65	●
49	Jordan	3.96	49.41	0.64	
50	Panama	3.96	49.40	0.64	
51	Turkey	3.95	49.25	0.63	
52	Brunei Darussalam	3.94	48.95	0.62	
53	Nigeria	3.93	48.77	0.61	●
54	Portugal	3.88	47.93	0.61	
55	Gambia	3.88	47.93	0.60	●
56	Kenya	3.84	47.38	0.59	
57	Barbados	3.82	46.96	0.59	
58	Mauritius	3.82	46.92	0.58	
59	Azerbaijan	3.79	46.46	0.57	
60	Rwanda	3.78	46.38	0.56	●
61	Morocco	3.76	46.05	0.56	
62	Estonia	3.76	45.98	0.55	
63	Pakistan	3.74	45.61	0.54	●
64	Colombia	3.73	45.50	0.53	
65	Honduras	3.73	45.47	0.53	
66	Slovenia	3.68	44.72	0.52	
67	Bangladesh	3.66	44.27	0.51	
68	Jamaica	3.64	43.99	0.50	
69	Guyana	3.64	43.98	0.50	
70	Dominican Republic	3.62	43.74	0.49	
71	Uruguay	3.61	43.53	0.48	
72	Slovakia	3.58	42.96	0.47	
73	Malta	3.58	42.93	0.47	
74	Peru	3.57	42.86	0.46	
75	Armenia	3.49	41.57	0.45	
76	Botswana	3.49	41.48	0.44	
77	Ecuador	3.48	41.40	0.44	
78	Egypt	3.48	41.28	0.43	
79	Bulgaria	3.47	41.21	0.42	
80	Namibia	3.47	41.20	0.41	
81	Croatia	3.47	41.18	0.41	
82	Trinidad and Tobago	3.47	41.18	0.40	
83	Kazakhstan	3.45	40.92	0.39	
84	Tanzania, United Rep.	3.43	40.54	0.39	
85	Bolivia, Plurinational St.	3.41	40.09	0.38	
86	Senegal	3.40	40.01	0.37	
87	Argentina	3.39	39.88	0.36	
88	Hungary	3.38	39.65	0.36	○
89	TFYR of Macedonia	3.38	39.64	0.35	
90	Mozambique	3.37	39.49	0.34	
91	Iran, Islamic Rep.	3.36	39.28	0.33	
92	Latvia	3.34	38.93	0.33	○
93	Tunisia (2011)	3.32	38.71	0.32	
94	El Salvador	3.32	38.70	0.31	
95	Poland	3.32	38.59	0.30	○
96	Bosnia and Herzegovina	3.31	38.58	0.30	
97	Kuwait	3.30	38.25	0.29	
98	Nicaragua	3.29	38.21	0.28	
99	Nepal	3.29	38.16	0.27	
100	Malawi	3.27	37.86	0.27	
101	Uganda	3.27	37.78	0.26	
102	Lithuania	3.27	37.78	0.25	○
103	Ghana	3.25	37.54	0.24	
104	Swaziland	3.20	36.64	0.24	
105	Cameroon	3.20	36.62	0.23	
106	Montenegro	3.20	36.60	0.22	○
107	Mali	3.19	36.50	0.21	
108	Russian Federation	3.16	35.97	0.21	○
109	Georgia	3.14	35.69	0.20	
110	Ukraine	3.12	35.37	0.19	○
111	Romania	3.12	35.25	0.19	○
112	Ethiopia	3.11	35.13	0.18	
113	Lebanon	3.08	34.72	0.17	○
114	Syrian Arab Republic (2011)	3.08	34.61	0.16	
115	Venezuela, Bolivarian Rep.	3.03	33.88	0.16	
116	Paraguay	3.03	33.83	0.15	
117	Lesotho	2.98	33.00	0.14	
118	Tajikistan	2.98	32.93	0.13	
119	Zimbabwe	2.97	32.75	0.13	
120	Cape Verde	2.96	32.65	0.12	
121	Guinea	2.96	32.61	0.11	
122	Madagascar	2.94	32.42	0.10	
123	Mongolia	2.94	32.32	0.10	○
124	Gabon	2.88	31.37	0.09	
125	Serbia	2.88	31.30	0.08	○
126	Greece	2.85	30.81	0.07	○
127	Benin	2.77	29.55	0.07	
128	Burkina Faso	2.73	28.84	0.06	
129	Côte d'Ivoire	2.71	28.55	0.05	○
130	Belize (2011)	2.59	26.53	0.04	○
131	Moldova, Rep.	2.56	25.98	0.04	○
132	Angola (2011)	2.41	23.56	0.03	
133	Kyrgyzstan	2.38	23.01	0.02	○
134	Yemen	2.25	20.88	0.01	
135	Algeria	2.23	20.52	0.01	○
136	Albania	2.14	19.06	0.00	○
n/a	Belarus	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	

SOURCE: World Economic Forum, *Executive Opinion Survey 2011–2012* (2011–12)

NOTE: ● indicates a strength; ○ a weakness.

5.2.3 GERD financed by abroad

GERD: Financed by abroad (% of total GERD) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Mozambique (2007)	64.32	100.00	1.00	●
2	Burkina Faso	59.61	92.66	0.99	●
3	Panama (2010)	49.52	76.98	0.98	●
4	Mali (2007)	49.04	76.24	0.97	●
5	Guatemala	47.74	74.21	0.95	●
6	Israel	42.83	66.58	0.94	
7	Tanzania, United Rep. (2007)	38.36	59.63	0.93	●
8	Senegal (2008)	38.27	59.48	0.92	●
9	Latvia (2010)	33.38	51.88	0.91	●
10	Ethiopia (2010)	29.96	46.56	0.90	●
11	Uganda	26.06	40.50	0.89	●
12	Ukraine	22.29	34.63	0.87	●
13	Lithuania (2010)	20.00	31.07	0.86	●
14	Luxembourg (2011)	19.86	30.86	0.85	
15	Ireland (2011)	19.24	29.90	0.84	
16	Greece (2005)	18.99	29.50	0.83	
17	Bolivia, Plurinational St.	18.58	28.87	0.82	●
18	Malta (2010)	18.01	27.99	0.80	
19	Kenya (2007)	17.62	27.38	0.79	●
20	United Kingdom (2011)	16.98	26.37	0.78	
21	Chile (2010)	15.73	24.44	0.77	
22	Austria (2012)	15.55	24.15	0.76	
23	Czech Republic (2011)	15.23	23.65	0.75	
24	Tunisia	14.95	23.22	0.74	●
25	Slovakia (2011)	14.16	21.99	0.72	
26	Hungary (2011)	13.45	20.89	0.71	
27	Poland (2011)	13.39	20.80	0.70	
28	Paraguay (2008)	12.25	19.03	0.69	●
29	South Africa	12.11	18.81	0.68	
30	Belgium	12.11	18.81	0.67	
31	Romania (2011)	12.07	18.74	0.66	
32	Cyprus	12.06	18.74	0.64	
33	Estonia (2011)	11.97	18.59	0.63	
34	Ghana (2007)	11.95	18.55	0.62	●
35	El Salvador	11.25	17.47	0.61	
36	Sweden (2011)	10.86	16.86	0.60	○
37	Netherlands	10.85	16.84	0.59	○
38	Iceland (2008)	10.04	15.59	0.57	
39	Croatia (2010)	9.86	15.31	0.56	
40	Italy (2010)	9.82	15.25	0.55	
41	Denmark (2011)	8.73	13.55	0.54	○
42	Belarus	8.50	13.19	0.53	
43	Bulgaria	8.38	13.01	0.52	
44	Madagascar (2007)	8.36	12.97	0.51	
45	Norway	8.20	12.73	0.49	○
46	France (2010)	7.61	11.81	0.48	○
47	Albania (2008)	7.37	11.43	0.47	
48	Serbia	7.18	11.15	0.46	
49	Slovenia (2011)	7.02	10.89	0.45	
50	Brunei Darussalam (2003)	6.56	10.18	0.44	
51	Finland (2011)	6.54	10.15	0.43	○
52	Moldova, Rep.	6.49	10.06	0.41	
53	Canada (2011)	6.43	9.98	0.40	○
54	Hong Kong (China)	6.09	9.45	0.39	○
55	Switzerland (2008)	5.95	9.23	0.38	○
56	Spain (2010)	5.73	8.89	0.37	○
57	New Zealand	5.36	8.31	0.36	○
58	Singapore (2010)	4.87	7.55	0.34	○
59	Russian Federation (2011)	4.28	6.64	0.33	
60	Sri Lanka (2008)	4.27	6.62	0.32	
61	Armenia	4.22	6.54	0.31	
62	Colombia (2010)	4.22	6.53	0.30	
63	Philippines (2007)	4.12	6.39	0.29	
64	Germany (2010)	3.88	6.02	0.28	○
65	Portugal (2010)	3.20	4.95	0.26	○
66	Gabon	3.09	4.78	0.25	
67	Morocco (2006)	2.61	4.04	0.24	
68	Uruguay	1.85	2.86	0.23	
69	Thailand (2005)	1.84	2.83	0.22	○
70	Mongolia	1.81	2.79	0.21	
71	Mexico	1.75	2.70	0.20	○
72	Costa Rica	1.66	2.56	0.18	○
73	Zambia (2008)	1.62	2.49	0.17	
74	Australia (2008)	1.61	2.48	0.16	○
75	China (2010)	1.30	2.01	0.15	○
76	Kuwait	1.18	1.80	0.14	○
77	Nigeria (2007)	1.04	1.59	0.13	
78	Kazakhstan (2008)	0.96	1.46	0.11	○
79	Pakistan	0.92	1.41	0.10	
80	Turkey (2010)	0.83	1.26	0.09	○
81	Tajikistan (2006)	0.67	1.01	0.08	
82	Argentina (2010)	0.60	0.91	0.07	○
83	Ecuador (2008)	0.50	0.75	0.06	○
84	Japan (2010)	0.45	0.67	0.05	○
85	Korea, Rep. (2010)	0.22	0.31	0.03	○
86	Malaysia (2006)	0.19	0.28	0.02	○
87	Azerbaijan	0.07	0.09	0.01	○
88	Kyrgyzstan (2005)	0.01	0.00	0.00	○
n/a	Algeria	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brazil	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Egypt	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Georgia	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	India	n/a	n/a	n/a	
n/a	Indonesia	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Peru	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	TFYR of Macedonia	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	United States of America	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Viet Nam	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2003–12)

NOTE: ● indicates a strength; ○ a weakness.

5.2.4 Joint venture/strategic alliance deals

Joint ventures/strategic alliances: Number of deals, fractional counting (per trillion PPP$ GDP) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Bahrain	0.66	100.00	0.97	●
1	Jordan	0.27	100.00	0.97	●
1	United Arab Emirates	0.26	100.00	0.97	●
1	Oman	0.23	100.00	0.97	●
1	Qatar	0.22	100.00	0.97	●
6	TFYR of Macedonia	0.18	82.34	0.96	●
7	Singapore	0.16	74.89	0.96	
8	Hong Kong (China)	0.15	70.12	0.95	
9	Israel	0.13	59.76	0.94	
10	Kuwait	0.13	58.15	0.94	●
11	Fiji	0.12	52.92	0.93	●
12	Canada	0.11	50.85	0.92	
13	Saudi Arabia	0.11	50.34	0.91	●
14	Denmark	0.11	49.11	0.91	
15	Ireland	0.11	48.78	0.90	
16	Luxembourg	0.11	48.62	0.89	
17	New Zealand	0.10	46.70	0.89	
18	Mongolia	0.10	44.93	0.88	●
19	Australia	0.09	42.79	0.87	
20	Malta	0.09	40.93	0.87	
21	Switzerland	0.09	40.57	0.86	
22	Malaysia	0.09	40.43	0.85	
23	Finland	0.09	39.93	0.84	
24	Cyprus	0.08	38.69	0.84	
25	United States of America	0.08	38.45	0.83	
26	Guyana	0.08	36.98	0.82	●
27	United Kingdom	0.08	34.59	0.82	
28	Sweden	0.08	34.29	0.81	
29	Norway	0.07	33.33	0.80	
30	Zimbabwe	0.07	32.99	0.79	●
31	Brunei Darussalam	0.07	31.16	0.79	●
32	Egypt	0.07	30.93	0.78	●
33	Estonia	0.07	30.73	0.77	
34	Netherlands	0.07	29.88	0.77	
35	Namibia	0.06	27.06	0.76	●
36	Mozambique	0.06	26.09	0.75	●
37	Thailand	0.05	24.15	0.74	
38	Uzbekistan	0.05	24.13	0.74	●
39	Armenia	0.05	24.03	0.73	
40	Slovenia	0.05	23.61	0.72	
41	Philippines	0.05	22.70	0.72	●
42	Zambia	0.04	19.26	0.71	●
43	Japan	0.04	18.13	0.70	
44	India	0.04	17.80	0.70	
45	Viet Nam	0.04	17.69	0.69	
46	Iceland	0.04	17.57	0.68	
47	Georgia	0.04	17.16	0.67	
48	Gabon	0.04	17.07	0.67	●
49	Kyrgyzstan	0.04	16.92	0.66	●
50	Cambodia	0.04	16.61	0.65	●
51	South Africa	0.04	16.54	0.65	
52	Sri Lanka	0.04	16.25	0.64	
53	Greece	0.03	15.42	0.63	
54	Belgium	0.03	15.17	0.62	
55	China	0.03	14.83	0.62	
56	Benin	0.03	14.70	0.61	●
57	Lebanon	0.03	13.12	0.60	
58	Germany	0.03	13.02	0.60	
59	France	0.03	12.98	0.59	
60	Russian Federation	0.03	12.97	0.58	
61	Korea, Rep.	0.03	12.65	0.57	
62	Nepal	0.03	12.20	0.57	●
63	Austria	0.03	12.17	0.56	
64	Nicaragua	0.03	11.46	0.55	●
65	Serbia	0.03	11.45	0.55	
66	Mauritius	0.02	11.25	0.54	
67	Turkey	0.02	10.60	0.53	
68	Indonesia	0.02	10.59	0.52	
69	Croatia	0.02	10.49	0.52	
70	Italy	0.02	9.73	0.51	
71	Latvia	0.02	9.23	0.50	
72	Cameroon	0.02	9.06	0.50	●
73	Bulgaria	0.02	8.79	0.49	
74	Senegal	0.02	8.60	0.48	
75	Algeria	0.02	8.03	0.48	●
76	Spain	0.02	7.79	0.47	○
77	Ghana	0.02	7.31	0.46	
78	Kazakhstan	0.02	7.26	0.45	
79	Botswana	0.02	7.24	0.45	
80	Tanzania, United Rep.	0.02	7.24	0.44	
81	Chile	0.02	7.14	0.43	
82	Bolivia, Plurinational St.	0.02	6.99	0.43	
83	Brazil	0.02	6.95	0.42	
84	Hungary	0.02	6.95	0.41	
85	Morocco	0.02	6.89	0.40	
86	Panama	0.01	6.81	0.40	
87	Colombia	0.01	5.47	0.39	
88	Poland	0.01	5.21	0.38	
89	Ecuador	0.01	5.08	0.38	
90	Bosnia and Herzegovina	0.01	4.74	0.37	
91	Portugal	0.01	4.65	0.36	○
92	Azerbaijan	0.01	4.64	0.35	
93	Czech Republic	0.01	4.45	0.35	○
94	Ukraine	0.01	4.41	0.34	
95	Peru	0.01	4.20	0.33	
96	Yemen	0.01	3.95	0.33	
97	Costa Rica	0.01	3.89	0.32	
98	Lithuania	0.01	3.54	0.31	
99	Belarus	0.01	3.03	0.30	○
100	Bangladesh	0.01	2.98	0.30	
101	Guatemala	0.01	2.91	0.29	
102	Angola	0.01	2.53	0.28	
103	Mexico	0.01	2.44	0.28	○
104	Argentina	0.01	2.44	0.27	
105	Dominican Republic	0.01	2.31	0.26	
106	Ethiopia	0.00	2.21	0.26	
107	Tunisia	0.00	2.18	0.25	
108	Romania	0.00	1.94	0.24	○
109	Venezuela, Bolivarian Rep.	0.00	1.70	0.23	
110	Pakistan	0.00	1.48	0.23	
111	Nigeria	0.00	1.01	0.22	
112	Slovakia	0.00	0.69	0.21	○
113	Iran, Islamic Rep.	0.00	0.69	0.21	
114	Albania	0.00	0.00	0.00	○
114	Barbados	0.00	0.00	0.00	○
114	Belize	0.00	0.00	0.00	○
114	Burkina Faso	0.00	0.00	0.00	○
114	Cape Verde	0.00	0.00	0.00	○
114	Côte d'Ivoire	0.00	0.00	0.00	○
114	El Salvador	0.00	0.00	0.00	○
114	Gambia	0.00	0.00	0.00	○
114	Guinea	0.00	0.00	0.00	○
114	Honduras	0.00	0.00	0.00	○
114	Jamaica	0.00	0.00	0.00	○
114	Kenya	0.00	0.00	0.00	○
114	Lesotho	0.00	0.00	0.00	○
114	Madagascar	0.00	0.00	0.00	○
114	Malawi	0.00	0.00	0.00	○
114	Mali	0.00	0.00	0.00	○
114	Moldova, Rep.	0.00	0.00	0.00	○
114	Montenegro	0.00	0.00	0.00	○
114	Niger	0.00	0.00	0.00	○
114	Paraguay	0.00	0.00	0.00	○
114	Rwanda	0.00	0.00	0.00	○
114	Sudan	0.00	0.00	0.00	○
114	Swaziland	0.00	0.00	0.00	○
114	Syrian Arab Republic (2011)	0.00	0.00	0.00	○
114	Tajikistan	0.00	0.00	0.00	○
114	Togo	0.00	0.00	0.00	○
114	Trinidad and Tobago	0.00	0.00	0.00	○
114	Uganda	0.00	0.00	0.00	○
114	Uruguay	0.00	0.00	0.00	○

SOURCE: Thomson Reuters, *Thomson One Banker Private Equity, SDC Platinum* database; International Monetary Fund *World Economic Outlook 2012* (PPP$ GDP) (2011–12)

NOTE: ● indicates a strength; ○ a weakness.

5.2.5 Patent families filed in at least three offices

Number of patent families filed by residents in at least three offices (per billion PPP$ GDP) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Switzerland	6.46	100.00	1.00	●
2	Japan	5.45	96.01	0.99	●
3	Finland	5.35	95.59	0.98	●
4	Korea, Rep.	5.21	94.94	0.98	●
5	Barbados	4.82	93.10	0.97	●
6	Sweden	4.37	90.79	0.96	●
7	Luxembourg	4.14	89.55	0.95	
8	Germany	4.00	88.77	0.95	
9	Israel	3.71	87.01	0.94	
10	France	2.39	76.76	0.93	●
11	Netherlands	2.12	74.01	0.92	
12	Austria	1.96	72.22	0.91	
13	United States of America	1.92	71.81	0.91	
14	Denmark	1.71	69.10	0.90	
15	Norway	1.54	66.73	0.89	
16	United Kingdom	1.52	66.42	0.88	
17	Belgium	1.38	64.26	0.88	
18	Singapore	1.31	63.21	0.87	
19	Canada	1.09	59.11	0.86	
20	Ireland	1.05	58.20	0.85	
21	Australia	0.93	55.72	0.84	
22	Italy	0.91	55.24	0.84	
23	Malta	0.90	54.92	0.83	
24	Cyprus	0.80	52.34	0.82	
25	Slovenia	0.65	48.05	0.81	
26	Iceland	0.58	45.59	0.80	
27	New Zealand	0.53	43.72	0.80	
28	Spain	0.42	39.43	0.79	
29	Hungary	0.33	34.84	0.78	
30	China	0.30	32.91	0.77	
31	Hong Kong (China)	0.29	32.67	0.77	
32	Estonia	0.25	29.81	0.76	
33	Czech Republic	0.22	27.65	0.75	
34	Portugal	0.13	20.07	0.74	
35	Poland	0.12	18.79	0.73	
36	Uruguay	0.12	18.39	0.73	
37	Slovakia	0.11	17.08	0.72	
38	Moldova, Rep.	0.10	16.24	0.71	
39	Mongolia	0.10	16.12	0.70	
40	Latvia	0.09	15.66	0.70	
41	Croatia	0.09	15.23	0.69	
42	Brazil	0.08	14.17	0.68	
43	Greece	0.08	13.39	0.67	
44	Malaysia	0.07	11.92	0.66	
45	Argentina (2008)	0.06	11.30	0.66	
46	Mauritius (2008)	0.06	11.21	0.65	
47	Russian Federation	0.06	10.71	0.64	
48	Lithuania	0.05	10.25	0.63	
49	Bulgaria	0.05	9.96	0.63	
50	Saudi Arabia (2007)	0.04	8.29	0.62	
51	Mexico	0.04	7.77	0.61	
52	Turkey	0.04	7.75	0.60	
53	South Africa	0.04	7.21	0.59	
54	Romania	0.03	5.72	0.59	
55	Serbia	0.03	5.65	0.58	
56	Colombia	0.02	5.12	0.57	
57	El Salvador	0.02	5.07	0.56	
58	Chile	0.02	3.42	0.55	
59	India	0.02	3.39	0.55	
60	Sri Lanka	0.01	2.33	0.54	
61	Ukraine	0.01	2.32	0.53	
62	Belarus	0.01	1.88	0.52	
63	Peru	0.01	1.81	0.52	
64	Morocco	0.01	1.57	0.51	
65	Philippines	0.01	1.36	0.50	
66	Thailand	0.01	1.28	0.49	
67	United Arab Emirates	0.00	0.99	0.48	
68	Iran, Islamic Rep. (2006)	0.00	0.31	0.48	
69	Albania	0.00	0.00	0.00	○
69	Algeria	0.00	0.00	0.00	○
69	Angola	0.00	0.00	0.00	○
69	Armenia	0.00	0.00	0.00	○
69	Azerbaijan	0.00	0.00	0.00	○
69	Bahrain	0.00	0.00	0.00	○
69	Bangladesh	0.00	0.00	0.00	○
69	Belize	0.00	0.00	0.00	○
69	Benin	0.00	0.00	0.00	○
69	Bosnia and Herzegovina	0.00	0.00	0.00	○
69	Botswana	0.00	0.00	0.00	○
69	Burkina Faso	0.00	0.00	0.00	○
69	Cameroon	0.00	0.00	0.00	○
69	Costa Rica	0.00	0.00	0.00	○
69	Côte d'Ivoire	0.00	0.00	0.00	○
69	Dominican Republic	0.00	0.00	0.00	○
69	Ecuador	0.00	0.00	0.00	○
69	Egypt	0.00	0.00	0.00	○
69	Ethiopia (2007)	0.00	0.00	0.00	○
69	Gabon	0.00	0.00	0.00	○
69	Gambia	0.00	0.00	0.00	○
69	Georgia	0.00	0.00	0.00	○
69	Ghana	0.00	0.00	0.00	○
69	Guatemala	0.00	0.00	0.00	○
69	Guinea	0.00	0.00	0.00	○
69	Honduras	0.00	0.00	0.00	○
69	Indonesia	0.00	0.00	0.00	○
69	Jamaica	0.00	0.00	0.00	○
69	Jordan	0.00	0.00	0.00	○
69	Kazakhstan	0.00	0.00	0.00	○
69	Kenya	0.00	0.00	0.00	○
69	Kyrgyzstan	0.00	0.00	0.00	○
69	Lesotho	0.00	0.00	0.00	○
69	Madagascar	0.00	0.00	0.00	○
69	Malawi	0.00	0.00	0.00	○
69	Mali	0.00	0.00	0.00	○
69	Montenegro	0.00	0.00	0.00	○
69	Mozambique	0.00	0.00	0.00	○
69	Namibia	0.00	0.00	0.00	○
69	Nicaragua	0.00	0.00	0.00	○
69	Niger	0.00	0.00	0.00	○
69	Nigeria	0.00	0.00	0.00	○
69	Oman	0.00	0.00	0.00	○
69	Pakistan (2008)	0.00	0.00	0.00	○
69	Paraguay	0.00	0.00	0.00	○
69	Senegal	0.00	0.00	0.00	○
69	Sudan	0.00	0.00	0.00	○
69	Swaziland	0.00	0.00	0.00	○
69	Syrian Arab Republic	0.00	0.00	0.00	○
69	Tajikistan	0.00	0.00	0.00	○
69	Tanzania, United Rep.	0.00	0.00	0.00	○
69	TFYR of Macedonia	0.00	0.00	0.00	○
69	Togo	0.00	0.00	0.00	○
69	Trinidad and Tobago	0.00	0.00	0.00	○
69	Tunisia	0.00	0.00	0.00	○
69	Uganda	0.00	0.00	0.00	○
69	Uzbekistan	0.00	0.00	0.00	○
69	Viet Nam	0.00	0.00	0.00	○
69	Yemen (2007)	0.00	0.00	0.00	○
69	Zambia	0.00	0.00	0.00	○
69	Zimbabwe	0.00	0.00	0.00	○
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Panama	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; International Monetary Fund *World Economic Outlook 2012* (PPP$ GDP) (2006–09)

NOTE: ● indicates a strength; ○ a weakness.

5.3.1 Royalties and license fees payments

Royalty and license fees, payments (% of total service imports) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Switzerland (2010)	37.64	100.00	0.98	
1	Ireland	35.66	100.00	0.98	●
1	Netherlands	17.41	100.00	0.98	●
1	Singapore	17.00	100.00	0.98	
5	Japan	11.43	67.22	0.97	●
6	South Africa	10.77	63.35	0.96	●
7	Argentina	10.56	62.14	0.95	●
8	Canada	9.11	53.58	0.94	
9	New Zealand	8.59	50.50	0.94	●
10	Hungary	8.33	49.00	0.93	●
11	Slovenia	8.19	48.17	0.92	●
12	Guyana (2010)	8.15	47.92	0.91	●
13	United States of America	8.11	47.69	0.90	
14	Poland	8.02	47.19	0.90	●
15	Croatia	7.51	44.16	0.89	●
16	Korea, Rep.	7.35	43.21	0.88	
17	Malta	6.87	40.39	0.87	
18	Russian Federation	6.79	39.90	0.86	●
19	Australia	6.74	39.64	0.86	
20	Italy	6.55	38.52	0.85	
21	China	6.16	36.21	0.84	
22	Thailand	6.10	35.90	0.83	
23	United Kingdom	5.80	34.09	0.82	
24	Indonesia	5.52	32.47	0.82	●
25	Israel	5.36	31.53	0.81	
26	Ukraine	5.13	30.17	0.80	●
27	Czech Republic	5.13	30.16	0.79	
28	Iceland (2010)	4.98	29.25	0.78	
29	Serbia	4.58	26.95	0.78	
30	Romania	4.48	26.35	0.77	
31	Colombia	4.44	26.09	0.76	
32	Germany	4.43	26.05	0.75	
33	Brazil	4.32	25.42	0.74	
34	Guatemala	4.18	24.60	0.74	●
35	Malaysia (2009)	4.12	24.25	0.73	
36	France	4.00	23.49	0.72	
37	Austria	3.92	23.05	0.71	
38	Hong Kong (China) (2010)	3.88	22.80	0.70	
39	Chile	3.81	22.41	0.70	
40	Philippines	3.71	21.81	0.69	
41	El Salvador	3.62	21.27	0.68	●
42	Portugal	3.39	19.94	0.67	
43	Finland	3.38	19.84	0.66	
44	Costa Rica	3.23	18.96	0.66	
45	Sweden	3.20	18.82	0.65	
46	Turkey	3.18	18.72	0.64	
47	Peru	3.13	18.38	0.63	
48	Bulgaria	2.94	17.30	0.62	
49	Greece	2.91	17.12	0.62	
50	Venezuela, Bolivarian Rep.	2.91	17.08	0.61	●
51	Dominican Republic (2010)	2.90	17.06	0.60	
52	Belarus	2.85	16.75	0.59	
53	Spain	2.80	16.45	0.58	
54	Belgium	2.78	16.36	0.58	
55	Denmark	2.77	16.26	0.57	○
56	Barbados (2010)	2.61	15.35	0.56	
57	TFYR of Macedonia	2.51	14.76	0.55	
58	Swaziland (2010)	2.44	14.31	0.54	●
59	Mexico (2006)	2.27	13.35	0.54	
60	Slovakia	2.15	12.65	0.53	
61	India (2010)	2.09	12.25	0.52	
62	Ecuador	2.06	12.10	0.51	
63	Estonia	2.01	11.83	0.50	
64	Jamaica (2010)	1.99	11.68	0.50	
65	Moldova, Rep.	1.99	11.67	0.49	
66	Honduras	1.98	11.61	0.48	
67	Latvia	1.94	11.41	0.47	
68	Pakistan	1.60	9.37	0.46	
69	Egypt (2010)	1.54	9.01	0.46	
70	Madagascar (2005)	1.48	8.67	0.45	
71	Zimbabwe	1.45	8.48	0.44	
72	Botswana (2010)	1.30	7.64	0.43	
73	Bolivia, Plurinational St.	1.25	7.35	0.42	
74	Norway (2010)	1.25	7.34	0.42	○
75	Cyprus	1.22	7.16	0.41	
76	Belize	1.16	6.81	0.40	
77	Panama	1.13	6.61	0.39	
78	Uruguay	1.12	6.54	0.38	
79	Syrian Arab Republic (2010)	1.05	6.17	0.38	
80	Luxembourg	1.01	5.95	0.37	○
81	Cambodia	1.01	5.94	0.36	
82	Namibia	1.01	5.92	0.35	
83	Lithuania	0.95	5.59	0.34	
84	Kenya (2010)	0.88	5.18	0.34	
85	Bosnia and Herzegovina	0.87	5.10	0.33	
86	Nigeria	0.87	5.08	0.32	
87	Kazakhstan	0.86	5.06	0.31	
88	Iran, Islamic Rep. (2010)	0.82	4.83	0.30	
89	Côte d'Ivoire (2008)	0.80	4.66	0.30	
90	Algeria (2010)	0.72	4.23	0.29	
91	Cameroon (2010)	0.66	3.89	0.28	
92	Lesotho (2010)	0.66	3.86	0.27	
93	Montenegro	0.64	3.76	0.26	
94	Georgia	0.63	3.71	0.26	
95	Mauritius (2010)	0.61	3.56	0.25	
96	Albania	0.56	3.29	0.24	
97	Benin (2010)	0.56	3.27	0.23	
98	Kyrgyzstan	0.54	3.18	0.22	
99	Brunei Darussalam (2009)	0.53	3.09	0.22	
100	Senegal (2010)	0.52	3.04	0.21	
101	Morocco	0.48	2.82	0.20	
102	Tunisia (2010)	0.45	2.65	0.19	○
103	Zambia	0.44	2.59	0.18	
104	Togo (2010)	0.41	2.42	0.18	
105	Malawi (2009)	0.39	2.29	0.17	
106	Uganda	0.36	2.11	0.16	
107	Mozambique	0.34	1.96	0.15	
108	Mongolia	0.33	1.89	0.14	
109	Azerbaijan	0.32	1.87	0.14	
110	Paraguay	0.28	1.61	0.13	
111	Niger (2009)	0.27	1.57	0.12	
112	Bangladesh	0.22	1.30	0.11	
113	Yemen	0.21	1.22	0.10	
114	Mali (2010)	0.20	1.14	0.10	
115	Fiji (2010)	0.17	1.00	0.09	○
116	Guinea	0.13	0.77	0.08	
117	Cape Verde (2010)	0.12	0.66	0.07	○
118	Lebanon (2010)	0.10	0.55	0.06	○
119	Nicaragua	0.10	0.54	0.06	○
120	Sudan	0.07	0.37	0.05	
121	Ethiopia (2010)	0.04	0.21	0.04	
122	Angola (2010)	0.03	0.18	0.03	
123	Tanzania, United Rep. (2010)	0.01	0.06	0.02	
124	Burkina Faso (2010)	0.01	0.06	0.02	○
125	Tajikistan (2010)	0.01	0.04	0.01	○
126	Rwanda (2010)	0.00	0.00	0.00	○
n/a	Armenia	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Sri Lanka	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Viet Nam	n/a	n/a	n/a	

SOURCE: World Trade Organization, *Trade in Commercial Services* database, based on the International Monetary Fund *Balance of Payments* database (2005–11)

NOTE: ● indicates a strength; ○ a weakness.

5.3.2 High-tech imports

High-tech net imports (% of total net imports) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Hong Kong (China) (2012)	42.30	100.00	0.99	●
1	Singapore	28.05	100.00	0.99	●
3	Malaysia (2012)	27.81	99.05	0.98	●
4	Panama	24.61	86.61	0.98	●
5	China	22.33	77.79	0.97	●
6	Costa Rica	21.44	74.30	0.96	●
7	Ireland (2012)	19.31	66.06	0.95	●
8	Hungary	18.42	62.60	0.94	●
9	Mexico	18.39	62.46	0.93	●
10	Paraguay (2012)	18.21	61.79	0.93	●
11	Malta	17.99	60.91	0.92	●
12	Colombia	17.47	58.89	0.91	●
13	Czech Republic (2012)	17.29	58.21	0.90	●
14	United States of America	16.57	55.39	0.89	
15	Thailand (2012)	16.16	53.83	0.89	●
16	Netherlands	16.04	53.34	0.88	
17	Korea, Rep.	15.63	51.74	0.87	
18	Switzerland	15.14	49.83	0.86	
19	Brazil (2012)	14.79	48.48	0.85	●
20	Japan (2012)	14.36	46.83	0.84	
21	Sweden	14.12	45.89	0.84	
22	France	13.87	44.93	0.83	
23	Kenya (2010)	13.78	44.56	0.82	●
24	Germany (2012)	13.62	43.94	0.81	
25	Australia	13.61	43.92	0.80	
26	Argentina	13.34	42.85	0.80	●
27	Viet Nam	13.23	42.44	0.79	●
28	United Kingdom	13.11	41.96	0.78	
29	Estonia (2012)	12.95	41.35	0.77	
30	Cape Verde (2012)	12.86	40.98	0.76	●
31	New Zealand (2012)	12.27	38.70	0.75	
32	Canada (2012)	12.11	38.07	0.75	
33	Malawi	12.09	37.99	0.74	●
34	Saudi Arabia	11.64	36.25	0.73	
35	Israel	11.41	35.38	0.72	
36	Norway	11.40	35.32	0.71	
37	Denmark	11.24	34.72	0.70	
38	Azerbaijan (2012)	11.20	34.53	0.70	●
39	Slovakia	11.18	34.49	0.69	
40	South Africa (2012)	10.97	33.65	0.68	
41	Luxembourg	10.93	33.49	0.67	
42	Romania	10.79	32.94	0.66	
43	Uganda	10.54	31.98	0.66	●
44	Rwanda (2012)	10.40	31.44	0.65	●
45	Russian Federation	10.34	31.22	0.64	
46	Poland	10.22	30.75	0.63	
47	Uruguay (2009)	10.21	30.72	0.62	
48	Bolivia, Plurinational St.	10.12	30.36	0.61	●
49	Finland (2012)	10.00	29.89	0.61	
50	Austria	9.93	29.60	0.60	
51	Italy	9.79	29.09	0.59	
52	Indonesia	9.76	28.97	0.58	
53	Peru	9.60	28.35	0.57	
54	Ghana	9.58	28.27	0.57	●
55	Algeria	9.56	28.19	0.56	●
56	Kazakhstan (2012)	9.55	28.14	0.55	
57	Ecuador	9.46	27.78	0.54	
58	Tunisia	9.27	27.06	0.53	
59	Chile	9.25	26.98	0.52	
60	Honduras (2009)	8.81	25.29	0.52	
61	Belgium (2012)	8.57	24.32	0.51	○
62	Iceland	8.44	23.82	0.50	
63	Croatia (2012)	8.31	23.33	0.49	
64	Spain	8.26	23.14	0.48	○
65	Sudan (2009)	8.25	23.11	0.48	●
66	Tanzania, United Rep.	8.15	22.72	0.47	
67	Turkey (2012)	8.01	22.18	0.46	
68	Greece	7.97	22.02	0.45	
69	Niger	7.95	21.92	0.44	●
70	Bulgaria	7.83	21.45	0.43	
71	Guatemala (2012)	7.77	21.25	0.43	
72	Cyprus	7.70	20.98	0.42	
73	Bahrain	7.67	20.85	0.41	
74	El Salvador (2012)	7.66	20.81	0.40	
75	Ukraine (2012)	7.63	20.68	0.39	
76	Nicaragua	7.47	20.07	0.39	
77	Portugal (2012)	7.43	19.91	0.38	○
78	Iran, Islamic Rep.	7.29	19.37	0.37	
79	United Arab Emirates (2008)	7.26	19.27	0.36	
80	Trinidad and Tobago (2010)	7.21	19.07	0.35	
81	India	7.17	18.91	0.34	
82	Serbia	6.81	17.50	0.34	
83	Latvia (2012)	6.74	17.24	0.33	○
84	Slovenia (2012)	6.62	16.75	0.32	○
85	Côte d'Ivoire	6.58	16.62	0.31	
86	Oman (2007)	6.50	16.30	0.30	
87	Pakistan	6.44	16.08	0.30	
88	Namibia	6.38	15.85	0.29	
89	Georgia (2012)	6.29	15.46	0.28	
90	Kyrgyzstan	6.21	15.17	0.27	
91	Nepal	6.19	15.10	0.26	
92	Moldova, Rep. (2012)	6.19	15.08	0.25	
93	Mauritius (2012)	6.15	14.95	0.25	
94	Burkina Faso	5.89	13.93	0.24	
95	Armenia (2012)	5.89	13.92	0.23	
96	Mongolia (2007)	5.83	13.70	0.22	
97	TFYR of Macedonia (2012)	5.83	13.69	0.21	○
98	Sri Lanka	5.53	12.52	0.20	
99	Guyana	5.52	12.48	0.20	
100	Egypt (2012)	5.33	11.77	0.19	
101	Ethiopia	5.25	11.43	0.18	
102	Dominican Republic	5.21	11.28	0.17	○
103	Togo	5.18	11.18	0.16	
104	Fiji (2010)	5.14	11.02	0.16	
105	Jordan	5.07	10.74	0.15	○
106	Nigeria	5.03	10.57	0.14	
107	Zambia	5.01	10.49	0.13	
108	Lithuania (2012)	4.96	10.32	0.12	○
109	Bosnia and Herzegovina (2012)	4.81	9.75	0.11	○
110	Madagascar	4.78	9.61	0.11	
111	Belize	4.78	9.61	0.10	
112	Jamaica (2010)	4.75	9.50	0.09	○
113	Syrian Arab Republic (2010)	4.61	8.97	0.08	
114	Albania	4.43	8.27	0.07	○
115	Montenegro (2012)	4.29	7.73	0.07	○
116	Mali (2010)	4.22	7.46	0.06	
117	Zimbabwe	4.18	7.30	0.05	○
118	Lebanon (2012)	4.02	6.65	0.04	○
119	Gambia	3.94	6.35	0.03	
120	Cambodia	3.79	5.79	0.02	○
121	Belarus	3.53	4.77	0.02	○
122	Senegal (2012)	2.80	1.93	0.01	○
123	Yemen	2.30	0.00	0.00	○
n/a	Angola	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Morocco	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Philippines	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	

SOURCE: United Nations, *COMTRADE* database; Eurostat *'High-technology' aggregations based on SITC Rev. 4*, April 2009 (2007–12)

NOTE: ● indicates a strength; ○ a weakness.

