

# Post Connect Americas Summit Report

Broadband Overview in the Americas

2014



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The Consultant Flavia Alves, thanks Allen Gibby, Amy Zirkle, David Wye, Janet Hernandez, Jeff Bernstein and Joel Garcia for their contribution, comments and support in preparing this work.

The present Report provides an update on the development of broadband networks and policies in the Americas since the Connect Americas Summit (CAS) held in Panamá in 2012. It was developed by decision of the AMS Regional Office, in close collaboration with ITU Area Offices in Americas.

*Important to highlight that the English translation of the contributions received in Spanish is a result of the effort made by ITU field staff in Americas and is not an ITU official translation.*

ITU Expert Flavia Alves, wrote the *Broadband overview of the Americas* contained in this Report, which was reviewed by the ITU Americas Regional Office.

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***Brahima Sanou***

Director, ITU Telecommunications Development Bureau (BDT)

Major technological changes and the deployment of new telecommunication networks, combined with the challenges imposed by markets and the increasing demands of end users have revolutionized the ways in which information is accessed and shared. These changes are helping to bring down the cost of broadband services, making them increasingly accessible to more and more citizens, regardless of their geographical location or social status.

ITU, together with the countries of the Americas are addressing the challenge of affordable access responsibly and without delay. Today, it is gratifying to note that the issue of affordable access has become a top priority in the national agendas of countries across the region to ensure that the benefits of these technological advances serve to spur the social and economic development of all segments of their populations. Production structures are being transformed — moving from a production-based economy to one that is driven by innovation.

While the countries of the Americas have made great efforts in this area, there are still significant gaps that we must close together. We can achieve this by harnessing information and communication technologies as an enabling factor in building an inclusive information and knowledge society.

To close these gaps, the Connect the World initiative was launched in 2005 and primarily aims to mobilize the human, technical and financial resources needed to achieve the connectivity goals set at the World Summit on the Information Society. As part of this global initiative, the Connect Summit series began in 2007 with Connect Africa. In 2012, we successfully organized the Connect Americas Summit during which the Americas region reaffirmed its commitment through a range of projects that are set to make a difference.

We have taken on the task of compiling testimonies from leaders in the region in which they share their strategic vision for the future, building on past achievements and the momentum set by the Connect the World initiative towards mobilizing the resources required to facilitate the continuous and sustained implementation of projects and initiatives announced at the Connect Americas Summit.

I take this opportunity to thank all those who, in one way or another, have participated in these activities and I look forward to making further progress together in achieving our shared objectives. At the same time, I invite those who have not had an opportunity to join us in this important initiative to do so as we move towards our goal of providing connectivity for all both in the Americas and worldwide.

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## A. BROADBAND OVERVIEW IN AMERICAS

### 1. INTRODUCTION

This report provides an update on the development of broadband networks and policies in the Americas. In brief, countries in the region have generally continued to make good progress in expanding access to broadband; subscriber figures have risen and policy frameworks continue to be implemented and revised. However, additional potential for growth and improvement remains. As ITU-D continues to undertake activities intended to improve broadband access on a global basis, the countries in the Americas are working to develop regional initiatives intended to guide future ITU-D efforts. This paper will discuss the state of broadband in the Americas, present an overview of policy and regulatory frameworks, examine relevant ITU-D activities and regional initiatives, and present recommendations to promote the rapid uptake and development of broadband.

### 2. THE STATE OF BROADBAND IN THE AMERICAS

Broadband in the Americas region has continued to grow since the Connect Americas Summit in July 2012, but there remains significant potential to improve access and adoption. As has been the case in other parts of the world, the strong increase in mobile broadband penetration and adoption over the past few years has been one of the major trends in the region, although the expansion of fixed networks remains an important avenue by which to improve broadband access. Despite important gains, however, there is still significant variability between the most-connected and least-connected countries in the region, from the perspective of both fixed and mobile broadband networks and services. This section will examine broadband subscriber growth, the availability of broadband access technologies, and access to broadband in the Americas as compared to other regions.

#### 2.1. Wireline and wireless broadband subscriber growth

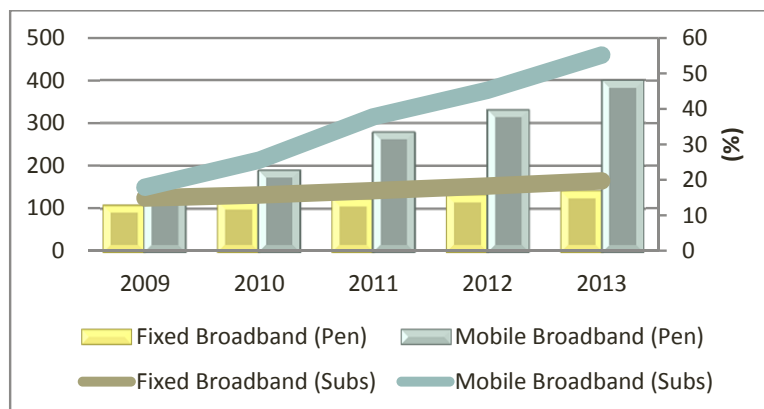
Over the last five years, the number of broadband subscriptions and the penetration rate of both fixed (wired) and mobile broadband networks have increased significantly, as shown in Figure 1. At the end of 2013, there were over 164 million fixed broadband subscriptions in the Americas, representing an approximately 8 per cent growth rate as compared to the number of subscriptions reported in 2012 at the Connect Americas Summit.<sup>1</sup> Not surprisingly, the largest markets have the most subscribers, with an estimated 90 million subscriptions in the United States, while Brazil and Mexico reached 18.2 million and 12.7 million, respectively. The number of wireless mobile broadband subscriptions grew even more significantly; to over 460 million, a 22 per cent increase over the number of subscriptions reported in 2012.<sup>2</sup> The high growth in mobile broadband penetration is seen in countries like Brazil, where penetration increased from 10 per cent in 2010 to over 36 per cent in 2012 and Costa Rica, which grew from 2 per cent penetration in 2010 to over 14.5 per cent in 2012.<sup>3</sup>

<sup>1</sup> See Regulatory Impact of Convergence and Broadband for the Americas available at: <http://www.itu.int/ITU-D/connect/americas/DisplayCategory.asp?Language=en&Cat=9>

<sup>2</sup> ITU, ICT Statistics, 2006-2013 ICT Data for the World, available at <http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>.

<sup>3</sup> ITU, ICT Eye, Costa Rica: Country Profile, available at <http://www.itu.int/net4/itu-d/icteye/CountryProfile.aspx>; and Broadband Commission, Annual Report 2012, at 84-85, available at <http://www.broadbandcommission.org/documents/bb-annualreport2012.pdf>.

**Figure 1: Growth of fixed and mobile broadband subscriptions and penetration in the Americas, 2009-2013**

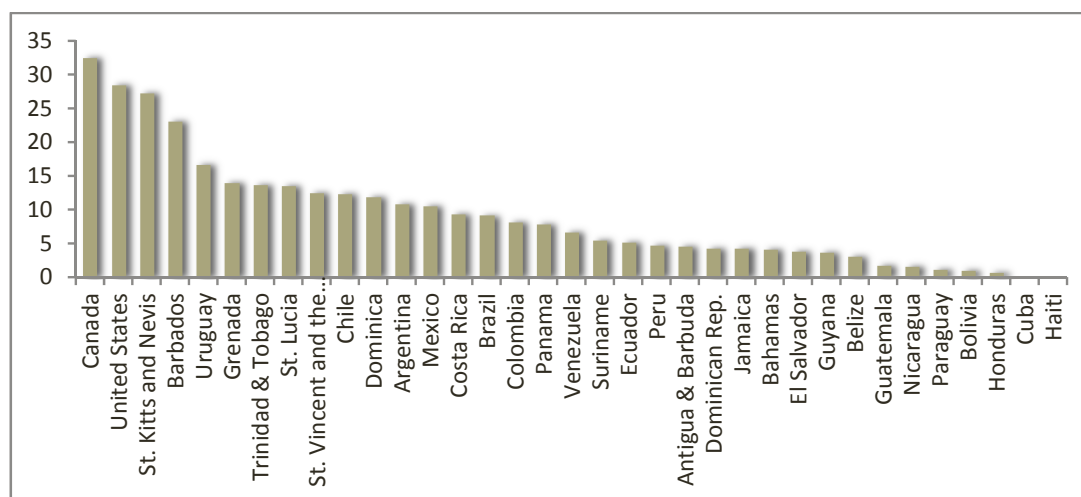


Source: ITU, ICT Statistics 2006-2013.

These trends demonstrate the growth in broadband access and high-speed broadband networks in the region. It also shows how enabling policies can effectively speed up the roll-out, access, and demand for broadband networks (see **Section 2**).

