

# **OECD Review of Telecommunication Policy and Regulation in Colombia**

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## Foreword

This study was carried out by the OECD Directorate for Science, Technology and Industry (DSTI) under the auspices of the Committee on Digital Economy Policy (CDEP, formerly known as the Information, Computer and Communications Policy Committee, “ICCP Committee”) and the Working Party of Communication Infrastructure and Services Policy (CISP Working Party). It was requested by the Government of Colombia, through the Ministry for Information and Communication Technology (*Ministerio de Tecnologías de la Información y las Comunicaciones*, MINTIC) and the Communications Regulation Commission (*Comisión de Regulación de Comunicaciones*, CRC), both being in charge of representing Colombia at the CDEP and the CISP Working Party.

The OECD review of telecommunication policy and regulation draws on responses by the Colombian authorities to a questionnaire and on the results of an extensive series of interviews with major communication stakeholders during a fact-finding mission in Colombia. The report was jointly peer reviewed by the CDEP and the CISP Working Party on 11 December 2013, with Ms. Tracey Weisler (Federal Communications Commission, FCC, United States) and Dr. Bengt Molleryd (Postal and Telecommunications Authority, PTS, Sweden) as the lead peer reviewers. It was finalised in January 2014 and reflects developments up to that time.

The review was drafted by Mr. Agustín Díaz-Pinés and Ms. Alexia González Fanfalone, both economists at the Information, Communications and Consumer Policy Division (ICCP) in DSTI, with contributions from Dr. Sam Paltridge, Head of the Telecommunications Unit (DSTI/ICCP), Dr. Rohan Samarajiva, Chair, LIRNEasia, and Dr. Ernesto Flores-Roux, CIDE, Mexico.

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## Executive summary

### Introduction

Telecommunication networks and services and, more generally, information and communication technologies (ICTs) play an increasingly important role in economies and societies. Colombia has rightly recognised the importance of ICT deployment and adoption for increased economic growth and productivity. ICTs, moreover, can also assist in bridging the gap between the rich and the poor and promote inclusive development. In Colombia, telecommunication and ICTs play a major role in the 2010-14 National Development Plan (*Prosperidad para Todos*), through the country's flagship national ICT Plan (*Plan Vive Digital*). This Plan represents an important milestone in Colombia's ICT policies: it is well resourced, has high political visibility and covers both the demand and the supply side of ICTs.

The enactment of Law 1341 of 2009 (hereafter named the ICT Law) represents a major turning point in Colombia's telecommunication policy and regulation, following the liberalisation of telecommunication services in 1994. The ICT Law provided the Colombian authorities with advanced instruments to curb market power in fixed, mobile, broadband and pay-television markets. Attractive conditions have been provided for market entry by adopting a "unique licensing approach" that only requires registration, which has lowered administrative entry barriers, even though television services still need a specific license.

While Colombia has made significant progress in improving its regulatory framework, stronger competition in mobile and fixed markets is needed in order to increase adoption rates and extend the benefits of telecommunication services to all Colombians. The largest mobile operator currently holds some 60% of the mobile market while some fixed operators have dominant positions at the local and regional level. Although the regulator (*Comisión de Regulación de Comunicaciones, CRC*) is aware of most of these concerns, it can only play a critical role if made truly independent from the government (i.e. two out of five CRC commissioners currently belong to the government) and be granted full enforcement and sanctioning powers, which it currently lacks.

The Colombian authorities are well aware of the need to promote the adoption of ICTs throughout the economy and society, by addressing both the supply and the demand side of ICTs. Much remains to be done to improve the quality and reach of telecommunication infrastructure. In this respect, the government has launched the "National Fibre Network", which should help improve broadband coverage by bringing fibre backhaul connectivity to all Colombian municipalities. This should decrease the costs of providing fixed broadband services to end-users, as well as facilitating the deployment of "4G" mobile networks.

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*The recommendations put forward in this report have been largely drawn up from good practices in OECD countries, most of which experienced similar concerns with respect to regulation of telecommunication markets.*

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### ***Assessment of current challenges***

Colombia's telecommunication regulatory framework is relatively advanced, in that the ICT law and secondary legislation already include most regulatory instruments needed to curb situations of dominance in telecommunication markets. For example, the current framework includes a comprehensive market definition and analysis framework and the ability to impose wholesale obligations on dominant operators (i.e. asymmetric regulation), potentially including local loop unbundling.

This framework, however, suffers from a fundamental flaw: it has not achieved an effective separation between regulation and policy making: two out of five commissioners of the CRC belong to the central government, which raises serious doubts about the effective separation between policy and regulatory functions. It also increases the risk of political interference in the regulator's everyday activities. These concerns are exacerbated by the government's significant share in the second largest operator in the country.

Moreover, the regulator does not currently have any enforcement, monitoring or sanctioning powers, which provides little assurance that its regulations will be observed. Enforcement and sanctioning powers, currently under the Ministry of ICTs (*Ministerio de Tecnologías de la Información y las Comunicaciones*, MINTIC), should be transferred to the CRC. Meaningful fines should be put in place in order to deter operators from not complying with regulatory decisions.

Notwithstanding the strengths of the current regulatory framework, fixed telephony and broadband adoption levels are far from those that would be expected in a vibrant, competitive market. Market concentration in mobile and pay-television markets is high by OECD and regional standards (the largest player consistently holding some 60% of the mobile market). The same is true for most regional and local fixed line markets, where incumbent operators still hold dominant positions. Price levels remain high by OECD standards for most telecommunication services, when measured in purchasing power parity (PPP) terms, except for fixed voice services and some entry-level mobile and fixed broadband services. In addition, some concerns have been raised recently with respect to poor quality of mobile services, especially in urban areas.

Colombian authorities have issued measures to promote competition in mobile markets, such as off-net/on-net price regulation (to avoid anti-competitive use of "club effects"), lowering termination rates, as well as introducing asymmetries in such rates. Measures that tackle club effects are welcome and should be maintained. In addition, priority should be given to reducing mobile termination rates to efficient costs (i.e. a level close to zero), while phasing out asymmetries, as there exists a danger of promoting inefficiencies in those markets if termination rates remain above costs.

While Colombia has devoted a significant effort to tackling dominance in mobile markets, more could be done to promote efficiency and competition in fixed markets by advancing consolidation of local and regional fixed operators and strengthening competition through local loop unbundling and wholesale obligations. In addition,

Colombia lags in terms of fixed infrastructure, which is being partially addressed through the National Fibre Network.

Current measures should, however, be complemented by a clear strategy for the deployment of fibre networks, together with an improvement in the performance of Colombian Internet Exchange Points (IXPs) and backhaul markets. Colombia also faces serious barriers to the deployment of telecommunication infrastructure, for example, urban planning rules that often prevent or delay network deployment. The regulator should take measures to prevent municipalities from stopping or delaying network deployment. The CRC should also encourage or, if need be, mandate infrastructure sharing among telecommunication operators.

Efforts to promote telecommunication infrastructure deployment should be accompanied by a coherent taxation policy: Colombia should refrain from adding a “luxury” VAT tax for mobile services and should decrease the current obligation on operators to fund the ICT Fund (FONTIC), with a view to transitioning to funding from general government revenue. The current approach is far from optimal for a sector with positive spill-overs throughout the whole economy. This funding mechanism imposes a burden on the sector and potentially leads to inefficiencies.

After many years of discretionary spectrum assignment procedures, Colombia has firmly asserted its willingness to promote transparency and competition in spectrum markets, as was evident in the recent 4G auction that took place in June 2013. Care should be taken to continue to ensure that smaller players have access to sufficient spectrum resources, by putting in place spectrum caps or set-asides in auction design (i.e. reserved blocks for entrants), bearing in mind the balance between higher and lower spectrum bands. Including conditions such as the distribution of tablets in spectrum auction procedures can create distortions with the risk of reducing the cost-effectiveness of public funds. These programmes should be run independently from spectrum auctions.

Moreover, convergence is a challenge for every telecommunication regulator around the world, and should be further advanced in Colombia by considering a merger between the CRC and the Television Regulator (*Autoridad Nacional de Televisión*, or ANTV). This should put Colombia in a similar position to that of some OECD countries, where a unified television and telecommunications regulator facilitates the implementation of regulation in a convergent environment, for example by assessing the competitive impact of bundles including television services.

## **Main recommendations**

### ***Strengthening the powers and the independence of the regulator***

- The CRC should be reformed and be made truly independent from the government. No direct participation of the MINTIC or other government departments should be allowed on the CRC’s board. Industry funding of the CRC, independent of the MINTIC, should be maintained and the CRC should enjoy more flexibility for recruitment and budget management. The appointment term of CRC commissioners should be extended with duration of five or six years.
- The CRC should be granted powers to impose meaningful sanctions for non-compliance with telecommunication regulation. More generally, the CRC should be made responsible for the enforcement of regulation.

- Fines should be sufficiently high to act as a deterrent for operators against non-compliance with regulations or the use of delaying practices.
- The CRC should have the authority to conduct spectrum auctions or, at a minimum, be able to establish auction criteria (i.e. auction design) as they have implications for competition in mobile markets.
- The CRC and the ANTV should merge and create an independent converged regulator, with responsibility for communication and broadcasting markets.
- The CRC should have the authority to impose functional and, if necessary, structural separation of telecommunication operators. Dominant telecommunication operators should be required to adopt accounting separation standards.

### ***Promoting competition in telecommunication markets***

- The CRC should continue to address the serious competition concerns present in the mobile market, by effectively preventing anti-competitive use of off-net/on-net price differentials.
- Smaller players and new entrants should be given priority in new spectrum assignments in order to promote market competition. In particular, the upcoming 700 MHz auction should ensure that smaller players achieve the right balance between higher and lower frequencies.
- The CRC should take further steps to reduce mobile and fixed termination rates to approach zero, which should become a priority. They should be symmetrical, unless very recent market entry justifies the need for a transitory period with a higher rate for calls terminating on the network of a new entrant.
- The CRC should impose wholesale obligations for fixed broadband markets, such as wholesale broadband access and local loop unbundling for existing copper loops.
- Colombian authorities should not block consolidation trends in fixed line communications and should refrain from exerting political influence over the sector, that is not driven by market-based and efficiency considerations.

### ***Extending communication infrastructure and services***

- Requests for financial support for low-income households or citizens with special needs should be made directly through government transfers and not rely on geographical stratification tariff subsidies, which should be reformed for telecommunication services.
- The MINTIC should split initiatives that focus on different areas and avoid cross-subsidisation (e.g. using spectrum auctions to distribute tablets among citizens).
- Colombia should phase out the additional “luxury” value added tax (VAT) on telecommunication services (e.g. on mobile telephony services), at the earliest possible opportunity.
- The MINTIC should reduce the operators’ contribution to FONTIC. Steps should be taken to transition towards funding FONTIC through general government revenue.

- The MINTIC, in conjunction with the National Planning Department (*Departamento Nacional de Planeación* or DNP), should monitor and conduct a proper programme evaluation of current universal service/access initiatives. The MINTIC should monitor the balance in the support given to the supply and demand side of ICTs, through close monitoring to avoid mismatches and lack of co-ordination.

### ***Removing barriers to infrastructure deployment***

- The CRC and the MINTIC should further develop the code of good practice for the deployment of telecommunication infrastructure for municipalities, which harmonise urban planning rules (in Spanish *Planes de Ordenamiento Territorial* or POTs,) streamline procedures and reduce barriers to infrastructure deployment.
- Colombia should promote the development of Internet Exchange Points (IXPs), especially outside Bogotá, and ensure that barriers to entry (e.g. membership fees) to new as well as the existing IXP are as low as possible and do not constitute an obstacle for peering among Internet Service Providers (ISPs).
- The government should take the first step and play a model role by hosting government websites within Colombia given that at present many government websites are hosted outside Colombia.

### ***Promoting the consumer interest***

- The process for filing consumer complaints should be expedited, by reducing the timeframe and streamlining procedures to resolve consumer complaints. Moreover, the SIC should also handle complaints related to television services.
- Operators should clearly state the monthly payment that corresponds to a handset device for mobile contracts that involve a bundled sale.
- The Colombian authorities should impose ex – ante regulations for quality of service (QoS) issues fostering higher standards of transparency. Operators should deploy reliable measurement systems subject to audit by third parties. Authorities could also consider imposing minimum QoS requirements. Smaller players, such as Mobile Virtual Network Operators (MVNOs), should be exempt from certain obligations.
- The CRC should issue a regulation to enable fixed number portability.
- The CRC should issue rules to improve transparency in the provision of roaming services, in particular regarding pricing. Colombia should undertake steps included in the OECD Recommendation on International Mobile Roaming Services (2012).



## Chapter 1

### The telecommunication sector in Colombia

*This chapter describes the dimensions and main players in Colombia's telecommunication market, including fixed-line, mobile, broadband and pay-television, focusing on market size, penetration and competition. Mobile markets are highly concentrated as are fixed telephony and broadband equivalents at the local and regional level. Data are presented on investment, speed and price indicators, which show that Colombia significantly lags OECD countries in terms of broadband penetration and speeds and exhibits higher prices for most telecommunication services.*

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

## 1.1. Introduction

This report reviews policies and regulations in the telecommunication service sector in Colombia. It puts forward recommendations to further regulatory reform and stimulate market competition and investment in the sector, as a building block for the future development of the Colombian economy. It aims to help achieve a key goal of the government: the development of a knowledge-intensive society. Colombia, as have OECD countries, has recognised that the communications sector and, in particular, high-speed Internet access, provided by fixed and mobile broadband, represents a key infrastructure for improving productivity and economic growth. Indeed, Colombia's telecommunication law (ICT Law 1341 of 2009) recognises the wider importance of information and communication technologies in economic growth and enhancing the welfare of its citizens.

Colombia is considered an upper middle income country. However, as noted in OECD's Economic Survey 2013, per capita income is 70% below the OECD average (OECD, 2013a). The country's gross domestic product (GDP) for 2012 amounted to USD 497 billion in purchasing power parity terms (PPP), ranking fourth in the region after Argentina, Brazil and Mexico, making it the 28<sup>th</sup> world's largest overall.<sup>1</sup> Over the last decade the country's economic performance has been strong with an annual real GDP growth of at least 3.5 %, with the exception of 2009 when the economy grew by 1.7%. In 2012, the services sector accounted for 56% of GDP (value added), whereas the industrial and agricultural sectors accounted for 37.5% and 6.5% of GDP, respectively. Telecommunication services (including postal services) as a share of the country's GDP have remained stable above 3% for the period 2002-2012 period (the OECD average is 3.2%). Overall, the telecommunication sector has been one of the most dynamic parts of the Colombian economy exhibiting an annual growth rate of around 8% for the same period.

GDP growth is highly dependent on the oil industry and the economy is vulnerable to oil prices and exports (i.e. in 2012 oil and mining represented 7.7% of GDP and oil alone accounted for 44% of Colombia's total exports), and depends to a lesser extent on other commodities such as coal, coffee or gold.<sup>2</sup> Income distribution in Colombia is very unequal: the highest 10% of households account for 44% of household income, and in 2010 Colombia's GINI index was 0.559, high by world as well as regional standards. In 2012, Colombia's GDP per capita was approximately USD 10 590 at PPP and USD 7 750 at current prices. Unemployment remains high at 10.4% (2012), well above the OECD average. This rate is one of the highest in Latin America (the average for 2012 was 7%), although it has seen a decline since 2012.<sup>3</sup> In particular, unemployment among those aged 14-28 was 17.6% (Q3 2012) and is a major concern.<sup>4</sup> In addition, approximately one-third of the population is estimated to be below the poverty line.

Low labour productivity growth has been an important factor for the lag in growth of income per capita (OECD, 2013b) with productivity growth among the lowest in Latin America, and amounting to only 24% of United States labour productivity. With this in mind, the government views information and communication technologies (ICTs) as playing a key role in furthering economic growth, reducing the income gap, and lowering unemployment.

The telecommunication sector in Colombia is characterised by relatively rapid growth, in particular, in mobile services (voice and broadband). Since the early 1990s, when Colombia began the process of telecommunication market liberalisation, there has been significant progress in investment leading to infrastructure development, market



entry and the development of competition. Many firms are now beginning to offer triple-play bundles. The mobile sector has attained a relatively high penetration rate, just below the OECD average, taking into consideration the fact that many Colombians own more than one SIM card. The fixed sector has a low penetration rate and has exhibited a decrease in recent years. This reflects a trend in many countries where residential users replace fixed lines with mobile services to a greater or lesser extent depending on the attractiveness of the fixed broadband services available over those lines. Residential users represent over 84.3% of fixed lines and business below 15.7% (Q2 2013). The level of competition needs to be improved in fixed, mobile and broadband services, as further developments in broadband are required to ensure that the benefits of ICTs are fully exploited throughout the economy.

Colombia has a landmass of just over 1.1 million square kilometres (twice the size of France) and a population of about 47 million, making it the fifth largest country in Latin America (after Brazil, Argentina, Mexico and Peru), and the third most populated country in the region. Population density per square kilometre is low reflecting both the large size of the country (26<sup>th</sup> in the world) and the fact that 75% of the population lives in urban areas.

In addition, the population distribution in Colombia is unequal, which results in a high gap in access to ICTs between urban and rural areas. For instance, the district of Bogota accounts for 16% of the population and 35.2% of fixed lines, the municipality of Medellin accounts for 5.3% of the population and 10.8% of fixed lines, but large geographic areas such as Amazonia account for 0.13% of the population and only 0.03% of fixed lines.

In addition, the gap in ICT use between large and small firms is also high. For example, in the third quarter of 2012, only 20% of Colombian SMEs were connected to the Internet. Closing this gap is important given that 96.4% of firms in Colombia are microenterprises (OECD, 2013c). The government is well aware of the need and has taken a number of proactive measures to improve connectivity, such as “*MiPyME Digital*” aimed at SMEs.<sup>5</sup> It also understands that policy changes and regulatory reform can play a significant part in improving performance and attaining benchmarks comparable to those in OECD countries that follow good practices.

The Information and Communication Technology Law of Colombia (hereafter the ICT Law) was issued in 2009, and has been an important milestone in improving the telecommunication policy and regulatory framework, as well as implementing measures aimed to further market competition and liberalisation.<sup>6</sup> It plays the same role as a telecommunications law in OECD countries. While specific to the telecommunication sector, this law also places much emphasis on the importance of ICTs for citizens and the industry and highlights the importance of ensuring quality of access for ICT services. The law also recognises the importance of convergence in the communications sector. Law 1341 of 2009 expanded the Ministry’s portfolio to cover the entire ICT industry, in addition to telecommunications, increased the powers of the regulator (CRC) and created a specialised spectrum agency (ANE).

Colombian authorities have highlighted the importance of benchmarking telecommunication performance against developments in other Latin American countries as well as OECD economies. The aim is to ensure that the country keeps pace with change and draws ever closer to the best performers. In addition, the expansion of universal service has been prioritised, in particular, to develop access to broadband and thereby to digital technologies and services across the country.

## 1.2. The national context for telecommunication policies

Historically, Colombia had a number of local and regional monopoly providers of fixed telephony services, while “Telecom” (*Empresa Nacional de Telecomunicaciones*) had exclusive rights for national and international long distance services. Telecom was also the sole provider of local services in small towns and rural communities, given its universal service commitments. The revised Colombian Constitution of 1991, with its emphasis on economic deregulation, laid the groundwork for the opening up of the telecommunications market. Fixed market liberalisation began in 1993 and was followed by the opening of long-distance competition in 1998. The pre-liberalisation market structure resulted in a relatively large number of municipal local companies, often partially owned by local governments. This accounts for the high degree of government ownership in fixed-line operators. The mobile market, which started in 1994 on the basis of a three-region duopoly model, experienced rapid growth after the entry of a third operator in 2003.

The Public Utility Services Law (Law 142 of 1994), enacted as a result of the 1991 Constitution, aimed to ensure the efficient provision of utilities at equitable prices. It led to the creation of the Telecommunications Regulation Commission (*Comisión de Regulación de Telecomunicaciones*, or CRT, now the CRC), which was tasked with promoting competition, initially in the fixed telephony market. Law 142 of 1994 set down a framework for the provision of public services and defined the roles of regulatory bodies tasked to ensure competition and that operators meet certain quality standards, coverage requirements, efficient delivery of services, and the cross-subsidy requirement among varying population strata to ensure equity in service availability. The Ministry at that time (Ministry of Communications) retained responsibility for allocating frequencies and had control over the state-owned telecommunication operators.<sup>7</sup> Its activities were complemented by the National Planning Department (DNP), which set multi-sector development priorities to ensure effective use of resources; and the Superintendence of Residential Public Services, which, in conjunction with the Ministry of Economic Development, oversaw fixed line providers of rural service.

Colombia has recognised the economic and social opportunities enabled by ICTs and has taken steps to ensure that businesses and consumers can take advantage of these tools. Ineffective regulatory frameworks can impose an economic and social cost on economies. These burdens can be significant as highlighted in other OECD telecommunication reviews (OECD, 2012). In Colombia, Fedesarrollo estimated a welfare loss in the mobile sector equivalent to 0.77% of GDP in 2011, attributed to ineffective competition (Fedesarrollo, 2012).<sup>8</sup> The Colombian authorities have been prompt in responding with initiatives to address such concerns, adopting measures such as removing off-net/on-net call price differentials and decreasing mobile termination rates (although imposing asymmetric termination rates).

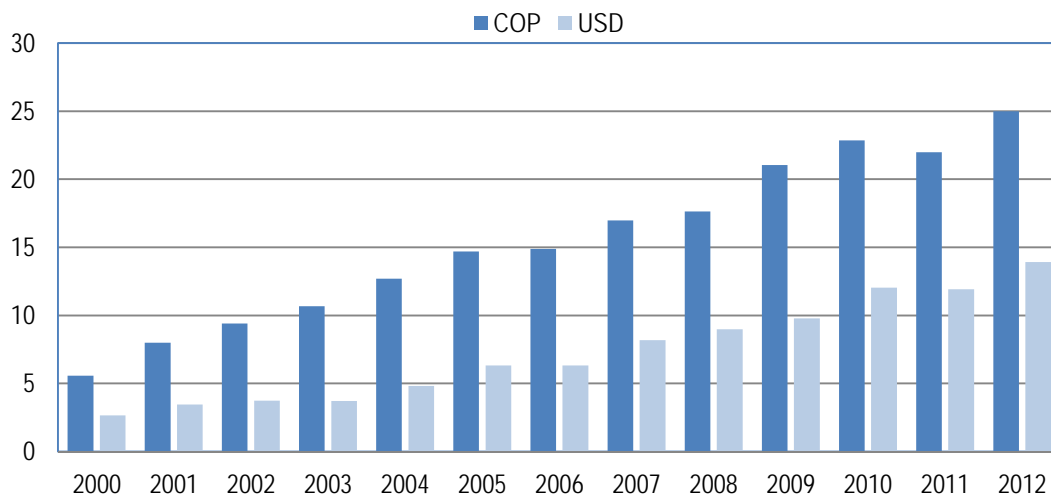
At the international level, Colombia was a signatory in 1998 to the Basic Telecommunications Agreement in the context of the World Trade Organisation (WTO).<sup>9</sup> It also entered into a Trade Promotion Agreement with the United States, which came into effect in May 2012 and included a chapter on telecommunications.<sup>10</sup> Colombia has signed treaties that include telecommunication-related instruments, such as free trade agreements with Canada, Chile, the European Union, Korea, Mexico and Mercosur, and has joined organisations such as the Andean Community (originally *Corporación Andina de Fomento*, CAF and is now named *Banco de Desarrollo de América Latina*) and the Inter-American Telecommunications Commission (CITEL) of the OAS (Organisation of American States).

### 1.3. Telecommunication market participants, market performance and the regulatory framework

In 2012, the telecommunication sector in Colombia generated revenue of USD 13.9 billion, up from USD 2.6 billion (Figure 1.1) in 2000. It is the third largest market in South America (after Brazil and Venezuela) with mobile services accounting for 40%. In revenue terms the market is slightly larger than those of Belgium or Portugal in the OECD (in 2010). ETB (*Empresa de Teléfonos de Bogotá*) is the largest fixed line carrier with 24.14% market share in terms of subscribers (Q3 2013), while Claro is the largest mobile operator in terms of revenue and number of subscribers (around 58% market share in terms of subscribers or 62% in terms of revenue in Q2 2013).

**Figure 1.1. Colombia telecommunications revenue**

COP trillion and USD billion



Source: ITU; CCIT for 2011 and 2012 (estimates).

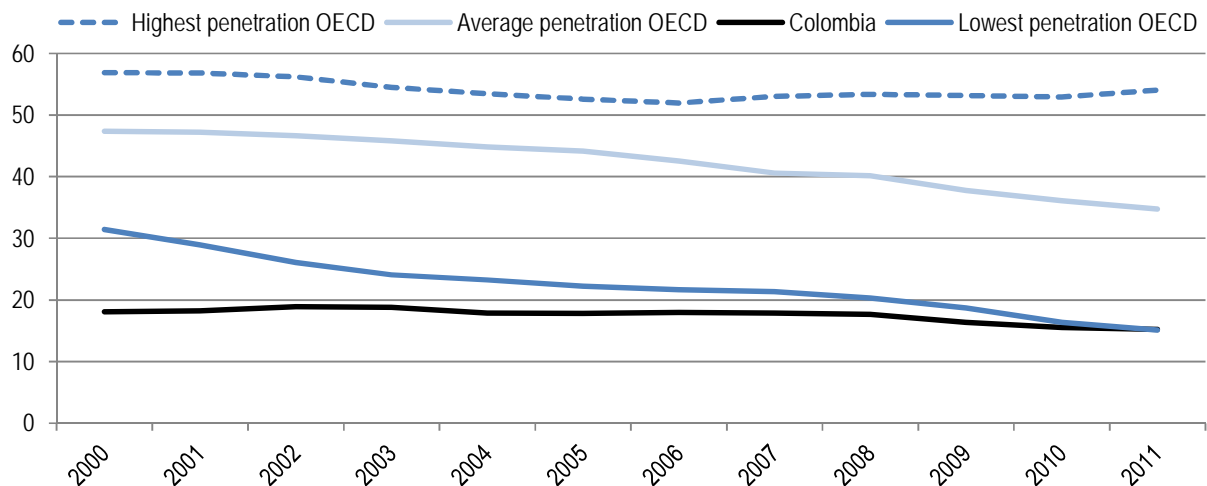
Colombia has a very concentrated mobile market, as the largest mobile network operator in the country has a similar market share (about 60%) to that of the largest mobile operator in Mexico (69%) and Switzerland (59.4%), both with the largest shares in the OECD (in 2011). In terms of fixed lines, the largest operator in Colombia has a lower overall national position with just 24% of market share. This is in large part because of the country's market configuration of the fixed segment. It is composed of municipal publicly-owned companies, and for historical reasons did not have a national state owned fixed network as was the case for many OECD countries. Setting aside market shares at the national level, each local provider has very high market shares where they are the incumbents, even though the CRC has to date not yet declared any dominant position and has included outgoing fixed and mobile voice in the same market, based on fixed-mobile substitution trends. Operators such as ETB and UNE-EPM hold two-thirds or more of the fixed lines in their regions.

Fixed broadband penetration in the Colombian market was 8% in December 2012 (in Q3 2013 it rose to 9.2%), far below the OECD average, which was 26.3%, and even lower than the lowest OECD fixed broadband penetration rate of 10.4% (Turkey) as of

that date.<sup>11</sup> This underlines the concerns expressed elsewhere in this report over the lack of consolidation in the fixed market, insufficient competition and barriers to infrastructure deployment, which altogether translate into challenges for those investing in “Next Generation Access Networks”. Even though broadband is defined in Colombia in terms of Internet connections with download speeds of at least 1 Mbps (the OECD baseline is 256 Kbps), this is not deemed to have a significant impact for comparative purposes. By the end of 2011 around 48% of broadband connections in Colombia exhibited a speed of 2 Mbps, and only 0.68% had a speed higher than 10 Mbps in that year (Figure 1.13). In comparison, 48% of the lines in the European Union advertised speeds of 10 Mbps or higher in January 2012 and only 8% had speeds below 2 Mbps.<sup>12</sup>

Penetration of fixed lines in Colombia was 14.3 per 100 inhabitants in Q3 2013 (15.19 by the end of 2011), among the lowest relative to the OECD, and also low compared to leading Latin American peers (see Table 1.1). This is partially explained by high population growth and the substitution of mobile services for fixed lines. However, given the decrease in fixed telephone lines across the OECD, the fixed line penetration rate in Colombia recently equalled that of the Slovak Republic, the OECD country with the lowest fixed penetration rate. As in many other countries, Colombia has also witnessed increasing fixed to mobile substitution (Figure 1.2). Although the average fixed line penetration rate is low, some major cities have penetration rates equal to a number of OECD countries. For example, Bogota has a fixed line penetration rate of 33% of inhabitants, and the second major city, Medellín, has a penetration rate of 31%. The three largest cities, Bogota, Medellín and Cali, account for 55% of fixed lines. The lower penetration reflects a lack of infrastructure and competition, to a greater or lesser extent across the country, associated with potential delays in development of services that require high-speed networks. Moreover, mobile communications, especially 4G, need significant investment in fixed infrastructure (e.g. backhaul infrastructure).

**Figure 1.2. Fixed access paths (per 100 inhabitants): Colombia compared to other OECD countries, end of 2011**



Sources: OECD (2013d), *OECD Communications Outlook 2013*, OECD Publishing, [http://dx.doi.org/10.1787/comms\\_outlook-2013-en](http://dx.doi.org/10.1787/comms_outlook-2013-en); CRC.

While the decreases in fixed line connections mirror trends in OECD countries, they started from a much lower baseline. At the same time, compared to other Latin American countries, Colombia seems to have lost ground against other countries that have maintained or even increased their fixed line penetration, such as Argentina, Brazil, Ecuador or Venezuela, which as Colombia, have also greatly increased mobile telephony penetration (Table 1.1).

**Table 1.1. Fixed line penetration, lines per 100 inhabitants, 2006 and 2011**

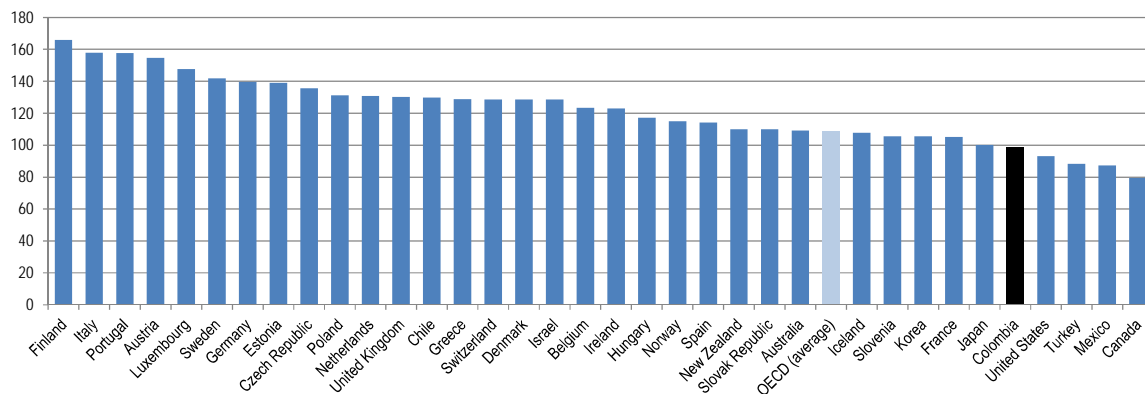
	2006	2011	CAGR 2006-2011 (penetration, %)
Argentina	24.24	24.29	0.04
Bolivia	7.16	8.73	4.04
Brazil	20.64	21.88	1.17
Chile	20.55	19.49	-1.05
Colombia	17.99	15.19	-3.33
Costa Rica	30.34	26.10	-2.97
Ecuador	13.02	15.07	2.97
Mexico	18.42	17.19	-1.37
Paraguay	5.51	5.62	0.40
Peru	9.18	11.08	3.83
Uruguay	29.66	28.55	-0.76
Venezuela	15.54	24.91	9.90
OECD average*	45.08	41.47	-1.66

*Note:* \*The ITU indicator “fixed telephone subscriptions” was used and includes: analogue fixed telephone lines, voice over broadband (VoB) subscriptions, fixed wireless local loop subscriptions, ISDN voice channel equivalents and fixed public payphones. Data from the ITU were used to render comparable figures from Latin American non-OECD member countries to the OECD average.

*Source:* ITU.

The experience of OECD countries with duopolies for mobile services was far from positive. As a result, additional players were allowed to enter the market to increase competition and drive growth. Colombia had regional mobile duopolies until 2003 and has experienced much improved growth rates with the entry of new players (Figures 1.3 and 1.4), particularly in the period following the entry of the third mobile operator.

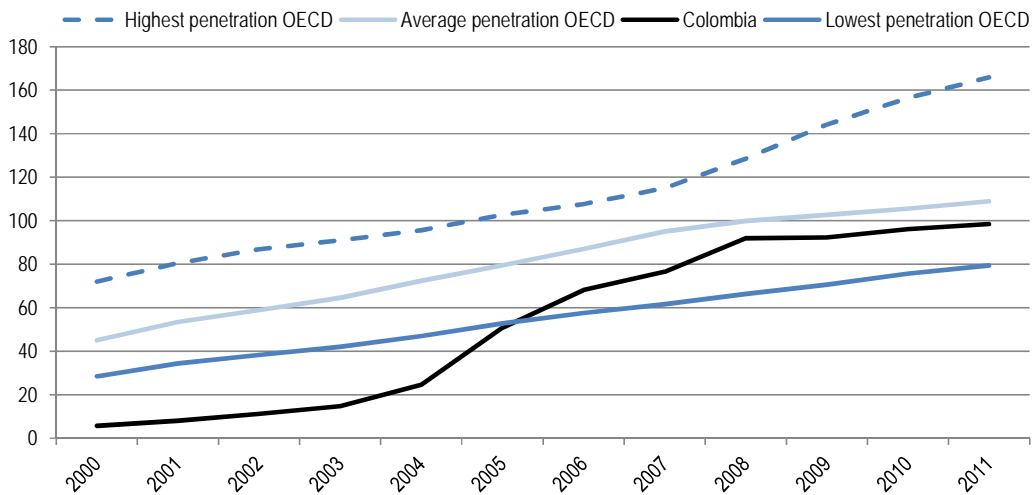
**Figure 1.3. Cellular mobile subscriptions per 100 inhabitants, end 2011**



*Sources:* OECD (2013d), *OECD Communications Outlook 2013*, OECD Publishing, [http://dx.doi.org/10.1787/comms\\_outlook-2013-en](http://dx.doi.org/10.1787/comms_outlook-2013-en); CRC.

Growth in the mobile sector has been mainly a result of expansion in prepaid subscriptions, which in previous few years have shown rapid growth. However, there has been a slight shift to post-paid subscriptions, which increased from 15% at the beginning of 2010 to 19% by the end of 2012, most likely associated with the increasing use of smartphones sold with post-paid plans.

**Figure 1.4. Mobile subscriptions per 100 inhabitants, Colombia compared to other OECD countries, end 2011**

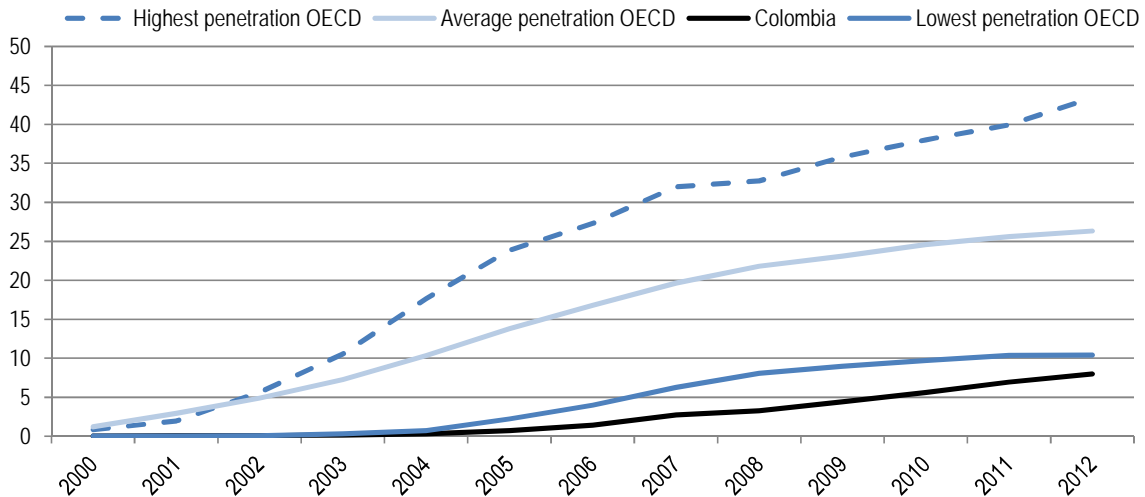


Sources: OECD (2013d), *OECD Communications Outlook 2013*, OECD Publishing, [http://dx.doi.org/10.1787/comms\\_outlook-2013-en](http://dx.doi.org/10.1787/comms_outlook-2013-en); CRC.

The growth in per capita broadband subscriptions has also lagged relative to OECD countries and, although growth increased after 2006 (Figure 1.5), it has been insufficient to close the gap with the OECD country with the lowest penetration (Turkey). Such a low fixed broadband penetration of 8% (Dec. 2012), reflects the concerns expressed in this report about the lack of consolidation in the fixed market, insufficient competition and barriers for infrastructure deployment. In addition, the fact that broadband penetration is concentrated in urban areas highlights the significant challenge to achieve coverage in rural areas as well as lower income population segments. All these factors taken as a whole translate into challenges for investing in Next Generation Access Networks. In this context, the national fibre network (see below) that brings backhaul and backbone connectivity to most heads of municipalities in Colombia, is a pivotal project.

While actual household uptake of fixed broadband is not directly measured by Figure 1.5 (number of lines per 100 inhabitants), this indicator has the advantage of being comparable across countries and relatively straightforward to obtain from operators. Colombia, such as Turkey and Mexico, has substantially larger households than the OECD average, which does not mean that the number of lines per 100 inhabitants can be directly corrected by a household size factor (as smaller households in Colombia are likely to have a higher broadband adoption than the average). Instead, fixed broadband uptake by households and businesses should be measured by surveys, according to well-established methodologies (OECD, 2011).

**Figure 1.5. Fixed broadband subscriptions per 100 inhabitants, Colombia compared to other OECD countries, end 2012**



Sources: OECD (2013d), *OECD Communications Outlook 2013*, OECD Publishing, [http://dx.doi.org/10.1787/comms\\_outlook-2013-en](http://dx.doi.org/10.1787/comms_outlook-2013-en); OECD Broadband Portal, <http://oe.cd/broadband>; CRC.

#### 1.4. Telecommunication markets: Developments in competition

The number of market participants in the Colombian telecommunication sector grew rapidly with market opening. Colombia's market liberalisation started in 1994 and was completed in 1999, passing from 26 telecom operators in 1993 to 40 in 1999 (CRT, 2000). In 2012, the market had 122 participants from the point of view of different communication services (Table 1.2).

**Table 1.2. Number of operators, 2012**

Infrastructure provision for the following services	Number of operators
PSTN	21
Cable	41
Fibre	20
Fixed wireless	30
Cellular mobile	4
MVNOs*	6

Note: \* As of May 2013, the number of MVNOs in Colombia was six: Uff!, Virgin Mobile, ETB, UNE/EPM (even they have some spectrum resources), Metrotel and Grupo Éxito. In addition, the number of cellular mobile operators will soon change as a result of the spectrum auction that took place in June 2013.

Source: OECD elaboration based on information reported by the CRC. The number of cellular mobile operators will be six as of early 2014.

#### *Market participants*

Prior to liberalisation of the telecommunication market a large number of individual players operated in distinct markets. These included local or regional fixed line monopolies, several of which were owned by municipalities, and the long distance/international operator, a separate company owned by the state. After liberalisation many of these local companies fell under public-private ownership and a number of mergers

and acquisitions by foreign market operators took place. At the same time, the initial mobile market structure with three regions and two companies per region inflated the number of companies.

Changes in regulations brought about a measure of consolidation resulting in a large number of players but with several dominant participants in the fixed, mobile and broadband markets. Fixed networks remain highly fragmented. Only a few former regional monopolies are able to profit from benefits of scale (e.g. Colombia Telecom, EPM and ETB) with many fixed line operators operating under 100 000 lines. While a few efficient providers below this size operate in OECD countries, there are undoubtedly advantages that arise from scale (e.g. natural economies of scale but also a higher bargaining power when purchasing from handset and network equipment providers). The real test of efficiency for these smaller companies is performance, and many have not expanded penetration to levels that might be expected. The largest operators, such as ETB and UNE-EPM, have achieved high fixed line penetration in major urban areas, but not in other cities or regions.

Two of the largest companies operating in Colombia, have recently launched unique brands for their products: Claro (América Móvil) and Movistar (Telefónica). These are used for all their fixed and mobile operations, including pay television services. Both are large multinational corporations present in most countries in the region and clearly take advantage of the benefits of scale. Table 1.3 shows the key market participants.

**Table 1.3. Key market participants in Colombia's telecommunication sector, May 2013**

Company name	Ownership	Market
Claro Colombia	América Móvil (99.4%)	Mobile telephony, mobile Internet
Telmex Colombia S.A	América Móvil (99.3%)	Fixed telephony, fixed Internet access, cable television
Colombia Telecomunicaciones (Telefónica Colombia)	Telefónica (70%), central government (30%). This represents the merger of TEM Colombia and Colombia Telecomunicaciones (Telecom), which took place in 2012. Prior to 2012, Colombia Telecomunicaciones was owned by the state (48%) and Telefónica (52%)	Fixed telephony, fixed Internet access, mobile telephony, mobile Internet, pay television (satellite)
Colombia Móvil S.A E.S.P. (Tigo)	Millicom (50% + 1 share), UNE-EPM (49.9%*), Medellín Municipality through EPM (*"Empresas Públicas de Medellín"). UNE-EPM has shares in Colombia Móvil (49.9%*), Edatel (56%), Emtelco (99.9%) and OSI & CTC (100%), Internexa (11%). EPM (UNE) is seeking a merger with Colombia Móvil (Tigo)*.	Mobile telephony, mobile Internet
UNE EPM Telecomunicaciones S.A.	Bogotá Municipality ("Distrito Capital de Bogotá") (88.4%).	Fixed telephony, fixed and mobile Internet, cable television
ETB	EPM (56%), Antioquia Department (19.8%)	Fixed telephony, fixed Internet, mobile telephony (MVNO)
Edatel	Discovery Capital –investment fund- (>50%), World Bank/IFC, CAF and Appaloosa –investment fund-.	Fixed telephony, fixed Internet access
Avantel	Cali municipality (100%)	Digital trunking services, mobile telephony
Emcali	Barranquilla municipality (95%)	Fixed telephony, fixed Internet access
Metrotel	Telefónica (56%), Metrotel (44%)	Fixed telephony, fixed Internet access, cable television,
Telebucaramanga	Bancolombia (70%), Ardila family (15%), management team (15%)	Fixed telephony, fixed Internet access
Uff!	DirectTV (100%) through DirectTV LATAM	Mobile telephony, mobile Internet (MVNO)
Direct TV	Central Government (51%), EPM (11%), Ecopetrol (5%), Empresa de Energía de Bogotá (2%)	Pay-television services (satellite), recently awarded 70 MHz in the 2.5 GHz band.
Interconexión Eléctrica, S.A. ESP (Internexa, ISA)		Carrier services, backbone connectivity

*Note:* \*In November 2013, ETB announced the sale to UNE-EPM of the stock it held from Tigo. This sale was conditioned to the approval of the merger UNE-Tigo. At the moment of writing the present report, the merger UNE-Tigo was still in process of obtaining the corresponding regulatory clearing.<sup>13</sup>



### *Development of competition*

Notwithstanding the high number of telecommunication providers, only a few operators in Colombia have managed to increase their market share. Five corporate groups account for over three-quarters of industry revenues (Table 1.4).<sup>14</sup>

**Table 1.4. Market share in Colombia's telecommunication market, Q3 2013**

Operator	Market share	Fixed telephony (%)	Mobile (%)	Pay television (%)	Fixed Internet (%)	Total market share (%)
América Móvil	Subscribers	16.75	58.38	43.71	31.20	
	Revenues		61.83	35.65		40*
Telefónica	Subscribers	21.05	24.31	7.20	18.98	
	Revenues		25.19	5.90		16.29*
Tigo	Subscribers		14.47			
	Revenues		12.61			6.14*
UNE-EPM	Subscribers	17.73	0.66	22.70	26.55	
	Revenues		0.10	20.46		7.45*
ETB	Subscribers	24.14			12.30	
	Revenues					5.38*
DirecTV	Subscribers			18.62		
	Revenues			32.80		1.82*

Note: \*OECD estimates, revenue figures correspond to Q2 2013, pay television subscriber figures correspond to Q4 2013.

Source: OECD elaboration based on information from MINTIC, CCIT and ANTV.

### *Fixed-line market*

In 1994, the Law of Public Domiciliary Services (*Ley de Servicios Públicos Domiciliarios*) opened local telephony services to competition. This policy took place before long distance competition was allowed in Colombia in 1998. The stated policy required local service providers to subsidise lower income households by imposing greater prices on higher income households. While “cross-subsidy” policies were common in OECD countries, they were usually accomplished by ensuring uniform pricing across geographical areas, which may have involved greater costs for provision of service or direct subsidies to low-income users. All such policies should be assessed against achievement of objectives, and in countries with very low penetration rates it is questionable whether low-income households benefited.

The same year saw the establishment of a telecommunications regulator, (*Comisión de Regulación de Telecomunicaciones*, CRT), with an initial mandate to regulate local telephony, later extended to cover all telecommunication services. The mandate was to undertake tariff rebalancing with the objective of driving tariffs towards costs and steps were taken to dismantle the existing cross-subsidies through a gradual approach. The CRT set limits on long-distance tariff reductions to a maximum of 20% relative to 1997 rates (40% for international long distance) until the end of 1999. In fact, this policy can be said to have slowed down the rebalancing process. The same case was made frequently in OECD countries prior to liberalisation, as an argument against the introduction of competition, especially in those countries with very low penetration (i.e. only limited local service was provided) which made the argument highly questionable. In addition, CRT regulations limited tariff increases by local incumbent operators with more than a 60% share of the market in recognition of insufficient competition.

At the close of 1998, the long distance market was opened to competition and two new entrants, Orbitel and ETB, obtained through a public call for proposals licences to operate (Decree 2542 of 1997). The entrants paid USD 150 million for the license and were also required, among other obligations, to install 150 000 local lines. These conditions acted as a restriction on market entry. Nevertheless, with competition, long-distance tariffs dropped by 33% from 1998 to 1999, and consequently traffic rose by 43% in one year.

At present, the fixed line market has 21 participants providing local (and long distance) service. ETB, based in Bogota, has a 24.1% market share (Q3 2013) while the Medellin Company, EPM, has 17.7%. Telefónica, present in most of the rest of the country, has 21.05% (Table 1.5). Emcali, Telebucaramanga, and a number of smaller companies account for the remaining share. Infracel (a brand of Comcel) has been relatively successful in the international long distance market (21% of outgoing traffic in 2009), together with other players such as Orbitel. As of Q2 2013, 84.3% of fixed telephone lines belong to residential users and 15.7% to business users.<sup>15</sup>

**Table 1.5. Fixed lines in service, 2010-2013, compound annual growth rate (CAGR)**

Service provider	Q1 2010	Q1 2012	Q2 2012	Q1 2013	Q2 2013	Q3 2013	Share of total lines (%)	CAGR Q1 2010-Q1 2013 (%)	CAGR Q1 2012-Q1 2013 (%)
ETB	1 970 636	1 558 978	1 656 271	1 659 329	1 611 357	1 521 016	24.14	-5.57	6.44
COLOMBIA TELECOM	1 707 051	1 385 500	1 338 130	1 282 965	1 290 629	1 326 230	21.05	-9.08	-7.40
UNE EPM	1 495 301	1 425 379	1 255 355	1 161 797	1 181 469	1 116 798	17.73	-8.07	-18.49
TELMEX COLOMBIA	470 877	729 595	787 783	929 664	995 927	1 055 237	16.75	25.45	27.42
EMCALI	493 188	438 272	433 863	399 991	390 817	385 902	6.13	-6.74	-8.73
EDATEL	130 031	189 354	188 411	201 655	204 213	207 165	3.29	15.75	6.50
TELE BUCARAMANGA	202 338	169 115	157 341	201 687	201 136	199 708	3.17	-0.11	19.26
TELECOM DE PEREIRA	157 304	135 800	141 118	140 268	135 104	132 187	2.10	-3.75	3.29
METROTEL	130 602	127 053	126 906	130 392	130 157	130 786	2.08	-0.05	2.63
OTHERS	306 215	241 117	237 146	231 121	219 768	225 370	3.58	-8.95	4.15
TOTAL	7 251 711	6 400 163	6 322 324	6 338 869	6 360 845	6 300 399		-4.39	-0.96

Source: MINTIC.

The limited penetration of fixed line telephony has constrained the development of fixed broadband services for some years. Since 2010, however, the number of fixed line broadband connections has doubled, rising from 2 million to over 4 million, albeit Colombia started from a low base. *Plan Vive Digital* has prioritised growth in this area with the stated goal of reaching 8.8 million broadband connections by 2014. In June 2013, the number of connections reached 7.2 million of which 4.2 million (58.45%) corresponded to fixed connections, underpinned by *Vive Digital* subsidies to strata 1 and 2, which have boosted fixed broadband penetration in those strata. Given the complementary nature of fixed and wireless networks, the greater use of both is advisable.

Competition has developed relatively slowly in the fixed market. Penetration is low both by OECD standards and compared to some countries in the region, and the overall number of lines is largely declining. Fixed operators do not seem to be successful in attracting new customers. New providers of long-distance services (EPM and ETB) have taken almost 50% of the market with shares associated with provision of local access, (i.e. mostly in Bogotá and Medellín). In this respect, it is important to note that the distinctions between local and long-distance services are gradually disappearing in many OECD countries. In some of the most competitive markets prices for domestic or international calls are the same. The key feature in all these countries is competitive access for businesses and consumers with policies aiming to promote services, rather than to encourage the use of particular technologies or regulating according to market segments.

Historically, Colombia's market structure is like that of Finland where a state-owned operator had a monopoly over long-distance and international services, and was the sole provider of fixed lines in many rural and remote areas. In Colombia, the National Telecommunications Company (*Empresa Nacional de Telecomunicaciones*, predecessor of *Colombia Telecomunicaciones* also known as *Telecom*), a state-owned company, had a monopoly over long distance and international service until the end of 1997, and also functioned as the only local operator in many small towns and rural areas. When the local telephony market opened to competition, Telecom began investing in large cities to offer local services, as also occurred following liberalisation in Finland. Consolidation among smaller operators occurred to a greater extent in Finland than in Colombia. That being said, larger operators have recently begun offering triple-play services and the market has started to consolidate. This includes operators with mobile licences that have started to integrate companies with fixed line operations.

