POST-2015 CONSENSUS

Post-2015 Development Agenda

Colombia Perspectives

ICT Infrastructure

SPEAKER

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Summary: White Paper Report by Alexia Gonzalez Fanfalone

Information and computer technology (ICT) has become a vital tool for development. In particular, the availability of Internet access is an important way to help businesses grow and allow individuals access to a range of services to improve their lives. This is as important in Colombia as anywhere and it makes great economic sense: investing a dollar in expanding broadband could give back to Colombia $19 worth of benefits.

Developing countries are leapfrogging today's rich world by going straight to mobile broadband access rather than investing in costly fixed lines, but there is still a big difference in levels of service. The 'digital divide' is more evident in Colombia than the average developing country, with only 7.9% of citizens having mobile broadband access in 2013 compared with an average of 16.8% in developing countries overall (and 75.1% in developed economies).

Fixed broadband penetration at 9.3% is a little above the Latin American average, but still way behind that of developed countries (i.e. 26.6%). Importantly, connection speeds are also slower, about one third of that in the United States and also slower than in Mexico or Chile. Despite this lack of infrastructure, Colombians have been eager to get online, with about half the population having access to the Internet in some way, despite the low penetration into individual households.

Although fixed broadband connections have their role in towns and cities, mobile broadband can give citizens across the country access to the Internet, including those in rural areas. A World Bank study in 2009 estimated that a 10% increase in broadband penetration in low- and medium-income countries boosted GDP growth by 1.34%. The benefits it brings are enormous, but its very importance makes it difficult to take full account of its impact, which may be greater than captured in such an analysis. For example, broadband access is not just about economic growth, but also social inclusion.

Current mobile broadband penetration in the country is just 7.9%, but ownership of mobile phones is very high (i.e. mobile telephony penetration is 104%), so it makes sense to focus on this approach. Providing a mobile broadband service can be very cost effective, since it can cost only a third as much as connecting people via fixed lines. Increasing penetration to 60% by 2030 is a very smart target, delivering benefits for Colombia of $19 for each dollar invested.

This is a big project, which would have to bring 30 million subscribers online in the next 15 years. The costs would be large – nearly $13 billion – but so would the economic benefits. GDP would be boosted by about $250 billion, which amounts to over $4,000 at current value for every Colombian citizen between now and 2030.

The Colombian government has been well aware of the importance of ICT to the economy and has helped to facilitate growth via the Plan Vive Digital and the 2009 ICT Law. This has helped boost the numbers of people who are already able to access the Internet, although not necessarily via their own phones or computers.

Policymakers have a continuing role to play in meeting the proposed new target. Although the focus is on mobile services, these still require a network of fibre optic cable across the country, and there is a need to make sure dominant local and regional suppliers give full access to their networks to avoid bottlenecks.

There are also a number of other things governments can do to boost competition and lower costs for mobile services, including making sure small operators have access to the market and reducing taxation on both suppliers and subscribers.

White Paper Report by Alexia Gonzalez Fanfalone

The Post 2015 UN development Agenda includes as a target to increase the availability of ICTs in the developing world. The research undertaken for the Copenhagen Consensus Center, published last December 2014, pinned down more specific ICT targets related to broadband deployment with the aim of increasing the impact of this development goal by rendering it more precise and measurable. The study found that expanding mobile broadband about three-fold in developing regions – from 21 to 60% -- will have a significant cost (about $1.3 trillion), which represents simply the cost of connecting up about two billion more people to the Internet, but this investment is money very well invested yielding a return **$17** for every dollar spent.[1]

The present paper attempts to put this suggested development target in the Colombian context. Using a similar methodology as the report published in December by the Copenhagen Consensus Center (CCC), it finds that investing in mobile broadband yields a significant benefit for Colombia of around **$19** for every dollar spent.

Colombian authorities, aware of the important role that ICTs have in the economy, have led structural changes in ICT policy since 2009. The latter naturally translated into a surprising increase of people accessing Internet that grew from 30% in 2009 to 51.7% in 2013 (ITU data). The national digital agenda (*Plan Vive Digital*), as well as the new ICT Law of 2009 (*Ley 1341*) evidently played a significant role in increasing Internet access to the population. Nevertheless, given the large benefit that mobile broadband can still deliver for Colombia, and in light of the fact that Colombia is still lagging in terms of broadband penetration (e.g. around 8% mobile broadband penetration versus 75% in developing countries in 2013), this paper also discusses further recommendations to improve the current regulatory framework. These policy recommendations address incentives to invest in network deployment as a way to improve the impact of public investment on ICT infrastructure.

[1] The increase of penetration would be from an average level of around 20% in 2014 to a level of 60% in 2030. The resulting Benefit-Cost Ratio (BCR) is in the realm of 14.41 to 21.74 (depending on scenario assumptions and considering a discount rate of 3%).

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Importance of ICT infrastructure and the UN development Post 2015 Agenda

Why do we care about information communication technologies (ICT) infrastructure in the context of the next round of UN development goals? Expanding affordable access to ICT infrastructure has become a priority for policy makers because they are important enablers for social inclusion and economic development.

With the Internet being such an important resource in the modern world, broadband has become a vital platform that boosts economic growth and has the potential to lift people out of poverty (e.g. a World Bank 2009 study showed a 10% increase in broadband penetration increased GDP growth by 1.34% in low to medium income countries). Not only does it help firms' productivity, but also health, education and government services can be delivered through this platform. Therefore, there is a strong case for governments to include broadband access in the next set of UN global targets.

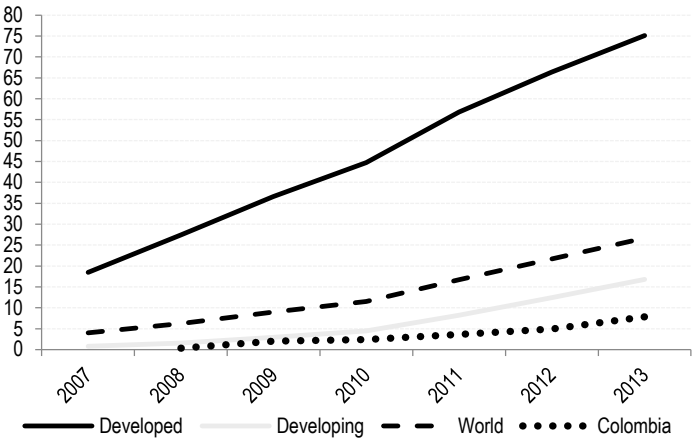
Why do ICTs matter for Colombia?