5.3.3 Communications, computer and information services imports

Communications, computer and information services imports (% of total services imports) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Fiji (2010)	16.10	100.00	1.00	●
2	Bosnia and Herzegovina	15.66	97.21	0.99	●
3	Croatia	13.66	84.51	0.99	●
4	Slovenia	12.49	77.07	0.98	●
5	Gambia (2009)	12.17	75.05	0.97	●
6	Czech Republic	11.50	70.84	0.96	●
7	Sweden	10.53	64.68	0.96	
8	Guyana (2010)	10.50	64.50	0.95	●
9	Estonia	9.93	60.86	0.94	●
10	Romania	9.69	59.35	0.93	●
11	Italy	9.61	58.86	0.93	●
12	Montenegro	9.48	58.05	0.92	●
13	Malta	9.47	57.93	0.91	
14	TFYR of Macedonia	9.35	57.19	0.91	●
15	Latvia	9.33	57.09	0.90	●
16	Honduras	8.99	54.92	0.89	●
17	Finland	8.78	53.60	0.88	
18	Serbia	8.56	52.22	0.88	●
19	Benin (2010)	8.45	51.51	0.87	●
20	Belgium	8.34	50.81	0.86	
21	Netherlands	8.29	50.47	0.85	
22	Kenya (2010)	8.25	50.25	0.85	●
23	Nepal	8.20	49.89	0.84	●
24	Germany	8.15	49.60	0.83	
25	Poland	7.93	48.19	0.82	●
26	El Salvador	7.77	47.19	0.82	●
27	Norway (2010)	7.69	46.68	0.81	
28	Bulgaria	7.56	45.84	0.80	
29	Portugal	7.54	45.72	0.80	
30	Senegal (2010)	7.54	45.72	0.79	●
31	United States of America	7.49	45.40	0.78	
32	Mali (2010)	7.39	44.79	0.77	●
33	Hungary	7.38	44.71	0.77	
34	Tajikistan (2010)	7.28	44.07	0.76	●
35	Costa Rica	7.26	43.96	0.75	
36	Moldova, Rep.	7.26	43.94	0.74	
37	United Kingdom	7.22	43.67	0.74	
38	Malaysia (2009)	7.20	43.57	0.73	
39	Austria	7.04	42.56	0.72	
40	Spain	6.30	37.88	0.72	
41	Argentina	6.21	37.33	0.71	
42	Togo (2010)	6.15	36.89	0.70	●
43	Botswana (2010)	6.06	36.35	0.69	●
44	New Zealand	5.89	35.28	0.69	
45	Jamaica (2010)	5.84	34.98	0.68	●
46	Peru	5.73	34.28	0.67	
47	Burkina Faso (2010)	5.70	34.06	0.66	●
48	Brazil	5.55	33.14	0.66	
49	Russian Federation	5.52	32.90	0.65	
50	Greece	5.46	32.56	0.64	
51	Canada	5.44	32.41	0.64	
52	Slovakia	5.40	32.16	0.63	
53	Cape Verde	5.36	31.91	0.62	●
54	Barbados (2010)	5.35	31.82	0.61	
55	Denmark	5.32	31.65	0.61	
56	Mozambique	5.14	30.49	0.60	●
57	Rwanda (2010)	5.10	30.23	0.59	●
58	Belarus	5.08	30.14	0.58	
59	Namibia (2009)	5.03	29.81	0.58	
60	Indonesia	4.69	27.68	0.57	
61	Colombia	4.64	27.32	0.56	
62	Lithuania	4.57	26.88	0.55	
63	Pakistan	4.48	26.36	0.55	●
64	Hong Kong (China) (2010)	4.39	25.74	0.54	
65	France	4.37	25.64	0.53	
66	Luxembourg	4.33	25.35	0.53	
67	Nicaragua	4.10	23.90	0.52	●
68	Niger (2010)	4.10	23.90	0.51	●
69	Malawi (2009)	4.09	23.88	0.50	●
70	Iceland (2010)	4.06	23.65	0.50	
71	Cyprus	3.94	22.89	0.49	
72	Philippines	3.82	22.16	0.48	
73	Bolivia, Plurinational St.	3.73	21.57	0.47	
74	Australia	3.43	19.68	0.47	○
75	Mauritius (2010)	3.41	19.58	0.46	
76	Egypt (2010)	3.39	19.43	0.45	
77	Venezuela, Bolivarian Rep.	3.36	19.24	0.45	
78	Saudi Arabia	3.33	19.05	0.44	
79	Côte d'Ivoire (2008)	3.25	18.56	0.43	●
80	Belize	3.24	18.46	0.42	
81	Dominican Republic (2010)	3.21	18.28	0.42	
82	Uganda	3.17	18.05	0.41	
83	Uruguay	3.15	17.91	0.40	
84	Japan	3.10	17.56	0.39	○
85	Bahrain	3.07	17.37	0.39	
86	Lebanon (2010)	3.04	17.22	0.38	
87	Ukraine	3.03	17.12	0.37	
88	Albania	3.01	17.01	0.36	
89	Ethiopia	2.94	16.55	0.36	
90	Singapore	2.93	16.51	0.35	○
91	Tunisia (2010)	2.91	16.37	0.34	
92	Cambodia	2.78	15.55	0.34	
93	Iran, Islamic Rep. (2010)	2.71	15.09	0.33	
94	Mongolia	2.68	14.90	0.32	
95	South Africa	2.59	14.37	0.31	
96	Guatemala	2.58	14.32	0.31	
97	India	2.29	12.45	0.30	
98	Angola (2010)	2.28	12.40	0.29	●
99	Georgia	2.28	12.38	0.28	
100	Switzerland	2.27	12.34	0.28	○
101	Kazakhstan	2.15	11.56	0.27	
102	Azerbaijan	2.14	11.52	0.26	
103	Guinea	2.13	11.43	0.26	
104	Ireland	2.09	11.19	0.25	○
105	China	2.06	11.01	0.24	
106	Korea, Rep.	2.04	10.85	0.23	○
107	Kyrgyzstan	2.01	10.68	0.23	
108	Morocco	1.93	10.18	0.22	
109	Turkey	1.78	9.24	0.21	○
110	Chile	1.73	8.88	0.20	○
111	Trinidad and Tobago (2010)	1.71	8.76	0.20	
112	Armenia	1.71	8.76	0.19	
113	Tanzania, United Rep. (2010)	1.62	8.24	0.18	
114	Nigeria	1.60	8.11	0.18	
115	Israel	1.54	7.71	0.17	○
116	Panama	1.53	7.63	0.16	
117	Qatar	1.50	7.46	0.15	○
118	Zambia	1.47	7.28	0.15	
119	Sri Lanka	1.41	6.88	0.14	○
120	Yemen	1.31	6.22	0.13	
121	Kuwait	1.29	6.13	0.12	○
122	Zimbabwe	1.14	5.17	0.12	
123	Madagascar (2005)	1.14	5.16	0.11	
124	Brunei Darussalam (2009)	1.09	4.88	0.10	○
125	Algeria (2010)	1.02	4.44	0.09	
126	Syrian Arab Republic (2010)	1.02	4.40	0.09	
127	Gabon (2005)	1.02	4.38	0.08	
128	Cameroon (2010)	0.99	4.25	0.07	
129	Swaziland (2010)	0.92	3.80	0.07	
130	Thailand (2010)	0.81	3.08	0.06	○
131	Lesotho (2010)	0.80	2.99	0.05	
132	Paraguay	0.68	2.23	0.04	○
133	Ecuador	0.60	1.71	0.04	○
134	Bangladesh	0.59	1.65	0.03	○
135	Viet Nam	0.57	1.54	0.02	○
136	Oman	0.52	1.21	0.01	○
137	Mexico	0.38	0.37	0.01	○
138	Sudan	0.32	0.00	0.00	○
n/a	Ghana	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	

SOURCE: World Trade Organization, *Trade in Commercial Services* database, based on the International Monetary Fund *Balance of Payments* database (2005–11)

NOTE: ● indicates a strength; ○ a weakness.

5.3.4 Foreign direct investment net inflows

Foreign direct investment (FDI), net inflows (% of GDP) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Mongolia	53.81	100.00	0.97	●
1	Hong Kong (China)	36.27	100.00	0.97	
1	Luxembourg	31.02	100.00	0.97	
1	Singapore	26.70	100.00	0.97	
1	Belgium	19.86	100.00	0.97	●
6	Guinea	17.61	90.14	0.96	●
7	Niger	16.85	86.77	0.96	●
8	Mozambique	16.25	84.14	0.95	●
9	Montenegro	12.41	67.28	0.94	●
10	Panama	12.17	66.20	0.94	●
11	Kyrgyzstan	11.72	64.23	0.93	●
12	Albania	10.57	59.18	0.92	●
13	Nicaragua	10.39	58.39	0.91	●
14	Zambia	10.32	58.08	0.91	●
15	Madagascar	9.15	52.97	0.90	●
16	Barbados	9.05	52.52	0.89	
17	Lebanon	8.67	50.84	0.89	●
18	Ghana	8.22	48.86	0.88	●
19	Georgia	8.03	48.02	0.87	●
20	Namibia	7.88	47.35	0.87	●
21	Iceland	7.88	47.35	0.86	
22	Brunei Darussalam	7.39	45.19	0.85	●
23	Belarus	7.26	44.64	0.84	●
24	Azerbaijan	7.07	43.82	0.84	●
25	Kazakhstan	7.03	43.65	0.83	●
26	Cambodia	7.03	43.62	0.82	●
27	Chile	6.96	43.32	0.82	●
28	Hungary	6.88	42.95	0.81	
29	Armenia	6.47	41.19	0.80	●
30	Guyana	6.42	40.93	0.79	●
31	Belize	6.29	40.38	0.79	●
32	Viet Nam	6.01	39.15	0.78	
33	Honduras	5.98	39.03	0.77	●
34	Serbia	5.89	38.64	0.77	
35	Portugal	5.51	36.94	0.76	
36	Lesotho	5.45	36.67	0.75	●
37	Fiji	5.35	36.25	0.74	●
38	Malta	5.34	36.20	0.74	
39	Costa Rica	5.32	36.14	0.73	
40	Latvia	5.32	36.10	0.72	
41	Ireland	5.30	36.01	0.72	
42	Jordan	5.09	35.12	0.71	●
43	Australia	4.90	34.29	0.70	
44	Cape Verde	4.89	34.22	0.70	●
45	TFYR of Macedonia	4.87	34.14	0.69	
46	Bulgaria	4.84	33.99	0.68	
47	Uganda	4.74	33.57	0.67	●
48	Israel	4.70	33.37	0.67	
49	Uruguay	4.66	33.22	0.66	
50	Peru	4.65	33.18	0.65	
51	Tanzania, United Rep.	4.59	32.90	0.65	●
52	Cyprus	4.37	31.95	0.64	
53	Ukraine	4.36	31.90	0.63	
54	Gabon	4.27	31.50	0.62	●
55	Moldova, Rep.	4.20	31.21	0.62	
56	Malaysia	4.17	31.05	0.61	
57	Dominican Republic	4.13	30.87	0.60	●
58	Colombia	4.02	30.38	0.60	
59	Zimbabwe	4.01	30.35	0.59	●
60	Gambia	4.01	30.35	0.58	●
61	Denmark	3.93	30.00	0.57	
62	Slovakia	3.81	29.48	0.57	
63	Austria	3.77	29.29	0.56	
64	Nigeria	3.62	28.66	0.55	●
65	Bolivia, Plurinational St.	3.59	28.50	0.55	
66	Botswana	3.39	27.63	0.54	
67	Lithuania	3.38	27.58	0.53	
68	Uzbekistan	3.09	26.33	0.52	
69	Sudan	3.02	26.02	0.52	●
70	China	3.01	25.96	0.51	
71	Poland	2.97	25.80	0.50	
72	Brazil	2.89	25.43	0.50	
73	Russian Federation	2.85	25.24	0.49	
74	Saudi Arabia	2.83	25.16	0.48	
75	Trinidad and Tobago	2.55	23.96	0.48	
76	Morocco	2.52	23.79	0.47	
77	Syrian Arab Republic (2010)	2.48	23.65	0.46	●
78	Czech Republic	2.48	23.63	0.45	
79	Mauritius	2.43	23.41	0.45	
80	Swaziland	2.38	23.20	0.44	
81	Guatemala	2.30	22.86	0.43	
82	Canada	2.28	22.74	0.43	○
83	Thailand	2.25	22.63	0.42	
84	New Zealand	2.24	22.59	0.41	○
85	Indonesia	2.14	22.16	0.40	
86	United Arab Emirates	2.13	22.10	0.40	
87	Spain	2.13	22.09	0.39	○
88	Bosnia and Herzegovina	2.10	21.96	0.38	
89	Ethiopia	2.07	21.84	0.38	
90	Turkey	2.07	21.83	0.37	
91	Croatia	2.02	21.63	0.36	○
92	Senegal	2.00	21.53	0.35	
93	Estonia	1.97	21.39	0.35	○
94	Mexico	1.77	20.49	0.34	
95	India	1.74	20.39	0.33	
96	Paraguay	1.73	20.33	0.33	
97	United States of America	1.72	20.29	0.32	○
98	Mali	1.68	20.11	0.31	
99	Rwanda	1.66	20.04	0.30	
100	Netherlands	1.66	20.03	0.30	○
101	Venezuela, Bolivarian Rep.	1.65	19.99	0.29	
102	Slovenia	1.65	19.99	0.28	○
103	Malawi	1.64	19.96	0.28	
104	France	1.63	19.90	0.27	○
105	Benin	1.62	19.87	0.26	
106	Sri Lanka	1.62	19.84	0.26	
107	Argentina	1.59	19.71	0.25	
108	Togo	1.49	19.26	0.24	
109	Sweden	1.46	19.16	0.23	○
110	Algeria	1.44	19.07	0.23	
111	Côte d'Ivoire	1.43	19.02	0.22	
112	Cameroon	1.43	19.01	0.21	
113	Romania	1.42	18.99	0.21	○
114	South Africa	1.40	18.89	0.20	○
115	Italy	1.28	18.35	0.19	○
116	Jamaica	1.20	17.99	0.18	
117	United Kingdom	1.16	17.82	0.18	○
118	Oman	1.10	17.56	0.17	
119	Germany	1.08	17.50	0.16	○
120	El Salvador	1.07	17.45	0.16	
121	Kenya	1.00	17.12	0.15	
122	Tunisia	0.94	16.88	0.14	○
123	Iran, Islamic Rep. (2009)	0.92	16.78	0.13	○
124	Ecuador	0.86	16.52	0.13	○
125	Philippines	0.83	16.39	0.12	○
126	Bangladesh	0.71	15.87	0.11	
127	Bahrain (2010)	0.68	15.72	0.11	○
128	Pakistan	0.62	15.47	0.10	
129	Nepal	0.50	14.92	0.09	
130	Korea, Rep.	0.42	14.57	0.09	○
131	Greece	0.38	14.39	0.08	○
132	Kuwait	0.23	13.73	0.07	○
133	Tajikistan	0.17	13.49	0.06	
134	Switzerland	0.10	13.18	0.06	○
135	Burkina Faso	0.07	13.06	0.05	
136	Japan	0.00	12.74	0.04	○
137	Qatar	–0.05	12.52	0.04	○
138	Norway	–0.16	12.02	0.03	○
139	Egypt	–0.21	11.81	0.02	○
140	Yemen	–2.11	3.46	0.01	
141	Finland	–2.19	3.12	0.01	○
142	Angola	–2.90	0.00	0.00	○

SOURCE: International Monetary Fund (with World Bank and OECD GDP estimates), extracted from World Bank *World Development Indicators* database (2009–11)

NOTE: ● indicates a strength; ○ a weakness.

6.1.1 National office resident patent applications

Number of patent applications filed by residents at the national patent office (per billion PPP$ GDP) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Korea, Rep.	88.82	100.00	0.97	●
1	Japan	64.71	100.00	0.97	●
1	China	36.80	100.00	0.97	●
1	Germany	23.51	100.00	0.97	●
5	Switzerland	22.63	96.25	0.96	
6	Finland	16.57	70.45	0.96	
7	United States of America	16.43	69.85	0.95	
8	Denmark	16.37	69.57	0.94	
9	Sweden	14.59	62.02	0.93	
10	Belarus	12.59	53.49	0.92	●
11	New Zealand	12.13	51.54	0.91	
12	Netherlands	11.68	49.63	0.90	
13	Russian Federation	11.28	47.89	0.89	●
14	Austria	11.11	47.18	0.88	
15	France	10.97	46.59	0.88	
16	Luxembourg	10.95	46.51	0.87	
17	Mongolia (2010)	9.93	42.16	0.86	●
18	Moldova, Rep.	8.92	37.85	0.85	●
19	United Kingdom	8.79	37.29	0.84	
20	Ukraine	8.04	34.12	0.83	●
21	Iran, Islamic Rep. (2006)	7.95	33.73	0.82	●
22	Iceland	7.74	32.81	0.81	
23	Armenia	7.07	29.97	0.81	●
24	Italy	6.92	29.32	0.80	
25	Kazakhstan	6.72	28.49	0.79	●
26	Belgium	6.36	26.94	0.78	
27	Norway	5.97	25.28	0.77	
28	Ireland	5.82	24.65	0.76	
29	Israel	5.74	24.30	0.75	
30	Latvia	5.73	24.28	0.74	
31	Georgia	5.62	23.81	0.73	
32	Romania	5.41	22.90	0.73	
33	Poland	5.36	22.70	0.72	
34	Turkey	3.96	16.73	0.71	
35	Hungary	3.88	16.39	0.70	
36	Malta	3.79	15.99	0.69	
37	Spain	3.45	14.54	0.68	
38	Canada	3.41	14.37	0.67	
39	Estonia	3.37	14.21	0.66	
40	Singapore	3.35	14.15	0.65	
41	Czech Republic	3.32	14.02	0.65	
42	Croatia	3.13	13.18	0.64	
43	Uzbekistan	2.96	12.47	0.63	●
44	Montenegro	2.79	11.77	0.62	
45	Bulgaria	2.75	11.58	0.61	
46	Portugal	2.61	10.97	0.60	
47	Australia	2.60	10.95	0.59	
48	Serbia	2.35	9.87	0.58	
49	Azerbaijan	2.33	9.80	0.58	
50	Malaysia	2.32	9.75	0.57	
51	Slovenia	2.25	9.43	0.56	
52	Cyprus	2.15	9.02	0.55	
53	Sri Lanka (2010)	2.14	8.97	0.54	
54	Slovakia	2.12	8.89	0.53	
55	India	2.00	8.38	0.52	
56	Lithuania	1.74	7.26	0.51	
57	TFYR of Macedonia	1.71	7.16	0.50	
58	Thailand	1.54	6.42	0.50	
59	Syrian Arab Republic (2006)	1.50	6.23	0.49	●
60	Argentina (2008)	1.40	5.82	0.48	
61	Bosnia and Herzegovina	1.36	5.66	0.47	
62	Brazil (2010)	1.24	5.13	0.46	
63	Egypt	1.19	4.94	0.45	
64	South Africa	1.18	4.90	0.44	
65	Kenya (2010)	1.15	4.77	0.43	
66	Chile	1.13	4.69	0.42	
67	Jordan	1.08	4.48	0.42	
68	Mozambique (2007)	1.05	4.31	0.41	
69	Morocco	1.03	4.27	0.40	
70	Viet Nam	1.00	4.12	0.39	
71	Jamaica	0.81	3.33	0.38	
72	Tunisia (2005)	0.78	3.17	0.37	
73	Niger (2005)	0.77	3.12	0.36	
74	Benin (2005)	0.67	2.71	0.35	
75	Mexico	0.64	2.59	0.35	
76	Kyrgyzstan	0.61	2.46	0.34	
77	Cameroon (2005)	0.57	2.31	0.33	
78	Hong Kong (China)	0.51	2.06	0.32	○
79	Saudi Arabia	0.50	2.01	0.31	○
80	Indonesia	0.48	1.91	0.30	
81	Philippines	0.48	1.89	0.29	
82	Paraguay (2010)	0.47	1.87	0.28	
83	Belize (2006)	0.43	1.71	0.27	
84	Togo (2005)	0.43	1.70	0.27	
85	Panama	0.41	1.63	0.26	
86	Uruguay	0.39	1.54	0.25	
87	Colombia	0.39	1.52	0.24	○
88	Senegal (2005)	0.38	1.50	0.23	
89	Tajikistan	0.37	1.44	0.22	
90	Algeria	0.36	1.38	0.21	
91	Greece	0.26	0.98	0.20	
92	Costa Rica	0.25	0.95	0.19	○
93	Mali (2005)	0.25	0.92	0.19	
94	Côte d'Ivoire (2005)	0.23	0.86	0.18	
95	Gabon (2005)	0.22	0.82	0.17	
96	Ethiopia (2007)	0.19	0.68	0.16	
97	Pakistan	0.19	0.67	0.15	
98	Uganda (2007)	0.17	0.60	0.14	
99	Barbados (2008)	0.15	0.48	0.13	○
100	Madagascar	0.15	0.48	0.12	
101	Peru	0.13	0.41	0.12	○
102	Mauritius (2008)	0.12	0.38	0.11	○
103	Yemen	0.12	0.38	0.10	
104	Albania	0.12	0.37	0.09	
105	Guinea (2005)	0.11	0.35	0.08	
106	Bangladesh	0.11	0.34	0.07	
107	Burkina Faso (2010)	0.10	0.27	0.06	
108	Venezuela, Bolivarian Rep.	0.09	0.24	0.05	○
109	Honduras	0.06	0.10	0.04	○
110	Guatemala	0.05	0.09	0.04	○
111	Trinidad and Tobago (2008)	0.04	0.02	0.03	○
112	Sudan (2007)	0.04	0.02	0.02	○
113	Ecuador (2010)	0.03	0.01	0.01	○
114	Bahrain	0.03	0.00	0.00	○
n/a	Angola	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; International Monetary Fund *World Economic Outlook 2012* (PPP$ GDP) (2005–11)

NOTE: ● indicates a strength; ○ a weakness.

6.1.2 Patent Cooperation Treaty resident applications

Number of international patent applications filed by residents at the Patent Cooperation Treaty (per billion PPP$ GDP) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Barbados	23.55	100.00	1.00	●
2	Finland	11.89	79.66	0.99	●
3	Switzerland	11.57	78.87	0.98	●
4	Japan	9.46	73.06	0.97	●
5	Sweden	9.06	71.83	0.97	●
6	Korea, Rep.	7.31	65.80	0.96	
7	Denmark	6.77	63.69	0.95	●
8	Luxembourg	6.40	62.17	0.94	
9	Germany	5.90	59.98	0.93	
10	Netherlands	5.63	58.70	0.92	
11	Israel	5.55	58.35	0.92	
12	Austria	3.69	47.82	0.91	
13	France	3.44	46.10	0.90	
14	Iceland	3.39	45.79	0.89	
15	United States of America	3.27	44.91	0.88	
16	Belgium	2.93	42.28	0.87	
17	Norway	2.46	38.28	0.86	
18	New Zealand	2.19	35.82	0.86	
19	Singapore	2.17	35.62	0.85	
20	United Kingdom	2.11	35.02	0.84	
21	Ireland	2.05	34.43	0.83	
22	Slovenia	2.00	33.89	0.82	
23	Cyprus	1.95	33.36	0.81	
24	Canada	1.90	32.82	0.81	
25	Australia	1.78	31.47	0.80	
26	Malta	1.62	29.60	0.79	
27	Italy	1.55	28.76	0.78	
28	China	1.50	28.24	0.77	
29	Spain	1.20	24.21	0.76	
30	Estonia	1.20	24.15	0.75	
31	Latvia	0.97	20.82	0.75	
32	Hungary	0.80	17.96	0.74	
33	Namibia	0.71	16.46	0.73	●
34	Belize	0.69	16.07	0.72	●
35	Malaysia	0.59	14.24	0.71	
36	Czech Republic	0.57	13.83	0.70	
37	Portugal	0.53	13.09	0.69	
38	South Africa	0.52	12.83	0.69	
39	Lithuania	0.47	11.69	0.68	
40	Armenia	0.42	10.74	0.67	
41	Turkey	0.40	10.28	0.66	
42	Russian Federation	0.38	9.84	0.65	
43	Croatia	0.38	9.75	0.64	
44	Chile	0.37	9.59	0.64	
45	Greece	0.34	8.88	0.63	
46	Ecuador	0.33	8.78	0.62	
47	Slovakia	0.32	8.57	0.61	
48	Poland	0.32	8.38	0.60	
49	Ukraine	0.32	8.37	0.59	
50	Bulgaria	0.30	7.97	0.58	
51	Kyrgyzstan	0.30	7.92	0.58	
52	Bosnia and Herzegovina	0.28	7.53	0.57	
53	Qatar	0.28	7.53	0.56	
54	India	0.26	6.95	0.55	
55	Serbia	0.25	6.82	0.54	
56	Brazil	0.25	6.75	0.53	
57	Moldova, Rep.	0.24	6.52	0.53	
58	United Arab Emirates	0.19	5.34	0.52	
59	Morocco	0.18	5.07	0.51	
60	Georgia	0.15	4.26	0.50	
61	Niger	0.15	4.19	0.49	●
62	Colombia	0.15	4.14	0.48	
63	Gabon	0.11	3.23	0.47	
64	Syrian Arab Republic (2010)	0.11	3.21	0.47	●
65	Sri Lanka	0.11	3.20	0.46	
66	Mexico	0.11	3.12	0.45	
67	Nicaragua	0.10	2.91	0.44	
68	Thailand	0.09	2.70	0.43	
69	TFYR of Macedonia	0.09	2.63	0.42	
70	Belarus	0.09	2.52	0.42	
71	Costa Rica	0.09	2.49	0.41	
72	Albania	0.08	2.26	0.40	
73	Egypt	0.08	2.23	0.39	
74	Kenya	0.07	1.93	0.38	
75	Romania	0.06	1.83	0.37	
76	Bahrain	0.06	1.82	0.36	
77	Tunisia	0.05	1.42	0.36	
78	Azerbaijan	0.04	1.21	0.35	
79	Viet Nam	0.04	1.21	0.34	
80	Dominican Republic	0.04	1.20	0.33	
81	Kazakhstan	0.04	1.15	0.32	
82	Philippines	0.04	1.14	0.31	
83	Senegal	0.04	1.12	0.31	
84	Trinidad and Tobago	0.04	1.10	0.30	
85	Peru	0.03	1.01	0.29	
86	Côte d'Ivoire	0.03	0.76	0.28	
87	Nigeria	0.02	0.73	0.27	
88	Algeria	0.01	0.44	0.26	
89	Guatemala	0.01	0.38	0.25	
90	Indonesia	0.01	0.30	0.25	
91	Uzbekistan	0.01	0.29	0.24	
92	Angola	0.00	0.00	0.00	○
92	Benin	0.00	0.00	0.00	○
92	Botswana	0.00	0.00	0.00	○
92	Burkina Faso	0.00	0.00	0.00	○
92	Cameroon	0.00	0.00	0.00	○
92	El Salvador	0.00	0.00	0.00	○
92	Gambia	0.00	0.00	0.00	○
92	Ghana	0.00	0.00	0.00	○
92	Guinea	0.00	0.00	0.00	○
92	Honduras	0.00	0.00	0.00	○
92	Hong Kong (China)	0.00	0.00	0.00	○
92	Lesotho	0.00	0.00	0.00	○
92	Madagascar	0.00	0.00	0.00	○
92	Malawi	0.00	0.00	0.00	○
92	Mali	0.00	0.00	0.00	○
92	Mongolia	0.00	0.00	0.00	○
92	Montenegro	0.00	0.00	0.00	○
92	Mozambique	0.00	0.00	0.00	○
92	Oman	0.00	0.00	0.00	○
92	Rwanda	0.00	0.00	0.00	○
92	Sudan	0.00	0.00	0.00	○
92	Swaziland	0.00	0.00	0.00	○
92	Tajikistan	0.00	0.00	0.00	○
92	Tanzania, United Rep.	0.00	0.00	0.00	○
92	Togo	0.00	0.00	0.00	○
92	Uganda	0.00	0.00	0.00	○
92	Zambia	0.00	0.00	0.00	○
92	Zimbabwe	0.00	0.00	0.00	○
n/a	Argentina	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Pakistan	n/a	n/a	n/a	
n/a	Panama	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Uruguay	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; International Monetary Fund *World Economic Outlook 2012* (PPP$ GDP) (2010–12)

NOTE: ● indicates a strength; ○ a weakness.

6.1.3 National office resident utility model applications

Number of utility model applications filed by residents at the national patent office (per billion PPP$ GDP) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	China	51.44	100.00	0.95	
1	Ukraine	31.21	100.00	0.95	●
1	Moldova, Rep.	14.84	100.00	0.95	●
1	Mongolia (2010)	11.47	100.00	0.95	●
5	Tajikistan	8.63	75.17	0.93	●
6	Korea, Rep.	7.38	64.18	0.92	
7	Belarus	7.21	62.72	0.90	●
8	Czech Republic	5.56	48.28	0.88	
9	Russian Federation	5.28	45.84	0.87	●
10	Germany	4.10	35.49	0.85	
11	Estonia	3.00	25.90	0.83	
12	Turkey	2.98	25.75	0.82	●
13	Georgia	2.97	25.66	0.80	●
14	Slovakia	2.76	23.76	0.78	
15	Armenia	2.50	21.54	0.77	
16	Finland	2.36	20.25	0.75	
17	Thailand	2.05	17.56	0.73	
18	Bulgaria	2.05	17.55	0.72	
19	Austria	1.79	15.28	0.70	
20	Spain	1.76	15.07	0.68	
21	Philippines	1.63	13.85	0.67	
22	Japan	1.42	12.04	0.65	
23	Australia	1.32	11.14	0.63	
24	Hungary	1.27	10.72	0.62	
25	Italy	1.25	10.56	0.60	
26	Poland	1.22	10.29	0.58	
27	Croatia	1.19	10.00	0.57	
28	Ethiopia (2007)	1.15	9.69	0.55	●
29	Hong Kong (China)	1.09	9.16	0.53	
30	Uzbekistan	0.99	8.26	0.52	
31	Brazil (2010)	0.88	7.33	0.50	
32	Serbia	0.85	7.07	0.48	
33	Denmark	0.83	6.88	0.47	○
34	Kyrgyzstan	0.76	6.29	0.45	
35	Uruguay	0.71	5.81	0.43	
36	Viet Nam	0.64	5.25	0.42	
37	Colombia	0.45	3.59	0.40	
38	Zimbabwe (2008)	0.41	3.22	0.38	
39	Portugal	0.36	2.79	0.37	○
40	Kazakhstan	0.36	2.77	0.35	
41	Bosnia and Herzegovina (2003)	0.35	2.69	0.33	
42	Mexico	0.31	2.33	0.32	
43	Kenya (2003)	0.28	2.06	0.30	
44	Peru	0.24	1.71	0.28	
45	Chile	0.22	1.52	0.27	○
46	Romania	0.21	1.49	0.25	
47	Indonesia	0.21	1.46	0.23	
48	Costa Rica	0.18	1.21	0.22	○
49	Slovenia (2010)	0.16	1.01	0.20	○
50	Ecuador (2010)	0.16	0.98	0.18	
51	Guatemala	0.15	0.91	0.17	
52	Burkina Faso (2010)	0.14	0.88	0.15	
53	Honduras	0.14	0.84	0.13	
54	Azerbaijan	0.14	0.84	0.12	○
55	Malaysia	0.13	0.75	0.10	○
56	Mozambique (2007)	0.12	0.64	0.08	
57	Trinidad and Tobago (2003)	0.11	0.60	0.07	○
58	Panama	0.10	0.48	0.05	○
59	France	0.10	0.45	0.03	○
60	Greece (2010)	0.08	0.30	0.02	○
61	Albania (2009)	0.04	0.00	0.00	○
n/a	Algeria	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Argentina	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Belgium	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Canada	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Cyprus	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Egypt	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Iceland	n/a	n/a	n/a	
n/a	India	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Ireland	n/a	n/a	n/a	
n/a	Israel	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Latvia	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Lithuania	n/a	n/a	n/a	
n/a	Luxembourg	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Malta	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Morocco	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Netherlands	n/a	n/a	n/a	
n/a	New Zealand	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Norway	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Pakistan	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Senegal	n/a	n/a	n/a	
n/a	Singapore	n/a	n/a	n/a	
n/a	South Africa	n/a	n/a	n/a	
n/a	Sri Lanka	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Sweden	n/a	n/a	n/a	
n/a	Switzerland	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	TFYR of Macedonia	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Tunisia	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	United Kingdom	n/a	n/a	n/a	
n/a	United States of America	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; International Monetary Fund *World Economic Outlook 2012* (PPP$ GDP) (2003–11)

NOTE: ● indicates a strength; ○ a weakness.

6.1.4 Scientific and technical publications

Number of scientific and technical journal articles (per billion PPP$ GDP) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Iceland	66.69	100.00	1.00	●
2	Serbia	66.30	99.42	0.99	●
3	Switzerland	65.43	98.10	0.99	●
4	Denmark	64.21	96.27	0.98	●
5	Slovenia	60.09	90.06	0.97	●
6	New Zealand	59.73	89.53	0.96	●
7	Sweden	53.60	80.30	0.96	
8	Finland	52.11	78.05	0.95	
9	Estonia	50.22	75.20	0.94	●
10	Israel	46.57	69.71	0.94	
11	Netherlands	45.56	68.19	0.93	
12	Portugal	45.49	68.09	0.92	●
13	Australia	45.20	67.64	0.91	
14	Croatia	42.07	62.94	0.91	●
15	United Kingdom	41.88	62.64	0.90	
16	Belgium	41.79	62.51	0.89	
17	Armenia	40.69	60.86	0.89	●
18	Canada	37.81	56.52	0.88	
19	Norway	37.56	56.14	0.87	
20	Zimbabwe	37.20	55.59	0.86	●
21	Cyprus	36.62	54.73	0.86	
22	Greece	34.99	52.28	0.85	●
23	Spain	34.93	52.18	0.84	
24	Ireland	34.59	51.66	0.84	
25	Austria	33.68	50.30	0.83	
26	Czech Republic	33.25	49.65	0.82	
27	Singapore	31.03	46.31	0.81	
28	Hungary	29.50	44.01	0.81	
29	Korea, Rep.	29.12	43.43	0.80	
30	Lithuania	28.92	43.13	0.79	
31	Germany	28.47	42.45	0.79	
32	Italy	28.22	42.07	0.78	
33	France	28.18	42.01	0.77	
34	Gambia	27.18	40.51	0.76	●
35	Jordan	26.53	39.54	0.76	●
36	Tunisia	26.51	39.50	0.75	●
37	Poland	25.74	38.34	0.74	
38	Romania	24.58	36.59	0.74	
39	Fiji	23.22	34.54	0.73	●
40	Iran, Islamic Rep.	22.56	33.55	0.72	●
41	Slovakia	21.98	32.68	0.71	
42	Georgia	21.83	32.45	0.71	
43	Malawi	21.53	32.01	0.70	●
44	Montenegro	21.41	31.81	0.69	
45	United States of America	21.28	31.62	0.69	
46	Turkey	20.86	30.99	0.68	
47	Bulgaria	20.51	30.47	0.67	
48	Chile	17.44	25.85	0.66	
49	Moldova, Rep.	17.36	25.72	0.66	
50	Malta	15.98	23.65	0.65	
51	Malaysia	15.95	23.59	0.64	
52	Kenya	15.91	23.53	0.64	
53	Japan	15.87	23.48	0.63	
54	Luxembourg	15.81	23.39	0.62	
55	South Africa	14.99	22.15	0.61	
56	Benin	14.90	22.02	0.61	●
57	Brazil	14.64	21.63	0.60	
58	Latvia	14.50	21.41	0.59	
59	China	14.45	21.34	0.59	
60	Ukraine	14.43	21.32	0.58	
61	Senegal	14.04	20.72	0.57	●
62	Uganda	13.36	19.70	0.56	
63	Bosnia and Herzegovina	13.15	19.39	0.56	
64	Lebanon	12.91	19.02	0.55	
65	TFYR of Macedonia	12.82	18.89	0.54	
66	Egypt	12.50	18.41	0.54	
67	Uruguay	12.27	18.06	0.53	
68	Burkina Faso	12.03	17.69	0.52	●
69	Mongolia	11.24	16.50	0.51	
70	Cameroon	11.11	16.31	0.51	●
71	Pakistan	10.77	15.80	0.50	
72	Russian Federation	10.58	15.51	0.49	
73	Argentina	10.29	15.07	0.49	
74	Mali	9.80	14.33	0.48	●
75	Barbados	9.73	14.23	0.47	
76	India	9.61	14.06	0.46	
77	Saudi Arabia	9.34	13.65	0.46	
78	Zambia	9.08	13.26	0.45	
79	Thailand	9.00	13.14	0.44	
80	Morocco	8.73	12.73	0.44	
81	Nepal	8.42	12.26	0.43	
82	Madagascar	8.33	12.12	0.42	
83	Tanzania, United Rep.	8.14	11.83	0.41	
84	Belarus	7.52	10.91	0.41	
85	Rwanda	7.11	10.29	0.40	
86	Costa Rica	6.69	9.66	0.39	
87	Algeria	6.69	9.65	0.39	
88	Ghana	6.56	9.47	0.38	
89	Niger	6.50	9.38	0.37	
90	Ethiopia	6.44	9.28	0.36	
91	Lesotho	6.34	9.12	0.36	●
92	Trinidad and Tobago	6.27	9.02	0.35	
93	Namibia	6.17	8.88	0.34	
94	Jamaica	6.15	8.85	0.34	
95	Togo	6.09	8.75	0.33	
96	Colombia	6.03	8.67	0.32	
97	Côte d'Ivoire	5.98	8.59	0.31	
98	Panama	5.90	8.46	0.31	
99	Mexico	5.87	8.42	0.30	
100	Botswana	5.59	8.00	0.29	
101	Mozambique	5.49	7.85	0.29	
102	Viet Nam	5.40	7.72	0.28	
103	Swaziland	5.37	7.66	0.27	
104	Azerbaijan	5.11	7.28	0.26	
105	Cape Verde	5.06	7.20	0.26	
106	Oman	4.95	7.04	0.25	
107	Cambodia	4.95	7.03	0.24	
108	Belize	4.83	6.86	0.24	
109	Kyrgyzstan	4.82	6.85	0.23	
110	Albania	4.79	6.80	0.22	
111	Mauritius	4.34	6.12	0.21	○
112	United Arab Emirates	4.33	6.11	0.21	○
113	Bangladesh	4.11	5.77	0.20	
114	Nigeria	3.92	5.48	0.19	
115	Nicaragua	3.82	5.33	0.19	
116	Sri Lanka	3.81	5.32	0.18	
117	Gabon	3.52	4.88	0.17	
118	Bahrain	3.45	4.78	0.16	
119	Kuwait	3.45	4.77	0.16	
120	Tajikistan	3.24	4.46	0.15	
121	Sudan	3.15	4.32	0.14	
122	Bolivia, Plurinational St.	3.11	4.26	0.14	○
123	Brunei Darussalam	3.10	4.25	0.13	
124	Qatar	2.93	4.00	0.12	○
125	Guyana	2.92	3.98	0.11	○
126	Yemen	2.84	3.86	0.11	
127	Syrian Arab Republic (2010)	2.84	3.86	0.10	
128	Uzbekistan	2.83	3.84	0.09	
129	Ecuador	2.74	3.71	0.09	○
130	Guinea	2.53	3.39	0.08	
131	Venezuela, Bolivarian Rep.	2.21	2.91	0.07	○
132	Peru	2.13	2.78	0.06	○
133	Philippines	2.08	2.71	0.06	○
134	Kazakhstan	1.71	2.16	0.05	○
135	Guatemala	1.63	2.04	0.04	○
136	Paraguay	1.57	1.95	0.04	○
137	Honduras	1.43	1.74	0.03	○
138	Indonesia	1.07	1.19	0.02	○
139	El Salvador	0.94	0.99	0.01	○
140	Dominican Republic	0.58	0.45	0.01	○
141	Angola	0.28	0.00	0.00	○
n/a	Hong Kong (China)	n/a	n/a	n/a	

SOURCE: Thomson Reuters, Web of Science, Science Citation Index and Social Sciences Citation Index; International Monetary Fund *World Economic Outlook 2012* (2010–12)

NOTE: ● indicates a strength; ○ a weakness.