An important company in Colombia (and in other countries in the region) is Internexa (*Interconexión Eléctrica, S.A. ESP*). It acts as a carrier of carriers and provides wholesale backbone connectivity and infrastructure services through its 22 723 km fibre optic network in Latin America. It has expanded its activities to other Latin American countries, such as Argentina, Brazil, Chile, Panama and Peru. The central government of Colombia holds 51% of Internexa and other Colombian state-owned enterprises (SOEs) some 17%.

Although following the implementation of the 1994 law, the local telephone markets opened to competition, development of competition has been slow. The delay in opening up long-distance markets and the high fee charged to all license winners (USD 150 million) was not conducive to the rapid expansion of competition. Attempts by mobile operators in 1998 to offer international long distance services using VoIP were investigated by the regulator, the Ministry and the competition authority. This eventually led to the imposition of fines on the mobile operators who were also required to compensate the new long-distance providers for “damages”.<sup>16</sup> This would not have been the case if the market had been opened to all entrants and regulations pursued the principle of technological neutrality.

### *Mobile market*

Colombia was one of the last countries in Latin America to introduce mobile services (Venezuela in 1988, Argentina, Chile, Costa Rica and Mexico in 1989, Brazil and Peru in 1990, Uruguay in 1991).<sup>17</sup> The cellular mobile telephony concessions in Colombia were only granted in 1994, following a process that started in 1991. The private sector was eager to enter the market since they had observed the successful take-up of mobile

services in other countries, particularly by business users. However some policy makers in Colombia considered mobile services to be a potential threat to existing fixed monopolies or a “luxury”, thus creating barriers to deployment (CRT, 2000). This perception still seems to hold today, as the government places an additional 4% “luxury” VAT tax (totalling 20%) on mobile services, higher than the regular 16% VAT rate.<sup>18</sup>

In 1993, Congress approved Law 37 to provide for the introduction of mobile services and enacted Decree 741 to cover its regulation. Instead of providing national licenses to reflect the main benefit of mobile services, the country was divided into three regions (Eastern, Western and Atlantic coast). In each region, two competing networks provided services. The A-band was a hybrid combining public-private ownership, and the B-band was 100% private. A total of 50 MHz in the 850 MHz band were assigned to the two different operators in each region.

Only three proposals (one for each region) were submitted for the A-band. During the process, the government determined that the hybrid ownership license’s minimum payment had to be at least 95% of the price paid for the B-band. All three consortia paid this minimum amount. Under the 1993 regimes, concessions were granted for a 10-year period, with the possibility of renewal for an additional 10 years. The selected firms were granted a five-year exclusivity period (until September 1999). The resulting structure was that of three duopolies (a duopoly per region) (Table 1.6).

**Table 1.6. First spectrum allocations**

	Company	Operator partner	Technology provider	Amount paid (USD million)
<b>A- BAND</b>				
Oriental	Comcel	ETB, Telecom and Bell Canada	Nortel	316
Occidental	Ocel	EPM, Cable & Wireless	Nortel	150
Atlantic Coast	Celcaribe	Millicom, Telecartagena	Ericsson	112
<b>B- BAND</b>				
Oriental	Celumovil S.A.	McCaw Cellular (AT&T)	Nortel	332
Occidental	Cocelco	Telefónica de España, CTC	Ericsson	158
Atlantic Coast	Celumovil Costa Atlantica S.A.	McCaw Cellular (AT&T)	Nortel	118*

Note: \*A total of COP 499 200 billion.

Source: OECD based on CRC/MINTIC and third party information.

Among the six companies granted licenses, AT&T, Bell Canada International, BellSouth, Cable & Wireless, Millicom International and SBC have all entered and exited the market. This turnover is a result of the potentially uncertain nature of the licenses and the changing strategies and circumstances of the firms involved. America Movil entered Colombia through the acquisition of one such companies (Comcel) in 2000 and completed the consolidation of the A-band in 2004, making the transition from Advanced Mobile Phone System (AMPS) and Time Division Multiple Access (TDMA) to GSM technology. In 2000, the three B-band regional operators were acquired by BellSouth, who transferred full control to Telefónica (Movistar) in 2004. Movistar also migrated from TDMA and CDMA platforms to GSM technology, but only in 2005-2006, which gave a clear technological advantage to Claro.

Law 555 of 2000 regarding personal communications services (PCS) stipulated the entry of a third player. It specified a three-year period during which no new licenses would be awarded (Article 12). After several legal battles, aimed mostly at delaying the entry of a third player, the auction of this license began in 2002. This policy aimed at encouraging competition as well as encouraging investment and national coverage. The process was far from successful. There was only one bidder, a 50/50 joint venture between ETB and EPM, both publicly owned, which launched under the brand of Ola. Even though it gained market share rapidly, reaching 12% (1.26 million subscribers) after only one year, it quickly started losing market share, reaching a low of 7.3% in Q1 2007. The loss in market share apparently was due to the fact that investments on the network were not up to pace with user take-up. Then in 2006, this third market player was sold to Millicom International.

A catalogue of relevant developments for mobile network operators (MNOs) and, more recently, the introduction of Mobile Virtual Network Operators (MVNOs), are provided here:

- Claro (brand of *Comunicación Celular, S. A.*, Comcel, owned by America Movil, Mexico) is the largest mobile operator in terms of subscribers and revenue. The company acquired Comcel in 2000 and Occel in 2002 from Telecom Americas. In 2002, the licences of these companies were modified, extending them to 2014 to allow them to offer 3G services. Later, in 2003, the company acquired Celcaribe from Millicom. All these companies merged into a single company, now called Claro.
- Movistar (Telefónica, Spain) is the second largest mobile operator. In 2004, it acquired 100% of BellSouth Colombia. Movistar did not offer GSM/GPRS services until the end of 2005. The same year the company requested the Ministry for approval of additional bandwidth in the 1900 MHz band in order to increase their coverage.
- Tigo (brand of Colombia Móvil) is a consortium of the two largest Colombian publicly owned, fixed line operators (ETB and UNE-EPM) and now majority-owned by Millicom (Luxembourg). The company started providing PCS services in 2003.
- UNE-EPM acquired 2.5 GHz spectrum in 2010 and provides mobile broadband services.
- Avantel (provider of trunking services) and DirecTV (satellite pay-tv provider), were awarded spectrum in the 2013 auction and DirecTV will start providing mobile telephony services in 2014. Avantel, considered a new entrant for 4G services, had already engaged in interconnection agreements with established operators (since 2004).
- MVNOs: “Uff! Móvil” entered the mobile market at the end of 2010 as an MVNO using Tigo's network. At the end of 2012, five new MVNOs entered the market bringing the total of service providers to six, out of which four (ETB, Movil Exito, Uff! and UNE) use Tigo's network and two, (including Virgin Mobile) use Telefonica's network. Claro does not host any MVNO on its network. Virgin Mobile has acquired 0.66% of the market in less than a year of operations, while Uff Móvil has reached 0.82%.

Competition in the mobile market has developed much faster than in the fixed market, although there is concern that one company has had a persistently high market share. In fact, Colombia's mobile market is extremely concentrated by OECD standards. Moreover, the same company (i.e. Claro/Telmex), which is dominant in the mobile market, also has a large market share in the broadband and pay television markets.

From 2002 to 2010, all new spectrum allocations were conducted by direct assignment. The process used a closed procedure with increasing spectrum caps to award spectrum to existing players, thus avoiding the possibility of third-party bids. This policy was changed in 2010 when a spectrum auction awarded 50 MHz in the 2.5 GHz band to UNE, outbidding DirecTV, a major satellite broadcaster.<sup>19</sup> In 2011, 25 MHz of spectrum in 1.9 GHz band were assigned to the three MNOs. More recently, in the 2013 auctions, spectrum has been allocated to DirecTV and Avantel, the largest trunking operator in Colombia. For the purposes of the auction, both DirecTV and Avantel were considered new entrants and could bid for reserved blocks, which had a lower starting price to facilitate the entry of new operators. As a result, from 2014 there will be six mobile network operators in Colombia.

### *Broadband market*

Cable modem services are growing more rapidly than DSL as a result of the introduction of triple-play offers. This growth has resulted in an almost equal share of subscriptions between cable and DSL. The broadband market is essentially an oligopoly shared between Claro (cable modem, 31.20%), UNE-EPM (DSL and cable modem, 26.55%) and Movistar (DSL, 18.98%). ETB (DSL) serves 12.30% of the market (Q3 2013). In its most recent analysis, the CRC takes the view in that these national market shares may pose short-term challenges to competition, but it does not foresee substantial problems in the fixed broadband market.<sup>20</sup> Nonetheless, local fixed markets are extremely concentrated, with EPM holding over 90% of the lines in Medellín, and ETB accounting for over 70% in Bogotá.

Connection speeds for fixed broadband are relatively slow compared to the OECD average, but are the fourth highest in Latin America after Chile, Brazil and Mexico according to Akamai.<sup>21</sup> In March 2013 Colombia had 32.1% of households connected to the Internet according to DANE's figures (this definition includes narrowband). By the end of 2013 Colombian authorities expect 43% of households to be connected to the Internet with a target of serving 50% of households by 2014.

Mobile broadband is developing quickly in Colombia, albeit from a small base. As in other countries, the growth in the popularity of smartphones has encouraged some users to shift to post-paid plans associated with their "subsidised" acquisition. Assuming sufficient competition, as was the experience in other countries new business models will evolve allowing prepaid users greater use of broadband networks and smartphones (the costs of which continue to fall). However, at present around 56% of the total pre-paid customers have 2G rather than 3G connections.

At the close of 2012, MINTIC placed wireless broadband penetration at 11.8 %, based on 3G connections, both pre-paid and post-paid (excluding 2G connections). If the OECD methodology for broadband wireless subscriptions is fully applied, the rate might be lower, as MINTIC's methodology does not take into account criteria such as minimum usage. Regardless, Colombia's mobile broadband penetration is significantly lower than the OECD average (62.8%). Only Mexico (10.9%), which however applied the OECD methodology, has a lower penetration than Colombia. Movistar (46.75% in Q2 2013) has

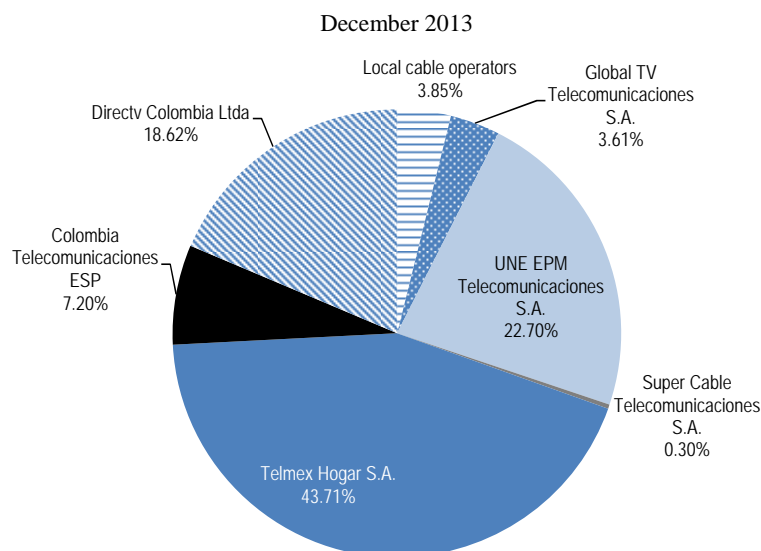
the highest market share in the post-paid wireless broadband market, while Claro accounts for over 80% of the pre-paid market.

As in OECD countries, bundles play an important role in the Colombian market with many subscribers purchasing several services with a significant discount over the sum of prices for stand-alone equivalents. The effects of bundles on competition dynamics in communication services have been recently addressed in OECD work (OECD, 2011 and OECD, 2013d). One issue raised was whether asymmetrical taxation (in the form of contribution to the National ICT Fund, FONTIC and the National Television Fund, FONTV) of the services in a bundle might result in artificial price setting for these services. For example, some providers argue that the price of the broadband component is artificially high, while the pay-television part is relatively too low as a result of the existent arbitrage given the differences in contributions to TV services in relation to communication services.

### *Pay television*

The market for subscription based television services (pay television) is divided between some 40 local cable operators, two satellite pay television providers (Colombia Telecom and DirecTV), and four regional or national cable television operators. The distinction between national and regional providers was removed recently and all are now national (Agreement ANTV 02 of 2012). A tender was held in 2012 to award new licenses. Two companies dominate cable television: Telmex (Claro) and UNE-EPM (Figure 1.6). The official number of subscribers is 4.67 million, although these may be under-reported.<sup>22</sup> In addition, there are over 760 community television providers, who face limitations in terms of the number of subscribers served, number of channels and so forth. Some industry stakeholders have criticised community television providers for failing to respect the rules and “cannibalising” the pay television market. The ANTV has recently published new rules for community television (May 2013).

**Figure 1.6. Pay-tv providers in Colombia: Subscriber market share**



Source: ANTV.

One of the satellite operators, DirecTV, has reportedly doubled its customer base between 2011 and December 2013 reaching over 860 000 subscribers. With access to substantial content via its parent company, based in the United States, and having acquired spectrum in the previous auction, it is expected to make this market more dynamic in coming years. As DirecTV focuses on “premium content”, its 18.62% of overall market share in subscriptions translates into an over 30% market share in terms of revenues. DirecTV has also engaged in innovative commercial schemes, such as the use of prepaid TV cards, particularly suited to low income users, who account for a high share of the Colombian communications market.

### 1.5. Price and quantity indicators

Competitive entry has reduced prices across all services in OECD and non-OECD countries. There is general consensus that, in an efficient and competitive market, prices at the wholesale and retail levels will be driven toward costs. Prices in Colombia have declined as a result of market entry and competition. However, because of the system of cross-subsidies in Colombia, downward adjustments in some prices have been constrained. The move away from the cross-subsidy system for universal service (see section 2.9) should allow more price flexibility in the market. Colombian authorities are, at present, mostly concerned with in the mobile market.

Table 1.7 and Figures 1.7 to 1.11 show price comparisons with OECD countries using the OECD price baskets (Annex A). Annex B compares Colombia with its regional peers and shows how it ranks in relation to selected countries in the region (seven Latin American countries). Graphs are based on PPP terms, which provide a better view of actual prices faced by consumers relative to domestic prices for goods and services (OECD and Eurostat, 2012). Annex I and II report prices in exchange rate and purchase power parity (PPP) terms and in nominal exchange rates (USD), to provide a comprehensive view on prices for telecommunication services. The OECD uses purchasing power parities to overcome two deficiencies associated with using nominal exchange rates to compare price baskets across countries. First, exchange rates vary from day to day and sometimes change abruptly - because of speculation against a currency or because of changes in interest rates. Second, exchange rates do not simply reflect the relative prices of goods and services produced in a country since they are affected by the relative prices of tradable goods and by factors such as interest rates and financial flows. The main drawback of PPPs is the measurement difficulty, particularly since the International Comparison Program (ICP) is a substantial statistical undertaking (IMF, 2007). Other institutions have also expressed telecommunication prices as a percentage of the average income (e.g. the ITU). Furthermore, price indicators should be analysed in conjunction with other penetration, performance and efficiency indicators shown in this report to deliver a comprehensive analysis of the Colombian telecommunication sector.



**Table 1.7. Fixed and mobile voice baskets: Colombia's performance compared with OECD, May 2013**

USD PPP			
	OECD average	Colombia	Colombia's ranking (of 35 countries)
<i>Fixed telephony baskets</i>			
20 calls	23.80	8.76	2
60 calls	33.90	23.57	5
140 calls	50.09	23.57	7
420 calls	74.09	41.31	3
100 calls (business)	45.53	100.84	34
260 calls (business)	91.16	100.84	30
<i>Mobile telephony baskets</i>			
30 calls	13.13	12.48	15
100 calls	23.24	28.88	28
300 calls	38.40	50.82	29
900 calls	58.35	106.16	31
Prepaid 40 calls	17.20	13.70	15
400 SMS	15.56	9.45	7

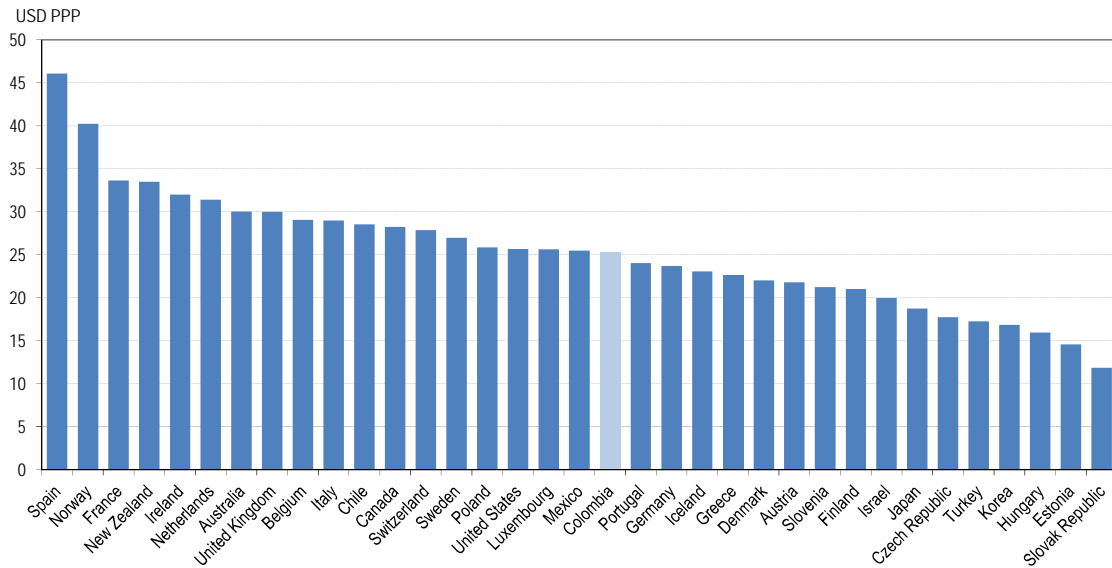
Source: OECD based on Teligen.

Except for the lowest usage patterns, Colombia ranks poorly in terms of mobile telephony prices when compared to the OECD. Mobile telephony prices are generally more expensive than the OECD average, with the exception of the SMS and lower usage baskets (30 calls and prepaid 40 calls, for which prices lie broadly at the OECD average). Medium and higher consumption baskets are considerably more expensive than the OECD average. It is important to note that prepaid tariffs are not restricted to the pre-paid 40 calls basket, as all other baskets include post-paid and pre-paid plans. Even though the consumption of many Colombians may fall under the lower baskets, higher consumption baskets are also relevant to Colombia, as with OECD countries, as they typically reflect a large share of revenues and traffic. This is why the OECD has developed many different baskets, from lower to higher use and is important to map Colombia across a broad range of indicators.

In mobile telephony, Colombia ranks better in relative terms compared to other Latin American countries such as Argentina, Brazil, Chile, Mexico, Peru and Uruguay. It is generally among the three least expensive countries within that group (the least expensive for the 30 calls and 400 SMS basket). It should be noted, however, that conversion of prices in Argentina may not be meaningful due to reporting issues of price and exchange rates in that country (see Annex B).

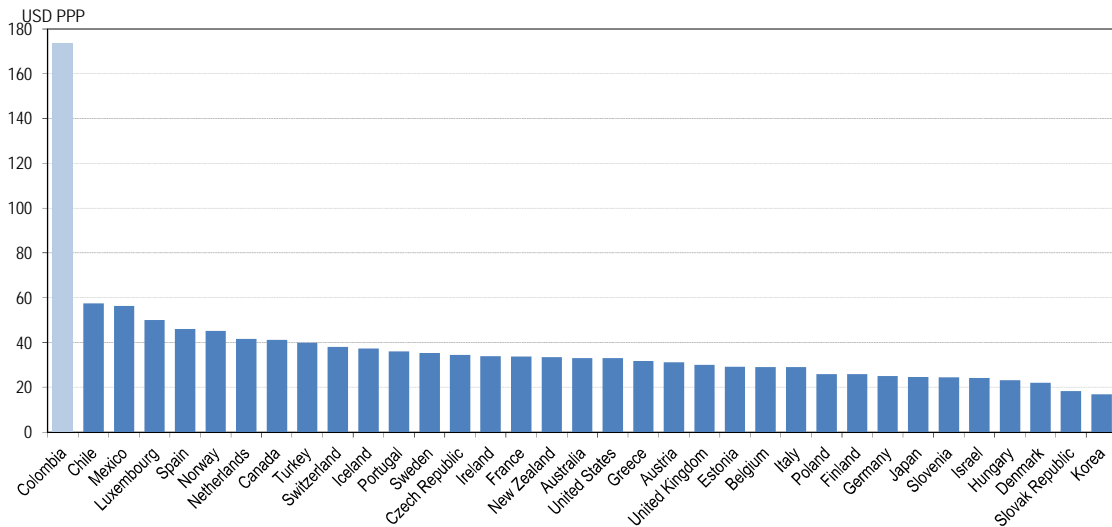
Fixed telephony prices show better behaviour and are among the least expensive when compared to OECD countries with the exception of business prices, which rank among the most expensive. Colombia is among the seven least expensive countries in all residential baskets, but among the five most expensive in the two business baskets. This could add weight to the assumption that mobile services impose a constraint on fixed telephony and help avoid price increases. Unlike for other services, no price data have been collected for fixed telephony services in other Latin American countries, given their high complexity.

**Figure 1.7. OECD fixed broadband basket including Colombia >256 Kbps, 2 GB, June 2013**



Source: OECD and Teligen.

**Figure 1.8. OECD fixed broadband basket including Colombia, >15 Mbps, 33 GB, June 2013**



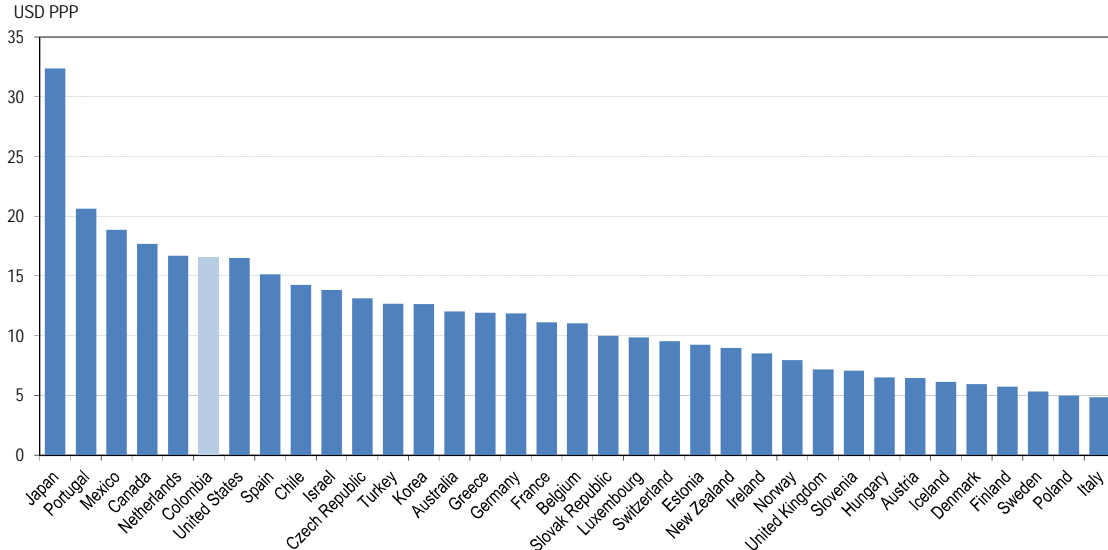
Source: OECD and Teligen.

Fixed broadband networks are underdeveloped and penetration and speeds are low. This is also reflected in pricing patterns. While entry-level broadband (>256 Kbps, 2GB per month) is priced at roughly the OECD median (17 in 35 countries), the price jumps dramatically when higher speeds are considered (e.g. 15 Mbps or higher, 30 Mbps or higher). This indicates that high-speed fixed broadband is still considered a premium service for many Colombians. Following a similar trend, compared to OECD countries, the price for an entry-level broadband subscription (speeds of 256 Kbps or higher) is the second lowest of the seven Latin American countries retained for the comparison (Argentina, Brazil, Chile, Costa Rica, Mexico and Peru), while Colombia is among the

most expensive countries for speeds higher than 15 Mbps.<sup>23</sup> This is in line with the finding that fibre networks have not been yet deployed and that the Next Generation Network strategy is only nascent (Figures 1.7 and 1.8), even though some preliminary work has been done (e.g. Resolution CRC 3101) laying down the grounds for the migration to NGN networks.

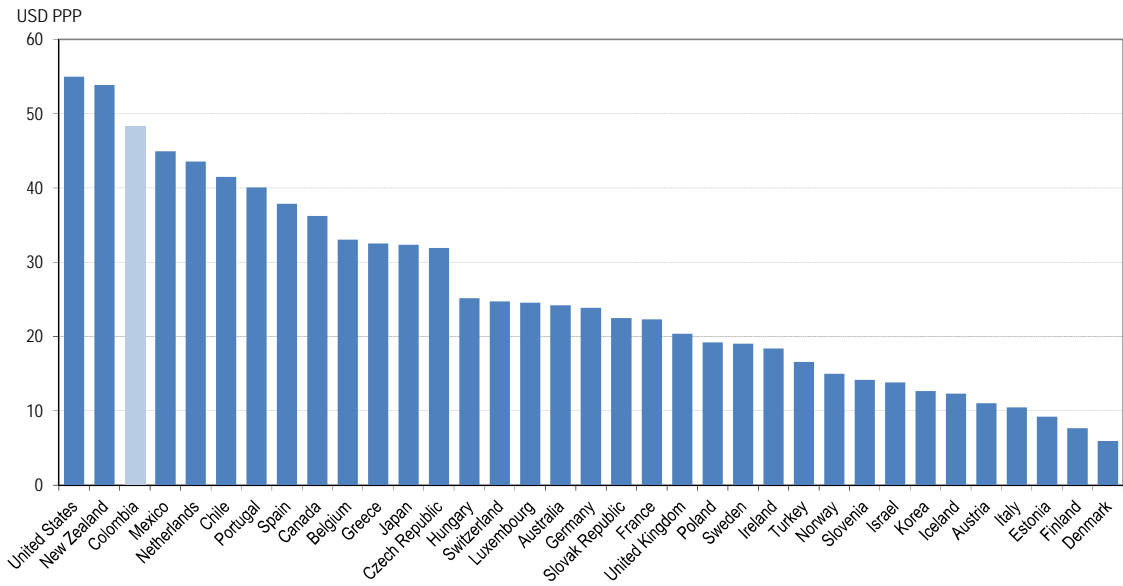
The lack of competition in the fixed broadband market in Colombia is reflected in much higher prices than for OECD countries. Mobile broadband services for smartphones, tablets and laptops are also among the most expensive compared to OECD countries (among the five or six most expensive countries across virtually all mobile broadband baskets, see Figures 1.9, 1.10 and 1.11). This may be a sign that mobile broadband services are still under-developed, and to date have only targeted relatively well-off segments of the population. This is in line with low penetration indicators highlighted earlier in this report. These price levels are, however, broadly in line with other countries in the region. For example, Colombia ranks third or fourth out of seven Latin American countries in mobile broadband services for smartphone baskets (bundled with calls). Also, it ranks among the less expensive for half of the laptop -and tablet-based mobile broadband baskets, with the exception of having prices above the average for the high consumption mobile broadband baskets (i.e. the 5GB and 10 GB laptop baskets). Other countries in the region, therefore, may face similar concerns regarding the development of mobile broadband services, such as insufficient competition. There is clearly room for tremendous growth in both fixed and wireless broadband services if greater competition is promoted in these markets.

**Figure 1.9. OECD wireless broadband basket, including Colombia, tablet 500 MB, June 2013**



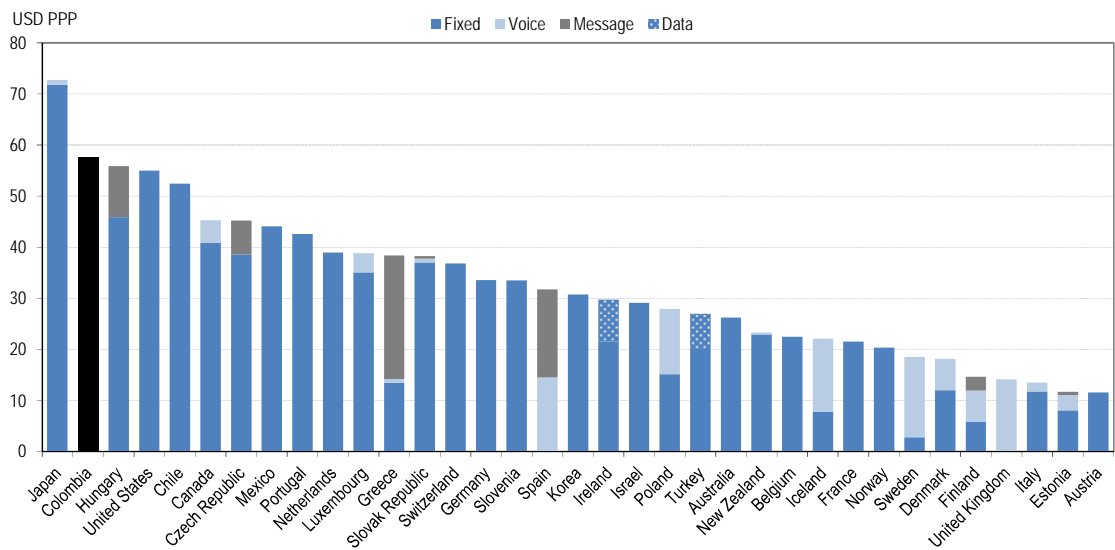
Source: OECD and Teligen.

**Figure 1.10. OECD wireless broadband basket including Colombia, laptop 5 GB, June 2013**



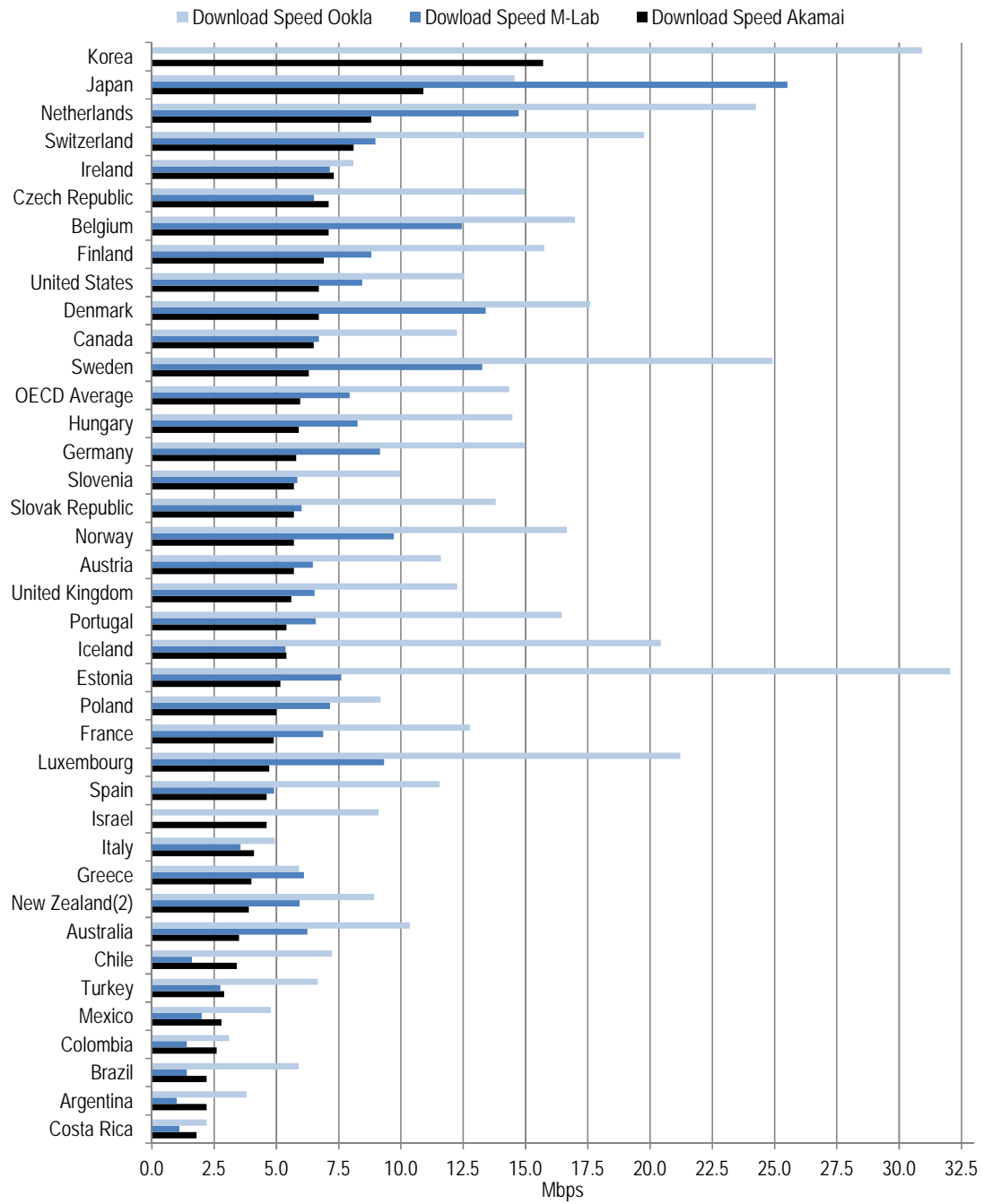
Source: OECD and Teligen.

**Figure 1.11. OECD 100 calls + 500 MB mobile basket, including Colombia, VAT included, May 2013**



Source: OECD and Teligen.

**Figure 1.12. Actual broadband speeds - Akamai, Ookla and M-Lab data, Q2 2012**



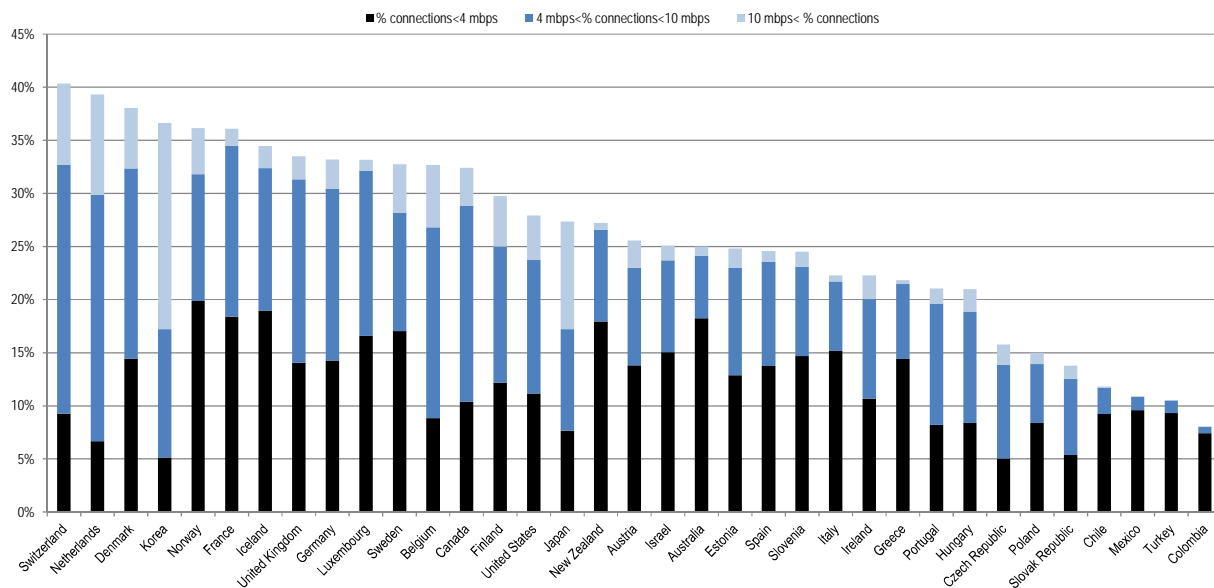
Source: OECD based on data from Ookla (published on Google Analytics website), M-Lab and Akamai (State of the Internet Report).

### Network investment and modernisation

There are many indicators used to assess the average speeds for broadband services available across different regions and countries. These include those provided by Ookla and M-Lab, as well as Akamai, a major content distribution network. These broadband speed indicators are the result of user-initiated tests, and as such, hold the caveat that they measure speed from particular observation point in relation to the rest of the Internet. Bearing this in mind, however, all three indicators display consistent results for Colombia (Figure 1.12-1.13). Colombia's fixed broadband speeds are in the lowest range of OECD countries, including Chile and Mexico, although in line with some Latin American peers such as Argentina or Brazil (Figure 1.12). These results reflect actual speeds as measured by these tools, as opposed to advertised speeds used in other parts of this report.

Faster speeds reported for a country do not necessarily imply wider deployment or adoption of broadband in that country (OECD, 2013d). Colombia not only has a much lower broadband penetration rate (around 8%) than the OECD average (26%), as of end 2012, but according to Akamai's speed test which refers to actual speeds, most broadband subscriptions in Colombia (92%) belong to the lowest speed tier (i.e. connections with speeds lower than 4 Mbps). Most countries in the OECD, with the exception of Mexico and Turkey, have predominant broadband offers with actual speeds higher than 10 Mbps (Figure 1.13). Still, Colombia lags behind OECD countries that report the lowest speeds and broadband penetration (i.e. Chile, Mexico and Turkey).

**Figure 1.13. Broadband penetration by speed tiers (in terms of actual speeds), Colombia compared to the OECD, 2012**



Source: OECD subscription data, June 2012; Akamai's broadband average adoption rates Q2 2012 [www.akamai.com/stateoftheinternet](http://www.akamai.com/stateoftheinternet); MINTIC subscription data from ICT Quarterly report Q3 2012.

## 1.6. Investment figures

There is little reliable, consolidated information about investment in telecommunication networks in Colombia. There does not seem to be an official reporting source and company reports can be hard to interpret. Nevertheless, Table 1.8 provides some data on investment, which correspond to investment figures reported by operators in their

company financial reports, compiled by the Superintendence of Corporations (*Superintendencia de Sociadades*). These data only cover the largest players, as considerable industry fragmentation entails challenges for benchmarking investment figures.

**Table 1.8. Investment as reported by main operators**

Operator	Investment-CAPEX						Investment as a percentage of revenues		
	USD millions (COP millions)						2010	2011	2012
	2010	2011	2012	2010	2011	2012			
Claro	NA	1 107.22	(2 058 254)	1 212.93	(2 195 155)	NA	23.76%	21.96%	
Telefónica	222.9	(426 403)	384.35	(714 479)	363.12	(657 176)	22.08%	17.73%	16.43%
Tigo	105.05	(200 959)	128.73	(239 296)	NA	NA	17.17%	17.03%	NA
ETB	98.53	(188 485)	151.97	(282 509)	122.32	(221 368)	12.44%	18.96%	15.66%
UNE-EPM	274.48	(525 076)	262.98	(488 867)	241.77	(437 550)	32.68%	28.35%	23.48%
DirectTV	32.12	(61 437)	21.39	(39 759)	42.14	(76 269)	4.05%	10.55%	15.19%
Industry total		2 084	(3 874 046)	2 000	(3 620 279)		21.25%	18.59%	

*Source:* OECD from firm's public financial reports, as well as information provided by CRC on SIC's database of firm's information reports.

These figures reflect an average investment for the largest five players in Colombia of about 18% of revenues in 2012. The average investment rate in the OECD is around 14% (excluding spectrum fees). It is hard to ascertain whether Colombia's investment ratio is higher or lower than the OECD average since spectrum fees are unreported by operators, and the CRC does not provide official investment data but is only reporting information provided in the operators' financial reports, which do not specify whether investment figures include spectrum fees. Regardless, Colombia seems to have a comparable investment level, as a percentage of revenues, to the OECD average. However, networks in OECD countries have a much wider coverage and take up, and as such the challenges are somewhat different for Colombia. Additional investment, in particular investments in Next Generation Access networks that would increase broadband quality in Colombia, would undoubtedly be required to increase network availability.

Taking into consideration these caveats regarding the reliability of information, the data indicate that UNE-EPM is engaging in large investments with a 28% and 23% investment share over revenues for the years 2011 and 2012, respectively. These figures could relate to the company's 4G deployment strategy, initiated in 2011, which reached 85 000 LTE users as of June 2013.<sup>24</sup> Additionally, ETB is currently investing in a fibre roll-out to attain coverage of 85% of households by 2015.<sup>25</sup> Telefonica's investment level compares to those of smaller players such as ETB and DirecTV, whereas Claro and UNE-EPM seem to be leading in investment measured as a share of their revenue (e.g. shares above 20%). When looking at the total amount of investment, Claro is the largest investor, followed by Telefónica.

In general terms, investment per access path in Colombia is below the OECD average. In 2011, OECD average investment per access path was about USD 90, whereas Colombia's was just USD 37 (USD 43.45 in per capita terms). Colombia's investment level for the same year compares to that of Mexico and Turkey, the two member states with the lowest investment levels per access path in the OECD at USD 39.6 and USD 26.3, respectively (OECD, 2013d).

## Notes

1. According to Proexport, [www.proexport.com.co/sites/default/files/Colombia Pa%C3%ADs de Oportunidades Septiembre 2011.pdf](http://www.proexport.com.co/sites/default/files/Colombia_Pa%C3%ADs_de_Oportunidades_Septiembre_2011.pdf). For GDP data of Latin America see [www.imf.org/external/pubs/ft/weo/2013/02/weodata/weorept.aspx?sy=2011&ey=2018&scsm=1&ssd=1&sort=country&ds=.&br=1&pr1.x=31&pr1.y=7&c=336%2C263%2C268%2C343%2C273%2C278%2C283%2C288%2C233%2C293%2C361%2C362%2C364%2C366%2C369%2C298%2C299&s=PPPGDP&grp=0&a=](http://www.imf.org/external/pubs/ft/weo/2013/02/weodata/weorept.aspx?sy=2011&ey=2018&scsm=1&ssd=1&sort=country&ds=.&br=1&pr1.x=31&pr1.y=7&c=336%2C263%2C268%2C343%2C273%2C278%2C283%2C288%2C233%2C293%2C361%2C362%2C364%2C366%2C369%2C298%2C299&s=PPPGDP&grp=0&a=)
2. For GDP data see DANE: [www.dane.gov.co/index.php/cuentas-economicas/cuentas-trimestrales](http://www.dane.gov.co/index.php/cuentas-economicas/cuentas-trimestrales), and for trade data see United Nations Comtrade data for Colombia: <http://comtrade.un.org/db/dqBasicQueryResults.aspx?px=H4&cc=TOTAL&r=170&=0&rg=2&y=2012,2011,2010,2009,2008&so=8>
3. See <http://www.compareyourcountry.org/chart.php?project=leo>
- 4; See DANE's Information on youth unemployment: [www.dane.gov.co/files/investigaciones/boletines/ech/juventud/RE\\_trim\\_jun\\_ago13.pdf](http://www.dane.gov.co/files/investigaciones/boletines/ech/juventud/RE_trim_jun_ago13.pdf)
5. [www.vivedigital.gov.co/mipymedigital/](http://www.vivedigital.gov.co/mipymedigital/)
6. “Ley No. 1341 de 2009, por la cual se definen principios y conceptos sobre la sociedad de la información y la organización de las tecnologías de la información y las comunicaciones –TIC-, se crea la agencia nacional de espectro y se dictan otras disposiciones”. [www.crcm.gov.co/index.php?idcategoria=41717#](http://www.crcm.gov.co/index.php?idcategoria=41717#)
7. For consistency this report uses CRC (*Comisión de Regulación de Comunicaciones or the Commission for Telecommunications Regulation*) and MINTIC (*Ministerio de Tecnologías de la Información y las Comunicaciones or the Ministry of Information and Communication Technology*) to refer respectively to the regulatory body and the Ministry, even though prior to the ICT Law of 2009 the CRC was the CRT and the Ministry was the Ministry of Communications.
8. The results from the Fedesarrollo (2012) study have been contested by a report commissioned by Claro (Oviedo, 2013). See [www.urosario.edu.co/economia/documentos/Informe-final-COMCEL-FEDESARROLLO-UR/](http://www.urosario.edu.co/economia/documentos/Informe-final-COMCEL-FEDESARROLLO-UR/)
9. The Basic Telecommunication Agreement (formally the Fourth Protocol of the General Agreement on Trade in Services) came into force in January 1998. In conjunction with the Basic Telecommunication Agreement a number of WTO members developed, and adopted, a Reference Paper which provided a general framework for basic telecommunication regulation by which WTO members could comply with the Basic Telecommunications Agreement.
10. See <http://trade.gov/fta/colombia/>
11. In June 2013 fixed broadband penetration rate in Colombia rose to 9%.



12. Electronic communication market indicators – Digital Scoreboard, European Commission (2012), [https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/electronic\\_communications\\_2012.pdf](https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/electronic_communications_2012.pdf)
13. See <http://primiciadiario.com/archivo/2013/etb-vende-sus-acciones-en-tigo/>
14. The breakdown of Table 1.4 does not necessarily correspond to the CRC’s market definitions.
15. See CCIT (2013), “June 2013 ICT Industry Report”, [www.ccit.org.co/files/TIC-Junio\\_2013.pdf](http://www.ccit.org.co/files/TIC-Junio_2013.pdf)
16. Article 60 of Regulatory Decree No. 741 of 1993 required that international long-distance calls originating with or received by cellular mobile telephony service users had to be made through the PSTN, and that cellular mobile telephony operators were not authorised to provide direct international long-distance telephony services.
17. For Argentina, Brazil, Chile, Peru, Uruguay, Venezuela and Mexico see CRC (2000), Chapter 4, and also see [http://biblio.colmex.mx/curso\\_introduccion\\_bibliotecologia/Cofetel/comp%20inter%20LA.htm](http://biblio.colmex.mx/curso_introduccion_bibliotecologia/Cofetel/comp%20inter%20LA.htm); for Argentina (1989) see [www.cnc.gob.ar/ciudadanos/telefonía\\_movil/index.asp](http://www.cnc.gob.ar/ciudadanos/telefonía_movil/index.asp); for Costa Rica (1989) see [www.aldia.cr/ad\\_ee/2008/abril/05/nacionales1485591.html](http://www.aldia.cr/ad_ee/2008/abril/05/nacionales1485591.html)
18. CRT (2000), “El sector de las Telecomunicaciones en Colombia en la década de los 90s” Capítulo 5 *Telefonía Móvil Celular*. This report also states that by 1994, 107 countries in the world had already introduced mobile telephony, namely in Latin America these countries were: Argentina, Bolivia, Brazil, Chile, Costa Rica, Cuba, Dominican Republic, México, Peru, Uruguay and Venezuela.
19. Spectrum caps were introduced for this auction to favour the entry of new operators.
20. “Revisión del Mercado Relevante de Datos y Acceso a Internet”, October 2011. <http://www.crcom.gov.co/index.php?idcategoria=61652>
21. See Akamai, “The State of the Internet”, 3rd Quarter, 2012 Report, Volume 5, No. 3.
22. Data from DANE show that actual pay-television may be higher than reported. Some 400 investigations are currently underway regarding “community television” providers not complying with the established conditions.
23. It should be noted that some of the countries that were part of the comparison do not have high speed offers (only six in seven for 30 Mbps or higher than 30 Mbps and five in seven for 45 Mbps or higher).
24. Une-EPM signs LTE deployment contracts; [www.telegeography.com/products/commsupdate/articles/2013/06/26/une-epm-has-85000-lte-users-introduces-converged-fixed-wireless-lte-option/](http://www.telegeography.com/products/commsupdate/articles/2013/06/26/une-epm-has-85000-lte-users-introduces-converged-fixed-wireless-lte-option/)
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## Chapter 2

### Regulatory structures and their reform in Colombia

*Chapter 2 examines the design of the institutional framework for telecommunication policy and regulation, which was recently reformed (2009). Most regulatory instruments used in OECD countries are present in Colombia's legal framework, even though some have never been used. The chapter presents recent developments in the areas of ex-ante regulation, competition law, interconnection, universal service, spectrum policy and consumer protection, as well as the new challenges posed by convergence.*

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

## 2.1. The regulatory regime

The ICT Law of 2009 provides the legal and policy framework for the telecommunication sector. Box 2.1 highlights the main features of the law. In addition to providing a framework for telecommunication policy and regulation, the 2009 law established a wider framework for the development and diffusion of ICTs in general. The main principles of the law include promoting access and use of ICTs, promoting fair competition, ensuring the efficient use of infrastructure and scarce communication resources, protecting the rights of users, promoting investment, ensuring technological neutrality, promoting the right of access to ICTs, and ensuring the maximum use of ICTs by government in the delivery of services and other functions. The law also outlines the roles and responsibilities of the various institutional bodies. It provided new powers to the regulator, which thereafter became known as the *Comisión de Regulación de Comunicaciones* (CRC) or Communications Regulation Commission, and created a new agency for spectrum issues, the *Agencia Nacional de Espectro* (ANE) or National Spectrum Agency.

### Box 2.1. Main features of Law 1341 of 2009 (The ICT Law)

- The ICT law set down the general framework for the information technology and communications sector and established the powers of the related government departments and agencies (e.g. CRC, MINTIC, SIC).
- The law established the role of the state: to safeguard competition, protect communications users' rights, and promote investment in the telecommunication sector and the efficient use of radio spectrum. Specific duties of the state include ensuring the interconnection and interoperability of networks and access to essential facilities. The law highlighted the importance of these two elements in fostering competition in the sector and achieving service coverage.
- The law created the ANE to provide technical support for spectrum planning, management and control and, more generally, provide advice to the Ministry and the ANTV on spectrum-related issues.
- The law laid out principles to guide protection of users' rights, in particular by ensuring suppliers provide services at established quality levels and at a "reasonable" profit.
- The law transformed the former "Telecommunications Regulation Commission" (CRT) into the present "Communications Regulation Commission" (CRC). It granted more powers to the new regulatory body in view of convergence; namely, the role of determining relevant markets for all communications markets, including TV markets, as well as the power to issue ex-ante regulation.
- The law created the concept of a "communications provider" to ensure the application of regulation to all providers, not just those providing public switch telecommunication networks (PSTNs).
- The law created the ICT Registry to facilitate market entry of telecommunication operators. Under Article 15, market entry only requires registration (if no spectrum use is involved). Because licenses were no longer tied to services, the ICT Law was termed the "Convergence Law".
- Lastly, the law established a new licensing regime requiring mobile network operators (MNOs) to first register and then obtain a license to use spectrum. Under the previous framework, operators engaged in individual contracts with the state (i.e. concession agreements) for the use and exploitation of spectrum.

The law refers in a number of articles to the concept of “market prices” and “costs” determined through competition and market efficiency. These concepts were critical in the Colombian context given the historical reliance on a complex system of cross-subsidies, which existed in all public service areas, including the telecommunication sector.

The implementation of the ICT Law is set out in a number of resolutions and decrees issued by the CRC and the MINTIC, respectively. Table 2.1 compares the powers of the CRC with its predecessor, the CRT. A synopsis of telecommunication regulation in Colombia is shown in Table 2.2.