Despite promising growth, however, broadband penetration still varies greatly across the region. As shown in **Figure 2**, Canada, the United States, and St. Kitts and Nevis led the region in fixed broadband penetration in 2012, with more than 32, 28, and 27 subscriptions per 100 inhabitants respectively. Barbados followed with more than 23 fixed broadband subscriptions per 100 inhabitants. Then there was a gap of more than six points before the next group of countries: the Caribbean islands of Grenada, Trinidad and Tobago, St. Lucia, and St. Vincent and the Grenadines as well as South American countries Uruguay, Chile, Mexico and Argentina, with between 10 and 17 fixed broadband subscriptions per 100 inhabitants. At the far end of the spectrum, Honduras, Cuba, and Haiti all have less than 1 fixed broadband subscription per 100 inhabitants.

**Figure 2: Fixed broadband subscriptions per 100 inhabitants, Americas, 2012**



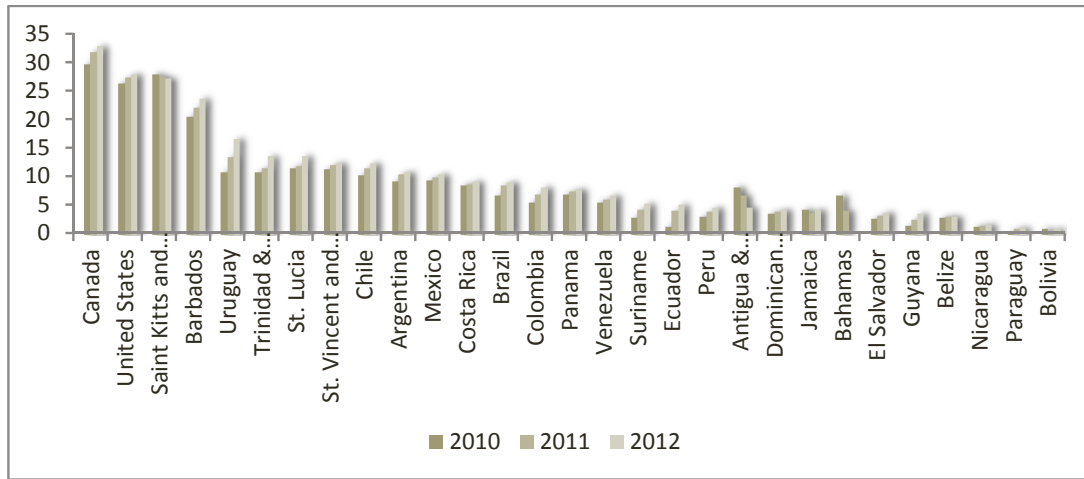
Source: ITU, ICT Statistics, 2006-2013.

Aside from the absolute numbers, analysing growth patterns also helps to understand potential trends in the region. Comparing data from 2010 to 2012, fixed broadband subscriptions in the region continue to grow very slowly, if at all. The trend for fixed broadband subscriptions in the region, as



seen in **Figure 3**, is positive overall, but some countries have actually experienced a contraction in fixed broadband subscriptions. In countries including Argentina, Chile, Colombia, Ecuador, El Salvador, Guyana, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago, and Uruguay, there was healthy growth in fixed broadband subscriptions from 2010 to 2012. In Antigua & Barbuda, by contrast, the number of fixed broadband subscriptions per 100 inhabitants has been decreasing significantly, with a 2012 penetration rate more than 40 per cent lower than the 2010 rate. Finally, some countries that reported a decrease in fixed broadband subscriptions penetration from 2010 to 2011, such as Jamaica and Bolivia, reported an increase from 2011 to 2012, bringing them to levels that slightly exceeded their 2010 numbers.

**Figure 3: Growth of fixed broadband subscriptions per 100 inhabitants, Americas 2010-2012**

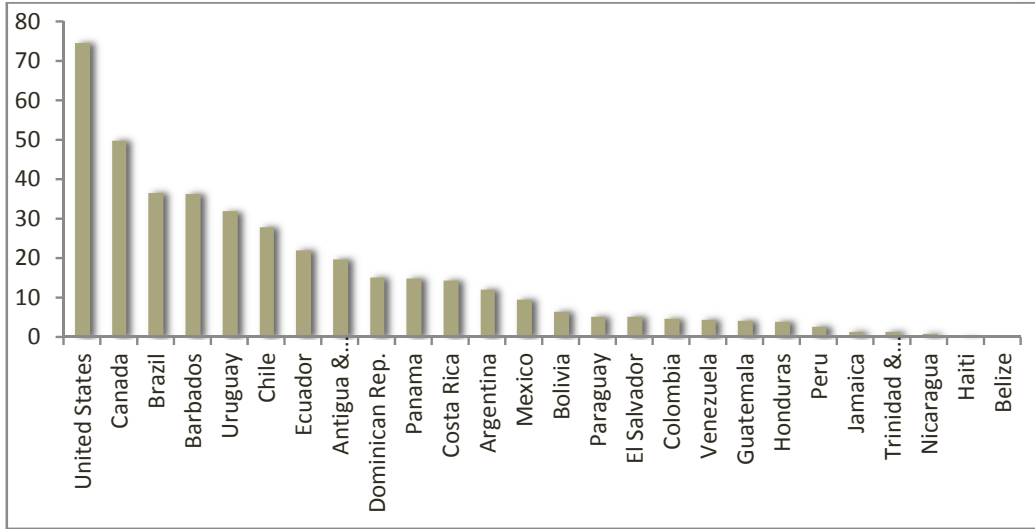


Source: ITU, ICT Statistics, 2006-2013.

Note: Information on 2012 penetration in Bahamas is not available at ITU Statistics.

The picture for mobile broadband penetration in the region for 2012 was quite similar (see Figure 4). The United States and Canada led the way again, while in South America, Brazil came out on top with more than 36 active mobile broadband subscriptions per 100 inhabitants. Barbados, Uruguay, and Chile followed, in that order; all had between 22 and 36 active mobile broadband subscriptions per 100 inhabitants. Antigua and Barbuda, Dominican Republic, Panama, Costa Rica, and Argentina had between 12 and 20 mobile broadband subscriptions per 100 inhabitants. All other countries in the region had fewer than 10 active mobile broadband subscriptions per 100 inhabitants, with Haiti, Belize, Bahamas, Cuba, Dominica, Grenada, Guyana, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, and Suriname all having less than 1 active mobile broadband subscription per 100 inhabitants.

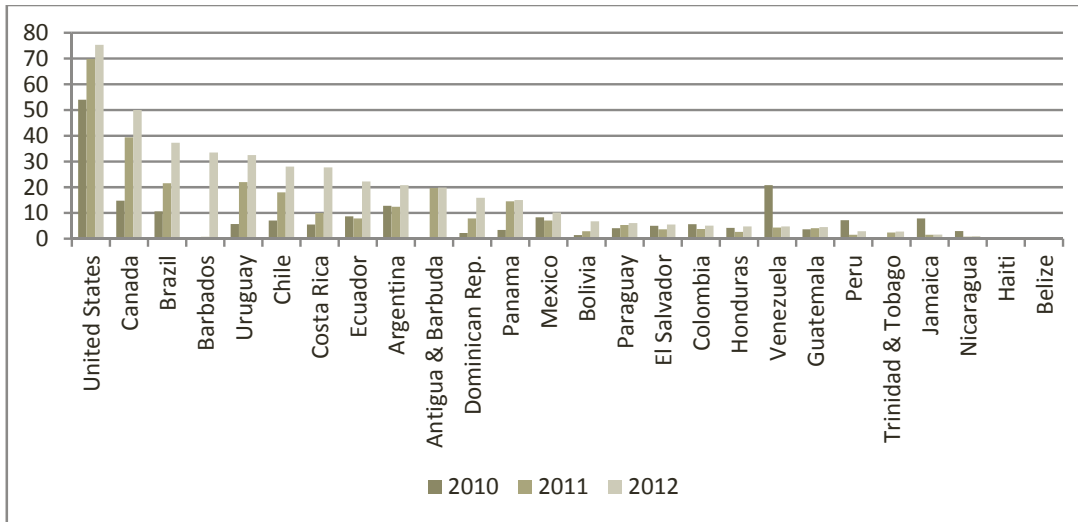
Figure 4: Active mobile broadband subscriptions per 100 inhabitants, Americas, 2012



Source: ITU, World Telecommunication/ICT Indicators database 2013 (17<sup>th</sup> Edition).<sup>4</sup>

As in other parts of the world, mobile broadband penetration has grown much more rapidly than fixed. Some countries have seen the number of active mobile broadband subscriptions per 100 inhabitants increase two-to three-fold from 2011 to 2012, with Brazil growing from about 21 to more than 37 per 100, Uruguay from 22 to 32 per 100, Chile from about 18 to more than 28 per 100, Costa Rica from 10 to more than 27 per 100, and Ecuador from about 10 to 22 per 100 (see **Figure 5**). Costa Rica’s increase is likely due to the liberalization of the mobile market in 2010. Although the growth in many of these countries is measured from a low starting point, the continued upward trend is particularly noteworthy.