Several studies have identified ICT infrastructure, and in particular mobile telephony, as a key enabler of economic development through different channels, such as increasing price efficiency and reducing travel costs (see Aker 2010, Parker et al. 2012, Jensen 2007, Fafchamps & Minten 2012).[2] This is particularly important for Colombia as it has a large portion of its population living still in rural communities, and has an important agricultural sector. Broadband, and an in particular mobile broadband, can be a key to bring these communities together. Furthermore, broadband is a platform that can increase firms' productivity and innovations, which is particularly important for Colombia that has around 96% of medium and small firms. In fact, the Colombian government is already aware of the incredible potential that broadband can deliver to its citizens, as reflected in its national digital strategy, *Vive Digital*, that has connected to the Internet backhaul (i.e. fiber) more than 700 municipalities in Colombia.

[2] Through different channels like increasing price efficiency and reducing travel costs (see Aker 2010, Parker et al. 2012, Jensen 2007, Fafchamps & Minten 2012). See http://lirneasia.net/wp-content/uploads/2014/07/4-LIRNEasia_Kapugama_Mobile-phone-impacts_250814.pdf for a review of existing literature. Also find Parker et al (2012) here http://faculty.london.edu/nsavva/RML22Jul.pdf

However, despite tremendous growth in broadband availability around the world in recent years, major differences persist among developed and developing countries (e.g. mobile broadband penetration was only 21.1% in developing countries in 2014 compared to 83.7% in the industrialized world). This *digital divide* is even more striking in Colombia where mobile broadband penetration was 7.9% in 2013, less than the average of developing countries of 16.8% for the same year, and far behind developed economies' average of 75.1% in 2013 (Figure 1).

Figure 1: Active mobile Broadband subscriptions per 100 inhabitants



Source: ITU-ICT Eye http://www.itu.int/net4/itu-d/icteye/Topics.aspx?TopicID=7

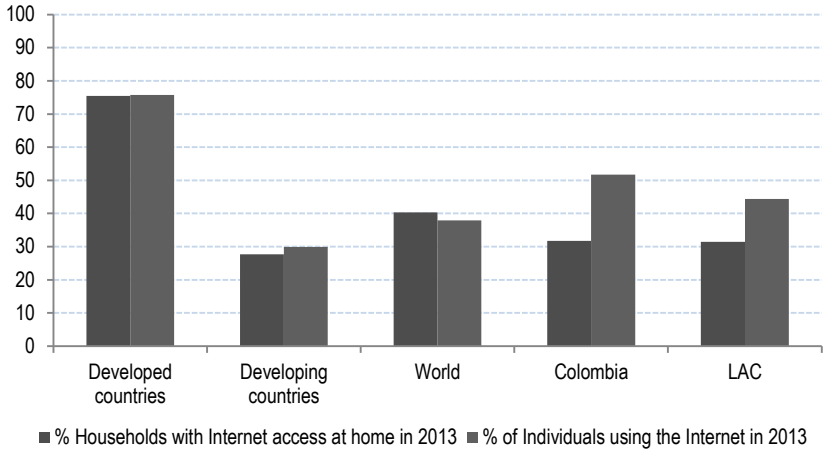
Therefore, Colombia has a strong case for investing in broadband as it could potentially harness incredible growth opportunities. Although Colombian authorities have taken pivotal steps to increase availability of broadband, with further help of the international donor community and adequate regulations in place, it could drastically reduce the *digital divide*.

Status quo of Broadband Infrastructure in Colombia

Colombia performs very similar in terms of ICT infrastructure when compared to developing countries' average as well as the Latin America and Caribbean (LAC) regional average. For instance, in 2013, 32% of Colombian households had Internet access, compared to 28% of households in developing countries and 31% in the LAC region. However, it still faces a persistent *digital divide* with respect to developed economies (e.g. 75% of households in developed countries had access to Internet in 2013, Figure 2). When compared to regional peers, with 52% of individuals having access to Internet in Colombia, it fares slightly better than

Mexico (i.e. 43%), but still behind Chile (i.e. 66.5%), and way behind developed countries' average of 76% in 2013.[3]

Figure 2: Household and Individual access to the Internet in 2013



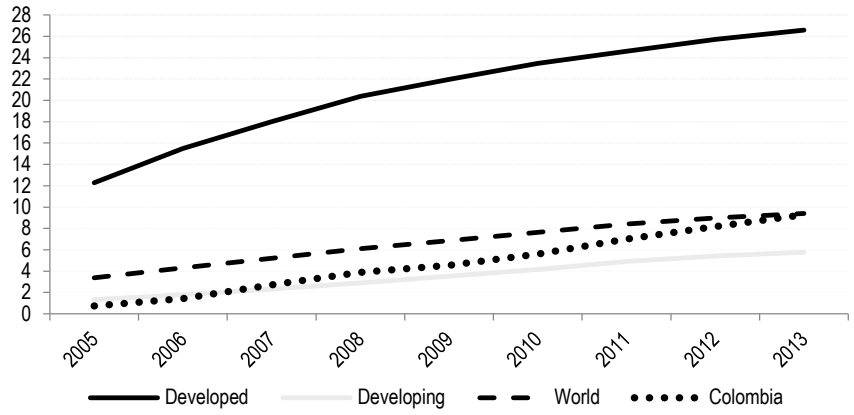
Source: ITU-ICT Eye http://www.itu.int/net4/itu-d/icteye/Topics.aspx?TopicID=7

Colombia's fixed broadband penetration of 9.3% in 2013 is slightly above the developing countries' average of 6%, and aligned with the regional average (i.e. LAC average was 8.7% in 2013).[4] However, it is still far from developed countries' average of 26.6% (Figure 3).

[3] See http://www.itu.int/ITU-D/ict/statistics/explorer/index.html

[4] Source of data is ICT Eye for the year 2013, taking into account the average of The Americas, excluding the United States and Canada.

Figure 3: Fixed (wired) broadband subscriptions per 100 inhabitants, 2005-2013



Source: ITU-ICT Eye http://www.itu.int/net4/itu-d/icteye/Topics.aspx?TopicID=7

Furthermore, Internet connections in Colombia are three times slower than connections in the United States (i.e. 3.7 Mbps versus 11.1 Mbps, Akamai 2014), and even slower than the average broadband connection speed in Chile and Mexico (i.e. 5 and 4.5 Mbps, respectively).[5] High broadband penetration, meaning connections with speeds above 10 Mbps, are still quite insipient in Colombia (i.e. only 2% of connections exhibit these speeds, Figure 4). This compares to 3.5% and 5.8% of connections in Mexico and Chile, respectively, and way behind Uruguay and the United States that have 9.9% and 39% of high speed broadband connections, respectively (Akamai, 2014).