**Table 2.1. Comparison of the powers of the CRC and the CRT**

Law 1341 of 2009	Law 142 of 1994 and Decree 1130 of 1999
The CRC can impose asymmetric rules on suppliers when it has determined the existence of market failure.	The CRT could impose measures to prevent abuse of dominant position (varying remedies, depending on the firm's position in the market). This was only applicable to public utilities.
The CRC can issue regulations on interconnection and essential facilities. The latter includes the definition of essential facilities as well as regulating the conditions of access to networks, including access fees.	The CRT could impose regulations on interconnection and essential facilities, as established by Law 142 and the commitments signed by Colombia with the Andean Community. However, CRT faced serious challenges when attempting to apply such regulation to operators other than public utilities service providers.
The CRC can establish quality of service parameters and resolving disputes among services providers.	Applicable to public utilities only (not to mobile or Internet services). For mobile providers recourse to supranational law was necessary.
The CRC can identify wholesale supply conditions and the provision of unbundled network elements (while guaranteeing compensation on the basis of efficient infrastructure and investment incentives).	These powers were not specifically granted to the CRT, which instead interpreted several other provisions.
The CRC can request information from communications services providers to undertake regulatory tasks	This was applicable to public utilities only (no mobile or Internet services). The CRT could not impose fines on mobile or Internet providers.

Administrative requirements for entry into the telecommunication market are low as only registration is needed (see Box 2.1). If service providers require spectrum, the Ministry grants a permit for spectrum use, either through a beauty contest (“*proceso de selección objetiva*”) or an auction. The ICT Law of 2009 modified the previous regime in order to diminish the regulatory burden and move from a service-based to a convergent licensing regime.

**Table 2.2. Synopsis of telecommunication regulation in Colombia**

Category	Regulatory requirements	Notes
<b>Entry requirements</b>	Entry by registration. No roll-out commitments but must meet quality standards.	No limit on number of entrants other than spectrum limitations (spectrum caps, available bands)
• Facilities-based carrier	Entry by registration	No limits
• Mobile network operator	Entry by registration	No limits
• MVNO	Entry by registration	No limits
• ISP	Entry by registration	No limits
• Cable TV		No limits
<b>Public ownership</b>	Municipal ownership of fixed network operators in major cities in Colombia. Significant state ownership in <i>Colombia Telecomunicaciones</i> (30%) and <i>Interconexión Eléctrica</i> , Internexa (51%).	Former local/regional fixed incumbents plus long-distance monopoly.
<b>Foreign ownership</b>	No restrictions.	
<b>Price controls</b>	Retail outgoing voice: See Table 2.3. <ul style="list-style-type: none"> <li>• Fixed to mobile calls are regulated.</li> <li>• Claro's outgoing mobile calls: (off-net charge&lt;=on-net).</li> <li>• Price cap applies to local fixed line operators (&gt;60% market share)</li> </ul>	
<b>Line of business restrictions</b>	None.	
<b>Interconnection controls</b>	Regulated. See Table 2.3	
<b>Market definition, analysis and remedies on players</b>	The CRC issues dominance declarations for operators holding SMP in communications, including TV markets.	
<b>Essential facilities</b>	Obligation to provide access at regulated prices to essential facilities (e.g. submarine cables, national mobile roaming).	
<b>Spectrum assignment</b>	Dual licensing regime: MINTIC (communications) and ANTV (broadcasting). Assignment through auction (IMT-2000) and beauty contests (" <i>proceso de selección objetiva</i> ") for the rest. ANE advises on technical matters. Revenues go to FONTIC and FONTV.	Auctions described only concern communication services.
<b>Infrastructure sharing</b>	Only ducts and poles, applied to all players.	
<b>Numbering policy</b>	Number portability (NP) only for mobile service.	
<b>Universal Service</b>	Strata 1 and 2 are exempt from VAT (fixed telephony). Fibre roll-out to municipal heads with aim of reaching 90% of population. Telecommunication operators under the new regime pay 2.2% of gross revenues to FONTIC, an ICT fund (see below). Rates were higher under the past regime.	

## 2.2. Regulatory institutions

A number of bodies or agencies in Colombia have direct or indirect responsibility over the communications sector. The powers of these institutions are defined by the ICT Law of 2009. The *Ministerio de Tecnologías de la Información y las Comunicaciones* (MINTIC), or Ministry of Information and Communication Technology, and the *Departamento Nacional de Planeación* (DNP), or National Planning Agency, both answer to the President. However, the MINTIC is a government ministry, while the DNP discharges its national planning role in an advisory capacity.

The MINTIC is responsible for telecommunications policy making and also has the main responsibility for overseeing the ICT industries. Its role is not limited to policy, however. It has a number of other bodies under its tutelage, such as the CRC and the ANE, as well as powers over key areas, such as spectrum assignment or enforcement of regulation, that go beyond setting policy objectives and measuring progress. The Minister is a member of the CRC's board and acts as its Chairman.

The DNP is responsible for universal access policy in conjunction with the Ministry, and also has powers to approve investment projects undertaken by the Ministry. Its director sits on the CRC's board.

Colombia's telecommunication regulator, the CRC is responsible for promoting competition in telecommunications, preventing the abuse of dominant position, and delivering ex-ante market regulation for networks and services to ensure the efficient provision of services. Unfortunately, the CRC cannot enforce regulation (i.e. it does not have the power to compel compliance of regulatory measures as it lacks sanctioning powers). It also regulates postal services and oversees broadcasting infrastructure but does not oversee television or radio content regulation. The CRC has legal, administrative and some degree of budgetary autonomy, but the Minister is the Chairman of the CRC and its board cannot meet in his or her absence. The CRC's budget is subject to a number of limitations, such as a cap set by the Ministry of Finance, even though it is funded by contributions from the industry.

The ANE is tasked with spectrum planning, management and control, and has a degree of technical autonomy (as does the CRC), although none of its board members is independent from the government.

In addition, the *Autoridad Nacional de Televisión* (ANTV), or National Television Authority, was set up in 2012 as a legal autonomous administrative body, and thus has more power and autonomy than the CRC. It replaced the *Comisión Nacional de Televisión* (CNTV), or National Commission for Television, set up under the 1991 Constitution. The ANTV is responsible for licensing in the television broadcasting sector, including assignment of spectrum, strengthening public television and regulating content. Thus, two entities grant licenses in the sector: ANTV for television services and the Ministry for all other communication services.

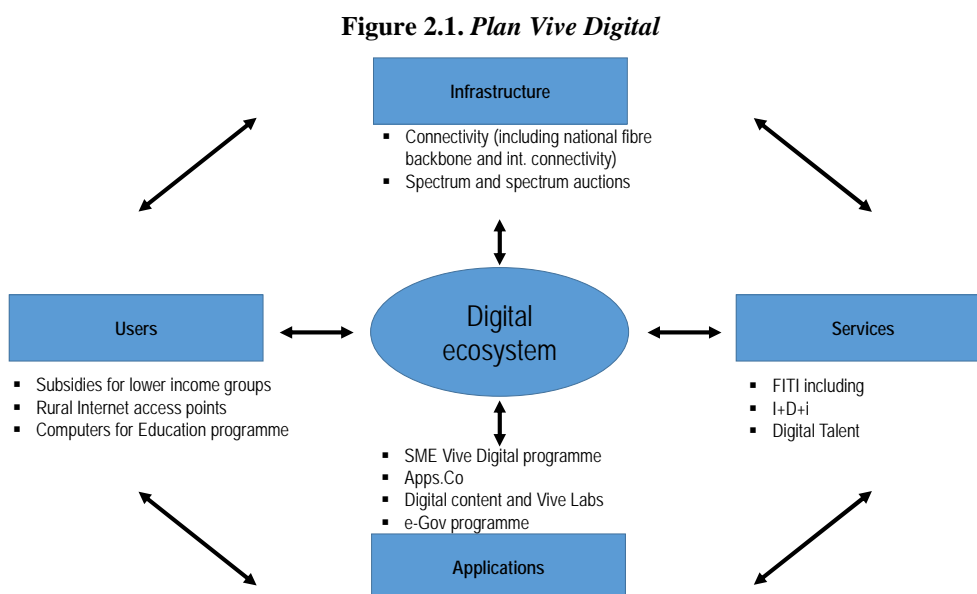
The *Superintendencia de Industria y Comercio* (SIC), or Superintendence of Industry and Commerce, is the competition authority and consumer protection agency, responsible for enforcing antitrust regulations, promoting competition and protecting consumer rights. The SIC mandate covers all economic sectors including telecommunications and broadcasting with the exception of financial services, television (content issues) and airline services. The President can appoint and remove the head of the SIC (the Superintendent) as he or she sees fit.

### *The Ministry of Information and Communication Technology*

Until 1994, the Ministry of Communications was responsible for oversight of the telecommunication sector. In 1994, Law 142 transferred some of the Ministry's responsibilities to the newly created CRT. Then, in 2009, Law 1341 established the CRC, which took over the CRT's regulatory functions. In addition, the ICT Law created the ANE to provide technical support on spectrum planning, management and control, and, more generally, provide advice to the Ministry and the ANTV on various spectrum-related issues.

After the enactment of the ICT Law, the Ministry underwent a major reform. It changed its name from the Ministry of Communications to the Ministry of Information and Communication Technology. Implicit in this change was recognition of the importance of demand-side policies to promote adoption of ICTs in Colombia (CEPAL, 2011). As a result, the Ministry has now a larger portfolio of responsibilities and focuses not only on infrastructure and universal access issues, but also on other areas, including e-government, ICTs in education, ICT and broadband adoption, trust in ICTs and ICT skills, among others.

The flagship ICT initiative of MINTIC is *Plan Vive Digital*. This has four major areas: infrastructure, services, users and applications (Figure 2.1). The main infrastructure initiatives are addressed below. *Plan Vive Digital* falls under the 2010-2014 National Development Plan, *Prosperidad para todos* (Prosperity for All), implemented under the current administration.



Source: OECD based on MINTIC (2013).

Many of the actions included under *Plan Vive Digital* are a continuation and/or evolution of existing MINTIC policies. For example, the previous plan (for the 2006-2010 period) already included initiatives to increase Internet access for public institutions such as schools, libraries, municipalities and hospitals; a plan to promote access to ICTs for disabled people; computer adoption for education purposes and ICT skills (see Annex C). *Compartel*, another predecessor to *Vive Digital* which dealt with infrastructure issues, included the deployment of a submarine cable to San Andrés, subsidies for broadband access for strata 1 and 2, rural telephony, and so on (see section 2.9).



Funding for these initiatives is drawn from the *Fondo para las Tecnologías de Información y las Comunicaciones* (FONTIC), established in 1976. This ICT Fund is a special administrative entity with separate legal status and patrimony, dependent on the MINTIC. Its functions are prescribed by Article 35 of the ICT Law.

Unlike ministries in most OECD countries that have limited their power to policy formulation and have stressed the importance of separating regulation from policy, the MINTIC plays a role as policy maker and *de facto* regulator, given the role of the Minister as President of the CRC. In fact, the CRC board cannot hold meetings without the Minister's presence, as the meeting would be considered not to have met quorum. In addition, the Minister participates in the decision making of the spectrum agency and the television regulator (see below). That being said, the existence of three independent commissioners may give the CRC a degree of *de facto* independence.

The fact that both the Minister and the National Planning Department are involved in regulation can potentially bring into conflict effective regulatory decisions with political considerations. These concerns are heightened by possible conflicts of interest, as the Colombian State is a shareholder of the second largest Colombia operator: it now holds 30% of Colombia Telecomunicaciones (Telecom), the rest being owned by Telefónica. Before the 2012 merger, it owned just below 50% of Colombia Telecomunicaciones (fixed subsidiary).

In addition, with one exception, only the Ministry can impose fines for lack of compliance with regulation.<sup>1</sup> The maximum amount that the Ministry can impose is 2 000 times the minimum wage – under USD 1 million. This provides little incentive for the largest operators to comply with regulation. As sanctioning powers are not within the remit of regulator, this creates an additional weakness and widens the lack of independence of the CRC.

### ***The National Department of Planning (DNP)***

The DNP is a government advisory body that reports directly to the President's Office. Its main responsibility is the elaboration of the National Development Plan, a strategic vision for the country and its development. This central framework document encompasses the entire presidential term and all government departments. It is produced in conjunction with other ministries with the DNP working to ensure consistency and coherence.

Every single government investment has to be approved by the DNP under this framework (with the exception of operational expenses). This means that the MINTIC has to request approval for any investment initiative through its Planning Office. An IT platform is in place to facilitate interaction, but the effective functioning of the whole system seems to rely to a great extent on the personal relationship between managers at both ends. The DNP authorises multi-annual investments of up to four years. Investment plans stretching over longer periods need to be approved by the *Consejo Nacional de Política Económica y Social* (CONPES). CONPES also develops policy documents that, once approved, become mandatory.<sup>2</sup> The DNP acts as the Secretariat of CONPES. CONPES comprises the Vice-President, ministers, the Director of the President's office, and the Directors of the DNP and Colciencias (the government department of science and technology).<sup>3</sup>

Finally, the DNP has a seat on the board of the CRC – together with the Minister of ICT. This undermines the independence of the regulatory body, as two out of the five commissioners belong to the government. DNP’s direct participation in the CRC also raises other questions. One is whether the DNP has the required skills to take important – usually rather technical – telecommunications regulatory decisions, bearing in mind the important impact the sector has on Colombia’s economy. Its participation may also further undermine the independence of CRC, potentially exposing its decision-making process to political pressure.

### ***The Communications Regulation Commission (CRC)***

In 2009, the ICT Law established the Communications Regulation Commission (CRC) as a replacement for its predecessor, the CRT. This change significantly augmented the regulatory power of this body and, within the framework of the law, gave it a large amount of discretion to interpret the law and implement regulations. The CRC is responsible for promoting competition in telecommunications, broadcasting infrastructure and the postal sector; preventing the abuse of dominant position; and regulating communication service markets and networks to ensure the efficient provision of services. It has complementary powers to the competition authority and can act independently of that body.

The CRC is an executive body of government under the MINTIC with administrative and technical autonomy, as well as its own budget, defined as a *unidad administrativa especial* (special administrative unit). However, the CRC is not an independent regulatory body given that it does not possess a separate legal status, and that the Minister of ICT sits on the board. Instead, the Ministry delegates all technical analysis of regulatory decisions concerning the sector to the CRC. The Chairman (*Presidente*) of CRC’s board is the Minister of ICT, responsible for policy formation. Consequently, there is no separation between policy and regulatory functions. The CRC is not even allowed to meet without the Minister (Article 20.1 of the ICT Law), which illustrates the extent of lack of independence. The CRC interacts with all other institutions involved in telecommunications policy and regulations (Ministry, SIC, ANE, ANTV) and co-ordination appears to work effectively, which may be closely linked to the fact the Minister is involved in all but one (i.e. SIC) of the aforementioned institutions. In some instances, the CRC can serve as technical advisor to the Ministry (e.g. handset theft regulations).

The Colombian government retains a stake (30%) in Colombia Telecomunicaciones, the second largest operator in the country.<sup>4</sup> This means that the government, through the Minister of MINTIC, plays a dual role of regulator and regulated entity. Although this may not technically contravene the United States/Colombia Free Trade Agreement, which states that: “*Each Party shall ensure that its telecommunications regulatory body is separate from, and not accountable to, any supplier of public telecommunications services. To this end, each Party shall ensure that its telecommunications regulatory body does not hold a financial interest or maintain an operating role in any such supplier.*”, as this stake is managed by the Ministry of Finance, it certainly raises concerns as the Minister of ICT is the Chairman of the CRC. The participation of the state in Colombia Telecomunicaciones (held by the Ministry of Finance), together with other shareholders, is regulated by an investment framework agreement (*Acuerdo Marco de Inversión*), signed in 2006 and modified in 2012.<sup>5</sup> Municipality or regional governments control many other operators in the country (e.g. ETB, UNE-EPM), though this does not place them directly under the central government (see Section 1.3).

In addition to the Minister, the CRC's board includes the Head of the DNP (also from the executive branch of government), and three full-time commissioners appointed by the President of Colombia for a fixed period of three years. The commissioners must be qualified electrical/communication engineers, lawyers or economists (at least one must be an engineer) and have eight years of related experience. The post of Executive Director is held by one of the commissioners on a rotating basis. The three-year mandate of CRC Commissioners is too short by OECD standards. A period of four to six years would be more suited to the requirements of the job, as most new commissioners require a settling-in period.

Staggered appointments would help ensure continuity among commissioners, and avoid the replacement of multiple commissioners at the same time, as it happens now. In addition, with the aim of the appointment process benefiting from greater transparency, an appointment committee could be established to put forward a list of suitable candidates for the President to choose from. Mexico recently designed and conducted such a procedure to appoint the commissioners of its new telecommunication regulator (IFT). In this case, the appointing committee comprised the Governor of the Central Bank, the Head of the National Statistical Office and the Head of the National Institute for the Evaluation of Education.

According to the ICT Law, the mandate of the CRC is to promote competition, prevent abuse of market power, and increase efficiency and quality of service, although it lacks sanctioning powers. Its functions include regulating the technical and economic aspects of access, interconnection, use of essential facilities and quality of service, and developing benchmarking indicators. It also resolves disputes between operators. It assists the MINTIC in the development of technical standards, the administration of numbering resources and the establishment of reporting obligations.

In 2012, its mandate was extended (law 1507) when responsibilities for the regulation of television were changed. The CRC obtained responsibility for television network and infrastructure regulation, and issuing regulations for consumer protection. Previously, under Law 1341, the CRC was not responsible for television services transmitted over telecommunication networks as this was not specifically stated in Law 1341 and subsequent court rulings had stated that only the ANTV had powers over television services, regardless of the technology used. However, this situation changed with the enactment of Law 1507 of 2012.

The CRC is required to follow transparent procedures in developing draft regulations (Decree 2696 of 2004). Accordingly, it publishes drafts with supporting background documentation on its website and requests comments from market participants and the public. The received comments are likewise published on their website, as well as the responses to each of those comments. Frequently, comment periods are extended or go through several rounds. In addition it is required to put forward every year a Regulatory Agenda, also subject to comments. This underlines both the virtues of transparent regulation by the CRC and the drawbacks, in that the issuing of regulation is time consuming and often delayed.

The CRC is financed by annual contributions from all registered communications companies, including postal, based on their gross income reported the previous year. The CRC stipulates the percentage contribution companies will pay every year, which can be up to 0.1% of gross income, even though the actual amount spent is between 0.03% and 0.06%. The remainder, if any, is returned to the operators. For 2013, the operators' contribution is set at 0.059%. The CRC also faces certain budget-related limitations. Its

budget is subject to three caps (one defined by Congress, another by the Ministry of Finance and a last one by the MINTIC). The budget for 2013 reached some COP 26 billion (USD 13 million). The CRC publishes on its website a detailed account of the annual budget and its execution.<sup>6</sup>

The CRC has some 80 staff of which 35 are professional. There is a limit on staff numbers, and new posts need to be approved by the President. Nevertheless, the CRC is solely responsible for recruitment, and has not lately reported any shortage of human resources, although it often outsources the analysis of regulatory measures to consulting firms given the availability and competence of staff for specific projects. Notwithstanding this, concerns have been raised over difficulties in retaining staff for long periods and attracting senior staff, given the restriction concerning previous employment with the industry (Article 21 of the ICT Law), even though CRC staff is regarded as well-prepared and technically skilled. These restrictions extend as far as a two-year ban from counselling, advising, working, instructing, guiding or lecturing any individual directly or indirectly involved in the industry, regardless of the appointment level and period spent as CRC staff. Clearly, these restrictions should be reviewed to allow the CRC to recruit staff and much-needed expertise from the industry.

The CRC is also accountable to many different bodies. It submits an annual report to Congress and to the Ministry, and is subject to supervision by the Comptroller General of the Republic (*Contraloría*), the Attorney General's Office (*Procuraduría*) and the General Prosecutor's Office (*Fiscalía*).

Moreover, the CRC publishes an annual "agenda" which sets out the major initiatives it expects to undertake in the following year to improve competition in the market. In 2013, the agenda highlighted the following initiatives:<sup>7</sup>

- Determine of a cost methodology to ensure efficient remuneration of shared infrastructure.
- Develop regulatory conditions applicable at the national level for the deployment of communication infrastructures (Code of Good Practice).
- Examine bundling of services practices to ensure that there are no "market failures".
- Examine the contract conditions imposed by communication network and service providers on users specifically with respect to clauses on minimum contract periods.
- Implement pre-selection for long distance services.
- Examine the evolution of measurement and reporting practices of quality indicators for different telecommunication services in Colombia, with an emphasis on voice communications over mobile networks, in order to assess the effects of the measures in the different markets and implement quality measures for Internet connections for fixed and mobile networks.
- Promote financial services provided through mobile networks.

In developing its 2013 regulatory agenda, the CRC took into account the *Plan Vive Digital* for 2010-2014, a direct descendant of the overarching 2010-2014 National Development Plan. Some of its principles encourage the private sector to deploy infrastructure and lower legal and technical barriers. Every three years, the CRC also

needs to elaborate a regulatory impact assessment (as established by Decree 2696 of 2004). The last assessment published in 2012 for years 2009-2011 showed a positive impact for the measures adopted by the CRC.

The CRC is a weak regulator, among other reasons, because it lacks both enforcement and sanctioning powers, with the exception of the imposition of fines for missing or flawed information. Such fines are relatively low at under USD 300 000.<sup>8</sup> All other sanctioning powers rest with the Ministry. Providing the CRC with sanctioning powers is essential to increase its credibility and leverage among operators. Such a move is also crucial to avoid political interference in the enforcement of regulation. While a degree of political exposure can be useful, for example, in helping to raise awareness of quality of service issues, it also distracts from the main function of telecommunications regulators – ensuring that regulations are enforced in a full and timely manner-, thereby promoting a level playing field for operators.

On the positive side, the broad consultation processes put in place by the CRC seems to be harnessing regulation from the judicial revision process, as very few regulatory decisions are brought before the courts. One of the few decisions subject to court challenges concerned termination charges for calls originating in a different calling area. Notwithstanding this, the courts have yet to overturn a regulatory decision, although some have been delayed. For example, Claro successfully challenged the participation of the former Executive Director of the CRC in the decision on asymmetric mobile termination rates, *de facto* delaying the process for over a year. The regulatory framework is still relatively recent (2009), however, the quality and diligence of decision making by the CRC is expected to improve over time, although further legislative changes may be necessary.

In conclusion, as the CRC is not a separate legal entity, operators must sue the Ministry to appeal decisions made by the Commission. This may limit the number of legal challenges, but entails the usual drawbacks that arise from the lack of an independent regulatory body. Conversely, the broad consultation processes and the existing regulatory framework seem to be working well, as regards court challenges. A more diligent review of judicial decisions should be implemented, while taking due care not to undermine transparency and the quality of regulatory decisions.

### ***The National Spectrum Agency (ANE)***

The National Spectrum Agency (ANE) is responsible for spectrum planning, management and control. It was created by the ICT Law of 2009 at the same time as the CRC. The ANE is an administrative body with technical and administrative autonomy, similar to the CRC, but under the control of the MINTIC. All ANE decisions are taken by the Board, whose members comprise the ICT Minister, the ICT Vice-Minister and the Head of the ICT Fund (FONTIC), all of whom form part of the government. The Executive Director of the CRC and the Director of ANE are non-voting members of the Board.

The ANE is a small body with a staff of 55 (expanded to 82 as of September 2013), and a director-general. Its mandate covers three areas: surveillance and control, technical spectrum management and planning, and institutional support. In addition, it assists the MINTIC in all technical aspects and is responsible for setting spectrum caps. In 2011 (Decree-Law 4169), the responsibilities of planning and allocating spectrum, as well as updating the *Cuadro Nacional de Atribución de Bandas de Frecuencias* (CNABF), or National Frequency Allocation Plan, were transferred from the MINTIC to the ANE. The ANE also undertakes technical work necessary for spectrum assignment decisions, which is submitted to the MINTIC for consideration.

The responsibilities of the ANE include formulating the spectrum plan, managing the spectrum and controlling its use. The Agency also has powers to impose fines for misuse or infringement of spectrum regulations, but does not have powers to grant the right to use spectrum, which falls under the powers of the MINTIC. In addition, the Agency advises the government on the viability of granting spectrum following any requests for spectrum access.

In 2012 the ANE was also given responsibility for spectrum use for broadcasting, previously the responsibility of the CNTV, performing all activities related to allocation, management, planning, surveillance and control of television broadcasting spectrum.<sup>9</sup> As a result, this responsibility now falls mostly under one roof in line with the growing convergence of telecommunication services.

Television broadcasting licensing, supervision and regulation, however, remain under the responsibility of the *Autoridad Nacional de Televisión* (ANTV), or National Television Authority, formerly the CNTV. Among other things, ANTV inherited the *Plan de Utilización de Frecuencias* (PUF), or Frequency Utilisation Plan (2009), the master document for TV spectrum planning. This establishes the framework for management of TV spectrum in general, and focuses in particular on the migration to Terrestrial Digital Television and the principles and rules of multiplexing as part of the analogue switch-off. The ANE is developing a new television frequency plan to be presented in the first half of 2014, which will lay the groundwork for the digital switchover and spectrum use until 2022.

Although the creation of ANE led to changes in spectrum management, the assignment of spectrum licences remained with the MINTIC. Market entry, as stated above, is a regulatory issue. Spectrum licensing (other than for broadcasting) would thus be more effective if placed under the responsibility of the CRC. This would also complement the licensing process for broadcasting, whereby spectrum permits fall under the purview of the ANTV.

### ***The National Television Authority (ANTV)***

The National Television Authority (ANTV) is responsible for licensing of television providers, including spectrum licenses, public television policies and regulation of television content. It was created in 2012 by Law 1507 and replaced the National Television Commission (CNTV). The Authority is an independent body and a separate legal entity, and nominally enjoys a degree of autonomy from the government (e.g. unlike the CRC or the ANE). However, given the structure of its board, a higher degree of autonomy may be difficult to achieve.

The board of the ANTV is made up of five commissioners: the Minister of ICT, a representative appointed by the President and three independent members, including a representative from the universities, a representative from local governments (*Gobernaciones*) and a representative from civil society. The terms of commissioners are not renewable.

The ANTV is funded through periodic contributions paid by television service providers to the Television Development Fund (FONTV), which equal 1.5% of gross revenues, of which up to 0.3% are devoted to the ANTV's operating costs, plus a per subscriber fee (USD 1 per month – COP 1 874.34 in 2012), plus 10% of the gross advertising revenues. FONTV also funds public broadcasters. FONTV and FONTIC (see earlier) represented 7% and 3% of sector revenues in 2012, respectively. Relative to total

government expenditures, the contributions to FONTV represented a share of 0.11% whereas FONTIC represented a share of 0.41% in 2012. These figures (i.e. FONTV contributions) are higher than operators' contribution to FONTIC, which creates an incentive to reduce the price assigned to television services in triple-play bundles.

The ANTV co-operates with ANE on broadcasting spectrum issues. In 2013, they signed a protocol to ensure effective collaboration. As of April 2013, the ANTV also consults on the obligation for pay-tv operators to carry free-to-air channels, and remuneration principles (must-carry/must-offer). Technical issues in the broadcasting sector, such as quality of service, transmitting power, use of satellite networks and obligation to users, remain the responsibility of the CRC. In addition, the CRC was entrusted with competition issues in the television sector, market definition, network and infrastructure regulation, and regulation and protection of users' rights. Powers previously held by the CNTV (ANTV's predecessor) including responsibility for mergers of television providers were transferred to the SIC.<sup>10</sup>

### *The Superintendence of Industry and Commerce (SIC)*

The Superintendence of Industry and Commerce (SIC) is the Colombian competition, consumer protection, industrial property and personal data protection authority. It regulates competition law enforcement, including antitrust investigation and merger review for all industries. As the national consumer protection authority, it is responsible for protecting consumers and enforcing general and specific consumer protection provisions for telecommunication services. As the data protection authority, it is also responsible for intellectual property issues. Its powers were considerably reinforced by Law 1340 of 2009, which transferred many of the powers held by sector agencies to the SIC, including competition powers in the telecom sector. As a result, all powers for the application of competition and consumer protection law now fall under the purview of the SIC, with the exception of consumer-related issues in television services, which remain under the authority of the ANTV. The SIC is not an independent authority. Its head can be appointed and removed at will by the President. In turn, the SIC's Superintendent can also appoint and remove Deputy Superintendents.

In competition law matters, including telecommunication and television services, the SIC may:

- Investigate abuses of dominant position or, more broadly, apply competition law.
- Investigate anti-competitive agreements and cartels.
- Review mergers and acquisitions and, if necessary, prohibit them or impose conditions.
- Authorise leniency programmes.

Regarding consumer protection, the SIC may:

- Conduct investigations on telecom services providers that may culminate in the imposition of orders and fines.
- Develop binding instructions for providers to comply with the legal provisions on consumer protection, and enforce such instructions.
- Order service providers to modify contracts to make them compliant with the law.

The CRC as a sector regulator provides advice to the SIC on telecommunication-related issues. In practice, when the SIC analyses mergers it usually takes into consideration the CRC's relevant market definition. With regard to disputes and consumer complaints, the SIC provides a channel to file complaints, provided the operator's response has not been accepted by the customer (see Section 2.11).

The sanctioning powers of the SIC are considerably higher than those of the MINTIC. Whereas the MINTIC can, in principle, impose fines up to 2 000 times the minimum wage, Law 1340 of 2009 allows the SIC to impose fines up to 100 000 times the minimum wage, or 150% of the profits resulting from the illegal conduct in question. Such powers play a crucial role in allowing the authority to gain credibility, play an influential role and prevent anticompetitive practices effectively.

On the negative side, under the current framework, the independence of the SIC is even more compromised than that of the CRC. The President can appoint and remove the Superintendent at any moment, and the appointee does not have a fixed term of office. There is a widespread agreement among competition experts that the heads (or boards) of competition authorities should be independent from the government.

### ***Overall assessment of the institutional framework***

After the passage of the ICT Law in 2009, Colombia increased the powers of the CRC, although it did not ensure its independence, or make it responsible for the enforcement of regulation. The current framework allows asymmetric regulation, either in fixed or mobile markets, covers features such as local loop unbundling and wholesale broadband access and uses the concept of "essential facility" as a "*one-size-fits-all*" instrument usable for many different purposes, from national roaming to submarine cable regulation. In theory, therefore, this framework should be sufficient to address the existing regulatory concerns in the industry. Nevertheless, the CRC lacks powers to impose operational, functional or structural separation of telecommunication operators.

At the same time, the new consumer protection and competition regimes have reinforced the authorities' powers to protect consumers and deal with abuses of dominant position. For example, raising awareness of quality of service issues has triggered new regulations and new safeguards, which should increase consumer trust of communication services and providers.

The Colombian institutional framework has two main strengths: a clear division of roles between the different authorities, and high standards of transparency and accountability. Co-ordination among the different agencies seems to be working reasonably well, even though recent changes in the functions of authorities may involve a learning curve and, therefore, a period of time to achieve optimal performance. On the other hand, CRC's lack of independence from the government and the absence of enforcement powers render it a weak regulator by OECD standards.

The main criticism which can be made regarding the current institutional framework of the telecommunication sector is the lack of independence of many of the authorities involved. To start with, the Minister of ICT sits on every decision-making body related to telecommunications: as the Chairman of the CRC, the ANE and the ANTV. In addition, the Minister runs a government department that is not only of telecommunications policy, but also of many important regulatory functions, such as conducting spectrum auctions or imposing fines for lack of compliance with regulation.



Having an independent regulator is considered good practice in OECD countries and is important for a number of reasons. From a public policy perspective, it is crucial to separate industrial policy and the promotion of competition and, if these two disciplines enter into conflict, the possible discrepancies should be resolved at the legislative level by providing principles or objectives that the telecommunication regulator should observe. Otherwise, there may be a risk, for example, that the regulator relaxes its regulatory surveillance in order to engage in industrial policy, such as the promotion of local companies or even national champions (Melody, 1997 and OECD, 2006). In Colombia's case, the significant stake that the government owns in the second largest operator, with its historical roots in the former fixed-line public monopoly, exacerbates these concerns.

Moreover, the independence of the regulator should be preserved to isolate it from political pressures, which can interfere with day-to-day regulation and distract it from delivering effective regulation. From a leadership point of view, the skills needed to run a regulator may not be those required for a member of cabinet or a political leader in the country. Increased political exposure for telecommunication issues may help in some cases, but could also distract from the CRC's main task: delivering effective regulation. Therefore, the CRC should be reformed to become a truly independent regulator, free from political interference. The CRC should also have sanctioning powers that guarantee that regulations are effectively enforced. The amount of possible fines or measures should be high enough as to deter operators from obstructing, delaying or distorting compliance.

The literature on regulatory capture largely argues in favour of separating policy making and regulation, especially in cases where the state has stakes in a "regulated firm". Such is the case in Colombia, where the government owns one third of *Colombia Telecomunicaciones*. The opposing view, in Colombia, has taken the position that some degree of political control and oversight in the regulatory agencies is necessary to avoid regulatory capture. This belief is mainly linked to past experiences with the former television regulator. It is true that the CNTV precedent is not very encouraging, as it was accused of corruption and dismantled in 2012 to create the ANTV.<sup>11</sup> While these fears are justified, they should be tackled through improved accountability and transparency standards, applied both to the CRC's outputs – regulations -- and to its daily operations and resource management. In this respect, the CRC is already subject to many different controlling bodies: it needs to report to the legislature, it presents a roadmap for regulatory actions, and is subject to a number of auditing bodies, such as the Comptroller-General and the General Attorney of the country. Should the Colombian authorities deem that these controls are insufficient, they should be reviewed accordingly. However, by no means is lack of independence the right solution.

The MINTIC should limit its role to policy formulation and to promoting ICT use and adoption. This is not a minor role, as confirmed by the high visibility of *Plan Vive Digital*. In that respect, it should transfer its powers on spectrum management to the ANE, which should in turn merge with the CRC to form a powerful regulator with a broad perspective across all relevant issues in the sector. As spectrum is a strategic public resource, the Colombian government should, of course, retain some powers to guarantee that national interests, such as security, are ensured. Otherwise, transferring spectrum management and planning to the CRC would make more sense, as is already the case of many OECD countries (e.g. the United Kingdom, the United States). The ANE would constitute the area within the CRC responsible for spectrum issues. The Colombian government could also retain powers over the management of spectrum resources that it uses (e.g. military, police, emergency services), but should otherwise let the regulator administer spectrum use for communication services. The fact that the ANE already

undertakes all spectrum allocation, management, planning, surveillance and control tasks for telecommunication and broadcasting services is a step in the right direction. In a convergent world, it makes sense to have only one authority responsible for spectrum-related matters.

When assessing the current framework, due consideration should be given to its relatively short existence to date. The new telecoms law was passed in 2009 and key changes, such as the replacement of the CNTV by the ANTV, only took place in 2012. Although the CRC has been in place for nearly two decades, it is likely that this institution will need a period of adaptation to adjust to the new framework, especially with regard to improving its co-ordination processes. The recently agreed protocols for improved co-ordination between the CRC and the SIC, and between the ANTV and the ANE, are positive steps in this direction. Similar protocols or framework agreements should be further encouraged between the different authorities.

Finally, the question remains as to whether a single regulator would be better placed to deal with a converged communications environment. Clearly, the rise of over-the-top providers (OTT) and the provision of triple-play services have put the current model to the test. While some of ANTV's functions can still be clearly separated from infrastructure provision (e.g. production of local content, rules on advertising), this may no longer be the case going forward as the trend toward convergence continues. The United States (FCC) and the United Kingdom (Ofcom) already follow this model. Moreover, Australia's recent convergence review should be analysed carefully with regard to the issues a country must consider when evaluating the need for a "converged regulator". In the case of Colombia, issues such as must-carry/must-offer rules, different contribution requirements for FONTIC and FONTV and the design of regulation for triple-play services would be more easily dealt with by a single body. The CRC and the ANTV should merge to form a converged regulator, in which a specialised division (the current ANE) would act as the technical body with specialised expertise in spectrum matters providing technical advice, as it now does for the ANTV and the MINTIC.

Notwithstanding this, the presence of a separate competition and consumer authority (SIC) may help to keep an eye on developments in the market, by safeguarding the weakest in the ecosystem – in other words, consumers that may be affected by abuses or insufficient competition. Regarding competition powers, these may best be kept under a different agency, the SIC, to ensure that CRC's actions are coherent with general competition law. As recommended for the CRC, the SIC should be independent from the government and its head should not be subject to discretionary appointment and dismissal, as it is currently the case. Regardless of whether the SIC is headed by a single officer or a collegial body, it should be separated from the government to guarantee sufficient impartiality.

The SIC should also provide a "second-check", should ex-ante regulations issued by the CRC not be effective (as already established by Law 1340 of 2009). Conflicts arising from this double jurisdiction may arise, as in many other countries, but could be reduced if collaboration between both authorities takes place at all levels, from top management to the expert level, as seems to be the case. Nevertheless, this relationship should be formalised via a protocol or a memorandum of understanding (MoU). Similar considerations are also valid for consumer policy issues. Moreover, the clear link between competition and consumer policy issues may well justify placing both powers under the same agency. Should the SIC require technical expertise on telecommunication issues from the CRC, it should be provided by means of enhanced co-operation or joint task forces.

### 2.3. The regulatory regime

The telecommunication sector in Colombia, within the broader ICT industry, is viewed as an important tool to promote economic and social development, and to improve quality of life. Such precepts are embedded in the Constitution and in various laws. They are closely linked with the importance given to public services, the regulatory bodies set up pursuant to Law 142 of 1994 on the provision of public service, and the emphasis on competition where possible for public services to increase efficiency in delivery, universal access and quality of service. Adherence to these principles is the cornerstone underlying the responsibilities of the CRC (and its predecessor the CRT). The CRT was responsible for promoting and regulating competition in telecommunication services, preventing unfair behaviour, and had the authority to propose asymmetric regulations when necessary.

#### *Market entry*

Following the approval of the ICT Law in 2009, market entry requirements for telecommunication operators, other than those using spectrum as set down in Decree 4948 of 2009, are limited to a registration process.<sup>12</sup> The process is fairly rapid and not burdensome. The provision of a communication service that uses radiofrequency spectrum requires a prior authorisation or license from the Ministry.<sup>13</sup> The ICT Registry, under the responsibility of the Ministry, can be modified and updated. Moreover, when an operator provides a new communications service, or stops supplying one, it must inform the ICT Registry of such changes.<sup>14</sup>

New entrants are required to provide information on the legal and natural persons undertaking the registration, a description of the network and services to be provided and the use of scarce resources, such as spectrum. All registered market participants providing telecommunication networks and services, including Internet Service Providers (ISPs), are obliged to contribute 2.2% of their gross revenues from the provision of the networks and services to FONTIC.<sup>15</sup> This levy works like a tax on telecommunication services, and has a negative impact on demand which most likely offsets the benefits of the projects that it funds. This percentage (2.2%) was higher in the past and was subsequently reduced by the Ministry. The purpose of this fund is to expand universal access (see below) and to develop the ICT sector in general. Additionally, market participants also have an obligation to provide information on a regular basis on a number of indicators of the services they provide, including quality of service indicators (see section 2.11).

Lastly, mobile services are subject to a higher VAT tax (20% instead of 16%), which is used for different purposes unrelated to telecommunications or ICT promotion. This imposes an additional burden on the sector.

#### *Licensing regime*

The Ministry regulates the conditions and requirements for licenses needed for the use of spectrum. Spectrum that has been allocated to mobile services (i.e. IMT spectrum) is assigned through an auction process. The Ministry is in charge of the auction design process, which in accordance with the ICT Law (Article 72) must undergo public consultation. Other types of spectrum (e.g. spectrum microwave links or radio stations) are assigned through a “*proceso de selección objetiva*” or “beauty contest”.<sup>16</sup> This procedure in most cases results in direct assignment of the band if the candidate meets certain criteria. When there are several stakeholders interested in a specific spectrum

band, candidates are evaluated according to how well they match a list of priorities. If candidates have exactly the same characteristics, a lottery takes place.<sup>17</sup> Some new entrants (i.e. Avantel) have been critical of the frequency and demands of these “beauty contests”, including them being an excessive burden. In that respect, administrative requirement for entrants, especially small, should be reduced to the extent possible to promote entry and rapid network deployment. Such processes should be streamlined and be conducted regularly.

It must be noted that a dual licensing system exists. The Ministry handles licensing for most communication services, while the ANTV grants licenses to operate television services, such as open broadcasting services (national or regional), pay television and community television.<sup>18</sup> In November 2012, the ANTV issued a resolution that established a *unique license* in order to offer pay-television services, irrespective of the technology used by providers.<sup>19</sup> This regulation established the bidding process that takes place in order to grant licenses to new operators. This dual licensing regime should be reviewed in the light of convergence, for example, for IPTV or new OTT video services, should they be subject to licensing requirements. In a converged licensing regime, service providers would only register once and be able to provide all services, including television.

Spectrum licenses granted by the Ministry come with obligations attached to them, for instance, the 2.2% annual fee for funding FONTIC.<sup>20</sup> In addition, operators must pay a fee for the use of spectrum that depends on the type of band (e.g. payment for a 700 MHz band will differ from a 2.5 GHz band), the bandwidth the operator holds, the population it serves and a weighting factor related to the value of the spectrum band.<sup>21</sup> This fee may be paid upfront when the permission to use spectrum is granted, or paid annually. In the latter case, it is calculated by the MINTIC on the basis of a certain formula laid down in Resolution 2877 of 2011. In addition, licensees must comply with CRC’s regulation, in particular, Resolutions 3066 and 3067 of 2011 (protection of users’ rights and quality of service). Discussions are on-going on the development of a unique regime for spectrum fees, which should increase regulatory certainty for operators.

### ***Past and new regime: Concession agreements vs. licenses***

The new licensing regime in Colombia came into place with the ICT Law in 2009. A license is a title granting permission for exclusive exploitation of a resource. The previous regime consisted of concession agreements, which are contracts between the state and a company for the provision of a service that undergoes a public tender process.<sup>22</sup> In practical terms, both regimes assign spectrum through an auction mechanism, although the main difference in Colombia is that a license is a general administrative act, and no longer a contract.<sup>23</sup> The principal caveat of a license is that it does not contain arbitration clauses, and hence conflict arising between operators and the state must be resolved directly in the courts. Licenses are supposed to allow the government further supervision/enforcement powers, while operators argue that concessions granted more legal certainty in comparison with the new licensing regime.

Concession agreements in Colombia are, at present, equivalent to licenses, although some differences persist regarding the contributions to FONTIC. Concessions last for ten years with an automatic renewal option for a further ten years (Decree 41 of 1993). The two largest mobile operators (Comcel and Telefonica) were granted concessions in 1994. These were renewed in 2004 and are due to expire in 2014. Attached to the concessions was an obligation to contribution 5% of gross revenues to FONTIC, as opposed to the

2.2% contribution under the new “convergent” regime, now uniform for all operators.<sup>24</sup> These asymmetries should be phased out, as it is not acceptable to require competing operators to provide different contributions to the fund. They should be harmonised at the shortest delay, and operators should not be allowed to choose the framework that favours them the most, thus extending the period of asymmetrical obligations (as mandated by a recent decree in 2013).

### ***Reversion of network assets***

The renewal of the aforementioned concession contracts in 2004 sparked a debate regarding the reversion of network elements or “assets”. This referred to the networks deployed to provide mobile service using spectrum resources. The 1994 original concession contracts for mobile services were based on the Telecom Law of 1993.<sup>25</sup> This law does not explicitly state that all network assets should be returned to the nation; however, such a clause is indeed present in the concession agreements.<sup>26</sup> Law 422 of 1998 and subsequently the ICT Law of 2009, on the other hand, explicitly state that once a license expires, and is not renewed, the operator is bound to return *only spectrum* to the state.<sup>27</sup>

The debate arose because of the terms under which the original concessions were granted. The Comptroller-General (*Contralora General*) argued that spectrum was made available at a very low price on the basis that all network assets were to revert to the state at the end of the license period. The Ministry also seems to have used this argument to justify higher spectrum fees in the on-going negotiations for renewal of Tigo’s spectrum license in 2013.

Furthermore, the significant increase in use of telecommunication services has contributed to higher perceived values for spectrum use. The Ministry has not yet taken an official position. However, the Comptroller-General has stated that either spectrum permits should not be renewed and network infrastructure returned to the nation, or the payment for spectrum originally stipulated in those concessions be properly amended to take into account the non-reversion of assets at the end of the license period.

A recent Constitutional Court decision (August 2013) supported the Comptroller-General’s arguments and ordered the reversion of assets. This was done on the basis that the legislator that had enacted previous dispositions damaged the public interest and had exceeded its powers at the time.<sup>28</sup> The implications of this decision are somewhat unclear, but could range from renegotiation of current or previous spectrum payments to reversion of the whole infrastructure to the state, should the concessions not be renewed. The economic implications of this decision should be clarified as soon as possible (only a summary of the decision has been published, pending the actual ruling). While a readjustment of past spectrum payments may be lawful, uncertainties over this economic compensation may discourage investments by operators and should be avoided.

In spite of the potential threat of network asset reversion, operators seem confident that their licenses will be extended in Q2 2014. At this point, all operators (with the exception of Tigo) will fall under the same regime. However, there remains uncertainty about the associated economic conditions (i.e. spectrum payments and fees). These conditions may impact the levels of investment on networks, although operators have dismissed this possibility. Another, highly unlikely, possibility is that, in view of the conditions put forward by the Ministry, some operators may state their intention not to renew.

**Table 2.3. Main regulatory developments in Colombia since liberalisation**

Year	Milestone
1993	Law 37 and Decree 741 of 1993 establish the rules for mobile licenses and spectrum auctions. Three regional duopolies are created. A total of 40 MHz in the 850 MHz are assigned.
1994	Law 142 of 1994 (Law of Domiciliary Public Services) opens the fixed line market to competition. Law 142 also establishes accounting separation for firms offering local and long-distance PSTN services (Article 18).
1995	CNTV assumes spectrum control and management of bands allocated to television services.
1997	CRT Resolution 087 places the CRT in charge of authorising retail tariffs for local PSTN operators with more than 60% market share (according to an average cost methodology). All other operators (i.e. local, long-distance, mobile) are free to set retail tariffs. This resolution also establishes the first General Interconnection Regime. Interconnection costs to be borne by the interested party.
1998	Law 422 amends Law 37 of 1993 and changes the licensing regime for mobile network operators. Only spectrum resources are to revert to the state at the end of the license period.
2000	Law 555 mandates the entry of a third mobile player.
2001	CRT Resolution 463 applies interconnection charges to fixed networks. Regulated prices depend on network size, based on a cost model (updated based on a 2% productivity factor).
2002	CRT Resolution 469 establishes the Unified Interconnection Regime (RUDI). Interested parties should negotiate conditions of interconnection within 30 days. If not, the CRT will intervene. Interconnection tariffs are to be based on efficient cost plus a "reasonable profit" (i.e. taking into account the "opportunity cost" to the established operator).
2003	Colombia Móvil (third mobile operator) enters the market (Resolution 908 of 2003).
2005	Amendment of Resolution 087 of 1997 concerning tariff rebalancing.
2007	CRT Resolution 1763 regulates interconnection charges for mobile and trunking networks (largely left unregulated until 2007). It sets a price cap based on a cost model.  Decree 2870 ("Convergence decree") entitles telecommunication service providers (with the explicit exception of television service providers) to adopt voluntarily a unique "convergence" license ( <i>Título Habilitante Convergente</i> ).
2009	February: CRC Resolution 2058 declares Claro as having SMP in outgoing mobile voice. CRC Resolutions 2066, 2067, 2171, and 2172 impose on-net/off-net regulation on Claro. July: Law 1341 (ICT Law, also known as the Convergence Law) transforms CRT into CRC and establishes a unique registration requirement for all communication service providers.
2010	MINTIC Resolutions 250, 469 and 833 assign spectrum in the 2.5 GHz band to UNE-EPM.
2011	Decree-Law 4169 transfers responsibilities of planning and attributing spectrum, as well as updating the National Frequency Allocation Plan, from the MINTIC to the ANE.  CRC Resolution 3066 regulates the rights of users of telecommunication services. CRC Resolution 3067 defines quality of service indicators for communication services. CRC Resolution 3501 defines access conditions for SMS and MMS. MINTIC auctions fibre backbone deployment for <i>Plan Vive Digital</i> . TV Azteca wins the contract (No. 437 of 2011).
2012	January: Law 1507 dissolves the CNTV and creates the ANTV.  CRC Resolution 4002 imposes asymmetric termination charges on Claro given its SMP. CRC Resolution 3530 establishes the standards for authorising the sale of mobile handset devices.
2013	4G auction awards spectrum to new entrants Avantel, and DirecTV. This auction included a requirement for of automatic national roaming. CRC Resolution 4112 classifies national roaming as an essential facility.  Constitutional court decision vacates Law 422 of 1998 to extend reversion to network assets.

The new “converged” licensing regime is a step in the right direction, as it minimises the risk of operators exploiting clauses in original concession contracts to evade further obligations imposed by regulation. Nevertheless, the CRC and the Ministry must make conditions in this new licensing regime as clear as possible, so as to reduce uncertainty and foster investment in the sector.

### *Licenses for pay television*

Television licenses (free-to-air and pay television) are granted by the ANTV. On 2 November 2012, under Resolution 179, the ANTV introduced a unique license to offer pay television services with national coverage, regardless of the technology used by the provider. This decision regulates the general bidding process to license new operators. Operators licensed prior to this date were granted ten-year concessions, which may be extended. Pay-tv licenses are obtained through public tender and are subject to specific obligations, such as meeting a set operating date and a “must-carry” obligation for national and regional public channels.

A pay-tv, subscription-based operator must also pay a periodic contribution to the ANTV comprising a fixed and variable fee for the license and an additional fee for the right to offer television services to the public. Both fees are based on the number of subscribers.

## **2.4. Regulations and related policy instruments in the telecommunication sector**

The initial process of market opening was somewhat hesitant following the 1994 Law but this process accelerated in the late 1990s. Since then a number of positive steps have been taken to develop competitive telecommunication markets in Colombia. In particular, changes resulting from the 2009 ICT Law have set the basis for an effective institutional framework, and provided the authorities with strong tools to further develop competition in the market and ensure that the new technologies benefit both the Colombian economy and citizens. Likewise, regulation issued after 2009 has been mainly targeted at facilitating the transition to new technologies and understanding convergence. Table 2.3 shows the key regulatory decisions in Colombia.

### *Ex-ante regulation*

In 2007 the CRT was tasked by Decree 2870 with defining the criteria and conditions for determining relevant markets and dominant positions in those markets and with taking appropriate steps. The model put in place had many similarities with the European regulatory framework: it lays down a procedure for market analysis, definition and, if appropriate, imposition of behavioural remedies to address existing competition concerns in those markets.

The CRC, which replaced the CRT, has the power to undertake market analysis and impose behavioural conditions on operators, including pay television providers. Such conditions include wholesale offerings on reasonable and non-discriminatory conditions. Those operators with a dominant position must provide access to network elements considered as essential facilities on an unbundled basis. In theory, this would include the local loop. Under this framework, the CRC has the capacity to impose both symmetrical measures on all players in a given market, and asymmetrical remedies such as mandated local loop unbundling or regulated mobile termination rates.