Figure 5: Active mobile broadband subscriptions per 100 inhabitants, Americas 2010-2012



Source: ITU, World Telecommunication/ICT Indicators database 2013 (17<sup>th</sup> Edition) and World Telecommunication/ICT Indicators database 2011 (15<sup>th</sup> Edition).

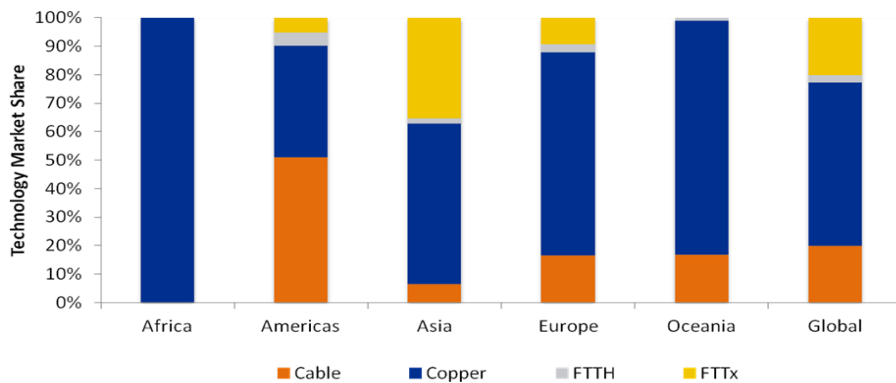
<sup>4</sup> ITU, World Telecommunication/ICT Indicators database 2013 (17<sup>th</sup> Edition), at Annex 3 available at <http://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>

The significant increase in wireless broadband indicates that that in many countries in the region, wireless networks may be the easiest and most cost-efficient solution for driving broadband deployment and access. This may also make wireless the best tool to reduce the digital divide within many of the region’s countries.

## 2.2. Availability of wireline and wireless access technologies

Figure 6 indicates the market share of cable, copper, fiber to the home (FTTH) and fiber to the x (FTTx) wireline access technology in each indicated region. In the Americas, nearly 50 per cent of the fixed broadband market is served by cable networks, more than double the amount of any other region.

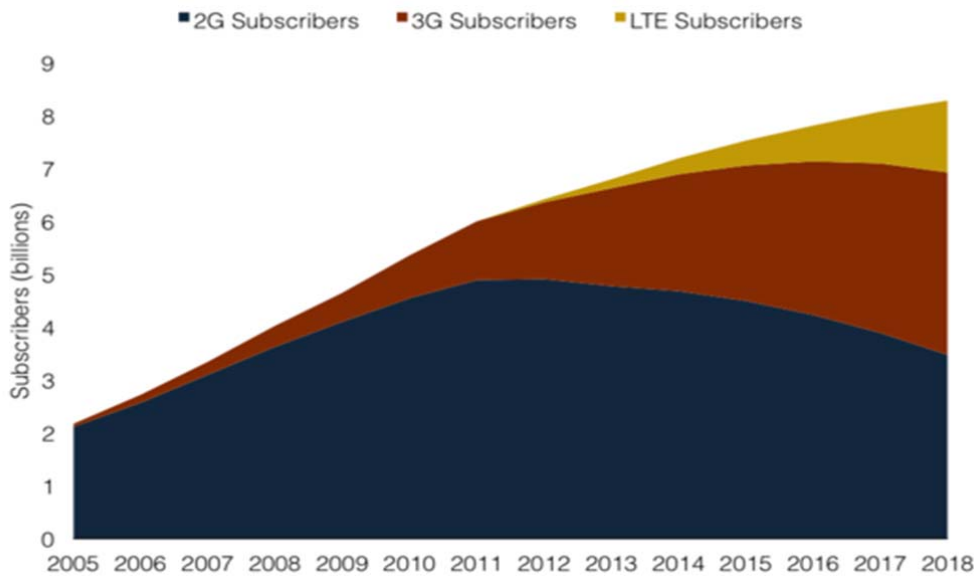
**Figure 6: Fixed broadband technology market share by region: Q1 2013**



Source: Point Topic, World Broadband Statistics Q1 2013.

Around the world, including across the Americas, wireless technologies continue to be the largest source of growth in broadband access. To meet increasing demands for wireless broadband services, operators are deploying 3G- and 4G-capable networks at an increasing rate, as they seek to migrate from 2G networks. The pace of this migration varies widely by region. In the region, North America has led the way in this migration, but even in Latin America, 2G subscriber figures levelled off in 2011 and 2012, and showed their first decline in 2013, and global forecasts show a continuing decline in 2G subscriptions, while 3G and 4G adoption will continue to increase (Figure 7). In North America, 3G and LTE (Long Term Evolution) accounted for more than 80 per cent of wireless subscribers at the end of 2013, while in Latin America they accounted for less than 30 per cent of subscribers.

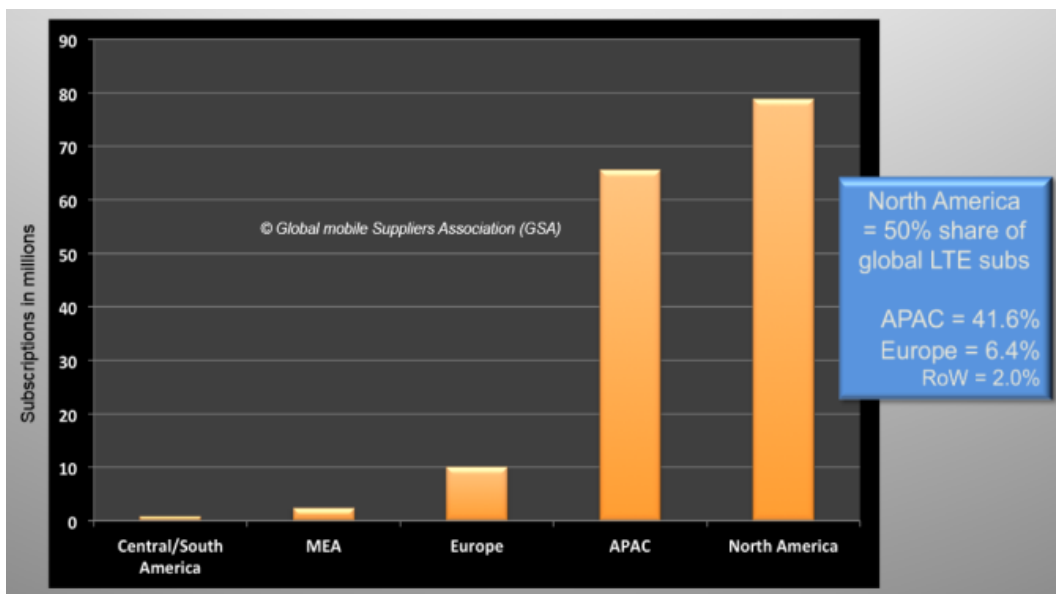
Figure 7: Global mobile subscribers by technology (2005-2018)



Source: TeleGeography, GlobalComms Forecast Service, February 2014.

While there is still considerable room for 2G subscribers to migrate to mobile broadband-capable 3G devices in Latin America and the Caribbean, the rapid commercialization of 4G devices and networks will provide additional options for mobile broadband services. Although LTE has achieved considerable adoption in certain markets, notably North America and the Asia-Pacific region, adoption rates are still low in other regions (Figure 8).

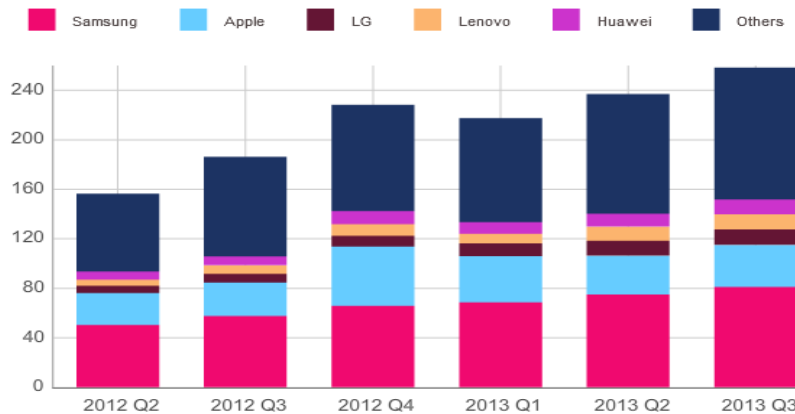
Figure 8: LTE subscriptions by region, Q3 2013



Source: Informa Telecoms and Media to GSA, December 2013.