[5] "State of the Internet Q4 2014": http://www.akamai.com/stateoftheinternet/soti-visualizations.html#stoi-map . Also see http://www.akamai.com/dl/soti/q4-2014-soti-infographic.pdf

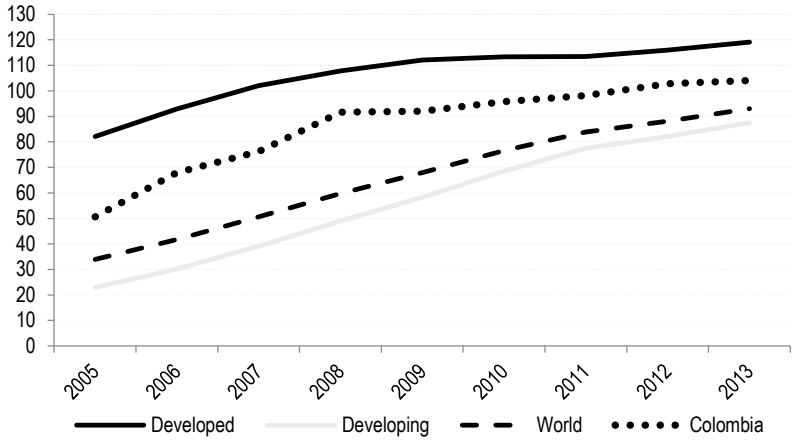
Figure 4: High Speed Broadband Connectivity, America (Akamai)

Global Rank	Country/Region	% Above 10 Mbps	QoQ Change	YoY Change
17	United States	39%	-0.3%	20%
18	Canada	38%	14%	44%
45	Uruguay	9.9%	37%	371%
50	Argentina	7.4%	32%	444%
53	Chile	5.8%	73%	371%
59	Mexico	3.5%	27%	77%
62	Colombia	2.0%	73%	528%
63	Brazil	1.9%	19%	125%
–	Ecuador	2.4%	0%	105%
–	Peru	1.3%	66%	674%
–	Panama	0.9%	13%	79%
–	Costa Rica	0.8%	2.3%	111%
–	Venezuela	0.2%	-11%	166%
–	Bolivia	0.1%	0%	89%
–	Paraguay	0.1%	73%	418%

Source: Akamai, State of the Internet Q4 2014 Figure 23, High Broadband (>10 Mbps) Connectivity by Americas Country

On the bright side, most people from developing countries are getting online for the first time through mobile phones (LIRNEasia, 2014). In Colombia, as is the case in many developing countries, although fixed networks are not as prevalent, mobile telephony is the most readily available ICT good in the population (e.g. mobile telephony penetration grew from 5.6% in the year 2000 to 104% in 2013, see Figure 5). Therefore, mobile broadband may play a crucial to reach end users in rural and remote areas in Colombia given that it is a cost effective solution. However, it is important to state that fixed broadband infrastructure is complementary to the deployment of mobile broadband networks, as the latter rely on good backhaul and backbone connectivity.

Figure 5: Mobile telephony subscriptions per 100 inhabitants, 2005-2013



Source: ITU-ICT Eye http://www.itu.int/net4/itu-d/icteye/Topics.aspx?TopicID=7

ICTs and the Sustainable Development Goals: the Post-2015 Agenda and Colombia

Given its importance for development, ICT infrastructure deployment has been embedded in the current draft of Sustainable Development Goals for the Post-2015 Agenda (e.g. "increase availability of ICT infrastructure"). The research paper on ICT Infrastructure from the Copenhagen Consensus Center reduced the scope of this target to "broadband availability" to increase the precision and impact of this goal.

Broadband is such an important enabling technology that it is difficult to estimate the complete impact on the economy, which will vary with local circumstances (i.e. geographical conditions, technology used to deploy networks, regulatory frameworks, etc.). Nevertheless, the CCC study found investing in mobile broadband in the developing world seems like a really smart move as it results in an average benefit **$17** for every dollar spent (Auriol and Fanfalone, 2014).[6]

To adapt the Cost Benefit Analysis to the Colombian context, a similar methodology is used. Given its cost effectiveness, the main target selected is to **increase mobile broadband penetration in Colombia up to 60%** (from a 7.9% level in 2014) by the year 2030 (see Table 1 below). Mobile broadband is likely to play a significant role in Colombia given geographical conditions, insipient fixed networks (i.e. 14.8% fixed voice, and around 9.3% fixed broadband penetration), and large mobile voice penetration (i.e. 104%).

[6] The precise target was: Increase mobile broadband penetration around three-fold in developing regions of the world by the year 2030 (with a Benefit-Cost ratio ranging from 14.41 to 21.74), with the BCR depending on the scenario assumptions and considering a discount rate of 3%.

Furthermore, it is a cost effective solution for developing countries as the cost per user of deploying a mobile network may be three times lower than a fixed network (Rahunathan, 2005). Two other targets -expanding fixed broadband to 20%, and achieving universal mobile broadband coverage by the year 2030- can also be consulted in Tables A1-A3 of the Annex.

Table 1: Mobile Broadband Target analysed for Colombia

Target examined for Colombia	Equivalent broadband target in Copenhagen Consensus Center (CCC) Infrastructure Report
Increase mobile broadband penetration in Colombia from 7.9% to 60% in the year 2030	**Target 4 of CCC report:** Increase Developing countries' mobile broadband penetration from 21% in 2014 to 60% in 2030

Increasing mobile broadband subscriptions up to 60% (per 100 inhabitants) in 2030 yields high returns for Colombia with a resulting average benefit **of around $19** for each dollar spent (Table 2).[7] This would require vast amounts of network investment as it represents the cost of getting **30 million subscribers online**. However, it would also reap significant benefits in terms of GDP in the range of USD 250 billion in net present value terms for the period of 2015-2030 (see Table 2).[8] In other words, each Colombian would receive a benefit of around USD 4,385 (in net present value terms).[9]

[7] The average BCR is considering two different scenarios to calculate the NPV that yields a BCR 16.18 and 21.81 with a 5% discount rate, and 16.58 and 22.39 with a 3% discount rate. The resulting average BCRs are 19 and 19.5, respectively.

[8] Figure using a 5% discount rate. The average benefit is taken from $210-283 billion (see Table A4 in the Annex for details).

[9] Assuming the average NPV of Benefits in Table 2 with a 5% discount rate, and dividing this figure among the projected population estimate in the year 2030 (UN) of 56,276 thousand inhabitants.

Table 2: Benefit to Cost Ratio of increasing mobile broadband penetration to 60% in Colombia (years 2015-2030)

Discount Rate 5%			Discount Rate 3%		
NPV Benefits* in millions USD (Billions COP)	**NPV Costs*** in millions USD (Billions COP)	**BCR***	**NPV Benefits* in** millions USD (Billions COP)	**NPV Costs*** in millions USD (Billions COP)	**BCR***
$246,742.37 (COP 605,407)	$12,988.66 (COP 31,869)	**18.99**	$293,349.31 (COP 719,762)	$15,054.01 (COP 36,937)	**19.48**

Notes: (*) The Benefits and costs are the average of two different scenarios that vary in the calculation of benefits, based on the Copenhagen Consensus Infrastructure Assessment paper (see Table A4 of Annex for details). A conservative estimate of the elasticity of the impact of broadband in the economy is considered (i.e. 0.014). Furthermore, a status quo GDP for Colombia of USD 378,415,326,790.1 and a high cost of infrastructure deployment is assumed (i.e. USD 640 for a wireless line and USD 1910 for a fixed line).[10] The exchange rate that is considered is 2,454 COP per USD (source: Bloomberg).