**Table 2.4. Relevant markets, analysis and remedies**

Market	Resolutions	Dominant players	Remedies
1.1 Retail outgoing (fixed and mobile) local voice	087 (1997), 2063 (2009), 3497 (2011), 3534 (2012)	Fixed and mobile form one single market. No dominance found. One-way F2M substitutability	Local fixed line operators are obliged to publish their tariff plans. Obligations for strata 1 and 2 Unregulated since 2009. F2M retail charge is regulated: COP 153.17 (VAT excluded), given by a formula (3497/2012) Price cap applies to local fixed line operators (>60% market share). Only reporting obligations. No structural competition concerns.
1.2 Residential retail fixed data access (broadband Internet)	3510 (2011), 3549 (2012), 3616 (2012)	–	Only reporting obligations. No structural competition concerns.
1.3 Corporate retail fixed data access (broadband Internet)	3510 (2011), 3549 (2012), 3616 (2012)	–	Only reporting obligations. No structural competition concerns.
2.1 Retail outgoing mobile voice	2058, 2066, 2067, 2171 (under judicial review), 2172 (2009), 3136 (2011), 4002, 4050 (2012), MVNO resolutions: 2028, 3152. National roaming: 4112 (2013), MINTIC Resolution 449 (2013)	Claro	Off-net/on-net price regulation: <ul style="list-style-type: none"> <li>• 2066 (2009): off-net price ≤ on-net price + MTR</li> <li>• ARPM_offnet ≤ ARPM_on-net + MTR</li> <li>• 4002 (2012): off-net price ≤ on-net price /2 + MTR</li> <li>• 4050 (2012): off-net price ≤ on-net price</li> </ul> Obligation to provide a wholesale offer to application and content providers –2067 (2009) in the terms of Decree 2870 (2007). Obligation to pass on saving from lower MTRs. Verification of replicability of Comcel's bundled offers (voice + data). National roaming is regulated based on its designation as an "essential facility". Automatic roaming obligation for spectrum awarded in the 4G auction in June 2013.
2.2 Retail outgoing (fixed and mobile) long-distance voice	–	–	–
2.3 Retail outgoing international long-distance voice	–	–	–
2.4 Post-paid mobile data	3510, 3549, 3616 (2012)	–	Only reporting obligations.
2.5 Prepaid mobile data	3510, 3549, 3616 (2012)	–	Only reporting obligations
4.1 Retail call termination (fixed to mobile)	3497 (2012)	All operators that terminate calls	F2M retail charges are regulated.
5.1 Termination wholesale markets (5.1.A.-F2F in each municipality, 5.1.B.-M2F in each municipality, 5.1.C.-M2M nationally, 5.1.D.-nationwide international long-distance)	CRT 087 (1997), CRT 1763 (2007), CRT 2156 (2009), 463 (2001), 1763 (2007), 2354 (2010), 3136, 3497 (2011), 3534, 4001, 4002, 4050 (2012), 4190 (2013) Fixed: 3534 (2012), 3500 (2011) (SMS), 3069 (2011) (billing), 2585 (2011), 2630 (2010) (international long distance)	All operators that terminate calls	Caps on F2M. Actualisation formula. Asymmetric rate for Comcel (accelerated downward glide-path). Per minute and per capacity interconnection rates. Operators benefitting from asymmetrical termination rates (Movistar and Tigo) must show that benefits are being passed on to customers through lower prices or additional investments.
5.2 Carrier wholesale market/ leased lines ( <i>servicio portador</i> )	–	–	Only reporting obligations.



The OECD has long favoured asymmetric remedies as a general principle, so that only dominant players meet certain obligations that promote competition in the market, for example in the recent OECD telecommunication review of Mexico (OECD, 2012a). These statements should not, however, be understood as arguing for asymmetric mobile termination rates specifically, but rather as an overarching principle for telecommunication regulation and, more broadly, competition law. That being said, this report includes a discussion about mobile termination rates applied to the case of Colombia. It is important to note that all operators have a monopoly in terminating calls in their network.

In 2009, following an extensive consultation process, the CRC issued Resolution 2058 which defined the relevant markets for ex-ante regulation in telecommunications, and Resolution 2062, which determined whether dominant positions existed in those markets and the applicable measures. Of course, this list can be subject to change over time (Table 2.4). It is important to highlight here that regulations should be subject to periodical reviews, and should the competitive conditions change, the list of relevant markets subject to ex-ante regulation should be amended accordingly. As such, it is important to ensure that the periodic review of regulations is not subject to discretion, but is rather required by law by the inclusion of sunset clauses.

Once a market has been included in the list of markets subject to ex-ante regulation, there are two non-mutually exclusive possibilities open to the CRC. It can issue general measures or obligations that apply to all players in that market, such as a price cap on mobile termination rates or the obligation to host MVNOs. Alternatively, it can deliver specific obligations, targeted to only one player, such as the off-net/on-net regulation imposed on Claro. Therefore, the Colombian framework clearly allows the imposition of asymmetric regulation, as has occurred in mobile telephone markets. The CRC makes the distinction between retail and wholesale markets, even though it sometimes rules on both levels using the same resolution (e.g. Resolution 4002 of 2012).

In addition, the ICT Law of 2009 provides clear principles to ensure access and interconnection. Article 50 stipulates that all telecommunication providers must allow interconnection with their networks and access to and use of essential facilities upon request, under the following principles:

- Non-discrimination (same charge involves same access)
- Transparency
- Prices based on cost plus a reasonable profit
- Promotion of free and fair competition
- Prevention of abuse of dominant position
- Interconnection practice at a given location and time will not be harmful for networks.

For example, submarine cable heads have been declared “essential facilities” and are regulated through CRC Resolution 2065 of 2009. As a result, operators of cable heads need to publish a reference offer. These operators are free to set the rates for access, but need to respect the principles of non-discrimination and transparency. Resolution 3101 of 2011 includes a list of essential facilities for access and interconnection purposes: IT systems that support communications, civil infrastructure elements (e.g. rights of way, ducts, poles, towers, energy), billing information, collocation space and head of submarine cables and number portability databases. This Resolution also specifies a list

of essential facilities for interconnection-only purposes: signalling and commuting, transmission between nodes, customer services systems and national mobile roaming. An interpretation of the ICT Law would tend to indicate that a similar reasoning could be applied to other facilities which could eventually be declared “essential facilities”, such as the copper local loop.<sup>29</sup>

### ***Regulation of interconnection***

An interconnection and access framework for the telecommunication sector is crucial to enabling competition in markets. The framework should support a number of requirements:

- *Availability of an appropriate set of interconnection and access products/services.* Certain services, such as reciprocal termination by networks of each other’s calls, are a necessary element in any connected regime. Mandating one-way access to the incumbent’s assets will depend upon policy makers’ preferences for infrastructure or service competition and nuanced judgements as to whether and when competitors can, through investment, replicate the incumbent’s assets.
- *Appropriate pricing of interconnection and access products.* One-way or two-way access pricing is a key element of any interconnection regime. Prices must provide adequate incentives for the access provider and the new entrant to invest in assets, and for the access seeker to enter where it is efficient for it to do so. The dominant regulatory approach to pricing of persistently non-replicable assets or bottlenecks is cost-based, in particular long run incremental cost (LRIC, TELRIC, etc.).
- *Non-price terms.* Access and interconnection services must be fit for purpose to prevent voice calls being dropped on handover and to allow uninterrupted data streaming. However, there may be incentives for access providers to “sabotage” their competitors either by degrading interconnection quality or causing delays in interconnection. Quality of service measures are therefore essential.
- *Predictability.* Competitors often have to make significant investments to enter the market. At the early stages, in particular, they are heavily dependent on interconnection and access products. For entrants to have confidence to invest, the interconnection regime must be predictable. A minimum requirement is transparency. The entrant must have access to information on which services are available (e.g. through consultation of a reference offer). Predictability can also be enhanced through measures such as publication of the regulator’s cost models.
- *Due process.* Procedures must be in place to ensure that mandated interconnection and access products are available in a timely manner. In practice, delayed access often amounts to denied access.

This section considers the degree to which the interconnection and access regime in Colombia meets these requirements. It describes the legislative, institutional and regulatory regime, and then examines the experience of interconnection in certain key areas.

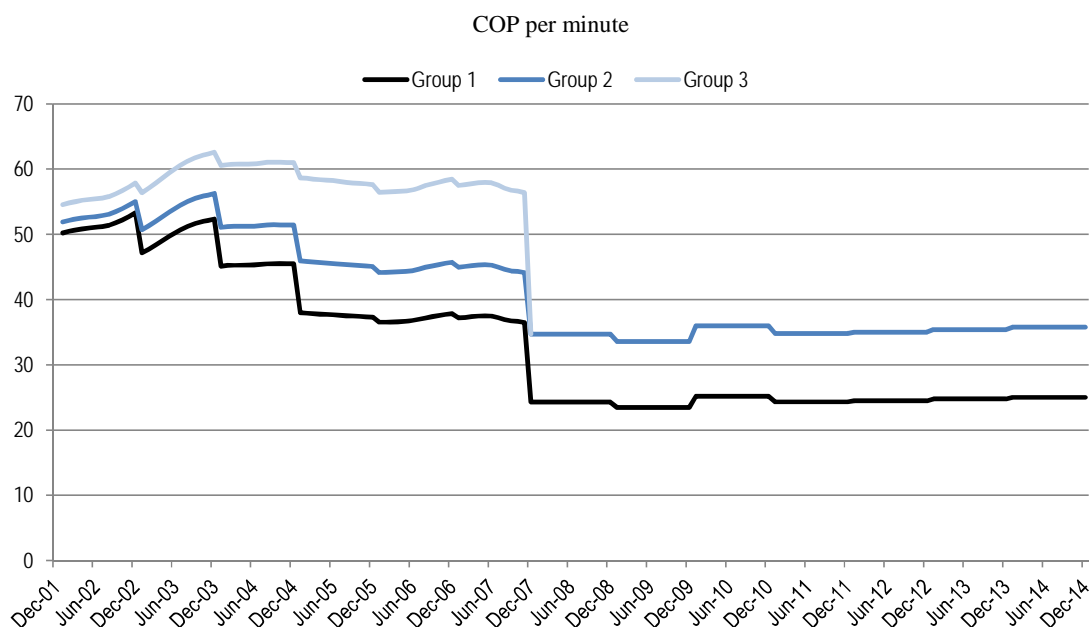
### *The development of interconnection in Colombia*

The bulk of ex-ante regulation developed over the last decade has been in part or fully related to interconnection. The process began in 1997 with the opening of the long-distance market through a resolution regulating PSTN services.

Resolution 087 established a methodology to set interconnection charges and provided a dispute resolution mechanism. Fixed local interconnection was subject to regulation in areas where there was insufficient competition – or market share above 60% – and left otherwise unregulated or subject to registration requirements only. At that point in time, according to the resolution, the network interested in interconnection had to bear the investment costs involved. In 2002, Resolution CRT 469 established the Unified Interconnection Regime (RUDI) under which operators would negotiate interconnection conditions, with the CRT resolving disputes if necessary. Interconnection tariffs would be based on efficient costs plus a reasonable profit (i.e. the operator’s opportunity cost).

The interconnection charges applicable to fixed networks were set the preceding year under Resolution CRT 463. This divided fixed network operators into three groups (Figure 2.2) based on the number of lines in service. Group 1 comprised the two largest companies in the largest cities in the country (ETB in Bogotá, and UNE and EPM in Medellín). The framework was based on different prices according to network size. Regulated tariffs were established based on a cost model during the first year and were subsequently updated based on revision formula with a 2% productivity factor. In 2007, Resolution 1763 reduced the number of fixed network operators to two groups. This resolution also established the principles of cost orientation applied to termination charges, and the unbundled elements necessary to provide interconnection.

**Figure 2.2. Maximum interconnection charges**

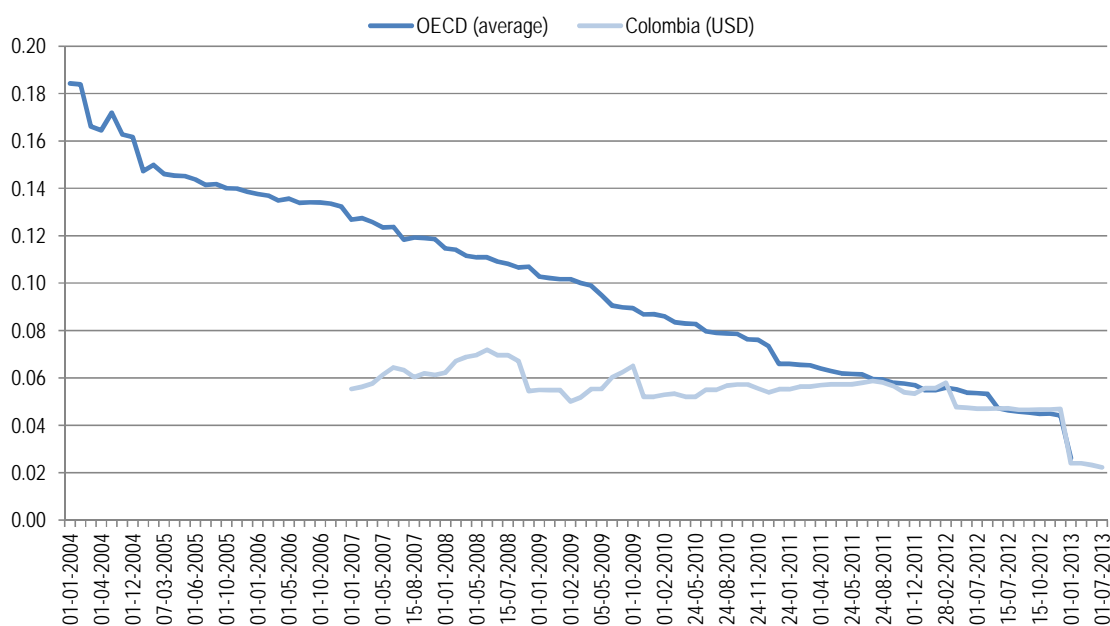


Source: CRC.

In Colombia, termination charges related to calls that originate in a different calling area or from abroad are subject to a different regime, whereby terminating operators are entitled to a “transport tariff” (*cargo de transporte*), in addition to local termination charges. A similar reasoning applies to incoming long distance international traffic. These termination charges, especially the “extended local” charge, have prevented operators from offering large buckets of minutes for national calls. In line with other OECD countries, where national flat rate plans are the rule, Colombia has taken steps to eliminate “extended local” termination charges, even though a court decision is pending.<sup>30</sup> In 2012, the CRC issued Resolution 3534, which sets a decreasing path for these charges, down to zero starting from 2015. In addition, the deployment of a nationwide fibre network should contribute to reducing the costs of providing transit service among local areas. For areas not connected to a nationwide fibre network, Resolution 3534 foresees a maximum rate of USD 6 cents/min (COP 135). For local interconnection each operator (within the local area) uses “bill and keep”; in other words, operators retain all amounts billed to users without compensating other (local) operators.

Interconnection charges for mobile and trunking networks were largely left unregulated until 2007, albeit the CRT had imposed regulated charges in the event of disputes, up until 2006.<sup>31</sup> This increase in termination charges contributed to a more stringent approach by the authorities that tried to reduce mobile termination charges from 2006 onwards (Figure 2.3). Resolution 1763 of 2007 introduced this change and obliged operators to comply with a price cap (see Table 2.5 below).

**Figure 2.3. Mobile termination rates in Colombia and OECD average**



Source: CRC and OECD.

**Table 2.5. Termination rates from 2012 onwards**

Termination rates, USD/min (COP/min)

		Before 2012	2012	2013	2014	2015	2016
Mobile telephony, trunking	Other operators	0.055 (103.38)	0.048 (84.15)	0.04 (70.26)	0.03 (56.38)	0.024 (42.49)	0.024 (42.49)
	Comcel	0.055 (103.38)	0.048 (84.15)	0.024 (42.49)	0.024 (42.49)	0.024 (42.49)	0.024 (42.49)
SMS			0.019 (33.61)	0.0086 (13.33)	0.0052 (9.20)	0	0
"Transport charge" (local extendida)		0.0763 (135)	0.051 (90.21)	0.034 (60.14)	0.017 (30.07)	0	0
Fixed – local:							
Group 1		0.014 (24.7)	0.014 (24.7)	0.014 (24.7)	0.014 (24.7)	0.014 (24.7)	0.014 (24.7)
Group 2		0.0196 (34.70)	0.0196 (34.70)	0.0196 (34.70)	0.0196 (34.70)	0.0196 (34.70)	0.0196 (34.70)

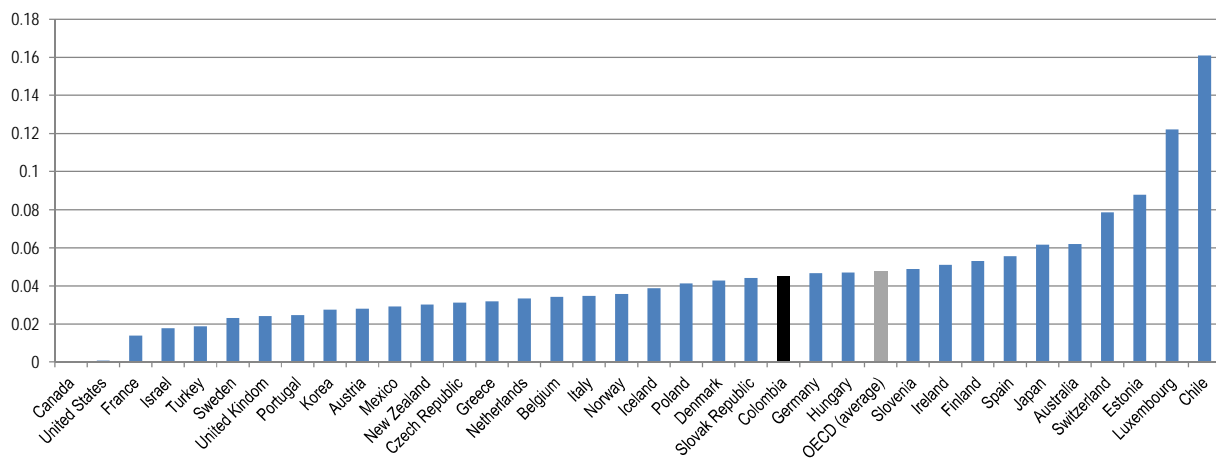
Source: CRC.

Interconnection prices were determined until 2007 using a TSLRIC (Total Service Long Run Incremental Cost) model, which was in turn migrated to a pure LRIC model from 2011 onwards. While the first model had the capacity to account for differences in efficiency/costs incurred by the different operators, a pure LRIC model essentially delivers symmetric charges, which represent the long-term efficient operator.

Overall, mobile termination charges in Colombia are in line with the OECD average for 2012/2013. However, given the downward path in many OECD countries, they may not remain so in the coming years (Figure 2.4). The regulated charge for 2015 has been established at USD 0.02 (COP 42.49), above the planned regulated rates in France and the United Kingdom and well above termination charges in non-European countries such as Canada. The CRC is currently considering a new draft regulation to review mobile termination charges and proposes a “sender keeps all” model, in addition to a regulated termination charge on entrants’ networks.

**Figure 2.4. Mobile termination rates in Colombia and OECD countries, October 2012**

USD



Source: OECD and CRC.

The economic evidence confirms the beneficial effects of low termination rates on competition and promoting efficiency (Armstrong, 1998; Laffont, Rey and Tirole, 1998; Laffont and Tirole, 2000; Cambini and Valetti, 2003; Cave et al., 2003; Growitsch and Marcus, 2010). Some have also suggested that a “bill and keep” model would reduce complexity and prove beneficial in the long term (BEREC, 2010a).<sup>32</sup> In 2012, moreover, the OECD recommended bringing mobile termination charges down to zero or to levels close to zero in the medium term (OECD, 2012b). The OECD report also showed a clear correlation between larger calling patterns and lower mobile termination rates. Some of the unlimited calling offers being launched in the OECD in recent years, such as in France or Israel, would not have been possible without the dramatic decrease in termination rates in those countries. This is also the case of Colombia.

In conclusion, it seems likely that a pure LRIC model would deliver similar termination costs in Colombia as in France or the United Kingdom. This suggests that there is further scope for MTR reductions in Colombia, below the planned USD 0.02 for 2015. Therefore, Colombia should give priority to further reductions in mobile termination rates which, in turn, would remove distortions linked to asymmetrical rates.

### *The issue of asymmetry*

Regulation of mobile interconnection in Colombia has always been discussed in conjunction with dominance issues in the retail mobile market, namely the high market share of Claro/Comcel and the rise of on-net traffic. The CRC has also regulated the market at the retail level by imposing restrictions on on-net/off-net call price differentials, as discussed below. In addition to the retail regulation applied to Claro, with regards to wholesale markets, the CRC utilises ineffective competition in the mobile market as a justification for imposing asymmetric termination rates on Claro or, better said, as the justification for an accelerated downward glide path for Claro’s termination charges, resulting in asymmetry across operators at a given point in time until 2015.

Asymmetrical termination rates are, however, hard to justify for operators that have already been in the market for many years, such as Movistar or Tigo, as they promote inefficiencies. The European Commission Recommendation (European Commission, 2009) only justifies the use of asymmetrical termination charges for new entrants and for a limited period of years, until they reach a critical mass of 15% to 20% market share. Otherwise, those entrants may face difficulties in gaining a critical mass before providing a competitive threat to established players. As both Movistar and Tigo have already reached the reference size or are about to do so, it is difficult to identify a substantial cost difference that justifies asymmetrical termination rates. Other cost considerations, such as increased network costs due to the use of higher frequencies would apply only to Tigo – not to Movistar – and would need further argumentation. Moreover, these potential cost differences may have already been discounted by lower prices paid for spectrum in higher bands. In short, if these cost differences represent a real barrier toward effective competition in Colombia, they should be addressed through less distortive instruments than asymmetrical termination rates.

Notwithstanding these arguments, and given the considerable time invested in enforcing asymmetrical termination rates, these should remain in place until 2015, according to the CRC ruling, when they are expected to reach symmetry. The CRC should also plan a further decrease (lower than USD 0.02, COP 40 for 2015), which sets a long-term price cap for termination rates – if not moving towards a “bill and keep” system, as applies for fixed local termination rates. Dysfunctional reactions in the retail

market caused by “club effects” may be tackled rather through regulation of off-net/on-net price differentials, as currently attempted by the CRC. In situations where termination rates are lower and closer to marginal costs, restrictions on on-net/off-net price differentials may not play such an important role in the future, as smaller operators will be able to replicate such offers more easily.

The existence of asymmetric termination charges may distort competition if mobile operators focus their efforts on wholesale income from interconnection rates, rather than competing in the retail segment through lower prices that attract a larger consumer base. With this in mind, the CRC issued a regulation in 2012 aimed at mobile operators benefitting from asymmetrical termination rates (i.e. Movistar and Tigo). Resolution 4001 stated that operators have to show that this financial advantage is passed on to consumers in the form of lower prices or higher investment. To that end, operators are required to set up a separate account and link it to reductions in prices or investments made. Such a system makes no economic sense for a number of reasons. First, if the regulatory framework as a whole is functioning, it should deliver these results through increased competition, higher investment and lower end prices for consumers. Second, such controls are not sustainable in the long run, and run contrary to the economic freedom of operators to manage their companies. For example, an operator may want to use this financial advantage to offer higher upfront discounts for smartphones, which may not compute as “lower prices for consumers”.

To sum up, asymmetric termination charges not only distort the way in which operators compete (without economic justification), but also increase the regulatory burden (e.g. the need to set up a monitoring system). Such a system, along with the asymmetric charges, should be eliminated to allow operators to compete as they wish.

Some stakeholders have argued that asymmetric MTRs are improving competition in the Colombian mobile market since they were in force (January 2013). In view of the decrease of on-net traffic (based on information provided by operators), these measures are certainly having an effect, although it may rather be the elimination of on-net/off-net price differentials (see below) that is having a stronger effect, or both (on-net/off-net differential and asymmetric MTRs). As a way forward, the CRC should examine the competitive conditions in the mobile market and seek further reductions in mobile termination rates. If rates are decreased further, the issue of asymmetry will become less important.

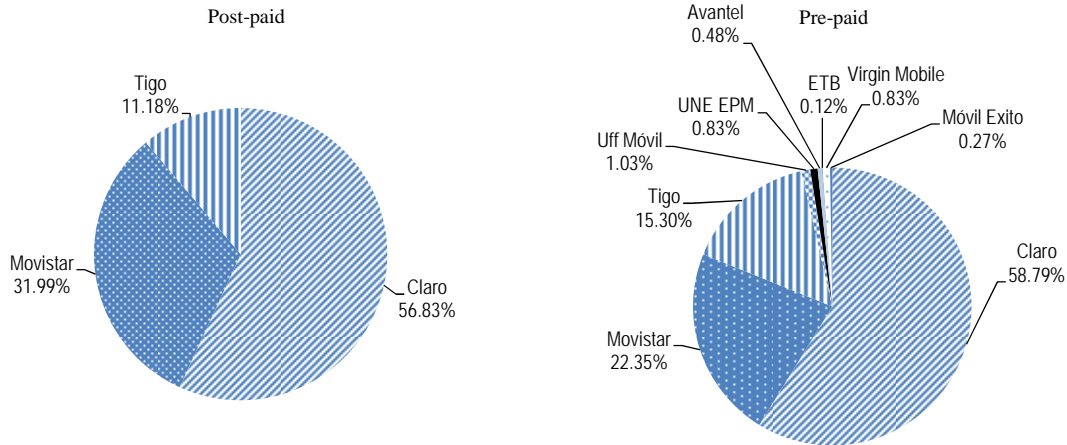
### *Dominance in the mobile sector*

The most pressing issue facing the CRC during the course of 2012-2013 is the question of market dominance in the mobile sector, and the measures needed to reduce this dominance. The CRC also expressed concern that this dominance could be leveraged over to mobile broadband services, a service which is expected to grow rapidly. Concerns regarding Claro’s dominance were raised as early as 2005. More recently, a 2012 study published by Fedesarrollo estimated that excessive prices for mobile services in Colombia resulted in a welfare loss of 0.77% of GDP in 2011 (Fedesarrollo, 2012). These results have been contested by a study commissioned by Claro (Oviedo, 2013).<sup>33</sup>

Starting from a market share of nearly 50% in 2000, after buying Celcaribe and Ocel (two of the regional duopolies), Comcel (now Claro) started to grow its subscriber base through a strategy based on lowering tariffs, extending coverage and bringing a number of innovations to the market. Even though its growth was significantly decreased by the entry of Tigo in 2003, it grew again in 2004-2005, benefitting, among other factors, from its strategic decision to move forward with GSM technology. Movistar, who purchased

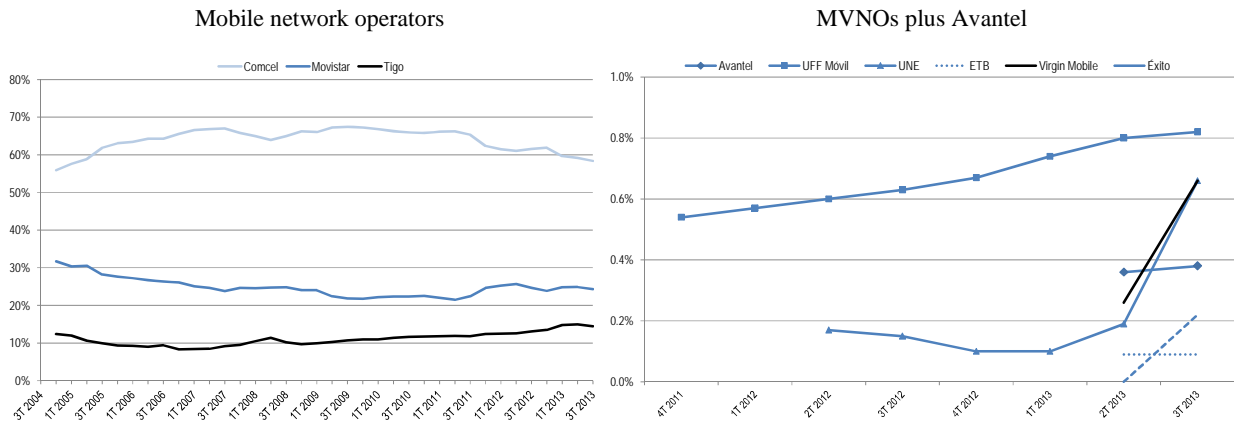
BellSouth in 2004, took more time to take a decision to migrate to GSM, which clearly hindered its development. All in all, Claro’s market share has remained since 2005 above 60% in terms of subscribers (Figures 2.5 and 2.6). Claro has focused its commercial strategy on the prepaid market although its postpaid share is also relatively high. From the start, Claro took the decision to reach out to rural areas and target low-income subscribers, which has translated into a much wider coverage than its competitors.

**Figure 2.5. Mobile markets shares (lines) for post-paid and pre-paid, Q3 2013**



Source: MINTIC.

**Figure 2.6. Market share evolution (subscribers)**



Source: OECD based on data from the CRC and the MINTIC.

In 2009, the CRC launched an investigation into Claro on the basis of its consistently high share of the mobile market, as measured by subscribers and revenue. It found that the operator had a dominant position in the retail voice mobile market, and resolved to impose ex-ante regulation (Resolution 2062). The CRC also found evidence that traffic patterns were increasingly shifting towards on-net traffic (87% in 2010, up from below 80% in 2009). High shares of on-net traffic together with off-net/on-net price differentials were weakening competition. The result was increased barriers to switching, resulting in consumer lock-in. The situation forced consumers to buy more than one SIM card in order to call different networks at competitive rates. This undermined interconnection and interoperability obligations.



The CRC determined that Claro's off-net price could not be higher than the on-net price plus the regulated mobile termination rate (Resolutions 2066 and 2171). On-net prices that were either zero or lower than off-net prices were viewed as having negative effects on competition in the relevant market. The 2009 determination had little impact, according to the CRC, as the new regulation covered only billed minutes and most of Claro's on-net traffic was labelled as "promotional". In 2012, the CRC revised the regulation to the effect that off-net prices, charged by this provider, for all types of traffic, can never be greater than the on-net price charged to its users, including promotions and discounts of any kind (Resolutions 4002 and 4050).

Claro used a tariff structure that differentiated between on-net and off-net calls whereas Movistar and Tigo have tended to use uniform prices. When an operator has a large market share, low on-net prices tend to reinforce that market share and increase revenue from termination charges. The European Regulators Group (ERG) has argued that "... *an on-net/off-net retail price differential, combined with significantly above-cost MTRs, can, in certain circumstances, tone down competition to the benefit of larger networks*" (ERG, 2008). In particular, smaller operators encounter difficulty in reducing their off-net retail prices if faced with high above-cost termination charges from large operators. In this context, the CRC's regulation on on-net/off-net price differentials seems to be well-targeted and timely, especially now that it covers promotional traffic.

The SIC should monitor these developments closely and act if there is a breach of competition law (as occurred in France).<sup>34</sup> Some operators, such as Claro and Telefonica, are already being investigated by the SIC with regard to misleading reporting and delays in processing number portability requests. While the CRC may implement ex-ante regulation, if deemed necessary, the SIC should have a complementary role and protect competition, regardless of the existence of ex-ante regulation. Ex-post measures could extend as far as network separation (structural separation) as an instrument of last resort. The legislator should guarantee that the SIC – or the CRC – are given these powers, and have the capacity to use them if necessary.

The authorities could explore a number of initiatives to ensure a level playing field in the mobile market beyond lowering mobile termination rates, facilitating number portability, and ensuring that mobile tariffs do not reinforce dominance. Actions that may help alleviate dominance in mobile markets are placing spectrum caps on mobile providers and, more generally, facilitating the entry of new players (see Section 2.8). Both of these have advanced as a result of the latest spectrum auctions.

New market entrants need to use existing carriers' infrastructure while deploying a national network and acquiring a sufficient market base. Across the OECD area, access-related provisions have played a significant part in helping new entrants become a credible alternative to incumbents. Companies that have benefitted include 2 Degrees (New Zealand) in 2010, Yoigo (Spain) in 2006-2008, and Free Mobile (France) and Golan Telecom (Israel) in 2012. National roaming agreements also play a key part in this process. These may be based on commercial negotiations between carriers or regulatory intervention (or the potential threat of regulation). However, roaming agreements are rare in the absence of these two motivations. Promoting mobile virtual network operators is another area that is likely to foster competition in the mobile market.

In February 2013, the CRC issued Resolution 4112 which forced operators to provide national roaming as part of their license conditions. National roaming obligations, as laid down by the resolution, include:

- Availability of a national roaming public offering that includes essential technical requirements, deadlines and service fees, coverage areas, etc.
- Clear obligations for home and visited network providers.
- Regulated prices: for voice and SMS services, actual prices must remain below the caps.<sup>35</sup>

National roaming regulations have been issued under the powers for regulating essential facilities (as for submarine cables) and not the SMP framework. These obligations are valid as long as the licenses hold, usually for ten years. Such a long period counters incentives for operators to invest, although some have argued that the national roaming price cap is sufficiently high to provide those incentives regardless of a sunset clause. Roaming can be requested on the condition that the requesting operators cannot technically or economically replicate the service, which should mean that, once coverage advances, entrants will have fewer roaming entitlements. Notwithstanding this, investment can be seriously discouraged in many areas of the country.

As the costs of deploying mobile infrastructure are significantly lower than those for fixed access networks, it is counterproductive to enforce a national roaming obligation without a sunset clause. These regulations help new entrants deploy their networks faster and compete against established players. An open-ended roaming obligation would seriously harm those incentives. Therefore, the CRC should include a sunset clause to ensure that national roaming obligations only remain in force for a reasonable period (four to six years). This is in line with the opinion of the French competition authority (March 2013), which recommends that the contract signed between the incumbent (Orange) and the new entrant (Free) not be extended beyond its current duration (until 2018). It takes the position that to do otherwise would incur serious risks for infrastructure competition.<sup>36</sup>

Movistar and Tigo should not be entitled to low national roaming prices, as both operators are established players in a position to invest in network expansion. As an alternative, they could sign infrastructure sharing agreements to deploy infrastructure where none is present. New entrants, however, will rely strongly on national roaming obligations while they deploy their networks and make progress in adding new customers. In that respect, Avantel has filed petitions with the CRC, the MINTIC and the SIC against all MNOs regarding national roaming obligations. These petitions ask the CRC to determine the conditions for national automatic roaming and requests to MINTIC penalties for launching 4G services (Tigo and Movistar) without entering into roaming agreements with Avantel. This case exemplifies the importance of not only issuing regulation, but also having effective enforcement of such measures in order to foster competition in the market.

National roaming obligations as currently established by the CRC do not include provisions for mobile virtual network operators (MVNOs). There are currently six MVNOs in Colombia. ETB Movil, Móvil Exito, UNE-EPM and Uff! operate on Tigo's network, while Metrotel and Virgin operate on Movistar's. The most successful among these is Uff!, which has acquired about 400 000 customers since its launch in 2012. MVNO agreements are voluntary and not triggered by regulation, although the CRC made minor regulatory changes in 2012 to grant MVNOs numbering resources (Resolution 3152). Claro's network does not host any MVNOs, possibly due to a lack of incentives (i.e. absence of win-win arrangements). The CRC should monitor these markets and intervene should MNOs refuse to grant access to MVNOS on fair and reasonable terms.

In short, the CRC seems to be taking the right approach towards regulating mobile markets, with the notable exception of asymmetric termination rates. These rates, while improving the competitive position of the second and third largest network operators, could in the medium term promote inefficiencies and distortions in competition conditions. Nevertheless, the approach taken by the CRC should bear fruit in the short-medium run and the competitive conditions in Colombia's mobile market should improve. Some preliminary indicators already show that these measures, especially the off-net/on-net price regulation, are working as expected: Claro's on-net traffic has dropped from 91.9% (January 2013) to 88.2% (September 2013), while Movistar's and Tigo's off-net traffic have increased (from 26.0 to 29.4% and from 19.1% to 23.9% respectively over the same period).

### *Competition in fixed voice and broadband markets*

While mobile markets have attracted considerable attention from the Colombian authorities, there has been less remedial intervention or a "lighter approach" by the CRC in fixed markets. In 2009, the CRC published a decision that deregulated fixed voice markets in Colombia. The main justification provided was that mobile telephony services offered a very close substitute and put pressure on prices for fixed telephony. The CRC found (Resolution 2063) that there was one-way substitutability between fixed and mobile voice services, and that a hypothetical monopolist would not be in a position to increase its prices without customers migrating to mobile services. This finding was confirmed by a CRC's market review in December 2011. As a result, retail fixed voice markets remain unregulated, except for a price cap on fixed to mobile calls (established by Resolutions 1250 of 2005 and 3497 of 2011), justified by the CRC on the grounds of existing regulation on mobile termination rates. Low prices for residential fixed telephony services seem to back these findings and support the idea of competitive pressure from mobile operators.

Following the ICT Law of 2009 (Article 23) telecommunication operators are free to set retail prices in all fixed services. The ICT Law only allows price regulation in the following circumstances: i) if there is insufficient market competition; ii) if there is market failure; or iii) if predetermined quality of service standards are not met. Article 23 also states that priority should be given to wholesale over retail regulation.

In 2009, the CRC took a decision to regulate retail charges in a market that is not regulated at the wholesale level (fixed origination of voice calls), and which is also affected by wholesale regulation in the termination segment (regulated mobile termination rates). Regulating retail tariffs, however, does not seem justified if the relevant market has been found competitive. In general, retail regulation should only be a last resort measure once all wholesale measures have been examined. The CRC should either conduct a competition assessment of retail voice markets, and impose obligations accordingly or, as it did, declare those markets as competitive and lift obligations. In the latter case, fixed-to-mobile retail price regulation should also be lifted.

Of course, if the retail market definition were to encompass mobile outgoing voice, the market shares of fixed incumbents would decrease (mobile calls would form part of that market). But if the definition focuses on fixed lines, many local or regional telecommunication operators would retain positions of uncontested primacy. For example, according to the CRC's market analysis document, in December 2010, ETB held 71.9% of the lines and 66.5% of the traffic in Bogotá and surrounding cities; UNE had 96.7% of lines and 97.8% of traffic in the Medellín area; Telebucaramanga had 74%

of lines and 76.3% of traffic in the Bucaramanga area; and Coltel had 85.7% of lines and 89.4% of traffic in Cartagena. Incumbent operators in Santa Marta (Coltel), Pereira and Dosquebradas (ETP), Manizales (UNE-EPM) and Cali (Emcali) all had market shares above 70%. Such numbers highlight the absence of effective competition in the fixed access market.<sup>37</sup> In addition, fixed number portability has not been implemented in Colombia, which increases the barriers to switching operators. The CRC decided in 2009 that it was not worth implementing fixed number portability in Colombia. A new assessment will be made in 2014.

The approach to the fixed broadband market is similar to that for fixed voice, which the CRC leaves essentially unregulated. In 2012, only fixed broadband providers faced reporting obligations (Resolutions 3510, 3549 and 3616), which implement regulatory proposals included in the market review consultation document.<sup>38</sup> In September 2013, national market shares were relatively equally distributed among Telmex (31.20%), UNE-EPM (26.55%) and Movistar (18.98%) but, as with the fixed voice market, national market shares do not provide an insight into the competition dynamics of this segment, as most telecommunication incumbents are regional or local. Most of these local markets are, however, extremely concentrated. Once these factors are considered, the absence of sufficient competition becomes evident. HHI statistics by the end of 2010 and in 2012 show that broadband markets remain extremely concentrated, even though some progress has been made in the last two years (Table 2.6). Broadband markets could clearly benefit from increased regulatory action, such as wholesale access remedies, as even the largest cities in the country show HHIs over 4 000. Table 2.5 presents the most recently available market share data disaggregated by municipality, and a summary of HHI statistics provided by the CRC<sup>39</sup>

**Table 2.6. Average HHI by type of municipality, 2010 and 2012**

Type of municipality	Average HHI – residential BB (end 2010)	Average HHI – residential BB (2012)	Type of municipality	Average HHI – corporate BB (end 2010)	Average HHI – corporate BB (2012)
< 180 000 inh.	9 230	8 904	<20 000 inh.	9 515	8 446
180 000 - 930 000 inh.	5 571	4 714	20 000 – 290 000 inh.	8 578	6 935
> 930 000 inh.	4 549	4 267	290 000 - 930 000 inh.	5 534	3 938
			> 930 000 inh.	5 387	4 533

Source: CRC, “Revisión del Mercado Relevante de Datos y Acceso a Internet”, October 2011.

These market concentration numbers are extremely high by all standards, far above levels where markets are considered to be highly concentrated. For example, the horizontal merger guidelines of the United States Department of Justice and the Federal Trade Commission state that HHIs above 2 500 already involved highly concentrated markets.<sup>40</sup> The case law of the European Commission and the European Court of Justice also affirms that market shares higher than 50% (which implies HHIs above 2 500 and usually above 3 500) are, in the absence of exceptional circumstances, proof of market power.

It could be argued that these markets are tending towards effective competition as some of the established players are losing market share on a national basis. This analysis should in any case be undertaken for each one of the local markets. It seems that the main competitive threat to incumbent telephone operators is Claro, through its cable network

infrastructure. While these competition dynamics are highly desirable, the accumulation of most fixed broadband subscriptions in a given municipality/region by two main providers seems insufficient in the long term. The entry of more fixed providers should therefore be encouraged. Wholesale obligations, including local loop unbundling and bitstream access, should be introduced on existing loops, for new entrants to extend their reach and for incumbents to enter each other's markets. These possible wholesale obligations should be implemented in a manner that they do not hamper investment incentives for new entrants. If correctly introduced, they should promote consolidation and the reutilisation of legacy copper infrastructure in Colombian cities.

In its market analysis for retail fixed broadband, the CRC undertook an econometric study that examined the relationship between HHIs and prices, and then identified a “critical tariff” above which, according to the CRC, there is a direct relationship between market concentration levels and service prices. The CRC then conducted this analysis at particular points in time and went on to conclude that neither structural nor temporary competition concerns exist in this market. However, the CRC should not base its analysis on prices per Kbps if market power is to be assessed, as technology evolution would make prices per Kbps fall even if there were a single monopolist supplier.

Although the elements provided by the CRC are informative, an exhaustive market analysis should be based on a number of factors that have not been adequately considered by the CRC. Without being exhaustive, these criteria include the following:

- *Market shares.* In the European Union and the United States market shares higher than 50% commonly translate into dominant positions in the market. Given the HHIs provided, most of these markets have market shares higher than 50%, although some may be declining.
- *Barriers to entry.* These include high sunk costs, the need to build a customer base, and legal requirements for deploying infrastructure (e.g. urban planning rules (POTs), rights of way, and so on).
- *Infrastructure bottlenecks.* The local loop is clearly a bottleneck in need of regulation. In urban areas, cable operators have a second path to reach customer premises. This would limit the possible number of competitors to two. In addition, incumbent players control access to civil infrastructure, a crucial requirement for the deployment of telecommunication networks.
- *Economies of scale and scope.* Telephone incumbent operators, especially the largest ones, have economies of scale and scope. They already have a customer base and have amortised many of their investments in fixed networks.

In 2010, the CRC also undertook an analysis of the wholesale broadband market (“*servicio al portador*”). This provided data on the retail fixed broadband market and also demonstrated alarming levels of concentration.<sup>41</sup> Surprisingly, this market is not one of those subject to ex-ante regulation included in Resolution 2058, although the CRC has decided to monitor its development. In 2010/2011, the CRC analysed this market but took no action. The market includes wholesale inputs for the provision of broadband services, such as backhaul connectivity services.<sup>42</sup> Out of 292 municipalities with broadband service in 2009, 73 did not have a wholesale service provider and 137 had a unique provider. The CRC also derives HHIs for the wholesale market, which shows an even higher concentration than at the retail level.

Strikingly, the CRC asserts that an HHI of 7 500 (Table 2.5) is the right threshold to differentiate municipalities with and without competition concerns, although it had previously set 3000 as the “correct” threshold. The CRC concludes that HHIs below 7 500 imply competitive markets and that, even for those experiencing a higher concentration, intervention is premature as the market is developing quickly. As such it only recommends monitoring those markets, but no other action. The CRC, however, does not provide evidence that market shares of incumbent operators are decreasing steadily. This is not the right analytical approach for this market as it disregards key aspects, such as high entry barriers, extremely high market shares if computed at the local level and, in most cases, the presence of a monopoly or, at best, a duopoly. HHIs over 7 500 constitute an extremely high threshold and the CRC should have identified competition concerns below those levels. In short, the CRC should observe well-established market analysis tools and criteria, such as those of the European Union’s, in order to identify competition concerns in these markets.

Finally, the available evidence also shows that fixed broadband prices in Colombia are high compared to OECD countries and other large economies in the region. Pricing above the levels expected in a competitive market can also be among the key factors to take into account when assessing dominance in communication markets. Section 1 highlights the high prices for fixed telephony and broadband in Colombia, especially for higher consumption patterns. Colombia ranks among the most expensive countries in the OECD for broadband speeds higher than 2.5 Mbps. Moreover, fixed line service for enterprises are much more expensive than in any OECD country, at least when purchased from the two largest players (ETB and UNE-EPM).

Clearly, fixed communication infrastructure is underdeveloped in Colombia, as proven by very low penetration levels. While some argue that this is not of concern, given the emergence of mobile telephony, the reality is that this constitutes a serious barrier for the development of fixed infrastructure and, of greater concern, next generation access networks. In addition, the ability of wireless networks to offer substitution for all services will necessarily be constrained by the availability of spectrum. This is why fixed and wireless services need to be developed in tandem, playing complementary and competitive roles. This is further highlighted by the need of fixed networks to undertake traffic off-loading from mobile networks, which usually requires fibre deep into the backhaul and access networks. Fibre needs are exacerbated by LTE technology, with respect to extensive fixed infrastructure deployments to aggregate wireless data streams and hand them over to backbone networks. These concerns are being partly addressed through the deployment of the National Fibre Network but, nevertheless, this should not prevent the Colombian authorities from introducing pro-competitive regulatory measures, such as wholesale broadband access.

### *Open access in Colombia*

In 2013, the OECD noted the lack of a standard definition for open access and provided a list of common elements present in open access policies. Open access means effective wholesale access to network infrastructure or services, provided under transparent and non-discriminatory terms (OECD, 2013a). It also noted that open access is rarely granted on a voluntary basis and, for the most part, is only granted as a result of regulatory intervention that requires incumbent operators to provide this access.

In Colombia, unbundling was defined as the separation of service or network elements, for which the requesting operator would pay a charge. Such a definition was established in Resolution 087 of 1997 in the context of interconnection regulation. It was an obligation placed on operators found dominant in a specific market (i.e. holding more than a 60% market share in local fixed lines). These provisions focused on interconnection issues, whereas local loop unbundling and bitstream access may rather fall under access issues.<sup>43</sup>

The possibility of requiring mandated access to essential facilities was covered by the Convergence Decree (Decree 2870 of 2007) and was further developed by the ICT Law of 2009. In Colombia, Article 50 of the ICT Law provides principles for access, use and interconnection of networks and essential facilities on non-discriminatory terms. In addition, a number of resolutions may well be used to oblige fixed network operators to implement mandatory local loop unbundling and bitstream access. The CRC is planning to put forward in 2014 a draft regulation on infrastructure sharing of fixed access networks.

Resolution 3101 of 2011 is much more explicit than earlier stipulations and defines network access and interconnection. It established separate regimes for access and interconnection. As in the past, the right to access telecommunication networks, applications or content relies on the concept of essential facility. It also provides a list of essential facilities: business support systems for communications, civil infrastructure, billing systems, physical spaces and additional services to provide access to and interconnection of networks, head of submarine cables and databases for routing purposes in the context of network portability. Resolution 3101 also provides an explicit list of essential facilities for interconnection purposes.

In conclusion, the Colombian regulatory framework provides sufficient basis to enact open access requirements, as has already been done in some cases (e.g. heads of cables). Unfortunately, these instruments have not been implemented to enable third-party access to fixed networks. The development and diffusion of broadband is a high priority for the government supported by a number of programmes to develop universal access. Wholesale broadband access (WBA) products can provide access to customers either through bitstream access, unbundling of the copper local loop or other products such as access to ducts, colocation facilities, backhaul services, and so on. These products could play a key role in promoting fixed broadband competition in Colombia, especially in areas where markets are more concentrated or served by a monopoly provider. Claro's remarkable growth in fixed services being an exception, it is hard to argue that fixed markets in Colombia are efficient and delivering good results in terms of innovation and adoption: fixed voice and broadband remain expensive and show very low penetration levels.

In addition, open access remedies, which would enable local incumbents to enter each other's markets at a much lower costs, would be a way forward to promote efficiency and, most likely, incentivise further consolidation. Even though small operators may well survive if they are efficient and innovative, the overall impression is that most are not, but remain protected by high entry and existing costs (high investments needed to deploy new networks, especially the local loop), and administrative barriers such as difficulties in obtaining urban permits. Finally, local ownership of many of those operators may also be distorting market-based incentives towards consolidation that would otherwise drive the market.

**Table 2.7. Regulatory measures being applied in OECD countries but absent/or weakly implemented in Colombia**

Access service	Common regulatory measures in OECD countries and elsewhere	Key issues	Colombia
Leased lines	Available. Must be offered under EC recommendations and national regulator rules. Incumbents usually offer a service level agreement.	Competition in business districts, or remote geographic locations.	Unregulated (although regulatory instruments are available under the current regulatory framework).
Wholesale line rental	Available and regulated although with some exceptions.	Retail minus or cost-oriented regulation.	Unregulated (although regulatory instruments are available under the current regulatory framework).
Bitstream access	Widely available and regulated.	Evolution to next generation access.	Unregulated (although regulatory instruments are available under the current regulatory framework).
Local loop unbundling (LLU)	Available. Required under EC recommendations and national regulatory authority rules.	Facilitate access through cost-oriented LLU.	Unregulated (although regulatory instruments are available under the current regulatory framework).
Transmission links to international cable landing stations	Available and regulated.	Interconnection and access regulation in monopolies	Regulated.
Ethernet access and leased lines-based IP VPN services	Available and regulated.	Geographic market definition, increasingly competitive services.	Unregulated (although regulatory instruments are available under the current regulatory framework).
Dark fibre	Generally commercially available and regulated duct access.	Passive access remedy.	Unregulated (although regulatory instruments are available under the current regulatory framework)
Pole or duct access	Available and regulated in particular for NGA.	See above.	Regulated by Resolution CRC 2014 of 2008. Additionally, energy grid infrastructure (poles and ducts) have been made available for service providers through Resolution CRC 4245 of June 2013.
Accounting separation	Available.	Helps guard against anti-competitive cross-subsidies	No regulations exist.
Functional separation	Available as last resort in European Union.	Would help achieve "equivalence of inputs"	No regulations exist.