6.1.5 Citable documents H index

The H index is the economy's number of published articles (H) that have received at least H citations in the period 1996-2011 | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	United States of America	1,305.00	100.00	0.99	●
1	United Kingdom	802.00	100.00	0.99	●
1	Germany	704.00	100.00	0.99	●
4	France	646.00	91.63	0.98	●
5	Canada	621.00	88.02	0.97	●
6	Japan	602.00	85.28	0.96	●
7	Italy	550.00	77.78	0.96	●
8	Netherlands	545.00	77.06	0.95	
9	Switzerland	537.00	75.90	0.94	
10	Sweden	484.00	68.25	0.94	
11	Australia	481.00	67.82	0.93	
12	Spain	448.00	63.06	0.92	●
13	Belgium	428.00	60.17	0.91	
14	Denmark	399.00	55.99	0.91	
15	Israel	393.00	55.12	0.90	
16	Austria	355.00	49.64	0.89	
17	China	353.00	49.35	0.89	
18	Finland	352.00	49.21	0.88	
19	Korea, Rep.	309.00	43.00	0.87	
20	Norway	308.00	42.86	0.86	
20	Russian Federation	308.00	42.86	0.86	●
22	Brazil	285.00	39.54	0.85	●
23	India	281.00	38.96	0.84	●
23	Poland	281.00	38.96	0.84	●
25	Hong Kong (China)	268.00	37.09	0.83	
26	New Zealand	264.00	36.51	0.82	
27	Ireland	254.00	35.06	0.82	
28	Greece	247.00	34.05	0.81	
29	Singapore	240.00	33.04	0.80	
30	Hungary	239.00	32.90	0.79	
31	Czech Republic	223.00	30.59	0.79	
32	Portugal	218.00	29.87	0.78	
33	Mexico	216.00	29.58	0.77	●
33	South Africa	216.00	29.58	0.77	●
35	Argentina	206.00	28.14	0.76	
36	Turkey	193.00	26.26	0.75	●
37	Chile	181.00	24.53	0.74	
38	Thailand	156.00	20.92	0.74	
39	Iceland	150.00	20.06	0.73	
40	Slovenia	141.00	18.76	0.72	
41	Slovakia	138.00	18.33	0.72	
42	Croatia	132.00	17.46	0.70	
42	Ukraine	132.00	17.46	0.70	
44	Bulgaria	129.00	17.03	0.70	
45	Romania	126.00	16.59	0.69	
46	Kenya	125.00	16.45	0.68	
47	Venezuela, Bolivarian Rep.	123.00	16.16	0.67	●
48	Colombia	122.00	16.02	0.66	
48	Egypt	122.00	16.02	0.66	●
50	Iran, Islamic Rep.	121.00	15.87	0.65	●
51	Estonia	119.00	15.58	0.65	
52	Malaysia	116.00	15.15	0.64	
53	Saudi Arabia	114.00	14.86	0.63	
54	Philippines	107.00	13.85	0.62	
55	Indonesia	103.00	13.28	0.62	
56	Lithuania	102.00	13.13	0.61	
57	Pakistan	101.00	12.99	0.60	●
57	Viet Nam	101.00	12.99	0.60	
59	Panama	100.00	12.84	0.59	
60	Uruguay	99.00	12.70	0.58	
61	Armenia	98.00	12.55	0.57	
61	Peru	98.00	12.55	0.57	
63	Costa Rica	97.00	12.41	0.56	
64	Belarus	96.00	12.27	0.55	
65	Lebanon	91.00	11.54	0.55	
66	Morocco	90.00	11.40	0.53	
66	Uganda	90.00	11.40	0.53	
68	Bangladesh	89.00	11.26	0.52	●
69	Tanzania, United Rep.	88.00	11.11	0.52	
70	Nigeria	82.00	10.25	0.51	
71	United Arab Emirates	81.00	10.10	0.50	
72	Tunisia	80.00	9.96	0.50	
73	Cyprus	79.00	9.81	0.48	
73	Latvia	79.00	9.81	0.48	
75	Ecuador	78.00	9.67	0.47	
75	Sri Lanka	78.00	9.67	0.47	
77	Kuwait	77.00	9.52	0.46	
78	Gambia	76.00	9.38	0.45	
79	Malawi	75.00	9.24	0.45	
80	Algeria	74.00	9.09	0.44	
81	Luxembourg	73.00	8.95	0.43	
82	Jordan	72.00	8.80	0.43	
83	Georgia	71.00	8.66	0.41	
83	Senegal	71.00	8.66	0.41	
85	Zimbabwe	69.00	8.37	0.40	
86	Cameroon	68.00	8.23	0.39	●
86	Ethiopia	68.00	8.23	0.39	
88	Ghana	67.00	8.08	0.38	
89	Nepal	66.00	7.94	0.38	
90	Côte d'Ivoire	64.00	7.65	0.37	
91	Zambia	61.00	7.22	0.36	
92	Burkina Faso	58.00	6.78	0.35	
92	Oman	58.00	6.78	0.35	
94	Bolivia, Plurinational St.	57.00	6.64	0.32	
94	Gabon	57.00	6.64	0.32	
94	Malta	57.00	6.64	0.32	
94	Trinidad and Tobago	57.00	6.64	0.32	
98	Moldova, Rep.	56.00	6.49	0.31	
99	Botswana	54.00	6.20	0.28	
99	Jamaica	54.00	6.20	0.28	
99	TFYR of Macedonia	54.00	6.20	0.28	
99	Madagascar	54.00	6.20	0.28	
103	Serbia	53.00	6.06	0.27	○
103	Syrian Arab Republic	53.00	6.06	0.27	
105	Mongolia	51.00	5.77	0.26	
105	Namibia	51.00	5.77	0.26	
107	Mozambique	50.00	5.63	0.24	
107	Uzbekistan	50.00	5.63	0.24	
109	Mali	49.00	5.48	0.23	
110	Sudan	48.00	5.34	0.23	
111	Guatemala	47.00	5.19	0.22	
112	Barbados	46.00	5.05	0.21	
112	Kazakhstan	46.00	5.05	0.21	
114	Benin	45.00	4.91	0.19	
114	Cambodia	45.00	4.91	0.19	
116	Qatar	44.00	4.76	0.18	
117	Nicaragua	43.00	4.62	0.17	
117	Niger	43.00	4.62	0.17	
119	Paraguay	42.00	4.47	0.16	
120	Azerbaijan	41.00	4.33	0.16	
121	Bosnia and Herzegovina	40.00	4.18	0.15	○
122	Dominican Republic	39.00	4.04	0.14	○
123	Brunei Darussalam	37.00	3.75	0.12	○
123	Honduras	37.00	3.75	0.12	
123	Mauritius	37.00	3.75	0.12	○
126	Bahrain	36.00	3.61	0.11	○
126	Fiji	36.00	3.61	0.11	○
128	Albania	34.00	3.32	0.09	○
128	El Salvador	34.00	3.32	0.09	○
128	Yemen	34.00	3.32	0.09	
131	Rwanda	33.00	3.17	0.08	
132	Guinea	31.00	2.89	0.07	
133	Kyrgyzstan	30.00	2.74	0.06	
134	Togo	28.00	2.45	0.06	
135	Swaziland	27.00	2.31	0.05	
136	Guyana	25.00	2.02	0.04	○
137	Belize	24.00	1.88	0.04	○
138	Angola	23.00	1.73	0.03	
139	Tajikistan	22.00	1.59	0.02	
140	Lesotho	20.00	1.30	0.01	○
141	Montenegro	12.00	0.14	0.01	○
142	Cape Verde	11.00	0.00	0.00	○

SOURCE: SCImago (2007) SJR—SCImago Journal & Country Rank. Retrieved 7 April 2013.

NOTE: ● indicates a strength; ○ a weakness.

6.2.1 Growth rate of GDP per person engaged

Growth rate of GDP per person engaged (constant 1990 PPP$, 2007 to 2008) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Ghana	10.81	100.00	1.00	●
2	Qatar	9.95	95.50	0.99	●
3	China	8.82	89.61	0.98	●
4	Moldova, Rep.	7.83	84.41	0.97	●
5	Sri Lanka	6.16	75.72	0.97	●
6	Turkey	5.79	73.78	0.96	●
7	Bulgaria	5.50	72.25	0.95	●
8	Chile	5.48	72.12	0.94	●
9	Georgia	5.43	71.88	0.93	●
10	Hong Kong (China)	5.42	71.83	0.92	
11	Indonesia	5.38	71.59	0.91	●
12	Ukraine	5.26	71.01	0.91	●
13	Uruguay	5.22	70.78	0.90	●
14	India	5.21	70.75	0.89	●
15	Belarus	5.12	70.27	0.88	●
16	Kazakhstan	5.04	69.85	0.87	●
17	Kyrgyzstan	4.84	68.79	0.86	●
18	Croatia	4.83	68.75	0.85	●
19	Uzbekistan	4.73	68.22	0.85	●
20	Peru	4.54	67.25	0.84	●
21	Russian Federation	4.43	66.68	0.83	
22	Mozambique	4.41	66.54	0.82	●
23	Cambodia	4.40	66.48	0.81	●
24	Ethiopia	4.30	65.97	0.80	●
25	Nigeria	4.11	64.99	0.79	●
26	Viet Nam	3.96	64.22	0.79	●
27	Saudi Arabia	3.88	63.76	0.78	
28	Bangladesh	3.87	63.73	0.77	●
29	Armenia	3.78	63.28	0.76	
30	Ecuador	3.62	62.40	0.75	●
31	South Africa	3.50	61.79	0.74	
32	Zambia	3.49	61.76	0.74	●
33	Kuwait	3.48	61.71	0.73	
34	Malaysia	3.31	60.82	0.72	
35	Tajikistan	3.13	59.84	0.71	●
36	Colombia	3.11	59.73	0.70	
37	Ireland	3.05	59.46	0.69	
38	Tanzania, United Rep.	3.03	59.32	0.68	●
39	Poland	2.99	59.13	0.68	
40	Morocco	2.96	58.99	0.67	●
41	Singapore	2.76	57.93	0.66	
42	Thailand	2.69	57.59	0.65	
43	Bolivia, Plurinational St.	2.67	57.43	0.64	●
44	Dominican Republic	2.54	56.78	0.63	●
45	Lithuania	2.49	56.51	0.62	
46	Kenya	2.48	56.45	0.62	
47	Uganda	2.34	55.71	0.61	
48	Philippines	2.30	55.50	0.60	
49	Mali	2.26	55.31	0.59	●
50	Latvia	2.25	55.25	0.58	
51	TFYR of Macedonia	2.25	55.25	0.57	
52	Costa Rica	2.22	55.10	0.56	
53	Netherlands	2.09	54.44	0.56	○
54	Montenegro	2.05	54.24	0.54	
54	Serbia	2.05	54.24	0.54	
56	Korea, Rep.	2.05	54.22	0.53	
57	Bosnia and Herzegovina	2.03	54.13	0.52	
58	Finland	2.02	54.05	0.51	○
59	Estonia	1.96	53.77	0.50	
60	Argentina	1.94	53.65	0.50	
61	Norway	1.91	53.46	0.49	○
62	Iceland	1.82	53.04	0.48	
63	Oman	1.75	52.66	0.47	
64	Sweden	1.74	52.60	0.46	○
65	Slovenia	1.73	52.55	0.45	
66	Spain	1.69	52.34	0.44	○
67	Germany	1.68	52.30	0.44	○
68	Niger	1.62	52.00	0.43	
69	Trinidad and Tobago	1.57	51.73	0.42	
70	Israel	1.52	51.44	0.41	○
71	Romania	1.52	51.43	0.40	
72	Austria	1.51	51.41	0.39	○
73	Denmark	1.50	51.34	0.38	○
74	Barbados	1.49	51.28	0.38	
75	Malawi	1.43	51.00	0.37	
76	Brazil	1.41	50.86	0.36	
77	Cameroon	1.37	50.66	0.35	●
78	Burkina Faso	1.35	50.57	0.34	
79	Cyprus	1.30	50.30	0.33	
80	United States of America	1.24	50.01	0.32	○
81	Slovakia	1.24	49.97	0.32	○
82	Malta	1.07	49.10	0.31	○
83	Albania	1.03	48.88	0.30	
84	Algeria	1.03	48.87	0.29	
85	Czech Republic	1.03	48.87	0.28	○
86	France	1.01	48.80	0.27	○
87	Belgium	0.98	48.65	0.26	○
88	Senegal	0.93	48.36	0.26	
89	Iran, Islamic Rep.	0.86	47.98	0.25	
90	Venezuela, Bolivarian Rep.	0.72	47.29	0.24	
91	Canada	0.64	46.84	0.23	○
92	Jordan	0.43	45.75	0.22	○
93	Australia	0.28	44.99	0.21	○
94	Hungary	0.28	44.97	0.21	○
95	Italy	0.27	44.94	0.20	○
96	Greece	0.22	44.64	0.19	
97	Angola	0.07	43.87	0.18	
98	United Arab Emirates	–0.10	43.00	0.17	○
99	Switzerland	–0.12	42.88	0.16	○
100	Pakistan	–0.18	42.57	0.15	
101	Jamaica	–0.21	42.43	0.15	○
102	United Kingdom	–0.21	42.40	0.14	○
103	Zimbabwe	–0.23	42.29	0.13	
104	Guatemala	–0.24	42.26	0.12	
105	New Zealand	–0.29	42.00	0.11	○
106	Japan	–0.30	41.93	0.10	○
107	Egypt	–0.71	39.79	0.09	○
108	Portugal	–0.82	39.23	0.09	○
109	Mexico	–0.83	39.15	0.08	○
110	Tunisia	–1.08	37.85	0.07	○
111	Luxembourg	–1.23	37.08	0.06	○
112	Azerbaijan	–1.28	36.83	0.05	○
113	Bahrain	–1.71	34.56	0.04	○
114	Madagascar	–2.30	31.52	0.03	
115	Sudan	–3.13	27.17	0.03	
116	Syrian Arab Republic	–4.32	20.95	0.02	○
117	Yemen	–5.84	13.01	0.01	○
118	Côte d'Ivoire	–8.33	0.00	0.00	○
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Mongolia	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Panama	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	

SOURCE: International Labour Organization, *Key Indicators of the Labour Market* (KILM) database, Table 17 Labour productivity, special tabulations

NOTE: ● indicates a strength; ○ a weakness.

6.2.2 New business density

New business density (new registrations per thousand population 15–64 years old) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Hong Kong (China)	27.67	100.00	0.97	
1	Cyprus	24.73	100.00	0.97	●
1	Costa Rica	17.64	100.00	0.97	●
1	New Zealand	14.53	100.00	0.97	●
5	Latvia	11.18	76.94	0.96	●
6	Montenegro	10.44	71.86	0.95	●
7	United Kingdom	10.41	71.65	0.94	
8	Malta (2009)	9.52	65.53	0.93	●
9	Botswana	9.44	65.00	0.92	●
10	Singapore	8.45	58.14	0.91	
11	Estonia (2009)	8.10	55.77	0.90	
12	Iceland	7.94	54.65	0.90	
13	Mauritius	7.88	54.22	0.89	●
14	Hungary	7.63	52.52	0.88	
15	Canada (2009)	7.56	52.03	0.87	
16	Luxembourg (2010)	7.31	50.28	0.86	
17	Bulgaria (2009)	7.20	49.57	0.85	●
18	Sweden	7.17	49.35	0.84	
19	Australia	6.17	42.48	0.83	
20	Norway	4.94	33.99	0.82	
21	Slovakia	4.81	33.08	0.81	
22	Ireland	4.78	32.89	0.80	
23	Denmark	4.55	31.31	0.79	
24	Belize	4.54	31.27	0.78	●
25	Georgia	4.49	30.90	0.77	
26	Israel (2008)	4.46	30.71	0.76	
27	Romania	4.41	30.33	0.75	
28	Gabon (2009)	4.27	29.39	0.74	●
29	Chile	4.13	28.42	0.73	
30	TFYR of Macedonia	4.12	28.34	0.72	
31	Slovenia	4.04	27.82	0.71	
32	Portugal (2009)	3.92	26.97	0.70	
33	Finland	3.60	24.74	0.70	
34	Uruguay	3.36	23.14	0.69	
35	Netherlands	3.20	21.99	0.68	
36	France	3.13	21.54	0.67	
37	Belgium	3.00	20.63	0.66	
38	Czech Republic	2.84	19.53	0.65	
39	Spain	2.59	17.78	0.64	
40	Peru	2.54	17.47	0.63	
41	Switzerland	2.52	17.36	0.62	
42	Malaysia	2.42	16.62	0.61	
43	Croatia	2.39	16.44	0.60	
44	Brazil (2009)	2.38	16.34	0.59	
45	Lithuania (2009)	2.18	14.99	0.58	
46	Korea, Rep.	1.83	12.56	0.57	
47	Colombia	1.80	12.38	0.56	
48	Oman (2009)	1.67	11.50	0.55	
49	Serbia	1.66	11.44	0.54	
50	Kazakhstan	1.64	11.25	0.53	
51	Italy	1.63	11.18	0.52	
52	United Arab Emirates	1.37	9.44	0.51	
53	Germany (2010)	1.35	9.27	0.50	○
54	Moldova, Rep. (2009)	1.32	9.07	0.50	
55	Morocco (2009)	1.28	8.79	0.49	
56	Zambia	1.26	8.63	0.48	
57	Lesotho	1.22	8.38	0.47	●
58	Armenia	1.12	7.69	0.46	
59	Japan	1.10	7.58	0.45	
60	Jamaica	1.10	7.55	0.44	
61	Ghana	1.09	7.45	0.43	
62	Albania (2010)	0.96	6.61	0.42	
63	Dominican Republic	0.96	6.58	0.41	
64	Turkey (2008)	0.96	6.58	0.40	
65	Kyrgyzstan	0.95	6.50	0.39	
66	Belarus	0.91	6.23	0.38	
67	Mexico	0.87	5.99	0.37	
68	Kenya (2008)	0.85	5.86	0.36	
69	Greece (2008)	0.85	5.84	0.35	
70	Jordan	0.83	5.71	0.34	
71	Nigeria	0.83	5.68	0.33	
72	Russian Federation	0.83	5.67	0.32	
73	Uzbekistan	0.82	5.59	0.31	
74	Rwanda	0.78	5.31	0.30	
75	South Africa (2010)	0.77	5.29	0.30	
76	Uganda (2009)	0.72	4.93	0.29	
77	Bosnia and Herzegovina	0.71	4.88	0.28	
78	Guatemala	0.64	4.36	0.27	
79	Tunisia	0.63	4.33	0.26	
80	Azerbaijan	0.63	4.29	0.25	
81	Ukraine (2009)	0.60	4.11	0.24	○
82	Thailand (2009)	0.59	4.05	0.23	○
83	Sri Lanka	0.58	3.96	0.22	
84	Austria	0.56	3.86	0.21	○
85	Poland (2009)	0.52	3.58	0.20	○
86	Bolivia, Plurinational St.	0.48	3.30	0.19	
87	Argentina (2009)	0.46	3.14	0.18	○
88	El Salvador	0.46	3.12	0.17	
89	Tajikistan	0.29	1.94	0.16	
90	Indonesia	0.27	1.82	0.15	
91	Cambodia (2009)	0.22	1.47	0.14	
92	Philippines (2009)	0.19	1.30	0.13	
93	Algeria	0.19	1.29	0.12	
94	Senegal	0.19	1.28	0.11	
95	Egypt (2009)	0.13	0.86	0.10	○
96	Burkina Faso	0.11	0.77	0.10	
97	Togo	0.11	0.75	0.09	
98	Bangladesh	0.10	0.64	0.08	
99	India	0.09	0.58	0.07	○
100	Panama	0.08	0.54	0.06	○
101	Madagascar	0.08	0.53	0.05	
102	Malawi (2009)	0.08	0.52	0.04	
103	Syrian Arab Republic	0.05	0.31	0.03	○
104	Pakistan	0.03	0.21	0.02	○
105	Ethiopia (2009)	0.03	0.19	0.01	○
106	Niger (2009)	0.00	0.00	0.00	○
n/a	Angola	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	China	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Ecuador	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mongolia	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	United States of America	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Viet Nam	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: World Bank, *Doing Business 2013, Entrepreneurship* (2008–11)

NOTE: ● indicates a strength; ○ a weakness.

6.2.3 Total computer software spending

Total computer software spending (% of GDP) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	United States of America	1.00	100.00	1.00	●
2	Ireland	0.86	82.45	0.99	●
3	Canada	0.76	71.14	0.97	●
4	Switzerland	0.73	68.05	0.96	
5	United Kingdom	0.70	64.12	0.95	
6	Netherlands	0.70	63.97	0.93	
7	Turkey	0.69	62.43	0.92	●
8	Belgium	0.69	62.41	0.90	
9	Portugal	0.68	61.20	0.89	●
10	Spain	0.66	59.39	0.88	●
11	Austria	0.64	56.29	0.86	
12	France	0.64	56.24	0.85	
13	Italy	0.64	56.21	0.84	
14	Denmark	0.62	54.93	0.82	
15	Norway	0.62	54.51	0.81	
16	Germany	0.61	53.62	0.79	
17	Finland	0.59	51.35	0.78	
18	Sweden	0.58	49.71	0.77	
19	Greece	0.57	48.95	0.75	
20	Romania	0.45	33.96	0.74	
21	Hong Kong (China)	0.43	31.74	0.73	
22	Bahrain	0.41	29.46	0.71	
23	Kuwait	0.38	26.28	0.70	
24	Singapore	0.38	25.88	0.68	
25	Malaysia	0.37	25.07	0.67	
26	South Africa	0.36	23.59	0.66	
27	China	0.36	23.16	0.64	
28	Korea, Rep.	0.34	21.51	0.63	
29	New Zealand	0.34	20.51	0.62	
30	Australia	0.34	20.43	0.60	
31	Jamaica	0.33	19.95	0.59	●
32	Jordan	0.32	18.27	0.58	
33	Slovakia	0.31	17.94	0.56	
34	Sri Lanka	0.31	17.57	0.55	
35	Viet Nam	0.31	17.53	0.53	
36	Czech Republic	0.31	17.52	0.52	
37	Bulgaria	0.31	17.14	0.51	
38	Israel	0.30	16.73	0.49	○
39	Ukraine	0.30	16.72	0.48	
40	Chile	0.30	16.67	0.47	
41	Honduras	0.30	16.08	0.45	
42	Japan	0.30	16.04	0.44	
43	Indonesia	0.29	15.51	0.42	
44	Poland	0.29	15.05	0.41	
45	Russian Federation	0.29	14.83	0.40	
46	Thailand	0.29	14.71	0.38	
47	Saudi Arabia	0.29	14.57	0.37	
48	Hungary	0.29	14.51	0.36	
49	Pakistan	0.28	14.03	0.34	
50	Tunisia	0.28	13.22	0.33	
51	Costa Rica	0.27	13.15	0.32	
52	Panama	0.27	12.89	0.30	
53	Venezuela, Bolivarian Rep.	0.27	12.51	0.29	
54	Morocco	0.26	11.95	0.27	
55	Uruguay	0.26	11.33	0.26	
56	Ecuador	0.26	11.04	0.25	
57	Peru	0.26	10.89	0.23	
58	Brazil	0.25	10.82	0.22	○
59	Philippines	0.25	10.56	0.21	
60	Senegal	0.25	10.53	0.19	
61	United Arab Emirates	0.25	10.47	0.18	○
62	Qatar	0.25	9.90	0.16	○
63	Bolivia, Plurinational St.	0.24	9.29	0.15	○
64	India	0.24	9.13	0.14	○
65	Colombia	0.24	8.86	0.12	○
66	Mexico	0.24	8.66	0.11	○
67	Egypt	0.23	8.12	0.10	○
68	Argentina	0.23	8.11	0.08	○
69	Kenya	0.23	7.29	0.07	○
70	Iran, Islamic Rep.	0.21	5.42	0.05	○
71	Nigeria	0.20	4.18	0.04	○
72	Zimbabwe	0.19	3.51	0.03	○
73	Bangladesh	0.17	0.10	0.01	○
74	Cameroon	0.16	0.00	0.00	○
n/a	Albania	n/a	n/a	n/a	
n/a	Algeria	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Armenia	n/a	n/a	n/a	
n/a	Azerbaijan	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Belarus	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Croatia	n/a	n/a	n/a	
n/a	Cyprus	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Estonia	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Georgia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Guatemala	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Iceland	n/a	n/a	n/a	
n/a	Kazakhstan	n/a	n/a	n/a	
n/a	Kyrgyzstan	n/a	n/a	n/a	
n/a	Latvia	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Lithuania	n/a	n/a	n/a	
n/a	Luxembourg	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Malta	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Moldova, Rep.	n/a	n/a	n/a	
n/a	Mongolia	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Serbia	n/a	n/a	n/a	
n/a	Slovenia	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	TFYR of Macedonia	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	

SOURCE: IHS Global Insight, *Information and Communication Technology Database*; International Monetary Fund *World Economic Outlook 2012* (current US$ GDP)

NOTE: ● indicates a strength; ○ a weakness.

6.2.4 ISO 9001 quality certificates

ISO 9001—Quality management systems—Requirements: Number of certificates issued (per billion PPP$ GDP) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Italy	93.10	100.00	0.99	●
1	Romania	72.64	100.00	0.99	●
1	Bulgaria	49.50	100.00	0.99	●
4	Czech Republic	44.56	90.02	0.98	●
5	Malta	40.35	81.53	0.97	●
6	Spain	37.74	76.25	0.96	●
7	Serbia	36.42	73.57	0.96	●
8	Bosnia and Herzegovina	35.45	71.61	0.95	●
9	Hungary	34.89	70.48	0.94	●
10	Swaziland	31.78	64.20	0.94	●
11	Israel	31.73	64.11	0.93	
12	Cyprus	31.28	63.19	0.92	●
13	Estonia	30.57	61.77	0.91	
14	Slovakia	29.84	60.28	0.91	●
15	China	29.05	58.68	0.90	
16	Switzerland	28.80	58.18	0.89	
17	Slovenia	28.44	57.46	0.89	
18	Croatia	26.70	53.93	0.88	●
19	Malaysia	23.20	46.87	0.87	
20	Latvia	22.56	45.57	0.87	
21	Colombia	21.00	42.43	0.86	●
22	Montenegro	20.40	41.21	0.85	●
23	United Kingdom	19.04	38.47	0.84	
24	Lithuania	18.96	38.30	0.84	●
25	Portugal	18.66	37.71	0.83	
26	Singapore	17.92	36.21	0.82	
27	Korea, Rep.	17.56	35.47	0.82	
28	Viet Nam	15.93	32.19	0.81	●
29	Germany	15.91	32.14	0.80	
30	Netherlands	15.79	31.89	0.79	
31	Uruguay	15.22	30.76	0.79	●
32	Poland	14.25	28.78	0.78	
33	Greece	14.18	28.65	0.77	
34	TFYR of Macedonia	13.43	27.14	0.77	
35	France	13.20	26.66	0.76	
36	Japan	12.81	25.87	0.75	
37	Sweden	12.74	25.74	0.74	
38	Thailand	12.58	25.41	0.74	
39	Brazil	12.35	24.94	0.73	
40	Chile	12.23	24.71	0.72	
41	Austria	11.82	23.89	0.72	
42	United Arab Emirates	11.68	23.60	0.71	
43	Finland	11.65	23.55	0.70	
44	Australia	10.56	21.32	0.70	
45	Hong Kong (China)	10.52	21.26	0.69	
46	Ireland	10.02	20.25	0.68	
47	Jordan	9.80	19.80	0.67	
48	Turkey	8.78	17.74	0.67	
49	Ecuador	8.65	17.47	0.66	
50	Belgium	7.75	15.66	0.65	
51	New Zealand	7.64	15.43	0.65	
52	Lebanon	7.63	15.42	0.64	
53	Denmark	7.31	14.76	0.63	
54	Mauritius	7.21	14.56	0.62	
55	Moldova, Rep.	7.17	14.48	0.62	
56	India	6.69	13.52	0.61	
57	Argentina	6.63	13.40	0.60	
58	Norway	6.61	13.36	0.60	
59	Albania	6.48	13.08	0.59	
60	South Africa	6.14	12.41	0.58	
61	Barbados	6.06	12.25	0.57	
62	Bahrain	6.04	12.20	0.57	
63	Russian Federation	5.31	10.73	0.56	
64	Pakistan	5.26	10.62	0.55	●
65	Canada	5.09	10.29	0.55	○
66	Guyana	4.96	10.01	0.54	
67	Paraguay	4.92	9.94	0.53	●
68	Tunisia	4.77	9.63	0.52	
69	El Salvador	4.13	8.34	0.52	
70	Egypt	4.00	8.08	0.51	
71	Kenya	3.90	7.89	0.50	
72	Philippines	3.87	7.83	0.50	
73	Luxembourg	3.76	7.60	0.49	
74	Ukraine	3.67	7.40	0.48	
75	Sri Lanka	3.56	7.19	0.48	
76	Indonesia	3.56	7.18	0.47	
77	Honduras	3.50	7.07	0.46	
78	Bolivia, Plurinational St.	3.49	7.06	0.45	
79	Oman	3.46	6.99	0.45	
80	Cape Verde	3.41	6.89	0.44	
81	Costa Rica	3.29	6.65	0.43	
82	Brunei Darussalam	3.23	6.53	0.43	
83	Georgia	3.14	6.34	0.42	
84	Trinidad and Tobago	3.10	6.25	0.41	
85	Iceland	2.82	5.70	0.40	
86	Iran, Islamic Rep.	2.82	5.69	0.40	
87	Mexico	2.77	5.59	0.39	
88	Peru	2.77	5.59	0.38	
89	Kazakhstan	2.74	5.55	0.38	
90	Saudi Arabia	2.39	4.83	0.37	
91	Guatemala	2.32	4.70	0.36	
92	Kuwait	2.20	4.45	0.35	
93	Nicaragua	2.17	4.39	0.35	
94	Fiji	2.17	4.38	0.34	
95	Armenia	1.95	3.94	0.33	
96	Namibia	1.76	3.55	0.33	
97	Dominican Republic	1.76	3.55	0.32	
98	Senegal	1.75	3.53	0.31	
99	United States of America	1.71	3.46	0.30	○
100	Panama	1.70	3.43	0.30	
101	Zimbabwe	1.70	3.43	0.29	
102	Qatar	1.65	3.34	0.28	
103	Nepal	1.60	3.24	0.28	
104	Morocco	1.60	3.22	0.27	
105	Uzbekistan	1.58	3.18	0.26	
106	Belize	1.44	2.90	0.26	
107	Zambia	1.37	2.77	0.25	
108	Madagascar	1.36	2.74	0.24	
109	Venezuela, Bolivarian Rep.	1.34	2.72	0.23	
110	Azerbaijan	1.31	2.65	0.23	
111	Uganda	1.26	2.54	0.22	
112	Gabon	1.25	2.53	0.21	
113	Burkina Faso	1.22	2.47	0.21	
114	Syrian Arab Republic (2010)	1.21	2.45	0.20	
115	Mozambique	1.21	2.44	0.19	
116	Belarus	1.21	2.44	0.18	○
117	Côte d'Ivoire	1.11	2.24	0.18	
118	Togo	1.08	2.19	0.17	
119	Algeria	1.02	2.06	0.16	
120	Sudan	0.89	1.79	0.16	
121	Malawi	0.73	1.47	0.15	
122	Benin	0.68	1.37	0.14	
123	Jamaica	0.61	1.23	0.13	○
124	Bangladesh	0.61	1.23	0.13	
125	Gambia	0.57	1.16	0.12	
126	Botswana	0.57	1.15	0.11	○
127	Cameroon	0.47	0.94	0.11	
128	Yemen	0.45	0.91	0.10	
129	Niger	0.43	0.87	0.09	
130	Kyrgyzstan	0.38	0.77	0.09	
131	Cambodia	0.35	0.72	0.08	
132	Ethiopia	0.31	0.62	0.07	
133	Lesotho	0.27	0.54	0.06	
134	Angola	0.26	0.52	0.06	
135	Mongolia	0.23	0.46	0.05	○
136	Mali	0.17	0.34	0.04	
137	Ghana	0.12	0.24	0.04	○
138	Nigeria	0.11	0.21	0.03	○
139	Guinea	0.09	0.18	0.02	○
140	Tajikistan (2010)	0.07	0.14	0.01	
141	Tanzania, United Rep.	0.04	0.09	0.01	○
142	Rwanda	0.00	0.00	0.00	○

SOURCE: International Organization for Standardization, *The ISO Survey of Certifications 2011*; International Monetary Fund, *World Economic Outlook 2012* (2010–11)

NOTE: ● indicates a strength; ○ a weakness.

6.2.5 High-tech and medium-high-tech output

High-tech and medium-high-tech output (% of total manufactures output) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Singapore	64.00	100.00	1.00	●
2	Ireland	63.69	99.50	0.99	●
3	Switzerland (2007)	61.28	95.65	0.98	
4	Israel (2008)	57.19	89.13	0.97	●
5	Germany	53.47	83.19	0.96	●
6	Malta (2008)	53.35	83.00	0.95	●
7	Slovakia	53.23	82.80	0.94	●
8	Japan (2007)	52.22	81.19	0.93	
9	Hungary	49.32	76.57	0.92	●
10	Korea, Rep. (2008)	49.17	76.32	0.91	
11	Philippines (2006)	46.66	72.31	0.90	●
12	Iran, Islamic Rep. (2008)	45.45	70.39	0.89	●
13	Slovenia	45.23	70.04	0.88	
14	Thailand (2006)	43.88	67.87	0.86	●
15	United States of America (2008)	43.27	66.90	0.85	
16	China	43.06	66.58	0.84	
17	Mexico (2007)	42.10	65.03	0.83	●
18	France	41.61	64.25	0.82	
19	Finland	41.32	63.79	0.81	
20	Malaysia (2008)	40.61	62.65	0.80	
21	Sweden	39.14	60.31	0.79	
22	Brazil (2007)	38.96	60.03	0.78	●
23	Denmark (2008)	38.64	59.52	0.77	
24	United Kingdom	37.19	57.21	0.76	
25	Austria	36.49	56.08	0.75	
26	Italy	36.00	55.30	0.74	
27	Canada (2008)	35.20	54.02	0.73	
28	Spain	33.35	51.07	0.72	
29	Netherlands (2008)	33.04	50.57	0.71	
30	Belgium	32.77	50.14	0.70	
31	India (2008)	32.37	49.50	0.69	
32	Poland	32.26	49.33	0.68	
33	Indonesia	32.04	48.98	0.67	●
34	Romania	31.79	48.58	0.66	
35	Saudi Arabia (2006)	30.15	45.96	0.65	
36	Czech Republic (2007)	26.61	40.32	0.64	
37	Turkey (2008)	26.52	40.17	0.63	
38	South Africa	26.22	39.70	0.61	
39	Hong Kong (China)	24.74	37.32	0.60	
40	Norway (2008)	24.48	36.91	0.59	○
41	Trinidad and Tobago (2006)	24.11	36.33	0.58	
42	Morocco	23.88	35.95	0.57	
43	Pakistan (2006)	23.71	35.69	0.56	●
44	Portugal	23.67	35.62	0.55	
45	Colombia (2005)	22.36	33.53	0.54	
46	Russian Federation	22.28	33.39	0.53	
47	Lebanon (2007)	22.00	32.95	0.52	
48	Australia (2006)	21.96	32.89	0.51	○
49	Chile (2008)	21.73	32.52	0.50	
50	Viet Nam (2008)	21.15	31.59	0.49	
51	Ukraine	20.78	31.00	0.48	
52	Jordan	20.17	30.03	0.47	
53	Egypt (2006)	19.89	29.59	0.46	
54	Estonia	19.66	29.22	0.45	○
55	Serbia	19.35	28.72	0.44	
56	Gambia (2004)	16.81	24.66	0.43	
57	Lithuania	16.81	24.66	0.42	
58	Georgia	16.43	24.06	0.41	
59	Bulgaria	15.61	22.75	0.40	
60	Qatar (2006)	15.55	22.65	0.39	
61	Senegal	15.09	21.93	0.38	
62	Oman (2007)	14.64	21.21	0.36	
63	Albania	14.60	21.14	0.35	
64	Belarus	14.55	21.05	0.34	
65	Greece (2007)	14.08	20.32	0.33	
66	Ecuador (2008)	13.96	20.12	0.32	
67	Cyprus	12.35	17.55	0.31	
68	Tunisia (2006)	11.78	16.65	0.30	
69	TFYR of Macedonia	11.65	16.43	0.29	
70	Ghana (2003)	11.38	16.01	0.28	
71	Uruguay (2008)	11.11	15.57	0.27	
72	Tanzania, United Rep.	10.99	15.37	0.26	
73	Peru (2007)	10.96	15.34	0.25	
74	Ethiopia	10.87	15.18	0.24	
75	New Zealand (2008)	10.74	14.97	0.23	○
76	Sri Lanka (2008)	10.71	14.93	0.22	
77	Malawi	7.94	10.51	0.21	
78	Moldova, Rep.	7.86	10.38	0.20	
79	Kuwait	7.02	9.04	0.19	
80	Latvia	7.01	9.02	0.18	○
81	Kazakhstan (2007)	6.84	8.75	0.17	○
82	Azerbaijan	6.84	8.75	0.16	
83	Fiji (2008)	5.86	7.19	0.15	
84	Armenia	5.81	7.11	0.14	○
85	Panama (2005)	5.23	6.18	0.13	
86	Iceland (2006)	4.78	5.46	0.11	○
87	Mongolia (2008)	4.21	4.55	0.10	○
88	Nigeria (2004)	3.81	3.91	0.09	
89	Kyrgyzstan	3.80	3.90	0.08	
90	Kenya (2007)	3.44	3.33	0.07	○
91	Mauritius (2007)	3.30	3.11	0.06	○
92	Yemen (2006)	2.88	2.43	0.05	
93	Madagascar (2006)	2.42	1.69	0.04	
94	Tajikistan (2008)	2.40	1.66	0.03	
95	Cameroon (2008)	1.93	0.92	0.02	○
96	Luxembourg	1.43	0.12	0.01	○
97	Nepal (2008)	1.36	0.00	0.00	○
n/a	Algeria	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Argentina	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Costa Rica	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Croatia	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Guatemala	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: United Nations Industrial Development Organization, *Industrial Statistics Database INDSTAT4 2012*; OECD, 'ISIC Rev. 3 Technology Intensity Definition' (2003–09)

NOTE: ● indicates a strength; ○ a weakness.