Overall, both BCR --the one found in the CCC study of December 2014 (i.e. 17 USD per dollar invested) and the BCR calculated for Colombia (i.e. 19) -- are fairly aligned. The slight difference may be related to the benefits derived from a higher percent change in mobile broadband lines (i.e. Colombia is starting from a slightly lower level of mobile broadband penetration than the average of developing countries). The main caveat of this methodology is that it simplifies the assumptions of deployment costs (that may vary given the regulatory framework in Colombia).

The present study assumes a conservative estimate of the impact of broadband on GDP growth (i.e. elasticity of 0.014 based on Koutroumpis, 2009), which is quite similar to other studies, such as Katz, 2012, that found this elasticity to be 0.0158 for Latin America and the Caribbean region (LAC).

Nevertheless, caution should be exerted when analysing the BCR in the Colombian context as network deployment costs may be higher due to geographical characteristics of the country (e.g. three mountain chains), and competitive features of the market (e.g. a mobile market incumbent with a 62% market share, and a fragmented fixed market).[11]

[10] See http://data.worldbank.org/indicator/NY.GDP.MKTP.CD/countries/CO?display=graph for Colombia's GDP and http://www.worldbank.org/en/publication/global-economic-prospects/regional-outlooks/lac for growth estimates.
[11] Mobile telephony market share measured in terms of revenues, according to 2013 data (OECD, 2014).

Given the importance of ICTs for development, what type of regulatory measures should be kept in mind for Colombia?

Colombian authorities since 2009, aware of the importance of ICTs in the economy, have led structural changes in ICT policy. The commendable national digital agenda (*Plan Vive Digital*), as well as the new ICT Law of 2009 (*Ley 1341*) evidently played a significant role in increasing Internet access to the population (i.e. from 30% in 2009 to 51.7% in 2013, according to ITU data). Nevertheless, given the large benefits that broadband can still deliver to Colombia, this section discusses further policy recommendations that may help foster incentives to invest in network deployment as a way to improve the impact of public investment on ICT infrastructure.

a. Lowering the cost of network deployment

Deployment of broadband infrastructure is an expensive undertaking given the fixed costs it entails. Any regulatory measure that reduces the cost of network deployment should help public funds have a greater impact. In this sense, two policies that prove important for Colombia are: i) removing current barriers to infrastructure deployment (i.e. wholesale obligations for broadband markets, promotion of infrastructure sharing agreements, and streamlining municipality urban planning rules), and ii) effective spectrum management policy.

Removing barriers to infrastructure deployment

Colombian authorities should seek to remove barriers to infrastructure deployment as it is crucial for network investments. For instance, fixed telephony and broadband infrastructure is still quite insipient in Colombia, which is of great concern given that fixed and mobile networks are complementary. Mobile networks rely on fiber that connects cities (i.e. fiber backbone), as well as fiber within Municipalities (i.e. backhaul). One reason behind fragmented fixed networks in Colombia is the prevalence of strong local/regional incumbents that may be creating bottlenecks in wholesale broadband services (OECD, 2014). To ensure a level playing field among operators, the National Communications Regulatory Authority (CRC) could impose wholesale broadband access obligations (i.e. WBA or "*servicio al portador*") (OECD, 2014).

Secondly, the CRC and the Ministry of Communications (MINTIC) should strive to harmonize the administrative provisions for network deployment set by municipalities (*Planes de Ordenamiento Territorial, or POTs*). These urban planning rules could create unnecessary burdens in network deployment.

Finally, infrastructure sharing can help reduce deployment costs of broadband networks. Although the current regulatory framework allows for the mediation the CRC if market players do not reach such agreements, the regulator could strive, if need be, for general mandated infrastructure sharing conditions (OECD, 2014).

Spectrum Management

Given the potential role of mobile networks for Colombia, spectrum policy is of vital importance as 3G and 4G network deployment depends on it. How spectrum is awarded will naturally have an impact on competition dynamics. For instance, decisions on spectrum caps or reserved blocks for entrants, will shape the market in in years to come (OECD, 2014). Spectrum should be awarded through market-based mechanisms, instead of direct assignment procedures, as used in the past in Colombia. One way to boost competition among mobile market players is by reserving a block for small operators without spectrum holdings in lower bands in the upcoming 700 MHz auction scheduled for 2015 (OECD, 2014).[12]

Lowering the cost of telecommunications services by fostering competition

Reduction ICT goods and services taxes

Despite the fact that the expansion and adoption of ICTs deliver positive externalities to the economy, and the fact that mobile telephony is the most prevalent form of ICT service in Colombia, it currently places an additional 4% "luxury" VAT tax on mobile services (above the 16% level).[13] Furthermore, 2.2% of revenues are levied on ICT providers for the Universal Service Fund (FONTIC). This could be seen as a sector specific tax (OECD, 2014). Although governments in the past have been keen to tax telecommunication services due

[12] See http://www.telesemana.com/blog/2015/01/02/colombia-intenta-balancear-su-mercado-de-telecomunicaciones-atacando-todos-sus-frentes/

[13] See http://www.eltiempo.com/tecnosfera/novedades-tecnologia/precios-de-los-planes-celulares-en-colombia/15366758

to the rapid growth of the sector (Cave and Mfuh, 2011), this could prevent the sector's development and its positive economic spillovers (Hausman, 2000; Katz and Roux, 2010).

Mobile Market Regulation that fosters competition

Economic evidence confirms the beneficial effects of low termination rates on competition (Laffont, Rey and Tirole, 1998; Cambini and Valetti, 2003; Growitsch and Marcus, 2010). Therefore, Colombia should give priority to further reductions in mobile termination rates which, in turn, would remove distortions linked to asymmetrical rates (OECD, 2014).

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ANNEX

Table A1: Targets analysed for Colombia

	Targets for Colombia examined	Equivalent broadband targets contained in Copenhagen Consensus Center (CCC) Infrastructure Report
Target 1C	Increase fixed broadband penetration from 9.3% in 2013 to 20% in 2030 in Colombia	**Target 2 of CCC report:** Increase Developing countries' fixed broadband penetration from 6% in 2014 to 20% in 2030
´Target 2C	Increase mobile broadband penetration in Colombia from 7.9% to 60% in the year 2030	**Target 4 of CCC report:** Increase Developing countries' mobile broadband penetration from 21% in 2014 to 60% in 2030
Target 3C	Universal mobile broadband in Colombia by the year 2030	**Target 8 of CCC report:** Universal mobile broadband penetration by the year 2030

The number of subscriptions that would be covered by each of the three targets allows the calculation of the stream of costs and benefits over the period 2015-2030 (see Table A2).