### *Network separation*

Some OECD countries have taken steps to empower their regulators or governments to undertake structural and/or functional separation of telecommunication operators (typically fixed line incumbents). Even though this should be a last resort instrument, in some cases it has proved to be the only effective way of disciplining incumbents, either by the “threat” of regulatory intervention (e.g. Poland, Sweden) or actual separation (e.g. Australia, New Zealand, United Kingdom). The European Union regulatory framework has included the functional separation of telecommunication operators as a last resort measure since 2009. In Colombia, accounting separation is not even a requirement, even though the CRC plans to put forward a proposal in 2014. This is a step in the right direction, as accounting separation and cost accounting systems, in line with international standards, are necessary conditions for wholesale price regulation to be effective (OECD 2012a and European Commission 2005).<sup>44</sup> Accounting separation provides a higher degree of detail than regular corporate reporting and, therefore, should be a requirement for all dominant operators. Table 2.7 compares the regulatory measures proposed or implemented in OECD countries and Colombia.

In Mexico, the recently approved constitutional reform gives IFT (the new telecommunications regulator) powers to structurally or functionally separate dominant players if necessary. Although the Colombian situation is rather different, in that there is no nationwide fixed-line incumbent, the government should have the instruments to undertake functional or structural separation if necessary. Such a measure should remain a last resort instrument and should be included in the legislation for implementation only if other measures are not successful.

## **2.5. Competition policy**

### *Historical developments*

The Superintendence of Industry and Commerce (SIC) is the administrative body in Colombia responsible for advising the national government and helping to formulate policies on consumer protection and promotion of competition. It has the power to conduct investigations to protect competition advocacy in all sectors of the economy.

In the 1990s, Colombia took, along with other countries, a more decisive approach to liberalising its economy. The 1991 Constitution established the right to free competition. In 1992, the SIC was granted enhanced powers under Decree 2153 to investigate anti-competitive behaviour at its own initiative or at the request of third parties, and to impose monetary fines.

From the 1990s to 2009, the *Superintendencia de Servicios Públicos Domiciliarios*, or Superintendence of Domiciliary Public Services, was responsible for applying competition law to fixed telephony services, together with other public services, such as water supply or sanitation. Mobile services remained under the authority of SIC (being non-domiciliary). During this period, the proliferation of agencies led to a decentralised institutional model for protecting and promoting competition, in which various economic authorities (the sector commissions, the sector superintendents and the SIC) all applied sanctions for restrictive practices and abuse of market dominance, and exerted control over mergers and acquisitions.

By 2004, it had become apparent that this model resulted in administrative inefficiency, confusion regarding the scope of the powers granted to each authority, lack of legal predictability and the absence of a unified jurisprudence interpreting the competition law. Another round of reforms was formulated to implement Colombia's National Development Plan for 2006-2010. This called for overhauling the competition protection system to improve Colombia's business and investment climate and spur the development of internationally-competitive market sectors.

The result was the enactment of the ICT Law of 2009, containing significant amendments to the competition law. The Law removed most authority for enforcing the competition law from the various sector agencies and consolidated it in the SIC. It expanded the range of parties subject to the competition law, substantially increased civil penalties for violations of the law, authorised a leniency programme, mandated a role for the SIC in evaluating proposed regulations, and modified the merger control system.

### **Box 2.2. Draft “antimonopoly” law for mobile communications**

Steps were taken to address Claro's dominance through a draft law proposed at the end of 2012, termed the “draft law on Antimonopoly”. This law proposed a 30% market share cap on all mobile operators.<sup>45</sup> Claro's high subscriber and revenue market shares were used as arguments to justify this initiative.

In practical terms, the draft law foresaw that any telecommunication operator exceeding the 30% market share threshold would have a period of two years to adjust its market share. If, after this adjustment period, the supplier still exceeded the threshold level, the SIC could impose additional measures to reduce the supplier's market share, such as structural separation or divestment.

However, the draft law neglected the fact that a high market share does not automatically imply the abuse of dominant position. Competitive and innovative firms may well obtain significant market shares in a dynamic market environment. Thus, the market share “cap” proposed by the law placed an artificial constraint which could limit rather than help competition, and therefore have an impact on the market contrary to its intention – to ensure effective competition in a market.

In a dynamic context, limiting the market share that a firm can aspire to reach may lead to collusive practices. Once all firms have reached the threshold, they lack incentives to compete in retail market (i.e. there would be no incentive for firms to lower prices with the aim of gaining subscribers, because de facto, they could not). Additionally, it would be unfair to force consumers to change their service provider if they do not wish to.

Moreover, in practical terms, the issue of what would constitute a relevant market share, in terms of subscribers, revenues and traffic, was unclear. Finally, from a legal point of view, the draft law seemed discriminatory, given that it would apply only to the mobile sector.

The use of market share caps is rare in OECD countries. Their use is restricted to efforts to protect the public interest, such as media plurality, or limits on banks to prevent systemic crisis (e.g. as in the United States). Furthermore, the threshold contemplated by the draft law (30%) is quite low. As an example, in all but three of the 34 OECD countries there are operators with a market share superior to 30%. Only one OECD member country (Mexico) has an operator with a market share over 60%.

Best practice regulation should aim to improve market contestability, not artificially restrict the ability of one firm to compete. To do otherwise, indirectly provides an incentive for firms to limit price competition and service innovation.

The ICT Law of 2009 further allows the SIC to examine draft regulations with regard to their impact on free competition (Article 7). The CRC is not obliged to accept the SIC's observations, but must provide an explanation if its recommendations are not taken into account. The SIC has also developed guidelines that set out how the competition authority and other regulators interact. In particular, the guidelines provide criteria for identifying how a regulation may impact free competition, and detail the information that authorities must report regarding draft regulations.

Following the passage of the ICT Law, all telecommunication services, including those qualified as “domiciliary”, fell under the purview of the SIC. Furthermore, from 2011 onwards all telecommunication services would be described as “non-domiciliary”.

A surprising competition law development during 2012-13 was the parliamentary discussion of a draft bill to restrict market shares to 30% in mobile communications. Even though the Senate dismissed this initiative in May 2013, it is worth noting its main rationale (see Box 2.2).

### ***Recent and on-going cases***

Recent changes in the institutional framework and the applicable legislation make the task of the SIC (and the CRC) extremely challenging. Given that the SIC is a very young authority that has only recently been awarded most of its telecommunications-related powers, it suffers from a shortage of “corporate memory”. This challenge could be overcome by specific capacity-building and training activities for SIC staff surrounding telecommunication markets and, more generally, the ICT ecosystem. The following section provides a non-exclusive list of recent or on-going competition cases.

### **Consolidation in cable television**

Claro increased its cable television and broadband markets mostly as a result of inorganic growth, through the acquisition of many regional and local operators over the past five to seven years. In 2006, Telmex purchased three cable operators: Superview is present in the Bogotá area, Cable Pacífico is present in seven departments, and TV Cable holds a municipal license, but has only nascent fixed telephony operations. In 2007, Telmex acquired Cablecentro.

Many of these mergers, such as Telmex's purchase of “Teledinámica”, the cable television concessionaire in the city of Barranquilla, included conditions imposed by the CNTV, the competent television authority at the time. Such conditions concerned the removal of minimum commitment periods, limits to exclusivity broadcasting of certain events, conditions for migrating customers, and so on. Some have suggested that the previous authority (CNTV) lacked sufficient expertise to analyse those acquisitions.

In December 2013, the SIC imposed a USD 5 million (COP 10.76 billion) fine on Telmex Colombia for failing to remove minimum commitment periods from its contracts. This obligation was established during approval of Telmex's mergers in 2008 under resolution CNTV 1071.

### ***Interconnection issues***

The SIC is currently investigating Comcel (Claro) to establish whether the operator is abusing its dominant position in the market, defined as “interconnection service to Comcel's network” (Resolution 8255 of 2012). Comcel is alleged to have prevented

Conmundata (a long-distance provider) and Avantel (a trunking network provider) from accessing the market by:

- Delaying interconnection processes to Comcel's network.
- Imposing disadvantageous conditions in comparison with those offered to Infracel (Comcel's subsidiary for international long-distance).
- Setting access charges for its subsidiary at a level significantly below that imposed on its other competitors. This also constitutes obstructive conduct, as other market participants could not compete with traffic termination prices offered by Infracel.

Interconnection issues are usually resolved by telecommunication regulators. However, the case of Avantel shows how a competition authority can complement the role of a regulator, and fill the gap when regulation fails. Avantel experienced difficulties during seven years to achieve interconnection agreements. This issue, common among other trunking providers in Latin America, was eventually resolved by the regulator, since it was a result of the former interconnection regime that did not consider trunking providers as mobile operators.

### *Mobile number portability*

In 2012, the SIC opened formal proceedings against Comcel (Claro) for allegedly hindering mobile number portability (MNP) processes for users who wanted to migrate from Claro's network to other operators. In addition, it has been suggested that Comcel distorted the mobile number portability figures by reporting massive ports, when apparently no users were requesting portability to its network. SIC's resolutions 53403 and 66934 of 2013 imposed a fine of USD 43 million (COP 87.75 billion) on Claro.

The investigation was initiated *ex-officio* following complaints brought by the CRC, based on accounts of difficulties experienced by consumers when requesting MNP. The SIC investigation into possible abuse of dominance alleged that Comcel:

- created a possible impediment to portability processes;
- altered figures to increase the reported number of migrants to its network (see Section 2.11).

## **2.6. Convergence of communication markets**

Multi-purpose IP-based networks have enabled the provision of different services over the same network. Those services, such as telephony, video and data, were previously provided by separate networks (e.g. PSTN, cable networks, and dedicated corporate links) and were often subject to different regulatory frameworks. As a result, technological convergence has encouraged competition between services and platforms (OECD, 2013b). Convergence has translated into commercial offers based on bundles, a trend witnessed across the OECD and the rest of the world. This is particularly true for Colombia, where Claro/Telmex acquired several cable companies and launched triple-play services. ETB, the local fixed incumbent in Bogotá, along with other fixed operators, matched these offers by establishing alliances with satellite television providers, such as DirecTV, and included television services in their offers (OECD, 2011a). ETB is investing in infrastructure upgrades to increase speeds and provide television services.

Moreover, UNE-EPM is currently investing in fibre networks and providing IPTV services where it does not own cable networks.

Increasing service convergence requires a consistent regulatory approach. In Colombia, the first step towards a converged regulatory framework was taken in 2007 through Decree 2870, which established that telecommunication service providers (with the explicit exception of television service providers) were entitled to adopt a unique “converged” license (*Título Habilitante Convergente*). This new converged regime eliminated possible imbalances between providers, first by harmonising their contributions to FONTIC and, secondly, by establishing interconnection and interoperability requirements for all network operators. In addition, the Decree enabled the regulator to impose obligations on operators regarding access to essential facilities, to be defined by the CRC at a later stage, such as heads of submarine cables or the local loop.<sup>46</sup>

One of the major achievements of the ICT Law was that all communication service providers only required registration to provide a service, except for spectrum resources for which a license was necessary. As a result, licenses are no longer tied to specific services, which was a positive development towards adopting a “converged” regulatory framework. This change to regulation was critical because it simplified market entry by removing many of the previous requirements to becoming a telecommunication network or service provider. In 2011, CRC Resolution 3101 CRC also made the interconnection framework more flexible with respect to new technologies.

Many OECD countries, such as Australia, Hungary and the United Kingdom, have merged broadcasting and telecommunication regulators with the objective of adapting regulation to a convergent environment. Others, such as the United States, have long had a converged regulator performing both functions. In Colombia, however, this is not the case. In addition to co-ordination issues, having two different agencies for telecommunication and television services may create difficulties for implementing convergent regulation. The ICT Law, did however grant the CRC the power to determine relevant markets in telecommunication markets, as well as in broadcasting markets, and this is a positive development.

### ***Bundled offers***

Policy makers should promote competition in the sector, both with respect to bundles and to the provision of services on an individual basis. In particular, with regard to bundled services, policy makers can enhance competition by increasing transparency in billing, avoiding consumer “lock-in” and preventing abuse of market power by large operators (OECD, 2013b).

Lack of transparency in billing with bundled offers prevents consumers from comparing offers. In 2011, Colombia issued Resolution 3066 to address this issue. This stipulated that the price of each bundle should be presented in a disaggregated fashion to the consumer. It also obliges operators, when selling a terminal device tied to the mobile service, to make explicit the amount of the bill that corresponds to the handset, in line with good practices set out in the *OECD Consumer Policy Toolkit* (OECD, 2010a).

In 2010, the Body of European Regulators of Electronic Communications (BEREC) issued a report laying out the best practices to facilitate consumer switching (BEREC, 2010b). The document invites regulators to ensure that consumers of bundled services are able to switch providers with ease. One way of achieving this goal is by issuing fixed and mobile number portability regulation. Colombia has made progress in mobile number

portability, however, this measure has not been introduced in the fixed market. Competition in fixed markets is limited to date as are performance and innovation levels, demonstrated by the very low penetration and services offered (e.g. fixed broadband). Fixed number portability is required to promote competitive dynamics in fixed markets.

Another major issue related to bundles is that operators may artificially alter the prices charged for each standalone service. This can pose challenges for regulators as well as competition authorities with regards to relevant market definitions. The CRC is currently analysing the competition implications of such bundled offers, especially their effects on the definition of relevant markets. This concern is not unique to Colombia. European regulators have revised their position in relation to this issue in recent years with the publication of a report on “The impact of bundled offers in retail and wholesale market definition” (BEREC, 2010c). The underlying difficulty is that attempts to assign costs to specific elements of the bundle are extremely arbitrary, as most infrastructure elements are used by all services in the bundle.

BEREC’s document explored the limitations of the traditional tools used to identify relevant markets, such as the “Small but Significant Non-Transitory Increase in Price” (SSNIP) test in the context of communication service bundles. BEREC recommends that regulators take into account other indicators when defining relevant markets, including economies of scope and transaction costs linked to bundles. Moreover, bundles at the retail level may have no impact at the wholesale level as the inputs may still be handled on a stand-alone basis (ComReg, 2011).

Finally, bundles may be used to leverage dominance from one market to another and may incorporate elements that are not replicable by competitors (e.g. premium television content). This is why it is important that the CRC conducts tests for bundles to identify competition concerns linked to whether these products can be replicated. In particular, the CRC should identify any possible cross-subsidies between the different elements of bundles (e.g. displaying artificially low prices for one service), assess if bundled retail markets should be defined and its potential implications on wholesale markets (i.e. upstream).

### ***Switch to DTT (digital terrestrial television)***

More than 20 OECD countries have already completed the transition to digital terrestrial television, and 22 out of the 27 European Union member states switched-off analogue television in 2012. In addition, pay DTT services are available in 21 European countries (17 member countries of the European Union) and, in 2012, 369 new television channels were launched in the European Union, 40% of which are broadcast in high definition (European Audiovisual Observatory, 2012). In Colombia, the digital switch-over will take significantly longer. The migration calendar began in 2012 and has an end date of 2018, even though the release of the 700 MHz band is planned for 2015 (Table 2.8). The ANTV does not have plans to accelerate this migration process.<sup>47</sup>

A number of important issues remain to be addressed to ensure a successful digital switchover. For example, television receivers must be replaced at an acceptable pace. In many countries, an approach solely based on the market has achieved an acceptable level of replacement of analogue receivers. However, given the higher share of low income population in Colombia compared to OECD member countries, authorities may consider other mechanisms such as a subsidy scheme to replace analogue receivers with digital codecs, although inexpensive codecs can be found on the market.

A further concern is the technology standard adopted in Colombia. In 2010, the CNTV officially opted for the European DVB-T standard, which later evolved into DVB-T2. Given the patterns of adoption of different standards in the region, Colombia and Panama are now the only countries adopting the European standard.<sup>48</sup> The rest of Latin American countries are adopting the Brazilian/Japanese standard. The myriad of standards may, over the long term, pose fragmentation problems and loss of synergies and economies of scales, such as happened with mobile telephony and the CDMA, TDMA and GSM standards.

**Table 2.8. National coverage of digital terrestrial television**

Year	National coverage (%)	Accumulated (%)
2012	49.88	49.88
2013	13.72	63.60
2014	10.15	73.75
2015	12.51	86.26
2016	3.00	89.26
2017	2.00	91.26
2018	1.00	92.26
Total	92.26	92.26

Source: ANTV, DTT coverage plan for the national public operator, May 2013.

### *Other issues in the pay television market*

Unlike some OECD countries, must-carry/must offer issues do not seem to be a source of concern for television providers in Colombia. Satellite providers are exempt from carrying some regional and local channels on the grounds of scarce capacity; and cable operators usually demand remuneration to carry the free-to-air signal, rather than paying free-to-air broadcasters to carry their content. Nevertheless, the ANTV should develop clear set of criteria for the implementation of must-carry/must-offer rules, such as determining specific channels that should be included.

Pay-tv operators have complained of two main problems. First, local community operators do not respect the legal requirements in terms of number of customers and channels, and thereby compete unlawfully with commercial pay television providers. Community television rules should be vigorously enforced to reduce unlawful competition against pay television providers. Second, the asymmetric contribution shares to FONTIC and FONTV create distortions in invoices of bundled services. Pay television operators pay a higher contribution to ANTV than communication providers to FONTIC. This creates an incentive to allocate a low price to the television component of the bundle. For a provider that competes on a stand-alone basis, such as DirecTV, this threatens its ability to compete in the market. This is because consumers perceive the price of the television service, provided by competitors, as being lower than that of a stand-alone provider such as DirecTV.

## 2.7. Infrastructure deployment: Rights of way, infrastructure sharing and next generation access

### *Rights of way*

Telecommunication operators often encounter barriers when deploying infrastructure. These include the need to request rights of way, access to third-party facilities, environmental permits, problems with the deployment of masts, poles, towers, and so on. In Colombia, it may take several months (sometimes even a year) to obtain permits to deploy infrastructure, and the eventual outcome is uncertain. This barrier to network deployment is further aggravated by a lack of harmonisation across municipalities over rights of way. Urban planning rules (i.e. *Planes de Ordenamiento Territoriales*, POTs) differ significantly from city to city, and each municipality can ban tower deployments at will. Such obstacles impact coverage and exacerbate quality concerns in mobile telephony in Colombia, as has been widely covered by the media.

In an effort to address this lack of harmonisation, the CRC and the MINTIC have issued a set of guidelines (“code of good practice”) for municipalities with the aim of increasing co-ordination in urban planning rules for infrastructure deployment. The code is non-binding at present and making it compulsory would entail a constitutional amendment, a complicated step that the CRC has not considered to date. The voluntary nature of the code unfortunately undermines its attempt to improve harmonisation of POTs. The CRC should monitor developments to measure the progress of municipalities in implementing these guidelines. A complementary, intermediate approach could involve streamlining the procedure for granting rights of way by introducing time-bound arbitration mechanisms. These could include a concrete specification of the possible reasons for denial, which should shorten the period of time taken by municipalities to respond to requests for rights of way.

### *Infrastructure sharing*

Infrastructure sharing plays a major role in adjusting the pace of deployment of mobile network infrastructure, and is becoming increasingly common in OECD countries, especially for rural areas (OECD, 2012c). In 2009, for example, Telefónica and Vodafone reached an agreement to share infrastructure in European markets where both companies are present.

There are two main types of infrastructure sharing: passive and active. Passive infrastructure sharing covers the sharing of network elements such as masts, sites, cabinets and conditioning. Active infrastructure sharing includes the common use of equipment in the access network such as antennae, nodes and radio network controller elements (which may include spectrum). Operators share passive infrastructure in all European Union member countries. Some sharing agreements are commercially driven (e.g. Denmark and Hungary), while others are encouraged by the authorities (e.g. Finland, Italy and Portugal) or decided by the telecom regulator (e.g. France, Netherlands, Spain) (BEREC, 2011).

The principal benefits of passive sharing are significant cost savings for operators and increased geographical coverage for users. For example, according to some industry analysts, wireless infrastructure sharing saves operators 30% in capital expenditure and 15% in operating expenses (Analysys Mason, 2010; BEREC, 2011). Cost savings are usually sufficient to encourage industry agreements to engage in network sharing. The



main drawbacks of sharing are a reduction in the operator's incentives to invest in its own network and concerns by competition authorities that too much common information among operators might lead to collusion. At present, almost all OECD countries encourage infrastructure sharing, provided that the advantages outweigh the drawbacks (i.e. that sharing is not detrimental to competition).

In 2008, Colombia issued regulation to encourage passive infrastructure sharing. All operators, fixed or mobile, are required to share ducts and poles, regardless of their market share (Resolution CRC 2014). Prices must be cost-oriented and calculated according to the methodology established by this Resolution. In addition, operators installing new ducts must reserve 30% of the duct capacity for future requests. More generally, access to civil infrastructure is considered an essential facility with respect to access and interconnection since 2011 (Resolution CRC 3101 of 2011). This includes not only ducts and poles, but also rights of way, towers, energy supply and physical facilities in general. Infrastructure sharing should be encouraged by the CRC, either through mediation between operators or, if stronger measures are deemed necessary, through laying down general conditions for infrastructure sharing.

In 2012, the CRC published a draft regulation on in-building wiring sharing (*Reglamento Técnico para Redes Internas de Telecomunicaciones – RITEL*), which led to Resolution CRC 4262 of 2013 (July 2013). RITEL included technical specifications for building owners and operators providing telephony, Internet access or cable services. Because it involved changes to in-building wiring standards, the draft regulation had to be submitted to the World Trade Organization (WTO) and the *Corporación Andina de Fomento* (CAF), or the Andean Community, to undergo an international notification process. RITEL will be implemented from 1 January 2014.<sup>49</sup>

In March 2013, the Ministry issued Resolution 449, which established that 4G tender winners would be obliged to share passive infrastructure as well as participate in roaming agreements. This resolution clearly states that operators failing to comply potentially face removal of their spectrum license. Unsurprisingly, Tigo and Movistar have announced a passive infrastructure sharing agreement for the deployment of 4G network facilities.<sup>50</sup> In the context of this auction, the Colombian authorities have also regulated national mobile roaming, which could be seen as a form of active infrastructure sharing (Resolution CRC 4112 of 2013).

In June 2013, the CRC, in co-ordination with the energy regulator, issued Resolution 4245 to provide further incentives for network deployment by means of infrastructure sharing. The resolution defined the conditions under which the electricity grid (namely poles, ducts and channels) could be used to provide telecommunication services. It states that all operators may use the ducts and poles of the electrical network to deploy infrastructure, and specifies the price-cap to be used to compensate utilities. This regulation will be highly beneficial as it represents significant cost efficiencies for operators.

The Colombian authorities, and in particular the CRC, have clearly recognised the importance of removing obstacles to infrastructure deployment. The above initiatives, if successfully implemented, should provide incentives for operators to invest in mobile and fixed telecommunication networks. The key issues in this regard are compliance with RITEL rules and the code of good practice which requires the successful involvement of municipalities.

### *Next generation access*

The Ministry's flagship programme, *Plan Vive Digital*, has made considerable progress in raising awareness of ICTs and highlighting the importance of demand-side policies. However, it still needs to consider ways to ensure competition in a next generation environment. The current lack of consolidation in the Colombian fixed market combined with low fixed broadband penetration (8% as of December 2012) and existing barriers to infrastructure deployment comprise significant obstacles to investment in next generation access (NGA) networks.

The Colombian authorities have focused their efforts on promoting investment and competition in mobile networks (Circular CRC 108 of 2013). While this is commendable, the promotion of fibre to the home (FTTH) deployments must be a key feature of a successful broadband plan. Fixed broadband is complementary to mobile networks. Even in highly developed telecommunication markets, such as the case of some OECD countries, 70-80% of data accessed by smartphones is exchanged over private Wi-Fi provided by own fixed networks. Moreover, mobile providers in these countries seek to offload traffic to fixed networks as soon as possible, using tools such as Extensible Authentication Protocol (EAP) to make the experience relatively seamless for users (OECD, 2012c; Thanki, 2012).<sup>51</sup>

Next generation access will also require faster broadband speeds for direct access or mobile service backhaul. This will require further fibre investments on the part of operators. Authorities also need to acknowledge the new technical challenges posed by NGAs. For example, if the regulator intends to promote access through local loop unbundling of the incumbent's fixed network, it should be aware that certain fibre technologies, such as VDSL or GPON FTTH, do not allow implementation of local loop unbundling (OECD, 2011b).

**Table 2.9. Approaches to NGA market structure, access and development in selected economies**

Category	Economies	Comments
Primary reliance on market forces for NGAs	China, Finland, Hong Kong (China), Korea, Switzerland, United States	The presence of extensive coverage of cable service is an important factor
Determine where bottlenecks are and take action through access regulation	Austria, France, Portugal, most other OECD countries	Most countries are making some effort in regard to access regulation
Develop end-to-end infrastructure competition through LLU but without imposition of functional or structural separation	France, Germany, Ireland, the Netherlands, Portugal, Spain	The relative success of ex-ante access regulation, including LLU is considered an important contributing success factor; Portugal was a pioneer in adopting the Reference Conduit Access Offer (RCAO).
Access regulation plus functional separation	Italy, New Zealand, United Kingdom	Functional separation has been installed as a complement to access regulation.
Facilitate deployment of a wholesale backbone network	Argentina, Chile, Italy	Government initiatives to catalyse or fund a high speed backbone network
Government participation in NGA fibre deployment	Australia, France, Japan, New Zealand, Portugal, Singapore, Sweden	For example, government private sector cooperative arrangements have been used in these countries.
Deploy a prospectively structurally separated NGA wholesale operator	Australia, New Zealand, Singapore	Up to 100% publicly funded (although some with the intention of future privatisation).

Source: OECD (2011b), "Next Generation Access Networks and Market Structure", *OECD Digital Economy Papers*, no. 183, OECD Publishing, <http://dx.doi.org/10.1787/5ke9qgnr866g-en>.

More densely populated and/or wealthy areas, where demand is higher, are likely to support two or more NGA networks, but the economies of scale and scope of NGA investments are likely to reduce the degree of replication in other areas, potentially leading to an economic bottleneck. This is why some countries (Table 2.9) have introduced operational separation (e.g. Italy) and functional separation (e.g. Sweden, United Kingdom). Others are introducing models that include vertical structural separation (e.g. Australia, New Zealand) (OECD, 2011b). With this in mind, the CRC should be given the powers to impose some form of structural remedy, should this be necessary.

*International and national connectivity: Submarine cables and Internet Exchange Points (IXPs)*

*Plan Vive Digital* acknowledged the need to increase international connectivity, mostly in terms of content distribution network (CDN) infrastructure and submarine cable connectivity. In addition, Colombia has an Internet Exchange Point (IXP), managed by the IT industry business association CCIT (*Cámara Colombiana de Informática y Telecomunicaciones*), although a large amount of traffic is still routed to the United States and exchanged there. This adds delays and possible capacity bottlenecks, as opposed to exchanging traffic in Colombia.<sup>52</sup>

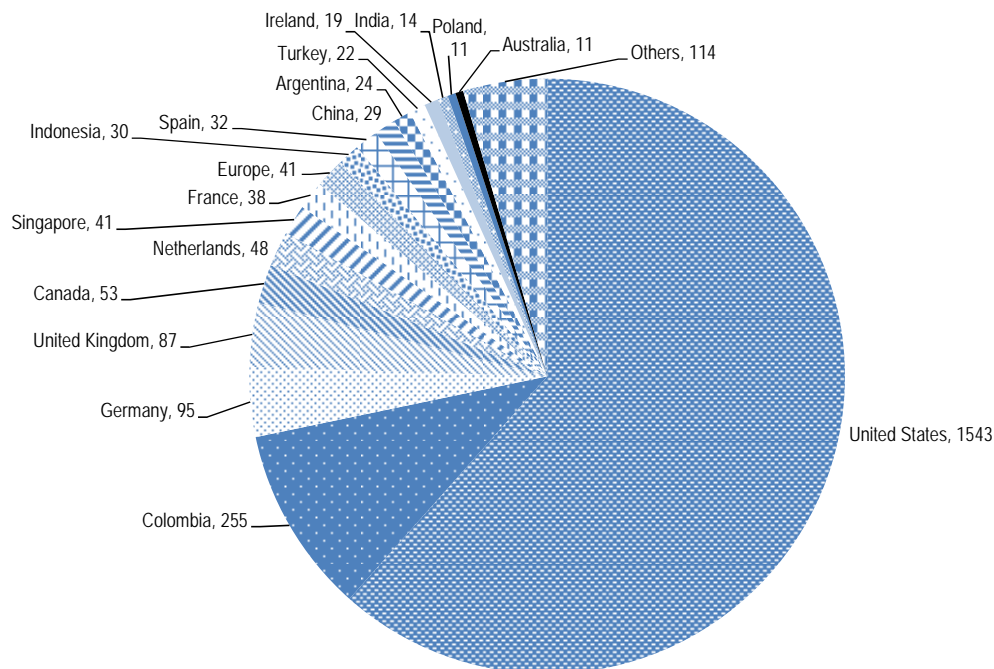
Internet exchange points (IXPs) are the source of nearly all Internet bandwidth. Countries that lack IXPs must import bandwidth from other countries. As a general rule, the cost of telecommunication services equals the product of the speed of the service multiplied by the distance covered (i.e. speed times distance equal cost). In other words, the further an Internet service provider (ISP) goes to seek bandwidth, the more expensive and slower the broadband connection it provides. Thus, it is always preferable to use a local IXP to one further away. Furthermore, given the low cost of implementing an IXP, the amortisation period for the investment required is typically between two and 20 days (OECD, 2013c).<sup>53</sup>

Colombia could take steps to foster the development of IXPs, especially outside Bogotá. It could also incentivise peering in NAP Colombia, the existing IXP. For example, in Brazil, the Brazilian Network Information Center (NIC.br), a non-profit civil organisation, uses funds originating from the domain name registration to develop the country's Internet infrastructure, by implementing and managing IXPs. At present, Brazil has 23 IXPs across different regions and the country is second only to the United States in number and distribution of IXPs.<sup>54</sup> Even though some argue that no IXPs are necessary outside Bogotá, experience in some OECD countries such as Canada show that connectivity costs can be significantly reduced by having one IXP in every middle-sized city or metropolitan area (Woodcock and Edelman, 2012). Lastly, Colombia should address barriers to peering in existing IXPs. In particular, policy makers should pay attention to the existence of extremely high monthly "membership fees" (e.g. USD 10 000), which may act as a potential deterrent to entry.

A topic linked to IXPs is the hosting of local Internet content. In its *Vive Digital* strategy, MINTIC acknowledged the need to establish content distribution networks in the country, however when having a more general look at hosting services in the country, there are indications that this market is not well developed and that most content is hosted outside Colombia. This is clearly inefficient, as users in Colombia need to rely more on submarine fibre connectivity with its likely higher latencies.

While it is difficult to obtain precise statistics on the volume of hosting in Colombia, information on where the top one million websites in the world (Alexa one million) are hosted serves as a good proxy. Pingdom, a Swedish analytics company, analyses the hosting market worldwide and studies where these sites are co-located. For the purpose of this report, Pingdom retrieved data on where the websites with the country code top-level domain (ccTLD) “.co” for Colombia are hosted. Out of the Alexa one million, there are about 2 500 .co websites, of which only some 10% are hosted in Colombia (see Figure 2.7). While the .co domain can be used by parties, which are not related to Colombia to take advantage of the meaning associated with the abbreviation, it is also the case that many of these sites will be Colombian in origin. Thus, a significant proportion of websites with Colombian local content are hosted outside the country. It is thus recommended to carefully review why firms and citizens opt to host the content outside the country to then be able to set appropriate conditions for hosting content and applications in Colombia (OECD, 2014).

**Figure 2.7. Overview of hosting countries of .co-sites**



Source: OECD based on Pingdom data (July 2013).

In terms of policy measures to foster the content market within a country, public entities in OECD countries often take the first step in being a role model and host their content in the country. For the purpose of this report, Pingdom provided a second data set in order to analyse where the Colombian government sites that are listed in Alexa are hosted. More websites of the Alexa sample are hosted inside Colombia than outside Colombia which is positive. However, when it comes to the flagship sites of the Vive Digital strategy, it has to be noted that the URLs *gobiernoenlinea.gov.co*, *vivedigital.gov.co* and the sites of the MINTIC *mintic.gov.co* are all hosted outside the country. In addition, a number of important sites from the public function including the Ministry of Foreign Affairs (*cancilleria.gov.co*), the Central Bank (*banrep.gov.co*), and the Ministry of Defense (*mindefensa.gov.co*) are equally hosted outside the country

according to the Pingdom database. As the government can take an important role as a lead user when it comes to local hosting, it is highly recommended that the public sector assesses the possibility to host these sites in the country. In addition, it could be examined whether it is efficient for the government to manage its Internet traffic using its own IP-addresses, Autonomous System numbers, perhaps even with a government managed fibre network and peering domestically at a local Internet Exchange Point.<sup>55</sup>

## 2.8. Spectrum policy

### *The spectrum management regime*

The development of wireless broadband services is critical for Colombia, given the limited coverage and performance of fixed broadband networks. Wireless services are likely to become the principal means of Internet access for a large part of the Colombian population, and in rural areas. Recently, spectrum management and planning has undergone positive changes. The first was the creation of a specialised body, the National Spectrum Agency (ANE) with authority of management and planning of spectrum. The second positive change was the shift to a market-driven approach for the allocation of spectrum with new auctions also held in 2013.

In 2012, the ANE reviewed all frequency bands with the aim of developing a *Plan Maestro de Administración de Espectro* (PMAE), or Spectrum Management Master Plan. The ANE reviewed the procedures and organisation of the current spectrum management approach, with the aim of developing options for the future, taking into consideration the economic, technical and policy objectives set forth by the MINTIC. It was completed in July 2013 (Resolution 442 of 2013) and its implementation spans from January 2013 to 2015. The ANE has also created a Spectrum National Committee to analyse and discuss government policies related to spectrum.

The ANE is also responsible for setting up the *Cuadro Nacional de Atribución de Bandas de Frecuencia* (CNABF), or the National Frequency Allocation Table (issued by Resolution 442 of 2013). In May 2013, the ANE launched a public consultation on changes to the CNABF, following recommendations made during the WRC-12 (World Radio Communications Conference, 2012).

ANE is updating several frequency allocations for mobile maritime services. It has also suggested reserving the 470-512 MHz for television services, and is allocating the following bands to IMT services: 698-806 MHz (digital dividend), 824-849 MHz, 869-894 MHz, 1710-1755 MHz, 1850-1910 MHz, 1930-1990 MHz, 2110-2155 MHz and 2500-2690 MHz. A recent resolution (Resolution 442 of 2013) changed the attribution of the 894-915 MHz and 939-960 MHz bands, whereby half of the band was allocated to terrestrial mobile services (including the possibility of deploying IMT) thus increasing spectrum availability under 1 GHz.

Spectrum licenses are granted by the MINTIC (communication services) and the ANTV (television services). Even though the ICT law endorses the principle of service neutrality, in practice there is a dual licensing regime depending on the service. Although spectrum management lies under the responsibility of the ANE, all assignment procedures, including the auction design, are carried out by the MINTIC. The ICT Law also mentions the technology neutrality principle, although the most recent auction focused on 4G without specifying whether 2G/3G can also be deployed.

### *Spectrum assignments to mobile operators*

Until recently, Colombia had not been generous with the granting of spectrum rights for mobile services. By 2010, it had conducted only six granting processes, and licenses, though renewable, have been always issued for only ten years (Table 2.10). In addition to this, Colombia has not been consistent in its use of granting procedures. Spectrum has been granted via auctions and direct assignments. Some of the auctions have had a large number of requirements, making them more akin to “beauty contests”. It has also changed the rules for on-going spectrum rights and does not have a transparent objective process for setting renewal fees. These approaches have probably created significant uncertainty in the development of the sector and have not served the country well. By 2013, a total of 405 MHz had been assigned for IMT services, 215 MHz of which were licensed in the past three years. By OECD standards, the amount of spectrum devoted to communication services has been historically low, although this has been tackled in part by the latest 4G spectrum auction where 190 MHz of spectrum for mobile services was assigned. Nevertheless, the ANE estimates these spectrum assignments will fulfill demand until 2016.

### *Historical spectrum auctions in Colombia*

Colombia has a track record of few spectrum tendering processes and arbitrary delays and procedures, mostly with the intention of giving existing operators exclusivity periods. Such delays and discretionary policy making can also be found in the process of transitioning licensing regimes and in other areas such as the possible reversion of network assets.

The first spectrum auction in Colombia was conducted for two mobile licenses in each of the three regions (for a total of three regional duopolies). Given the exclusivity periods awarded to these operators, and some delays caused by legal battles which sought to delay entry, a third national operator commenced operations only in 2003. Spectrum was directly assigned to existing players in 2004, 2008 and 2009 (Table 2.10). The first competitive selection process, which awarded spectrum to UNE, took place in 2010 (2.5 GHz band). In 2011, half of the spectrum payments associated to the assigned spectrum were made in kind, i.e. through coverage extension. Similar arrangements were also allowed during the 2004-2010 period to extend coverage to unserved areas.

**Table 2.10. Historical spectrum allocations in Colombia**

Year	Band	MHz	Assignment process
1993	850 MHz	50	Auction
2002	1.9 GHz	30	Auction
2004	1.9 GHz	30	Direct assignment
2008	1.9 GHz	10	Direct assignment
2009	1.9 GHz	20	Direct assignment
2010	2.5 GHz	50	Auction
2011	1.9 GHz	25	Auction
2013	1.9 GHz, 1.7/2.1 GHz, 2.5 GHz	190	Auction
2014 (planned)	700 MHz		Auction

### ***Most recent auction***

The most recent spectrum auction was conducted in May 2013, completing a long process that started in late 2011. The government decided to auction spectrum simultaneously in the AWS (1.7/2.1 GHz) band (three blocks of 2x15 MHz), 2.5 GHz band (three paired FDD blocks of 90 MHz, one unpaired TDD block of 40 MHz) and the remainder in the 1.9 GHz band (2 x 2.5 MHz).

The most controversial aspect of the auction concerned the participation of the largest operator, Comcel (Claro). In 2009, Comcel was declared a dominant player and subjected to asymmetric regulation, with on-net/off-net retail price restrictions and asymmetric interconnection rates. Following the recommendations of the SIC, the dominant player was restricted from bidding for the AWS blocks, but was allowed to bid for the 2.5 GHz band. The principal justification for this decision was the significant risk of leveraging dominance to the mobile broadband market. An additional consideration concerned the lower cost of deploying a network in the AWS band, compared to the 2.5 GHz band, which would allow other players, including new entrants, to benefit from lower costs of deployment (see the 4G spectrum condition in Box 2.3).

#### **Box 2.3. Conditions for the 4G spectrum auction**

Although only 190 were assigned, a total of 225 MHz divided into eight blocks was auctioned, with an 85 MHz spectrum cap, through a simultaneous ascending auction process (1.7-2.1 GHz -AWS- band, 2.5 GHz band).

There was a spectrum cap on AWS spectrum (1.7/2.1 GHz band), but applicants could bid for the 2.5 GHz band. Spectrum bands were reserved for new entrants in both the AWS and the 2.5 GHz band.

Established players have to cover all municipalities (1122) within five years. New entrants have to cover the 50 largest municipalities and all the department capitals. Twenty percent of these conditions have to be met by July 2014.

A theoretical minimum speed of 100 Mbps/35 Mbps (downlink/uplink) had to be provided in 70% of the heads of municipality; the remaining 30% being covered at 21.6 Mbps/11.5 Mbps.

Winners had to migrate the current spectrum users (e.g. the army, the navy, the police) with the costs borne by all winners. Operators that were awarded the reserved blocks (new entrants) faced very low migration costs. Migration has to be completed within one year.

All winners had to share passive infrastructure and provide national roaming at rates regulated by the CRC.

There was an obligation to offer a special plan for students and teachers, including a tablet. The objective was to increase by 1 million devices the number of tablets by June 2014. The obligation would be proportional to the number of users of each of the companies bidding for the unreserved bands by the end of 2012.

All tablets had to include at least 50 pieces of educational software. A document with instructions to use the software had to be provided to teachers and students. Winners had to provide a minimum of 4 hours of training on how to use the device. They also had to provide, on a periodic basis, statistics on the use of these devices.

Although Claro and other stakeholders, such as the United States Trade Representative, have expressed concerns about setting specific caps on a particular company in the auction carried out in June 2013, spectrum caps are widely used in many countries and a very effective regulatory measure for which the CRC has provided sufficient justification.<sup>56</sup> Spectrum caps should be, however, set in a manner that they provide sufficient legal

certainty for operators so that they can plan their network investments in a timely fashion (i.e. clear rules should be set well in advance).

Spectrum caps seem to have been successful in encouraging entry. Spectrum caps are common in OECD countries, where they are widely used for encouraging entry and addressing situations of dominance. A question remains, however, as to whether Claro will be able to provide adequate quality of service without further spectrum assignments in lower bands, as it was only awarded 30 MHz in the 2.5 GHz band in the 2013 auction. The auction was carried out in a single day (26 June 2013). Six companies participated in the process; only one company (Azteca 4G) was not assigned any blocks. Of the eight blocks auctioned, only six were assigned (84% of the total amount of spectrum auctioned, which represents 88% more spectrum assigned to operators than it was previously the case). The 1.9 GHz band block and the open 30 MHz block in the 2.5 GHz band were not assigned in the process (Table 2.11).

**Table 2.11. 2013 spectrum auction**

Winner	Band	Block	Amount paid (USD millions)	Tablets	Coverage (municipality heads)
Claro (Comcel)	2.5 GHz	30 MHz (open block)	62.2	309 630	660
DirecTV	2.5 GHz	30 MHz (open block) 40 MHz (reserved block)	37.2 40.2	30 000	57
Avantel	AWS	30 MHz (reserved block)	55.7	30 000	57
ETB-Tigo	AWS	30 MHz (open block)	101.5	67 426	144
Movistar	AWS	30 MHz (open block)	102.6	119 317	255
Total			399.4	556 373	

The total payment of almost USD 400 million was 70% above the minimum price (USD 235 million). However, the fact that two blocks were not assigned can be considered as negative. From 2014 on, there will be six active mobile operators in the market. Only one of the new entrants is, in fact, a true new entrant. Avantel, the largest trunking operator in Colombia, was considered a new player and eligible for blocks reserved for new entrants. Prior to the auction, Avantel only had 8 MHz spectrum in the 1.9 GHz band (so far, a non-IMT band) and provided services using i-DEN technology to some 150 000 customers. For these reasons, the CRC never considered Avantel a mobile (IMT) operator. The resulting spectrum holdings after the auction were more balanced than prior to the auction (see Table 2.12). Spectrum in other bands, such as the 700 MHz, will be auctioned in the second half of 2014, and is expected to have significant implications for the future evolution of the market. For example, those operators only holding spectrum in the higher bands, may need 700 MHz spectrum to ensure coverage. Any change in the current spectrum caps (now at 25 MHz for sub 1 GHz IMT bands and 85 MHz as an overall cap) should take into account these implications in the design of the upcoming auction.

Spectrum auctions can shape competition dynamics as the design of blocks can determine how many strong players will prevail in markets in years to come. Thus, the design of the auctions becomes vital for the sector. Perhaps one way to boost market competition in Colombia is to reserve a block in the upcoming auction of 700 MHz band (e.g. 30 MHz) for operators without spectrum above 1 GHz and/or new entrants. This would prove beneficial for competition while allowing other established operators to bid for the remaining blocks (e.g. 60 MHz).



**Table 2.12. Current spectrum holdings (as of July 2013)**

Operator (MHz held in each band)	850 MHz band	1.9 GHz (PCS) band	1.7 / 2.1 GHz (AWS) band	2.5 GHz band	Total (MHz per operator)
Claro	25	30		30	85
Movistar	25	30	30		85
Tigo		55	30		85
UNE				50	50
DirectTV				70	70
Avantel			30		30
Total (MHz per band)	50	115	90	150	405

Revenues from spectrum tenders go to FONTIC. This raises questions about how to plan expenditures on ICTs coming from non-recurrent sources of income, such as spectrum auctions. The current structure should not create incentives to spend beyond what is reasonable when income is especially high due to spectrum auctions. From a wider perspective, spectrum proceedings should form part of general government revenue, and not go to FONTIC. Due to its irregular nature, these proceedings are likely to be allocated inefficiently, as the government has a strong incentive to spend more when the sums are higher. Over time, the contribution to FONTIC should be reduced and eventually replaced by general government revenue. For instance, for the year 2012, Colombia's telecommunication sector revenue amounted to 3.2% of GDP, and FONTIC represented 3% of total sector revenue. Naturally, the amount of this fund will tend to increase year by year given the growth rate and dynamism of the telecommunication sector and its importance in terms of GDP.

As explained in previous sections, the system currently in place relies on cross-subsidies to fund some public interest programmes, such as the obligation for spectrum bidders to provide tablets. A more transparent framework is likely to be more efficient. If tenders for spectrum are free, to the extent possible, from associated obligations, the system would gain some transparency and the bids would not be distorted. Following this logic, it is likely that public revenues would be maximised and the state would have a more reliable view of the market situation. The current system creates distortions and inefficiencies. Programmes to fund tablets could still be implemented, through a stand-alone procurement procedure. Given the size of the country and the investments required to deploy a nationwide network, it makes sense to implement clearly defined and reasonable coverage obligations for operators being awarded spectrum. This can provide some certainty about the future coverage of networks. Ambitious coverage obligations are difficult to enforce and may increase regulatory risk.

### *The digital dividend*

It has long been recognised that bands below 1 GHz are best suited for improving coverage of mobile communications (IMT services), in combination with higher bands to increase network capacity. The Colombian government has targeted the 698-806 MHz spectrum band (channels 52 to 69 in the UHF band, termed as the “digital dividend”) to be used for mobile communications. Following the WRC-07 recommendations, in October 2009 the MINTIC allocated the band to IMT services on a primary basis, with a temporary allocation to broadcasting services to allow the relocation of television network. The government is planning an auction in the second half of 2014.

In 2012, the ANE allocated this spectrum on a unique basis to IMT (Resolution 668). In 2009, the 700 MHz band was partially occupied.<sup>57</sup> In 2012, the ANE's DTT migration plan (Resolution 37) redefined the regions and timeframe for freeing up the digital dividend. The original date for the analogue switch-off (end-2019) was advanced by more than four years for the 700 MHz band, so as to enable its use for mobile broadband services. By the end of 2012, the band was clear with the exception of some blocks for which migration was scheduled for 2014 or 2015.<sup>58</sup> By 2015, the digital dividend band is expected to be fully available for the use of IMT services, with full migration to digital television completed by 2019.

In January 2012, a public consultation was launched to decide certain technical aspects pertaining to use of the digital dividend. One matter was whether to adopt the Asia-Pacific Telecommunity (APT) band segmentation plan or the United States/Canada standard. In May 2012, a decision was taken to adopt the former. Colombia became the second country to do so in the region, after Chile, and was then followed by Mexico in October 2012. The APT standard has since gained momentum and it is expected that most of Latin America will follow suit.

The 700 MHz band is not used intensively in Colombia, which should facilitate the transition to digital terrestrial television. This is not the case of the 600 MHz band, on which discussion are currently being held at the ITU in relation to a second digital dividend for Region 2. Should this band be allocated for mobile communications, Colombia would need to find ways to manage the change. At that time, improved fixed networks could contribute to easing spectrum needs or more efficient transmission technologies could alleviate the need for spectrum.

### ***Other spectrum policy issues***

In light of recent decisions by the International Telecommunications Union (ITU), the ANE is currently reviewing its policy regarding unlicensed spectrum. It is willing to assess the feasibility of shared use of spectrum, such as white spaces or licensed shared access, even though interest from stakeholders seems limited to date. Given the worldwide success of Wi-Fi technology, and the extremely important role it plays in mobile traffic offloading, Colombia should conduct a needs assessment for unlicensed spectrum. This should be accompanied by a long-term plan for deploying fibre networks and increasing investment and competition in fixed networks. Developing shared access schemes seems less urgent, as there is insufficient interest from industry or other players.

Secondary markets for spectrum do not exist in Colombia. At present, the Minister has to authorise any spectrum transfers between providers (ICT Law, Article 11). Given the changing market conditions and the presence of new entrants in Colombia, a more flexible framework for spectrum trading should be put in place. Even though the new auctions have eased existing spectrum needs, spectrum trading could provide additional flexibility for some players to optimise their mobile services. The Colombian spectrum policy framework already acknowledges the need for increased flexibility in spectrum management and planning. In 2012, the ANE undertook a preliminary assessment which will be followed by a complete set of measures and a trial in 2013/2014, aimed at including some of these measures in the 2014 spectrum policy framework. According to common practice in OECD countries, spectrum transactions should be subject to case-by-case competitive review to ensure that they do not harm competition.

## 2.9. Universal service

In Colombian legislation, access to telecommunication services is regarded not only as a right, but also as an important tool for economic and social development. Colombia has differentiated between the development of “universal access” and “universal service” in its legal framework. In 1999, Decree 899 (on Social Telephony) defined “universal service” as a service that enables all households to have basic telecommunication services. It was indicated, at the time, that this referred first to basic telephony services, then to other services depending on the evolution of technology and the availability of resources. Alongside this goal, “universal access” was specified as the ability of the population to access the PSTN at a “reasonable” distance, the latter being defined as a function of the available means of transportation.<sup>59</sup> Universal service is therefore regarded as a minimum package of services available to any user at any geographical location at a reasonable price.

Underpinning universal service and access schemes was a cross-subsidies framework, which aims at facilitating access to public utilities for lower income segments of the Colombian population. Historically, the system of cross-subsidies for public services has been relatively complex. It includes utilities (gas, electricity, water) and telecommunication services (fixed lines, connection and usage charges, and fixed payphone services).<sup>60</sup>

According to Law 142 of 1994 (which provided for universal service and social coverage for all utilities) and Decree 899 (see above), universal service obligations in Colombia are restricted to fixed telephony (public switched service). These obligations are defined by law and can only be modified by Congress. Policy implementation is a responsibility of the MINTIC. Historically, the system was based on a contribution framework where higher income users paid higher prices to a public fund used to subsidise lower income users. The subsidies system differed according to region and was based on a system whereby households and businesses were divided into six “strata” or categories (Table 2.13). Households considered as having lower incomes received subsidies up to 50%, 40% and 15% depending on their classification, while higher income households paid up to 20% above the standard rate. In principle, the system was aimed to achieve balance in such a way that no additional burden would be placed on operators (CEPAL, 2011).