As 3G and 4G networks are increasingly deployed, the broadband capacity they offer opens the door to greater adoption of smartphones in those markets. During the third quarter of 2013, 468 million mobile phones were sold across the world, nearly 6 per cent more than in the third quarter of 2012 (see Figure 9). Smartphone sales have also continued to grow significantly. A recent study shows that worldwide smartphone sales rose to more than 258 million units in the third quarter of 2013, a 39 per cent year-over-year increase.<sup>5</sup>

**Figure 9: Top 5 worldwide smartphone vendors Q1 2013**



Source: IDC Worldwide Mobile Phone Tracker, January 27, 2014.

In January 2014, IDC reported that the worldwide smartphone market had reached another milestone, selling more than one billion units in 2013, up to 38.4 per cent more than the 725.3 million units in 2012.<sup>6</sup>

Tablet sales reflect an interesting trend as they have begun to slow worldwide. While some markets (e.g., the United States) appear to be reaching high levels of consumer saturation, emerging markets continue to show significant growth in tablet sales.<sup>7</sup> The growth in emerging markets, however, has not been enough to sustain the very-high worldwide growth rate from previous years. In 2013, worldwide tablet sales totalled 217.1 million units, an increase from the 144.2 million units sold in 2012, representing an overall year-over-year growth rate of 50.6 per cent. The demand for tablets remained substantial for the fourth quarter of 2013, increasing 62.4 per cent as compared to the previous quarter. However, the growth rates are lower than those reported a year earlier. The year-over-year growth rate reported in the fourth quarter of 2013 was 28.2 per cent, as compared to 87.1 per cent growth when comparing fourth quarter sales in 2011 and 2012.<sup>8</sup>

Going forward, the increase in mobile data use is expected to be the main driver of telecommunications retail revenue growth in Latin America as smartphone penetration approaches 60 per cent by 2018.<sup>9</sup> As shown in Figure 10, from 2013 to 2018, mobile data traffic from smartphones in Latin America is projected to grow at a compound annual growth rate of 71 per cent and smartphones are expected to account for 60.2 per cent of mobile traffic data in 2018, compared

<sup>5</sup> <http://www.webpronews.com/smartphone-market-grew-39-during-third-quarter-2013-10>

<sup>6</sup> IDC, "Worldwide Smartphone Shipments Top One Billion Units for the First Time," Jan. 27, 2014, available at <http://www.idc.com/getdoc.jsp?containerId=prUS24645514>.

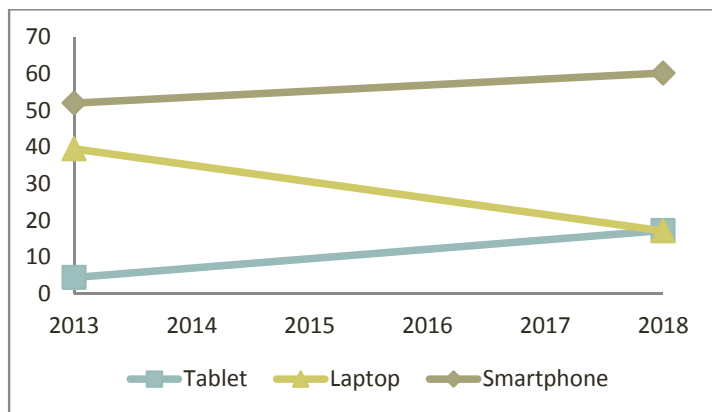
<sup>7</sup> IDC, "A Strong Holiday Quarter for the Worldwide Tablet Market, but Signs of Slower Growth are Clear," Jan. 29, 2014, available at <https://www.idc.com/getdoc.jsp?containerId=prUS24650614>.

<sup>8</sup> IDC, "A Strong Holiday Quarter for the Worldwide Tablet Market, but Signs of Slower Growth are Clear."

<sup>9</sup> Iacopino, Pablo, "Mobile handset data revenue will be driven by volume in emerging markets and value in developed countries, Analysys Mason, Jan. 7, 2014, available at <http://www.analysismason.com/About-Us/News/Insight/mobile-handset-data-Jan2014-RDDG0/>.

to 52 per cent in 2013.<sup>10</sup> In 2018, tablets are projected to account for 17 per cent of total traffic, while laptops are expected to decrease from 40 per cent of total mobile data traffic in 2013 to 17 per cent in 2018.<sup>11</sup>

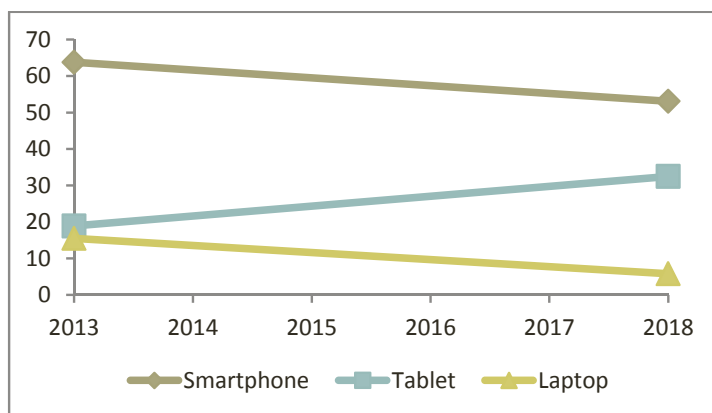
**Figure 10: Projected amount of mobile data traffic use by access technology in Latin America (per cent)**



Source: Cisco Visual Networking Index Mobile Forecast: 2013-2018.

In North America, the use patterns are slightly different. Smartphone traffic as a percentage of total mobile data traffic is projected to actually decline from 64 per cent to 53 per cent from 2013 to 2018, while data traffic from tablets is expected to grow from 19 per cent of total traffic to 33 per cent by 2018, and traffic from laptops is projected to decline from 15.5 per cent to 6 per cent (see Figure 11).<sup>12</sup>

**Figure 11: Projected amount of mobile data traffic use by access technology in North America (per cent)**



Source: Cisco Visual Networking Index Mobile Forecast: 2013-2018

<sup>10</sup> Cisco, Visual Networking Index Mobile Forecast Highlights, 2013-2018: Latin America – Device Growth Traffic Profiles, available at [http://www.cisco.com/assets/sol/sp/vni/forecast\\_highlights\\_mobile/index.html](http://www.cisco.com/assets/sol/sp/vni/forecast_highlights_mobile/index.html)

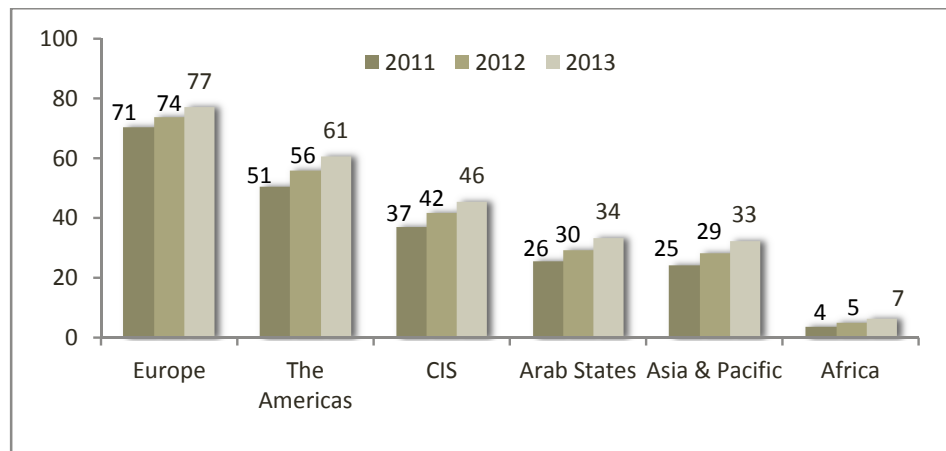
<sup>11</sup> Cisco, Visual Networking Index Mobile Forecast Highlights, 2013-2018: Latin America – Device Growth Traffic.

<sup>12</sup> Cisco, Visual Networking Index Mobile Forecast Highlights, 2013-2018: North America – Device Growth Traffic.

### 2.3. Americas access to broadband in comparison with other regions

How do the Americas compare to other regions in terms of access to advanced services? Starting with basic Internet access, in comparison with the other five regions, the Americas region ranks second in terms of households with Internet access. With more than 60 per cent of households having some form of Internet access in 2013, the region tops the Commonwealth of Independent States (CIS), the Arab States, the Asia-Pacific region and Africa (see **Figure 12**). However, if Canada and the United States are excluded from the analysis, the regional picture changes appreciably. In 2012, approximately 34 per cent of households had Internet access in the Americas (excluding Canada and the United States), as compared to 56 per cent if all countries are included.<sup>13</sup> On the other hand, the Americas region lagged behind Europe in this metric by approximately 17 points in 2013, even if Canada and the United States are included. However, average growth of households with Internet access per year has been similar in both regions during recent years, with nearly 7 per cent growth from 2011 to 2012 in Europe and 10 per cent growth in the Americas.