Table A2: Mapping penetration targets to the change in lines needed for each target

	Mobile Broadband Penetration 2013	Subscribers 2013	Penetration target 2030	Change in penetration 2013-2030	Subs. in 2030* (millions)	Change in subs. 2013-2030 (millions)
Target 1C Fixed Broadband	9.3%	4,486,752	20%	10.7%	11.2552	6.768448
Target 2C Mobile broadband	7.9%	3,804,046	60%	52.1%	33.7656	29.931554
Target 3C Universal mobile broadband	7.9%	3,804,046	100%	91.1%	51.267437	47.463391

Note: *To estimate targets in terms of subscribers for the year 2030, the following estimated population figure for Colombia in the year 2030 was used: 56,276,000 (United Nations population estimates with constant mortality rate).

The resulting Benefit Cost Ratios (BCRs), according to two different scenarios that vary on the assumed growth rate of the economy, are the following:

Table A3: Benefit to Cost Ratio of ICT Infrastructure, Colombia (years 2015-2030)

	LAC growth rate		Colombia growth rate	
Discount rate	5%	3%	5%	3%
Target 1C: Increase fixed broadband penetration from 9.3% in 2013 to 20% in 2030 in Colombia	22.19	22.65	30.28	30.99
Target 2C: Increase mobile broadband penetration from 7.9% in 2013 to 60% in 2030 in Colombia	**16.18**	**16.58**	**21.81**	**22.39**
Target 3C: Achieve Universal Mobile broadband penetration by 2030 in Colombia	10.34	10.6	13.91	14.29

Notes: A conservative scenario is assumed, with an elasticity of the impact of broadband in the economy of 0.014, a growth rate of the economy assumed to be around the average for the LAC region according to the World Bank (3.3%) and for Colombia (4.3%). Furthermore, the status quo GDP for Colombia of USD 378,415,326,790.1, and high cost of infrastructure deployment (i.e. USD 640 for a wireless line and USD 1910 for a fixed line) is considered. [14]

Table A4: CBA of ICT Infrastructure: Increasing mobile broadband penetration to 60% in Colombia in 2030

Discount Rate	**5%**			**3%**		
	NVP Benefits*	**NPV Costs***	**BCR**	**NVP Benefits***	**NPV Costs***	**BCR**
LAC growth rate of the economy						
	$210,197.98	$12,988.66	**16.18**	$249,584.21	$15,054.01	**16.58**
Colombia growth rate of the economy						
	$283,286.76	$12,988.66	**21.81**	$337,114.41	$15,054.01	**22.39**

Notes: (*) NPV of benefit and costs are expressed in USD millions. A conservative elasticity of the impact of broadband in the economy is considered (0.014). For the first scenario a growth rate of the economy according to the regional average for LAC from the World Bank is assumed (3.3%), and for the second scenario a growth rate for Colombia of 4.3% is assumed. Furthermore, the status quo GDP for Colombia of USD 378,415,326,790.1, and high cost of infrastructure deployment (i.e. USD 640 for a wireless line and USD 1910 for a fixed line) is assumed. [15]

[14] See http://data.worldbank.org/indicator/NY.GDP.MKTP.CD/countries/CO?display=graph for Colombia's GDP and http://www.worldbank.org/en/publication/global-economic-prospects/regional-outlooks/lac for growth estimates.
[15] See http://data.worldbank.org/indicator/NY.GDP.MKTP.CD/countries/CO?display=graph for Colombia's GDP and http://www.worldbank.org/en/publication/global-economic-prospects/regional-outlooks/lac for growth estimates.

AGENDA DE DESARROLLO DE LA ONU 2015-2030 : IMPORTANCIA DE LAS TIC PARA COLOMBIA

Alexia Lee González Fanfalone

30 de Abril de 2015
Toulouse School of Economics

INDICE

I. La importancia de las TIC en las metas de desarrollo de la ONU
II. Las TIC y su papel central en el desarrollo en Colombia
III. Medidas regulatorias para maximizar el impacto de las TIC en Colombia
IV. Conclusiones

INTRODUCCION

La importancia de las TIC en la Agenda de Desarrollo de la ONU post 2015

- Las redes de comunicaciones constituyen una infraestructura fundamental para el crecimiento económico, las interacciones sociales y las transacciones comerciales
- Impacto en la productividad y en la innovación
- Ayuda para el desarrollo y la lucha contra la pobreza.
- Internet no será solo una parte de la economía, sino que la economía estará en Internet.
- Mercados competitivos y eficientes son cruciales para la economía colombiana