**Table 2.13. Stratification in Colombia, former system**

Stratum	% of population	Monthly income per household (USD)	Discount/surcharge (-/+, %)
1 (Low-low)	27%	< 330	-50%
2 (Low)	39%	330-660	-40%
3 (Low to medium)	22%	660-1 170	-15%
4 (Medium)	7%	1 170-3 330	0
5 (Medium-high)	1%	>3 300	+20%
6 (High)	1%		+20%

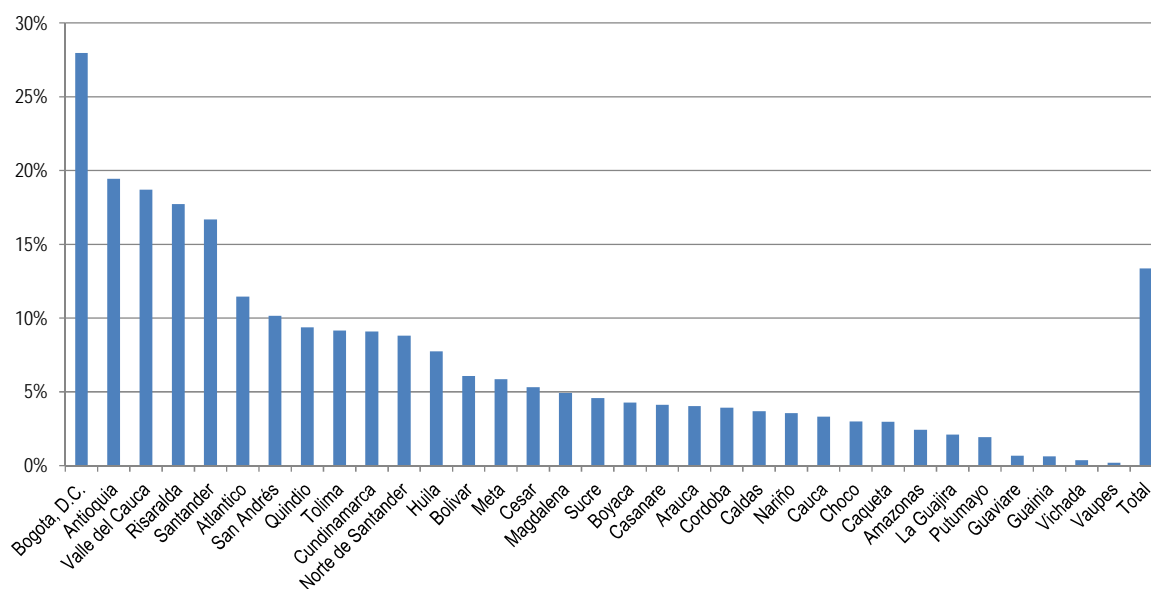
Source: MINTIC based on DANE and SUI.

Higher charges were also applied to businesses and other commercial entities with the stated aim of subsidising lower income users (Law 142 set down the provisions for the subsidy for this segment). The public fund was also designed with the intention of

receiving contributions from a charge on long-distance and mobile calls, as well as from fees that operators paid for licences. As low-income households substantially outnumbered those in higher income strata (i.e. strata 5 and 6), the universal service fund was aimed at making up the difference. Over the years, however, the shares of households paying subsidies declined, and central government and municipalities were required to increase their shares (Parra, 2011). In addition, the low penetration rates for fixed services raised the question of whether the policy was effective in expanding services.

Today, Colombia still has a relatively low penetration rate for fixed services. The differences are particularly acute in rural areas relative to the larger cities (Figure 2.8). Urban, wealthier areas such as Bogotá and Antioquía have fixed-line penetration rates of 20% to 30%, whereas most rural areas are below 5% penetration, for a national average of 13.5% in June 2013. In 1997, and again in 2009, changes were introduced to the cross-subsidy schemes in recognition of the fact that they were not meeting the set policy goals.

**Figure 2.8. Fixed line penetration by department, Q3 2013**



Source: MINTIC and DANE.

In 1997, Colombia adopted a *National Telecommunications Plan for 1997-2007* with the goals of increasing telephone penetration to 75% for category 2 homes and 25% for category 1 homes, and promoting access to databases for schools, hospitals and public libraries. It was linked to the *Social Telephony Plan* (1997-2000), which aimed to install 975 239 urban and rural telephone lines. A wider economic programme (the *National Development Plan for 1998-2002*) also had components covering telecommunication, namely the development of community social telephony and rural services. A further plan for universal service was also developed (*National Plan for Universal Service 1999-2009*). These plans proved not very effective in meeting their targets, at least with respect to fixed line penetration.

The 2009 ICT Law phased out the existing stratification framework and exempted from VAT only strata 1 and 2, allowing for a transition period of five years. Except for this obligation, which is funded by foregone government revenues (VAT), operators are free to price services as they wish and do not have the obligation to tailor prices to users on different strata. Notwithstanding this, operators conduct price discrimination between the different strata even for headline prices of fixed services. While the ICT Law phased out the subsidies framework, it also requested the MINTIC to undertake programmes (funded by FONTIC) to extend access to communications for strata 1 and 2, with a special emphasis on broadband services, as laid down by the National Development Plan 2010-2014.

In 2010, the new National Development Plan and its ICT component *Plan Vive Digital* replaced, at least in part, previous ICT initiatives, such as Compartel, and adopted the role of improving access to telecommunications in Colombia. In 2012, Compartel was subsumed within the “Connectivity Programme” of the MINTIC’s “Connectivity Directorate”. Box 2.4 details the main universal service-related initiatives of *Plan Vive Digital*. The infrastructure component of the plan covers spectrum-related issues, in-building wiring, the promotion of an early alert emergency system, and so on. Annex C provides a summary of the plan’s initiatives.

#### Box 2.4. Universal service related initiatives under *Plan Vive Digital*

Three main initiatives under *Plan Vive Digital* address universal service issues:

##### 1. The national fibre network

In November 2011, the national fibre network project was awarded to a joint venture formed by the Mexican companies Total Play and TV Azteca. The companies were awarded USD 220 million to cover 753 municipalities with fibre, representing a total investment of USD 640 million (of which one third would be funded by the government). The joint venture won the tendering process against competing offers of Telmex Colombia, Telefónica and another joint venture participated in by ZTE and Anditel.<sup>61</sup> The MINTIC seeks to connect some 753 extra municipalities in addition to the 325 that already have this technology. These will have access to backbone facilities through 15 000 km of new fibre optic cable (see improved fibre coverage, Figure 2.9).

Figure 2.9. Coverage of fibre backbone networks, heads of municipalities



.../...

### **Box 2.4. Universal service related initiatives under *Plan Vive Digital*** (continued)

#### **2. Promoting infrastructure in rural areas**

The ICT Law (2009) prioritised universal access goals for rural and isolated areas, as well as those with lower income. This led the MINTIC to promote ICT use in these areas by providing subsidies to operators to expand their networks. It has achieved 114 000 additional connections to date, for which customers pay a maximum of USD 10 per month (the MINTIC's subsidies amount to USD 9 million, through PPP arrangements). Operators that accept the subsidy commit to expanding the network and to offering a "social tariff" to end-users for a period of three years. Customers pay USD 10 for a 1 Mbps connection. Some subscribers switch to a triple-play offer from the operator after a few months and usually keep their connection after the three-year period. These subsidies are targeted to low-income areas, although higher income households within those regions are also entitled to the same benefits.

*Plan Vive Digital* includes the initiative *Punto Vive Digital*, which aims to provide access to the Internet in areas with lower average incomes (strata 1 and 2). It consists of an Internet centre (*Punto Vive Digital*) with a 6 Mbps connection and 32 PCs for Internet access, in addition to 32 working stations for training purposes, 32 PCs for e-government applications and two to three television sets for entertainment purposes. After the initial investment, the main challenge is the burden of maintenance costs. This is why municipalities are endeavouring to maintain them through partnerships with other institutions such as local law enforcement. End-users pay a very low fee, insufficient to cover maintenance costs (mainly the Internet connection, which is a dedicated channel for USD 1 000 to USD 1 500 per month). As highlighted by the ICT Law and its focus on universal access, the goal is for all population centres with over 100 inhabitants to have at least one Internet community access point. For smaller populations, the MINTIC launched *Kiosko Vive Digital*, with two to six computers. At the end of 2013, 1 114 "Vive Digital kiosks" have been installed, providing additional services such as photocopying, scanning, calls, and free training for the community on basic digital literacy and agriculture-specific training, entrepreneurship and online education. Taken together, these projects have involved an investment of USD 200 million.

#### **3) Subsidies for broadband access**

In addition to these two main initiatives, the MINTIC intends to redirect existing subsidies for voice to broadband access (strata 1 and 2) through legal changes. In 2012, Resolution 1363 granted a subsidy of some USD 150 million (COP 285 billion) to operators that deliver fixed broadband access to strata 1 and 2, in order to extend broadband penetration during 2012-2014. To this end, the resolution set the penetration goals per operator, as well as the amount of subsidy received per connection, weighted by the type of geographical department reached (e.g. remote rural communities are given a higher weight). The resolution also stipulated the amount to be transferred to the final user in the form of a discount on their bill. A later amendment to this resolution allowed subscribers to use the subsidy either to acquire a tablet/computer or to pay for their broadband service. The subsidies per household and Internet connection range from USD 79 (COP 150 000) to USD 158 (COP 300 000) over 28 months.<sup>62</sup> By 2014, the Ministry plans to provide subsidies to 1.9 million households.<sup>63</sup>

*Plan Vive Digital* also acknowledges the need for expanding international connections and attracting investments in CDNs and data centre infrastructure. For example, it proposes to build additional submarine cable infrastructure and increase the diversity of routes across the Pacific. In 2010, Compartel funded a fibre optic cable to San Andrés in the Caribbean, where the MINTIC provided 87% of the required funds (about USD 29 million) for an 824 km submarine cable. According to MINTIC data, Internet penetration started to increase in the island after installation of the cable. *Plan Vive Digital* intends to increase international connectivity through submarine cables by a factor of 20.

Under the current arrangements, TV Azteca is required to provide wholesale broadband connectivity to the national broadband network at regulated prices, and is not prohibited from offering retail broadband services. The latter may raise concerns of vertical restrictions to competitors, thus appropriate regulation on wholesale services provided by Azteca should be considered. This arrangement falls under the definition of “open access” for broadband networks, as defined by the OECD (2013a). The 44 municipalities not covered by the national fibre network will be reached through radio or satellite links by another MINTIC plan, named *Proyecto de Conectividad de Alta Velocidad*. This plan is funded to the amount of USD 200 million (COP 409 billion) and covers mainly the Amazonia, Chocó and Orinoquia regions. Needless to say, these plans only cover municipality heads. This means that some backhaul infrastructure is required to connect customers to the backbone end at the head of a municipality.<sup>64</sup> The project also includes connectivity improvements (e.g. public institutions, kiosks and so on). The lack of electricity supply may be a challenge in rural areas, especially outside the head of municipalities (according to the MINTIC, electricity coverage is 98.81% for heads of municipality and 86% outside the heads).

### *The culture of subsidies*

Social telephony projects in the 1990s were well funded through licence payments, spectrum fees and a percentage of operator revenues, but were not very effective in meeting targets.<sup>65</sup> Reform led to the development of a National Telecommunications Plan aimed at improving universal access and ensuring universal service. The Compartel programme started in 1999-2000 and was funded by the Communications Fund (FONTIC). FONTIC obtained resources through several, though not harmonised, levies on mobile and long-distance services, in addition to a number of fees placed on operators. Prior to 1994, FONTIC was publicly funded from general revenue.

Under Compartel, many significant initiatives were launched, including the national fibre network, telecentres for heads of municipalities in rural areas and for strata 1 and 2 areas, connectivity for public institutions, improved satellite links and higher capacity, and the submarine cable to San Andrés and Providencia. Compartel’s telephony programme was funded by a combination of revenues generated from license fees, and a 5% revenue levy paid by Telecom (the incumbent for rural areas and long distance) and other long-distance operators. A competitive tender process was used to deploy networks under this programme. In 2005, Compartel’s second phase funded broadband development in public institutions. A further addition to the programme in 2006 aimed to provide 178 000 students with high-speed Internet access.

Since 2009, operators are required to contribute 2.2% of their total gross revenues to FONTIC, although several are still transitioning to the new framework. Revenues from spectrum auctions and fees also go to FONTIC. The uniform contribution percentage for all operators avoids distortions, but creates uncertain revenues, most likely with very high sums of money in certain years when spectrum auctions are held, and very low sums in other years. Moreover, the 2.2% contribution places a high burden on the industry. The asymmetry in relation to pay television services, which face a variety of fees that go to FONTV, has not been resolved yet, even though some operators offer television services bundled with telephone and broadband services. Some suggest that this asymmetry is leading certain operators to artificially price different services in a bundle. For example, operators have an incentive to apply a low price for the television component of a triple-bundle and a higher price for broadband and telephone services, as the contribution percentage to FONTV largely exceeds that to FONTIC.

While deeply ingrained in Colombia's culture and history, the cross-subsidisation system for telecommunications, based on strata, was phased out in 2009 under the ICT Law with the exception of the VAT exemption for strata 1 and 2 (for fixed telephony services). The underlying principles are based on the country's constitution and were confirmed by recent Constitutional Court decision (C150 of 2003). That framework has been replaced by a number of other programmes initiated to develop infrastructure and services in rural areas.<sup>66</sup> In 2009, the ICT Law acknowledged that resources from the state's general revenues could be devoted to funding universal service needs for a three-year transition period to the new regime. At the same time, the law recognised the need to promote fixed broadband adoption in strata 1 and 2. The subsidies framework is fundamental to the way the Colombian state views the provision of public services. As these are linked to a geographic location, it proved relatively easy to implement a system that considers local socio-economic conditions in order to alleviate the burden for the less well off.

This framework, however, has a number of drawbacks when applied to telecommunication services provided under competitive conditions. One is the issue of mobility. Even though certain subsidies for mobile broadband provided by Colombian operators are based on the location of the base station, linking subsidies to locations does not make sense in the mobile environment. A second, more serious, problem is that stratification provides operators with a powerful tool to undertake price discrimination and reduce consumer surplus to virtually zero. Stratification databases should not be accessible by telecommunication operators and VAT refunds should be obtained directly from the government. These databases provide the operators with, more or less accurate, information about the income level of a given household, and can in turn be used to undertake price discrimination by charging more to users who can pay more.

In addition, stratification only has limited granularity and does not provide data for specific households. Therefore, some inhabitants of strata 1 and 2 areas may earn higher incomes and yet be eligible for subsidies. Finally, the cross-subsidisation system entails further challenges, such as political interference to keep some households from being classified as high-income households, lack of incentives to connect new homes, motivation to apply high-subsidies to avoid diversion of funds to other markets (as the system worked on a local basis) and so on.

### *Targeting funds to needs*

The MINTIC's current emphasis on Internet access appears fully justified. The Ministry has understood correctly that the Internet is a complex ecosystem made up of multiple components. These include users with skills, user-friendly terminal devices, attractive content and applications, an environment of trust and services, including broadband, that are available and affordable. Progress on one component may not yield the desired outcomes in the absence of progress in one or more of the others.

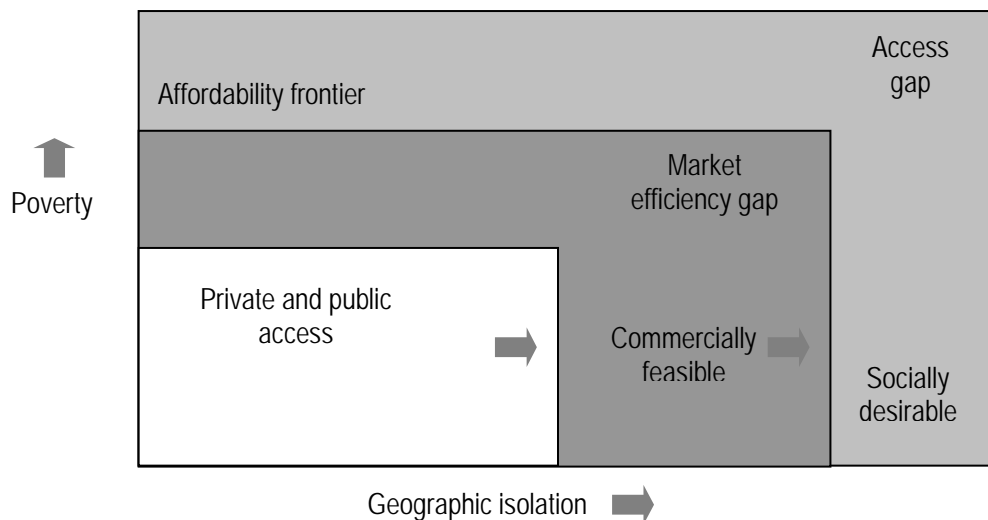
To date, the main bottleneck towards extending broadband access seems to be backbone and backhaul fibre connectivity, which is being currently addressed through the National Fibre Network. Wireless devices such as smartphones and tablets will become the primary modes for Internet access in developed as well as developing countries. These devices will have to be connected to the fixed network to deliver high-capacity data transmission, as mobile networks cannot possibly handle all the traffic. In all cases, the considerable bandwidth requirements will be met by high-capacity links such as optical fibres in the backhaul segment (Samarajiva, 2009). Colombia, along with other



governments, such as India, is taking steps to ensure that optical fibre backhaul reaches most populated settlements within the national territory.<sup>67</sup> This lowers the cost of deploying LTE infrastructure, which is likely to be the technological solution for providing broadband services in those areas.

The measures to increase Internet access in strata 1 and 2 and in rural areas aim to provide Internet access where it is socially desirable (Figure 2.10). Most potential users from Strata 1 and 2 will access the Internet from collective telecentres served by fixed broadband. While such centres can play a very useful role in building up the skills needed to make optimal use of the Internet, and even to facilitate access to government services provided over the Internet, there is a need to recognise that individual or family access through wireless devices will play an increasingly important role over time, as device prices decline and interface design improves. The proposal to require winners of the 4G auction to provide a specified number of terminal devices suggests that the MINTIC has begun to address the increasingly important role of mobile networks and devices. However, linking the provision of tablets to the spectrum assignment may be distorting the auction results. While the Ministry's aim to remove device barriers is commendable, doubts remain as to whether this is the most efficient way to achieve it.

**Figure 2.10. Market efficiency and access gaps**



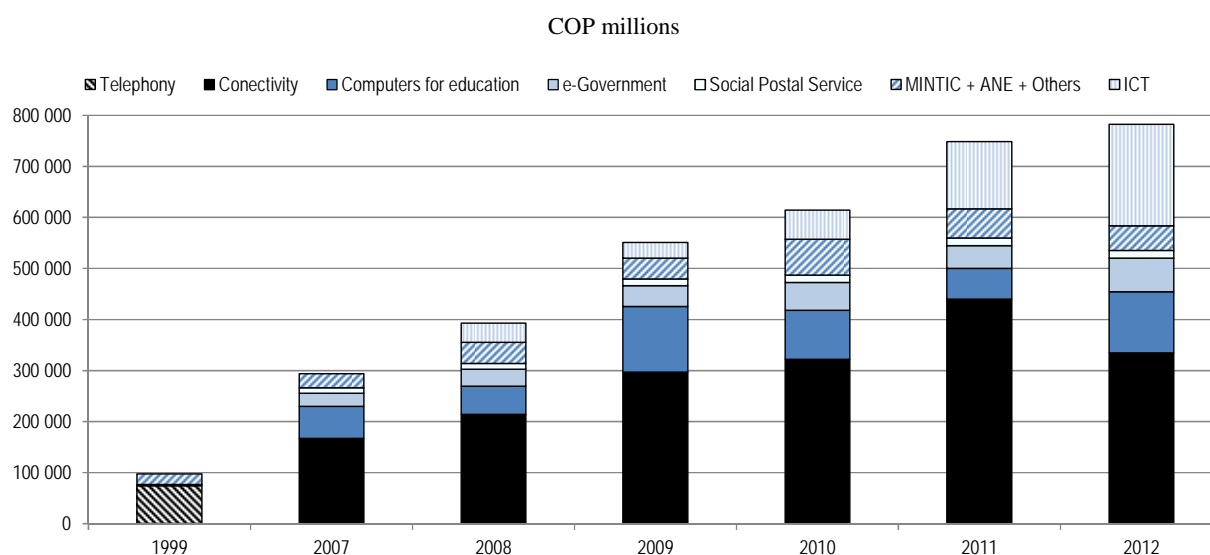
Source: J. Navas-Sabater, A. Dymond and N. Juntunen (2003), "Telecommunications and Information Services for the Poor: Towards a Strategy for Universal Access", *World Bank Discussion Paper* No. 432, World Bank.

### *Funding and governance of investment projects*

Any government agency seeking to implement investment projects interacts closely with the DNP. While the DNP has no say over the operational costs of ministries, it does approve all investment projects. As an advisory body directly under the President's authority, it has the technical expertise to assist in the strategic direction of the country. It is also in charge of the National Development Plan. All investments made by the MINTIC need to be approved by DNP, including those funded by resources drawn from FONTIC. The MINTIC's Planning Office works very closely with the DNP to ensure that investment projects are authorised in due time. The DNP also approves multi-annual investment programmes, and designs the investment strategy in co-operation with the MINTIC. This could be thought of as an accountability mechanism or a safeguard to ensure that funds are not diverted for political or other purposes. However, it seems that to obtain programme approval from the DNP, the Ministry need only to complete a checklist in the public budget software. Hence, no rigorous programme evaluation methods are in place.

The generous availability of funds, based on 2.2% of industry revenues, and the fact that the majority of the budget needs to be executed within a calendar year, raises some concerns about the efficiency of the system. There does not seem to be a cost-benefit analysis of investment for ICT promotion. The enormous number of initiatives could also be reduced or simplified. For example, tracking the amount of funding for each initiative seems challenging. In 2012, according to FONTIC data, from a budget of some USD 400 million (COP 760.7 billion), 43% was spent on connectivity initiatives, 15% on computers, 8% on e-government, 6% on operational costs for the ANE and the MINTIC, and 2% on postal universal service (Figure 2.11).

**Figure 2.11. FONTIC expenditures**



Source: FONTIC.

The MINTIC should create, in conjunction with the DNP, an adequately resourced monitoring and evaluation programme for universal service initiatives. This should be done by developing and implementing an impact-assessment filter for all new initiatives

in order to exclude the possibility of crowding out private investment. Such an assessment does not seem to have been undertaken to date. For example, it was found in Sri Lanka that specialised operators that serve under-served areas needed not only subsidies but also regulatory forbearance with regard to tariffs. If these actions were not accompanied by a lessening of the regulatory burdens on the operators predating the initiative and serving the entire national territory, they would have no incentives to push out their coverage and connect more customers. The issues were taken to court and the subsidy program was halted. A better solution would have been to apply a filter prior to project implementation, and ensure the project did not harm the competitive forces that were providing voice connectivity to people at a rate greater than hitherto experienced.

Once a comprehensive cost-benefit analysis has been undertaken, steps should be taken to reduce the contribution from the industry in percentage terms, even more so in an industry with increasing revenues. This will lessen the distortions resulting from the current system. Progress has already been achieved with the establishment of a uniform 2.2% rate replacing the variable rates prior to the law. Once the rate approaches zero, consideration should be given to funding any universal service programs that are still considered necessary out of general government funds, as is the practice in countries like Australia and Chile.<sup>68</sup> In the same spirit, any one-time payments such as the proceeds of spectrum auctions should flow to the general treasury, and not to the universal service fund. This should be done by modifying the ICT Law (art. 13 and 37) and possibly other provisions.

In general, more transparency is needed with respect to the fund allocation for universal service purposes, in particular in relation to the breakdown into different projects and initiatives. These should be reported separately and be properly identified, which could be done by creating a universal service fund, as has been done in France, Italy, Pakistan and Spain. The current system introduces a large amount of distortions and is not efficient. FONTIC funds are used for many different purposes and it is not very clear that benefits offset the costs imposed on the industry and consumers.

Beyond developing a new line of initiatives that aim at boosting demand for ICTs in Colombia, the MINTIC should think carefully about the timing of supply- and demand-side initiatives. Experience shows (OECD, 2010b) that, once the infrastructure is in place, more efforts should be devoted to providing incentives for demand, which can be an equally challenging task. Colombia is still in the phase where more infrastructures need to be deployed in order to expand broadband coverage, but the authorities should bear in mind that demand-side policies usually represent a greater challenge and need to be considered from earlier phases of the development of the digital economy.

### ***Reducing the tax burden on the sector***

In light of existing evidence, telecommunication services are still considered a “luxury” service in Colombia, even though the government has started to introduce some tax exemptions, such as the one for smartphones. Notwithstanding this, operators still need to pay 2.2% of their gross revenues to FONTIC (telecommunication revenues minus income from handset devices). In addition, the VAT tax on telecommunication services is 20%, higher than the regular 16%, and the law obliges that the difference be used for sports, culture and artistic programmes. Therefore, these revenues are used for purposes other than extending telecommunication infrastructure to rural and remote areas.<sup>69</sup> Again, this introduces further distortion into the system and has a negative impact on demand.

As telecommunications have positive spillover effects across the whole economy, imposing high tax burdens, as happens in Colombia, can only have negative effects on the development of the sector and, as a result, on the whole economy. As argued above, FONTIC should gradually transition to being funded from general government revenue. Many have argued against the deadweight effects of taxing the sector, which can have the effect of preventing its development and its positive economic spillovers (Hausman, 2000; Katz and Flores Roux, 2010). Traditionally, governments have been keen to tax telecommunication services due to their rapid growth and low collection costs (Cave and Mfuh, 2011, OECD 2013c), but this behaviour may turn out to have perverse effects. Even though the 2.2% paid by operators goes to FONTIC, as explained above, the system is at best inefficient and earmarking these funds, in addition to taxing the sectors, has a negative impact on the flexibility of public spending.

FONTIC's funding should come from general government revenues and, likewise, the additional tax burden on the sector should be lifted. While the current arrangement may seem favourable to the sector, it has two main problems that very likely offset any benefits. First, it taxes a sector that delivers positive externalities to the economy very heavily and thus hampers its development and, second, promotes inefficiencies and lack of flexibility in public spending. Finally, if earmarking also affects other large programmes, it undermines the exercise of building the national budget, as many expenditure items can eventually be already allocated (earmarked).

## **2.10. Foreign and state ownership of telecommunication operators**

### ***International commitments and foreign ownership***

Colombia and the United States have entered into a Free Trade Agreement (FTA) that provides for non-discriminatory access and use of telecommunication facilities. The FTA covers most of the principles in the WTO agreement on basic telecommunications, but provides an exemption from a number of clauses in the agreement for Colombia for rural areas (defined as a municipality with a total number of installed fixed lines of 4 500 or less). However, the combined areas that Colombia designated as rural areas may not contain more than 10% of the total number of fixed subscriber lines installed in its territory. The WTO commitments also entail reporting obligations, such as the obligation to report changes to in-building wiring regulation (the new RITEL) to the WTO and the CAF. The implementation of the United States-Colombia FTA does not seem to have involved any major changes for Colombia, as most of its obligations for telecommunications were already in place. Moreover, there are no foreign ownership restrictions in Colombia (the last having been eliminated in 2009).

### ***Public ownership issues***

The onset of competition for local telephony and, eventually, long distance led to a number of private companies entering the market, and in many cases, investing in existing municipal companies. Unlike most OECD countries, where there was a unique, national fixed line incumbent, Colombia had many municipal and regional fixed operators. Most of them – at least the most important ones – have remained publicly owned. Despite some limited consolidation, the fixed telecommunications industry remains very fragmented.

With the exception of the largest telecommunication player (Claro), all other major operators have some degree of public ownership. The governments of Bogotá and Medellín control the two largest fixed operators, ETB and UNE-EPM, while municipalities also own many other small fixed operators. The second and third largest mobile operators (i.e. Telefónica and Tigo) have minority shares held by the Colombian government and EPM/ETB, respectively. The central government has reduced its financial interest in Colombia Telecomunicaciones, which now includes mobile operations, but still retains a 30% share (and agreed to assume responsibility for 48% of the company's pension obligations).

The lack of consolidation in the fixed telecommunication markets has led many to believe that most local operators are to some extent shielded from competition. These considerations are backed by the fact that fixed telecommunications are underdeveloped in Colombia and by high degrees of market concentration in most local/regional telephony markets.

A more concerning issue is the possible barriers that some municipalities – owning telecommunication operators – may pose for third-party infrastructure deployment. The CRC and the MINTIC should monitor infrastructure deployment to ensure it is not hampered by local regulations, such as the current work to harmonise urban planning rules (POTs).

As many OECD countries have done, Colombia can also leverage municipal and regional utilities to improve its telecommunication infrastructure. In countries such as Denmark, the Netherlands or Sweden, local utilities have contributed to the extension of fibre broadband networks by taking advantage of their customer base and lower costs for deployment. Two requirements, however, should be met. First, local and municipal authorities should not intervene against the on-going consolidation trend in the industry, especially if the small size of some local operators leads to bankruptcy, or to the spending of taxpayer money.

More consolidation in fixed communications would surely lead to the emergence of a competitive player both in fixed and mobile (especially after the recent spectrum auction), which would benefit the marketplace in the long term. Second, local and regional authorities, under the direction of the CRC and the MINTIC, should harmonise their urban planning rules with respect to telecommunication infrastructure deployment and remove the remaining barriers. They should promote fixed infrastructure deployment and upgrades to fibre where it makes economic sense. Utilities in North European countries have been extremely successful in using fibre-based services as a means to capture additional revenues at relatively low marginal costs.

In addition, publicly owned operators should observe good practices on competitive neutrality. The OECD (2012d) has highlighted the main challenges to obtaining competitive neutrality between public and private enterprises, and suggested some remedies for countries to implement, such as streamlining government business, promoting high standards of transparency and disclosure, and recommendations concerning debt neutrality. Colombia has no formal policy on competitive neutrality and public bodies are not required to have separate accounts for commercial and non-commercial activities, although public and private companies are treated equally before the law.

## 2.11. Consumer protection and empowerment

The new convergent framework for telecommunication services, brought about by the ICT Law, highlights the need to protect users' rights in communication services. Since 1991 Colombia had a framework for the protection of users of public domiciliary services (including telecommunications), including some sanctioning powers for providers failing to comply with obligation on billing, customer service, tariffs, and so forth. Nevertheless, before 2009 little was done in practice to protect consumers of communications services. Although in 2007, Colombia had already issued a telecommunications consumer protection regime (Resolution CRT 1732 of 2007), it was not until 2011 that Colombia started to make serious efforts to protect and empower consumers. A major milestone was the implementation of regulation in the ICT Law (Resolution 3066 of 2011), which established a comprehensive framework for communication users' rights. This Resolution also implements Law 1480 of 2011, termed as the Consumer's Statute (*Estatuto del Consumidor*), with respect to users of communication services.

There are two agencies in charge of consumer protection, and each has a certain role. The CRC has the duty to issue regulation with the aim of "maximising social welfare of users" (ICT Law of 2009), and the Superintendence of Industry and Commerce (SIC), through the Deputy Superintendent for Consumer Protection, is the body in charge of resolving disputes between consumers and operators (Decree 4886 of 2011). In other words, the SIC is the enforcement agency of consumer protection and empowerment rules and can impose fines on operators for breaching regulation designed to protect consumers.

With this dual approach (i.e. separating consumer regulation from enforcement), Colombian authorities intend to guarantee effective regulation that guards user's benefits of communication services while, and at the same time, to ensure consumer's contractual protection. In fact, both authorities co-operate in the preparatory work leading to CRC resolution on consumer-related matters. However, it can also be argued that such a division of tasks between the CRC and the SIC may increase coordination challenges among agencies, and thus create a supplementary burden for communications users.

In some countries, the telecommunication regulator is responsible for all consumer matters regarding communication services, from developing regulation to its enforcement. One example is the United Kingdom, where OFCOM issues regulation and has powers to fine service providers if they breach consumer-related regulation. OFCOM, however, resembles the CRC in that it does not deal with individual consumer complaints which go through an alternative dispute resolution process. In the case of Colombia, this would be the equivalent of filing complaint through the SIC. Nevertheless, OFCOM does welcome consumer's feedback to foster accountability of operators by publishing such information.<sup>70</sup> If the CRC were to be in charge of simultaneously issuing and enforcing regulation on consumer issues, some efficiency may be gained but the CRC would have to be appropriately resourced to undertake this task.

Resolution 3066 of 2011 seeks to ease the process of filing complaints, enhance the transparency of contracts made by operators and promote user's rights in general. The regulation covers contract terms, early termination fees, bill transparency, protection of personal data, and complaint procedures, among other issues. For example, it establishes that users should be able to switch providers easily, that contracts should be clear and provide prior notification of consumption, and that appeals should be handled within a given time frame. In addition, the CRC is currently working on a draft resolution to simplify contracts and facilitate consumer empowerment through better understanding of contractual terms.

One of the main pillars of Resolution 3066 is that consumers are entitled to transparent, truthful, timely and precise disclosure of contractual information. The CRC has seemingly followed best practice concerning bill transparency (OECD, 2008), although it seems unclear how the SIC is practically enforcing it. Some countries, such as Spain and the United Kingdom, have gone as far as to issuing quality of service measures to ensure adequate bill transparency, which include the auditing of 5% of operator bills in order to verify compliance with regulation of billing quality of service.<sup>71</sup>

Although there is no requirement to register prices, consumers must be directly informed beforehand of any price changes. If a consumer is engaged in a contract with a commitment period, the operator can only change terms of the contract, including prices, with the agreement of the consumer. Otherwise, the consumer can end the contract without penalty.

In a country where approximately 82% of mobile subscribers are prepaid, regulation targeting the pre-paid segment becomes highly relevant. Recent changes in regulation (Resolution 4040 of 2012 of the CRC) allow for prepaid cards to remain valid for 60 days from activation, and for unused balances to be transferred for a further 30 days from the end of the term. Mobile operators are also required to ensure that subscribers are informed of balances in their accounts. These measures may raise the headline price for customers but are welcome in that they provide higher levels of transparency.

As communications services evolve to a convergent environment, bundles that offer fixed and mobile telephone, television and broadband services have become quite common in OECD countries. Bundled offers raise significant concerns regarding transparency and consumer “lock-in.” First, they render price comparisons difficult for consumers and, second, they increase barriers to switch providers (OECD, 2011c). Colombia has made a positive decision by requiring the price disaggregation of the different services within the bundle (Resolution 3066 of 2011). Concerns remain, however, as to artificial pricing of the different components of the bundle (either driven by pure commercial criteria or by external factors such as different taxation regimes).

### ***Filing complaints***

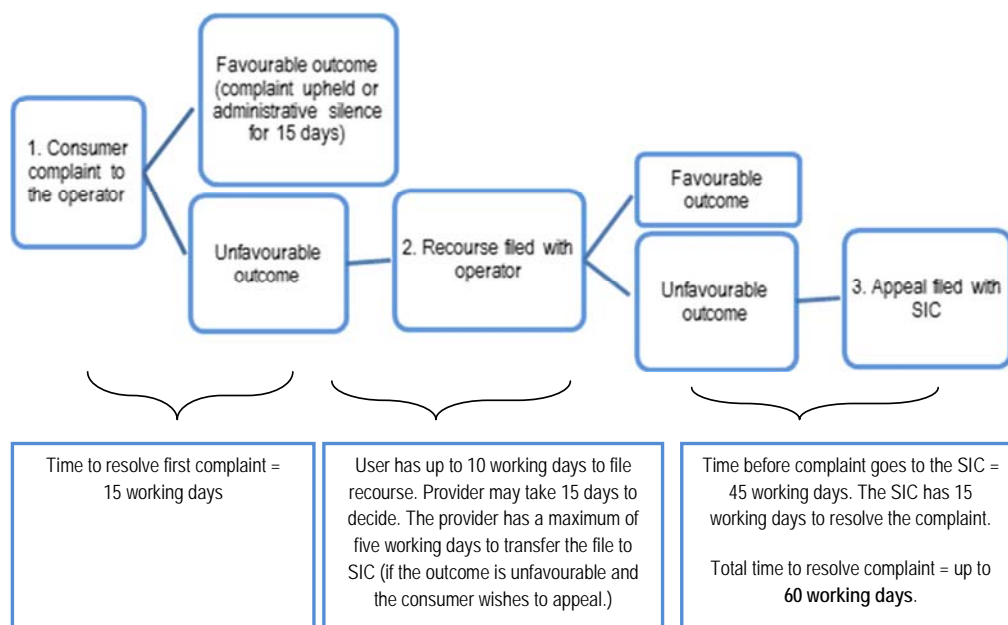
Colombia has undergone some changes in consumer policy in order to ease the process of filing complaints. The ICT Law (art. 54) specifically states that providers of communication services should promptly reply to user’s complaints and resolution 3066 develops the procedure to do so (articles 39-52).<sup>72</sup> Moreover, the SIC’s consumer division has a special unit devoted to telecommunication issues, mainly due to the increase of consumer complaints in recent years. Before being allowed to complain to the SIC, consumers must have had complained twice to the operator. There is an exception to this rule: if the consumer believes that the provider is not complying with applicable regulation, e.g. faulty advertising, then the consumer has recourse directly to SIC (see Figure 2.12).

The full process of resolving a consumer complaint takes 60 working days, i.e. close to three months, or even longer if the consumer needs additional time to build the administrative file. This procedure is burdensome for consumers and is most likely preventing them from exercising their rights. Despite this long and complex process, the SIC currently receives over 3 000 complaints a month, most of them on quality of service issues, although some also are filed with respect to billing issues.<sup>73</sup>

One positive change is the Unique Number Code (*Código Único Numérico, CUN*) created for users at the start of the complaint procedure. The CUN makes the complaint tractable by the consumer through the SIC's website, easing to some extent the burden of filing complaints borne by users and avoid it being lost.<sup>74</sup> In order to increase transparency regarding consumer complaints the SIC could, in addition to publishing information on complaints broken down by operator, undertake a geographical referencing of this information. This can be useful for consumers, operators and the regulator.<sup>75</sup> If these data were matched with CRC's geographical data on quality indicators, it would assist the regulator in identifying parts of the network infrastructure that may be suffering saturation.

However, in Colombia there is an increased difficulty to file complaints in a convergent environment given the current duality among competent bodies (e.g. ANTV and SIC) dealing with communication user's complaints. That is, a consumer that has a billing problem with a bundled offer can only file complaints to SIC regarding the part of the bill that corresponds to telecommunication services. All broadcasting complaints have to be dealt through the ANTV.

**Figure 2.12. Procedure for consumer complaints in Colombia (communications services)**



Source: OECD elaboration based on information provided by CRC.

### ***International mobile roaming***

In recent years, OECD countries have addressed the issue of how to provide more competitive prices for international mobile roaming services which remain unreasonably high. A series of OECD reports (e.g. OECD, 2010c) have highlighted this issue and put forward recommendations to reduce prices in this area and protect consumers.<sup>76</sup>

Roaming charges for Colombians travelling in Latin America and elsewhere are extremely high (see Table 2.14). By way of example, a three-minute call from a Latin American country to Colombia would cost around USD 6.50 and the same call from France to Colombia would cost around USD 10 for a user roaming in those countries. This price is almost equivalent to the daily minimum wage in Colombia, which is close to



USD 11.<sup>77</sup> In the European Union, where roaming rates are regulated, a three-minute call to France would cost around USD 1.20. International data roaming prices in Colombia are also high, at around USD 18 per MB. Again, international data roaming costs within the European Union would be around USD 0.72 per MB.<sup>78</sup>

In Europe some of the most competitive mobile markets, with at least four facilities based providers, have begun to witness some favourable developments. It is not yet clear whether these developments are solely the result of competition or ahead of further intervention designed to lower or abolish roaming charges in the European Union area. Examples include a French mobile operator (Iliad Free) offering customers the ability to use roaming services in Portugal without incurring additional charges. A second example is the operator “Three” in the United Kingdom offering customers the ability to roam in any country where its parent owns a mobile network. This includes not only countries such as Denmark and Italy but also Australia and Hong Kong, China. This raises the question of why similar developments are not occurring in Latin America especially where there is a common ownership in mobile networks across different countries.

It is not surprising, therefore, that the CRC and the SIC are, like most regulators in the world, concerned with the competitiveness and transparency of international mobile roaming services. The CRC has begun to take steps to protect consumers. Namely, it has issued regulation stating that international roaming has to be activated by the user when travelling abroad in order to prevent bill shock (article 37 of CRC resolution 3066).<sup>79</sup> Additionally, prior to the use of roaming service abroad, the communications service provider is obliged to send the user an SMS with price information for the roaming service. The Colombian authorities are seriously concerned about international mobile roaming services. For instance, in December 2012 the SIC had fined Claro for allegedly charging 12 roaming users who had not activated the service expressly.<sup>80</sup> In addition, Telefonica and Tigo were also fined in 2013 for similar actions.<sup>81</sup>

**Table 2.14. International mobile roaming charges, voice and SMS**

Operator	Long distance (Outgoing) Price per minute	Local (Receiving and outgoing) Price per minute	SMS Price per message
TIGO	USD 2.12-3.30 (COP 3 999-6 199)	USD 1.53-1.59 (COP 2 899-2 999)	USD 0.42 (COP 799)
MOVISTAR	USD 2.12-3.30 (COP 3 999-6 199)	USD 2.12 (COP 3 999)	USD 0.42 (COP 799)
CLARO	USD 2.21-3.35 (COP 4 172-6 338) USD 8.43 (COP 15 937) to certain countries	USD 1.56 (COP 2 941)	USD 0.45 (COP 860)

Source: OECD elaboration from operators' webpages, August 2013.

In February 2012, the OECD Council Recommendation set the measures to be considered by OECD member countries with regards to International Mobile Roaming regulation (OECD, 2012e). The key points of this recommendation are the following:

- Promote awareness and transparent pricing.
- Facilitate transnational alliances to promote transparent Inter-Operator tariffs.

- Where possible, the determination of wholesale roaming prices should be left to the market. If member countries determine that market dynamics are insufficient to produce reasonably competitive wholesale price, they are encouraged to regulate wholesale roaming prices, including by reaching bi- or multilateral agreements between member countries.
- If member countries determine that market dynamics are insufficient to guarantee reasonably competitive retail prices they should, as a last resort, implement retail price regulation.
- When assessing the appropriateness of introducing wholesale and/or retail roaming price regulation, member countries should undertake an impact assessment.

With respect to transparency and awareness, Resolution CRC 4295 of 2013 is in the process of being implemented and includes: i) international mobile roaming services may only be activated following a specific request by the user, ii) the user has to specify the desired expenditure threshold and activation period, iii) the operator will send a daily SMS informing the consumer of the current expenditure and the remaining credit and iv) alerts when reaching 80% of the maximum amount.

Colombia is taking steps in the right direction with regards to International Mobile Roaming regulation as it has recently engaged in a roaming agreement with CAF members Ecuador and Peru in order to increase transparency of roaming tariffs with the possibility, in the near future, to conduct a cost study.<sup>82</sup> Additionally, Colombia has actively participated in Latin American initiatives that seek to improve the South American roaming service market by correcting inadvertent border roaming and harmonising platforms.<sup>83</sup> Colombia has started to implement some of the measures included in the OECD recommendation, although they are mostly limited to transparency and awareness. A more stringent approach is needed and Colombian authorities need to conduct an assessment as to whether price regulation is warranted, as price levels for roaming services remain predominantly high.

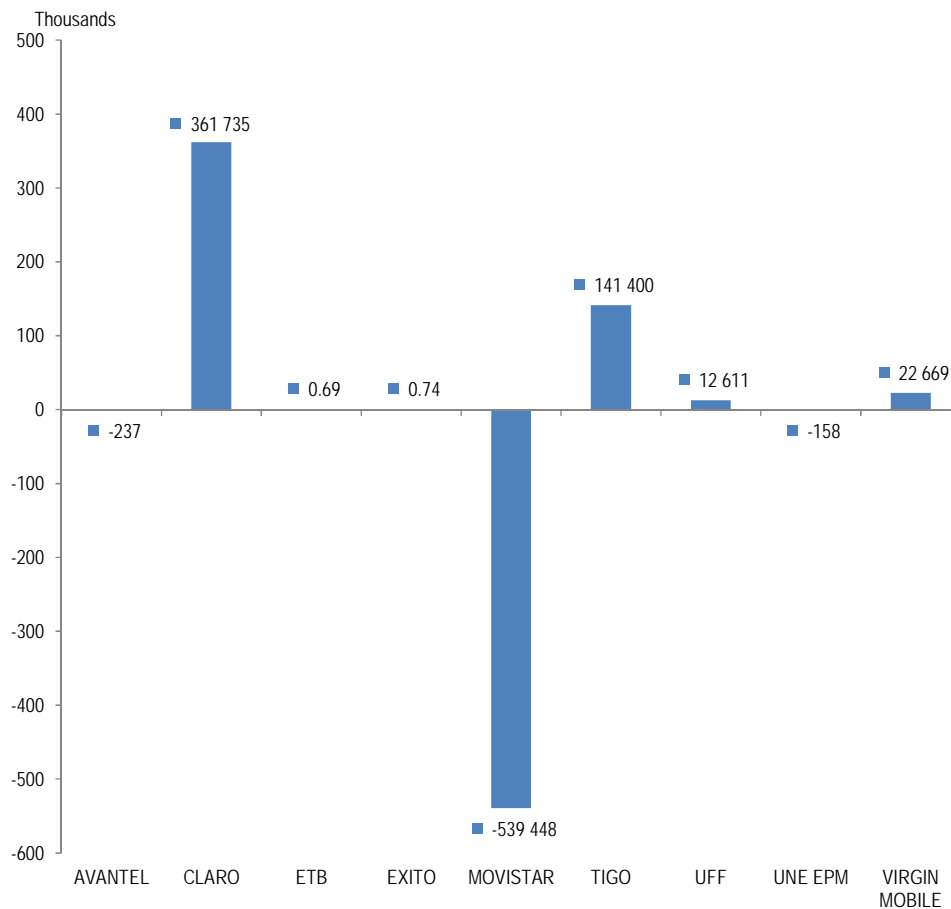
### ***Number portability***

Mobile number portability was implemented rather late given the relative maturity of the mobile market but is nonetheless a very welcome inclusion. The framework for mobile number portability was adopted in 2010 (CRC Resolution 2355 of 2010) and came into force in July 2011. Since number portability is a key tool to reduce switching costs for consumers (OECD 2013e, OECD 2008, and BEREC 2010b), late adoption may have contributed to high concentration in the Colombian mobile market.

In contrast, the CRC has not implemented fixed number portability, under the argument that fixed telephony has exhibited a weak development. As discussed in other parts of this document, the fixed market needs to become more competitive and, especially, increase penetration and adoption indicators. Fixed number portability is also needed to facilitate these changes. The CRC should develop fixed number portability, together with other measures to increase fixed service adoption, which is critical for the development of next generation networks. In 2009, the CRC concluded that implementing fixed number portability was not feasible due to technical and economic constraints, which is, to say the least, extremely surprising given that fixed number portability has been implemented in all OECD countries. The CRC will undertake a new assessment in 2014.

The implementation costs for mobile number portability are borne by the suppliers. Two years after its implementation, 1.3 million mobile subscribers have been ported in Colombia (3.01% of the subscriber base). To date, Claro has seemingly experienced a net gain of customers through the use of number portability, while Movistar accumulated a net loss (of around 540 000 ported numbers, see Figure 2.13). However, these figures should be considered with caution as the SIC has opened an investigation, and has recently (September 2013) fined Claro, based on its assessment that this operator distorted portability figures to its advantage by falsely reporting massive migration to its network.<sup>84</sup>

**Figure 2.13. Net number portability balance, implementation of regulation, August 2011-July 2013**



Source: OECD elaboration based on CRC's report on number portability, August 2013.

The implementation of number portability in Colombia has not been without challenges. The SIC opened a formal proceeding against Claro for anti-competitive practices by hampering/delaying requests for portability or not implementing requests. The SIC resolved that Claro has indeed been abusing its dominant position, and imposed a USD 31 million fine in June 2013.<sup>85</sup> In September 2013, the SIC imposed an unprecedented fine on Claro for, among other reasons, blocking terminal devices as well as manipulating number portability figures. The fine amounted to 148 855 times the minimum wage (i.e. COP 87 000 million or USD 45 million).<sup>86</sup> Much higher fines are the

outcome of the changes in the law which should deter operators from bypassing existing regulation. Most of these fines have been appealed, as would happen in any OECD country. Although the SIC can impose higher fines for antitrust issues, consumer-related fines are limited to 2 000 times the minimum wage. In practice it has only imposed fines up to 1 000 times the minimum wage (around USD 320 000). Increasing the amount of fines has been a very positive step as it is a necessary measure to compel operators to comply with regulation.

### ***Handset subsidies and commitment periods***

Resolution 3066 of the CRC established that all mobile handsets provided by suppliers, whether “subsidised” or not, must be delivered unlocked (Article 105). In addition, it stipulates that commitment periods should last no longer than one year. After the minimum contract period has ended, the contract may be extended but can be terminated by the user at any time without penalty. Contracts for “smartphones” that involve Internet access and an “initially discounted” handset are an exception to this rule. In this case, the minimum commitment period may be up to three years, which is far too long by comparison to OECD countries and could keep customer locked-in for an excessive duration.

Most “subsidised” telephones are smartphones and this is unlikely to change in the coming years. At the same time, however, the cost of many brands of smartphones is rapidly decreasing – and therefore the need for higher upfront discounts. This adds weight to the need to reduce the maximum period for a contract. A better approach would be to adopt a shorter period (two years or less), separate the telephone payments in the monthly bill and, if they are reasonable, establish that the consumer should pay back to the operator the remaining part of the discount awarded at the start of the contract if they wish to change service provider. The CRC has concluded that this could be implemented through having two separate contracts: one for the handset device and another one for the mobile plan, which should increase transparency and consumer empowerment.

Resolution 3066 established that any handset “subsidy” should be disclosed to the consumer when signing the contract. It also establishes that early termination fees should not exceed the total amount of handset discount given to the user (art. 17). These measures favour bill transparency and may reduce transaction/switching costs for the user.

Although this regulation is in line with best practice, the Colombian Congress has recently proposed a new bill to abolish the minimum commitment period completely, which would subsequently lead to the prohibition of the tied sale of handsets and the communication services (Project of Law 161 of 2012). This measure has the intention of empowering the consumer potentially at the expense of the operator. It can, however, be regarded as excessive in many aspects not the least of which is that the “subsidy model” can also have benefits for consumers. The most important ingredient in this market segment is that consumers have a choice and are not locked in to contracts that preclude the development of competition.

Policies excluding models that bundle handsets and services, while aiming to increase competition, may deliver perverse results such as hindering innovative tariff schemes. In France, for example, one MVNO offers unlimited calls to some 50 other countries, 10 GB of data as well as a free baseline model smartphone as part of a bundle for USD 26.70 per month – but only if the consumer agrees to use that smartphone. Such a policy would be restrictive if it was the only choice available to consumers but they can readily choose a different provider and bring their own device.

In some markets consumers can benefit from bundles provided at lower prices than the sum of standalone services (OECD, 2011b and OECD, 2007). In addition, high upfront payments for smartphones may deter many customers from using mobile broadband services and in turn slow down take up and incentives for network deployment, especially in a country with relatively unequal income distribution. Industry stakeholders such as Asomovil disagree with the elimination of contract commitment periods on the grounds that it would distort the market and go against good practices elsewhere.<sup>87</sup>

In June 2013 the CRC consulted on three possible regulatory scenarios regarding the tied sale of handset devices:<sup>88</sup>

- Minimum contract terms are banned, thus imposing the separate sale of handset devices. Credit schemes could be put in place to buy the device in instalments;
- An intermediate approach where the commitment associated with a bundled sale is limited to one year, but the loan to purchase the handset device can be transferred to a third operators if the customer switches;
- A mixture of the previous scenarios as transition period towards the elimination of minimum contract terms.

Competitive markets provide consumers with several options to purchase smart phones. Eliminating some of these options can only harm consumers. The role of the CRC should be to promote transparency and ban contract clauses that are abusive or not reasonable, such as very long commitment periods that are not proportionate to upfront discounts for smartphones, if there is insufficient competition, or that are not transparent for consumers.