6.3.1 Royalties and license fees receipts

Royalty and license fees, receipts (% of total service exports) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Netherlands	21.71	100.00	1.00	●
2	Japan	19.95	97.38	0.99	●
3	Switzerland (2010)	19.62	96.86	0.98	●
4	Guyana (2010)	18.92	95.74	0.97	●
5	United States of America	17.31	93.01	0.96	
6	Paraguay	15.51	89.65	0.96	●
7	Finland	11.10	79.59	0.95	
8	Iceland (2010)	8.20	70.73	0.94	
9	Sweden	7.88	69.60	0.93	
10	France	7.39	67.75	0.92	●
11	Germany	5.36	58.81	0.91	
12	Canada	5.18	57.90	0.90	
13	Hungary	4.87	56.26	0.89	
14	United Kingdom	4.86	56.20	0.88	
15	Korea, Rep.	4.55	54.42	0.88	
16	Denmark	4.08	51.55	0.87	
17	Israel	3.97	50.88	0.86	
18	Angola (2008)	3.64	48.68	0.85	●
19	Italy	3.41	47.04	0.84	
20	Romania	2.88	42.89	0.83	●
21	Yemen (2009)	2.70	41.41	0.82	●
22	Belgium	2.59	40.40	0.81	
23	New Zealand	2.36	38.33	0.81	
24	Ireland	2.35	38.20	0.80	
25	Uganda	1.97	34.39	0.79	●
26	Australia	1.78	32.24	0.78	
27	Singapore	1.73	31.62	0.77	
28	Russian Federation	1.61	30.19	0.76	
29	Brazil	1.54	29.33	0.75	
30	Kenya (2010)	1.46	28.39	0.74	●
31	Serbia	1.35	26.88	0.73	
32	Austria	1.27	25.75	0.73	
33	Norway (2010)	1.25	25.55	0.72	
34	Argentina	1.20	24.79	0.71	
35	Colombia	1.20	24.78	0.70	
36	Sudan (2010)	1.13	23.83	0.69	●
37	Bosnia and Herzegovina	1.00	21.70	0.68	
38	Malaysia (2009)	0.92	20.53	0.67	
39	Bolivia, Plurinational St.	0.90	20.07	0.66	●
40	TFYR of Macedonia	0.88	19.75	0.65	
41	Slovenia	0.78	18.03	0.65	
42	Poland	0.73	17.25	0.64	
43	Spain	0.73	17.12	0.63	
44	Belize	0.73	17.11	0.62	
45	Malta	0.70	16.63	0.61	
46	Luxembourg	0.62	15.18	0.60	
47	Guatemala	0.62	15.14	0.59	
48	Egypt (2007)	0.61	14.93	0.58	●
49	Chile	0.61	14.87	0.58	
50	Moldova, Rep.	0.61	14.83	0.57	
51	Ukraine	0.55	13.72	0.56	
52	Albania	0.55	13.63	0.55	
53	Madagascar (2005)	0.47	11.95	0.54	●
54	Czech Republic	0.46	11.87	0.53	
55	China	0.45	11.68	0.52	
56	South Africa	0.44	11.46	0.51	
57	Thailand	0.43	11.19	0.50	
58	Tunisia (2010)	0.43	11.10	0.50	
59	Estonia	0.39	10.33	0.49	○
60	Belarus	0.38	10.05	0.48	
61	Indonesia	0.38	10.01	0.47	
62	Mexico (2004)	0.38	9.98	0.46	
63	Hong Kong (China) (2010)	0.38	9.97	0.45	○
64	Mongolia	0.34	9.10	0.44	
65	Zimbabwe	0.33	8.99	0.43	
66	Tajikistan (2010)	0.30	8.29	0.42	
67	Georgia	0.23	6.45	0.42	
68	Bulgaria	0.23	6.42	0.41	
69	Portugal	0.23	6.41	0.40	
70	Barbados (2010)	0.21	5.91	0.39	
71	Latvia	0.20	5.67	0.38	○
72	Croatia	0.19	5.43	0.37	○
73	Jamaica (2010)	0.18	5.26	0.36	
74	Greece	0.18	5.15	0.35	
75	Costa Rica	0.16	4.72	0.35	
76	Peru	0.16	4.49	0.34	
77	Pakistan	0.14	4.12	0.33	
78	Burkina Faso (2010)	0.14	4.10	0.32	
79	Honduras (2003)	0.14	3.99	0.31	
80	Kyrgyzstan	0.13	3.79	0.30	
81	Senegal (2010)	0.12	3.38	0.29	
82	Iran, Islamic Rep. (2010)	0.11	3.20	0.28	
83	India (2010)	0.10	3.07	0.27	
84	Swaziland (2010)	0.10	2.98	0.27	
85	Guinea (2008)	0.10	2.87	0.26	●
86	Algeria (2010)	0.08	2.50	0.25	
87	Montenegro	0.07	2.09	0.24	
88	Cambodia	0.07	1.98	0.23	
89	Slovakia	0.06	1.85	0.22	○
90	Fiji (2010)	0.06	1.85	0.21	
91	Mali (2010)	0.06	1.82	0.20	
92	Lebanon (2010)	0.05	1.38	0.19	○
93	Mozambique	0.04	1.26	0.19	
94	Morocco	0.04	1.20	0.18	○
95	Botswana (2010)	0.03	0.99	0.17	
96	Philippines	0.03	0.98	0.16	
97	Côte d'Ivoire (2008)	0.03	0.88	0.15	
98	El Salvador	0.03	0.85	0.14	
99	Cameroon (2010)	0.03	0.83	0.13	
100	Bangladesh	0.03	0.82	0.12	
101	Lithuania (2010)	0.02	0.67	0.12	○
102	Mauritius (2010)	0.02	0.63	0.11	○
103	Syrian Arab Republic (2010)	0.02	0.58	0.10	
104	Cyprus	0.02	0.51	0.09	○
105	Rwanda (2010)	0.01	0.35	0.08	
106	Ethiopia (2010)	0.01	0.33	0.07	
107	Uruguay	0.00	0.13	0.06	○
108	Togo (2006)	0.00	0.09	0.05	
109	Niger (2007)	0.00	0.07	0.04	
110	Kazakhstan (2005)	0.00	0.02	0.04	○
111	Azerbaijan	0.00	0.02	0.03	○
112	Namibia (2009)	0.00	0.01	0.02	○
113	Benin (2010)	0.00	0.01	0.01	○
114	Cape Verde (2007)	0.00	0.00	0.00	○
n/a	Armenia	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Ecuador	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Panama	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Sri Lanka	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	Turkey	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Viet Nam	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	

SOURCE: World Trade Organization, *Trade in Commercial Services* database, based on the International Monetary Fund *Balance of Payments* database (2003–11)

NOTE: ● indicates a strength; ○ a weakness.

6.3.2 High-tech exports

High-tech net exports (% of total net exports) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Singapore	32.82	100.00	1.00	●
2	Malaysia (2012)	29.24	89.09	0.99	●
3	China	28.45	86.69	0.98	●
4	Malta	24.92	75.91	0.98	●
5	Costa Rica	24.67	75.15	0.97	●
6	Korea, Rep.	24.04	73.23	0.96	
7	Switzerland	21.96	66.90	0.95	
8	Ireland (2012)	20.80	63.37	0.94	
9	Hungary	20.54	62.59	0.93	●
10	France	19.12	58.25	0.93	●
11	Israel	17.23	52.49	0.92	
12	Czech Republic (2012)	16.34	49.78	0.91	●
13	Thailand (2012)	16.20	49.34	0.90	●
14	Japan (2012)	16.18	49.30	0.89	
15	Netherlands	16.00	48.73	0.89	
16	United Kingdom	15.91	48.46	0.88	
17	Mexico	14.95	45.55	0.87	●
18	Germany (2012)	14.03	42.76	0.86	
19	Sweden	13.87	42.27	0.85	
20	Cyprus	12.92	39.37	0.85	
21	Estonia (2012)	12.87	39.19	0.84	
22	United States of America	12.78	38.93	0.83	
23	Viet Nam	12.08	36.80	0.82	●
24	Austria	10.53	32.07	0.81	
25	Denmark	9.32	28.40	0.80	
26	Romania	9.05	27.57	0.80	●
27	Belgium (2012)	8.51	25.92	0.79	
28	Luxembourg	7.68	23.40	0.78	
29	Finland (2012)	7.50	22.85	0.77	
30	Croatia (2012)	7.43	22.63	0.76	
31	Italy	6.45	19.65	0.76	
32	Canada (2012)	6.28	19.13	0.75	
33	Slovakia	6.27	19.09	0.74	
34	Tunisia	6.08	18.52	0.73	●
35	Latvia (2012)	5.96	18.14	0.72	
36	Lithuania (2012)	5.77	17.59	0.72	
37	Slovenia (2012)	5.33	16.24	0.71	
38	Poland	5.16	15.71	0.70	
39	India	4.81	14.66	0.69	
40	Spain	4.72	14.39	0.68	
41	Hong Kong (China) (2012)	4.30	13.10	0.67	
42	Greece	4.24	12.92	0.67	
43	El Salvador (2012)	4.24	12.91	0.66	
44	Brazil (2012)	3.91	11.90	0.65	
45	Ukraine (2012)	3.87	11.79	0.64	
46	Kazakhstan (2012)	3.87	11.79	0.63	
47	Madagascar	3.83	11.68	0.63	●
48	Bulgaria	3.77	11.49	0.62	
49	Indonesia	3.58	10.90	0.61	
50	Norway	3.38	10.30	0.60	
51	Portugal (2012)	3.24	9.87	0.59	
52	Iceland	2.95	8.98	0.59	
53	TFYR of Macedonia (2012)	2.93	8.93	0.58	
54	Serbia	2.77	8.44	0.57	
55	Zambia	2.47	7.52	0.56	
56	South Africa (2012)	2.46	7.50	0.55	
57	Argentina	2.43	7.41	0.54	
58	Kenya (2010)	2.28	6.94	0.54	
59	New Zealand (2012)	2.12	6.47	0.53	
60	Australia	2.07	6.31	0.52	○
61	Guatemala (2012)	2.06	6.26	0.51	
62	Montenegro (2012)	2.04	6.22	0.50	
63	Moldova, Rep. (2012)	1.91	5.83	0.50	
64	Jordan	1.74	5.31	0.49	
65	Malawi	1.60	4.89	0.48	●
66	Dominican Republic	1.59	4.85	0.47	
67	Côte d'Ivoire	1.59	4.84	0.46	●
68	Bosnia and Herzegovina (2012)	1.56	4.77	0.46	
69	Turkey (2012)	1.53	4.65	0.45	
70	Uruguay (2009)	1.53	4.65	0.44	
71	Pakistan	1.29	3.94	0.43	
72	Georgia (2012)	1.28	3.91	0.42	
73	Belarus	1.24	3.78	0.41	
74	Paraguay (2012)	1.13	3.45	0.41	
75	Russian Federation	1.11	3.38	0.40	
76	Lebanon (2012)	1.01	3.07	0.39	
77	Fiji (2010)	0.93	2.83	0.38	
78	Tanzania, United Rep.	0.91	2.77	0.37	
79	Namibia	0.82	2.48	0.37	
80	Colombia	0.77	2.35	0.36	
81	Sri Lanka	0.72	2.18	0.35	
82	Peru	0.70	2.14	0.34	
83	Chile	0.67	2.04	0.33	○
84	Kyrgyzstan	0.65	1.97	0.33	
85	Albania	0.61	1.86	0.32	
86	Armenia (2012)	0.59	1.80	0.31	
87	Uganda (2010)	0.59	1.79	0.30	
88	Mauritius (2012)	0.57	1.75	0.29	
89	Bolivia, Plurinational St.	0.53	1.61	0.28	
90	Iran, Islamic Rep.	0.50	1.54	0.28	
91	Honduras (2009)	0.44	1.35	0.27	
92	Mongolia (2007)	0.38	1.15	0.26	
93	Syrian Arab Republic (2010)	0.34	1.04	0.25	
94	Senegal (2012)	0.34	1.03	0.24	
95	Niger	0.34	1.03	0.24	
96	Nicaragua	0.33	1.01	0.23	
97	Rwanda (2012)	0.32	0.97	0.22	
98	Nepal	0.31	0.93	0.21	
99	Gambia	0.28	0.84	0.20	
100	Zimbabwe	0.28	0.84	0.20	
101	Ecuador	0.27	0.82	0.19	
102	Egypt (2012)	0.27	0.82	0.18	
103	Jamaica (2010)	0.24	0.72	0.17	
104	Ethiopia	0.22	0.67	0.16	
105	Azerbaijan (2012)	0.19	0.58	0.15	
106	Mali (2010)	0.17	0.51	0.15	
107	Togo	0.16	0.48	0.14	
108	Burkina Faso	0.14	0.42	0.13	
109	Ghana	0.13	0.39	0.12	
110	United Arab Emirates (2008)	0.13	0.39	0.11	○
111	Sudan (2009)	0.12	0.36	0.11	
112	Cambodia	0.11	0.33	0.10	
113	Panama (2010)	0.10	0.30	0.09	○
114	Belize	0.08	0.24	0.08	○
115	Saudi Arabia	0.06	0.18	0.07	○
116	Oman (2007)	0.03	0.10	0.07	○
117	Nigeria	0.03	0.10	0.06	
118	Trinidad and Tobago (2010)	0.03	0.09	0.05	○
119	Bahrain	0.03	0.08	0.04	○
120	Guyana	0.01	0.04	0.03	○
121	Yemen	0.01	0.03	0.02	
122	Algeria	0.00	0.01	0.02	○
123	Qatar	0.00	0.01	0.01	○
124	Cape Verde (2012)	0.00	0.00	0.00	○
n/a	Angola	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Morocco	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Philippines	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	

SOURCE: United Nations, *COMTRADE* database; Eurostat *'High-technology' aggregations based on SITC Rev. 4*, April 2009 (2007–12)

NOTE: ● indicates a strength; ○ a weakness.

6.3.3 Communications, computer and information services exports

Communications, computer and information services exports (% of total services exports) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Guinea	42.25	100.00	0.96	●
1	Ireland	41.19	100.00	0.96	●
1	India (2009)	37.93	100.00	0.96	●
1	Israel	37.28	100.00	0.96	●
1	Tajikistan (2010)	37.00	100.00	0.96	●
1	Kuwait	35.55	100.00	0.96	●
7	Mali (2010)	31.35	88.04	0.96	●
8	Costa Rica	31.21	87.64	0.95	●
9	Sudan (2010)	25.84	72.33	0.94	●
10	Finland	23.94	66.91	0.93	
11	Guyana (2010)	20.66	57.56	0.93	●
12	Bahrain	20.61	57.42	0.92	●
13	Moldova, Rep.	20.37	56.74	0.91	●
14	Malawi (2009)	20.29	56.51	0.91	●
15	Honduras	20.13	56.06	0.90	●
16	Togo (2008)	18.60	51.69	0.89	●
17	Gambia (2009)	17.84	49.51	0.88	●
18	Bangladesh	17.34	48.10	0.88	●
19	Senegal (2010)	17.34	48.09	0.87	●
20	Romania	16.86	46.73	0.86	●
21	Burkina Faso (2010)	16.55	45.85	0.85	●
22	Philippines	15.88	43.93	0.85	●
23	Guatemala	15.37	42.49	0.84	●
24	El Salvador	15.19	41.97	0.83	●
25	Sweden	14.31	39.46	0.82	
26	Sri Lanka	14.27	39.36	0.82	●
27	Argentina	13.34	36.70	0.81	●
28	TFYR of Macedonia	13.33	36.67	0.80	●
29	Niger (2009)	12.82	35.21	0.80	●
30	Armenia	12.34	33.84	0.79	
31	Nicaragua	11.43	31.26	0.78	●
32	Nepal	11.39	31.14	0.77	●
33	Canada	11.21	30.62	0.77	
34	Bolivia, Plurinational St.	11.05	30.18	0.76	●
35	Côte d'Ivoire (2008)	10.97	29.95	0.75	●
36	Belgium	10.49	28.56	0.74	
37	Bosnia and Herzegovina	10.47	28.53	0.74	●
38	Serbia	10.46	28.47	0.73	
39	Ecuador	10.18	27.69	0.72	●
40	Slovakia	10.12	27.52	0.72	
41	Czech Republic	9.95	27.04	0.71	
42	Kenya (2010)	9.79	26.58	0.70	
43	Bulgaria	9.69	26.30	0.69	
44	Norway (2010)	9.46	25.65	0.69	
45	Germany	9.31	25.22	0.68	
46	Netherlands	8.99	24.29	0.67	
47	Swaziland (2010)	8.97	24.22	0.66	●
48	Belarus	8.81	23.77	0.66	
49	Estonia	8.81	23.77	0.65	
50	Pakistan	8.75	23.61	0.64	●
51	Benin (2010)	8.75	23.61	0.64	●
52	Italy	8.64	23.31	0.63	
53	United Kingdom	8.64	23.30	0.62	○
54	Yemen	8.45	22.75	0.61	●
55	Morocco	8.24	22.15	0.61	
56	Zambia (2008)	8.00	21.47	0.60	
57	Indonesia	7.91	21.21	0.59	
58	Hungary	7.85	21.06	0.58	
59	Slovenia	7.82	20.95	0.58	
60	China	7.57	20.25	0.57	
61	Poland	7.27	19.39	0.56	
62	Venezuela, Bolivarian Rep.	7.24	19.30	0.55	
63	Malaysia (2009)	7.00	18.62	0.55	
64	Ukraine	6.56	17.38	0.54	
65	Austria	6.50	17.20	0.53	○
66	Mozambique	6.42	16.98	0.53	●
67	Colombia	6.39	16.89	0.52	
68	Jamaica (2010)	6.36	16.79	0.51	
69	Spain	6.34	16.74	0.50	○
70	Uruguay	6.25	16.48	0.50	
71	Latvia	6.14	16.16	0.49	
72	Russian Federation	5.97	15.69	0.48	
73	Tunisia (2010)	5.94	15.59	0.47	
74	Cambodia (2010)	5.53	14.42	0.47	
75	Botswana (2010)	5.49	14.33	0.46	
76	Angola (2009)	5.45	14.20	0.45	●
77	Australia	5.33	13.87	0.45	○
78	Croatia	5.20	13.48	0.44	
79	Uganda	5.16	13.38	0.43	
80	Algeria (2010)	5.02	12.98	0.42	
81	Albania	4.80	12.34	0.42	
82	Cape Verde	4.79	12.31	0.41	
83	New Zealand	4.75	12.20	0.40	○
84	United States of America	4.72	12.12	0.39	○
85	Luxembourg	4.59	11.75	0.39	○
86	Dominican Republic (2010)	4.52	11.55	0.38	
87	Lesotho (2010)	4.50	11.51	0.37	●
88	Portugal	4.44	11.31	0.36	○
89	Rwanda (2010)	4.38	11.15	0.36	
90	Egypt (2010)	4.18	10.59	0.35	
91	Gabon (2005)	4.14	10.47	0.34	
92	Montenegro	4.09	10.33	0.34	
93	Ethiopia	4.07	10.28	0.33	
94	France	4.04	10.18	0.32	○
95	Belize	3.98	10.02	0.31	
96	Denmark	3.97	10.00	0.31	○
97	Panama	3.95	9.92	0.30	
98	Mauritius (2010)	3.81	9.53	0.29	
99	Cameroon (2010)	3.62	8.99	0.28	
100	South Africa	3.56	8.80	0.28	
101	Iceland (2010)	3.43	8.45	0.27	○
102	Peru	3.29	8.06	0.26	
103	Lithuania	3.24	7.89	0.26	○
104	Lebanon (2010)	2.99	7.20	0.25	○
105	Oman	2.91	6.95	0.24	
106	Trinidad and Tobago (2010)	2.85	6.79	0.23	
107	Azerbaijan	2.74	6.48	0.23	
108	Singapore	2.73	6.45	0.22	○
109	Malta	2.71	6.40	0.21	○
110	Greece	2.64	6.20	0.20	
111	Kazakhstan	2.50	5.79	0.20	
112	Brunei Darussalam (2009)	2.37	5.43	0.19	
113	Barbados (2010)	2.32	5.29	0.18	○
114	Saudi Arabia	2.30	5.21	0.18	○
115	Chile	2.15	4.79	0.17	○
116	Georgia	2.11	4.68	0.16	
117	Tanzania, United Rep. (2010)	2.08	4.60	0.15	
118	Hong Kong (China) (2010)	2.00	4.38	0.15	○
119	Mongolia	1.96	4.27	0.14	
120	Syrian Arab Republic (2010)	1.92	4.16	0.13	
121	Iran, Islamic Rep. (2010)	1.88	4.04	0.12	○
122	Viet Nam	1.63	3.33	0.12	○
123	Namibia	1.63	3.31	0.11	
124	Switzerland	1.59	3.19	0.10	○
125	Mexico	1.55	3.08	0.09	○
126	Qatar	1.54	3.07	0.09	○
127	Kyrgyzstan	1.50	2.95	0.08	
128	Nigeria	1.48	2.88	0.07	
129	Brazil	1.45	2.80	0.07	○
130	Turkey	1.41	2.69	0.06	○
131	Cyprus	1.40	2.65	0.05	○
132	Thailand (2010)	1.37	2.59	0.04	○
133	Japan	1.34	2.50	0.04	○
134	Fiji (2010)	1.29	2.35	0.03	○
135	Korea, Rep.	1.28	2.32	0.02	○
136	Paraguay	0.86	1.11	0.01	○
137	Zimbabwe	0.61	0.40	0.01	○
138	Madagascar (2005)	0.47	0.00	0.00	○
n/a	Ghana	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	

SOURCE: World Trade Organization, *Trade in Commercial Services* database, based on the International Monetary Fund *Balance of Payments* database (2005–11)

NOTE: ● indicates a strength; ○ a weakness.

6.3.4 Foreign direct investment net outflows

Foreign direct investment, net outflows (% of GDP) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Luxembourg	570.50	100.00	1.00	●
2	Mauritius	216.19	89.00	0.99	●
3	Hong Kong (China)	32.84	69.05	0.98	
4	Belgium	15.83	62.58	0.98	●
5	Hungary	15.60	62.47	0.97	●
6	Singapore (2010)	9.26	58.63	0.96	
7	Barbados (2010)	8.27	57.90	0.95	●
8	Switzerland	6.48	56.45	0.94	
9	Austria	6.08	56.09	0.93	●
10	Zambia	5.99	56.01	0.93	●
11	Malaysia	5.29	55.36	0.92	
12	Portugal	5.22	55.29	0.91	●
13	Sweden	5.06	55.14	0.90	
14	United Kingdom	4.39	54.47	0.89	
15	Norway	4.14	54.22	0.89	
16	Netherlands	4.14	54.21	0.88	
17	Denmark	4.05	54.12	0.87	
18	Chile (2010)	4.04	54.11	0.86	●
19	Russian Federation	3.62	53.66	0.85	●
20	Cyprus	3.46	53.48	0.85	
21	France	3.31	53.31	0.84	
22	Canada	2.84	52.76	0.83	
23	United States of America	2.71	52.61	0.82	
24	Trinidad and Tobago (2008)	2.50	52.35	0.81	●
25	Spain	2.49	52.33	0.80	
26	Italy	2.46	52.30	0.80	
27	Kazakhstan	2.41	52.24	0.79	●
28	Colombia	2.35	52.17	0.78	
29	Australia (2010)	2.15	51.91	0.77	
30	Finland	2.03	51.75	0.76	
31	Angola	2.01	51.72	0.76	●
32	Togo (2010)	2.00	51.72	0.75	●
33	Japan	1.97	51.68	0.74	
34	Lebanon	1.86	51.53	0.73	
35	Korea, Rep.	1.82	51.48	0.72	
36	New Zealand	1.75	51.38	0.72	
37	Thailand (2010)	1.73	51.36	0.71	
38	Niger (2009)	1.70	51.32	0.70	●
39	Kuwait (2010)	1.66	51.27	0.69	
40	Germany	1.49	51.03	0.68	
41	Bahrain (2010)	1.46	50.98	0.67	
42	Poland	1.43	50.94	0.67	
43	Israel	1.36	50.86	0.66	
44	Mongolia	1.08	50.45	0.65	
45	Georgia	1.01	50.35	0.64	
46	Mexico	0.93	50.22	0.63	
47	Indonesia	0.91	50.20	0.63	
48	Gabon (2005)	0.87	50.14	0.62	●
49	Azerbaijan	0.84	50.09	0.61	
50	Oman	0.80	50.03	0.60	
51	India (2010)	0.78	50.01	0.59	
52	Viet Nam	0.77	49.99	0.59	
53	Armenia	0.76	49.98	0.58	
54	China	0.68	49.85	0.57	
55	Greece	0.62	49.76	0.56	
56	Saudi Arabia	0.55	49.65	0.55	
57	Czech Republic	0.53	49.62	0.54	
58	Slovakia	0.52	49.61	0.54	
59	Jamaica	0.52	49.60	0.53	
60	Bulgaria	0.44	49.48	0.52	
61	Burkina Faso (2009)	0.41	49.43	0.51	●
62	Lithuania	0.40	49.41	0.50	
63	Serbia	0.37	49.36	0.50	
64	Nigeria	0.33	49.31	0.49	
65	Argentina	0.33	49.31	0.48	
66	Turkey	0.32	49.28	0.47	
67	Albania	0.31	49.28	0.46	
68	Moldova, Rep.	0.29	49.24	0.46	
69	Algeria	0.28	49.23	0.45	●
70	Egypt	0.27	49.21	0.44	
71	Morocco	0.25	49.17	0.43	
72	Cambodia	0.23	49.14	0.42	
73	Latvia	0.22	49.12	0.41	○
74	Slovenia	0.21	49.10	0.41	○
75	Fiji (2010)	0.18	49.06	0.40	
76	Malawi	0.17	49.04	0.39	
77	Sudan (2008)	0.17	49.04	0.38	●
78	Brunei Darussalam (2006)	0.15	49.01	0.37	
79	Costa Rica	0.14	49.00	0.37	
80	Mali (2010)	0.13	48.97	0.36	
81	Ukraine	0.12	48.95	0.35	
82	Bosnia and Herzegovina	0.11	48.94	0.34	
83	Côte d'Ivoire (2010)	0.11	48.94	0.33	
84	Jordan	0.11	48.94	0.33	
85	Swaziland (2010)	0.11	48.94	0.32	
86	Belarus	0.10	48.93	0.31	
87	Sri Lanka	0.10	48.93	0.30	
88	Cape Verde	0.07	48.88	0.29	
89	Ghana	0.06	48.87	0.28	
90	Peru	0.06	48.87	0.28	
91	Senegal (2010)	0.06	48.86	0.27	
92	Venezuela, Bolivarian Rep.	0.05	48.85	0.26	
93	Croatia	0.05	48.85	0.25	○
94	Belize	0.04	48.83	0.24	
95	Honduras	0.04	48.82	0.24	
96	Guatemala	0.04	48.82	0.23	
97	Paraguay	0.03	48.81	0.22	
98	Pakistan	0.03	48.81	0.21	
99	Kenya	0.03	48.81	0.20	
100	Tunisia	0.03	48.81	0.20	○
101	Mozambique	0.03	48.80	0.19	
102	Malta	0.02	48.80	0.18	○
103	El Salvador	0.02	48.80	0.17	
104	Guinea	0.02	48.79	0.16	
105	Philippines	0.00	48.77	0.15	
106	Botswana (2010)	0.00	48.76	0.15	
107	Bangladesh	0.00	48.76	0.14	
108	Bolivia, Plurinational St.	0.00	48.76	0.13	○
109	Nepal (2010)	0.00	48.76	0.12	
110	TFYR of Macedonia	−0.00	48.76	0.11	○
111	Kyrgyzstan	−0.00	48.76	0.11	
112	Romania	−0.02	48.73	0.10	○
113	Uganda (2010)	−0.02	48.73	0.09	
114	Namibia	−0.03	48.72	0.08	○
115	Uruguay	−0.03	48.71	0.07	○
116	Brazil	−0.04	48.69	0.07	○
117	South Africa	−0.12	48.55	0.06	○
118	Cameroon (2010)	−0.16	48.49	0.05	
119	Lesotho	−0.16	48.48	0.04	
120	Benin (2010)	−0.27	48.29	0.03	○
121	Rwanda (2007)	−0.35	48.16	0.02	○
122	Iceland	−0.51	47.87	0.02	○
123	Ireland	−1.75	45.37	0.01	○
124	Estonia	−6.77	0.00	0.00	○
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Ecuador	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Panama	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: International Monetary Fund (with World Bank and OECD GDP estimates), extracted from World Bank *World Development Indicators* database (2005–11)

NOTE: ● indicates a strength; ○ a weakness.

7.1.1 National office resident trademark registrations

Number of trademark registrations issued to residents by the national office (per billion PPP$ GDP) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Mongolia (2010)	316.93	100.00	0.99	●
1	Moldova, Rep.	178.54	100.00	0.99	●
3	Luxembourg	120.27	67.36	0.98	●
4	Iceland	109.28	61.20	0.97	
5	Morocco (2010)	95.74	53.62	0.96	●
6	Portugal	94.97	53.19	0.95	●
7	Ecuador (2010)	92.89	52.02	0.93	●
8	Armenia	88.89	49.78	0.92	●
9	Switzerland	88.73	49.70	0.91	
10	Czech Republic	88.62	49.64	0.90	●
11	Costa Rica	83.44	46.73	0.89	●
12	China	81.98	45.91	0.88	
13	Malta	80.34	45.00	0.87	
14	Viet Nam	79.63	44.60	0.86	●
15	Italy	79.13	44.32	0.85	
16	Bulgaria	79.00	44.25	0.84	●
17	Estonia	76.34	42.76	0.83	
18	Uruguay	70.93	39.73	0.82	●
19	Belarus (2004)	69.48	38.92	0.80	
20	Ukraine	68.11	38.14	0.79	●
21	Madagascar	66.92	37.48	0.78	●
22	Germany	66.46	37.22	0.77	
23	Panama	66.21	37.08	0.76	●
24	Croatia	65.20	36.52	0.75	
25	Netherlands	64.24	35.98	0.74	
26	Latvia	63.54	35.59	0.73	
27	Cyprus	60.66	33.97	0.72	
28	Romania	60.00	33.60	0.71	
29	Chile	59.06	33.08	0.70	
30	Turkey	57.44	32.17	0.68	
31	Finland	57.13	32.00	0.67	
32	Slovakia	56.22	31.49	0.66	
33	Spain	55.72	31.21	0.65	
34	Denmark	50.49	28.28	0.64	
35	Norway (2009)	47.99	26.88	0.63	
36	Australia	46.47	26.03	0.62	
37	Sweden	45.62	25.55	0.61	○
38	New Zealand	44.65	25.01	0.60	
39	Hong Kong (China)	43.83	24.55	0.59	
40	Georgia	42.67	23.90	0.58	
41	Korea, Rep.	41.72	23.37	0.57	
42	Lithuania	40.50	22.68	0.55	
43	Belgium	40.43	22.64	0.54	○
44	United Kingdom	38.41	21.51	0.53	○
45	Yemen	35.93	20.13	0.52	●
46	Poland	35.77	20.03	0.51	
47	Hungary	34.19	19.15	0.50	
48	Guatemala (2009)	33.44	18.73	0.49	
49	Honduras	32.19	18.03	0.48	
50	South Africa	31.94	17.89	0.47	
51	Jordan	31.32	17.54	0.46	
52	Kazakhstan (2008)	31.02	17.37	0.45	
53	Mozambique (2007)	29.15	16.32	0.43	
54	Colombia	27.72	15.53	0.42	
55	India	27.70	15.51	0.41	
56	Mexico	27.58	15.44	0.40	
57	Kenya (2006)	27.45	15.38	0.39	
58	Canada	26.89	15.06	0.38	○
59	Uzbekistan	25.70	14.40	0.37	
60	Malaysia	22.00	12.32	0.36	○
61	Brazil (2008)	21.93	12.28	0.35	
62	Austria	21.90	12.26	0.34	○
63	Russian Federation	21.40	11.99	0.33	
64	Serbia	21.27	11.91	0.32	
65	Philippines (2010)	20.79	11.64	0.30	
66	Nepal (2007)	20.71	11.60	0.29	
67	Tajikistan	20.10	11.26	0.28	
68	TFYR of Macedonia (2004)	19.68	11.02	0.27	
69	Thailand	19.36	10.84	0.26	
70	Venezuela, Bolivarian Rep.	17.25	9.66	0.25	
71	Cambodia (2007)	16.73	9.37	0.24	
72	Gambia (2007)	15.86	8.88	0.23	
73	Kyrgyzstan	15.24	8.53	0.22	
74	Israel	14.18	7.94	0.21	○
75	Bahrain	13.48	7.55	0.20	
76	Singapore	13.28	7.44	0.18	○
77	United States of America	11.91	6.67	0.17	○
78	Albania	11.73	6.57	0.16	
79	Sudan (2007)	11.38	6.37	0.15	
80	Ireland	11.36	6.36	0.14	○
81	Bosnia and Herzegovina	11.28	6.32	0.13	○
82	Malawi (2006)	11.02	6.17	0.12	
83	Slovenia	10.65	5.97	0.11	○
84	France	10.02	5.61	0.10	○
85	Algeria	7.19	4.03	0.09	
86	Sri Lanka (2010)	5.42	3.03	0.08	○
87	Pakistan (2009)	5.13	2.87	0.07	
88	Greece	4.01	2.25	0.05	○
89	Barbados	3.18	1.78	0.04	○
90	Bangladesh (2010)	1.18	0.66	0.03	○
91	Tanzania, United Rep. (2007)	0.71	0.40	0.02	○
92	Iran, Islamic Rep. (2008)	0.00	0.00	0.01	○
93	Japan (2009)	0.00	0.00	0.00	○
n/a	Angola	n/a	n/a	n/a	
n/a	Argentina	n/a	n/a	n/a	
n/a	Azerbaijan	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Egypt	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Indonesia	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Peru	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Senegal	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	Tunisia	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; International Monetary Fund *World Economic Outlook 2012* (PPP$ GDP) (2004–11)

NOTE: ● indicates a strength; ○ a weakness.

7.1.2 Madrid system trademark registrations by country of origin

Number of international trademark registrations issued through the Madrid system by country of origin (per billion PPP$ GDP) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Switzerland	7.71	100.00	0.97	
1	Cyprus	7.68	100.00	0.97	●
1	Luxembourg	6.14	100.00	0.97	●
4	Moldova, Rep.	4.54	73.94	0.96	●
5	Slovenia	3.69	60.18	0.94	●
6	Iceland	3.24	52.75	0.93	
7	Austria	2.95	48.02	0.92	
8	Denmark	2.67	43.43	0.90	
9	Serbia	2.40	39.06	0.89	●
10	TFYR of Macedonia	2.39	38.98	0.88	●
11	Estonia	2.39	38.96	0.86	
12	Latvia	2.35	38.27	0.85	
13	Bulgaria	2.27	36.91	0.83	
14	Germany	2.10	34.18	0.82	
15	Belarus	1.91	31.11	0.81	●
16	Croatia	1.90	30.88	0.79	
17	Finland	1.89	30.71	0.78	
18	Netherlands	1.83	29.87	0.76	
19	France	1.79	29.12	0.75	
20	Belgium	1.70	27.77	0.74	
21	Sweden	1.65	26.92	0.72	
22	Lithuania	1.65	26.85	0.71	
23	Italy	1.50	24.48	0.69	
24	Hungary	1.35	22.02	0.68	
25	Armenia	1.32	21.47	0.67	
26	Czech Republic	1.30	21.25	0.65	
27	Norway	1.11	18.10	0.64	
28	Australia	1.00	16.31	0.63	
29	Ukraine	0.90	14.70	0.61	
30	United Kingdom	0.86	14.03	0.60	○
31	Slovakia	0.83	13.54	0.58	
32	Portugal	0.82	13.43	0.57	
33	Spain	0.77	12.62	0.56	
34	Turkey	0.77	12.54	0.54	
35	Singapore	0.66	10.77	0.53	○
36	Israel	0.64	10.45	0.51	○
37	Ireland	0.60	9.82	0.50	○
38	Russian Federation	0.55	8.98	0.49	
39	Poland	0.50	8.13	0.47	
40	Georgia	0.49	7.97	0.46	
41	Japan	0.42	6.85	0.44	
42	Bosnia and Herzegovina	0.37	6.09	0.43	
43	United States of America	0.33	5.33	0.42	○
44	Greece	0.31	5.05	0.40	
45	Korea, Rep.	0.30	4.92	0.39	○
46	Morocco	0.30	4.86	0.38	
47	Kyrgyzstan	0.30	4.84	0.36	
48	Kazakhstan	0.29	4.70	0.35	
49	Montenegro	0.27	4.47	0.33	
50	Romania	0.26	4.16	0.32	
51	Viet Nam	0.21	3.36	0.31	
52	China	0.15	2.45	0.29	
53	Madagascar	0.14	2.29	0.28	
54	Mongolia	0.13	2.14	0.26	
55	Botswana	0.13	2.07	0.25	
56	Syrian Arab Republic (2010)	0.09	1.51	0.24	
57	Albania	0.08	1.26	0.22	
58	Bahrain	0.06	1.00	0.21	
59	Kenya	0.05	0.86	0.19	
60	Egypt	0.04	0.70	0.18	
61	Mozambique	0.04	0.62	0.17	
62	Azerbaijan	0.03	0.50	0.15	
63	Iran, Islamic Rep.	0.02	0.26	0.14	
64	Oman	0.01	0.18	0.13	○
65	Algeria	0.01	0.12	0.11	
66	Ghana	0.00	0.00	0.00	○
66	Lesotho	0.00	0.00	0.00	○
66	Namibia	0.00	0.00	0.00	○
66	Sudan	0.00	0.00	0.00	○
66	Swaziland	0.00	0.00	0.00	○
66	Tajikistan	0.00	0.00	0.00	○
66	Uzbekistan	0.00	0.00	0.00	○
66	Zambia	0.00	0.00	0.00	○
n/a	Angola	n/a	n/a	n/a	
n/a	Argentina	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Brazil	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Canada	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Chile	n/a	n/a	n/a	
n/a	Colombia	n/a	n/a	n/a	
n/a	Costa Rica	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Ecuador	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Guatemala	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Hong Kong (China)	n/a	n/a	n/a	
n/a	India	n/a	n/a	n/a	
n/a	Indonesia	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Malaysia	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Malta	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Mexico	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	New Zealand	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Pakistan	n/a	n/a	n/a	
n/a	Panama	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Peru	n/a	n/a	n/a	
n/a	Philippines	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Senegal	n/a	n/a	n/a	
n/a	South Africa	n/a	n/a	n/a	
n/a	Sri Lanka	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	Thailand	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	Tunisia	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uruguay	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; International Monetary Fund *World Economic Outlook 2012* (PPP$ GDP) (2010–12)

NOTE: ● indicates a strength; ○ a weakness.