INTRODUCCION

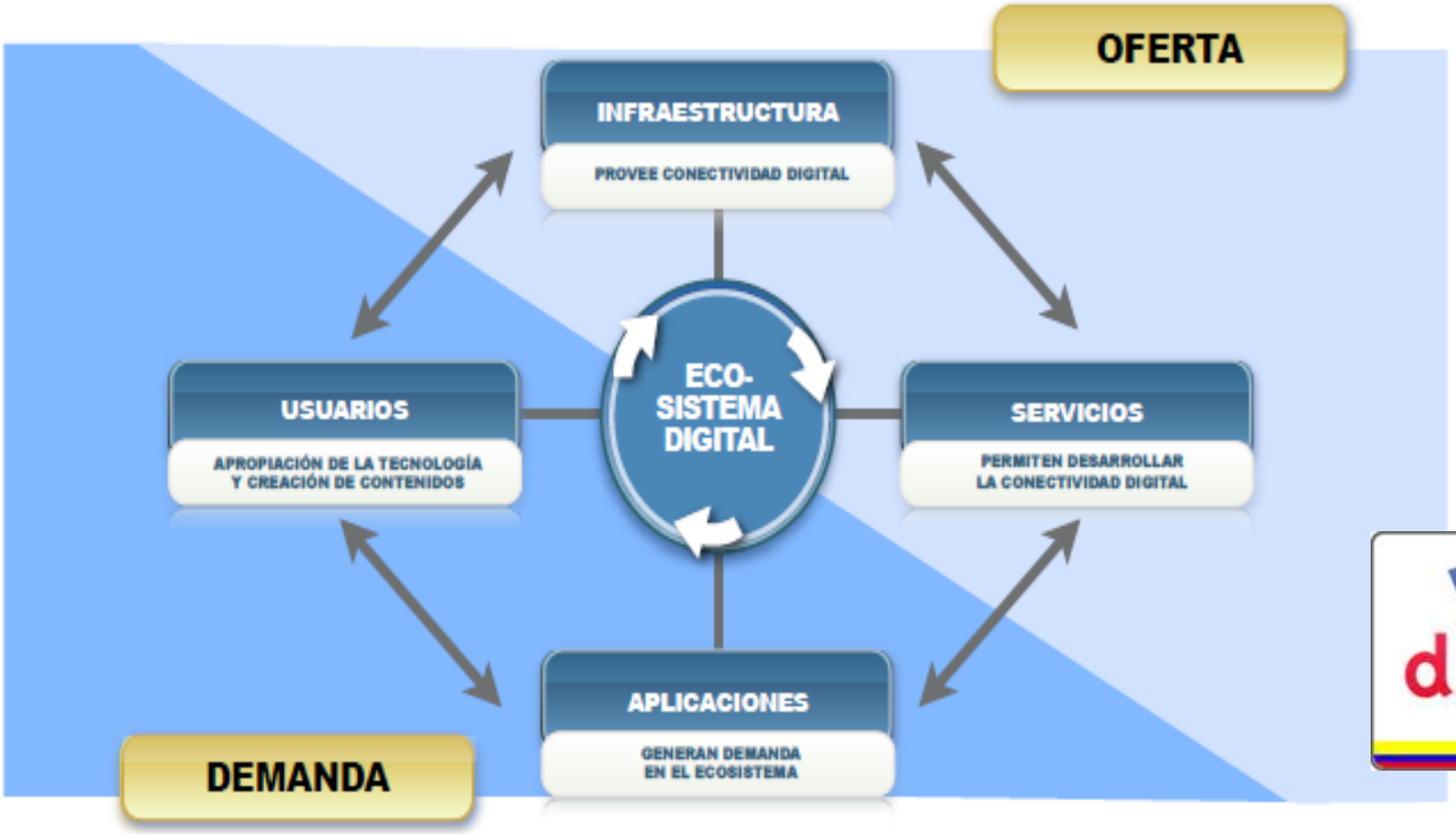
La importancia de las TIC en la Agenda de Desarrollo de la ONU post 2015

El reporte del Copenhagen Consensus Center (Diciembre 2014) encontró:

- Triplicar el acceso a la banda ancha móvil (a 60%) en los países emergentes para el 2030 resultaría en un retorno promedio de $17 por cada dólar gastado.
- El presente estudio encontró que el beneficio promedio para Colombia sería de $19 por cada dólar invertido.

Colombia reconoce la importancia de las TIC

PLAN VIVE DIGITAL: ENFOQUE HOLISTICO



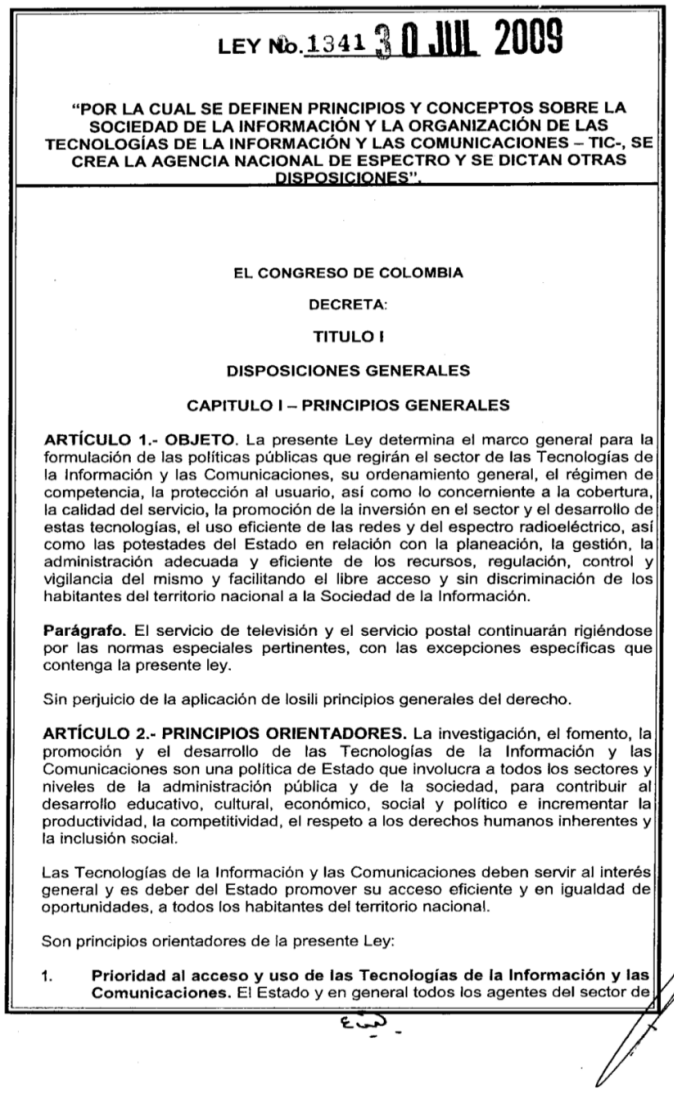
vive digital Colombia

Colombia reconoce la importancia de las TIC

LEY TIC de 2009

Ley 1341 de 2009

(Ley TIC)



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"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".

EL CONGRESO DE COLOMBIA

DECRETA:

TITULO I

DISPOSICIONES GENERALES

CAPITULO I – PRINCIPIOS GENERALES

ARTÍCULO 1.- OBJETO. La presente Ley determina el marco general para la formulación de las políticas públicas que regirán el sector de las Tecnologías de la Información y las Comunicaciones, su ordenamiento general, el régimen de competencia, la protección al usuario, así como lo concerniente a la cobertura, la calidad del servicio, la promoción de la inversión en el sector y el desarrollo de estas tecnologías, el uso eficiente de las redes y del espectro radioeléctrico, así como las potestades del Estado en relación con la planeación, la gestión, la administración adecuada y eficiente de los recursos, regulación, control y vigilancia del mismo y facilitando el libre acceso y sin discriminación de los habitantes del territorio nacional a la Sociedad de la Información.

Parágrafo. El servicio de televisión y el servicio postal continuarán rigiéndose por las normas especiales pertinentes, con las excepciones específicas que contenga la presente ley.

Sin perjuicio de la aplicación de losili principios generales del derecho.

ARTÍCULO 2.- PRINCIPIOS ORIENTADORES. La investigación, el fomento, la promoción y el desarrollo de las Tecnologías de la Información y las Comunicaciones son una política de Estado que involucra a todos los sectores y niveles de la administración pública y de la sociedad, para contribuir al desarrollo educativo, cultural, económico, social y político e incrementar la productividad, la competitividad, el respeto a los derechos humanos inherentes y la inclusión social.