### *Quality of service*

Issues around quality of service (QoS) in the mobile service market have been a source of concern for all stakeholders in Colombia. A great deal of public attention has been drawn on the poor quality of mobile services. Surprisingly, most of the complaints filed through SIC are not about QoS, such as for dropped calls, but rather concerning billing. While some believe that operators are unwilling to provide higher quality communications services, operators say that obstacles to network deployment present challenges for establishing base stations in urban areas and they are the root cause of quality of service issues. It is true that urban planning rules are different in each Colombian municipality and local authorities may delay or cause difficulties in tower deployment in some cases.

The CRC and the Ministry have sought to address this issue by issuing a set of guidelines (“code of good practice”) for municipalities, which aims at harmonising urban planning rules for infrastructure deployment, namely towers. This code is non-binding, and it could only become compulsory through a constitutional amendment, although some believe that such a change would go against local autonomy. An intermediate solution would be to limit the period of time that municipalities have to decline or allow the permits. Once this time period has elapsed, a lack of response from the municipality would imply the authorisation of the deployment by the operator.

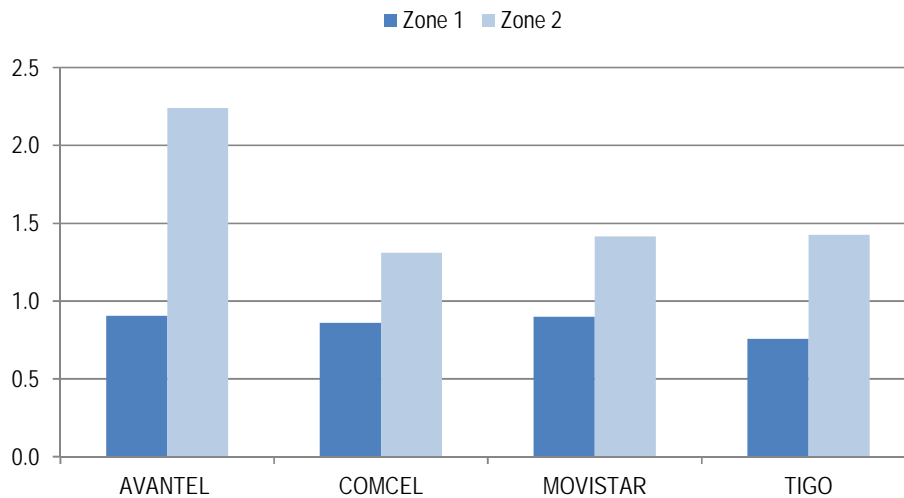
Resolution 3067 of 2011 of the CRC established reporting requirements for quality of service. It states that communications service providers must publish QoS data on their websites.<sup>89</sup> Based on this information, the CRC issues a list of QoS indicators by supplier and region. For instance, ISPs must report the data transmission rate and unsuccessful

data transmission ratio, and fixed and mobile service providers must report successful call rates (Table 2.15). The following table shows the indicators by type of service that a network provider must provide to the CRC for publication:<sup>90</sup>

**Table 2.15. QoS indicators reported to the CRC**

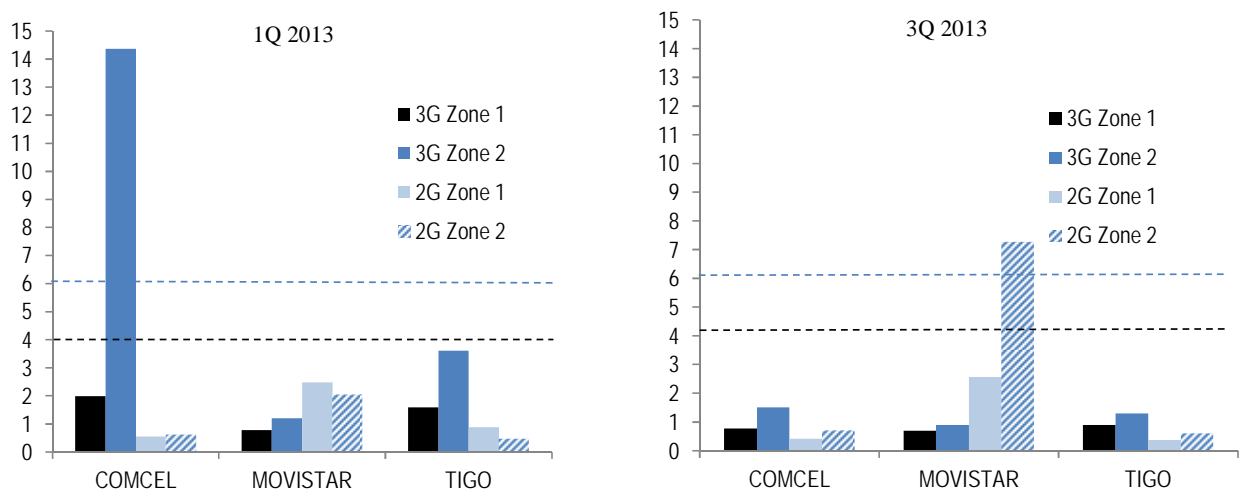
Service	Quality indicator	Tolerance threshold
Mobile services	<ul style="list-style-type: none"> <li>Percentage of dropped calls by area</li> <li>Unsuccessful attempts (separately for 2G and 3G)</li> <li>Indicators for delivery of SMS</li> <li>Availability of network elements</li> <li>Internet access indicators (ping, bitrate, SGSN availability, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>&lt;3% for densely populated areas, and &lt;6% for other areas</li> <li>&lt;6% in a monthly period</li> <li>&gt;90% in a monthly period</li> </ul>
Long distance services	<ul style="list-style-type: none"> <li>Rate of national and international calls successfully delivered to the destination network (broken down by municipality and operators)</li> </ul>	<ul style="list-style-type: none"> <li>&gt;95% of calls</li> </ul>
Voice services on fixed networks	<ul style="list-style-type: none"> <li>Average installation time for new lines</li> <li>Average time to repair defaults</li> <li>Number of faults per 100 lines in service.</li> </ul>	<ul style="list-style-type: none"> <li>10-15 days</li> <li>1-2 days</li> <li>5-8 faults in a quarter</li> </ul>
ISPs (fixed networks)	<ul style="list-style-type: none"> <li>Data transmission speed (VTD)</li> <li>Unsuccessful data transmission ratio (%TDF)</li> <li>Delay (one way transmission) (Ret)</li> </ul>	<ul style="list-style-type: none"> <li>Within the range guaranteed by ISP in its commercial offers</li> <li>Less than 3% first year, and then &lt;2%</li> <li>Acceptable ranges according to recommendation ETSI EG 202 057-4 V.1.1 (2005-10), Table F.</li> </ul>

In Colombia VoIP service providers must report the R-factor indicator on a quarterly basis, through the application of ITU-T's Model (ITU-T Recommendation G.107). The R-factor measures the overall quality of voice over IP networks taking into account several parameters such as room noise, jitter, and packet loss probability, among others.<sup>91</sup> Its main advantage is that it can be mapped to subjective QoS indicators such as the MOS (Mean Opinion Score). Resolution 3067 of 2011 of the CRC established that the R-factor should be higher or equal to 80 (in a 0-100 scale, where values below 50 are generally unacceptable and an average phone line ranks below 93). The CRC has also defined a new methodology to measure unsuccessful call and dropped call ratios over mobile networks and issues a quarterly report (see Figure 2.14 for Q3 2013 results). Resolution 3067 of 2011 sets the minimum acceptable threshold at 2% on a monthly basis for calls in densely populated areas (zone 1) and less than 5% threshold for the rest of the areas that many time correspond to rural communities (zone 2).<sup>92</sup> It seems that operators are, on average (i.e. three month average for 3Q 2013), below these thresholds. The CRC has doubts, however, about the reliability of the data reported given the amount of consumer complaints.

**Figure 2.14. Percent average of dropped calls by mobile network operator by zone, Q3 2013**

Source: OECD elaboration with data from CRC.

Another indicator for mobile services is the percentage of failed call attempts which, for 2G and 3G networks, are required to be below 4% for more densely populated areas (zone 1), and below 6% for the rest of the areas which are those less densely populated areas (zone 2). Taking into account an aggregated average for illustrative purposes, operators in 2013 seemed to comply with this threshold, with the exception of Claro in Q1 2013 with 3G technology, and Telefonica in Q3 2013 with 2G, both displaying quality issues in less densely populated areas (Figure 2.15). It should be noted that Figure 2.15 shows the indicator's quarterly average (simple national average of departments), instead of on a monthly basis as stipulated in current regulation. Additionally, this average may differ from the QoS indicator used by MINTIC for monitoring purposes, which may reflect that operators have to comply with this threshold in every municipality.

**Figure 2.15. Percent average of failed call attempts in 2G and 3G networks, Q1 2013 and Q3 2013**

Source: OECD elaboration with data from CRC.

The MINTIC's supervision and control unit is responsible for monitoring compliance with QoS requirements and imposing fines for lack of compliance, while the SIC can also impose fines resulting from consumer complaints. In August 2013, the MINTIC imposed a USD 2.7 million (COP 5.2 billion) fine on Claro for excessive dropped calls in two rural departments of Colombia. The decision has been appealed by Claro.<sup>93</sup> At the moment of writing, all operators were being investigated by MINTIC regarding QoS concerns.

Articles 64 and 65 of the ICT Law established that non-compliance with QoS requirements could result in a fine up to 2 000 times the minimum wage. The amount of the fine imposed by the MINTIC was 8 700 times the minimum wage (though only represented some 1% of Claro's revenues in Q3 2012).

The CRC has expressed concerns that the amount of the fines are not enough deterrent for operators to comply with QoS requirements, together with fears that operators are not correctly reporting their actual QoS indicators. In addition, QoS issues have become very prominent in Colombia and attract increasing media attention. As a result, in 2013 the CRC approved (Resolution CRC 4296 of 2013) an automatic compensation mechanism for consumers suffering poor quality of service. It consists of establishing an individual (from 2015 on) and an average regional and national (in 2014) compensation mechanism when mobile services are unavailable to users for seven hours or longer (continuous or interrupted) in a month long period. This mechanism would be activated either at the request of the subscriber or if detected upon information obtained from the operators.<sup>94</sup> This system should take into account that, in some instances, QoS incidents are only temporary and caused by time-bound overload of the network. It is when these incidents appear repeatedly that this mechanism should be activated and, eventually, customers should be compensated. Operators should only be held responsible if the congestion pattern persists.

Notwithstanding the existing QoS concerns, this mechanism may face implementation challenges. Operators may argue that the valid QoS measurements are the ones they must provide by law (resolution 3067 of 2011), which are measured by municipality and not on an individual basis. Finally, monitoring such a mechanism may be resource-demanding and impose implementation costs on operators. In competitive markets, consumers should have enough tools to be able to compare QoS among providers, so that if a provider offers lower QoS, it will be taken into account by consumers, who would in turn switch providers.

To complement this measure, the Ministry has made available a mobile app for smartphones called "*Calidad Celular*" (see *Calidadcelular.co*). This tool aims to record the quality of the signal, the number of dropped calls as well as the download speed experienced by the subscriber. Such an application, if effective, could be used as a source of data to activate the automatic compensation scheme when regulation in this area enters into force at the start of 2014.<sup>95</sup> Even if the Colombian approach is relatively ambitious, a growing number of OECD countries have tools that subscribers can use to measure their user experience in terms of QoS, both for fixed and mobile broadband services.

According to Resolution 3067 of 2011, Colombia defines broadband as a connection with actual download speed of 1 Mbps, and an upload speed of 512 Kbps. Although the CRC has not measured the difference between advertised versus actual speeds, this resolution obliges ISPs to have available, on their webpage a free application that allow users to measure the speed of their broadband connection. Some countries, such as the United Kingdom and the United States have made substantive efforts to measure broadband speed, and publish the results of these reports as an approach to enhance the quality of this service by consumer empowerment (see Box 2.5).



### **Box 2.5. Measuring broadband speeds in the United Kingdom and the United States**

Broadband speed measurement can be undertaken solely using software or complemented with hardware provided by companies that specialise in this field. In the United Kingdom, Ofcom has used this approach since 2008, and from April 2010, the FCC contracted the same company (SamKnows) to conduct this type of speed test in the United States. Since then the United States has published the results in “Measuring Broadband America”. Using hardware to measure broadband speed has the advantage of correcting for the impact that multiple terminal devices connected to the same line has on speed.

#### United Kingdom: OFCOM

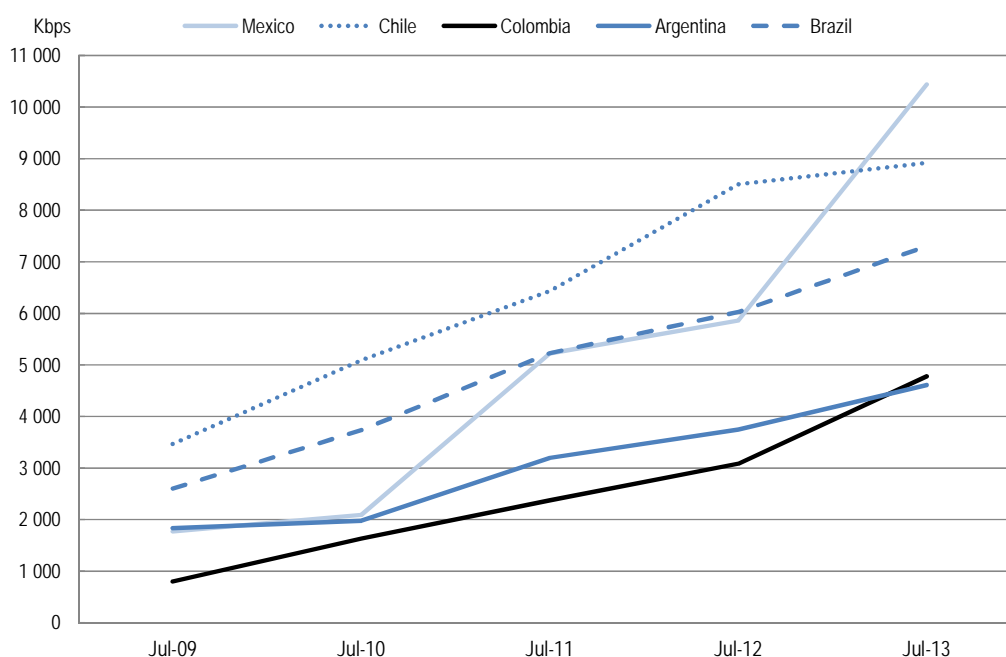
SamKnows provides a monitoring unit called the “White Box”, which the user connects to his/her router. Ofcom published the first broadband speed report on July 2010 based on 1 506 users that connected to these boxes to their routers in May 2010. The general aim of the study was to have a global perspective on the quality of broadband in the United Kingdom. Ofcom wanted to measure the relationship between the “actual” average download speed in the country and the speeds advertised by operators. The regulator was also aiming to better understand the differences in speed depending on the geographical location of the user (includes distance to the exchange for DSL connections), time of day, access technology, and Internet Service Provider. Finally, it looked at other factors that affect the overall quality of broadband such as upload speeds, loss of packages, DNS faults, latency, and jitter (i.e. changes in latency).

Ofcom’s primary aim in publishing the results of speed tests is to empower consumers in making decisions when choosing their ISP. It could also have the benefit of stimulating investments in new facilities as operators seek to differentiate themselves from competitors. It has also made possible the elaboration of the UK Broadband Map by speed tiers, which can assist all stakeholders in their decision making.<sup>96</sup>

#### United States: Federal Communications Commission (FCC)

In the context of the National Broadband Plan, the FCC has provided consumers with two broadband speed test software tools, one provided by M-Labs and another one by Ookla. These tests measure four dimensions of broadband quality: latency, jitter, download and upload speed. Additionally, taking into account that the number of people using the same broadband connection simultaneously has an effect on the measured speed, the FCC hired SamKnows to follow the same methodology that Ofcom employed. Since then they have published three reports on speed performance (the “Measuring Broadband America” series).<sup>97</sup>

In July 2013, based on Ookla’s web-based data, Colombia’s actual average broadband download speed was around 4.8 Mbps, which is low compared to other Latin American countries (Figure 2.16). For example, in Mexico the average speed ranged around 10.5 Mbps, while in Brazil it was around 7.3 Mbps in the same year. The OECD average download speed at this time, as measured by Ookla was 17.62 Mbps, hence more than threefold the speed witnessed in Colombia. Ookla’s methodology tends to provide higher average speeds, than some other similar services, across all countries. Nonetheless, similar services, such as the one provided by M-Lab, point to similar rankings for Colombia relative to other countries.

**Figure 2.16. Broadband download speed (Kbps) selected LATAM countries 2009-2013**

Source: OECD elaboration based on data from Ookla.

### *Network neutrality*

The ICT Law of 2009 ensures, in principle, “network neutrality” by guaranteeing users access to services and lawful content and applications of their choice. Resolution CRC 3502 of 2011 developed the principle laid down by Resolution CRT 1740 of 2007 and adopted some network neutrality principles for fixed ISPs that are similar to those laid down by the FCC in the United States: i) free choice, ii) non-discrimination, iii) transparency, and iv) and free access to information. Moreover, the CRC Resolution incorporates two key elements: first, ensuring appropriate conditions regarding net neutrality by establishing defined QoS levels for access to Internet, and second, clarifying the conditions for content blocking due to security reasons. The latter has the aim of impeding ISPs from blocking, interfering with, discriminating or restricting the user's right to use, send, receive or offer any content, application or service over the Internet.

Resolution CRC 3502 states that traffic management should be applied in a non-discriminatory way with respect to content providers. In this vein, it allows for ISPs to engage in prioritisation of time sensitive traffic, as well as allowing QoS management only if it does not degrade the user's experience of the services provided. Although network neutrality is ensured by Law in Colombia, it is unclear how authorities are in practice implementing network neutrality principles for fixed networks. Both fixed and mobile Internet access services are included under the scope of this resolution, although enforcement of these principles to mobile networks may be called into question if operators can offer data plans with exclusive applications.

## Notes

1. The CRC may impose fines relating to information requirements.
2. For example, the CONPES document 3701 on cyber-security and cyber-defence (2011).
3. In addition, the Consejo Superior de Política Fiscal (CONFIS), under the Ministry of Finance, is responsible for directing and co-ordinating fiscal policy and budget, and comprises the Minister of Finance (its Chairman), the Director of DNP, the Economic Advisor to the President of the Republic, the Vice-Ministers of Finance, the Director of DIAN (Directorate for Taxes and Customs) and the Director of the General Treasury.
4. Originally the government had just under 50% ownership of Colombia Telecomunicaciones. This was reduced to 30% as a result of the merger with Telefónica Móviles Colombia.
5. See for example:  
[www.dnp.gov.co/LinkClick.aspx?fileticket=SvVaTPuYims%3D&tabid=1475](http://www.dnp.gov.co/LinkClick.aspx?fileticket=SvVaTPuYims%3D&tabid=1475) or  
[www.minhacienda.gov.co/portal/pls/portal/docs/1/5819440.PDF](http://www.minhacienda.gov.co/portal/pls/portal/docs/1/5819440.PDF).
6. This is in accordance with Law 38 (1989), Law 179 (1994) and Law 225 (1995) – which together form the Organic Budget Statute, *Estatuto Orgánico del Presupuesto General de la Nación* – and Law 1593 (2013).
7. See [www.crcom.gov.co/index.php?idcategoria=64839](http://www.crcom.gov.co/index.php?idcategoria=64839).
8. The CRC seems to be satisfied overall with the response rate and quality of information reported. There has been only once one sanction imposed in three years.
9. A constitutional amendment in 1991 (Articles 76 and 77) and the enactment in 1995 of Law 182 transferred spectrum control and management of the bands assigned to television services to the Comisión Nacional de Televisión (CNTV), or the National Television Commission – an independent body responding to Congress. The result was a dual system of spectrum management, depending on the services for which spectrum was being used. This was deemed problematic in view of the increasing convergence of services.
10. The CNTV authorised Telmex's acquisitions in 2007 and 2008 (e.g. Cable Pacífico, Cablecentro, Superview, Teledinámica).
11. See related news on alleged corruption of the CNTV at:  
[www.elcolombiano.com/BancoConocimiento/P/procesos\\_de\\_contratacion\\_en\\_la\\_cntv\\_son\\_revisados\\_por\\_la\\_procuraduria/procesos\\_de\\_contratacion\\_en\\_la\\_cntv\\_son\\_revisados\\_por\\_la\\_procuraduria.asp](http://www.elcolombiano.com/BancoConocimiento/P/procesos_de_contratacion_en_la_cntv_son_revisados_por_la_procuraduria/procesos_de_contratacion_en_la_cntv_son_revisados_por_la_procuraduria.asp);  
[www.elespectador.com/columna137809-acabar-cntv](http://www.elespectador.com/columna137809-acabar-cntv);  
[www.eltiempo.com/entretenimiento/tv/ARTICULO-WEB-NEW\\_NOTA\\_INTERIOR-9602285.html](http://www.eltiempo.com/entretenimiento/tv/ARTICULO-WEB-NEW_NOTA_INTERIOR-9602285.html).
12. Law 1341 of 2009 (art 10 and 15) and regulated by Decree 4948 of 2009
13. In accordance with Article 11 of the 2009 ICT law.

14. Article 12 and 13 of the Decree 4948 of 2009.
15. <http://archivo.mintic.gov.co/mincom/faces/index.jsp?id=2668>
16. According to Article 72 of Law 1341 de 2009 and under the terms stated in the Constitutional Court Sentence C-403 of 27 May 2010. The objective selection processes are regulated by Decree 4392 of 23 November 2010, and the direct assignment of radio spectrum for service continuity are regulated in Articles 11 and 72 of Law 1341 of 2009. All processes have been regulated by Resolution 2118 of 2011, (and amended by Resolution 1588 of 2012), establishing the conditions, requirements and procedures for issuing permits for the use of radio spectrum, except for the frequency bands allocated or identified for the operation and provision IMT services and radio broadcasting.
17. See Resolution 2118 of 2011 for the explicit methodology of granting spectrum through an objective selection process
18. These are classified according to Law 182 of 1995
19. Pay-TV service provision is regulated under National Laws 182 / 1995, 335 / 1996 and 680 / 2001, and the Agreement CNTV 006 / 2006 (Mandatory Document issued by the Comisión Nacional de Televisión – Hoy en Liquidación). *Resolution ANTV 179/2012* is published on the Authority's Internet site: [www.antv.gov.co/nomatividad/resolucion-antv-0179-de-2012-0](http://www.antv.gov.co/nomatividad/resolucion-antv-0179-de-2012-0)
20. Regulated by Resolution 290 of 2010 and Resolution 2877 of 2011.
21. See annex of Resolution 290 of 2010 for the exact formulas for each type of spectrum allocation.
22. The process is regulated in Law 80 of 1993.
23. In the United Kingdom and some Commonwealth countries, a license is closer to a concession in Colombia, in that it contains a very detailed description of the obligations of both parties.
24. Articles 13, 36 and 37 of Law 1341 of 2009, regulated by Decree 1161 of 2010 and Resolution 290 of the same year, and Resolution 2877 of 2011. Resolution 290 of 2010 adopts the periodic consideration in favour of FONTIC for providing telecommunications services or networks that try to Articles 10 and 36 of Law 1341 of 2009. This consideration corresponds to 2.2% of gross revenues resulting from the provision of telecommunications networks and services, excluding the terminals of the provider, and must be paid quarterly by the supplier (Article 2). This resolution states that general authorisation for the provision of telecommunications networks or services, and entry onto the ICT register and periodic payment of the consideration given above, do not imply the acquisition of rights to use radio spectrum, which must be expressly granted by permission (administrative act) giving rise to a payment, in accordance with Article 13 of Law 1341 of 2009 (Article 3).
25. Law 37 of 1993, Article 14.
26. See [www.eltiempo.com/justicia/ARTICULO-WEB-NEW\\_NOTA\\_INTERIOR-12463632.html](http://www.eltiempo.com/justicia/ARTICULO-WEB-NEW_NOTA_INTERIOR-12463632.html).
27. Law 1341 2009, Article 68: “*En las concesiones, permisos y autorizaciones de servicios de telecomunicaciones, que estén vigentes a la entrada de la presente ley, la reversión solo implicará que revertirán al Estado las frecuencias radioeléctricas*”

- asignadas para la prestación del servicio concedido.*” See also Law 422 of 1998, Article 4.
28. Press release no. 32, Constitutional Court, 22 August 2013, [www.corteconstitucional.gov.co/comunicados/No.%2032%20comunicado%2021%20y%2022%20de%20agosto%20de%202013.pdf](http://www.corteconstitucional.gov.co/comunicados/No.%2032%20comunicado%2021%20y%2022%20de%20agosto%20de%202013.pdf).
  29. Resolution 202 of 2010 of the MINTIC defines as “essential facility” based on the ITU definition as: “a facility in public telecommunications transport network or service that: a) is provided exclusively or predominantly by one provider or a limited number of providers, and b) whose replacement from the point of view of supply is technically or economically feasible”.
  30. Edatel, a firm belonging to the UNE-EPM consortium, interposed in 2012 an injunction against CRC’s Resolution 3534 of 2012 with regards to the elimination of the “local extended” access charges. (The court case is Edatel vs. Nation, judicial process number 250002341000-2012-00324-00). The injunction was not accompanied by an automatic suspension of the regulatory decision whilst the court decision is reached, however, at the time of writing this report, CRC was still pending to see whether the court would rule in favour of the State.
  31. For example USD 5.35 cents (COP 142) in 2004, USD 8.7 cents (COP 206.9) in 2005 or USD 9.1 cents (COP 206.9) in 2006.
  32. Also Littlechild (2006) points out that DeGraba (2000) and Atkinson and Barnekov (2000, 2004) make the case for “bill and keep”, [www.econ.cam.ac.uk/dae/repec/cam/pdf/cwpe0426.pdf](http://www.econ.cam.ac.uk/dae/repec/cam/pdf/cwpe0426.pdf)
  33. See study by Juan Daniel Oviedo from Universidad del Rosario: [www.urosario.edu.co/economia/documentos/Informe-final-COMCEL-FEDESARROLLO-UR/](http://www.urosario.edu.co/economia/documentos/Informe-final-COMCEL-FEDESARROLLO-UR/)
  34. [www.autoritedelaconcurrence.fr/user/standard.php?id\\_rub=418&id\\_article=2014](http://www.autoritedelaconcurrence.fr/user/standard.php?id_rub=418&id_article=2014).
  35. Actual prices must remain below the caps, which are fixed at the same level as the termination rates (for voice and SMS), and national data roaming may not be price above USD 1.38 cents (COP 25.63)/MB in 2013, USD 1 cent (COP 19.36)/MB in 2014 and USD 0.68 cents (COP 13.09)/MB from 2015 on.
  36. [www.autoritedelaconcurrence.fr/user/standard.php?id\\_rub=482&id\\_article=2061](http://www.autoritedelaconcurrence.fr/user/standard.php?id_rub=482&id_article=2061)
  37. Review of the local retail outgoing fixed call market: [www.crcom.gov.co/index.php?idcategoria=62681&download=Y](http://www.crcom.gov.co/index.php?idcategoria=62681&download=Y)
  38. Revision of the data and internet access relevant market. See: [www.crcom.gov.co/index.php?idcategoria=61652#](http://www.crcom.gov.co/index.php?idcategoria=61652#)
  39. “The Herfindahl–Hirschman Index (HHI) is a measure of the size of firms in relation to the industry and an indicator of the amount of competition among them”, [https://en.wikipedia.org/wiki/Herfindahl\\_index](https://en.wikipedia.org/wiki/Herfindahl_index).
  40. [www.justice.gov/atr/public/guidelines/hmg-2010.html](http://www.justice.gov/atr/public/guidelines/hmg-2010.html)
  41. This document uses data from 2008 and 2009. In Q4 2009, out of 292 municipalities with broadband service, 184 only have one ISP, 104 have between two and five ISPs and four have more than five ISPs. Of these 292 municipalities, only 26 have HHIs under 5 000, with 184 over 10 000 and 45 between 7 500 and 10 000. [www.crcom.gov.co/index.php?idcategoria=42812](http://www.crcom.gov.co/index.php?idcategoria=42812)

42. The CRC defines the “carrier service” (*servicio portador*) as the capability to transmit signal between to access points, and forwards the reader to the ITU definition.
43. By way of example, the European Directives provide a definition for access and interconnection where the difference is highlighted (Article 2 of Directive 2002/19/EC (Access Directive):
- “Access” means the making available of facilities and/or services to another undertaking, under defined conditions, on either an exclusive or nonexclusive basis, for the purpose of providing electronic communications services, including when they are used for the delivery of information society services or broadcast content services. It covers inter alia: access to network elements and associated facilities, which may involve the connection of equipment, by fixed or non-fixed means (in particular this includes access to the local loop and to facilities and services necessary to provide services over the local loop); access to physical infrastructure including buildings, ducts and masts; access to relevant software systems including operational support systems; access to information systems or databases for pre-ordering, provisioning, ordering, maintaining and repair requests, and billing; access to number translation or systems offering equivalent functionality; access to fixed and mobile networks, in particular for roaming; access to conditional access systems for digital television services and access to virtual network services.’;*
- “Interconnection” means the physical and logical linking of public communications networks used by the same or a different undertaking in order to allow the users of one undertaking to communicate with users of the same or another undertaking, or to access services provided by another undertaking. Services may be provided by the parties involved or other parties who have access to the network. Interconnection is a specific type of access implemented between public network operators.*
44. Accounting separation: this occurs between retail and network activities, possibly with an additional breakdown between contestable network activities and non-contestable ones, such as the local loop. Because accounting separation requires the recording of transfers between wholesale and retail accounts at regulated wholesale prices, it can support to eliminate price discrimination by the incumbent against its downstream competitors (OECD, 2012).
45. The draft law states that “no supplier of networks and services of telecommunications may have a share above 30% in the national markets object of this law”.
46. Specifically it established that by 2010, all telecom providers who voluntarily submitted themselves to this regime would pay 3% of their income to the fund.
47. Resolution CRC 4047 of 2012 updated the technical requirements for DTT receivers and networks (DVB-T2), which was updated by Resolution CRC 4337 of 2013.
48. This is in contrast to the widely adopted ISDB-T plan (Japanese-Brazilian standard) adopted by most of South and Central America, or the adoption of the American ATSC standard chosen by Canada, the Dominican Republic, Honduras, Mexico Salvador and the United States.
49. Some OECD member countries have pioneered this type of regulation. For instance, Korea developed a highly effective framework for labelling new buildings in terms of their fibre connectivity. This played a major role in transitioning to “fibre-ready” multi-dwelling buildings (OECD, 2013a). In addition, countries such as France,

Portugal and Spain have employed national legislation to impose symmetrical obligations on the party deploying in-house wiring (BEREC, 2011).

50. See <http://blogs.elespectador.com/la-movida-de-los-negocios/2013/08/16/tigo-y-movistar-compartirian-infraestructura-para-4g/>.
51. The history of Wi-Fi and the benefits of unlicensed spectrum are discussed in an interesting paper by Milgrom et al. (2011), [http://siepr.stanford.edu/?q=/system/files/shared/pubs/papers/pdf/10-036\\_Paper\\_Milgrom.pdf](http://siepr.stanford.edu/?q=/system/files/shared/pubs/papers/pdf/10-036_Paper_Milgrom.pdf).
52. See <http://nap.co/>
53. For example, if the cost of Internet transit in a country is USD 300 per megabit per second per month, an IXP is constructed at a cost of USD 20 000 and it produces one gigabit of bandwidth at inception, it's creating USD 300 000 per month in value, and would have an amortisation period of two days (Weller and Woodcock, 2013).
54. For further information on NIC.br, see [www.nic.br/english/about/nicbr.htm](http://www.nic.br/english/about/nicbr.htm). For a list of regional IXPs, see [www.ptt.br/intro](http://www.ptt.br/intro).  
  
For information on the Brazilian Internet Steering Committee, see [www.cgi.br/english/](http://www.cgi.br/english/).  
  
An interesting article by Bill Woodcock compares the development of Brazil's Internet infrastructure to that of the United States, <http://america.aljazeera.com/articles/2013/9/20/brazil-internet-dilmarousseffnsa.html>.
55. OECD (2014), *OECD Reviews of Innovation Policy: Colombia*, OECD Publishing, Paris.
56. Ver USTR 2013 Section 1377 Review on Compliance with Telecommunications Trade Agreements, Office of the United States Trade Representative. [www.ustr.gov/sites/default/files/04032013%202013%20SECTION%201377%20Review.pdf](http://www.ustr.gov/sites/default/files/04032013%202013%20SECTION%201377%20Review.pdf).
57. Channels 52-63 were not in use in three cities, but channels 64-69 were unused nationwide. At this time, the CNTV published a plan to reassign all frequencies to free up the Digital Dividend spectrum (from Current PUF to Transition PUF to Digital PUF). There were a total of 59 operators: two were commercial with a national footprint, three were public with a national footprint, eight were public regional, and there were 46 local stations.
58. By end 2014, Cali broadcasters should have migrated, as well as channels 52-59 and 63-69 in Bogota. By August 2015, Medellín, Envigado, Bello, Copacabana and Bogota channels 60-62 will be turned off and the switch-off complete.
59. See [www.alcaldiabogota.gov.co/sisjur/normas/Norma1.jsp?i=9603](http://www.alcaldiabogota.gov.co/sisjur/normas/Norma1.jsp?i=9603).
60. Act 142 of 1994 changed the system of cross-subsidies applied by service providers to a more formal system based on law and regulation. This determined limits and contributions and made the state responsible when resources were insufficient to meet legal requirements. Since the structure of universal service was set down by law this structure could only be changed by Congress.
61. See [www.mintic.gov.co/index.php/fibra-noticias/53-sitio-fibra-optica/sitio-fibra-noticias/542-20111104licitacionfibra](http://www.mintic.gov.co/index.php/fibra-noticias/53-sitio-fibra-optica/sitio-fibra-noticias/542-20111104licitacionfibra).

62. Resolution 1363 of 2012, “By which the process of subsidy allocation for fixed broadband access for users in strata 1 and 2 is established, in accordance to article 58 of Law 1450 of 2011 ‘National Development Plan 2011-2014’, and other dispositions are dictated”, [www.alcaldiabogota.gov.co/sisjur/normas/Norma1.jsp?i=48839](http://www.alcaldiabogota.gov.co/sisjur/normas/Norma1.jsp?i=48839).
63. See [www.vivedigital.gov.co/participa/ecosistema-digital/](http://www.vivedigital.gov.co/participa/ecosistema-digital/).
64. Municipalities may be relatively large. Amazonas (109 665 km<sup>2</sup>) has only two municipalities and nine municipal entities (*corregimientos departamentales*) for a total population of 74 541. Vaupés (42 814 inhabitants) has 54 125 km<sup>2</sup> distributed across three municipalities and three *corregimientos*. DANE defines municipality head (*cabecera municipal*) as the geographical area defined by an urban perimeter, as established by the local council, where the municipality’s administrative office is located. See [www.dane.gov.co/files/inf\\_geo/4Ge\\_ConceptosBasicos.pdf](http://www.dane.gov.co/files/inf_geo/4Ge_ConceptosBasicos.pdf).
65. The target for 1995-96 was the installation of 57 409 lines, whereas only 4 850 were installed. See: [http://banners.noticiasdot.com/termometro/boletines/docs/paises/america/colombia/gob\\_col/1999/gob\\_col-telefonía-colombia98.pdf](http://banners.noticiasdot.com/termometro/boletines/docs/paises/america/colombia/gob_col/1999/gob_col-telefonía-colombia98.pdf).
66. See [www.dane.gov.co/index.php/estratificacion-socioeconomica/preguntas-frecuentes](http://www.dane.gov.co/index.php/estratificacion-socioeconomica/preguntas-frecuentes).
67. See [www.bbnl.nic.in/content/](http://www.bbnl.nic.in/content/).
68. See Serra (2000), “Subsidies in Chilean public utilities”, World Bank, <http://elibrary.worldbank.org/content/workingpaper/10.1596/1813-9450-2445>.  
While Australia has provision for industry levies (see [www.dbcde.gov.au/broadband/national\\_broadband\\_network/universal\\_service\\_policy](http://www.dbcde.gov.au/broadband/national_broadband_network/universal_service_policy)), the AUD 34 million-plus expenditures for the National Broadband Network come from general funds.
69. See: [http://impuestos.shd.gov.co/portal/page/portal/portal\\_internet\\_sdh/tesoreria/ingresos\\_tes/IVA\\_Telefonía\\_Celular](http://impuestos.shd.gov.co/portal/page/portal/portal_internet_sdh/tesoreria/ingresos_tes/IVA_Telefonía_Celular)
70. See <http://consumers.ofcom.org.uk/tell-us/telecoms/billing/>
71. With regards to Bill Transparency, MINETUR in Spain (Ministry of Industry, Energy and Tourism) issued regulation that audited quality of service in billing. All documents accompanying such regulation can be found at: [www.minetur.gob.es/telecomunicaciones/es-ES/Servicios/CalidadServicio/DocRef/Paginas/Documentaciondereferencia.aspx](http://www.minetur.gob.es/telecomunicaciones/es-ES/Servicios/CalidadServicio/DocRef/Paginas/Documentaciondereferencia.aspx)  
The Ministerial Order can be found at: [www.minetur.gob.es/telecomunicaciones/es-ES/Servicios/CalidadServicio/DocRef/DocumentacionReferencia/Orden\\_Calidad.pdf](http://www.minetur.gob.es/telecomunicaciones/es-ES/Servicios/CalidadServicio/DocRef/DocumentacionReferencia/Orden_Calidad.pdf)
72. The Law supplements Article 365 of the Constitution that requires the State to ensure that public services, such as telecommunications, are delivered to the public in an efficient manner.
73. Annual Management Report SIC, June 2013 (Reporte de Gestión of SIC, Junio 2013.) In 2012, they had 18 214 complaints, a monthly average of 3 035.
74. See <http://colombiadigital.net/actualidad/nacional/item/4850-usuarios-podran-consultar-en-internet-estado-de-sus-reclamos.html>



75. See <http://www.sic.gov.co/en/web/guest/informe-telefonía-movil-primer-trimestre-de-2012>
76. See: <http://www.oecd.org/sti/broadband/morecompetitioniskeytocuttingexcessiveinternationalmobileroamingchargesaysocd.htm>
77. See [www.portafolio.co/economía/aumento-del-salario-minimo-2013-3](http://www.portafolio.co/economía/aumento-del-salario-minimo-2013-3)
78. For Colombia, using data from two operators: Tigo and Claro: [www.tigo.com.co/personas/planes/roaming-tarifas](http://www.tigo.com.co/personas/planes/roaming-tarifas); [www.claro.com.co/wps/portal/co/pc3/personas/movil/Servicios-postpago/internacional/roaming-internacional](http://www.claro.com.co/wps/portal/co/pc3/personas/movil/Servicios-postpago/internacional/roaming-internacional); COP 1890.5 = USD 1 at 5 August 2013.
- For the case of France, using data from two operators: Orange and Bouygues, <http://travel.orange.fr/syntheseZonesEtTarifs.php>; [www.prepaidgsm.net/en/francia/bt.php](http://www.prepaidgsm.net/en/francia/bt.php); USD 1.33 = EUR 1 at 5 August 2013.
- See also European Commission on International Roaming regulation within Europe: [http://europa.eu/rapid/press-release\\_IP-13-611\\_en.htm](http://europa.eu/rapid/press-release_IP-13-611_en.htm)
79. Article 37 of CRC Resolution 3066, International Mobile Roaming Services: “The communications service providers can only activate international roaming services, on specific request of the user who entered the contract, through any mechanism of customer service, in which case the user must choose the duration of the service activation. In addition, prior use of roaming services abroad, the supplier must send the user an sms-text-free, informing the consumer additional cost.”
80. Resolution SIC 83060, 28 December 2012.
81. See [www.larepublica.co/empresas/movistar-lidera-top-de-multas-por-quejas\\_45726](http://www.larepublica.co/empresas/movistar-lidera-top-de-multas-por-quejas_45726); see also new draft law: [http://servoaspr.imprenta.gov.co:7778/gacetap/gaceta.mostrar\\_documento?p\\_tipo=05&p\\_numero=095&p\\_consec=37610](http://servoaspr.imprenta.gov.co:7778/gacetap/gaceta.mostrar_documento?p_tipo=05&p_numero=095&p_consec=37610)
82. See [www.telesemana.com/blog/2012/12/24/ecuador-colombia-y-peru-firmaron-acuerdos-de-roaming-internacional/](http://www.telesemana.com/blog/2012/12/24/ecuador-colombia-y-peru-firmaron-acuerdos-de-roaming-internacional/)
83. Colombia has also actively participated in Latin American initiatives, such as IIRSA (Initiative for the Integration of the Regional Infrastructure of South America), an initiative for the improvement of the South American roaming service market. The IIRSA Project has been going on for some years and has done interesting studies. The mostly focus on quality of service issues and Trans-border involuntary roaming problems, but have not established obligations among operators. IIRSA is a broad Project that seeks the integration of telecommunication infrastructure in Latin America, [www.iirsa.org/admin\\_iirsa\\_web/Uploads/Documents/tid\\_resumen\\_estudio\\_roaming\\_eng.pdf](http://www.iirsa.org/admin_iirsa_web/Uploads/Documents/tid_resumen_estudio_roaming_eng.pdf). Fourteen Latin-American countries are participating in this project sponsored by the Inter-American Development Bank (IDB), the CAF (*Confederación Andina de Fomento*) and Fonplata. IIRSA is a broad project mainly concerned with quality related issues of international roaming service, inadvertent roaming and the harmonisation of platforms to avoid bypass. Thus, it does not consist on a multilateral pricing agreement or a project targeted to lowering roaming prices.

84. Namely, Telefonica is currently contesting CRC's figures because it claims that Claro had allegedly manipulated portability numbers by buying SIM cards and porting them to their network to the detriment of Telefonica's porting record.  
[www.rcnradio.com/noticias/movistar-rechaza-informe-de-portabilidad-numerica-que-favorece-claro-81423](http://www.rcnradio.com/noticias/movistar-rechaza-informe-de-portabilidad-numerica-que-favorece-claro-81423)
85. See [www.animalpolitico.com/2013/06/la-historica-multa-contra-slim-en-colombia/#axzz2bONwSqUN](http://www.animalpolitico.com/2013/06/la-historica-multa-contra-slim-en-colombia/#axzz2bONwSqUN)
86. See [www.eltiempo.com/economia/claro-sancionada-por-87000-millones-de-pesos\\_13045707-4](http://www.eltiempo.com/economia/claro-sancionada-por-87000-millones-de-pesos_13045707-4)
87. See:  
[www.asomovil.org/index.php?option=com\\_content&view=article&id=31&Itemid=155](http://www.asomovil.org/index.php?option=com_content&view=article&id=31&Itemid=155)
88. For the public consultation process of CRC regarding the regulatory scenarios for the potential banning of the tied sale of handsets and communication services, please see the following link: [www.crcom.gov.co/index.php?idcategoria=65240](http://www.crcom.gov.co/index.php?idcategoria=65240)
89. In accordance with Article 1.7 of the CRC Resolution 3067 of 2011.
90. Resolution CRC 3523, 2012 which establishes the information that communications service providers must submit to the CRC. It also establishes the elements included in the forms to be used for data reporting obligations, such as periodicity and details of services being provided.
91. The E Model was originally intended as a transmission planning tool for telecommunication networks and is now widely used to measure VoIP service quality.  
[www.packetizer.com/ipmc/diagnostics/papers/TelchemyVoiceQualityMeasurement.pdf](http://www.packetizer.com/ipmc/diagnostics/papers/TelchemyVoiceQualityMeasurement.pdf)
92. See Resolution CRC 3067 of 2011, which was later modified by Resolution CRC 4000 of 2012: [www.alcaldiabogota.gov.co/sisjur/normas/Norma1.jsp?i=50399](http://www.alcaldiabogota.gov.co/sisjur/normas/Norma1.jsp?i=50399)
93. See [www.eluniversal.com.co/tecnologia/mintic-y-claro-enfrentados-por-sancion-de-5200-millones-de-pesos-130478](http://www.eluniversal.com.co/tecnologia/mintic-y-claro-enfrentados-por-sancion-de-5200-millones-de-pesos-130478)
94. See [www.crcom.gov.co/index.php?idcategoria=64868](http://www.crcom.gov.co/index.php?idcategoria=64868)
95. See [www.mintic.gov.co/index.php/prensa/noticias/2395-gobierno-presenta-medidas-de-calidad-para-mejorar-el-servicio-de-telefonía-celular](http://www.mintic.gov.co/index.php/prensa/noticias/2395-gobierno-presenta-medidas-de-calidad-para-mejorar-el-servicio-de-telefonía-celular)
96. <http://consumers.ofcom.org.uk/2011/07/consumers-benefit-from-uk-broadband-speed-surge>
97. [www.fcc.gov/measuring-broadband-america/2013/February](http://www.fcc.gov/measuring-broadband-america/2013/February)

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## Chapter 3

### **Assessment and recommendations: Towards a more efficient telecommunication sector in Colombia**

*This final chapter concludes with a set of recommendations that Colombian authorities should follow in order to achieve more efficient telecommunication markets to the benefit of the economy and society. The chapter highlights the importance of having a regulator truly independent from the government with enforcement powers. It also focuses on how Colombia should curb competition concerns in fixed and, especially, mobile markets, which are very concentrated. The chapter outlines a series of measures that should be put in place such as removing barriers to network infrastructure deployment, promoting the consumer interest and calls for a reduction in the sector's tax burden and a reform in how the ICT Fund (FONTIC) is funded.*

### 3.1. Conclusions

The enactment of Law 1341 was a watershed for telecommunications in Colombia. The years immediately preceding its passage in 2009, and since then, have been characterised by a strong willingness and political commitment on the part of the government to address challenges to its telecommunication markets. The Colombian government has clearly understood the importance of ICT deployment and adoption as key enablers of economic growth and increased productivity. Telecommunication networks and services and ICTs play a major role in the 2010-2014 National Development Plan (Prosperidad para Todos) through one of its constituent elements, the National ICT Plan (*Plan Vive Digital*). This plan represents a turning point in Colombia's ICT policies. It is well resourced and has high political visibility. Moreover, it rightly emphasises the importance of overcoming challenges associated with the demand side of ICTs, to ensure the best use of these tools for the economy and society.

This report focuses on the state of telecommunication networks and services in Colombia, as well as noting major changes in telecommunication policies since 2009. Colombia liberalised fixed telecommunication services back in 1994 and took steps to deploy mobile networks. Its liberalisation strategy differed from that of most OECD countries. It was based on regional duopolies for mobile services (as in Brazil) and local and regional fixed line incumbents (many remaining under public ownership) combined with a long-distance monopoly. The resulting market structure bears many similarities with that of Finland. Despite recent attempts at consolidation the fixed telecommunications market remains relatively fragmented.

Telecommunication policy and regulation in Colombia has increased mobile voice penetration, but fixed voice and fixed and mobile broadband services still under-perform compared to OECD countries. Moreover, price indicators presented in this report show that most telecommunication prices in Colombia are high compared to OECD levels, with the exception of fixed voice services and some entry-level mobile voice and fixed broadband services.

The mobile telecommunication market is highly concentrated, and the largest player holds a 60% market share. The same is true for most fixed communication markets. Although markets shares are less concentrated at the national level, local incumbents providing fixed voice and broadband services hold dominant positions in most cities and regions (over 70% in many cases). The Colombian authorities are adopting initiatives to address market power in mobile markets, but fixed markets still require attention, especially broadband.

The 2009 ICT Law provided Colombian authorities with advanced instruments to implement best practice regulation in fixed, mobile, broadband and pay television markets. Mobile markets are increasingly regulated to curb the dominance of the largest player (Claro); however, further efforts are necessary to improve the efficiency of fixed markets. There is insufficient network deployment and uptake of fixed communications and almost inexistent fibre network deployment. Measures to promote stronger competition and network investment in Colombia's fixed communication infrastructure are needed to bring it in line with that of OECD countries. Ideally, all fixed and mobile players in the Colombian telecommunications industry should be able to compete across the whole national territory. To date, this has not occurred because of several bottlenecks, including limited competitive access to existing local loops and other barriers to new



infrastructure deployment (e.g. urban planning rules). As a result, existing fixed network facilities are underutilised for broadband services and the rate of expansion is slow.

For the most part, the telecommunications regulatory framework is very advanced. The ICT Law includes most regulatory instruments needed to curb situations of dominance in telecommunication markets. The Colombian authorities are theoretically able to regulate mobile and fixed telecommunication markets, impose regulated rates to access the local loop and wholesale broadband access and, more generally, identify dominant players in these markets and impose a broad range of obligations to ensure a level playing field.

Much remains to be done to improve the quality and reach of telecommunication infrastructure, for example, with respect to fibre backhaul, leased lines and international connectivity. The government has recently launched the National Fibre Network, which should help improve broadband coverage and speeds. Fibre backhaul, if accompanied by an effective open access regime, should also help to decrease the costs of deploying 4G mobile networks crucial to reaching end users in rural and remote areas of Colombia.

The main weakness of the current framework is the lack of independence of the regulator (CRC). In many cases, it acts as a branch of government responsible for telecommunication regulation. While the current government has been proactive in facilitating competition and furthering the liberalisation process, this lack of independence casts doubts on the continuity of these policies. Good practices in OECD countries suggest that policy formulation and regulation should be separated. The regulator should have commensurate powers to carry out its role and be kept at arm's length from the government.

Notwithstanding its lack of independence, the CRC delivers effective regulation, informed by a comprehensive stocktaking of international best practices. It has high transparency and accountability standards and follows wide consultation processes for the delivery of regulation. Moreover, it provides detailed responses to comments raised by the industry, as well as evidence as to why a specific choice was made. Its decisions have proved relatively robust against court challenges by the affected players and the current framework is largely coherent.

### **3.2. General assessment of current strengths and weaknesses**

#### ***Strengths***

Generally speaking, the main strength of Colombia's telecommunication policy and regulation is that the authorities clearly understood the need for liberalisation and effective competition, and have advanced considerably regulatory reform (see Box 3.1). As such, Colombia has acknowledged the role of the regulator in laying the groundwork for a competitive environment for market players. The regulatory framework already includes provisions that incorporate most regulatory instruments used in OECD countries, the main exception being network separation for facilities essential for increasing competition.

A separate consumer and competition authority balances the CRC in competition issues, allowing for a second review to ensure that operator behaviour does not contravene principles of competition law. Moreover, co-ordination among the authorities seems to be satisfactory and new protocols are being developed to ensure that this remains the case in the coming years.

Market entry has been incentivised by adopting a “unique licensing” approach that only requires registration. This contrasts with the burdensome requirements for obtaining licenses in place before 2008. Administrative entry barriers are low as a result, facilitating quick entry to the market for small operators. This licensing regime favours convergence and the provision of different services over the same network. Television service providers still need a specific license, which has also been simplified.

The authorities are also aware of challenges to competition and quality of service in the mobile market and are acting to remedy these. In general, the level of public concern for mobile communication issues is matched by the political will and technical capacity to promptly bring about improvements to market conditions.