7.1.3 ICTs and business model creation

Average answer to the question: To what extent are information and communication technologies creating new business models, services and products in your country? [1 = not at all; 7 = a significant extent] | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Finland	5.89	81.43	1.00	●
2	United Kingdom	5.85	80.88	0.99	●
3	Korea, Rep.	5.81	80.13	0.99	●
4	Sweden	5.71	78.47	0.98	●
5	Singapore	5.59	76.54	0.97	
6	Estonia	5.55	75.77	0.96	●
7	Netherlands	5.52	75.39	0.96	
8	Luxembourg	5.51	75.22	0.95	
9	France	5.51	75.17	0.94	●
10	United Arab Emirates	5.51	75.12	0.93	●
11	Qatar	5.49	74.81	0.93	●
12	Malaysia	5.48	74.59	0.92	
13	Norway	5.46	74.32	0.91	
14	Malta	5.41	73.47	0.90	
15	United States of America	5.40	73.27	0.90	
16	Denmark	5.36	72.68	0.89	
17	Switzerland	5.35	72.50	0.88	
18	Hong Kong (China)	5.34	72.32	0.87	
19	Germany	5.32	72.04	0.87	
20	Israel	5.31	71.84	0.86	
21	Portugal	5.27	71.23	0.85	
22	Canada	5.26	71.02	0.84	
23	Ireland	5.23	70.46	0.84	
24	New Zealand	5.21	70.20	0.83	
25	Saudi Arabia	5.16	69.39	0.82	
26	Japan	5.14	69.05	0.81	
27	Australia	5.12	68.70	0.81	
28	Lithuania	5.08	67.99	0.80	●
29	Chile	5.07	67.85	0.79	
30	Belgium	5.07	67.81	0.79	
31	Iceland	5.04	67.41	0.78	
32	Austria	5.04	67.28	0.77	
33	Brazil	5.01	66.84	0.76	
34	Bahrain	5.01	66.77	0.76	
35	India	4.99	66.52	0.75	
36	Viet Nam	4.98	66.30	0.74	
37	Spain	4.93	65.42	0.73	
38	Senegal	4.92	65.32	0.73	●
39	Sri Lanka	4.92	65.28	0.72	●
40	Azerbaijan	4.87	64.48	0.71	●
41	Uruguay	4.83	63.82	0.70	
42	Philippines	4.82	63.65	0.70	●
43	South Africa	4.80	63.32	0.69	
44	Rwanda	4.78	63.04	0.68	●
45	Kenya	4.78	62.98	0.67	
46	Jordan	4.75	62.53	0.67	
47	Costa Rica	4.74	62.35	0.66	
48	China	4.72	62.02	0.65	
49	Panama	4.71	61.83	0.64	
50	Nigeria	4.70	61.59	0.64	●
51	Dominican Republic	4.69	61.44	0.63	●
52	Mexico	4.67	61.23	0.62	
53	Oman	4.67	61.09	0.61	
54	Mauritius	4.66	61.07	0.61	
55	Gambia	4.63	60.56	0.60	●
56	Montenegro	4.63	60.47	0.59	
57	Guatemala	4.60	59.92	0.59	
58	Tunisia (2011)	4.58	59.71	0.58	
59	Turkey	4.57	59.49	0.57	
60	Peru	4.55	59.20	0.56	
61	Barbados	4.55	59.16	0.56	
62	Benin	4.53	58.87	0.55	●
63	Cyprus	4.51	58.54	0.54	
64	Indonesia	4.50	58.32	0.53	
65	Colombia	4.50	58.31	0.53	
66	Cape Verde	4.49	58.19	0.52	●
67	Slovenia	4.48	58.07	0.51	
68	Armenia	4.43	57.22	0.50	
69	Brunei Darussalam	4.41	56.82	0.50	
70	Mongolia	4.41	56.76	0.49	
71	Hungary	4.36	56.08	0.48	
72	Mali	4.36	56.01	0.47	●
73	Uganda	4.36	56.01	0.47	
74	Croatia	4.36	55.95	0.46	
75	Slovakia	4.35	55.75	0.45	
76	Latvia	4.34	55.69	0.44	
77	Cambodia	4.34	55.67	0.44	
78	Ghana	4.33	55.45	0.43	
79	Zambia	4.30	54.95	0.42	
80	Czech Republic	4.29	54.82	0.41	○
81	Jamaica	4.24	54.01	0.41	
82	Honduras	4.23	53.91	0.40	
83	Thailand	4.23	53.91	0.39	
84	Côte d'Ivoire	4.21	53.55	0.39	●
85	Morocco	4.19	53.23	0.38	
86	El Salvador	4.19	53.22	0.37	
87	Ecuador	4.17	52.78	0.36	
88	Italy	4.15	52.45	0.36	○
89	Iran, Islamic Rep.	4.13	52.14	0.35	
90	Kazakhstan	4.11	51.89	0.34	
91	Albania	4.08	51.40	0.33	
92	Argentina	4.08	51.39	0.33	
93	Guyana	4.07	51.22	0.32	
94	Bulgaria	4.06	51.08	0.31	○
95	Poland	4.01	50.19	0.30	○
96	Egypt	4.01	50.17	0.30	
97	Paraguay	4.00	49.98	0.29	
98	Bangladesh	3.98	49.74	0.28	
99	Cameroon	3.94	48.93	0.27	
100	Georgia	3.92	48.64	0.27	
101	Ukraine	3.90	48.34	0.26	○
102	Bosnia and Herzegovina	3.88	48.04	0.25	
103	Romania	3.87	47.77	0.24	○
104	Pakistan	3.86	47.68	0.24	
105	Burkina Faso	3.85	47.45	0.23	
106	Botswana	3.82	47.05	0.22	
107	Tajikistan	3.82	47.00	0.21	
108	TFYR of Macedonia	3.81	46.84	0.21	○
109	Mozambique	3.81	46.77	0.20	
110	Tanzania, United Rep.	3.80	46.69	0.19	
111	Nicaragua	3.74	45.66	0.19	
112	Moldova, Rep.	3.74	45.63	0.18	○
113	Namibia	3.73	45.54	0.17	
114	Malawi	3.73	45.51	0.16	
115	Greece	3.70	45.02	0.16	
116	Venezuela, Bolivarian Rep.	3.69	44.87	0.15	
117	Trinidad and Tobago	3.64	44.05	0.14	
118	Zimbabwe	3.64	43.93	0.13	
119	Gabon	3.62	43.68	0.13	
120	Nepal	3.61	43.58	0.12	
121	Russian Federation	3.61	43.56	0.11	○
122	Ethiopia	3.60	43.29	0.10	
123	Madagascar	3.57	42.81	0.10	
124	Kuwait	3.53	42.09	0.09	○
125	Bolivia, Plurinational St.	3.52	41.96	0.08	○
126	Serbia	3.39	39.88	0.07	○
127	Guinea	3.28	37.97	0.07	
128	Lebanon	3.28	37.96	0.06	○
129	Kyrgyzstan	3.24	37.30	0.05	○
130	Belize (2011)	2.97	32.82	0.04	○
131	Swaziland	2.93	32.21	0.04	
132	Lesotho	2.82	30.26	0.03	
133	Syrian Arab Republic (2011)	2.72	28.75	0.02	○
134	Angola (2011)	2.64	27.28	0.01	○
135	Yemen	2.55	25.78	0.01	○
136	Algeria	2.38	23.04	0.00	○
n/a	Belarus	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	

SOURCE: World Economic Forum, *Executive Opinion Survey 2011–2012* (2011–12)

NOTE: ● indicates a strength; ○ a weakness.

7.1.4 ICTs and organizational models creation

Average answer to the question: To what extent are information and communication technologies creating new organizational models (e.g., virtual teams, remote working, telecommuting) within businesses in your country? [1 = not at all; 7 = a significant extent] | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	United Kingdom	5.57	76.12	1.00	●
2	Finland	5.55	75.85	0.99	●
3	Qatar	5.51	75.25	0.99	●
4	Sweden	5.45	74.12	0.98	●
5	Netherlands	5.40	73.25	0.97	●
6	United States of America	5.38	73.04	0.96	
7	Singapore	5.38	72.98	0.96	
8	Norway	5.36	72.67	0.95	●
9	Malaysia	5.32	72.07	0.94	●
10	United Arab Emirates	5.25	70.88	0.93	●
11	Estonia	5.21	70.17	0.93	●
12	Denmark	5.17	69.57	0.92	
13	Canada	5.12	68.75	0.91	
14	Hong Kong (China)	5.11	68.48	0.90	
15	Saudi Arabia	5.06	67.70	0.90	●
16	Luxembourg	5.02	67.03	0.89	
17	Germany	5.01	66.82	0.88	
18	Switzerland	5.00	66.59	0.87	
19	Ireland	4.98	66.28	0.87	
20	Israel	4.97	66.24	0.86	
21	France	4.97	66.23	0.85	
22	Korea, Rep.	4.96	66.05	0.84	
23	New Zealand	4.89	64.87	0.84	
24	Iceland	4.89	64.86	0.83	
25	Lithuania	4.89	64.86	0.82	●
26	India	4.87	64.50	0.81	●
27	Australia	4.86	64.32	0.81	
28	Malta	4.85	64.15	0.80	
29	Belgium	4.84	64.00	0.79	
30	Portugal	4.83	63.83	0.79	
31	Philippines	4.75	62.56	0.78	●
32	Brazil	4.73	62.12	0.77	●
33	Chile	4.72	61.95	0.76	
34	Uruguay	4.66	60.96	0.76	●
35	China	4.66	60.95	0.75	
36	Tunisia (2011)	4.62	60.32	0.74	●
37	Kenya	4.61	60.24	0.73	●
38	Azerbaijan	4.60	59.96	0.73	●
39	Bahrain	4.56	59.30	0.72	
40	Dominican Republic	4.51	58.43	0.71	●
41	Sri Lanka	4.50	58.41	0.70	●
42	Costa Rica	4.50	58.37	0.70	
43	Guatemala	4.49	58.11	0.69	●
44	Mexico	4.48	58.07	0.68	
45	Jordan	4.48	58.04	0.67	
46	Panama	4.47	57.83	0.67	
47	Peru	4.47	57.83	0.66	
48	Austria	4.46	57.71	0.65	
49	Japan	4.44	57.39	0.64	
50	Spain	4.41	56.82	0.64	
51	Montenegro	4.39	56.49	0.63	
52	South Africa	4.38	56.35	0.62	
53	Indonesia	4.37	56.17	0.61	
54	Colombia	4.36	56.05	0.61	
55	Viet Nam	4.35	55.88	0.60	
56	Brunei Darussalam	4.35	55.81	0.59	
57	Mali	4.34	55.66	0.59	●
58	Gambia	4.31	55.14	0.58	●
59	Oman	4.29	54.85	0.57	
60	Rwanda	4.28	54.71	0.56	●
61	Mauritius	4.26	54.25	0.56	
62	Barbados	4.25	54.15	0.55	
63	Jamaica	4.24	54.03	0.54	●
64	Turkey	4.23	53.89	0.53	
65	Armenia	4.19	53.16	0.53	
66	Honduras	4.17	52.80	0.52	
67	Nigeria	4.16	52.62	0.51	●
68	Zambia	4.15	52.57	0.50	
69	Kazakhstan	4.15	52.50	0.50	
70	Latvia	4.13	52.09	0.49	
71	Senegal	4.12	52.06	0.48	
72	Cyprus	4.12	52.04	0.47	
73	Slovakia	4.12	52.04	0.47	
74	Cambodia	4.11	51.89	0.46	
75	El Salvador	4.11	51.78	0.45	
76	Cape Verde	4.10	51.71	0.44	
77	Argentina	4.08	51.29	0.44	
78	Slovenia	4.07	51.21	0.43	
79	Egypt	4.05	50.79	0.42	
80	Uganda	4.03	50.48	0.41	
81	Croatia	4.03	50.45	0.41	
82	Ecuador	4.00	50.05	0.40	
83	Guyana	4.00	50.03	0.39	
84	Hungary	4.00	49.95	0.39	
85	Czech Republic	3.96	49.25	0.38	○
86	Thailand	3.91	48.47	0.37	
87	Morocco	3.90	48.30	0.36	
88	Albania	3.88	47.93	0.36	
89	Pakistan	3.82	46.97	0.35	
90	Bosnia and Herzegovina	3.82	46.93	0.34	
91	Ghana	3.79	46.56	0.33	
92	Bulgaria	3.79	46.54	0.33	
93	Poland	3.77	46.13	0.32	○
94	Iran, Islamic Rep.	3.76	46.05	0.31	
95	Paraguay	3.75	45.88	0.30	
96	Mongolia	3.74	45.59	0.30	
97	Italy	3.69	44.86	0.29	○
98	Bolivia, Plurinational St.	3.66	44.26	0.28	
99	Moldova, Rep.	3.65	44.13	0.27	
100	Romania	3.63	43.85	0.27	
101	Ukraine	3.63	43.79	0.26	○
102	Venezuela, Bolivarian Rep.	3.62	43.71	0.25	
103	Russian Federation	3.62	43.60	0.24	○
104	Trinidad and Tobago	3.60	43.27	0.24	
105	Cameroon	3.57	42.83	0.23	
106	Nepal	3.57	42.80	0.22	
107	Côte d'Ivoire	3.57	42.79	0.21	
108	Nicaragua	3.57	42.78	0.21	
109	Bangladesh	3.55	42.57	0.20	
110	Tanzania, United Rep.	3.53	42.09	0.19	
111	Malawi	3.50	41.69	0.19	
112	TFYR of Macedonia	3.49	41.55	0.18	○
113	Botswana	3.49	41.55	0.17	
114	Benin	3.49	41.47	0.16	
115	Namibia	3.48	41.33	0.16	
116	Syrian Arab Republic (2011)	3.48	41.32	0.15	
117	Georgia	3.46	41.02	0.14	
118	Ethiopia	3.44	40.75	0.13	
119	Madagascar	3.44	40.60	0.13	
120	Tajikistan	3.43	40.42	0.12	
121	Zimbabwe	3.40	39.96	0.11	
122	Mozambique	3.32	38.63	0.10	
123	Kyrgyzstan	3.28	38.07	0.10	
124	Greece	3.25	37.57	0.09	○
125	Burkina Faso	3.25	37.43	0.08	
126	Kuwait	3.11	35.09	0.07	○
127	Angola (2011)	3.00	33.33	0.07	
128	Serbia	2.97	32.88	0.06	○
129	Guinea	2.93	32.08	0.05	
130	Lesotho	2.91	31.89	0.04	
131	Lebanon	2.89	31.44	0.04	○
132	Swaziland	2.81	30.15	0.03	
133	Gabon	2.70	28.29	0.02	○
134	Yemen	2.68	27.94	0.01	
135	Belize (2011)	2.40	23.29	0.01	○
136	Algeria	2.11	18.57	0.00	○
n/a	Belarus	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	

SOURCE: World Economic Forum, *Executive Opinion Survey 2011–2012* (2011–12)

NOTE: ● indicates a strength; ○ a weakness.

7.2.1 Audiovisual and related services exports

Audiovisual and related services exports (% of total services exports) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Hungary	5.54	100.00	1.00	●
2	Ecuador	5.23	98.60	0.99	●
3	Guinea	4.25	93.53	0.97	●
4	Luxembourg	3.41	88.18	0.96	
5	Canada	2.93	84.54	0.95	
6	United States of America (2010)	2.46	80.29	0.93	
7	Argentina	2.10	76.52	0.92	●
8	United Kingdom (2010)	1.05	60.40	0.91	
9	Czech Republic (2010)	0.83	55.20	0.89	●
10	Romania (2010)	0.79	53.99	0.88	●
11	TFYR of Macedonia	0.76	53.05	0.87	●
12	Colombia	0.70	51.51	0.85	●
13	Iceland (2010)	0.68	50.75	0.84	
14	Spain	0.66	50.23	0.83	
15	France (2010)	0.66	50.19	0.81	
16	Serbia	0.64	49.51	0.80	●
17	Belgium	0.61	48.56	0.79	
18	Lebanon (2010)	0.61	48.37	0.77	
19	Swaziland (2010)	0.59	47.66	0.76	●
20	Denmark (2010)	0.59	47.64	0.75	
21	Russian Federation	0.57	47.14	0.73	
22	Armenia	0.55	46.08	0.72	
23	Mexico	0.52	45.16	0.71	
24	Norway (2010)	0.51	44.74	0.69	
25	Bulgaria (2010)	0.51	44.46	0.68	
26	Portugal (2010)	0.50	44.23	0.67	
27	Australia	0.40	39.92	0.65	
28	Netherlands	0.40	39.53	0.64	
29	Ireland (2010)	0.34	36.59	0.63	
30	Germany	0.34	36.26	0.61	
31	Venezuela, Bolivarian Rep.	0.30	33.87	0.60	●
32	Uganda	0.29	33.56	0.59	
33	Korea, Rep.	0.29	33.21	0.57	
34	Estonia (2010)	0.28	32.68	0.56	
35	Greece (2005)	0.27	32.34	0.55	
36	Sweden (2010)	0.26	31.31	0.53	○
37	Morocco	0.22	28.95	0.52	
38	Georgia	0.21	27.80	0.51	
39	Poland (2010)	0.18	25.68	0.49	
40	Bolivia, Plurinational St.	0.18	24.86	0.48	
41	Slovenia (2010)	0.17	24.01	0.47	
42	Philippines	0.16	23.01	0.45	
43	Latvia (2010)	0.15	22.80	0.44	
44	Croatia (2010)	0.15	22.01	0.43	
45	Fiji (2010)	0.14	21.98	0.41	
46	Slovakia (2010)	0.13	20.14	0.40	
47	Austria (2010)	0.12	18.94	0.39	○
48	Senegal (2010)	0.11	18.10	0.37	
49	Hong Kong (China) (2010)	0.11	17.63	0.36	○
50	Japan (2007)	0.10	16.70	0.35	○
51	Italy (2010)	0.09	16.25	0.33	○
52	Cyprus (2010)	0.09	15.77	0.32	
53	Madagascar (2003)	0.09	15.22	0.31	
54	China	0.08	14.35	0.29	
55	Belarus (2005)	0.07	12.58	0.28	○
56	Montenegro	0.06	11.63	0.27	
57	Albania	0.06	10.72	0.25	
58	Mauritius (2010)	0.05	10.13	0.24	
59	Pakistan	0.04	8.81	0.23	
60	Moldova, Rep.	0.04	7.99	0.21	
61	Bangladesh	0.04	7.43	0.20	
62	Brazil	0.03	7.22	0.19	○
63	Algeria (2010)	0.03	5.93	0.17	
64	Lithuania	0.02	4.63	0.16	○
65	Kazakhstan	0.02	4.24	0.15	○
66	Finland (2010)	0.01	3.18	0.13	○
67	Mozambique	0.01	2.76	0.12	
68	Niger (2003)	0.01	2.42	0.11	
69	Cape Verde (2008)	0.01	2.11	0.09	
70	Guatemala (2005)	0.01	1.66	0.08	○
71	Benin (2010)	0.01	1.12	0.07	
72	Côte d'Ivoire (2005)	0.01	1.05	0.05	○
73	Mali (2009)	0.00	0.73	0.04	
74	Costa Rica	0.00	0.45	0.03	○
75	Ethiopia (2010)	0.00	0.34	0.01	○
76	Rwanda (2010)	0.00	0.00	0.00	○
n/a	Angola	n/a	n/a	n/a	
n/a	Azerbaijan	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Chile	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Egypt	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	India	n/a	n/a	n/a	
n/a	Indonesia	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Israel	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Kenya	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Kyrgyzstan	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Malaysia	n/a	n/a	n/a	
n/a	Malta	n/a	n/a	n/a	
n/a	Mongolia	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	New Zealand	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Panama	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Peru	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Singapore	n/a	n/a	n/a	
n/a	South Africa	n/a	n/a	n/a	
n/a	Sri Lanka	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Switzerland	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	Thailand	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	Tunisia	n/a	n/a	n/a	
n/a	Turkey	n/a	n/a	n/a	
n/a	Ukraine	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uruguay	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Viet Nam	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: World Trade Organization, *Trade in Commercial Services* database, based on the International Monetary Fund *Balance of Payments* database (2003–11)

NOTE: ● indicates a strength; ○ a weakness.

7.2.2 National feature films produced

Number of national feature films produced (per million population 15–69 years old) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Iceland	43.59	100.00	1.00	●
2	Luxembourg	42.87	99.57	0.99	●
3	Mauritius	30.91	91.14	0.98	●
4	Azerbaijan	22.51	83.06	0.97	●
5	Guyana	22.43	82.96	0.96	●
6	Switzerland	14.98	72.84	0.95	
7	Estonia	13.53	70.32	0.94	●
8	Slovenia	12.63	68.63	0.93	●
9	Tanzania, United Rep.	12.33	68.04	0.92	●
10	Nigeria	11.12	65.53	0.91	●
11	Finland	10.96	65.18	0.90	
12	Denmark	10.88	64.99	0.89	
13	Gabon	10.48	64.08	0.88	●
14	Ireland	10.03	63.03	0.88	
15	Norway	10.01	63.00	0.87	
16	Hong Kong (China)	9.40	61.47	0.86	
17	Montenegro	8.81	59.93	0.85	●
18	Austria	8.80	59.90	0.84	
19	New Zealand	8.04	57.79	0.83	
20	Iran, Islamic Rep.	7.21	55.22	0.82	●
21	United Kingdom	6.78	53.80	0.81	
22	Mongolia	6.67	53.43	0.80	
23	Sweden	6.44	52.63	0.79	
24	Belgium (2009)	6.28	52.07	0.78	
25	France	6.25	51.95	0.77	
26	Netherlands	6.11	51.43	0.76	
27	Spain	5.93	50.74	0.75	
28	Korea, Rep.	5.86	50.48	0.74	
29	Czech Republic	5.64	49.64	0.73	
30	Israel	5.27	48.13	0.72	
31	Japan	4.98	46.88	0.71	
32	Lebanon	4.64	45.32	0.70	
33	Georgia	4.46	44.47	0.69	
34	Bolivia, Plurinational St. (2009)	4.22	43.27	0.68	●
35	Serbia	4.09	42.59	0.67	
36	Portugal	3.91	41.65	0.66	
37	Singapore	3.75	40.78	0.65	
38	United States of America	3.70	40.50	0.64	
39	Latvia	3.65	40.24	0.63	
40	Germany	3.62	40.07	0.63	
41	Italy	3.61	40.00	0.62	
42	Argentina	3.61	39.99	0.61	
43	Cyprus	3.60	39.96	0.60	
44	Uruguay	3.49	39.30	0.59	
45	Canada	3.40	38.75	0.58	
46	Hungary (2010)	3.25	37.88	0.57	
47	Malta	3.19	37.46	0.56	
48	Slovakia	2.86	35.31	0.55	
49	Croatia	2.83	35.13	0.54	
50	Bulgaria	2.73	34.42	0.53	
51	Australia	2.66	33.92	0.52	○
52	TFYR of Macedonia (2010)	2.60	33.52	0.51	
53	Malaysia	2.53	32.95	0.50	
54	Bosnia and Herzegovina	2.49	32.67	0.49	
55	Russian Federation (2009)	2.35	31.57	0.48	
56	Armenia	2.27	30.99	0.47	
57	Greece (2010)	2.22	30.55	0.46	
58	Tajikistan (2009)	1.97	28.40	0.45	●
59	Chile	1.85	27.34	0.44	
60	Cameroon (2009)	1.83	27.12	0.43	●
61	Poland	1.77	26.62	0.42	
62	Fiji (2009)	1.72	26.16	0.41	
63	India	1.51	24.06	0.40	
64	Tunisia	1.44	23.30	0.39	
65	Cambodia	1.36	22.44	0.38	
66	Turkey	1.36	22.36	0.38	
67	Philippines	1.31	21.82	0.37	
68	Paraguay (2009)	1.25	21.19	0.36	
69	Guatemala (2010)	1.25	21.12	0.35	
70	Costa Rica (2010)	1.21	20.71	0.34	
71	Viet Nam	1.16	20.11	0.33	
72	Morocco	1.08	19.11	0.32	
73	Romania	1.07	19.00	0.31	
74	Kazakhstan (2009)	1.07	18.97	0.30	
75	Thailand (2010)	0.96	17.58	0.29	
76	Dominican Republic (2009)	0.95	17.41	0.28	
77	Mexico	0.95	17.37	0.27	○
78	Guinea (2010)	0.91	16.83	0.26	●
79	Lithuania	0.82	15.62	0.25	○
80	Namibia (2005)	0.81	15.52	0.24	
81	Venezuela, Bolivarian Rep.	0.81	15.41	0.23	
82	Niger	0.75	14.53	0.22	
83	Brazil	0.72	14.05	0.21	○
84	Senegal	0.71	13.95	0.20	
85	Bangladesh (2009)	0.67	13.28	0.19	
86	South Africa	0.65	12.98	0.18	○
87	China	0.57	11.80	0.17	○
88	Colombia	0.56	11.63	0.16	○
89	Egypt	0.52	10.84	0.15	
90	Indonesia	0.50	10.47	0.14	
91	Burkina Faso (2009)	0.47	10.00	0.13	
92	Panama (2010)	0.43	9.21	0.13	
93	Peru	0.41	8.92	0.12	○
94	Syrian Arab Republic	0.39	8.61	0.11	
95	Moldova, Rep. (2009)	0.37	8.15	0.10	○
96	Nicaragua (2009)	0.28	6.45	0.09	○
97	El Salvador (2008)	0.26	6.05	0.08	○
98	Pakistan (2009)	0.26	5.94	0.07	
99	Honduras (2009)	0.22	5.25	0.06	○
100	Belarus	0.14	3.40	0.05	○
101	Mali	0.12	2.99	0.04	
102	Ukraine	0.09	2.22	0.03	○
103	Mozambique (2006)	0.09	2.18	0.02	○
104	Kyrgyzstan	0.00	0.00	0.00	○
104	Oman (2009)	0.00	0.00	0.00	○
n/a	Albania	n/a	n/a	n/a	
n/a	Algeria	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Ecuador	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Kenya	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Sri Lanka	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database*; United Nations, *World Population Prospects: The 2010 Revision* (population data) (2005–11)

NOTE: ● indicates a strength; ○ a weakness.

7.2.3 Daily newspapers circulation

Paid-for dailies average circulation (per thousand population 15–69 years old) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Japan (2011)	54.64	100.00	1.00	●
2	Norway (2011)	51.59	94.42	0.99	●
3	Kuwait	50.57	92.55	0.99	●
4	Finland (2011)	49.89	91.31	0.98	●
5	Sweden (2011)	44.02	80.54	0.97	●
6	Hong Kong (China) (2010)	39.49	72.24	0.96	
7	Switzerland	38.35	70.16	0.96	
8	Korea, Rep. (2011)	33.91	62.03	0.95	
9	Austria (2011)	32.53	59.50	0.94	●
10	Malta	32.20	58.89	0.93	●
11	Germany (2011)	31.64	57.86	0.93	
12	United Kingdom (2011)	30.60	55.97	0.92	
13	Luxembourg (2011)	29.90	54.67	0.91	
14	Netherlands (2011)	28.11	51.39	0.91	
15	Belarus (2011)	25.41	46.46	0.90	●
16	Denmark (2011)	24.46	44.72	0.89	
17	Singapore (2011)	23.88	43.64	0.88	
18	Barbados	23.78	43.46	0.88	
19	Estonia (2011)	21.91	40.03	0.87	
20	Iceland (2010)	21.21	38.75	0.86	
21	Bahrain	20.71	37.85	0.85	●
22	United States of America (2011)	20.05	36.64	0.85	
23	Bulgaria (2011)	19.93	36.41	0.84	●
24	New Zealand (2011)	19.90	36.36	0.83	
25	Ireland (2011)	19.60	35.80	0.82	
26	Belgium (2011)	17.89	32.68	0.82	
27	Hungary (2011)	16.82	30.72	0.81	
28	Slovenia (2011)	16.48	30.10	0.80	
29	France (2011)	16.35	29.86	0.80	
30	United Arab Emirates (2011)	15.71	28.69	0.79	
31	Canada (2011)	15.18	27.72	0.78	
32	Australia (2011)	15.12	27.60	0.77	
33	Thailand (2011)	14.86	27.13	0.77	
34	Serbia (2011)	14.82	27.05	0.76	
35	Moldova, Rep.	14.74	26.91	0.75	
36	Brunei Darussalam	14.70	26.83	0.74	●
37	Israel (2010)	14.46	26.39	0.74	
38	Oman	14.34	26.17	0.73	●
39	Czech Republic (2011)	14.27	26.04	0.72	
40	Algeria (2011)	14.03	25.60	0.72	●
41	Trinidad and Tobago	13.97	25.50	0.71	
42	Montenegro	13.71	25.02	0.70	
43	Malaysia (2011)	13.39	24.43	0.69	
44	India (2011)	13.27	24.21	0.69	
45	Latvia	13.17	24.03	0.68	
46	Croatia (2011)	12.71	23.18	0.67	
47	Cyprus	12.37	22.56	0.66	
48	Greece (2011)	12.13	22.13	0.66	
49	China (2011)	11.65	21.25	0.65	
50	Lithuania (2011)	11.59	21.13	0.64	
51	Saudi Arabia (2011)	11.32	20.65	0.64	
52	Costa Rica (2011)	11.30	20.60	0.63	
53	Mauritius	11.08	20.21	0.62	
54	TFYR of Macedonia	10.48	19.10	0.61	
55	Spain (2011)	10.45	19.05	0.61	
56	Italy (2011)	10.39	18.93	0.60	
57	Panama	9.97	18.16	0.59	
58	Poland (2011)	9.76	17.79	0.58	
59	Turkey (2011)	9.17	16.71	0.58	
60	Venezuela, Bolivarian Rep. (2011)	9.16	16.68	0.57	
61	Slovakia (2011)	9.08	16.53	0.56	
62	Lebanon	8.83	16.08	0.55	
63	Qatar	8.81	16.03	0.55	
64	Jordan	8.63	15.71	0.54	
65	Peru (2011)	8.49	15.46	0.53	
66	Egypt (2011)	8.04	14.63	0.53	
67	Russian Federation (2011)	7.50	13.64	0.52	
68	Ukraine (2011)	7.28	13.25	0.51	
69	El Salvador	7.25	13.19	0.50	
70	Fiji	6.90	12.54	0.50	
71	Ecuador (2011)	6.83	12.42	0.49	
72	Bosnia and Herzegovina	6.75	12.26	0.48	
73	Jamaica	6.48	11.78	0.47	
74	Uruguay	6.40	11.63	0.47	
75	Philippines (2011)	6.38	11.59	0.46	
76	Guyana	6.33	11.50	0.45	
77	Guatemala	6.31	11.45	0.45	
78	Viet Nam (2010)	6.30	11.45	0.44	
79	Brazil (2011)	6.25	11.36	0.43	
80	Portugal (2011)	6.25	11.35	0.42	
81	Mexico (2011)	6.24	11.32	0.42	
82	Pakistan (2011)	5.53	10.03	0.41	
83	Indonesia (2011)	5.47	9.92	0.40	
84	Tunisia	5.38	9.76	0.39	
85	Romania (2011)	4.98	9.03	0.39	
86	Nicaragua	4.80	8.70	0.38	
87	South Africa (2011)	4.45	8.06	0.37	
88	Honduras	4.26	7.71	0.36	
89	Chile (2011)	4.24	7.67	0.36	○
90	Argentina (2011)	4.17	7.55	0.35	
91	Namibia	4.03	7.28	0.34	
92	Sri Lanka (2011)	4.02	7.26	0.34	
93	Nepal	3.91	7.07	0.33	
94	Dominican Republic	3.88	7.02	0.32	
95	Colombia (2010)	3.83	6.92	0.31	
96	Swaziland	3.63	6.54	0.31	
97	Syrian Arab Republic (2010)	3.11	5.60	0.30	
98	Albania	3.10	5.58	0.29	
99	Senegal	2.98	5.36	0.28	
100	Iran, Islamic Rep. (2010)	2.90	5.21	0.28	
101	Paraguay	2.88	5.19	0.27	
102	Kazakhstan (2011)	2.81	5.06	0.26	
103	Bolivia, Plurinational St.	2.61	4.69	0.26	
104	Mongolia	2.59	4.65	0.25	
105	Gabon	2.21	3.96	0.24	
106	Armenia (2011)	2.05	3.65	0.23	
107	Kyrgyzstan	1.86	3.31	0.23	
108	Côte d'Ivoire	1.82	3.24	0.22	
109	Azerbaijan	1.80	3.19	0.21	
110	Bangladesh (2011)	1.55	2.74	0.20	
111	Morocco (2011)	1.53	2.71	0.20	
112	Ghana	1.42	2.51	0.19	
113	Georgia	1.36	2.39	0.18	
114	Yemen	1.35	2.38	0.18	
115	Kenya (2011)	1.33	2.34	0.17	
116	Zambia	1.21	2.12	0.16	
117	Benin	1.07	1.86	0.15	
118	Madagascar	1.05	1.82	0.15	
119	Botswana	0.86	1.47	0.14	○
120	Tanzania, United Rep.	0.72	1.22	0.13	
121	Cameroon	0.68	1.16	0.12	
122	Cambodia	0.64	1.07	0.12	
123	Uganda	0.62	1.03	0.11	
124	Zimbabwe	0.55	0.91	0.10	
125	Nigeria (2011)	0.54	0.88	0.09	
126	Mali	0.52	0.85	0.09	
127	Guinea	0.47	0.76	0.08	
128	Angola	0.44	0.70	0.07	
129	Gambia	0.44	0.70	0.07	
130	Burkina Faso	0.42	0.68	0.06	
131	Sudan	0.39	0.62	0.05	
132	Malawi	0.29	0.44	0.04	
133	Ethiopia	0.20	0.27	0.04	
134	Rwanda	0.17	0.22	0.03	○
135	Uzbekistan	0.17	0.21	0.02	○
136	Mozambique	0.15	0.17	0.01	○
137	Togo	0.15	0.17	0.01	○
138	Niger	0.05	0.00	0.00	○
n/a	Belize	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	

SOURCE: World Association of Newspapers and News Publishers, *World Press Trends 2010*; United Nations, *World Population Prospects: The 2010 Revision* (2009–11)

NOTE: ● indicates a strength; ○ a weakness.