**Figure 12: Households with Internet access, by region, 2011 to 2013 (per cent)**



Source: ITU, ICT Statistics 2006-2013.

Beyond basic Internet access, (**Figure 13** and **Figure 14**) break down the number of fixed and mobile broadband subscriptions around the world by region and show the growth in fixed and mobile broadband subscriptions for the last few years. The figures are similar to that for basic Internet access, with the Americas region coming ranking second. In 2012, although the region as a whole had 16 fixed subscriptions per 100 inhabitants, if Canada and the United States are excluded, the figure was 8.05 per 100.<sup>14</sup> The Americas as a whole had almost a 7 per cent rate of growth in fixed broadband subscriptions from 2011 to 2013.

<sup>13</sup> While the ITU has published regional statistics for year-end 2013, country-level statistics are not available at the time of this writing. Thus, in order to consider the region exclusive of Canada and the United States, 2012 figures were used.

<sup>14</sup> While the ITU has published regional statistics for year-end 2013, country-level statistics are not available at the time of this writing. Thus, in order to consider the region exclusive of Canada and the United States, 2012 figures were used.

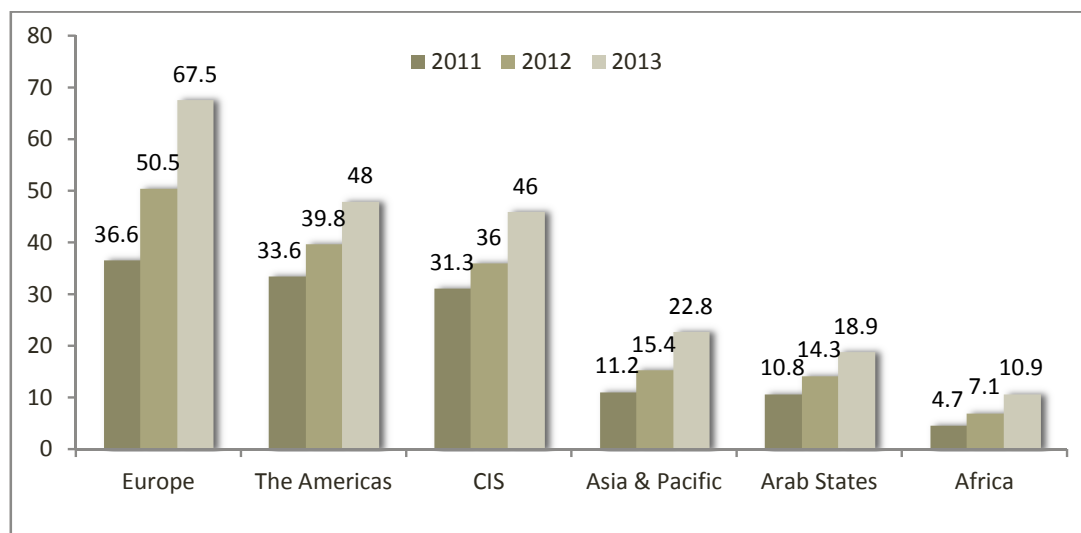
**Figure 13: Fixed broadband subscriptions per 100 inhabitants by region, 2011-2013**



Source: ITU, ICT Statistics 2006-2013.

Of note, each region has significantly more mobile broadband subscriptions than fixed broadband subscriptions. Specifically, the Americas as a whole had almost three times more mobile broadband subscriptions than fixed broadband subscriptions at the end of 2013, or 48 subscriptions per 100 inhabitants. In 2012, the region had 39.8 mobile broadband subscriptions per 100 inhabitants, as compared to 19.24 per 100 if Canada and the United States were excluded, or 2.4 times as many mobile subscriptions as fixed subscriptions per 100 inhabitants.<sup>15</sup> Additionally, in the Americas mobile broadband subscriptions grew at a faster rate from 2011-2013, around 16 per cent compared to a rate of less than 7 per cent for fixed. If the trend continues, the gap between mobile and fixed subscribers will continue to grow (see **Figure 14**).

**Figure 14: Active mobile broadband subscriptions per 100 inhabitants by region, 2011-2013**



Source: ITU, ICT Statistics 2006-2013.

<sup>15</sup> While the ITU has published regional statistics for year-end 2013, country-level statistics are not available at the time of this writing. Thus, in order to consider the region exclusive of Canada and the United States, 2012 figures were used.



### 3. OVERVIEW OF POLICY AND REGULATORY FRAMEWORKS IN THE AMERICAS

Across the Americas, many countries have sought to design policies that will facilitate the deployment of broadband. While some of these initiatives are broad in scope, others are focused on more specific short-term goals. However, they both embrace the common goal of expediting and expanding broadband access. Accomplishing this goal has required countries to consider not just how to encourage the building and expansion of broadband networks, but also how to drive demand for the services that these networks can provide in ways that will meet the needs of all users. Addressing both sides of the broadband development equation will be critical to increase access to broadband technology and services and minimize the digital divide. This section will identify broadband plans that have been developed in the region, discuss the development of broadband policy and mechanisms intended to bridge the digital divide, and describe some of the initiatives countries have used to increase access to broadband technology and services.

#### 3.1. Broadband plans in the Americas region

National broadband plans are a vital step toward fostering policies to drive universal broadband access. It is a way for governments to establish a set of goals and encourage coordination among government entities, as well as between government and the private sector, in order to encourage economic growth and enhance access to new technologies and services. As shown in Table 1, across the Americas region, a majority of countries have adopted national broadband plans. Many of these plans rightly focus on promoting both the supply of broadband networks and services as well as on generating demand for, and increasing the adoption of, broadband services.

Table 1: National broadband plans in the Americas

Country	Plan and Year Adopted
Antigua and Barbuda	Government Assisted Technology Endeavor (GATE) – 2012
Argentina	National Broadband Plan - Argentina Connected – 2010
Barbados	National ICT Strategic Plan of Barbados – 2010
Belize	ICT National Strategy – 2011
Brazil	National Broadband Plan – 2010
Canada	Broadband Canada: Connecting Rural Canadians - 2009
Chile	Strategy for Digital Development 2010-2014
Colombia	Live Digital Plan – 2010
Costa Rica	National Broadband Strategy – 2012
Dominican Republic	E-Dominican Rural Broadband Connectivity in Dominican Republic – 2007 Indotel Connects You-2008 Rural Broadband Connectivity Project II – 2010 Fibre Optics in Underserved Areas for Dominican Republic - 2010
Ecuador	Ecuador Digital Strategy 2.0 and Broadband Plan - 2011
Grenada	ICT – A strategy and Action Plan for Grenada – 2006
Guyana	E-Guyana – 2011
Honduras	Resolution 005/10 - Regulations to regulate broadband connectivity – 2010

Jamaica	National ICT Strategy – 2007
Mexico	Digital National Strategy – 2013
Panama	National ICT Strategy 2008-2018
Paraguay	Paraguay 2013 Connected and National Telecommunications Plan – 2011
Peru	National Plan for Development of Broadband in Peru - 2010
St. Kitts and Nevis	National Communications and Information Technology Strategic Plan – 2006
Trinidad and Tobago	National ICT Strategy Fastforward: Accelerating into the Digital Future – 2008
United States	Connecting America – 2010
Uruguay	Ceibal Plan - 2007 Digital Agenda – 2011-2015

Source: TMG.