### **Box 3.1. Strengths of Colombia’s telecommunications regulatory framework**

- The framework contains all the necessary provisions to issue ex-ante regulation for telecommunication markets.
- A competition and consumer protection authority ensures that consumer interest is respected. All competition issues, including those not covered by ex-ante regulation, go through a second review conducted by the SIC.
- There is good co-ordination among the different authorities and a clear division of tasks.
- There are no limitations to foreign investment in telecommunication operators. The presence of many foreign operators indicates that they are treated on the same terms as Colombian operators.
- The regulator observes high standards of transparency and accountability, both for its regulatory proceedings and its management of resources.
- Judicial review of regulatory decisions is ensured but does not, in general, undermine the functions of the regulator.
- Market entry has been facilitated by a new licensing regime, which includes a simplified procedure to obtain a single authorisation to provide different communication services. The licensing regime for the provision of television services has also been simplified.
- Colombians are aware of existing problems regarding dominance in mobile telephony and quality of service. This should facilitate regulatory action. Interconnection issues are widely perceived as crucial for the development of the industry and the regulator has taken an active role in bringing down interconnection charges.
- Spectrum is assigned through market-based mechanisms, taking into account competition and public revenue considerations. Spectrum caps and national roaming obligations help promote entry.
- The government has taken an active role in extending communication infrastructure with initiatives such as the National Fibre Network. In general, initiatives for increasing ICT access are well-resourced and receive political commitment from the government.

After many years of questionable approaches towards spectrum management, especially regarding spectrum assignment procedures, the Colombian authorities have adopted market-based mechanisms proven to be more efficient and transparent. Spectrum auctions have been held since 2010 and the experience has been positive, as highlighted by the 2013 4G auction.

Although regulatory decisions are subject to judicial review, the courts seem to acknowledge the high transparency standards adopted by the CRC and other authorities in the regulatory proceedings and do not overturn major regulatory decisions and, at most, delay them only in very specific cases. The regulator also observes high accountability standards and is required to report to several controlling bodies, such as the Parliament or the General Prosecutor.

Finally, Colombia has removed all existing barriers to foreign direct investment allowing full ownership of telecommunication operators by foreign corporations. Over the years, this has brought a considerable amount of skills, expertise and new investment to the country.

### *Weaknesses*

Despite the strengths of Colombia telecommunication policy and regulatory framework, its most important weakness is the lack of an independent regulator. While most regulatory decisions since 2010 have been positive and the Colombian authorities have understood the need to promote competition in telecommunication markets, the lack of an independent regulator risks the continuity of these policies. These concerns are exacerbated by the dual presence of the Colombian state as a regulator and regulated entity. The Minister of ICTs is the Chairman of the regulator, which cannot meet without his presence, while the state, through the Ministry of Finance, owns 30% of the second largest operator in the country.

Moreover, the Ministry retains many regulatory functions, such as conducting spectrum auctions or imposing sanctions, which go beyond policy formulation and should be placed under the regulator. The implication is that the regulator, the CRC, is extremely weak. It lacks enforcement powers and has to abstain or forward complaints to the Ministry in the event that regulations are not complied with.

Similar concerns are expressed in relation to Colombia's competition authority, whose head (the Superintendent) can be appointed without a fixed term and dismissed by the President of Colombia. This presents significant risks for the promotion of competition in Colombia, as the SIC can be subject to political pressures which can interfere with its functions.

Another weakness, which should diminish over time, relates to the novelty of the current regulatory framework. Many changes have occurred in the last three to four years and may require more time to deliver optimal results.

Although the Colombian framework generally provides a sufficient degree of legal certainty for market players, recent discussions about mobile licenses and the reversion of assets have had a negative effect and raise a number of questions with respect to present and future investments. Steps should be taken to avoid situations of uncertainty in the future as this has a harmful effect on investment incentives.

Mobile markets (broadband and telephony) are extremely concentrated in Colombia, although the CRC has issued a set of regulations aimed at improving competition dynamics in these markets. These markets are the most important by size and the success of these measures is crucial for the whole ICT ecosystem.

### Box 3.2. Weaknesses of Colombia's telecommunications regulatory framework

- The framework lacks an independent regulator. The Minister of ICTs is the Chairman of the CRC and needs to be present for the CRC board to have quorum. This allows the government to exercise political influence over the regulator. This is of particular concern as the Government of Colombia owns 30% of the second largest telecommunication operator in the country (*Colombia Telecomunicaciones*).
- The framework lacks an independent competition authority, as the head of the SIC can be appointed and dismissed at will by the President.
- Subsidies in fixed telephony and other proceedings, such as spectrum auctions, can cause distortions. There is an ingrained culture of cross-subsidisation of public services which favours operators by facilitating price-discrimination among the different population strata.
- The authorities lack experience in applying the new regulatory framework, due to the numerous legal changes that have taken place recently.
- The delivery (CRC) and implementation of regulation (MINTIC) reside in different bodies. This raises concerns about the effectiveness of the implementation of regulation.
- The CRC has no sanctioning powers, except with regard to failure to report information. The powers to impose fines for non-compliance with regulation lie within the Ministry and the maximum fine that can be levied is very low. As a result, industry players have little incentive to comply with regulations.
- Investment uncertainty has been caused by the transition to the new licensing regime, in particular regarding spectrum valuation. License renewal is not automatic and is often granted only a few months (or even less) before expiration. Legal certainty can also be put at risk by controlling bodies (e.g. *Contraloría*), that review current regulations and cast doubts on their conformity with the Constitution.
- Having a separate television regulator (ANTV) may be at odds with the increasing convergence of networks and services. Insufficient monitoring of compliance with community television rules.
- Political interference at the local level and public ownership of local and regional operators entail conflicts of interest and political drivers in the management of operators.
- The broad powers granted to local and regional governments represent a barrier to infrastructure deployment.
- Fixed markets are underdeveloped, and little action is being taken. In particular there is a need for a Next Generation Network strategy.
- The process for filing complaints against telecommunication operators is slow and burdensome for consumers.
- IXPs in Colombia do not play a decisive role in expanding Internet service efficiency, most likely due to barriers to entry and peering policies adopted at the IXP.

Although a great deal of attention is paid to mobile networks and services, fixed markets have been left predominantly unregulated despite showing low levels of penetration and competition. Much could be done to promote incentives for fixed network upgrades, for example, allowing local and regional operators to enter each other's markets, and promoting, or at least not hindering, further consolidation. Such actions are crucial to encouraging investment in fibre networks to support 4G networks and increasing fixed broadband speeds. Colombia lags in terms of fixed network infrastructure, which is a critical given the complementarity among fixed and mobile networks. More fibre is needed in the backhaul (e.g. to support 4G networks) and in the access segment to enable Wi-Fi offloading and higher fixed broadband speeds. Thus, the Colombian authorities should develop a next generation network strategy, which could form part of *Vive Digital*, to promote investment in fixed and, especially, next generation networks. Finally, the performance of Internet Exchange Points (IXPs) in Colombia could be greatly improved. Their role is crucial to providing inexpensive and efficient Internet services to residential and business users.

Network convergence implies increasing provision of multiple services over multi-purpose IP networks. In this context, all players and networks will likely provide voice, data and video services. As convergence gains momentum, the existence of a separate agency and a different licensing regime for television services will seem increasingly anachronistic, with a merger of ANTV and CRC to create a converged regulator being the logical step.

Lastly, most local operators are owned by municipalities with local or regional footprints. The extremely poor performance and penetration levels of fixed services, such as broadband or telephony, casts serious doubt on whether these operators are protected from competition by local and regional authorities, for example, by not granting network deployment permits to other operators or by keeping unprofitable operators on the market artificially. Box 3.2 lists the most important weaknesses of Colombia's regulatory framework.

### 3.3. Potential benefits of further regulatory reform

Although this report highlights many of the strengths of the Colombian regulatory framework, policy makers should undertake certain changes to improve its effectiveness, competition dynamics and efficiency. Stronger competition in mobile services and fixed markets would bring benefits to Colombian consumers and business in the form of innovative services, lower prices and higher penetration rates. Colombian prices for higher speeds and performances are relatively expensive and can only be afforded by a minority of its population which only increases the "digital divide" and may have consequences in furthering income inequality.

Increased competition both in fixed and mobile markets should provide the necessary incentives for operators to upgrade infrastructure, provide innovative solutions and deliver lower prices to consumers. Such a virtuous circle would benefit Colombian citizens and spill over to the whole economy. These trends were at the heart of liberalisation policies in OECD countries in the 1990s, and have proved successful at boosting competition and network upgrades.

At present, fixed operators in Colombia face several limitations that hinder development, such as rights of way, urban planning rules or lack of wholesale products at the access level. However, fixed line operators could further consolidate and enter each other's markets, thus increasing competition. Such was the case with Telmex/Claro and, to a lesser extent, UNE-EPM, the former relying on existing cable television infrastructure. In OECD countries, cable operators were among the main drivers of infrastructure competition. This in turn provoked investment by incumbent and alternative telephone companies. This model could equally be adapted to Colombia. Another example of healthy competition is DirecTV in the pay television market, which by relying on high-quality content has managed to expand its customer base and provide a credible alternative to cable television operators. These two developments are examples of how increased competition could benefit Colombian consumers and businesses.

Streamlining regulation and providing incentives for stronger competition and higher investment are roles better undertaken by an independent regulator. Although the current administration is committed to these objectives, an independent regulator would ensure their continuity over time. An independent regulator also needs to comply with high standards of transparency and accountability. The CRC should also be granted enforcement powers to ensure that regulations are complied with.

Finally, increasing convergence in telecommunication markets not only demands convergent regulation, but also needs converged regulators. While the CRC has already undertaken analysis of convergence in telecommunication markets, it would greatly benefit from broadening its powers to look after all issues related to competition in television markets. In that respect, some of ANTV's powers could be transferred to the CRC or, ideally, both bodies could merge to form a converged regulator.

### 3.4. Recommendations

The following recommendations are based on the findings of research undertaken for this report, in conjunction with good practices in telecommunication policy and regulation in OECD countries. These good practices are mostly drawn from solutions to challenges similar to those identified in Colombia presented throughout the review. This does not imply that all OECD countries have already adopted the recommendations proposed in this report, but rather that similar policies have delivered good results in many of those countries.

Although some of the recommendations may need to be adapted to Colombia's specific context, all are considered as being of potential benefit to the country. The list does not provide recommendations by order of priority. On the contrary, reforms are needed on all fronts to achieve sizeable progress.

Many of the recommendations are aimed at strengthening the regulator, the CRC, and at providing it with effective tools to curb situations of market power. These changes would require new legislation. Others are more procedural, implying that the regulator or other institutions already possess the necessary powers to implement the changes. For example, the recommendations aimed at implementing local loop unbundling and wholesale broadband access do not need legislative changes, but instead a decisive action from the regulator to issue new obligations for fixed telecommunication providers.

## *Institutional framework and regulatory structures*

### *Independence of the regulator*

This report has cited various advantages for the regulation of telecommunication markets by independent regulators. If well designed, they should enable a clear separation between industrial policy and sector and competition regulation, and reduce exposure to political drivers in any regulatory action. Most OECD countries have an independent regulator. These countries have found that, when well designed, it has helped to promote competition and avoid conflict of interest, especially for countries with public ownership of telecommunication operators.

In Colombia, two of the five members of the CRC board belong to the government. In addition, the board cannot meet without the presence of the Minister of ICTs, which not only represents a constraint on the timing of regulatory decisions, but could also lead to inaction and obstruction if the Minister and the rest of the board do not agree on a particular issue.

The MINTIC's role should be limited to policy formulation and extending adoption and use of ICTs, for example, by funding infrastructure deployments in rural areas or boosting demand for ICTs. Regulatory tasks, such as imposing sanctions or conducting spectrum auctions, would be better placed under the regulator.

In Colombia's case, the government is a shareholder of Colombia Telecomunicaciones, one of the historical fixed incumbents and today the second largest telecommunication operator. Clearly, the government should not be a regulator and a regulated entity at the same time.

Finally, the current appointment term (three years) of CRC Commissioners is too short. CRC commissioners should be appointed for longer periods, perhaps five or six years, which would also increase their independence and on a staggered basis to ensure continuity. Appointments should be conducted through open and transparent procedures, for example, by establishing a shortlist of qualified candidates for the appointing authority to choose from. Such a procedure was used by Mexico for its newly established telecommunication regulator (IFT).

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*The CRC should be reformed and be made truly independent from the government. No direct participation of the MINTIC or other government departments should be allowed on the CRC's board, which should be able to take decisions independently. Industry funding of the CRC, independent of the MINTIC, should be maintained, and the CRC should enjoy more flexibility for recruitment and budget management.*

*The appointment term of CRC commissioners should be extended to last five to six years. Appointments should be made on a staggered basis to ensure continuity. The appointment process should adopt high transparency standards, through open calls and clear qualification and evaluation criteria. An evaluation committee should be established and tasked with assembling a list of qualified candidates according to established criteria.*

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### *Independence of the competition authority (SIC)*

Similar concerns about lack of independence can be made regarding the competition authority, the SIC, whose Head (Superintendent) can be arbitrarily removed by the President of Colombia. It is widely accepted that competition authorities should be independent from the government, to avoid political interference and ensure that decisions are not dependent on the political situation of the country.

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*The competition authority should be made independent of the government, thereby ensuring that the President cannot dismiss the Superintendent without an objective reason. The Superintendent or the Board – if a collegial body is chosen – should be appointed for a fixed term and not be liable for dismissal without due cause.*

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### *Enforcement powers and sanctions*

At present, the CRC has minimal sanctioning powers. It may only levy fines on operators failing to report information, and only up to 250 times the minimum wage (some USD 80 000), a very low amount measured by all standards. Sanctioning proceedings and the imposition of fines are at present the responsibility of the Ministry. These powers would be better placed under the CRC, which is responsible for developing regulations and is therefore better placed to enforce them and monitor compliance.

Ensuring that regulations are observed is a technical task and one that should be kept separate from political interference. For this reason also, the CRC is better suited to enforcing regulation and imposing fines or other measures for lack of compliance with regulation.

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*The CRC should be granted powers to impose sanctions for non-compliance with telecommunication regulation. More generally, the CRC should be made responsible for the enforcement of regulation.*

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### *Maximum amount of fines*

The current maximum fines that can be imposed for lack of compliance with regulations are derisory. The Ministry can only impose fines up to 2 000 times the minimum wage (less than USD 1 million) and the SIC up to 1 000 times the minimum wage for consumer protection issues (under USD 500 000). In contrast, maximum fines for breaching antitrust rules can reach 100 000 times the minimum wage, or 150% of the profits obtained through the illegal conduct. This implies that these fines do not act as a deterrent against infringements.

The maximum fines imposed for lack of compliance with regulation, including consumer issues, should be increased, so as to act as a deterrent and ensure compliance with regulations. This would be of particular relevance for consumer protection, which has attracted considerable attention in recent years.

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*Fines for non-compliance with regulation should be sufficiently high to act as a deterrent for operators against non-compliance or the use of delaying practices.*

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### *Spectrum-related powers*

Radio frequency spectrum resources have important implications for competition dynamics. For example, decisions taken on setting spectrum caps on operators, while conducting spectrum auctions, are likely to shape the market in subsequent years. Likewise, spectrum planning and management tasks are key decisions for the future of communications, both from an operational (e.g. assigning spectrum to mobile stations) and a strategic point of view (e.g. band segmentation plans, migration schedule).

Given the highly technical nature of these issues and their important implications for competition in communication markets, the CRC and the ANE should merge to fully exploit their synergies concerning spectrum-related matters. In any case, the CRC should be free to establish competition-related conditions for spectrum auctions to ensure that competition is not significantly diminished in wireless markets. The Colombian government should be able to retain control of the bands used for government-related purposes (e.g. military, police) under the framework laid down by the spectrum unit, placed under the CRC.

In particular, conducting spectrum auctions is a highly specialised task with clear technical and economic implications. As such, it should be handled by an agency with sufficient expertise free of political interference. This suggests that these powers should be awarded to the CRC with the technical advice of the ANE. Alternatively, as suggested in other recommendations, the ANE should merge with the CRC, thus incorporating its expertise into the regulator. At a minimum, the CRC should have powers to establish competition-related conditions for spectrum auctions. Moreover, it does not make sense, in a convergent environment, for the ANTV to issue spectrum licenses for broadcasting services. In line with the convergent authority proposed in this report, spectrum used for telecommunication and broadcasting services should be allocated, allotted and assigned by a single authority, such as that created by the proposed merger of the CRC with the ANE. The need for a single authority for spectrum management is even more important in the context of the digital dividend.

Spectrum assignment procedures have been greatly enhanced by the adoption of transparent, market-based mechanisms in OECD countries, such as spectrum auctions and trading. Colombia should continue to adopt these transparent approaches, and avoid the arbitrary procedures used in the past. Finally, the promotion of unlicensed spectrum and spectrum sharing should also avoid bottlenecks due to spectrum scarcity or inefficiency in its use.

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*Spectrum management and planning powers, including the authority to conduct spectrum auctions and assign spectrum licences, currently under the MINTIC and the ANE, could be transferred to the CRC. The ANE could be merged with the CRC to form a department specialised in spectrum-related issues. Spectrum powers relating to broadcasting services could also be placed under the responsibility of the CRC. At a minimum, the CRC should be able to establish the auction criteria that have an impact on competition in mobile markets.*

*Spectrum should be awarded through market-based mechanisms, instead of direct assignment procedures, as used in the past. The associated conditions, such as excessive coverage obligations or requirements to provide tablets should be kept to a minimum to prevent distortions in the auction design. If the authorities wish to do so, they can use spectrum auction revenues for universal service purposes, as is currently the case.*

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*The ANE and the MINTIC should set up a framework that enables spectrum trading between telecommunication operators. They should also assess the current situation with regard to unlicensed bands and shared use of spectrum (e.g. through licensed shared access arrangements or white spaces), which could help fulfil the country's current spectrum needs.*

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### *Converged regulator*

Although some ANTV functions, especially those related to television content and the funding of public broadcasters, have little to do with telecommunications, it is expected that increasing convergence will erase the limits between traditional television broadcasters and telecommunications or content providers broadcasting video content over their networks or the Internet.

In view of these developments, the ANTV and the CRC should be merged into a converged regulator that covers both telecommunications and broadcasting services. Should there be a need to keep a separate television authority, the ANTV could retain its mandate for television content-related issues. Nevertheless, content issues that affect competition in television markets, such as must-carry/must-offer regulation should be placed under the CRC.

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*The CRC and the ANTV should merge and create an independent converged regulator, with responsibility for communication and broadcasting (including television) markets. The new, converged regulator would be better placed to assess the implications of video content and bundles in the competition dynamics of these markets.*

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## **Promoting competition in telecommunication markets**

### *Fixed market regulation*

The development of fixed line infrastructure in Colombia is crucial for mobile broadband services and for a long-term next generation network strategy. In this respect, it is important to increase take-up of fixed services (telephony, broadband and pay television) to enable operators to transition to fibre-based infrastructure. While mobile voice services could to some extent substitute for fixed voice, this is not necessarily the case for mobile broadband – a situation that will likely increase with deployment of high-speed fixed broadband infrastructure.

Fixed telephony and broadband take-up are extremely low in Colombia, an issue of significant concern. This is largely due to the prevalence of local/regional incumbents with a strong presence in their regions, and of bottlenecks such as the local loop that avoid nationwide competition of fixed line providers. Only Telmex (Claro) has managed to expand its customer base and increase its market share by acquiring several cable operators and leveraging existing cable infrastructure.

To allow fixed operators to provide service outside their footprints, wholesale services should be made available at regulated prices. This would enable operators to target customers across the whole country, which would in turn improve economies of scale. In the absence of further consolidation and given the current impossibility of attaining national size (i.e. lack of significant investments), all fixed operators could potentially be given the opportunity to provide services across the whole country.

Unbundling obligations would affect existing access loops (basically copper) in areas where there is insufficient competition.

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*The CRC should impose wholesale obligations for broadband markets, such as wholesale broadband access (“servicio portador”) and local loop unbundling for existing copper loops, especially in areas where infrastructure cannot be replicated economically. These new obligations should allow all fixed players to provide services across the whole country, even in regions and cities where they do not have local loop infrastructure.*

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### *Bundles of telecommunication services*

Bundles of telecommunication services (e.g. voice, television, data, mobile) are increasingly important and should be considered by the CRC when undertaking market definition and analysis. In particular, the CRC should ensure that bundles are not used to undermine competition through artificial cross-subsidies between their different components. As bundles may raise additional competition concerns in telecommunication markets (e.g. bottlenecks in access to content), the CRC should conduct replicability tests and assess whether the definition of bundled markets is warranted. These measures should also be complemented by increased bill transparency for consumers with a disaggregation of the prices of the standalone elements included in bundles.

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*The CRC should consider service bundles when undertaking market definition and analysis. In particular, it should conduct replicability tests, identify any possible cross-subsidies between the different elements of bundles (e.g. displaying artificially low prices for one service) and assess if bundled retail markets should be defined, together with its potential implications on wholesale markets upstream.*

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### *Fixed market consolidation*

There remains the issue of fragmentation in fixed markets. While local and regional authorities should be free to keep ownership of small local and regional operators, these should not be protected from outside competition by increasing barriers to entry for other operators. Conflicts of interest arising from municipalities owning local operators and, at the same time, granting permits for the deployment of networks, should be avoided. Operators owned by regional and local authorities should be kept at arm’s length from their owners to avoid conflicts of interest.

Local authorities should also let operators consolidate if the move makes economic sense, and should not intervene in on-going consolidation processes. Further consolidation in fixed telecommunication markets should increase economies of scale and assist in promoting competition.

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*The Colombian authorities should not block consolidation trends in fixed line telecommunications, and should withdraw any political influence not underpinned by market-based and efficiency considerations. Local and regional authorities should not delay the granting of permits for the deployment of networks, even if this increases competitive pressures on their local telephone operators. Besides, operators owned by public authorities should be kept at arm’s length to avoid conflict of interest.*

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### *Functional and structural separation*

Functional and structural separation of fixed line incumbent operators has been implemented in a number of OECD countries, including Australia, New Zealand and the United Kingdom. This measure is also available to regulators in the European Union, who are empowered to use it as a last resort. While functional and structural separation should remain a regulatory threat or, at most, a last resort, experience shows that regulators in some countries have decided to utilise it. The Colombian regulator should also have this instrument at its disposal, particularly in the context of next generation networks, where the traditional remedies for promoting competition (e.g. local loop unbundling) may not be available. As a result, fixed network monopolies or duopolies are likely to continue without options for regulatory intervention to address insufficient competition.

The measures of functional and structural separation are remedies aimed at providing a level playing field for competition in a country. By way of contrast, accounting separation allows the regulator to ascertain wholesale costs, according to cost accounting models, which enables wholesale price regulation. Therefore, all dominant operators should implement accounting separation and cost accounting systems, while functional and structural separation remedies should be used in case of dire need.

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*The CRC should have the authority to impose functional and, if necessary, structural separation of telecommunication operators, should other measures to prevent abuse of market power not be effective, to ensure that there is equal access and equivalence of inputs.*

*Telecommunication operators should be required to adopt accounting separation standards, following internationally accepted rules.*

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### *Mobile market regulation*

Retail off-net/on-net price differentials and high termination rates are well-documented tools to strengthen the market power of the largest mobile operators, particularly if there are important differences in the size of operators. Growing competition concerns in the mobile market are currently being addressed by the CRC and the SIC, mainly through lower mobile termination rates and tariff controls to ensure that the largest operator does not use “club effects” to reinforce its dominant position. Under current regulation, Claro cannot offer on-net calls at lower prices than off-net calls. Compliance with this regulation should be carefully monitored to ensure effectiveness.

The CRC has not only lowered mobile termination rates, but has also imposed asymmetrical termination rates (i.e. competitors pay a lower rate for terminating calls on Claro’s network). While the steps taken to counter Claro’s dominance in the mobile market are positive, an asymmetrical termination rate is not justified for the other two mobile network operators have been present in the market for many years and such a rate would promote inefficiency. In general, cost differences such as different spectrum holdings, should be addressed under other regulatory items, not under the interconnection regime, as asymmetrical termination rates can be highly distortive, the exception being very recent entry.

Given the amount of regulatory effort devoted to imposing asymmetrical termination rates, it is not recommended that the CRC withdraw this decision, but it should ensure that mobile termination rates reach symmetry between the three established operators

within the shortest possible time. Regardless of the current asymmetry, the most important element of termination rates is that these should approach zero, which should become a priority. The CRC should thus further decrease mobile termination, down from USD 0.024 (COP 39), the planned level for 2015. The CRC should undertake an analysis to verify if asymmetrical termination rates are necessary to encourage the entry of DirecTV and Avantel, which have been awarded spectrum in the most recent auction.

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*The CRC should continue to address the serious competition concerns in the mobile market, by effectively preventing anti-competitive use of on-net/off-net price differentials.*

*The CRC, while reviewing interconnection regulation, should take further steps to reduce mobile and fixed termination rates to approach zero, and this should become a priority. They should be symmetrical, unless very recent market entry justifies the need for a transitory period with a higher rate for calls terminating on the network of a new entrant.*

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Spectrum auctions can shape competition dynamics as the design of blocks can determine how many strong players will prevail in the markets in years to come. Thus, the design of the auctions becomes vital for the sector. If boosting competition is the main objective for Colombian authorities in the upcoming auction of the 700 MHz band, the authority should consider reserving a block (e.g. 30 MHz) for those operators without spectrum below 1 GHz. This would prove beneficial for smaller operators in that it ensures the right balance between high and low frequencies, while allowing other established operators to bid for the remaining blocks.

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*Future spectrum auctions should be aimed at promoting competition in markets, by ensuring that smaller players and new entrants have sufficient spectrum holdings to provide a credible competitive threat, which should be undertaken through spectrum caps or set-asides. In particular, the upcoming 700 MHz auction should include conditions that allow that small operators have access to spectrum in lower bands, while allowing other operators to bid for the remaining blocks.*

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#### *Underreporting practices in television markets*

Even though the ANTV has made efforts to improve the regulatory framework for community television in order to provide a level playing field vis-à-vis pay television operators, underreporting practices of community television subscribers and poor enforcement of rules are still of concern. Community television rules should therefore be vigorously enforced to reduce unlawful competition against pay television providers.

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*The ANTV should enforce community television rules more effectively in order to tackle underreporting practices and promote fair competition in the pay television market.*

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#### *The licensing regime and the reversion of assets*

The recent Constitutional Court decision on the reversion of network assets to the state in relation to the 1994 mobile services concessions has created a great deal of uncertainty among the operators involved, which can potentially deter investments. While the claims about damages to the state may be justified, the issue needs to be resolved in a way that restores the state's patrimony while causing the lowest disruption to the

country's mobile services. Legal certainty is important and crucial for operators to take investment decisions.

In addition, ten-year license periods are too short by OECD standards and should be lengthened or, at least, provide mobile players with sufficient certainty that their licenses will be renewed, based on clear criteria having been met. The conditions for renewal should be known well in advance and renewals should be conducted through open and transparent procedures.

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*The Colombian courts and authorities should determine whether the reversion of network assets applies to the 1994 concessions, in order to ensure legal certainty and maintain incentives to invest. Once this decision is taken, the Colombian authorities should take the necessary steps to ensure that services are not disrupted and that the harm to the country's interest is duly recompensed. One potential option would be for the affected operators to provide financial compensation to the state, for example through an objective and neutral valuation of spectrum resources and/or of the network assets involved.*

*More generally, spectrum licenses should be awarded for periods longer than the current ten years. If the ten-year period is maintained companies should operate under the expectation that licenses will be renewed. Conditions for renewal should be known well in advance and the proceedings should be conducted through open and transparent procedures.*

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## ***Extending communication infrastructure and services***

### ***Stratification***

Colombia has a long tradition of cross-subsidising public services between different income segments of the population, including telecommunications. The country is divided into six different strata according to socio-economic conditions in which they live. Strata 1 and 2 correspond to about 60% of population and the lowest income levels. Traditionally, higher income strata (5 and 6) subsidised services of the lower strata, so that households on strata 1 and 2 faced lower prices for utilities, such as fixed telephony.

With the transition to competitive markets for telecommunications, the cross-subsidisation system needs to be re-evaluated. Even though strata are now only used to exempt some households from paying VAT for fixed telephony and for some social programmes that extend fixed and mobile broadband access, operators keep using stratum data to undertake price discrimination for services offered to customers. The system has the caveat that some wealthy households may be located in lower income areas and still be entitled to subsidies. As a result, the stratification system in its current form does not make sense for telecommunication services.

Telecommunication operators should be prohibited from using stratification data to conduct price discrimination and should be obliged to offer uniform headline prices to all possible customers. While some further bargaining may take place at a later stage, it should not be based on income/stratification data that have been made available to operators. Should this reform be implemented, the government should ensure the access to telecommunication services for the low-income segment of the population.

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*The stratification system should be phased out for telecommunication services. Operators should not be granted access to customer stratification data, as these are used to conduct price discrimination between the different strata, and thus extract consumer surplus to the benefit of the operator. Requests for financial support for low-income households or citizens with special needs should be made directly to the government and not rely on geographical stratification.*

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### *Subsidisation practices*

The subsidies tradition in Colombia not only refers to stratification of the population, but also to other initiatives, such as the 4G spectrum auction, where an obligation to distribute tablets among citizens had to be accepted by operators and incorporated into the bidding conditions. While the objectives are laudable, they entail a high degree of distortion that may not be beneficial to accomplishing policy goals. For these reasons, initiatives to promote ICT adoption such as the distribution of tablets among citizens should be separated from auction proceedings.

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*The Ministry should split initiatives that focus on different areas and avoid cross-subsidisation (e.g. different proceedings should be used for assigning spectrum resources and for distributing tablets among citizens). This should reduce distortions and provide a more reliable method for measuring progress in meeting public policy objectives.*

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### *Taxes on telecommunication services*

Currently, mobile services are subject to an additional 4% VAT tax not justifiable for services that provide positive externalities to the economy. Even though levying taxes on telecommunication services is likely to entail low collection costs and rising, or at least stable, revenues, consumers should not bear this burden, as it reduces demand for these services and distorts the market. ICTs and telecommunications, in particular, have shown positive spill-over effects across the whole economy in the form of increased productivity and overall social development. Higher taxes can only hamper their development and thus hurt the overall economy.

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*Colombia should refrain from placing an additional burden on the telecommunication sector in the form of an additional “luxury” VAT tax on telecommunication services. This should be phased out at the earliest possible opportunity.*

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### *Universal service*

The current approach of the MINTIC to extend broadband connectivity is to rely more on programmes and access and less on subsidies for fixed telephone lines. This seems in line with good practice. The MINTIC can also draw from a vast pool of resources (FONTIC) obtained from the operators' contribution. There is a risk, however, that these resources may be misused, especially in years where revenues are higher as a result of a spectrum auction. To date, there is no evidence that the MINTIC or other government department is undertaking cost-benefit analyses regarding public investment in ICTs. Therefore, the MINTIC should put in place a rigorous monitoring programme that ensures that public resources are not misused.

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*The MINTIC, in conjunction with the DNP, should monitor and conduct proper programme evaluation of current universal service/access initiatives. It should undertake a careful assessment of all initiatives to: (i) ensure that private investment is not crowded out by public funding, (ii) ensure that investment initiatives comply with cost-benefit criteria, and (iii) advise whether other measures (e.g. exclusivity period in a given area) are necessary to extend coverage to remote areas.*

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The MINTIC has rightfully included demand-side policies in its initiatives to promote ICTs. While this approach is correct, it should also ensure that the right balance between demand and supply-side initiatives is achieved and that co-ordination is successful. For example, from a geographical perspective, it is important to ensure that communication infrastructure is deployed in some regions before engaging in programmes to promote ICT skills.

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*While the current emphasis on ICT demand is justified, the MINTIC should monitor the balance in the support given to the supply and demand side of ICTs. Both areas require closely monitoring to avoid mismatches and lack of co-ordination, which would result in a waste of public resources.*

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Public authorities should only request contributions from the industry to the extent necessary to meet their public policy objectives. Otherwise, such contributions decrease private sector resources without appropriate justification. The operators' contribution of 2.2% of gross revenues to FONTIC may be in excess of MINTIC needs to promote ICTs in Colombia.

Moreover, for those years where spectrum fees are collected by FONTIC, the fund may have more resources and the MINTIC may have a higher incentive to spend them. Opportunity costs for these funds should be carefully assessed, as they may detract from a high-growth, productivity-enhancing part of the economy, or could be used for different government needs. In that sense, spectrum revenues should form part of general government revenue, and should not be earmarked for specific purposes. This approach should accompany increasing competition and efficiency in the telecommunications industry.

For this reason, the MINTIC should reduce the industry's contribution to FONTIC and transition towards funding through general government revenue. This would phase out the current practice of earmarking government grants to specific purposes. This practice is perceived as negative because: (i) earmarking grants reduces the importance of elaborating the government's annual budget and harms flexibility and, (ii) the available budget may be too high in some years and too low in others.

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*The MINTIC should reduce the operators' contribution to FONTIC. Steps should be taken to transition towards funding FONTIC through general government revenue.*

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## ***Removing barriers to infrastructure deployment***

### *Barriers to infrastructure deployment*

Removing barriers to infrastructure deployment is crucial for telecommunication network investments and for lowering barriers to market entry. Any legal or administrative permits involved in the process of deploying networks should be carefully reviewed and assessed to ascertain whether they are justified. More generally, harmonising these provisions across the whole country is important to reduce the burden on operators.

The CRC and the MINTIC should strengthen their efforts to facilitate infrastructure deployment and remove legal and administrative barriers, such as those contained in the different provisions of the municipalities' urban planning rules (POTs). The recent initiative to develop a code of good practice for POTs with regard to telecommunication infrastructure deployment is welcome, but more stringent action should be taken if challenges remain.

Infrastructure sharing is becoming increasingly important for the deployment of fixed and mobile networks. Even though the current framework allows for the mediation of the CRC if market players do not reach agreements, the CRC should adopt a more proactive approach by assessing the current situation, and mandating, if need be, generalised infrastructure sharing conditions.

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*The CRC and the MINTIC should further develop the code of good practice for the deployment of telecommunication infrastructure for municipalities. This should harmonise POTs and reduce barriers to network deployment. Should these efforts not achieve their purpose, additional legal changes or even a constitutional amendment should be pursued to prevent municipalities from stopping or delaying the deployment of telecommunication infrastructure. Further measures to streamline this process include more precise regulation of the timeframe for granting permission for network deployment, specification of reasons for denial of permission, and streamlining of related administrative procedures.*

*Infrastructure sharing should be encouraged by the CRC and the MINTIC, either through mediation between operators or, if stronger measures are deemed necessary, by laying down general conditions for infrastructure sharing.*

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### *Internet exchange points*

Internet exchange points (IXPs) create domestic bandwidth and may substitute for international bandwidth. Efficient IXPs represent a win-win situation for all stakeholders. Colombia should promote more IXPs in locations where it makes sense to do so (e.g. Brazil has 23), and ensure that they play an important role in boosting the efficient exchange of traffic. In addition, the participation policy of the existing IXP (NAP Colombia) could be made more open by, for example, reducing the extremely high "membership" fees. The actual cost of deploying an IXP is relatively low and no artificial barriers that increase entry costs should be put in place, as this harms Colombia's connectivity.

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*Colombia should promote the development of Internet exchange points, especially outside Bogotá. It should also ensure that barriers to entry to new and existing IXPs are as low as possible and do not constitute an obstacle to entry for new or small ISPs.*

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In terms of policy measures to foster the Internet hosting of local content market within a country, public entities in OECD countries often take the first step in being a role model and host their content in the country. One positive aspect is that many government websites with the ccTLD .co are hosted inside Colombia, however, when it comes to the flagship sites of the Vive Digital strategy and the sites of the MINTIC are all hosted outside the country. In addition, a number of important sites from the public function are equally hosted abroad according to the Pingdom database.

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*It is recommended that the government takes a leadership role by becoming a model user of local Internet hosting services, as well as assessing the possibility to host all public sector information within Colombia.*

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### *Quality of service issues*

Quality of service (QoS) issues, especially relating to mobile, have received a great deal of attention and caused growing discontent among telecommunication users. As quality of service is a rather technical area, operators and authorities have sometimes provided contradictory or confusing responses that fail to improve the situation, and lead telecommunication users to complain against operators and the authorities. For example, the impact of barriers to infrastructure deployment and spectrum holdings on quality of service should be carefully examined. This would enable a comprehensive assessment of the existing challenges to QoS, as well as the possible solutions.

These challenges should be addressed through higher transparency and reporting requirements for operators that allow users to compare QoS performance. However, the authorities should bear in mind that these obligations inhibit the development of smaller and new operators that can help increase the dynamism of the market. The authorities should also be allowed to conduct inspections and commission independent audit of networks to identify the causes of poor QoS. Lastly, consumers should be provided with tools to measure their user experience, as recently proposed in Colombia through the development of an application to measure quality of user experience.

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*The Colombian authorities (CRC, SIC, MINTIC) should impose ex-ante regulation for quality of service (QoS) issues fostering higher standards of transparency. Guidelines should be developed, based on internationally recognised QoS standards, to deploy reliable measurement systems that can be audited by third parties. These systems should both cover the operator's network and the consumer experience. Comparable QoS indicators should be published periodically to allow QoS comparisons across operators, which would provide incentives for operators to provide better QoS.*

*If the situation persists, the authorities could consider imposing minimum QoS requirements, while taking into account the possible causes for deficiencies, such as spectrum shortages or delays in permits for network deployments. The authorities should be allowed to conduct inspections of the operators' facilities and commission independent audits to ascertain the reasons for insufficient QoS.*

*Measures such as the automatic compensation of dropped calls are also encouraged, but exceptions should be allowed to exempt smaller operators (e.g. MVNOs). MVNOs and small MNOs should also be exempt from certain reporting obligations.*

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In regulated markets, many operators rely on wholesale inputs, such as interconnection services or wholesale mobile airtime for MVNOs, which are crucial for them to provide retail services. These measures are even more important in a regulated environment, as incumbent operators often have incentives to deteriorate quality in order to have an advantage over competitors. Quality of service levels are usually governed by SLA (service level agreements) and disputes between operators are resolved by the regulators. In the current context, where QoS issues are of great concern, the CRC could increase its transparency efforts and public comparable QoS indicators at the wholesale level.

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*Quality of wholesale services purchased by operators should also be compared, subject to public scrutiny, and sanctions should be imposed if they do not meet certain standards.*

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### **Promoting the consumer interest**

#### *Consumer complaints*

Empowered consumers and low switching costs are key enablers for competitive markets. The SIC has paid increasing attention to telecommunication-related consumer issues and is currently taking steps to make the complaint process easier for consumers.

At present, consumers complaining against telecommunication operators need to go through a number of lengthy steps, most of which are determined by provisions on the general administrative procedure. In its current form, the procedure is long and in need of reform to better allow consumers to exercise their rights. Recent changes, such as the single identification number for consumer complaints, represent an improvement but the whole process could be expedited.

In addition, consumer complaints concerning television services are not handled by the SIC, but by the ANTV. This raises concerns from the perspective of ease of procedure, especially for television, telephone and data service bundles. In such cases, procedures can be even lengthier, as the television-related part of a complaint has to be forwarded to the ANTV.

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*The process for filing complaints should be expedited. This may necessitate a change in the law to shorten the timeframe and/or procedures to resolve consumer complaints. The SIC should also handle complaints related to television services, which should not be forwarded to the ANTV.*

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#### *Transparency for handset purchases*

Operators should also inform consumers of conditions associated with upfront discounts for handset devices purchased jointly with mobile contracts (known as “handset subsidies”). Operators should be required to separate the costs of the mobile service and the handset in the contract and in the monthly bills, and allow consumers to unlock their handset through an easy and inexpensive procedure.

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*For mobile contracts that involve a bundled sale of a handset device, operators should clearly state in the bills sent to consumers the monthly payment that corresponds to the handset, the remaining amount to be paid to compensate the upfront discount given by the operators, and the penalties for early cancellation of the contract. Consumers should also be provided with*

*an easy mechanism to unlock handset devices. In this sense, upfront discounts for smartphone should not be banned, but should be subject to transparency rules and the inspection of contractual clauses to avoid abuses.*

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### *Number portability*

Number portability has played a crucial role in facilitating consumer switching in OECD countries and has helped to improve mobile competition in Colombia. However, fixed number portability is not available as the authorities have, to date, focused on mobile markets.

As urged throughout this report, the development of the fixed market should be a priority for Colombia, as the mobile network relies to a great extent on fixed infrastructure, and promoting the adoption of fixed networks and services would considerably facilitate the transition to next generation networks. As such, the CRC should issue rules to enable fixed number portability, as a measure to promote competition in fixed markets.

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*The CRC should issue a regulation to enable fixed number portability and ensure that it is duly implemented.*

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### *International mobile roaming*

Even though international mobility in Colombia is lower than in other regions of the world, such as Europe, international mobile roaming services are priced at several times the level of comparable domestic services, without an underlying cost justification. Moreover, various bill-shock cases have raised the question of whether current transparency obligations are sufficient to protect consumers. The CRC has taken an active role in this matter and issued regulations on transparency and bill-shock, but these measures may not be sufficient to avoid abuse and protect consumers.

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*The CRC should issue rules to improve transparency in the provision of roaming services, in particular relating to pricing, so as to avoid bill-shock. For example, such rules would limit the maximum amount consumers can spend on roaming services without their express consent or by requesting the specific activation of the service by the customer.*

*More generally, Colombia should undertake steps included in the OECD Recommendation on International Mobile Roaming Services (2012), and assess whether it should implement some or all the measures included in the recommendation, including wholesale and retail price regulation of roaming services.*

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## *References*

OECD (2012), “OECD Recommendation of the Council on International Mobile Roaming Services”, 16 February 2012,  
<http://acts.oecd.org/Instruments/ShowInstrumentView.aspx?InstrumentID=271&InstrumentPID=276&Lang=en&Book=False>



## Annex A

## Summary of OECD basket prices in Colombia

Basket name	OECD average USD PPP	Colombia's price USD PPP	Colombia's ranking (of 35 countries)	Colombia's price USD (OECD average USD)
Fixed broadband (June 2013 basket)				
Low (>256 Kbps)	24.73	22.25	17	16.74 (28.31)
Low (>2.5 Mbps)	27.20	40.31	32	30.32 (30.85)
Low (>15 Mbps)	33.10	166.94	35	125.57 (37.10)
Low (>30 Mbps)	41.03	300.63	35	226.14 (45.89)
Low (>45 Mbps)	42.92	470.60	35	353.99 (47.59)
High (>256 Kbps)	25.74	22.25	17	16.74 (29.29)
High (>2.5 Mbps)	27.68	40.31	31	30.32 (31.39)
High (>15 Mbps)	33.41	166.94	35	125.57 (37.37)
High (>30 Mbps)	41.33	300.63	35	226.14 (46.14)
High (>45 Mbps)	43.13	470.60	35	353.99 (47.79)
Mobile broadband (June 2013 basket)				
Laptop (500 MB)	11.91	16.52	28	12.43 (12.90)
Laptop (1 GB)	13.37	18.60	28	13.99 (14.51)
Laptop (2 GB)	17.55	24.13	29	18.15 (19.39)
Laptop (5 GB)	24.26	48.32	33	36.35 (26.26)
Laptop (10 GB)	31.14	152.09	35	114.40 (33.96)
Tablet (250 MB)	10.06	16.52	32	12.43 (10.91)
Tablet (500 MBb)	11.12	16.52	30	12.43 (12.15)
Tablet (1 GB)	12.00	18.60	30	13.99 (13.04)
Tablet (2 GBb)	17.09	24.13	29	18.15 (18.80)
Tablet (5 GB)	23.95	48.32	33	36.35 (25.89)
Telephony (May 2013 basket)				
<i>FIXED TELEPHONY</i>				
20 calls	23.80	8.76	2	6.59 (26.15)
60 calls	33.90	23.57	5	17.72 (36.99)
140 calls	50.09	36.47	7	27.43 (54.81)
420 calls	74.09	41.31	3	31.06 (79.75)
100 calls (business)	45.53	100.84	34	65.37 (40.43)
260 calls (business)	91.16	141.50	30	91.73 (82.71)
<i>MOBILE TELEPHONY</i>				
30 calls	13.13	12.48	15	9.39 (13.87)
100 calls	23.24	28.88	28	21.73 (24.20)
300 calls	38.40	50.82	29	38.23 (39.42)
900 calls	58.35	106.16	31	79.85 (59.18)
Prepaid 40 calls	17.20	13.70	15	10.30 (18.42)
400 SMS	15.56	9.45	7	7.11 (15.79)
<i>MOBILE TELEPHONY+INTERNET</i>				
30 calls+100 MB	18.61	23.32	28	17.55 (19.58)
100 calls+500 MB	32.84	57.69	34	43.40 (33.95)
300 calls+1 GB	47.77	85.91	32	64.62 (48.88)
900 calls+2 GB	73.19	151.79	33	114.18 (75.15)
100 calls+2 GB	41.93	56.84	29	42.76 (43.81)

Note: \* Prices for business baskets have been taken with VAT excluded.





## Annex B

## Basket prices in Colombia compared to selected LATAM countries

Basket name	LATAM average Price USD PPP	Colombia price USD PPP	Colombia's ranking (of 7 countries)	Colombia price USD (LATAM) average USD
Fixed broadband*				
Low (>256 Kbps)	39.51	25.22	2	18.97 (25.00)
Low (>2.5 Mbps)	48.66	40.76	4	30.16 (32.34)
Low (>15 Mbps)	122.86	201.40	6	151.50 (85.55)
Low (>30 Mbps)	184.07	545.90	6 (6 countries)	410.63 (74.12)
Low (>45 Mbps)	221.21	545.90	5 (5 countries)	410.63 (161.41)
High (>256 Kbps)	40.56	25.22	2	18.97 (25.86)
High (>2.5 Mbps)	48.66	40.76	4	30.16 (32.34)
High (>15 Mbps)	122.86	201.40	6	151.50 (85.56)
High (>30 Mbps)	111.70	545.90	6 (6 countries)	410.63 (74.12)
High (>45 Mbps)	140.37	545.90	5 (5 countries)	410.63 (99.35)
Mobile broadband*				
Laptop (500 Mb)	22.16	16.52	1	12.43 (15.11)
Laptop (1 Gb)	29.82	18.60	1	13.99 (20.15)
Laptop (2 Gb)	33.99	24.13	2	18.15 (22.51)
Laptop (5 Gb)	53.67	48.32	4	36.35 (35.94)
Laptop (10 Gb)	92.16	152.09	6	114.40 (59.34)
Tablet (250 Mb)	19.83	16.52	3	12.43 (13.13)
Tablet (500 Mb)	21.01	16.52	2	12.43 (14.20)
Tablet (1 Gb)	29.75	18.60	1	13.99 (20.10)
Tablet (2 Gb)	35.21	24.13	2	18.15 (23.28)
Tablet (5 Gb)	53.36	48.32	4	36.35 (35.73)
Telephony**				
<i>MOBILE TELEPHONY</i>				
30 calls	19.20	12.48	1	9.39 (13.70)
100 calls	35.36	28.88	3	21.72 (25.78)
300 calls	62.30	50.81	3	38.22 (42.65)
900 calls	145.01	106.16	2	79.85 (103.47)
Prepaid 40 calls	20.62	13.70	2	10.30 (14.46)
400 SMS	24.36	9.45	1	7.11 (16.50)
<i>MOBILE TELEPHONY+INTERNET</i>				
30 calls+100 Mb	32.39	23.32	3	17.54 (22.42)
100 calls+500 Mb	52.28	57.69	4	43.39 (37.50)
300 calls+1 Gb	82.75	85.90	3	64.62 (59.43)
900 calls+2 Gb	168.41	151.79	4	114.18 (120.22)
100 calls+2 Gb	58.17	56.84	4	42.76 (41.70)

Notes: \* June 2013 Mobile and Fixed Broadband Basket Low 4, Low 5, High 4 and High 5 do not include Colombia in the LATAM average; \*\* May 2013 Telephony Basket; Countries compared: Argentina, Brazil, Chile, Costa Rica, Colombia, Peru (mobile broadband), Argentina, Brazil, Chile, Colombia, Peru, Uruguay (Fixed Broadband); The data for Argentina are based on officially reported data. The IMF has, however, issued a declaration of censure and called on Argentina to adopt remedial measures to address the quality of the official CPI-GBA data. Alternative data sources point to considerably higher inflation rates than the official data since 2007. In this context, the Fund is also using alternative estimates of CPI inflation for the surveillance of macroeconomic developments in Argentina.



## Annex C

### Summary of the main initiatives of “Plan vive digital”

Program name	Details
<i>Conectividad</i> -Connectivity Program (previously known as Compartel)	<ul style="list-style-type: none"> <li>✓ National fibre optic deployment plan (777 municipalities are connected in 2013, and by 2014 the goal is to reach 1 078 connected municipalities)</li> <li>✓ Telecentres in rural communities (e.g. <i>Punto Vive Digital</i> and <i>Kiosco Vive Digital</i>)</li> </ul>
GEL ( <i>Gobierno en Línea</i> ) – e-Government	<ul style="list-style-type: none"> <li>✓ Colombian e-government programme providing online services for citizens, initially launched in the year 2000</li> </ul>
MIpyme Digital	<ul style="list-style-type: none"> <li>✓ MINTIC and Bancoldex join efforts to help SMEs use ICTs. To date this program has benefited more than 17 000 SMEs</li> </ul>
<i>Computadores Para Educar</i> - Computers for Education	<ul style="list-style-type: none"> <li>✓ MINTIC and the Education Ministry join efforts to provide computers to educational facilities, as well as training teachers in the use of ICTs</li> </ul>
Apps.co	<ul style="list-style-type: none"> <li>✓ Initiative to provide incentives for the development of apps, software and digital content</li> </ul>
<i>Fortalecimiento de la Industria TI</i> (FITI)- Digital Industry Strengthening Program (e.g. Digital Talent Program)	<ul style="list-style-type: none"> <li>✓ Main objective: Develop the IT sector in Colombia</li> <li>✓ Talento Digital-Digital Talent: the government sponsors grants for those who want to study careers related to ICT. The program expects to grant 4 661 scholarships in 2014</li> <li>✓ iNNPulsaTic: Competition to find top 10 Colombian ICT Start-ups. Award: Entrepreneurial networking and paid training in Argentina</li> </ul>
Digital Content Program (e.g. Vivelabs)	<ul style="list-style-type: none"> <li>✓ Vivelabs: Entrepreneurial training centres for the development of digital content (Video games, webpages, etc.)</li> </ul>
I+D+I: Innovation Ecosystem Program	<ul style="list-style-type: none"> <li>✓ MINTIC and COLCIENCIAS join efforts to create this Subsystem of innovation for ICTs (I+D+) with the aim of defining a national ICT agenda, and strengthen e-government</li> <li>✓ Programs: Government Information Infrastructure, Cyber security, e-Health, among others</li> </ul>
Regional Vive Digital	<ul style="list-style-type: none"> <li>✓ Promotion of Vive Digital's Initiatives in Colombia's regions: the program supports municipal and regional efforts for the adoption and deployment of ICTs</li> </ul>
ICT Appropriation Program	<ul style="list-style-type: none"> <li>✓ Digital alphabetisation programs</li> <li>✓ Promotion of Teleworking Initiatives</li> </ul>

Source: OECD elaboration based on MINTIC

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