Las Tecnologías de la Información y las Comunicaciones deben servir al interés general y es deber del Estado promover su acceso eficiente y en igualdad de oportunidades, a todos los habitantes del territorio nacional.

Son principios orientadores de la presente Ley:

1. **Prioridad al acceso y uso de las Tecnologías de la Información y las Comunicaciones.** El Estado y en general todos los agentes del sector de

Diagnóstico del sector TIC en Colombia

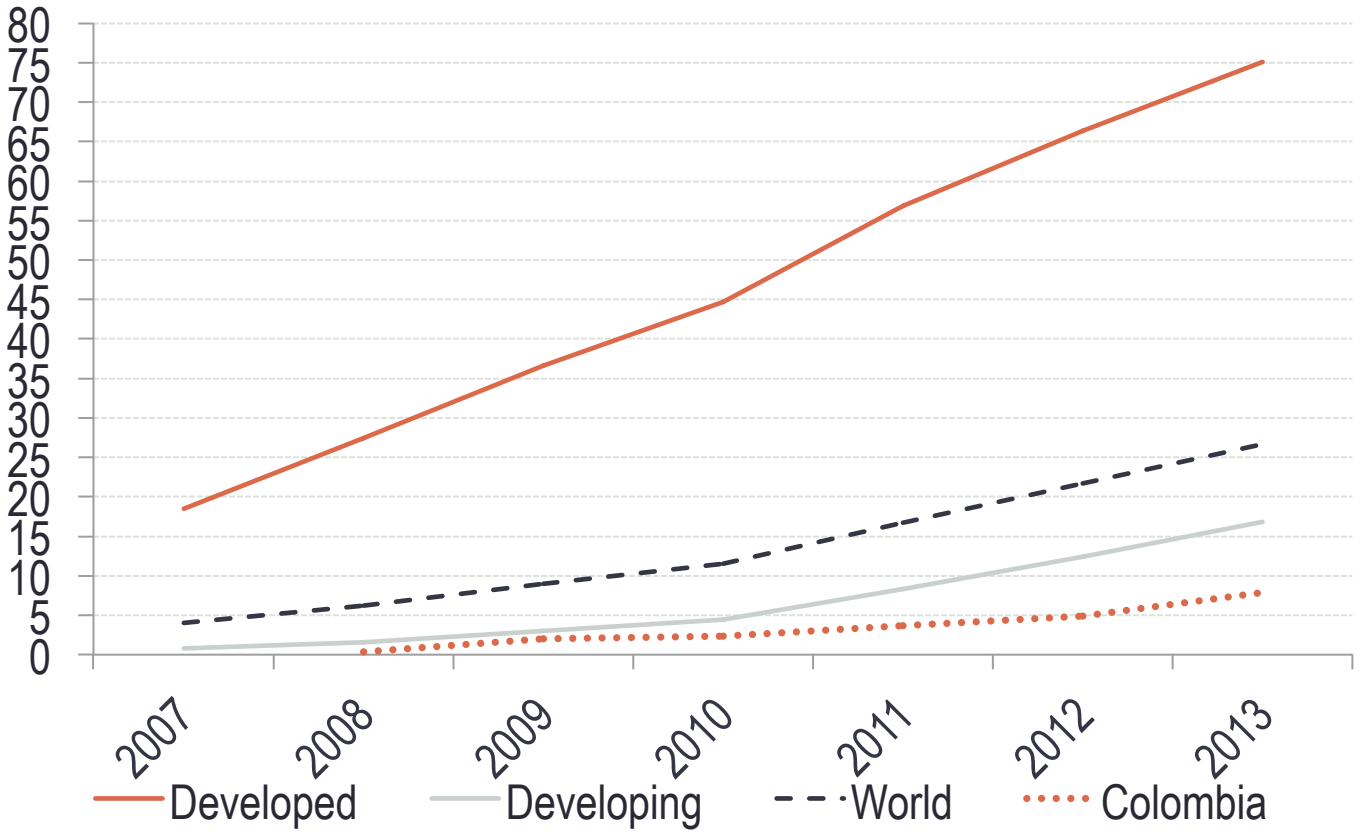
La brecha digital

- Colombia exhibe niveles de despliegue de infraestructura TIC similar a la region LAC
- De 2009 a 2013 ha habido un incremento en el número de individuos con acceso a Internet (de 30% a 52%)
- **Sin embargo, la *brecha digital* en Colombia persiste**:
  - La penetración de la banda ancha móvil en 2013 era de 7.9% (comparada con 16.8% en países emergentes y 75% en países desarrollados)
  - Penetración de banda ancha fija 9.3% en 2013 comparada con 26.6% en países desarrollados
  - Sólo 2% de conexiones tienen velocidades superiores a 10 Mbps

Diagnóstico del sector TIC en Colombia

La brecha digital

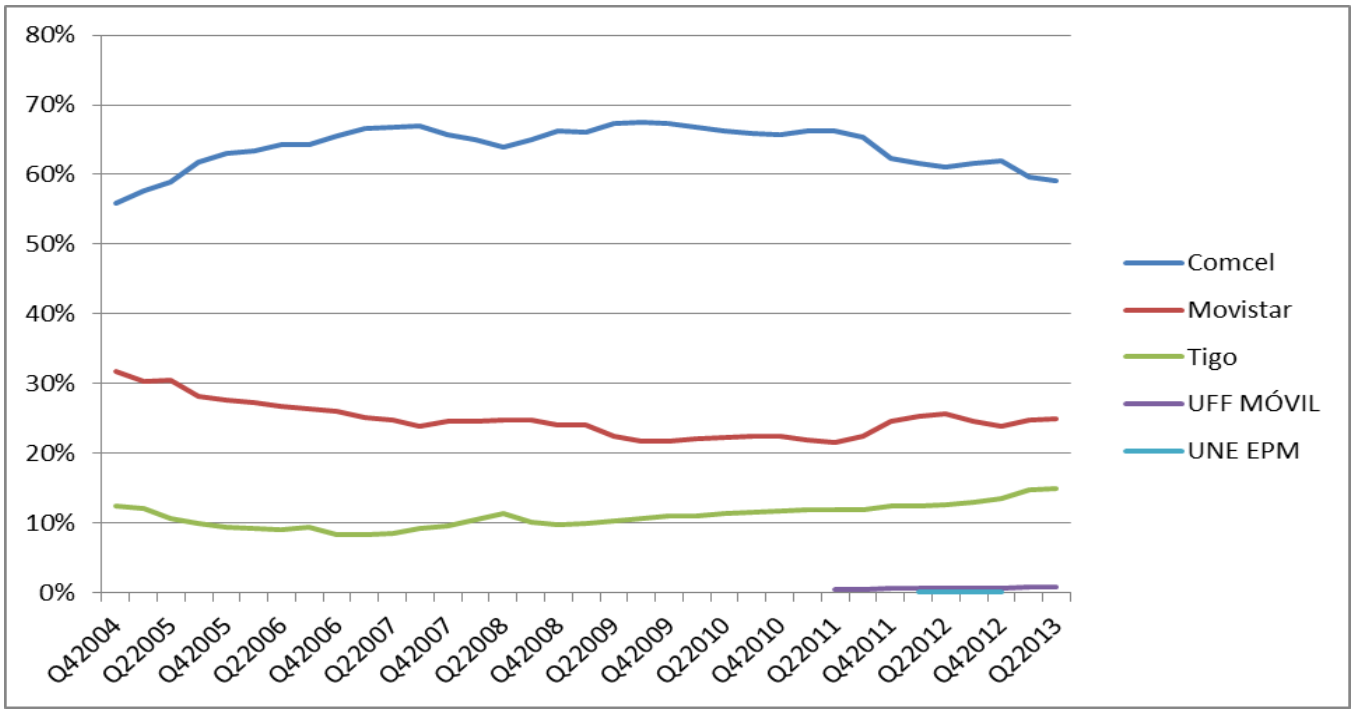
- Penetración de la banda ancha móvil 2007 a 2013 (Fuente: ITU)