### 3.2. Development of broadband policy

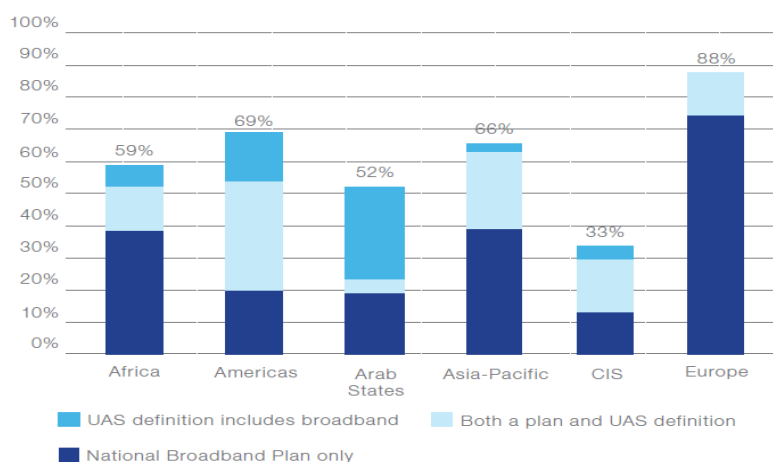
The broadband policies enacted for countries in the Americas region (and in the developing world in general) share some common characteristics in the strategies considered. Ultimately, the goal is to expand broadband availability to all to ensure that the economic, educational, and social benefits of broadband are universally available. To ensure this, the plans and policies have tended to:

- ✓ Focus on national backbone deployments, particularly by building-out a nationwide, fibre-optic broadband infrastructure that connects municipalities in underserved and unserved areas;
- ✓ Focus on mobile broadband deployments by auctioning International Mobile Telecommunications (IMT) spectrum;
- ✓ Address demand-side goals by encouraging the development of national content and applications, improving digital literacy, and building confidence and security in the use of broadband services and applications;
- ✓ Support network development and the acquisition of user devices by providing tax breaks on broadband devices and equipment;
- ✓ Encourage local governments to implement Wi-Fi hot spots in government buildings and public places;
- ✓ Establish targets to connect a certain percentage of households to broadband;
- ✓ Use public funding (universal service funds (USF), stimulus grants, etc.) to achieve specific deployment goals; and
- ✓ Encourage the development of both public and commercial services to increase demand, such as: e-education; e-health/telemedicine; e-government; e-commerce and e-business.

Countries have taken different approaches in implementing the initiatives noted above. Some countries develop a specific national broadband plan with targets to increase access to broadband. Other countries extend the scope of their universal services obligations to include broadband targets, defining broadband as a universal access service.<sup>16</sup> As shown in **Figura 15**, the Americas region tends to use a relatively equal mix of the two approaches.<sup>17</sup>

<sup>16</sup> Broadband Commission for Digital Development, "The State of Broadband 2013: Universalizing Broadband," at 56-57, Sep. 2013, available at <http://www.broadbandcommission.org/Documents/bb-annualreport2013.pdf>.

<sup>17</sup> Broadband Commission for Digital Development, "The State of Broadband 2013" at 57.

**Figure 15: Policy instrument used to develop broadband**


Source: Broadband Commission for Digital Development, *The State of Broadband 2013: Universalizing Broadband*.

For example, when Brazil announced its national broadband plan in May 2010, one of the plan's main goals was to triple broadband penetration by the end of 2014, partly through the introduction of basic packages (starting at USD 20 per month) to target 40 million households.<sup>18</sup> The plan also authorized a range of tax relief and financial incentives to reduce broadband access prices. Small and medium enterprises (SMEs) that provide broadband services, for example, can be exempted from paying into Brazil's universal service fund (FUST). The plan also calls for the development of a national telecommunication equipment industry, and proposes tax breaks and financing for purchases of equipment that incorporate Brazilian technology (see **Box 1**).

#### Box 1: Brazil's tax exemptions on broadband devices and recent results

Brazil introduced a range of tax breaks to help reduce the cost of mobile phones and tablets, aiming to increase access to broadband services, spur national equipment production, and all support local development of mobile applications. Specifically with regard to smartphones and tablets, the government exempted devices manufactured in Brazil from paying two types of taxes that together equal 9.25 per cent of gross revenues from retail sales.<sup>19</sup>

This was done by amending the Goods Act (Law 11196 of 2005). The Goods Act (known as "Lei do Bem") creates tax benefits to stimulate exports and technology innovation, and addresses digital inclusion programmes by reducing taxes on certain ICT equipment, including, for example, personal computers, modems, tablets, smartphones and others.

To benefit from the Goods Act exemption on smartphones, manufacturers must comply with a list of localization requirements, including the requirement to have a minimum number of national applications embedded in the device.<sup>20</sup> The government's goal is to support the national developers' ecosystem for solutions developed within the country and stimulate the development

<sup>18</sup> More details on the programme is available at <http://www4.planalto.gov.br/brasilconectado>.

<sup>19</sup> Law N. 12507 (October 11, 2011), and Decree N. 7981 (April 8, 2013), added tablets and smartphones, respectively, to the list of ICT equipment that benefit from the tax exemptions established at the Goods Acts.

<sup>20</sup> The minimum requirements on smartphones are established by Ministry of Communications' Portaria N. 87, from April 10, 2013, available at: <http://www.mc.gov.br/portarias/26712-portaria-n-87-de-10-de-abril-de-2013>

of applications and content targeted to a Brazilian audience, in Portuguese and without age restrictions. As such, manufacturers must include in their devices: (i) 5 apps from October 10 to December 31, 2013; (ii) 15 apps from January to June 30, 2014; (iii) 30 apps from July 1 through December 31, 2014; and (iv) 50 beginning on December 1, 2014.

In January 2014, the Ministry of Communications announced that the tax exemption for smartphones manufactured in Brazil under the Goods Act had prompted the approval of 216 national applications since October 2013.<sup>21</sup> As of January 2014, 11 device manufacturers are part of the initiative, including Apple (21 apps), CCE/Digibrás Indústria do Brasil (8 apps), Huawei (8 apps), LG (9 apps), Motorola Mobility (6 apps), Multilaser (5 apps), Nokia (16 apps), Philco (5 apps), Brazil's Positivo Informática (6 apps), Samsung (18 apps), and Sony Mobile (6 apps).<sup>22</sup>

Source: TMG.

Colombia released its national broadband plan in 2010, with the aim of transforming Colombia into a digital society by 2014. The plan, known as Vive Digital, includes a number of initiatives meant to encourage both broadband supply and demand. Colombia also provides tax exemption to broadband devices, and personal computers below ~\$1,200 have been VAT (16 per cent) exempted since 2006,<sup>23</sup> while tablets below ~\$650 have also been VAT exempt since 2012.<sup>24</sup> At the end of 2013, the Colombian government released its initial results. As of September 2013, there were 7.6 million broadband connections in the country, with 777 municipalities having fibre optic Internet access.<sup>25</sup> In addition, Internet penetration increased from 17 per cent in 2010 to 33 per cent by the end of 2013.<sup>26</sup> Regardless of the general approach chosen to implement measures to achieve broadband access for all, uptake of broadband requires attention to both the supply of and demand for broadband networks and services.

**Table 2** summarizes the main points to be addressed in order to drive broadband supply and demand.

<sup>21</sup> Ministro das Comunicações, “Aprovados mais de 200 aplicativos nacionais para smartphones,” Jan. 29, 2014, available at <http://www.mc.gov.br/telecomunicacoes/noticias/29681-aprovados-mais-de-200-aplicativos-nacionais-para-smartphones>.

<sup>22</sup> Ministro das Comunicações, “Lista de aparelhos que atendem aos requisitos técnicos mínimos e pacotes de aplicativos aprovados,” available at <http://www.comunicacoes.gov.br/telecomunicacoes/acoes-e-programas/desoneracao-de-smartphones/429-temas/programa-nacional-de-banda-larga-pnbl/desoneracao-de-smartphones/27260-lista-dos-aparelhos-beneficiados>

<sup>23</sup> Colombian Law 1111 of 2006, article 31, and Law 1607 of 2012, article 38.3.

<sup>24</sup> Colombian Law 1607 of 2012, article 38.9.

<sup>25</sup> Ministerio de Tecnologías de la Información y las Comunicaciones, “2013 el mejor año de Colombia en cuanto a las TIC,” Dec. 23, 2013, available at <http://www.mintic.gov.co/index.php/prensa/noticias/2825-2013-el-mejor-ano-de-colombia-en-cuanto-a-las-tic>

<sup>26</sup> Ministerio de Tecnologías de la Información y las Comunicaciones, “2013 el mejor año de Colombia en cuanto a las TIC,” Dec. 23, 2013, available at <http://www.mintic.gov.co/index.php/prensa/noticias/2825-2013-el-mejor-ano-de-colombia-en-cuanto-a-las-tic>

**Table 2: Supply and demand driven initiatives**

Supply	Demand
✓ Build-out of national fibre networks	✓ Support development of local digital content and apps
✓ Increase availability of IMT spectrum	✓ Sponsor ICT training and R&D programmes
✓ Private sector financing	✓ Encourage digital literacy for business & citizens
✓ Public sector financing	✓ Access to broadband at health and education facilities
✓ Facilitate deployment of ICT infrastructure	✓ Access to Wi-Fi in public places and buildings
✓ Promote flexible spectrum use	✓ Promote e-commerce
✓ Tax breaks on services and devices	
✓ Convergence-friendly legal and regulatory framework	
✓ Promote competition	

Source: TMG.

### 3.3. Policy mechanisms to bridge the digital divide

Regardless of the general approach to implementing initiatives to promote broadband access, the region still has a significant number of inhabitants without access to broadband. Even within the countries with the highest penetration rates, certain populations and locations do not have adequate access – or any access – to broadband services. To bring broadband to unserved and underserved populations and places, countries in the region are implementing creative digital inclusion policies.