7.2.4 Printing and publishing output

Printing and publishing manufactures output (% of manufactures total output) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Hong Kong (China) (2004)	18.25	100.00	0.98	
1	Niger (2003)	9.66	100.00	0.98	●
1	Greece (2007)	7.12	100.00	0.98	●
4	Malta (2008)	6.56	92.06	0.97	●
5	Iceland (2006)	6.36	89.08	0.96	
6	Australia (2006)	6.11	85.50	0.95	●
7	Norway (2008)	5.82	81.43	0.94	
8	Panama (2005)	5.29	73.77	0.92	●
9	Denmark (2008)	4.89	68.07	0.91	
10	Netherlands (2008)	4.37	60.66	0.90	
11	New Zealand (2008)	4.33	60.03	0.89	
12	Lebanon (2007)	4.18	57.95	0.88	●
13	Georgia	3.81	52.59	0.87	●
14	Switzerland (2007)	3.79	52.28	0.86	
15	TFYR of Macedonia	3.33	45.67	0.85	●
16	Mongolia (2008)	3.23	44.29	0.84	●
17	Cyprus	3.13	42.90	0.83	
18	Armenia	3.01	41.12	0.82	●
19	Mauritius (2007)	2.88	39.25	0.81	●
20	Latvia	2.86	39.00	0.80	
21	Estonia	2.85	38.82	0.78	
22	Moldova, Rep.	2.83	38.60	0.77	
23	Saudi Arabia (2006)	2.75	37.34	0.76	
24	Ethiopia	2.72	37.02	0.75	●
25	Costa Rica	2.72	36.98	0.74	
26	Colombia (2005)	2.71	36.86	0.73	
27	Israel (2008)	2.57	34.84	0.72	
28	Peru (2007)	2.55	34.51	0.71	●
29	Kenya (2007)	2.53	34.25	0.70	
30	Tanzania, United Rep. (2007)	2.46	33.31	0.69	●
31	United Kingdom	2.42	32.68	0.68	
32	Slovenia	2.30	30.91	0.67	
33	South Africa	2.30	30.89	0.66	
34	Japan (2007)	2.27	30.60	0.65	
35	Fiji (2008)	2.23	29.92	0.63	
36	Czech Republic (2007)	2.17	29.09	0.62	
37	Jordan	2.12	28.40	0.61	
38	Ukraine	2.11	28.18	0.60	
39	Madagascar (2006)	2.08	27.79	0.59	●
40	Spain	2.05	27.31	0.58	
41	Serbia	1.96	26.15	0.57	
42	Brazil (2007)	1.95	25.96	0.56	
43	Canada (2008)	1.95	25.94	0.55	○
44	Sri Lanka (2008)	1.91	25.40	0.54	
45	Malawi	1.89	25.02	0.53	●
46	United States of America (2008)	1.88	25.00	0.52	
47	Qatar (2006)	1.87	24.86	0.51	
48	Portugal	1.84	24.37	0.49	
49	Austria	1.83	24.23	0.48	○
50	Belgium	1.71	22.48	0.47	○
51	Senegal	1.69	22.25	0.46	
52	Kazakhstan (2007)	1.69	22.17	0.45	
53	Nepal (2008)	1.65	21.70	0.44	
54	Ireland	1.65	21.59	0.43	○
55	Sweden	1.62	21.20	0.42	○
56	Turkey (2008)	1.61	21.12	0.41	
57	Italy	1.61	21.10	0.40	○
58	Luxembourg	1.57	20.49	0.39	
59	Russian Federation	1.56	20.38	0.38	
60	France	1.56	20.36	0.37	○
61	Finland	1.56	20.31	0.35	○
62	Ecuador (2008)	1.55	20.24	0.34	
63	Germany	1.54	20.04	0.33	○
64	Bulgaria	1.49	19.30	0.32	○
65	Romania	1.39	17.92	0.31	
66	Cameroon (2008)	1.28	16.40	0.30	
67	Viet Nam (2008)	1.25	15.96	0.29	
68	Morocco	1.16	14.69	0.28	
69	Poland	1.15	14.51	0.27	○
70	Thailand (2006)	1.14	14.36	0.26	○
71	Singapore	1.14	14.33	0.25	○
72	Malaysia (2008)	1.13	14.24	0.24	○
73	Kyrgyzstan	1.13	14.14	0.23	
74	Lithuania	1.12	14.02	0.22	○
75	Trinidad and Tobago (2006)	1.12	13.98	0.20	
76	Uruguay (2008)	1.10	13.78	0.19	○
77	Ghana (2003)	1.08	13.44	0.18	
78	Indonesia	1.03	12.76	0.17	
79	Hungary	1.03	12.69	0.16	○
80	Kuwait	1.02	12.69	0.15	
81	Slovakia	0.91	10.97	0.14	○
82	Azerbaijan	0.89	10.79	0.13	
83	Egypt (2006)	0.83	9.93	0.12	○
84	Philippines (2006)	0.75	8.81	0.11	○
85	India (2008)	0.62	6.93	0.10	○
86	China	0.62	6.89	0.09	○
87	Chile (2008)	0.62	6.87	0.08	○
88	Tajikistan (2008)	0.56	6.01	0.06	
89	Oman (2007)	0.55	5.94	0.05	○
90	Yemen (2006)	0.44	4.28	0.04	
91	Korea, Rep. (2008)	0.37	3.23	0.03	○
92	Pakistan (2006)	0.33	2.74	0.02	○
93	Iran, Islamic Rep. (2008)	0.29	2.13	0.01	○
94	Gambia (2004)	0.14	0.00	0.00	○
n/a	Albania	n/a	n/a	n/a	
n/a	Algeria	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Argentina	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Belarus	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cape Verde	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Croatia	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Guatemala	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mexico	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Republic	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Tunisia	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: United Nations Industrial Development Organization, *Industrial Statistics Database*, ISIC Revision 3 (INDSTAT4 2012) (2003–09)

NOTE: ● indicates a strength; ○ a weakness.

7.2.5 Creative goods exports

Creative goods exports (% of total goods exports) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	China	15.39	100.00	1.00	●
2	Slovakia	12.32	96.97	0.99	●
3	Thailand (2012)	11.95	96.55	0.98	●
4	Malaysia (2012)	11.55	96.09	0.98	●
5	Mexico	11.55	96.09	0.97	●
6	Czech Republic (2012)	10.66	95.00	0.96	●
7	Hungary	7.60	90.38	0.95	●
8	Netherlands	7.54	90.28	0.94	
9	Hong Kong (China) (2012)	7.30	89.85	0.93	
10	Singapore	7.04	89.35	0.93	
11	India	5.98	87.14	0.92	●
12	Poland	5.83	86.78	0.91	●
13	United Kingdom	5.29	85.46	0.90	
14	Switzerland	5.02	84.75	0.89	
15	Viet Nam	4.86	84.32	0.89	●
16	Lebanon (2012)	4.78	84.08	0.88	●
17	Latvia (2012)	4.46	83.13	0.87	
18	Tunisia	3.77	80.84	0.86	●
19	Ireland (2012)	3.76	80.84	0.85	
20	Turkey (2012)	3.73	80.71	0.85	●
21	Dominican Republic	3.42	79.52	0.84	●
22	Mauritius (2012)	3.32	79.14	0.83	●
23	Japan (2012)	3.26	78.88	0.82	
24	Korea, Rep.	3.24	78.81	0.81	
25	United States of America	3.21	78.69	0.80	
26	Denmark	3.03	77.91	0.80	
27	Portugal (2012)	2.89	77.24	0.79	
28	Romania	2.60	75.82	0.78	
29	Italy	2.60	75.82	0.77	
30	Israel	2.52	75.36	0.76	
31	Indonesia	2.50	75.30	0.76	●
32	France	2.45	75.03	0.75	
33	Sweden	2.40	74.73	0.74	
34	Jordan	2.26	73.88	0.73	●
35	Germany (2012)	2.20	73.56	0.72	
36	Austria	1.91	71.62	0.72	
37	Pakistan	1.90	71.54	0.71	●
38	Belgium (2012)	1.85	71.22	0.70	
39	Lithuania (2012)	1.85	71.21	0.69	
40	Malta	1.63	69.46	0.68	
41	Nepal	1.61	69.28	0.67	●
42	Estonia (2012)	1.49	68.29	0.67	
43	Spain	1.47	68.04	0.66	
44	Bulgaria	1.38	67.24	0.65	
45	El Salvador (2012)	1.25	65.85	0.64	
46	Greece	1.15	64.82	0.63	
47	Serbia	1.14	64.66	0.63	
48	Costa Rica	1.12	64.40	0.62	
49	Kenya (2010)	1.10	64.15	0.61	
50	Finland (2012)	1.06	63.62	0.60	
51	Slovenia (2012)	0.96	62.33	0.59	
52	Luxembourg	0.93	61.90	0.59	
53	Egypt (2012)	0.93	61.88	0.58	
54	Ukraine (2012)	0.92	61.76	0.57	
55	Croatia (2012)	0.88	61.19	0.56	
56	Canada (2012)	0.87	60.94	0.55	○
57	Uruguay (2009)	0.85	60.66	0.54	
58	Armenia (2012)	0.85	60.62	0.54	
59	Australia	0.81	60.01	0.53	
60	Fiji (2010)	0.80	59.79	0.52	
61	Guatemala (2012)	0.75	59.09	0.51	
62	South Africa (2012)	0.71	58.31	0.50	
63	Sri Lanka	0.61	56.13	0.50	
64	Bolivia, Plurinational St.	0.59	55.77	0.49	
65	Montenegro (2012)	0.57	55.23	0.48	
66	Norway	0.51	53.93	0.47	○
67	Iran, Islamic Rep.	0.51	53.75	0.46	
68	Namibia	0.49	53.36	0.46	
69	Cambodia	0.46	52.32	0.45	
70	New Zealand (2012)	0.45	52.13	0.44	○
71	Madagascar	0.45	52.10	0.43	
72	Uganda	0.45	52.05	0.42	
73	Cyprus	0.40	50.58	0.41	
74	Colombia	0.38	49.94	0.41	
75	Kazakhstan (2012)	0.37	49.54	0.40	
76	Zimbabwe	0.36	49.21	0.39	
77	Senegal (2012)	0.35	48.97	0.38	
78	Gambia	0.34	48.57	0.37	
79	Chile	0.34	48.33	0.37	
80	Syrian Arab Republic (2010)	0.32	47.46	0.36	
81	Belarus	0.32	47.45	0.35	
82	Bosnia and Herzegovina (2012)	0.29	46.41	0.34	
83	Albania	0.29	46.31	0.33	
84	Georgia (2012)	0.28	45.91	0.33	
85	Guyana	0.27	45.55	0.32	
86	Peru	0.27	45.45	0.31	
87	Brazil (2012)	0.25	44.47	0.30	
88	Ghana	0.25	44.25	0.29	
89	Argentina	0.23	43.55	0.28	
90	TFYR of Macedonia (2012)	0.23	43.47	0.28	
91	Moldova, Rep. (2012)	0.23	43.06	0.27	
92	Kyrgyzstan	0.21	42.28	0.26	
93	Russian Federation	0.16	38.50	0.25	○
94	Tanzania, United Rep.	0.16	38.20	0.24	
95	Ethiopia	0.15	37.54	0.24	
96	Jamaica (2010)	0.15	37.48	0.23	
97	Rwanda (2012)	0.14	36.75	0.22	
98	Paraguay (2012)	0.13	36.20	0.21	
99	Malawi	0.13	35.82	0.20	
100	Nicaragua	0.13	35.61	0.20	
101	Ecuador	0.11	34.17	0.19	
102	Iceland	0.10	33.27	0.18	○
103	Honduras (2009)	0.09	30.88	0.17	
104	Saudi Arabia	0.08	29.97	0.16	○
105	Togo	0.08	29.82	0.15	
106	Trinidad and Tobago (2010)	0.05	25.44	0.15	
107	Côte d'Ivoire	0.05	24.33	0.14	
108	Zambia	0.04	22.98	0.13	
109	Mali (2010)	0.04	22.38	0.12	
110	Burkina Faso	0.03	20.44	0.11	
111	Yemen	0.02	15.82	0.11	
112	Nigeria	0.02	13.55	0.10	
113	Belize	0.02	13.46	0.09	
114	Mongolia (2007)	0.02	13.17	0.08	○
115	Bahrain	0.02	12.70	0.07	○
116	Niger	0.01	11.91	0.07	
117	Azerbaijan (2012)	0.01	8.32	0.06	○
118	Panama (2010)	0.01	7.40	0.05	○
119	Oman (2007)	0.00	4.72	0.04	○
120	Algeria	0.00	2.91	0.03	
121	Sudan (2009)	0.00	1.12	0.02	
122	Qatar	0.00	0.55	0.02	○
123	United Arab Emirates	0.00	0.23	0.01	○
124	Cape Verde (2012)	0.00	0.00	0.00	○
n/a	Angola	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Barbados	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Morocco	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Philippines	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	

SOURCE: United Nations, *COMTRADE* database; 2009 UNESCO Framework for Cultural Statistics, Table 3, *International trade of cultural goods and services* (2007–12)

NOTE: ● indicates a strength; ○ a weakness.

7.3.1 Generic top-level domains (gTLDs)

Generic top-level domains gTLDs (per thousand population 15–69 years old) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	United States of America	100.00	100.00	0.98	●
1	Luxembourg	100.00	100.00	0.98	●
1	Belize	100.00	100.00	0.98	●
1	Canada	100.00	100.00	0.98	●
5	Iceland	97.67	97.67	0.97	
6	Netherlands	92.75	92.75	0.96	●
7	Australia	91.61	91.61	0.96	●
8	Hong Kong (China)	89.47	89.47	0.95	
9	Switzerland	88.83	88.83	0.94	
10	Cyprus	85.77	85.77	0.94	●
11	Ireland	84.97	84.97	0.93	
12	United Kingdom	83.93	83.93	0.92	
13	Germany	70.57	70.57	0.91	
14	Norway	65.37	65.37	0.91	
15	Denmark	61.07	61.07	0.90	
16	Austria	55.60	55.60	0.89	
17	Malta	53.29	53.29	0.89	
18	France	52.68	52.68	0.88	
19	Sweden	51.60	51.60	0.87	
20	Panama	46.15	46.15	0.87	●
21	New Zealand	42.13	42.13	0.86	
22	Singapore	39.15	39.15	0.85	
23	Slovenia	36.63	36.63	0.84	
24	Spain	34.57	34.57	0.84	
25	Israel	30.72	30.72	0.83	
26	Namibia	30.07	30.07	0.82	●
27	Italy	26.89	26.89	0.82	
28	Belgium	26.78	26.78	0.81	
29	Bulgaria	25.90	25.90	0.80	
30	Finland	25.10	25.10	0.79	
31	Portugal	23.18	23.18	0.79	
32	Estonia	23.05	23.05	0.78	
33	Japan	20.33	20.33	0.77	
34	United Arab Emirates	17.71	17.71	0.77	
35	Costa Rica	16.07	16.07	0.76	
36	Lebanon	16.01	16.01	0.75	
37	Turkey	15.96	15.96	0.74	
38	Greece	14.98	14.98	0.74	
39	Kuwait	14.65	14.65	0.73	●
40	Barbados	14.24	14.24	0.72	
41	Hungary	14.10	14.10	0.72	
42	Latvia	14.08	14.08	0.71	
43	Czech Republic	14.03	14.03	0.70	
44	Croatia	12.69	12.69	0.70	
45	Lithuania	12.00	12.00	0.69	
46	Mauritius	11.51	11.51	0.68	
47	Korea, Rep.	11.05	11.05	0.67	
48	Uruguay	10.98	10.98	0.67	
49	Poland	9.69	9.69	0.66	
50	Trinidad and Tobago	9.43	9.43	0.65	
51	Guatemala	8.93	8.93	0.65	
52	Jordan	7.70	7.70	0.64	
53	Thailand	7.58	7.58	0.63	
54	Malaysia	7.14	7.14	0.62	
55	Bahrain	6.09	6.09	0.62	
56	Qatar	5.73	5.73	0.61	
57	Romania	5.52	5.52	0.60	
58	Ukraine	5.47	5.47	0.60	
59	Peru	5.46	5.46	0.59	
60	Saudi Arabia	5.17	5.17	0.58	
61	TFYR of Macedonia	4.84	4.84	0.57	
62	Oman	4.72	4.72	0.57	
63	Colombia	4.50	4.50	0.56	
64	South Africa	4.45	4.45	0.55	
65	Jamaica	4.40	4.40	0.55	●
66	Slovakia	4.29	4.29	0.54	
67	Gabon	4.21	4.21	0.53	
68	Russian Federation	4.14	4.14	0.52	
69	Bolivia, Plurinational St.	3.87	3.87	0.52	
70	Azerbaijan	3.85	3.85	0.51	
71	Argentina	3.71	3.71	0.50	
72	Chile	3.64	3.64	0.50	
73	Brunei Darussalam	3.34	3.34	0.49	
74	Mexico	3.26	3.26	0.48	
75	Paraguay	3.12	3.12	0.48	
76	Dominican Republic	2.94	2.94	0.47	
77	Ecuador	2.82	2.82	0.46	
78	Morocco	2.71	2.71	0.45	
79	Sri Lanka	2.55	2.55	0.45	
80	China	2.44	2.44	0.44	
81	Venezuela, Bolivarian Rep.	2.42	2.42	0.43	
82	Cape Verde	2.41	2.41	0.43	
83	Bosnia and Herzegovina	2.40	2.40	0.42	
84	Tunisia	2.36	2.36	0.41	
85	Iran, Islamic Rep.	2.31	2.31	0.40	
86	Viet Nam	2.24	2.24	0.40	
87	Albania	2.24	2.24	0.39	
88	Brazil	2.20	2.20	0.38	
89	Indonesia	2.06	2.06	0.38	
90	Egypt	1.87	1.87	0.37	
91	Armenia	1.68	1.68	0.36	
92	Philippines	1.63	1.63	0.35	
93	Belarus	1.62	1.62	0.35	
94	El Salvador	1.57	1.57	0.34	
95	India	1.33	1.33	0.33	
96	Nicaragua	1.28	1.28	0.33	
97	Ghana	1.25	1.25	0.32	
98	Kenya	1.14	1.14	0.31	
99	Fiji	1.13	1.13	0.30	
100	Montenegro	1.09	1.09	0.30	
101	Moldova, Rep.	1.08	1.08	0.29	
102	Guyana	1.07	1.07	0.28	
103	Niger	1.05	1.05	0.28	
104	Syrian Arab Republic	0.91	0.91	0.27	
105	Honduras	0.85	0.85	0.26	
106	Kyrgyzstan	0.83	0.83	0.26	
107	Georgia	0.81	0.81	0.25	
108	Pakistan	0.79	0.79	0.24	
109	Kazakhstan	0.78	0.78	0.23	
110	Nepal	0.71	0.71	0.23	
111	Cameroon	0.70	0.70	0.22	
112	Nigeria	0.68	0.68	0.21	
113	Serbia	0.55	0.55	0.21	○
114	Swaziland	0.53	0.53	0.20	
115	Benin	0.47	0.47	0.19	
116	Bangladesh	0.47	0.47	0.18	
117	Botswana	0.41	0.41	0.18	
118	Tanzania, United Rep.	0.41	0.41	0.17	
119	Zambia	0.40	0.40	0.16	
120	Gambia	0.38	0.38	0.16	
121	Algeria	0.36	0.36	0.15	
122	Uganda	0.36	0.36	0.14	
123	Côte d'Ivoire	0.36	0.36	0.13	
124	Yemen	0.34	0.34	0.13	
125	Senegal	0.31	0.31	0.12	
126	Mongolia	0.31	0.31	0.11	
127	Cambodia	0.30	0.30	0.11	
128	Angola	0.24	0.24	0.10	
129	Zimbabwe	0.16	0.16	0.09	
130	Togo	0.15	0.15	0.09	
131	Uzbekistan	0.13	0.13	0.08	○
132	Mozambique	0.10	0.10	0.07	
133	Sudan	0.08	0.08	0.06	
134	Guinea	0.08	0.08	0.06	
135	Rwanda	0.08	0.08	0.05	
136	Ethiopia	0.05	0.05	0.04	
137	Burkina Faso	0.05	0.05	0.04	○
138	Mali	0.04	0.04	0.03	○
139	Malawi	0.03	0.03	0.02	
140	Lesotho	0.03	0.03	0.01	○
141	Madagascar	0.03	0.03	0.01	○
142	Tajikistan	0.00	0.00	0.00	○

SOURCE: ZookNIC Inc; United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2010 Revision* (population)

NOTE: ● indicates a strength; ○ a weakness.

7.3.2 Country-code top-level domains (ccTLDs)

Country-code top-level domains ccTLDs (per thousand population 15–69 years old) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Montenegro	100.00	100.00	1.00	●
2	Netherlands	83.10	83.10	0.99	●
3	Switzerland	78.78	78.78	0.99	●
4	Denmark	78.48	78.48	0.98	●
5	Germany	76.42	76.42	0.97	●
6	Belize	74.83	74.83	0.96	●
7	United Kingdom	74.79	74.79	0.96	
8	Austria	72.35	72.35	0.95	●
9	Luxembourg	72.02	72.02	0.94	
10	Sweden	71.95	71.95	0.94	
11	Iceland	71.19	71.19	0.93	
12	Belgium	71.16	71.16	0.92	●
13	New Zealand	70.06	70.06	0.91	●
14	Norway	69.75	69.75	0.91	
15	Australia	69.38	69.38	0.90	
16	Czech Republic	66.51	66.51	0.89	
17	Argentina	61.57	61.57	0.89	●
18	Hungary	61.15	61.15	0.88	
19	Poland	60.82	60.82	0.87	●
20	Finland	60.30	60.30	0.86	
21	Canada	60.03	60.03	0.86	
22	Estonia	58.78	58.78	0.85	
23	Slovakia	58.61	58.61	0.84	●
24	Slovenia	58.50	58.50	0.84	
25	Portugal	57.92	57.92	0.83	
26	Lithuania	57.06	57.06	0.82	●
27	Latvia	56.82	56.82	0.81	
28	Italy	55.90	55.90	0.81	
29	France	55.79	55.79	0.80	
30	Ireland	55.52	55.52	0.79	
31	Spain	53.34	53.34	0.79	
32	Israel	53.14	53.14	0.78	
33	Greece	52.94	52.94	0.77	
34	Colombia	51.45	51.45	0.76	
35	Romania	51.23	51.23	0.76	
36	Russian Federation	50.90	50.90	0.75	
37	Singapore	49.32	49.32	0.74	
38	Hong Kong (China)	48.14	48.14	0.74	
39	Uruguay	48.04	48.04	0.73	
40	Chile	47.97	47.97	0.72	
41	Korea, Rep.	46.87	46.87	0.71	
42	South Africa	44.73	44.73	0.71	
43	Croatia	44.30	44.30	0.70	
44	Brazil	43.02	43.02	0.69	
45	Ukraine	42.49	42.49	0.69	
46	Malta	41.50	41.50	0.68	
47	Viet Nam	40.66	40.66	0.67	
48	Japan	38.01	38.01	0.66	
49	United Arab Emirates	37.87	37.87	0.66	
50	Cyprus	37.66	37.66	0.65	
51	Serbia	33.65	33.65	0.64	
52	Venezuela, Bolivarian Rep.	33.61	33.61	0.64	●
53	Malaysia	33.55	33.55	0.63	
54	Armenia	32.37	32.37	0.62	
55	Qatar	31.71	31.71	0.61	
56	Moldova, Rep.	30.46	30.46	0.61	
57	Mexico	30.01	30.01	0.60	
58	Mauritius (2009)	29.94	29.94	0.59	
59	United States of America	29.84	29.84	0.59	
60	Kazakhstan	29.03	29.03	0.58	
61	Fiji (2009)	28.03	28.03	0.57	
62	China	27.09	27.09	0.56	
63	Turkey	26.97	26.97	0.56	
64	Georgia	26.79	26.79	0.55	
65	Iran, Islamic Rep.	25.96	25.96	0.54	
66	Mongolia (2010)	25.01	25.01	0.54	
67	Bosnia and Herzegovina	24.71	24.71	0.53	
68	TFYR of Macedonia (2005)	24.15	24.15	0.52	
69	Guyana	23.46	23.46	0.51	
70	Bulgaria (2010)	23.11	23.11	0.51	
71	Costa Rica	22.81	22.81	0.50	
72	Bahrain	22.68	22.68	0.49	
73	Brunei Darussalam	21.84	21.84	0.49	
74	Barbados	21.24	21.24	0.48	
75	Jamaica (2011)	20.68	20.68	0.47	
76	Peru	20.04	20.04	0.46	
77	Paraguay	19.94	19.94	0.46	
78	Albania	19.82	19.82	0.45	
79	Ecuador	19.19	19.19	0.44	
80	Panama	18.73	18.73	0.44	
81	Cape Verde	17.21	17.21	0.43	
82	Trinidad and Tobago	17.05	17.05	0.42	
83	Dominican Republic	16.69	16.69	0.41	
84	Azerbaijan	16.55	16.55	0.41	
85	India	14.86	14.86	0.40	
86	Morocco	14.72	14.72	0.39	
87	Nicaragua	13.89	13.89	0.39	
88	Nepal	13.37	13.37	0.38	
89	Kuwait	13.19	13.19	0.37	
90	Swaziland (2011)	13.03	13.03	0.36	
91	El Salvador	12.77	12.77	0.36	
92	Saudi Arabia	12.70	12.70	0.35	
93	Kyrgyzstan (2011)	12.47	12.47	0.34	
94	Tajikistan	12.13	12.13	0.34	
95	Guatemala	11.89	11.89	0.33	
96	Philippines (2005)	11.67	11.67	0.32	
97	Bolivia, Plurinational St.	11.43	11.43	0.31	
98	Honduras	11.32	11.32	0.31	
99	Thailand	11.05	11.05	0.30	
100	Gambia	10.38	10.38	0.29	
101	Lebanon	10.26	10.26	0.29	
102	Jordan (2011)	10.11	10.11	0.28	
103	Cameroon	9.95	9.95	0.27	
104	Kenya	9.84	9.84	0.26	
105	Uzbekistan	8.22	8.22	0.26	
106	Oman	7.70	7.70	0.25	
107	Tunisia	7.45	7.45	0.24	
108	Sri Lanka (2011)	6.25	6.25	0.24	
109	Indonesia	5.94	5.94	0.23	
110	Senegal (2011)	5.60	5.60	0.22	
111	Lesotho (2007)	5.16	5.16	0.21	
112	Pakistan	4.32	4.32	0.21	
113	Belarus	4.30	4.30	0.20	○
114	Gabon (2011)	4.27	4.27	0.19	
115	Botswana (2003)	3.77	3.77	0.19	
116	Mozambique	3.60	3.60	0.18	
117	Malawi	2.91	2.91	0.17	
118	Tanzania, United Rep.	2.91	2.91	0.16	
119	Côte d'Ivoire	2.63	2.63	0.16	
120	Uganda (2009)	2.51	2.51	0.15	
121	Algeria	2.24	2.24	0.14	
122	Cambodia	2.08	2.08	0.14	
123	Madagascar	2.07	2.07	0.13	
124	Namibia (2011)	1.93	1.93	0.12	
125	Zimbabwe	1.72	1.72	0.11	
126	Nigeria	1.71	1.71	0.11	
127	Rwanda	1.54	1.54	0.10	
128	Egypt (2009)	1.48	1.48	0.09	○
129	Benin	0.96	0.96	0.09	
130	Yemen	0.85	0.85	0.08	
131	Bangladesh (2010)	0.66	0.66	0.07	
132	Angola	0.37	0.37	0.06	
133	Ethiopia	0.31	0.31	0.06	
134	Guinea	0.30	0.30	0.05	
135	Sudan (2008)	0.23	0.23	0.04	
136	Niger	0.23	0.23	0.04	
137	Burkina Faso (2003)	0.15	0.15	0.03	○
138	Zambia (2008)	0.05	0.05	0.02	○
139	Ghana (2003)	0.04	0.04	0.01	○
140	Mali (2003)	0.02	0.02	0.01	○
141	Syrian Arab Republic (2003)	0.00	0.00	0.00	○
n/a	Togo	n/a	n/a	n/a	

SOURCE: ZookNIC Inc; United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2010 Revision* (2003–12)

NOTE: ● indicates a strength; ○ a weakness.

7.3.3 Wikipedia monthly edits

Wikipedia monthly page edits per adult (per population 15–69) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Iceland	17,226.08	100.00	1.00	●
2	Estonia	16,734.37	97.14	0.99	●
3	Norway	15,391.91	89.35	0.99	●
4	Israel	14,159.11	82.19	0.98	●
5	Finland	13,874.53	80.54	0.97	
6	Sweden	12,681.10	73.61	0.96	●
7	Netherlands	10,288.26	59.71	0.96	
8	Luxembourg	9,889.97	57.40	0.95	
9	Belgium	9,627.15	55.87	0.94	●
10	Hong Kong (China)	9,619.61	55.83	0.93	
11	United Kingdom	9,225.80	53.54	0.93	
12	France	8,890.33	51.59	0.92	
13	Italy	8,406.50	48.78	0.91	●
14	Slovenia	8,306.34	48.20	0.90	●
15	New Zealand	7,963.74	46.21	0.90	
16	Germany	7,956.62	46.17	0.89	
17	Malta	7,909.19	45.89	0.88	
18	Ireland	7,534.80	43.72	0.87	
19	Hungary	7,438.91	43.16	0.87	
20	Switzerland	7,373.66	42.78	0.86	
21	Czech Republic	7,023.97	40.75	0.85	
22	Austria	6,634.75	38.49	0.84	
23	Canada	6,608.32	38.34	0.84	
24	Latvia	6,606.57	38.33	0.83	
25	Spain	6,438.10	37.35	0.82	
26	Denmark	6,310.14	36.61	0.81	
27	Australia	6,109.73	35.44	0.81	
28	Croatia	5,818.73	33.75	0.80	●
29	Lithuania	5,785.01	33.56	0.79	
30	Uruguay	5,527.67	32.06	0.78	●
31	Bulgaria	4,822.01	27.96	0.78	
32	Poland	4,476.23	25.96	0.77	
33	Cyprus	4,444.38	25.77	0.76	
34	United States of America	4,374.94	25.37	0.75	
35	TFYR of Macedonia	4,199.14	24.35	0.75	
36	Slovakia	4,163.81	24.14	0.74	
37	Portugal	4,133.30	23.96	0.73	
38	Serbia	3,973.80	23.04	0.72	
39	Armenia	3,962.73	22.97	0.72	
40	Greece	3,905.87	22.64	0.71	
41	Montenegro	3,839.52	22.26	0.70	
42	Chile	3,339.81	19.36	0.69	
43	Ukraine	3,297.84	19.11	0.69	
44	Belize	3,235.73	18.75	0.68	●
45	Georgia	3,200.75	18.55	0.67	
46	Japan	2,875.70	16.66	0.66	
47	Russian Federation	2,864.54	16.60	0.66	
48	Bosnia and Herzegovina	2,751.96	15.94	0.65	
49	Belarus	2,704.72	15.67	0.64	
50	Argentina	2,203.11	12.75	0.63	
51	Qatar	2,125.86	12.31	0.63	
52	Azerbaijan	2,049.18	11.86	0.62	
53	Bahrain	1,997.68	11.56	0.61	
54	Korea, Rep.	1,792.11	10.37	0.60	
55	Kuwait	1,688.80	9.77	0.60	
56	Fiji	1,671.37	9.67	0.59	
57	Barbados	1,613.70	9.33	0.58	
58	Romania	1,612.75	9.33	0.57	
59	Singapore	1,594.70	9.22	0.57	
60	Costa Rica	1,530.64	8.85	0.56	
61	Kazakhstan	1,287.67	7.44	0.55	
62	United Arab Emirates	1,189.13	6.87	0.54	
63	Turkey	1,172.52	6.77	0.54	
64	Albania	1,150.43	6.64	0.53	
65	Colombia	1,140.05	6.58	0.52	
66	Brunei Darussalam	1,119.78	6.46	0.51	
67	Malaysia	1,098.41	6.34	0.51	
68	Paraguay	1,053.99	6.08	0.50	
69	Peru	1,020.21	5.88	0.49	
70	Cape Verde	1,008.96	5.82	0.49	●
71	Mongolia	968.20	5.58	0.48	
72	Brazil	941.45	5.43	0.47	
73	Moldova, Rep.	940.04	5.42	0.46	
74	Kyrgyzstan	890.38	5.13	0.46	
75	Trinidad and Tobago	877.41	5.06	0.45	
76	Ecuador	864.40	4.98	0.44	
77	Panama	819.72	4.72	0.43	
78	Mexico	818.25	4.71	0.43	
79	Venezuela, Bolivarian Rep.	780.26	4.49	0.42	
80	Jordan	755.93	4.35	0.41	
81	Lebanon	734.40	4.23	0.40	
82	Saudi Arabia	687.60	3.95	0.40	
83	Guyana	667.10	3.83	0.39	
84	Thailand	628.26	3.61	0.38	
85	El Salvador	618.94	3.55	0.37	
86	Philippines	599.32	3.44	0.37	
87	Mauritius	566.14	3.25	0.36	
88	Oman	523.94	3.00	0.35	
89	Iran, Islamic Rep.	510.81	2.93	0.34	
90	Gambia	494.48	2.83	0.34	
91	Nicaragua	462.80	2.65	0.33	
92	Tunisia	453.40	2.59	0.32	
93	Namibia	415.32	2.37	0.31	
94	Dominican Republic	414.12	2.37	0.31	
95	Bolivia, Plurinational St.	394.77	2.25	0.30	
96	Jamaica	385.67	2.20	0.29	
97	Botswana (2011)	376.74	2.15	0.28	
98	Guatemala	351.45	2.00	0.28	
99	Gabon	340.15	1.94	0.27	
100	Viet Nam	332.83	1.89	0.26	
101	South Africa	313.91	1.78	0.25	○
102	Sri Lanka	304.35	1.73	0.25	
103	Morocco	299.87	1.70	0.24	
104	Egypt	267.07	1.51	0.23	
105	Indonesia	247.92	1.40	0.22	
106	Algeria	214.36	1.21	0.22	
107	Honduras	205.75	1.15	0.21	
108	India	157.69	0.88	0.20	
109	Nepal	141.50	0.78	0.19	
110	Pakistan	141.36	0.78	0.19	
111	Cambodia	128.62	0.71	0.18	
112	Senegal	91.72	0.49	0.17	
113	Malawi (2010)	85.31	0.46	0.16	
114	Bangladesh	75.81	0.40	0.16	
115	Kenya	73.17	0.39	0.15	
116	Ghana	71.36	0.37	0.14	
117	Rwanda	62.19	0.32	0.13	
118	Mali	59.23	0.30	0.13	
119	Mozambique	58.55	0.30	0.12	
120	Zambia	54.35	0.28	0.11	
121	Madagascar	47.80	0.24	0.10	
122	Angola	47.08	0.23	0.10	
123	China	44.62	0.22	0.09	○
124	Yemen	44.62	0.22	0.08	
125	Zimbabwe (2011)	44.11	0.22	0.07	○
126	Côte d'Ivoire	42.26	0.21	0.07	○
127	Burkina Faso	35.55	0.17	0.06	
128	Uzbekistan	34.68	0.16	0.05	○
129	Sudan	31.22	0.14	0.04	
130	Cameroon	28.28	0.12	0.04	○
131	Tanzania, United Rep.	26.27	0.11	0.03	
132	Syrian Arab Republic	25.44	0.11	0.02	○
133	Uganda	18.59	0.07	0.01	○
134	Nigeria	7.25	0.00	0.01	○
135	Ethiopia (2011)	6.87	0.00	0.00	○
n/a	Benin	n/a	n/a	n/a	
n/a	Guinea	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	

SOURCE: Wikimedia Foundation; United Nations, *World Population Prospects: The 2010 Revision* (population data) (2010–12)

NOTE: ● indicates a strength; ○ a weakness.

7.3.4 Video uploads on YouTube

Number of video uploads on YouTube (scaled by population 15–69 years old) | 2012

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Iceland	100.00	100.00	1.00	●
2	Latvia	96.93	96.93	0.99	●
3	Israel	96.37	96.37	0.99	●
4	United States of America	93.11	93.11	0.98	●
5	Finland	91.07	91.07	0.97	
6	Netherlands	90.34	90.34	0.96	●
7	United Kingdom	89.57	89.57	0.96	
8	Sweden	88.49	88.49	0.95	
9	Canada	88.42	88.42	0.94	
10	Estonia	88.05	88.05	0.94	●
11	Denmark	87.84	87.84	0.93	
12	Norway	87.79	87.79	0.92	
13	Ireland	87.64	87.64	0.91	
14	Hong Kong (China)	86.45	86.45	0.91	
15	Australia	85.88	85.88	0.90	
16	Singapore	85.58	85.58	0.89	
17	France	85.16	85.16	0.89	
18	Malta	84.78	84.78	0.88	
19	Belgium	84.57	84.57	0.87	
20	New Zealand	84.50	84.50	0.87	
21	Spain	84.17	84.17	0.86	
22	Switzerland	83.48	83.48	0.85	
23	Luxembourg	83.45	83.45	0.84	
24	Czech Republic	83.40	83.40	0.84	
25	Barbados	83.13	83.13	0.83	
26	Belize	83.08	83.08	0.82	●
27	Hungary	82.90	82.90	0.82	
28	Germany	82.41	82.41	0.81	
29	Italy	82.01	82.01	0.80	
30	Slovenia	81.86	81.86	0.79	
31	Lithuania	81.81	81.81	0.79	
32	Portugal	81.66	81.66	0.78	
33	Moldova, Rep.	81.57	81.57	0.77	
34	Greece	81.28	81.28	0.77	
35	Austria	81.18	81.18	0.76	
36	Cyprus	80.38	80.38	0.75	
37	Poland	79.44	79.44	0.74	
38	Chile	79.23	79.23	0.74	
39	Romania	79.03	79.03	0.73	
40	Argentina	78.80	78.80	0.72	
41	Albania	78.69	78.69	0.72	●
42	Kuwait	78.44	78.44	0.71	
43	Slovakia	78.29	78.29	0.70	
44	Bosnia and Herzegovina	78.17	78.17	0.70	
45	Uruguay	78.14	78.14	0.69	
46	Ukraine	78.08	78.08	0.68	
47	Japan	77.89	77.89	0.67	
48	Croatia	77.69	77.69	0.67	
49	Saudi Arabia	77.47	77.47	0.66	
50	Brunei Darussalam	77.42	77.42	0.65	
51	Brazil	77.13	77.13	0.65	
52	Bulgaria	77.12	77.12	0.64	
53	TFYR of Macedonia	76.91	76.91	0.63	
54	Bahrain	76.90	76.90	0.62	
55	Russian Federation	76.84	76.84	0.62	
56	Turkey	76.68	76.68	0.61	
57	Serbia	76.35	76.35	0.60	
58	United Arab Emirates	75.83	75.83	0.60	
59	Armenia	75.12	75.12	0.59	
60	Montenegro	74.05	74.05	0.58	
61	Mexico	73.72	73.72	0.57	
62	Peru	73.71	73.71	0.57	
63	Georgia	73.55	73.55	0.56	
64	Thailand	73.47	73.47	0.55	
65	Trinidad and Tobago	73.34	73.34	0.55	
66	Malaysia	72.76	72.76	0.54	
67	Qatar	72.29	72.29	0.53	
68	Belarus	72.10	72.10	0.52	
69	Jamaica	71.96	71.96	0.52	
70	Korea, Rep.	71.60	71.60	0.51	
71	Costa Rica	71.42	71.42	0.50	
72	Colombia	70.74	70.74	0.50	
73	Ecuador	70.62	70.62	0.49	
74	Philippines	70.46	70.46	0.48	
75	Panama	69.92	69.92	0.48	
76	Lebanon	69.46	69.46	0.47	
77	Viet Nam	69.35	69.35	0.46	
78	Dominican Republic	69.08	69.08	0.45	
79	Cape Verde	68.84	68.84	0.45	
80	Jordan	68.20	68.20	0.44	
81	Syrian Arab Republic	67.91	67.91	0.43	
82	Kazakhstan	67.50	67.50	0.43	
83	El Salvador	66.97	66.97	0.42	
84	Fiji	66.22	66.22	0.41	
85	Azerbaijan	65.93	65.93	0.40	
86	Venezuela, Bolivarian Rep.	64.98	64.98	0.40	
87	Oman	64.28	64.28	0.39	
88	Guyana	64.14	64.14	0.38	
89	Tunisia	64.04	64.04	0.38	
90	Mongolia	63.34	63.34	0.37	
91	Egypt	63.25	63.25	0.36	
92	Morocco	63.17	63.17	0.35	
93	Mauritius	63.12	63.12	0.35	
94	Pakistan	62.98	62.98	0.34	
95	Paraguay	62.45	62.45	0.33	
96	Sri Lanka	61.87	61.87	0.33	
97	Guatemala	60.46	60.46	0.32	
98	Nicaragua	60.11	60.11	0.31	
99	Gabon	59.92	59.92	0.30	
100	Bolivia, Plurinational St.	58.35	58.35	0.30	
101	Honduras	58.02	58.02	0.29	
102	Botswana	57.84	57.84	0.28	
103	Gambia	57.72	57.72	0.28	
104	Algeria	55.81	55.81	0.27	
105	Indonesia	54.54	54.54	0.26	
106	Swaziland	54.40	54.40	0.26	
107	South Africa	53.71	53.71	0.25	○
108	Namibia	53.27	53.27	0.24	
109	India	52.95	52.95	0.23	
110	Cambodia	52.39	52.39	0.23	
111	Côte d'Ivoire	49.31	49.31	0.22	
112	Yemen	48.82	48.82	0.21	
113	Nepal	48.38	48.38	0.21	
114	Kyrgyzstan	47.18	47.18	0.20	
115	Zimbabwe	47.16	47.16	0.19	
116	Senegal	46.91	46.91	0.18	
117	Kenya	46.06	46.06	0.18	
118	Angola	45.97	45.97	0.17	
119	Togo	45.65	45.65	0.16	
120	Bangladesh	45.36	45.36	0.16	
121	Benin	44.09	44.09	0.15	
122	Lesotho	42.10	42.10	0.14	
123	Tajikistan	41.89	41.89	0.13	
124	Ghana	41.65	41.65	0.13	
125	Zambia	35.48	35.48	0.12	
126	Madagascar	35.02	35.02	0.11	
127	Uganda	34.96	34.96	0.11	
128	Iran, Islamic Rep.	32.87	32.87	0.10	○
129	Cameroon	32.77	32.77	0.09	
130	Rwanda	32.75	32.75	0.09	
131	Uzbekistan	30.65	30.65	0.08	○
132	Burkina Faso	30.51	30.51	0.07	
133	Sudan	29.34	29.34	0.06	
134	Guinea	27.43	27.43	0.06	
135	Nigeria	26.48	26.48	0.05	○
136	Tanzania, United Rep.	26.12	26.12	0.04	
137	Niger	24.30	24.30	0.04	
138	Mozambique	22.23	22.23	0.03	
139	Mali	22.01	22.01	0.02	○
140	Malawi	18.75	18.75	0.01	
141	Ethiopia	15.17	15.17	0.01	○
142	China	0.00	0.00	0.00	○

SOURCE: Google, parent company of YouTube; United Nations, *World Population Prospects: The 2010 Revision* (population data)

NOTE: ● indicates a strength; ○ a weakness.