Diagnóstico del sector TIC en Colombia

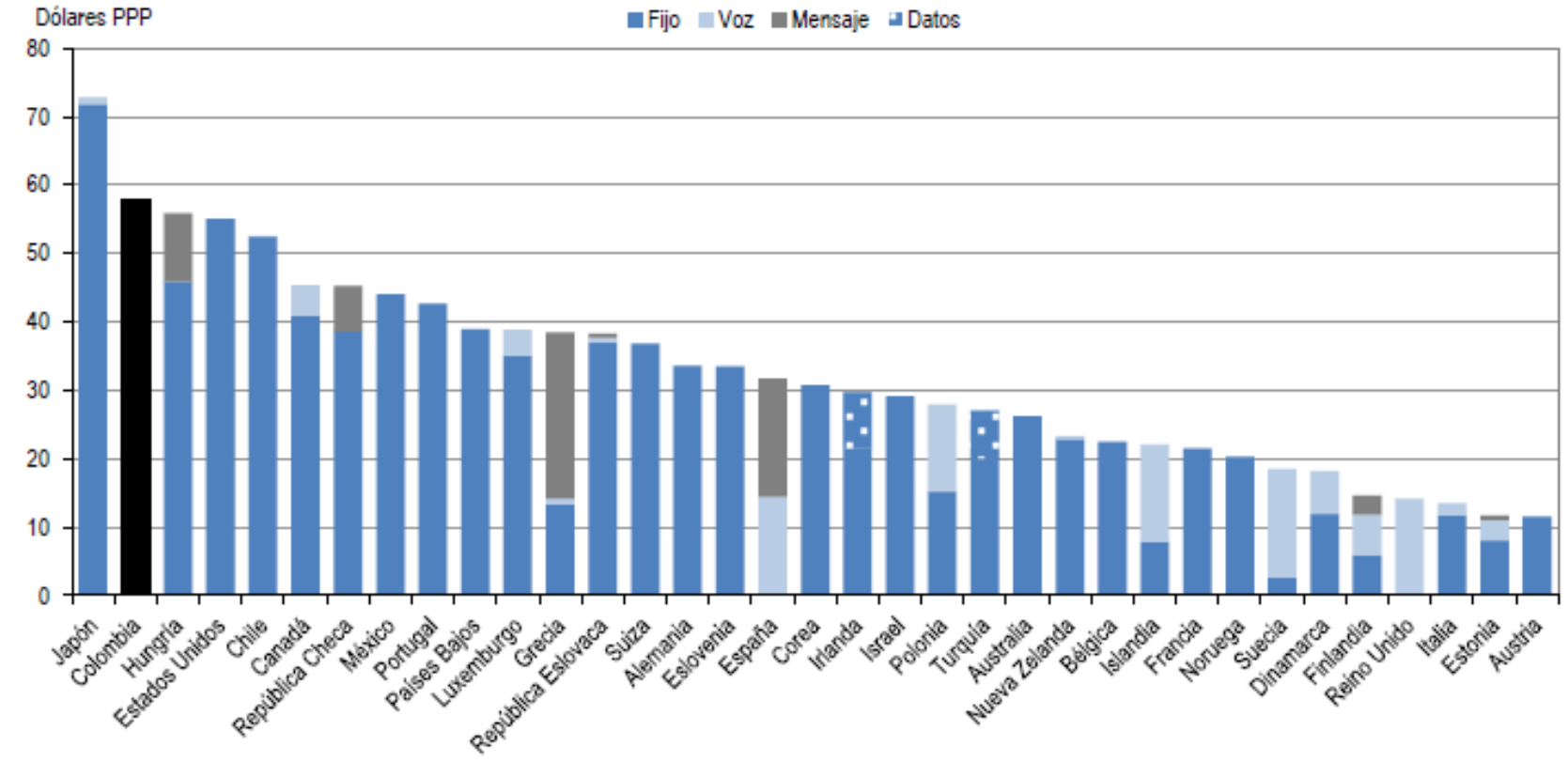
Concentración en el mercado móvil

Evolución de la participación de mercado de los operadores móviles en Colombia



Los niveles de precios permanecen en general altos

Gráfica 1.11. Canasta de 100 llamadas + 500 MB de telefonía móvil de la OCDE, incluyendo a Colombia, con IVA, mayo de 2013



Fuente: OCDE y Teligen.

¿Qué se puede hacer para maximizar el impacto de las TIC en Colombia?

La importancia del marco regulatorio e institucional

Medidas para incrementar el acceso y adopción a la banda ancha:

1. Eliminar barreras al despliegue de infraestructura y la importancia del manejo eficiente del espectro (próxima subasta en 2015)
2. Servicios de comunicaciones asequibles
   - A través de la competencia en el mercado móvil
   - Reduciendo los impuestos TIC

CONCLUSIONES

Reduciendo la brecha digital en Colombia

- Existe una gran oportunidad para Colombia de desarrollo económico al invertir en el sector TIC
- Con ayuda de inversiones de la comunidad internacional, y con ciertas medidas regulatorias, Colombia podría reducir signifcativamente la brecha digital.
- Para maximizar los beneficios que ofrece esta infraestructura existen ciertas medidas que el gobierno aún puede atender
- Por último, las metas acordadas en la ONU a finales de año guiarán **2.5 billones** de USD en ayuda internacional en los próximos años, por lo que es importante que los tomadores de decisiones, y el público en general, esté enterado de la agenda de desarrollo de la ONU.

Muchas gracias!

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