Chile, for example, launched a wide-ranging plan called the Digital Agenda: Imagine Chile 2013-2020 (Imagine Chile) to reduce the digital divide. The government has

outlined 14 areas of focus, with 30 different initiatives that seek to facilitate access to telecommunications networks and services to all Chileans.<sup>27</sup> These initiatives aim to promote efficient use of spectrum, stimulate demand for broadband services, and increase the deployment of networks, including backbones, as well as promoting initiatives to build new fibre optic cable routes.<sup>28</sup>

To increase the availability of Internet access to the public, Chilean regulator SUBTEL (Subsecretaría de Telecomunicaciones) is planning to award licenses to deploy 1,364 public Wi-Fi hotspots free of charge, in 341 localities.<sup>29</sup> The project is to be co-financed by SUBTEL, using the Chilean Universal Service Fund (Development Fund for Telecommunications) and resources from regional governments.<sup>30</sup> The subsidies will be awarded on the condition that those receiving licenses will offer free public Wi-Fi for five years.

An important factor in bridging the digital divide is increasing digital literacy. Imagine Chile’s goal for education by 2020 includes connecting 70 per cent of high schools to high speed Internet, training

<sup>27</sup> Agenda Digital Imagina Chile 2013-2020, May 17, 2013 available at <http://www.gob.cl/media/2013/05/Agenda-Digital-2013-2020.pdf>.

<sup>28</sup> Agenda Digital Imagina Chile 2013-2020, at 26.

<sup>29</sup> Agenda Digital Imagina Chile 2013-2020, at 28.

<sup>30</sup> SUBTEL, “SUBTEL Publica Bases Para Segundo Concurso de Puntos WiFi Gratuitos a Nivel Nacional,” Sept. 3, 2013, [http://www.subtel.gob.cl/index.php?option=com\\_content&view=article&id=3263%3Asubtel-publica-bases-para-segundo-concurso-de-puntos-wifi-gratuitos-a-nivel-nacional&catid=95%3Aservicios-telecomunicaciones&Itemid=71](http://www.subtel.gob.cl/index.php?option=com_content&view=article&id=3263%3Asubtel-publica-bases-para-segundo-concurso-de-puntos-wifi-gratuitos-a-nivel-nacional&catid=95%3Aservicios-telecomunicaciones&Itemid=71).

half of the teachers to use ICTs in the classroom, and making digitally available 100 per cent of educational resources covering curriculum learning objectives.<sup>31</sup> In order to achieve these objectives, the plan calls for promoting and supporting initiatives that provide the necessary infrastructure to integrate ICTs in education and make educational resources accessible anywhere.<sup>32</sup>

#### Box 2: Policy mechanisms in Peru and Antigua and Barbuda

##### Peru: Connecting the unconnected

Peru has launched a policy to increase inclusion among users located in very remote areas. In December 2013, Peruvian private investment promotion agency ProInversión, after receiving bids from 16 interested firms, issued a license to Gilat to Home Peru to install a terrestrial high-capacity broadband network to 70 localities in one of the country's most sparsely populated regions, the Loreto region, as part of the Amazon Integration Project.<sup>33</sup> Gilat to Home Peru will provide fixed public telephony service in 26 localities; Internet access in 54 localities and 88 public institutions (e.g., colleges or schools, health centres, municipalities and police stations); and Intranet access in those same 88 institutions.

##### Antigua and Barbuda: ICT Cadet Programme

As part of Antigua and Barbuda's Government Assisted Technology Endeavour (GATE), the government is seeking to combat the nation's high unemployment rate by equipping youth with entry-level ICT skills as a means to obtaining gainful employment. The ICT Cadet Programme recruits individuals who have completed secondary school and/or equivalent examinations and who are interested in working in information technology-related fields. The programme helps participants to acquire technical skills and workplace experience. The "boot camp"-style programme is intended to teach the cadets specific skills, tools, and technologies over a six-month period in a zero-distraction environment.<sup>34</sup>

Source: TMG.

### 3.4. Initiatives to increase access to broadband technology

One of the key areas that governments in the region have focused on is expanding the reach of broadband networks so that they provide access to as many people as possible.<sup>35</sup> Many countries are implementing plans to install backbone networks to expand access to broadband services. Backhaul networks are being improved to help accommodate growth in mobile traffic. In all these cases, public and private partnerships are playing a key role in connecting the region.

<sup>31</sup> Agenda Digital Imagina Chile 2013-2020, at 42.

<sup>32</sup> Agenda Digital Imagina Chile 2013-2020, at 39.

<sup>33</sup> Convergencia Latina, "ProInversión to award today connectivity project for Loreto – San Martin region," Dec. 18, 2013, available at <http://www.convergencialatina.com>, and ProInversión, "Loreto–San Marin Amazon Integration to the Terrestrial Telecommunications Network," Dec. 2013, at 24 available at [http://www.proyectosapp.pe/RepositorioAPS/1/2/JER/PROJECT\\_PRESENTATION/ppt%20de%20proyectos%20ENG%20pptx.pdf](http://www.proyectosapp.pe/RepositorioAPS/1/2/JER/PROJECT_PRESENTATION/ppt%20de%20proyectos%20ENG%20pptx.pdf)

<sup>34</sup> Government Assisted Technology Endeavour (GATE), "ICT Cadet Program Background," available at [http://gateantigua.ag/ictcadets\\_background.php](http://gateantigua.ag/ictcadets_background.php).

<sup>35</sup> Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2013-2018, at 18, available at [http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white\\_paper\\_c11-520862.pdf](http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.pdf).

### 3.4.1. Expanding fibre networks

On a regional level, the Union of South American Nations (UNASUR) is working on the deployment of a 10 000-kilometre optical fibre ring to interconnect South America, which it expects to be ready in 2015. UNASUR meetings have also led to a bilateral agreement between Chile and Brazil to build and extend terrestrial and submarine cables connecting Fortaleza (a city in the Northeast region of Brazil) to Chile, the United States, and Europe. That project is expected to be completed by 2014 and will be carried out by a public-private consortium. Brazil had previously entered into a similar optical fibre interconnection agreement with Argentina. In January 2014, Brazilian state-owned telecommunications infrastructure provider Telebras signed a memorandum of understanding with Silica Networks Argentina and Silica Networks Chile to establish a partnership to build, operate, and maintain a fibre optic network in the region. This arrangement will provide Telebras with better access networks on the Pacific coast. Silica Networks Argentina and Silica Networks Chile own fibre networks with high capacity backbones that connect the cities of Santiago de Chile, Mendoza, Cordoba, Rosario, Buenos Aires, Bahia Blanca, Neuquen, Bariloche, Osorno, and Paso de Los Libres.<sup>36</sup>

On a national level, particularly in South America, various countries in the region are looking into deploying fibre networks (see **Box 3** below).

#### Box 3: National fibre optic deployment initiatives in South America

**Peru.** In December 2013, ProInversión awarded a license to deploy a national fibre optic backbone network to the Mexican consortium TV Azteca-Tendai.<sup>37</sup> The national fibre optic backbone network, expected to require investments of USD 323 million, will connect Lima and other provincial capitals.<sup>38</sup> It will involve the deployment, operation, and maintenance of 13,400 kilometres of fibre to link 22 departmental capitals, 180 provincial capitals, and more than 780 municipalities.<sup>39</sup> Peru's Minister of Transport and Communications, Carlos Paredes, asserted that once the network is deployed, home Internet access costs will decrease by up to 80 per cent.

**Argentina.** ArSat (Empresa Argentina de Soluciones Satelitales SA) announced an upcoming tender for the construction, installation, and operation of telecommunications equipment shelters.<sup>40</sup> This tender comes as part of Arsat's project to install 19,000 kilometres of fibre optic backbone across the country. The goal of the network is to improve content transmission capacity to all areas, particularly those with comparatively less capacity, like the Southern Cone, and to establish links with neighboring countries.

**Dominican Republic.** In January 2014, the Instituto Dominicano de las Telecomunicaciones (Indotel) unveiled new details of a National Fibre Optic Network project included in the government's 2014-2015 Biennial Plan.<sup>41</sup> The

<sup>36</sup> Brasil y Argentina Construirán Red de Fibra Óptica, Mediatelecom, Jan. 16, 2014, disponible en <http://www.mediatelecom.com.mx/index.php/agencia-informativa/noticias/item/57790-brasil-y-argentina-construiran-red-de-fibra-optica>.

<sup>37</sup> ProInversión, "TV Azteca-Tendai consortium awarded National Fibre Optic Backbone Network," Dec. 23, 2013, [http://www.proinversion.gob.pe/modulos/NOT/NOT\\_DetallarNoticia.aspx?ARE=1&PFL=1&NOT=2400](http://www.proinversion.gob.pe/modulos/NOT/NOT_DetallarNoticia.aspx?ARE=1&PFL=1&NOT=2400).