Appendix III

Sources and Definitions

Sources and Definitions

This appendix complements the data tables by providing, for each of the 84 indicators included in the Global Innovation Index (GII), its title, its description, its definition, and its source. For each indicator for each country/economy, the most recent value within the period 2003–12 was used. The single year given next to the description corresponds to the most frequent year for which data were available; when more than one year is considered, the period is indicated at the end of the indicator's source in parenthesis.

Some indicators received special treatment in the computation. A few variables required scaling by some other indicator to be comparable across countries, through division by gross domestic product (GDP) in current US dollars, purchasing power parity GDP in international dollars (PPP$ GDP), population, total exports, etc. Details are provided in this appendix. The scaling factor was in each case the value corresponding to the same year of the particular indicator. In addition, 27 indicators that were assigned half weight are singled out with an 'a'. Finally, indicators for which higher scores indicate worse outcomes, commonly known as 'bads', are differentiated with a 'b' (details on the computation can be found in Appendix IV Technical Notes).

A total of 60 variables are hard data; 19 are composite indicators from international agencies, distinguished with an asterisk (*); and 5 are survey questions from the World Economic Forum's Executive Opinion Survey (EOS), singled out with a dagger (†).

1 Institutions

1.1 Political environment

1.1.1 Political stability and absence of violence/terrorism

Political stability and absence of violence/terrorism index* | 2011

Index that captures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism. Scores are standardized.

Source: World Bank, World Governance Indicators, 2012 update. (http://info.worldbank.org/governance/wgi/index.asp)

1.1.2 Government effectiveness

Government effectiveness index* | 2011

Index that captures perceptions of the quality of public and civil services and the degree of their independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Scores are standardized.

Source: World Bank, World Governance Indicators, 2012 update. (http://info.worldbank.org/governance/wgi/index.asp)

1.1.3 Press freedom

Press freedom index*[b] | 2012

Index that captures perceptions on violations of press freedom in the world. It reflects the degree of freedom that journalists and news organizations enjoy in each country and the efforts made by the authorities to respect and ensure respect for this freedom. It is based on events between 1 December 2011 and 30 November 2012.

Source: Reporters Without Borders, Press Freedom Index 2013. (http://en.rsf.org/press-freedom-index-2013,1054.html)

1.2 Regulatory environment

1.2.1 Regulatory quality

Regulatory quality index*[a] | 2011

Index that captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private-sector development. Scores are standardized.

Source: World Bank, World Governance Indicators, 2012 update. (http://info.worldbank.org/governance/wgi/index.asp)

1.2.2 Rule of law

Rule of law index*[a] | 2011

Index that captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Scores are standardized.

Source: World Bank, World Governance Indicators, 2012 update. (http://info.worldbank.org/governance/wgi/index.asp)

1.2.3 Cost of redundancy dismissal

Sum of notice period and severance pay for redundancy dismissal (in salary weeks, averages for workers with 1, 5, and 10 years of tenure, with a minimum threshold of 8 weeks)[b] | 2012

Doing Business, in its indicators on employing workers, measures flexibility in the regulation on redundancy in a manner consistent with relevant ILO conventions to strike a better balance between labour market flexibility and social protection (including unemployment protection). The redundancy cost indicator is the sum of the cost of advance notice requirements added to severance payments due when terminating a redundant worker, expressed in weeks of salary. The average value of notice requirements and severance payments applicable to a worker with 1 year of tenure, a worker with 5 years of tenure, and a worker with 10 years of tenure is used to assign the score. If the redundancy cost adds up to 8 or fewer weeks of salary, a value of 8 is assigned but the actual number of weeks is published. If the cost adds up to more than 8 weeks of salary, the score is the number of weeks. One month is recorded as 4 and 1/3 weeks. Assumptions about the worker: the worker is a full-time, male, nonexecutive employee; he earns a salary plus benefits equal to the economy's average wage during the entire period of his employment; he has a pay period that is the most common for workers in the economy; he is a lawful citizen who belongs to the same race and religion as the majority of the economy's population; he resides in the economy's largest business city; he is not a member of a labour union, unless membership is mandatory. Assumptions about the business: the business is a limited liability company; it operates in the economy's largest business city; it is 100% domestically owned; it operates in the manufacturing sector; it has 60 employees; it is subject to collective bargaining agreements in economies where such agreements cover more than half the manufacturing sector and apply even to firms not party to them; and it abides by every law and regulation but does not grant workers more benefits than mandated by law, regulation, or (if applicable) collective bargaining agreement.

Source: World Bank, Doing Business 2013, Employing Workers. (http://www.doingbusiness.org/data/exploretopics/employing-workers)

1.3 Business environment

1.3.1 Ease of starting a business

Ease of starting a business (distance to frontier)* | 2012

The ranking is the simple average of the percentile rankings on the component indicators of the ease of starting a business index: procedures (number); time (days); cost to complete each procedure (% of income per capita); and paid-in minimum capital (% of income per capita). *Doing Business* records all procedures that are officially required for an entrepreneur to start up and formally operate an industrial or commercial business. These include obtaining all necessary licenses and permits and completing any required notifications, verifications, or inscriptions for the company and employees with relevant authorities. To make the data comparable across economies, *Doing Business* uses a standardized business that is 100% domestically owned, has start-up capital equivalent to 10 times the income per capita, engages in general industrial or commercial activities, and employs between 10 and 50 people within the first month of operations. The distance to frontier measure benchmarks economies to the frontier in regulatory practice, measuring the absolute distance to the best performance on each indicator and showing how much the regulatory environment for local entrepreneurs in each economy has changed over time in absolute terms.

Source: World Bank, Ease of Doing Business Index 2013, Doing Business 2013. (http://www.doingbusiness.org/)

1.3.2 Ease of resolving insolvency

Ease of resolving insolvency (distance to frontier)* | 2012

The ranking on the ease of resolving insolvency is based on the recovery rate (cents on the dollar). To make the data comparable across economies, several assumptions about the business and the case are used: the recovery rate is recorded as cents on the dollar recouped by creditors through reorganization, liquidation, or debt enforcement (foreclosure) proceedings. The calculation

takes into account the outcome: whether the business emerges from the proceedings as a going concern or the assets are sold piecemeal. Then the costs of the proceedings are deducted (1 cent for each percentage point of the value of the debtor's estate). Finally, the value lost as a result of the time the money remains tied up in insolvency proceedings is taken into account, including the loss of value due to depreciation of furniture, etc. The recovery rate is the present value of the remaining proceeds, based on end-2011 lending rates from the International Monetary Fund's *International Financial Statistics,* supplemented with data from central banks and the Economist Intelligence Unit. Indicators resolving insolvency—time (in years) and cost (% of estate), while also computed by *Doing Business*, are not taken into account for the ranking on the ease of resolving insolvency. Refer to indicator 1.3.1 for details regarding the distance to frontier measure.

Source: World Bank, Ease of Doing Business Index 2013, Doing Business 2013. (http://www.doingbusiness.org/)

1.3.3 Ease of paying taxes

Ease of paying taxes (distance to frontier)* | 2012

The ranking is the simple average of the percentile rankings on the component indicators of the ease of paying taxes: payments (number per year); time (hours per year); profit tax (%); labour tax and contributions (%); other taxes (%); and total tax rate (% profit). Since 2012, a threshold calculated and adjusted on a yearly basis is applied to the total tax rate. The threshold is equivalent to the highest total tax rate among the top 15% of economies in the ranking on the total tax rate; in 2013 it is 25.7% (i.e., for all economies with a total tax rate below this threshold, the total tax rate is set at 25.7%). The threshold is not based on any underlying theory, but is intended to mitigate the effect of very low tax rates on the ranking of the ease of paying taxes. To make the data comparable across economies, several assumptions about the business and the taxes and contributions are used. The methodology benefited from discussion with members of the International Tax Dialogue and other stakeholders, which led to a refinement of the survey questions on the time to pay taxes, the collection of additional data on the labour tax wedge for further research, and the introduction of a threshold applied to the total tax rate for the purpose of calculating the ranking on the ease of paying taxes. Refer to indicator 1.3.1 for details regarding the distance to frontier measure.

Source: World Bank, Ease of Doing Business Index 2013, Doing Business 2013. (http://www.doingbusiness.org/)

2 Human capital and research

2.1 Education

2.1.1 Expenditure on education

Current expenditure on education (% of GNI) | 2009

Current operating expenditures in education, including wages and salaries and excluding capital investments in buildings and equipment, as a percentage of gross national income (GNI).

Source: UNESCO Institute for Statistics, UIS online database (2004–11). (http://stats.uis.unesco.org)

2.1.2 Public expenditure on education per pupil

Public expenditure per pupil, all levels (% of GDP per capita) | 2009

Public current spending on education divided by the total number of students by level, as a percentage of GDP per capita. Public expenditure (current and capital) includes government spending on educational institutions (both public and private), education administration, and subsidies for private entities (students/households and other private entities).

Source: UNESCO Institute for Statistics, UIS online database (2003–11). (http://stats.uis.unesco.org)

2.1.3 School life expectancy

School life expectancy, primary to tertiary education (years) | 2010

Total number of years of schooling that a child of a certain age can expect to receive in the future, assuming that the probability of his or her being enrolled in school at any particular age is equal to the current enrolment ratio for that age.

Source: UNESCO Institute for Statistics, UIS online database (2003–11). (http://stats.uis.unesco.org)

2.1.4 Assessment in reading, mathematics, and science

PISA average scales in reading, mathematics, and science[a] | 2009

The Organisation for Economic Co-operation and Development (OECD) Programme for International Student Assessment (PISA) develops three-yearly surveys that examine 15-year-old students' performance in reading, mathematics, and science. The scores are calculated each year so that the mean is 500 and the standard deviation 100. The scores for China come from Shanghai; those for India from Himachal Pradesh and Tamil Nadu (average); those for the United Arab Emirates from Dubai; and those for the Bolivarian Republic of Venezuela from Miranda.

Source: OECD Programme for International Student Assessment (PISA) 2009 and 2010 (2009–10). (www.pisa.oecd.org/)

2.1.5 Pupil-teacher ratio, secondary

Pupil-teacher ratio, secondary[b] | 2010

The number of pupils enrolled in secondary school divided by the number of secondary school teachers (regardless of their teaching assignment). Where the data are missing for some countries, the ratios for upper-secondary are reported; if these are also missing, the ratios for lower-secondary are reported instead.

Source: UNESCO Institute for Statistics, UIS online database (2004–11). (http://stats.uis.unesco.org)

2.2 Tertiary education

2.2.1 Tertiary enrolment

School enrolment, tertiary (% gross)[a] | 2011

The ratio of total tertiary enrolment, regardless of age, to the population of the age group that officially corresponds to the tertiary level of education. Tertiary education, whether or not to an advanced research qualification, normally requires, as a minimum condition of admission, the successful completion of education at the secondary level.

Source: UNESCO Institute for Statistics, UIS online database (2003–11). (http://stats.uis.unesco.org)

2.2.2 Graduates in science and engineering

Tertiary graduates in engineering, manufacturing, and construction (% of total tertiary graduates) | 2010

The share of all tertiary graduates in manufacturing, engineering, and construction over all tertiary graduates.

Source: UNESCO Institute for Statistics, UIS online database (2003–11). (http://stats.uis.unesco.org)

2.2.3 Tertiary inbound mobility

Tertiary inbound mobility ratio (%)[a] | 2011

The number of students from abroad studying in a given country, as a percentage of the total tertiary enrolment in that country.

Source: UNESCO Institute for Statistics, UIS online database (2003–11). (http://stats.uis.unesco.org)

2.2.4 Gross tertiary outbound enrolment

Gross tertiary outbound enrolment ratio (%)[a] | 2011

Mobile students coming from a country/region as a percentage of the population of tertiary student age in their home country.

Source: UNESCO Institute for Statistics, UIS online database (2006–11). (http://stats.uis.unesco.org)

2.3 Research and development (R&D)

2.3.1 Researchers

Researchers, headcounts (per million population) | 2009

Researchers per million population, headcounts. Researchers in R&D are professionals engaged in the conception or creation of new knowledge, products, processes, methods, or systems and in the management of the projects concerned. Postgraduate PhD students (ISCED97 level 6) engaged in R&D are included. The series with full-time equivalents (FTE) also exists, but has a lower country coverage.

Source: UNESCO Institute for Statistics, UIS online database (2003–11). (http://stats.uis.unesco.org)

2.3.2 Gross expenditure on R&D (GERD)

GERD: Gross expenditure on R&D (% of GDP) | 2009

Total domestic intramural expenditure on R&D during a given period as a percentage of GDP. Intramural R&D expenditure is all expenditure for R&D performed within a statistical unit or sector of the economy during a specific period, whatever the source of funds.

Source: UNESCO Institute for Statistics, UIS online database (2004–12). (http://stats.uis.unesco.org)

2.3.3 QS university ranking average score of top 3 universities

Average score of the top 3 universities at the QS world university ranking* | 2012

Average score of the top three universities per country. If fewer than three universities are listed in the QS ranking of the global top 700 universities, the sum of the scores of the listed universities is divided by three, thus implying a score of zero for the non-listed universities.

Source: QS Quacquarelli Symonds Ltd, QS World University Ranking 2012/2013, Top Universities. (http://www.topuniversities.com/university-rankings/world-university-rankings/2012)

3 Infrastructure

3.1 Information and communication technologies (ICTs)

3.1.1 ICT access

ICT access index* | 2011

The ICT access index is a composite indicator that weights five ICT indicators (20% each): (1) Fixed telephone lines per 100 inhabitants; (2) Mobile cellular telephone subscriptions per 100 inhabitants; (3) International Internet bandwidth (bit/s) per Internet user; (4) Percentage of households with a computer; and (5) Percentage of households with Internet access. It is the first sub-index in ITU's ICT Development Index (IDI).

Source: International Telecommunication Union, Measuring the Information Society 2012, ICT Development Index 2012 (2010–11). (http://www.itu.int/ITU-D/ict/publications/idi/)

3.1.2 ICT use

ICT use index* | 2011

The ICT use index is a composite indicator that weights three ICT indicators (33% each): (1) Percentage of individuals using the Internet; (2) Fixed (wired)-broadband Internet subscriptions per 100 inhabitants; (3) Active mobile-broadband subscriptions per 100 inhabitants. It is the second sub-index in ITU's ICT Development Index (IDI).

Source: International Telecommunication Union, Measuring the Information Society 2012, ICT Development Index 2012 (2010–11). (http://www.itu.int/ITU-D/ict/publications/idi/)

3.1.3 Government's online service

Government's online service index* | 2012

To arrive at a set of online service index values, research teams assessed each country's national websites, including the national central portal, e-services portal, and e-participation portal as well as the websites of the related ministries of education, labour, social services, health, finance, and environment, as applicable. In addition to being assessed for content and features, the national sites were tested for a minimal level of web content accessibility as described in the *Web Content Accessibility Guidelines* of the World Wide Web Consortium. The survey covers four stages of government's online service development, with points assigned for (1) an emerging presence, providing limited and basic information; (2) an enhanced presence, providing greater public policy and governance sources of information, such as policies, laws and regulation, downloadable databases, etc.; (3) a transactional presence, allowing two-way interactions between government and citizens (G2C and C2G), including paying taxes and applying for ID cards, birth certificates, passports, license renewals, etc.; and (4) a connected presence, characterized by G2G, G2C, and C2G interactions; participatory deliberative policy- and decision-making. A citizen-centric approach was followed. It is the first of three components of the E-Government Development Index (EGDI) of the United Nations Public Administration Network (UNPAN), together with components on telecommunication infrastructure and human capital.

Source: United Nations Public Administration Network, e-Government Survey 2012 (2010–12). (http://www2.unpan.org/egovkb/)

3.1.4 Online e-participation

E-Participation Index* | 2012

The United Nations E-Participation Index is based on the survey used for the UN Online Service Index. The survey was expanded with questions emphasizing quality in the connected presence stage of e-government. These questions focus on the use of the Internet to facilitate the provision of information by governments to citizens ('e-information sharing'), interaction with stakeholders ('e-consultation'), and engagement in decision-

making processes ('e-decision making'). A country's E-Participation Index value reflects how useful these features are and the extent to which they have been deployed by the government compared with all other countries. The purpose of this measure is to offer insight into how different countries are using online tools to promote interaction between citizen and government, as well as among citizens, for the benefit of all. The index ranges from 0 to 1, with 1 showing greater e-participation.

Source: United Nations Public Administration Network, e-Government Survey 2012. (http://www2.unpan.org/egovkb/)

3.2 General infrastructure

3.2.1 Electricity output

Electricity output (kWh per capita)[a] | 2010

Electricity production, measured at the terminals of all alternator sets in a station. In addition to hydropower, coal, oil, gas, and nuclear power generation, this indicator covers generation by geothermal, solar, wind, and tide and wave energy, as well as that from combustible renewables and waste. Production includes the output of electricity plants that are designed to produce electricity only as well as that of combined heat and power plants. Electricity output in KWh is scaled by population.

Source: International Energy Agency, World Energy Balances online data service (2010–11). (http://www.iea.org/stats/)

3.2.2 Electricity consumption

Electricity consumption (kWh per capita)[a] | 2010

Electric power consumption, measured by the production of power plants and combined heat and power plants less transmission, distribution, and transformation losses and own use by heat and power plants. The total value in kWh is scaled by population.

Source: International Energy Agency, World Energy Balances online data service (2010–11). (http://www.iea.org/stats/)

3.2.3 Logistics performance

Logistics Performance Index* | 2012

A multidimensional assessment of logistics performance, the Logistics Performance Index (LPI) compares the trade logistics profiles of 155 countries and rates them on a scale of 1 (worst) to 5 (best). The ratings are based on 6,000 individual country assessments by nearly 1,000 international freight forwarders, who rated the eight foreign countries their company serves most frequently. The LPI's six components include: (1) the efficiency of the clearance process (speed, simplicity, and predictability of formalities) by border control agencies, including customs; (2) the quality of trade- and transport-related infrastructure (ports, railroads, roads, information technology); (3) the ease of arranging competitively priced shipments; (4) the competence and quality of logistics services (transport operators, customs brokers); (5) the ability to track and trace consignments; and (6) the frequency with which shipments reach the consignee within the scheduled or expected delivery time. Details of the survey methodology are in Arvis et al.'s *Connecting to Compete 2012: Trade Logistics in the Global Economy* (2012). Scores are averaged across all respondents.

Source: World Bank and Turku School of Economics, Logistics Performance Index 2012; Arvis et al., 2012, Connecting to Compete 2012: Trade Logistics in the Global Economy (2010–12). (http://go.worldbank.org/88X6PU5GV0)

3.2.4 Gross capital formation

Gross capital formation (% of GDP) | 2012

Ratio of total gross capital formation in current local currency to GDP in current local currency. Gross capital formation or investment is measured by the total value of the gross fixed capital formation and changes in inventories and acquisitions less disposals of valuables for a unit or sector, on the basis of the System of National Accounts (SNA) of 1993. Gross fixed capital formation consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales and 'work in progress'. Net acquisitions of valuables are also considered capital formation.

Source: International Monetary Fund, World Economic Outlook 2012 database (2010–12). (http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/weoselgr.aspx)

3.3 Ecological sustainability

3.3.1 GDP per unit of energy use

GDP per unit of energy use (2000 PPP$ per kg of oil equivalent) | 2010

Purchasing power parity gross domestic product (PPP GDP) per kilogram of oil equivalent of energy use. Energy use or total primary energy supply (TPES) is calculated as the production of fuels + inputs from other sources + imports – exports – international marine bunkers +/– stock changes. It includes coal, crude oil, natural gas liquids, refinery feedstocks, additives, petroleum products, gases, combustible renewables and waste, electricity, and heat. Domestic supply (also called 'energy apparent consumption') differs from final consumption in that it does not take account of distribution losses. The supply (or use) of energy commodities is converted to kilograms or tons of oil equivalent (koe, toe) using standard coefficients for each energy source.

Source: International Energy Agency, World Energy Balances online data service (2010–11). (http://www.iea.org/stats/)

3.3.2 Environmental performance

Environmental Performance Index* | 2010

This index ranks countries on 22 performance indicators tracked across policy categories that cover both environmental public health and ecosystem vitality. These indicators gauge how close countries are to established environmental policy goals. The index ranges from 0 to 100, 100 indicating best performance.

Source: Yale University and Columbia University Environmental Performance Index 2012. (http://epi.yale.edu/)

3.3.3 ISO 14001 environmental certificates

ISO 14001 Environmental management systems—Requirements with guidance for use: Number of certificates issued (per billion PPP$ GDP) | 2011

Number of certificates of conformity to 'ISO 14001:2004 Environmental management systems: Requirements with guidance for use' issued, according to the ISO survey. Single-site and multiple-site certificates are not distinguished. The ISO survey is published on an annual basis by the International Organization for Standardization (ISO). Only certification bodies accredited by national members of the International Accreditation Forum (www.iaf.nu) were used as sources (except for certificates in the Russian Federation, which were accredited locally). Certification of conformity with standards is not a requirement and the

standards can be implemented without certification, but certification is perceived as adding value and trust. ISO is a network of the national standards institutes of 163 countries, and it is the world's largest developer of voluntary International Standards for business, government, and society, with a portfolio of more than 18,800 standards in almost every sector of economic activity and technology. ISO itself does not perform certification to its standards, does not issue certificates, and does not control certification performed independently of ISO by other organizations. The data are reported per billion PPP$ GDP.

Source: International Organization for Standardization (ISO), The ISO Survey of Certifications 2011; International Monetary Fund World Economic Outlook 2012 database (PPP$ GDP) (2008–11). (www.iso.org; http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/weoselgr.aspx)

4 Market sophistication

4.1 Credit

4.1.1 Ease of getting credit

Ease of getting credit (distance to frontier)* | 2012

The ranking is the simple average of the percentile rankings on the component indicators of the ease of getting credit index: strength of legal rights index (range 0–10); and depth of credit information index (range 0–6). *Doing Business* measures the legal rights of borrowers and lenders with respect to secured transactions through one set of indicators and the sharing of credit information through another. The first set of indicators describes how well collateral and bankruptcy laws facilitate lending. The second set measures the coverage, scope, and accessibility of credit information available through public credit registries and private credit bureaus. Although *Doing Business* compiles data on getting credit for public registry coverage (% of adults) and for private bureau coverage (% of adults), these indicators are not included in the ranking. Refer to indicator 1.3.1 for details regarding the distance to frontier measure.

Source: World Bank, Ease of Doing Business Index 2013, Doing Business 2013. (http://www.doingbusiness.org/)

4.1.2 Domestic credit to private sector

Domestic credit to private sector (% of GDP) | 2011

Financial resources provided to the private sector, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries, these claims include credit to public enterprises.

Source: International Monetary Fund, International Financial Statistics and data files, and World Bank and OECD GDP estimates; extracted from World Bank World Development Indicators database (2005–11). (http://data.worldbank.org/)

4.1.3 Microfinance institutions' gross loan portfolio

Microfinance institutions: Gross loan portfolio (% of GDP) | 2011

Combined gross loan balances per microfinance institution (current US$), divided by GDP (current US$) and multiplied by 100.

Source: Microfinance Information Exchange, Mix Market database; International Monetary Fund World Economic Outlook 2012 database (current US$ GDP) (2007–12). (http://www.mixmarket.org/crossmarket-analysis-report/download; http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx)

4.2 Investment

4.2.1 Ease of protecting investors

Ease of protecting investors (distance to frontier)* | 2012

The ranking is the simple average of the percentile rankings on the component indicators of the ease of protecting investors index: the extent of disclosure index (0–10); the extent of director liability index (0–10); the ease of shareholder suits index (0–10); and the strength of investor protection index (0–10). *Doing Business* measures the strength of minority shareholder protections against directors' misuse of corporate assets for personal gain. The indicators distinguish three dimensions of investor protections: transparency of related-party transactions (extent of disclosure index), liability for self-dealing (extent of director liability index), and shareholders' ability to sue officers and directors for misconduct (ease of shareholder suits index). The data come from a survey of corporate and securities lawyers and are based on securities regulations, company laws, civil procedure codes, and court rules of evidence. Refer to indicator 1.3.1 for details regarding the distance to frontier measure.

Source: World Bank, Ease of Doing Business Index 2013, Doing Business 2013. (http://www.doingbusiness.org/)

4.2.2 Market capitalization

Market capitalization of listed companies (% of GDP) | 2011

Market capitalization (also known as 'market value') is the share price times the number of shares outstanding. Listed domestic companies are the domestically incorporated companies listed on the country's stock exchanges at the end of the year. Listed companies do not include investment companies, mutual funds, or other collective investment vehicles.

Source: Standard and Poor's and World Bank and OECD GDP estimates; extracted from World Bank World Development Indicators database (2006–11). (http://data.worldbank.org/)

4.2.3 Total value of stocks traded

Stocks traded, total value (% of GDP) | 2011

Total value of shares traded during the period. This indicator complements the market capitalization ratio by showing whether market size is matched by trading.

Source: Standard and Poor's and World Bank and OECD GDP estimates; extracted from World Bank World Development Indicators database (2006–11). (http://data.worldbank.org/)

4.2.4 Venture capital deals

Venture capital per investment location: Number of deals (per trillion PPP$ GDP) | 2012

Thomson Reuters data on private equity deals, per deal, with details on the location of investment, investment company, investor firms, and funds, among others. The series corresponds to a query on venture capital deals from 1 January 2012 to 31 December 2012, with the data collected by investment location, for a total of 8,452 deals in 80 countries in 2012. The data are reported per trillion PPP$ GDP.

Source: Thomson Reuters, Thomson One Banker Private Equity database; International Monetary Fund World Economic Outlook 2012 database (PPP$ GDP). (http://banker.thomsonib.com; http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx)

4.3 Trade and competition

4.3.1 Applied tariff rate, weighted mean

Tariff rate, applied, weighted mean, all products (%)[b] | 2010

The average of effectively applied rates weighted by the product import shares corresponding to each partner country. Data are classified using the Harmonized System of trade at the six- or eight-digit level. Tariff line data were matched to Standard International Trade Classification (SITC) revision 3 codes to define commodity groups and import weights. To the extent possible, specific rates have been converted to their ad valorem equivalent rates and have been included in the calculation of weighted mean tariffs. Effectively applied tariff rates at the six- and eight-digit product level are averaged for products in each commodity group. When the effectively applied rate is unavailable, the most-favoured nation rate is used instead. World Bank estimates use the World Integrated Trade Solution (WITS) system, based on tariff data from the UNCTAD Trade Analysis and Information System (TRAINS) database and import weights calculated using the UN Comtrade database.

Source: World Bank, based on WITS, UNCTAD TRAINS, and UN COMTRADE; extracted from World Bank World Development Indicators database (2003–10). (http://data.worldbank.org/)

4.3.2 Market access for non-agricultural exports

Non-agricultural market access: Five major export markets weighted actual applied tariff (%)[b] | 2010

Non-agricultural market access (NAMA) conditions are measured by the actual average weighted (AAW) tariff rate applied by the five major export markets. The applied tariff rate is the difference between the most-favoured nation (MFN) duty and the preference margin (if any); and average tariff rates are weighted by actual imports calculated from mirror imports data (in any of the two reference years, 2010 or 2009). For example, imports from Albania into the EU (the USA) benefit from an AAW preference margin of 4.7 (1.8) over an AAW MFN duty of 4.7 (3.5), thus implying an AAW applied tariff of 0.0 (1.7). Once the three other major export markets for Albania are considered as well (China, Turkey, and the former Yugoslav Republic of Macedonia), the NAMA conditions for Albania can be summarized in an AAW applied tariff of 0.08%. For EU countries, the extra-EU data are assigned to each of the 27 countries. When information on preferential tariff regimes is missing, MFN treatment is assumed (it is also assumed that a country avails itself of preferential tariffs, even if the exporter chooses not to for whatever reason— such as the more onerous prerequisites attached to the preferential tariff).

Source: World Trade Organization (WTO), International Trade Centre (ITC), and United Nations Conference on Trade and Development (UNCTAD) World Tariff Profiles 2012; Annex 1 of the WTO Agreement on Agriculture (NAMA classification) (2009–10). (http://stat.wto.org/TariffProfile/WSDBTariffPFHome.aspx?Language=E)

4.3.3 Intensity of local competition

Average answer to the question: How would you assess the intensity of competition in the local markets in your country? [1 = limited in most industries; 7 = intense in most industries][†] | 2012

Source: World Economic Forum, Executive Opinion Survey 2011–2012 (2011–12). (https://wefsurvey.org)

5 Business sophistication

5.1 Knowledge workers

5.1.1 Employment in knowledge-intensive services

Employment in knowledge-intensive services (% of workforce) | 2010

Sum of people in categories 1 to 3 as a percentage of total people employed, according to the International Standard Classification of Occupations (ISCO). Categories included: ISCO-08: 1 Managers, 2 Professionals, and 3 Technicians and associate professionals (years 2009–10); ISCO-88: 1 Legislators, senior officials and managers, 2 Professionals, 3 Technicians and associate professionals; ISCO-1968: 1 Professional, technical and related workers (category 0 Armed forces is excluded), 2 Administrative and managerial workers, 3 Clerical and related workers (years 2003–08).

Source: International Labour Organization, LABORSTA Database of Labour Statistics (2003–08), and ILOSTAT Database of Labour Statistics Beta version (2009–10). (http://www.ilo.org/ilostat/; http://laborsta.ilo.org/)

5.1.2 Firms offering formal training

Firms offering formal training (% of firms) | 2009

The percentage of firms offering formal training programmes for their permanent, full-time employees.

Source: International Finance Corporation and World Bank, Enterprise Surveys (2003–10). (http://www.enterprisesurveys.org/)

5.1.3 GERD performed by business enterprise

GERD: Performed by business enterprise (% of GDP) [a] | 2011

Gross expenditure on R&D performed by business enterprise as a percentage of GDP.

Source: UNESCO Institute for Statistics, UIS online database (2003–12). (http://stats.uis.unesco.org)

5.1.4 GERD financed by business enterprise

GERD: Financed by business enterprise (% of total GERD) [a] | 2009

Percentage of gross expenditure on R&D financed by business enterprise.

Source: UNESCO Institute for Statistics, UIS online database (2004–12). (http://stats.uis.unesco.org)

5.1.5 GMAT mean score

Weighted mean score at the Graduate Management Admission Test (GMAT) by residency and by citizenship (weighted by the total numbers of test takers)[a] | 2012

Mean scores at the Graduate Management Admission Test (GMAT) by residency and by citizenship, weighted by total number of residents and citizens taking the test, respectively. The GMAT is a standardized test aimed at measuring aptitude to succeed academically in graduate business studies. It is an important part of the admissions process for more than 5,600 graduate management programs in approximately 2,000 business schools worldwide. The GMAT exam consists of four sections: Verbal, Quantitative, Integrated Reasoning, and Analytical Writing. GMAT total scores are calculated based on performance in the Verbal and Quantitative sections of the exam only. Scores are reported in increments of 10, on a scale ranging from 200 to 800. Mean score data for groups with fewer than 5 GMAT exams taken are not released and therefore not considered.

Source: Graduate Management Admission Council (GMAC) (2005–12). (www.gmac.com/research)

5.1.6 GMAT test takers

Number of test takers of the Graduate Management Admission Test (GMAT) by citizenship (scaled by million population 20–34 years old)[a] | 2012

Total number of test takers of the Graduate Management Admission Test (GMAT) by citizenship, scaled by population 20–34 years old (if for a given country/economy the data for citizens do not exist, the data for residents are given instead). Refer to indicator 5.1.5 for details.

Source: Graduate Management Admission Council (GMAC); United Nations, Department of Economic and Social Affairs, Population Division, World Population Prospects: The 2010 Revision (population data) (2011–12). (www.gmac.com/research; http://esa.un.org/unpd/wpp/Excel-Data/population.htm)

5.2 Innovation linkages

5.2.1 University/industry research collaboration

Average answer to the survey question: To what extent do business and universities collaborate on research and development (R&D) in your country? (1 = Do not collaborate at all; 7 = Collaborate extensively)[†a] | 2012

Source: World Economic Forum, Executive Opinion Survey 2011–2012 (2011–12). (https://wefsurvey.org)

5.2.2 State of cluster development

Mean of the average responses to two survey questions on the role of clusters in the economy. 'Clusters' are defined as geographic concentrations of firms, suppliers, producers of related products and services, and specialized institutions in a particular field. The questions are: (1) In your country, how prevalent are well-developed and deep clusters? [1 = nonexistent; 7 = widespread in many fields]; and (2) In your country, how extensive is collaboration among firms (e.g., suppliers, competitors, clients) in order to promote knowledge flows and innovation? [1 = collaboration is nonexistent; 7 = collaboration is extensive][†a] | 2012

Source: World Economic Forum, Executive Opinion Survey 2011–2012 (2011–12). (https://wefsurvey.org)

5.2.3 GERD financed by abroad

GERD: Financed by abroad (% of total GERD) | 2009

Percentage of gross expenditure on R&D financed by abroad—i.e., with foreign financing.

Source: UNESCO Institute for Statistics, UIS online database (2003–12). (http://stats.uis.unesco.org)

5.2.4 Joint venture/strategic alliance deals

Joint ventures/strategic alliances: Number of deals, fractional counting (per trillion PPP$ GDP)[a] | 2012

Thomson Reuters data on joint ventures/strategic alliances deals, per deal, with details on the country of origin of partner firms, among others. The series corresponds to a query on joint ventures/strategic alliances deals from 1 January 2012 to 31 December 2012, for a total of 4,078 deals announced in 2012, with firms headquartered in 139 participating economies. Each participating nation of each company in a deal (*n* countries per deal) gets, per deal, a score equivalent to 1/*n* (with the effect that all country scores add up to 4,078). The data are reported per trillion PPP$ GDP.

Source: Thomson Reuters, Thomson One Banker Private Equity, SDC Platinum database; International Monetary Fund World Economic Outlook 2012 database (PPP$ GDP) (2011–12). (http://banker.thomsonib.com; http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx)

5.2.5 Patent families filed in at least three offices

Number of patent families filed by residents in at least three offices (per billion PPP$ GDP)[a] | 2009

A 'patent family' is defined as a set of interrelated patent applications filed in one or more countries/jurisdictions to protect the same invention (either directly or through the WIPO-administered Patent Cooperation Treaty). In this report, 'patent families data' refers to patent applications filed by residents in at least three offices; the data are scaled by PPP$ GDP (billions). A 'patent' is a set of exclusive rights granted by law to applicants for inventions that are new, non-obvious, and commercially applicable. It is valid for a limited period of time (generally 20 years), during which patent holders can commercially exploit their inventions on an exclusive basis. In returns, applicants are obliged to disclose their inventions to the public in a manner that enables others, skilled in the art, to replicate the invention. The patent system is designed to encourage innovation by providing innovators with time-limited exclusive legal rights, thus enabling innovators to appropriate a return on their innovative activity.

Source: World Intellectual Property Organization, WIPO Statistics Database; International Monetary Fund World Economic Outlook 2012 database (PPP$ GDP) (2006–09). (http://www.wipo.int//ipstats/; http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx)

5.3 Knowledge absorption

5.3.1 Royalties and license fees payments

Royalty and license fees, payments (% of total service imports)[a] | 2011

Royalties and license fees payments (% of total service imports) according to the Extended Balance of Payments Services Classification EBOPS 2002—i.e., code 266 Royalties and license fees (including franchises and similar rights) as a percentage of code 200 Total services. Receipts are between residents and nonresidents for the authorized use of intangible, nonproduced, nonfinancial assets and proprietary rights (such as patents, copyrights, trademarks, industrial processes, and franchises) and for the use, through licensing agreements, of produced originals of prototypes (such as films and manuscripts).

Source: World Trade Organization, Trade in Commercial Services database, itself based on the International Monetary Fund fifth (1993) edition of the Balance of Payments Manual and Balance of Payments database (2005–11). (http://stat.wto.org/StatisticalProgram/WSDBStatProgramSeries.aspx?Language=E; http://unstats.un.org/unsd/tradeserv/EBOPS2002_eng.pdf)

5.3.2 High-tech imports

High-tech net imports (% of total net imports) | 2011

High-technology imports minus re-imports over total imports minus re-imports. The list of commodities contains technical products with a high intensity of R&D, based on the Eurostat classification, itself based on SITC Rev.4 and the Organisation for Economic Co-operation and Development (OECD) definition. Commodities belong to the following sectors: aerospace; computers & office machines; electronics, telecommunications; pharmacy; scientific instruments; electrical machinery; chemistry; non-electrical machinery; and armament.

Source: United Nations, COMTRADE database; Eurostat 'High-technology' aggregations based on SITC Rev. 4, April 2009 (2007–12). (http://comtrade.un.org/; http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/htec_esms_an5.pdf)

5.3.3 Communications, computer and information services imports

Communications, computer and information services imports (% of total services imports) | 2011

Communication, computer and information services imports (% of total service imports) according to the Extended Balance of Payments Services Classification EBOPS 2002, including

codes 245 Communications services (postal, courier services, and telecommunications services); and/or 262 Computer and information services, as a percentage of code 200 Total services.

Source: World Trade Organization, Trade in Commercial Services database, itself based on the International Monetary Fund fifth (1993) edition of the Balance of Payments Manual and Balance of Payments database (2005–11). (http://stat.wto.org/StatisticalProgram/WSDBStatProgramSeries.aspx?Language=E; http://unstats.un.org/unsd/tradeserv/EBOPS2002_eng.pdf)

5.3.4 Foreign direct investment net inflows

Foreign direct investment (FDI), net inflows (% of GDP) | 2011

Net inflows of investment to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors, and is divided by GDP.

Source: International Monetary Fund, International Financial Statistics and data files, and World Bank and OECD GDP estimates; extracted from World Bank World Development Indicators database (2009–11). (http://data.worldbank.org/)

6 Knowledge and technology outputs

6.1 Knowledge creation

6.1.1 National office resident patent applications

Number of patent applications filed by residents at the national patent office (per billion PPP$ GDP)[a] | 2011

Number of patent applications filed by residents at the national patent office. Data are scaled by PPP$ GDP (billions). 'Patent' is defined in the description of indicator 5.2.5. Patent applications by resident data are based on 'equivalent count', by which applications at regional offices are multiplied by the corresponding number of member states. This concerns the Eurasian Patent Office (EAPO) and the African Intellectual Property Organization (OAPI). For the European Patent Office (EPO) and the African Regional Intellectual Property Organization (ARIPO), each application is counted as one application abroad if the applicant does not reside in a member state; or as one resident and one application abroad if the applicant resides in a member state.

Source: World Intellectual Property Organization, WIPO Statistics Database; International Monetary Fund World Economic Outlook 2012 database (PPP$ GDP) (2005–11). (http://www.wipo.int//ipstats/; http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx)

6.1.2 Patent Cooperation Treaty resident applications

Number of international patent applications filed by residents at the Patent Cooperation Treaty (per billion PPP$ GDP)[a] | 2012

Number of patent applications filed by residents under the World Intellectual Property Organization (WIPO)-administered Patent Cooperation Treaty (PCT). Data are reported for PCT member countries only, and scaled by PPP$ GDP (billions). 'Patent' is defined in the description of indicator 5.2.5. PCT applications are assigned to a particular country of origin according to the country of residence of the first-named applicant. The PCT system simplifies the process of multiple national patent filings by reducing the requirement to file a separate application in each jurisdiction. However, the decision of whether to grant patent rights remains in the hands of national and regional patent offices, and the patent rights remain limited to the jurisdiction of the patent granting authority. The PCT international application process starts with the international phase, during which an international search and, possibly, a preliminary examination are performed, and concludes with the national phase, during which national and regional patent offices decide on the patentability of an invention according to national law.

Source: World Intellectual Property Organization, WIPO Statistics Database; International Monetary Fund World Economic Outlook 2012 database (PPP$ GDP) (2010–12). (http://www.wipo.int//ipstats/; http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx)

6.1.3 National office resident utility model applications

Number of utility model applications filed by residents at the national patent office (per billion PPP$ GDP) | 2011

Number of utility model (UM) applications filed by residents at the national patent office. Resident UM data are scaled by PPP$ GDP (billions). Like a patent, UM is a special form of patent right granted by a state/jurisdiction to an inventor or inventor's assignee for a fixed period of time. The terms and conditions for granting a utility model are slightly different from those for normal patents (including a shorter term of protection and less stringent patentability requirements). The term 'utility model' can also describe what are known in certain countries as 'petty patents', 'short-term patents', or 'innovation patents'.

Source: World Intellectual Property Organization, WIPO Statistics Database; International Monetary Fund World Economic Outlook 2012 database (PPP$ GDP) (2003–11). (http://www.wipo.int//ipstats/; http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx)

6.1.4 Scientific and technical publications

Number of scientific and technical journal articles (per billion PPP$ GDP)[a] | 2012

The number of scientific and engineering articles published in the following fields: physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences. Article counts are from a set of journals covered by the Science Citation Index (SCI) and the Social Sciences Citation Index (SSCI). Articles are classified by year of publication and assigned to each country/economy on basis of the institutional address(es) listed on the article. Articles are counted on a count basis (rather than a fractional basis)—that is, for articles with collaborating institutions from multiple countries/economies, each country/economy receives credit on basis of its participating institutions. The data are reported per trillion PPP$ GDP.

Source: Special tabulations from Thomson Reuters, Web of Science, Science Citation Index (SCI) and Social Sciences Citation Index (SSCI); International Monetary Fund World Economic Outlook 2012 database (PPP$ GDP) (2010–12). (http://thomsonreuters.com/products_services/science/; http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx)

6.1.5 Citable documents H index

The H index is the economy's number of published articles (H) that have received at least H citations in the period 1996-2011*[a] | 2011

The H index is an economy's number of published articles (H) that have received at least H citations, in the period 1996–2011. It quantifies both country scientific productivity and scientific impact and is also applicable to scientists, journals, etc.

The SCImago Journal & Country Rank is a portal that includes journal and economy scientific indicators developed from the information contained in the Scopus® database (Elsevier B.V.). This platform takes its name from the SCImago Journal Rank (SJR), developed by SCImago from the algorithm Google PageRank™. The H index is tabulated from the number of citations received in subsequent years by articles published in a given year, divided by the number of articles published that year.

Source: SCImago (2007) SJR—SCImago Journal & Country Rank. Retrieved 7 April 2013. (http://www.scimagojr.com)

6.2 Knowledge impact

6.2.1 Growth rate of GDP per person engaged

Growth rate of GDP per person engaged (constant 1990 PPP$, 2007 to 2008) | 2011

Growth of GDP per person engaged provides a measure of labour productivity (defined as output per unit of labour input). GDP per person employed is gross domestic product (GDP) divided by total employment in the economy. PPP$ GDP is converted to 1990 constant international dollars using PPP rates. An international dollar has the same purchasing power over GDP that a US dollar has in the United States of America.

Source: International Labour Organization, Key Indicators of the Labour Market (KILM) database, Table 17 Labour productivity, special tabulations. (http://kilm.ilo.org/2011/download/kilm17EN.pdf)

6.2.2 New business density

New business density (new registrations per thousand population 15–64 years old)[a] | 2011

Number of new firms, defined as firms registered in the current year of reporting, per thousand population aged 15–64 years old.

Source: World Bank, Doing Business 2013, Entrepreneurship (2008–11). (http://www.doingbusiness.org/~/media/GIAWB/Doing%20Business/Documents/Miscellaneous/Entrepreneurship-db-2012.xlsx)

6.2.3 Total computer software spending

Total computer software spending (% of GDP)[a] | 2012

Computer software spending includes the total value of purchased or leased packaged software such as operating systems, database systems, programming tools, utilities, and applications. It excludes expenditures for internal software development and outsourced custom software development. The data is a combination of actual figures and estimates. Data are reported as a percentage of GDP.

Source: IHS Global Insight, Information and Communication Technology Database; International Monetary Fund World Economic Outlook 2012 database (current US$ GDP). (http://www.ihsglobalinsight.com/ProductsServices/ProductDetail2370.htm; http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx)

6.2.4 ISO 9001 quality certificates

ISO 9001 - Quality management systems—Requirements: Number of certificates issued (per billion PPP$ GDP)[a] | 2011

Number of certificates of conformity to standard 'ISO 9001:2008 Quality management systems—Requirements' issued, according to the ISO Survey. Single-site and multiple-site certificates are not distinguished. The data are reported per billion PPP$ GDP. Refer to indicator 3.3.3 for details.

Source: International Organization for Standardization (ISO), The ISO Survey of Certifications 2011; International Monetary Fund World Economic Outlook 2012 database (PPP$ GDP) (2010–11). (www.iso.org; http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx)

6.2.5 High-tech and medium-high-tech output

High-tech and medium-high-tech output (% of total manufactures output)[a] | 2009

High-tech and medium-high-tech output as a percentage of total manufactures output, on the basis of the Organisation for Economic Co-operation and Development (OECD) classification of Technology Intensity Definition, itself based on International Standard Industrial Classification ISIC Revision 3.

Source: United Nations Industrial Development Organization (UNIDO), Industrial Statistics Database, 3- and 4-digit level of International Standard Industrial Classification ISIC Revision 3 (INDSTAT4 2012); OECD, Directorate for Science, Technology and Industry, Economic Analysis and Statistics Division, 'ISIC REV. 3 Technology Intensity Definition: Classification of Manufacturing Industries into Categories Based on R&D Intensities,' 7 July 2011 (2003–09). (www.unido.org/statistics.html; http://unstats.un.org/unsd/cr/registry/regcst.asp?cl=27; http://www.oecd.org/sti/ind/48350231.pdf)

6.3 Knowledge diffusion

6.3.1 Royalties and license fees receipts

Royalty and license fees, receipts (% of total service exports) | 2011

Royalties and license fees receipts (% of total service imports) according to the Extended Balance of Payments Services Classification EBOPS 2002—i.e., code 266 Royalties and license fees (including franchises and similar rights) as a percentage of code 200 Total services. Receipts are between residents and nonresidents for the authorized use of intangible, nonproduced, nonfinancial assets and proprietary rights (such as patents, copyrights, trademarks, industrial processes, and franchises) and for the use, through licensing agreements, of produced originals of prototypes (such as films and manuscripts).

Source: World Trade Organization, Trade in Commercial Services database, itself based on the International Monetary Fund fifth (1993) edition of the Balance of Payments Manual and Balance of Payments database (2003–11). (http://stat.wto.org/StatisticalProgram/WSDBStatProgramSeries.aspx?Language=E; http://unstats.un.org/unsd/tradeserv/EBOPS2002_eng.pdf)

6.3.2 High-tech exports

High-tech net exports (% of total net exports) | 2011

High-technology exports minus re-exports over total exports minus re-exports. See indicator 5.3.2 for details.

Source: United Nations, COMTRADE database; Eurostat 'High-technology' aggregations based on SITC Rev. 4, April 2009 (2007–12). (http://comtrade.un.org/; http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/htec_esms_an5.pdf)

6.3.3 Communications, computer and information services exports

Communications, computer and information services exports (% of total services exports) | 2011

Communication, computer and information services exports (% of total service exports) according to the Extended Balance of Payments Services Classification EBOPS 2002, including codes 245 Communications services (postal, courier services, and telecommunications services), and/or 262 Computer and information services, as a percentage of code 200 Total services.

Source: World Trade Organization, Trade in Commercial Services database, itself based on the International Monetary Fund fifth (1993) edition of the Balance of Payments Manual and Balance of Payments database (2005–11). (http://stat.wto.org/StatisticalProgram/WSDBStatProgramSeries.aspx?Language=E; http://unstats.un.org/unsd/tradeserv/EBOPS2002_eng.pdf)

6.3.4 Foreign direct investment net outflows

Foreign direct investment, net outflows (% of GDP) | 2011

Net outflows of investment to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net outflows of investment from the reporting economy to the rest of the world and is divided by GDP.

Source: International Monetary Fund, International Financial Statistics and data files, and World Bank and OECD GDP estimates; extracted from World Bank World Development Indicators database (2005–11). (http://data.worldbank.org/)

7 Creative outputs

7.1 Intangible assets

7.1.1 National office resident trademark registrations

Number of trademark registrations issued to residents by the national office (per billion PPP$ GDP) | 2011

Number of trademark registrations at the national trademark office, based on equivalent class counts. Data are scaled by PPP$ GDP (billions). A 'trademark' is a distinctive sign that identifies certain goods or services as those produced or provided by a specific person or enterprise. The holder of a registered trademark has the legal right to exclusive use of the mark in relation to the products or services for which it is registered. The owner can prevent unauthorized use of the trademark, or a confusingly similar mark, so as to prevent consumers and the public in general from being misled. Unlike patents, trademarks can be maintained indefinitely by paying renewal fees. The procedures for registering trademarks are governed by the rules and regulations of national and regional IP offices. Trademark rights are limited to the jurisdiction of the authority that registers the trademark. Resident trademark registrations are based on equivalent class counts. 'Class count' refers to the number of classes specified in a trademark registration. In the international trademark system and at certain offices, an applicant can file a trademark application that specifies one or more of the 45 goods and services classes of the Nice Classification. Offices use either a single- or multi-class filing system. For example, the offices of Japan, the Republic of Korea, and the United States of America (USA) as well as many European offices have multi-class filing systems. The offices of Brazil, China, and Mexico follow a single-class filing system, requiring a separate application for each class in which applicants seek trademark protection. To capture the differences in application numbers across offices, it is useful to compare their respective registration class counts. 'Equivalent registrations' refers to registrations at regional offices and are equivalent to multiple registrations, one in each of the states that is a member of those offices. To calculate the number of equivalent registrations for regional office data, each registration is multiplied by the corresponding number of member states.

Source: World Intellectual Property Organization, WIPO Statistics Database; International Monetary Fund World Economic Outlook 2012 database (PPP$ GDP) (2004–11). (http://www.wipo.int//ipstats/; http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx)

7.1.2 Madrid system trademark registrations by country of origin

Number of international trademark registrations issued through the Madrid system by country of origin (per billion PPP$ GDP) | 2012

Number of international trademark registrations by country of origin under the WIPO-administered Madrid system. Data are reported for PCT member countries only, and scaled by PPP$ GDP (billions). 'Trademark' is defined in the description of indicator 7.1.1. The Madrid System for the International Registration of Marks, established under the Madrid Agreement and the Madrid Protocol and administered by WIPO, makes it possible for an applicant to register a trademark in a large number of countries by filing a single application at their national or regional IP office that is party to the system. The Madrid system simplifies the process of multinational trademark registration by reducing the requirement to file separate applications at each office. It also simplifies the subsequent management of the mark, since it is possible to record changes or to renew the registration through a single procedural step. Registration through the Madrid system does not create an 'international' trademark, and the decision to register or refuse the trademark remains in the hands of national and/or regional office(s). Trademark rights are limited to the jurisdiction of the trademark registration office(s).

Source: World Intellectual Property Organization, WIPO Statistics Database; International Monetary Fund World Economic Outlook 2012 database (PPP$ GDP) (2010–12). (http://www.wipo.int//ipstats/; http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx)

7.1.3 ICTs and business model creation

Average answer to the question: To what extent are information and communication technologies creating new business models, services and products in your country? [1 = not at all; 7 = a significant extent]† | 2012

Source: World Economic Forum, Executive Opinion Survey 2011–2012 (2011–12). (https://wefsurvey.org)

7.1.4 ICTs and organizational models creation

Average answer to the question: To what extent are information and communication technologies creating new organizational models (e.g., virtual teams, remote working, telecommuting) within businesses in your country? [1 = not at all; 7 = a significant extent]† | 2012

Source: World Economic Forum, Executive Opinion Survey 2011–2012 (2011–12). (https://wefsurvey.org)

7.2 Creative goods and services

7.2.1 Audiovisual and related services exports

Audiovisual and related services exports (% of total services exports) | 2011

Audiovisual and related services exports (% of total service imports) according to the Extended Balance of Payments Services Classification EBOPS 2002—i.e., EBOPS code 288 Audiovisual and related services, as a percentage of code 200 Total services.

Source: World Trade Organization, Trade in Commercial Services database, itself based on the International Monetary Fund fifth (1993) edition of the Balance of Payments Manual and Balance of Payments database (2003–11). (http://stat.wto.org/StatisticalProgram/WSDBStatProgramSeries.aspx?Language=E; http://unstats.un.org/unsd/tradeserv/EBOPS2002_eng.pdf)

7.2.2 National feature films produced

Number of national feature films produced (per million population 15–69 years old)[a] | 2011

A film with a running time of 60 minutes or longer. It includes works of fiction, animation, and documentaries. It is intended for commercial exhibition in cinemas. Feature films produced exclusively for television broadcasting, as well as newsreels and advertising films, are excluded. Data are reported per million population 15–69 years old. For Cambodia, Cameroon, Gabon, Mauritius, Nigeria, and the United Republic of Tanzania: this indicator covers only feature films in video format; for Kazakhstan: only fiction and does not include the film production of private studios; for Poland: feature films with a running time of 75 minutes or longer; for the Russian Federation: does not include documentaries; for the United States of America: covers only feature films produced in the English language and does not include documentaries; and for Viet Nam: covers only fiction.

Source: UNESCO Institute for Statistics, UIS online database; United Nations, Department of Economic and Social Affairs, Population Division, World Population Prospects: The 2010 Revision (population data) (2005–11). (http://stats.uis.unesco.org; http://esa.un.org/unpd/wpp/Excel-Data/population.htm)

7.2.3 Daily newspapers circulation

Paid-for dailies average circulation (per thousand population 15–69 years old)[a] | 2009

Paid-for dailies total average circulation. 'Daily newspapers' are periodic publications mainly reporting events that have occurred in the 24-hour period before going to press (issued at least four times a week). Periodic publications are intended for the general public and mainly designed to be a primary source of written information on current events connected with public affairs, international questions, politics, etc. They may also include articles on literary or other subjects as well as illustrations and advertising. The average daily circulation includes the number of copies distributed both inside the country and abroad and either: (1) sold directly; (2) sold by subscription; or (3) mainly distributed free of charge. Data are reported per thousand population 15–69 years old.

Source: World Association of Newspapers and News Publishers, World Press Trends 2010; United Nations, Department of Economic and Social Affairs, Population Division, World Population Prospects: The 2010 Revision (population data) (2009–11). (www.wan-ifra.org; http://esa.un.org/unpd/wpp/Excel-Data/population.htm)

7.2.4 Creative goods exports

Creative goods exports (% of total goods exports) | 2011

Total value of creative goods exports, net of re-exports (current US$) over total value of goods exports, net of re-exports (current US$).

Source: United Nations, COMTRADE database; 2009 UNESCO Framework for Cultural Statistics, Table 3, International trade of cultural goods and services based on the 2007 Harmonised System (HS 2007) (2007–12). (http://comtrade.un.org; http://www.uis.unesco.org/culture/Documents/framework-cultural-statistics-culture-2009-en.pdf)

7.2.5 Printing and publishing output

Printing and publishing manufactures output (% of manufactures total output) | 2009

Publishing, printing, and reproduction of recorded media output (ISIC Rev. 3 code 22) as a percentage of total manufacturing output (ISIC rev.3 code D).

Source: United Nations Industrial Development Organization, Industrial Statistics Database, 2-digit level of International Standard Industrial Classification ISIC Revision 3 (INDSTAT4 2012) (2003–09). (www.unido.org/statistics.html; http://unstats.un.org/unsd/cr/registry/regcst.asp?cl=2)

7.3 Online creativity

7.3.1 Generic top-level domains (gTLDs)

Generic top-level domains gTLDs (per thousand population 15–69 years old) | 2012

A generic top-level domain (gTLD) is one of the categories of top-level domains (TLDs) maintained by the Internet Assigned Numbers Authority (IANA) for use in the Internet. Generic TLDs can be unrestricted (com, info, net, and org) or restricted—that is, used on the basis of fulfilling eligibility criteria (biz, name, and pro). Of these, the statistic covers the five generic domains biz, info, org, net, and com. Generic domains .name and .pro, and sponsored domains (arpa, aero, asia, cat, coop, edu, gov, int, jobs, mil, museum, tel, travel, and xxx) are not included. Neither are country-code top-level domains (refer to indicator 7.3.2). The statistic represents the total number of registered domains (i.e., net totals by December 2012, existing domains + new registrations – expired domains). Data are collected on the basis of a 4% random sample of the total population of domains drawn from the root zone files (a complete listing of active domains) for each TLD. The geographic location of a domain is determined by the registration address for the domain name registrant that is returned from a whois query. These registration data are parsed by country and postal code and then aggregated to any number of geographic levels such as county, city, or country/economy. The original hard data were scaled by thousand population 15–69 years old. For confidentiality reasons, only normalized values are reported; while relative positions are preserved, magnitudes are not.

Source: ZookNIC Inc; United Nations, Department of Economic and Social Affairs, Population Division, World Population Prospects: The 2010 Revision (population data). (http://www.zooknic.com; http://esa.un.org/unpd/wpp/Excel-Data/population.htm)

7.3.2 Country-code top-level domains (ccTLDs)

Country-code top-level domains ccTLDs (per thousand population 15–69 years old) | 2012

A country-code top-level domain (ccTLD) is one of the categories of top-level domains (TLDs) maintained by the Internet Assigned Numbers Authority (IANA) for use in the Internet. Country-code TLDs are two-letter domains especially designated for a particular economy, country, or autonomous territory (there are 324 ccTLDs, in various alphabets/characters). The statistic represents the total number of registered domains (i.e., net totals by December 2012, existing domains + new registrations – expired domains). Data are collected from the registry responsible for each ccTLD and represent the total number of domain registrations in the ccTLD. Each ccTLD is assigned to the country with which it is associated rather than based on the registration address of the registrant. ZookNIC reports that, for the ccTLDs it covers, 85–100% of domains are registered in the same country; the only exceptions are the ccTLDs that have been licensed for commercial worldwide use. Of this year's GII sample of countries, this is the case for the ccTLDs of the following economies: Armenia am, Austria at, Belgium be, Belarus by, Canada ca, Switzerland ch, Colombia co, Denmark dk, Spain es, Finland fi, India in, Iran, Islamic Rep. ir, Iceland is, Italy it, Lao PDR la, Latvia lv, Moldova md, Montenegro me, Mongolia mn , Mauritius mu , Nicaragua ni, Serbia rs, and Slovenia si (this list is based on www.wikipedia.org). Data are reported per thousand population 15–69 years old. For confidentiality reasons, only normalized values are reported; while relative positions are preserved, magnitudes are not.

Source: ZookNIC Inc; United Nations, Department of Economic and Social Affairs, Population Division, World Population Prospects: The 2010 Revision (population data) (2003–12). (http://www.zooknic.com; http://esa.un.org/unpd/wpp/Excel-Data/population.htm)

7.3.3 Wikipedia monthly edits

Wikipedia monthly page edits per adult (per population 15–69) | 2012

Data extracted from Wikimedia Traffic Analysis Report, Wikipedia Page Edits per Country, Overview on the portal www.wikipedia.org. The count of monthly page edits data is based on a 1:1,000 sampled server log (squids), averages of quarterly reports. Countries are included only if the number of page edits in the period exceeds 100,000 (100 matching records in 1:1,000 sampled log). Page edits by bots are not included. IP addresses that occur more than once on a given day are discarded for that day. A few false negatives are taken for granted. Data are reported per million population 15–69 years old.

Source: Wikimedia Foundation; United Nations, Department of Economic and Social Affairs, Population Division, World Population Prospects: The 2010 Revision (population data) (2010–12). (http://stats.wikimedia.org/wikimedia/squids/SquidReportsCountriesLanguagesVisitsEdits.htm; http://esa.un.org/unpd/wpp/Excel-Data/population.htm)

7.3.4 Video uploads on YouTube

Number of video uploads on YouTube (scaled by population 15–69 years old)* | 2012

Total number of video uploads on YouTube, per country, scaled by population 15–69 years old. The raw data are survey based: the country of affiliation is chosen by each user on the basis of a multi-choice selection. This metric counts all video upload events by users. For confidentiality reasons, only normalized values are reported; while relative positions are preserved, magnitudes are not.

Source: Google, parent company of YouTube; United Nations, Department of Economic and Social Affairs, Population Division, World Population Prospects: The 2010 Revision (population data). (www.youtube.com; http://esa.un.org/unpd/wpp/Excel-Data/population.htm)

Appendix IV

Technical Notes

Technical Notes

Audit by the Joint Research Centre of the European Commission

The Joint Research Centre (JRC) of the European Commission has researched extensively on the complexity of composite indicators ranking economies' performances along policy lines. For the third consecutive year since 2011, the JRC has agreed to perform a thorough robustness and sensitivity analysis of the Global Innovation Index (GII) given some structural changes made by the GII developing team on the list of indicators (see Table 1 of Annex 2 to Chapter 1 for more details).

An earlier version of the 2013 GII model was submitted to the JRC in April 2013. The recommendations and flexibilities allowed by the JRC preliminary audit were taken into account in the final version of the GII model and are explained below as appropriate.

A final audit was performed in May on that last model, the results of which are included in Annex 3 to Chapter 1.

Composite indicators

The GII relies on seven pillars. Each pillar is divided into three sub-pillars. Each sub-pillar is composed of three to six individual indicators. Each sub-pillar score is calculated as the weighted average of its individual indicators. Each pillar score is calculated as the weighted average of its sub-pillar scores.

In 2012 and again this year, the notion of weights as 'importance coefficients' was discarded to ensure a greater statistical coherence of the model, following the recommendations of the JRC.[1]

The GII includes three indices and one ratio:

1. The Innovation Input Sub-Index is the simple average of the first five pillar scores.
2. The Innovation Output Sub-Index is the simple average of the last two pillar scores.
3. The Global Innovation Index is the simple average of the Input and Output Sub-Indices.
4. The Innovation Efficiency Ratio is the ratio of the Output Sub-Index over the Input Sub-Index.

Country/economy rankings are provided for indicator, sub-pillar, pillar, and index scores.

The Innovation Efficiency Ratio serves to highlight those economies that have 'achieved more with less' and those that lag behind in terms of fulfilling their innovation potential. In theory, assuming that innovation results go hand in hand with innovation enablers, efficiency ratios should evolve around the number one. This measure thus allows us to complement the GII by providing an insight that should be neutral to the development stages of economies.[2]

Individual indicators

The model includes 84 indicators, which fall within the following three categories:

1. quantitative/objective/hard data (60 indicators),
2. composite indicators/index data (19 indicators), and
3. survey/qualitative/subjective/soft data (5 indicators).

Hard data

Hard data series (60 indicators) are drawn from a variety of public and private sources such as United Nations agencies (the United Nations Educational, Scientific and Cultural Organization, the World Intellectual Property Organization), the World Bank, Thomson Reuters, and IHS Global Insight.

Indicators are often correlated with population, gross domestic product (GDP), or some other size-related factor; they require scaling by some relevant size indicator for economy comparisons to be valid. Most indicators are scaled at the source or do not need to be scaled; for the rest, the scaling factor was chosen to represent a fair picture of economy differences. This affected 31 indicators, which can be broadly divided into five groups:

1. Indicators 4.1.3 and 6.2.3, which come in current US dollars, were scaled by GDP in current US dollars.[3]

2. The count variables 3.3.3, 4.2.4, 5.2.4, 5.2.5, 6.1.1, 6.1.2, 6.1.3, 6.1.4, 6.2.4, 7.1.1, and 7.1.2 were scaled by GDP in purchasing power parity current international dollars (PPP$ GDP). This choice of denominator was dictated by a willingness to appropriately account for differences in development stages; in addition, scaling these variables by population would improperly bias results to the detriment of economies with large young or large ageing populations.[4]

3. Variables 5.1.6, 7.2.2, 7.2.3, 7.3.1, 7.3.2, 7.3.3, and 7.3.4 were scaled by population (20–34 years old for 5.1.6, and 15–69 years old for the rest).[5]

4. Variable 3.2.1, Electricity output in kWh per capita, was scaled by population to be consistent with 3.2.2, Electricity consumption in kWh per capita, which is scaled at the source by the International Energy Agency.

5. Sectoral indicators 5.3.1, 5.3.2, 5.3.3, 6.2.5, 6.3.1, 6.3.2, 6.3.3, 7.2.1, 7.2.4, and 7.2.5 were scaled by the total corresponding to the particular statistic.[6]

Indices

Composite indicators come from a series of specialized agencies and academic institutions, such as the World Bank, the International Telecommunication Union (ITU), the UN Public Administration Network (UNPAN), and Yale University and Columbia University. Statisticians discourage the use of an 'index within an index' on two main grounds: the distorting effect of the use of different computing methodologies and the risk of duplicating variables. The normalization procedure partially solves for the former (more on this below). To avoid incurring the mistake of including a particular indicator more than once (directly and indirectly through a composite indicator), only indices with a narrow focus were selected (19 in total).

Any remaining downside is outweighed by the gains in terms of model parsimony, acknowledgement of expert opinion, and focus on multi-dimensional phenomena that can hardly be captured by a single indicator.[7]

Survey data

Survey data are drawn from the World Economic Forum's Executive Opinion Survey (EOS). Survey questions are drafted to capture subjective perceptions on specific topics; five EOS questions were retained to capture phenomena strongly linked to innovative activities for which hard data either do not exist or have low economy coverage.

Country/economy coverage and missing data

This year's GII covers 142 economies, which were selected on the basis of the availability of data. Economies with a minimum indicator coverage of 53 indicators out of 84 (63%) and with scores for at least two sub-pillars per pillar were retained. These criteria were determined jointly with the JRC in 2011. The last record available for each economy was considered, with a cut-off at year 2003. For the sake of transparency and replicability of results, no additional effort was made to fill missing values. Missing values are indicated with 'n/a' and are not considered in the sub-pillar score. However, the JRC audit assessed the robustness of the GII modelling choices (i.e., no imputation of missing data, fixed predefined weights, and arithmetic averages) by imputing missing data, applying random weights, and using geometric averages. Since 2012, on the basis of this assessment, a confidence interval is provided for each ranking in the GII as well as the Input and Output Sub-Indices (see Annex 2 to Chapter 1).

Treatment of series with outliers

Potentially problematic indicators with outliers that could polarize results and unduly bias the rankings were treated with the rules listed below, following the recommendations of the JRC. This affected 34 hard data indicators.

First rule: Selection

The 34 problematic indicators were identified by a combination of skewness and kurtosis statistics:

- absolute value of skewness greater than 2, *and*
- kurtosis greater than 3.5.[8]

Second rule: Treatment

Series with one to four outliers (23 cases) were winsorised: The values distorting the indicator distribution were assigned the next highest value, up to the level where skewness and/or kurtosis entered within the ranges specified above.[9]

For series with five or more outliers (11 cases), skewness and/or kurtosis entered within the ranges specified above after multiplication by a given factor f and transformation by natural logs.[10] Since only 'goods' were affected (i.e., indicators for which higher values indicate better outcomes, as opposed to 'bads'), the formula used was:

$$\ln\left[\frac{(\max \times f - 1)\ (\text{economy value} - \min)}{\max - \min} + 1\right]^{11}$$

where 'min' and 'max' are the minimum and maximum indicator sample values.

Normalization

The 84 indicators were then normalized into the [0, 100] range, with higher scores representing better outcomes. Normalization was made according to the min-max method, where the min and max values were given by the minimum and maximum indicator sample values respectively, except for index and survey data, for which the original series' range of values was kept as min and max values (for example, [1, 7] for the World Economic Forum Executive Opinion Survey questions; [0, 100] for World Bank's World Governance Indicators; [0, 10] for ITU indices, etc.). The following formula was applied:

- **Goods:**

$$\frac{\text{economy value} - \min}{\max - \min} \times 100$$

- **Bads:**

$$\frac{\max - \text{economy value}}{\max - \min} \times 100$$

Notes

1 Paruolo et al. (2013) show that a theoretical inconsistency exists between the real theoretical meaning of weights and the meaning generally attributed to them by the standard practice in constructing composite indicators that use them as importance coefficients in combination with linear aggregation rules. The approach followed in the GII this year is to assign weights of 0.5 or 1.0 to each component in a composite to ensure the highest correlations between them (i.e., indicator/sub-pillar, sub-pillar/pillar, etc.). Three sub-pillars (6.1 Knowledge creation, 7.2 Creative goods and services, and 7.3 Online creativity) and 27 indicators (1.2.1, 1.2.2, 2.1.4, 2.2.1, 2.2.3, 2.2.4, 3.2.1, 3.2.2, 5.1.3, 5.1.4, 5.1.5, 5.1.6, 5.2.1, 5.2.2, 5.2.4, 5.2.5, 5.3.1, 6.1.1, 6.1.2, 6.1.4, 6.1.5, 6.2.2, 6.2.3, 6.2.4, 6.2.5, 7.2.2, and 7.2.3) are weighted 0.5; the rest have a weight of 1.

Five indicators with Pearson correlation coefficients with their respective sub-pillar scores below 0.5 were kept in the model to ensure a conceptual coherence (as opposed to a statistical coherence) in the belief that some cyclical (as opposed to structural) dimension might be at the source of their behaviour as 'noise': 3.2.4 Gross capital formation; 4.3.3 Intensity of local competition; 5.2.3 Gross expenditure on research and development (GERD) financed by abroad; 6.2.1 Growth rate of GDP per person engaged; and 6.3.4 Foreign direct investment (FDI) net outflows.

2 To account for differences in development, other composite indicators use weighting schemes differentiated by income level.

3 These indicators are Gross loan portfolio of microfinance institutions (4.1.3) and total computer software spending (6.2.3).

4 These count variables are mainly indicators that increase disproportionately with economic growth. They include: ISO 14001 environmental (3.3.3) and ISO 9001 quality (6.2.4) certificates issued; venture capital (4.2.4) and joint venture and strategic alliance (5.2.4) deals; Patent Cooperation Treaty (PCT) published patent family applications filed in at least three offices (5.2.5); resident patent applications at the national office (6.1.1) and at the PCT (6.1.2); national office resident utility model applications (6.1.3); publications in scientific and technical journals (6.1.4); national office resident trademark registrations (7.1.1); and trademark registrations under the Madrid System by country of origin (7.1.2).

5 These variables are GMAT test takers (5.1.6); national feature films (7.2.2); paid-for-dailies circulation (7.2.3); generic (7.3.1) and country-code (7.3.2) top-level Internet domains; Wikipedia monthly edits (7.3.3); and video uploads on YouTube (7.3.4).

6 Royalty and license fees payments (5.3.1) and communication, computer, and information services imports (5.3.3) were scaled by total services imports; high-tech goods imports minus re-imports by total imports minus re-imports (5.3.2); high-tech and medium-high-tech output (6.2.5), and printing and publishing output (7.2.4) by total manufactures output; royalty and license fees receipts (6.3.1), communication, computer, and information services exports (6.3.3) and audio-visual and related services exports (7.2.1) by total service exports; high-tech goods exports minus re-exports (6.3.2) and creative goods exports minus re-exports (7.2.5) by total exports minus re-exports. Refer to Annex 1 of Chapter 1 and Appendix III for details.

7 For example, GII sub-pillar 3.1 Information and communication technologies (ICT) is composed of four indices. ITU's ICT Access and Use sub-indices are components of ITU's ICT Development Index together with an ICT skills sub-index that was not considered, as it duplicates GII pillar 2. Similarly, the Online Service Index is a component of UNPAN's E-Government Development Index together with two indices on Telecommunication Infrastructure and Human Capital that were not considered, as they duplicate GII pillars 3 and 2, respectively. The e-Participation Index was developed separately by UNPAN in 2010.

8 Based on Groeneveld and Meeden, 1984, which sets the criteria of absolute skewness above 1 and kurtosis above 3.5. The skewness criterion was relaxed to account for the small sample at hand (142 economies).

9 This distributional issue affects the following variables: 3.2.2, 4.1.2, 4.2.2, 5.3.2, 7.1.1 (1 outlier) 3.2.1, 3.3.3, 6.1.5, 6.2.4, 7.1.2, 7.2.4 (2 outliers); 2.2.4, 4.1.3, 4.2.3, 6.1.1, 6.1.3, 6.2.2, 7.3.1 (3 outliers); and 1.2.3, 5.2.4, 5.3.1, 5.3.4 (4 outliers). A last minute recomputation affecting nine economies led 6.3.3 to appear with five winsorized outliers.

10 This distributional issue affects variables 2.2.3, 5.1.6, 6.1.2, 6.3.1, 7.2.2, 7.3.2 (factor f of 1); 5.2.5, 6.3.4, 7.2.1 (factor f of 10); 4.2.4, 7.2.5 (factor f of 100).

11 The corresponding formula for bads is:

$$\ln\left[\frac{(\max \times f - 1) \times (\max - \text{economy value})}{\max - \min} + 1\right]$$

These formulas achieve two things: converting all series into 'goods' and scaling the series to the range [1, max] so that natural logs are positive starting at 0.

References

Groeneveld, R. A. and G. Meeden. 1984. 'Measuring Skewness and Kurtosis'. *The Statistician* 33: 391–99.

Paruolo P., M. Saisana, and A. Saltelli. 2013. 'Ratings and Rankings: Voodoo or Science?' *Journal of the Royal Statistical Society* A 176(2), doi: 0964–1998/13/176000.

Appendix V

About the Authors

About the Authors

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Although the first half of 2013 has seen a pronounced economic uptick, the global recovery is not as strong as anticipated last year. Economic growth in emerging markets and high-income economies is uneven: growth prospects for many low- and middle-income economies continue to be good, but many high-income economies continue to struggle towards recovery.

Economic policy action is still focused on finding the right balance between reducing debt and supporting demand through stimulus spending. But questions remain: Where will future growth come from to drive the global economy? Where will future jobs come from? In this context, the importance of innovation cannot be emphasized enough. It is the policies fostering long-term output growth—especially policies that promote innovation—that can lay the foundation for future growth, improved productivity, and better jobs.

To guide polices and to help overcome divides, metrics are needed to assess innovation and policy performance. For this purpose, *The Global Innovation Index 2013: The Local Dynamics of Innovation* is timely and relevant. The Global Innovation Index (GII) helps to create an environment in which innovation factors are continually evaluated. It provides a key tool and a rich database of detailed metrics for 142 economies, which represent 94.9% of the world's population and 98.7% of global GDP.

Innovative countries (with the exception of a few small economies or city states) are rarely able to achieve uniformly high levels of achievements along all the different dimensions of the GII model. Instead, many innovation capabilities are developed in local ecosystems that revolve around particular cities, clusters, or regions. Against this background, it is only appropriate that the GII 2013 focuses on the local dynamics of innovation.

Launched by INSEAD in 2007, the GII report is now co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations. This year, the GII draws on the support and expertise of its Knowledge Partners Booz & Company, the Confederation of Indian Industry, du, and Huawei, as well as an Advisory Board of 14 eminent international experts. The Joint Research Centre (JRC) of the European Commission again performed a thorough robustness and sensitivity analysis of the index for the third consecutive year.

The GII is primarily concerned with improving the 'journey' towards better measuring and understanding innovation and with identifying targeted policies, good practices, and other levers that can foster innovation. Written in a nontechnical language and style, the GII appeals to diverse groups including policy makers, business leaders, academics, and different organizations of civil society.

The full report can be downloaded at www.globalinnovationindex.org.

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