<sup>38</sup> ProInversión, "Red Dorsal Nacional de Fibra Óptica: Cobertura Universal Norte, Cobertura Universal Sur y Cobertura Universal Centro," available at <http://www.proyectosapp.pe/modulos/JER/PlantillaProyecto.aspx?ARE=0&PFL=2&JER=5682&SEC=22>.

<sup>39</sup> ProInversión, Red Dorsal Nacional de Fibra Óptica: Cobertura Universal Norte, Cobertura Universal Sur y Cobertura Universal Centro."

<sup>40</sup> Secom, "Arsat Convoca a Licitación para Instalar Red de Fibra Óptica," Jan. 16, 2014, available at <http://www.secom.gov.ar/index.php?pageid=13&noticiaid=31625>.

<sup>41</sup> In October 2008 the regulator announced that it expected a national fibre-optic backbone network to be complete before the end of 2010, providing broadband services to at least 90 per cent of the country, and ensuring that all households had access at least a 128kbps minimum speed. However, Indotel has revised its timetable on several occasions, with little in the way of concrete progress reported.

network will require investment of 2.675 billion Dominican Pesos (USD 61.72 million), of which USD 30 million is expected to be co-funded by the World Bank, and is expected to connect more than 120 localities.<sup>42</sup> The telecommunications services will be sold on a wholesale basis, especially to operators and public utilities, as well as provide connectivity to governmental entities. It is expected to reach 60 per cent of the population by 2020.

**Mexico.** The Mexican government has two major plans for telecommunications backbone networks that are designed to increase capacity for commercial operators and improve coverage and connectivity throughout the country. The first project will involve the use of 90 MHz of spectrum in the 700 MHz band – suitable for LTE services--at a total cost of around USD 10 billion. The second, smaller project consists of extending the state-owned power company's fibre optic network from 25,000 km to 60,000 km, and will cost an estimated USD 750 million.

Source: TMG.

Trinidad and Tobago has been experiencing steady growth in fixed-broadband penetration. This may be a result of its National ICT Plan 2012-2016, which identified the installation of broadband infrastructure capable of delivering access speeds of 100 Mbps and above to the majority of the population by 2016 as a strategic objective.<sup>43</sup> To meet this objective, the Telecommunications Authority of Trinidad and Tobago (TAT) announced a project to develop a broadband backbone infrastructure using a fibre optic cable system.<sup>44</sup> After the network is built, its operating costs are expected to be covered by revenues collected from leased capacity.<sup>45</sup> The project calls for a minimum capacity of 40 Gbps for the short and medium term, with additional dark fibres included to meet longer term demand. TAT expects to start the project in early 2014 and conclude it in two years, based on a budget of USD 69 million.

### 3.4.2. Increasing access to mobile networks

Spectrum is an indispensable resource for wireless communications. Governments in the region have realized that timely and fair access to spectrum must be a priority if wireless broadband is to flourish, and most have noted this in their broadband plans.

The Americas region as a whole has seen a dramatic increase in completed and planned spectrum auctions in recent years. Some examples include:

- **Bolivia:** After many years with the state-owned operator dominating the market, in January 2013, Bolivia's Autoridad de Fiscalización y Control de Social de Telecomunicaciones y Transportes (ATT) released Resolution 890/2012, which identifies spectrum expected to be auctioned in an effort to introduce more competition into the mobile market. In February 2013, ATT assigned the 1900 MHz band to Viva and Tigo. In June 2013, a tender for the 1.7/2.1 GHz (Advanced Wireless Services, or AWS) band was launched, but there has been no further action.
- **Brazil:** In June 2012, the 2.5 GHz LTE auction raised USD 1.42 billion. The auction also included 450 MHz spectrum for rural access, which regulator Anatel was not able to auction

<sup>42</sup> Indotel, "Un proyecto de banda ancha afianzará liderazgo de RD en las telecomunicaciones del Caribe," Jan. 30, 2014, available at <http://www.indotel.gob.do/index.php/cgblog/1963/Un-proyecto-de-banda-ancha-afianzara-liderazgo-de-RD-en-las-telecomunicaciones-del-Caribe>

<sup>43</sup> SmartTT, Trinidad and Tobago National ICT Plan 2012-2016, at 36, available at <http://cci.planning.gov.tt/sites/default/files/Trinidad%20and%20Tobago%20Final%20Draft.pdf>.

<sup>44</sup> TAT, Development of the Broadband Backbone Infrastructure in Trinidad and Tobago, at 1, available [here](#).

<sup>45</sup> TAT, Development of the Broadband Backbone Infrastructure in Trinidad and Tobago.



independently. The 2.5 GHz band was divided into five FDD sub-bands and two TDD sub-bands. The 450 MHz band was assigned coupled with the 2.5 GHz band on a regional basis.

- Canada: In February, 2014, Industry Canada announced the results of the 700 MHz auction, which began on January 14 with 10 bidders participating. The auction yielded the highest return for any spectrum auction in Canada, earning just over CAD 5.27 billion (USD 4.8 billion). Coverage obligations included in the licenses vary, and licensees must cover with high-speed packet access (HSPA) between 90 to 97 percent of the population in some specific areas, within 5 to 7 years from awarding.
- Chile: In February 2014, SUBTEL granted three licenses totalling 70 MHz in the 700 MHz band to Entel, Telefonica Chile and Claro, following a beauty contest process that began in October 2013. Within 18 months, 700 MHz licensees must establish coverage in 1,281 isolated locations, 503 schools, and over 13 specified routes in the country. The winners also have 24 months to deploy nationwide, 4G networks. The auction raised USD 20.6 million. Prior to that, in July 2012, SUBTEL granted spectrum licenses in the 2.5 GHz band auction to Claro, Entel, and Movistar following a beauty contest process that began in December of 2011. The licensees were given 12 months to deploy 4G networks on a national level, and 24 months to connect 543 remote localities to 4G technologies. The auction raised over USD 12.2 million.
- Colombia: In June 2013, seven frequency blocks were auctioned: three in the 1.7 GHz/2.1 GHz (AWS) band and four in the 2.5 GHz band. Three well-established mobile operators – Telefónica’s Movistar, América Móvil’s Claro and a partnership of Tigo and ETB, as well as two new entrants, including DirecTV and Avantel, secured spectrum in the auction. Proceeds surpassed government forecasts, amounting to slightly more than USD 400 million.
- Peru: In August 2013 Peru’s government awarded licenses to Telefonica Moviles and Americatel Peru in the 1.7/2.1 GHz (AWS) band following an auction that raised USD 257 million for the government. The two networks will need to cover 234 districts with LTE services within the next six years, and will have coverage in several cities by the middle of 2016.
- Venezuela: In December 2013, the National Telecommunications Commission launched an auction for spectrum in the 1.7/2.1 GHz (AWS) band and four paired spectrum blocks in the 2500-2690 MHz band, all with nationwide coverage. However, the tender is currently suspended, pending the appointment of the Committee to evaluate the bids. It is unclear when the process will restart.

Despite these successes, the region may face substantial challenges to wireless broadband growth in the medium and long term. The ITU has issued Report 2078 on “Estimated spectrum bandwidth requirements for the future development of IMT-

2000 and IMT-Advanced.”<sup>46</sup> The Report considers the amount of spectrum necessary to support growing demands and foster the continued development of mobile broadband services in 2015 and 2020.<sup>47</sup> The ITU noted that approximately 1300 MHz of spectrum is needed to deal with market growth in the Americas by 2015, while the total spectrum requirement for 2020 will vary based on the market development with 1720 MHz needed in those countries with higher market development and 1280 MHz need for those with lower market development.<sup>48</sup>

<sup>46</sup> ITU Recommendation M. 2078 (2006), “Estimated spectrum bandwidth requirements for the future development of IMT-2000 and IMT-Advanced,” available at <http://www.itu.int/pub/R-REP-M.2078>

<sup>47</sup> 4G Americas, “Analysis of ITU Spectrum Recommendations in the Latin American Region, Understanding Spectrum Allocations and Utilization,” Aug. 2013, available at <http://www.4gamericas.org/documents/Analysis%20of%20ITU%20Spectrum%20Recommendations%20in%20Latin%20America-August%202013.pdf>

<sup>48</sup> 4G Americas, “Analysis of ITU Spectrum Recommendations in the Latin American Region,” p. 3.

To date, only two markets in Latin America have allocated more than 400 MHz; five markets between 300 MHz and 400 MHz, while other countries in the region vary considerably.<sup>49</sup> As shown in Table 3, only Brazil, Chile and Colombia have allocated even 30 per cent of the ITU’s forecast, while Costa Rica, Nicaragua, Puerto Rico, Peru, and Uruguay have reached 20 per cent, with other countries between 10 per cent and 20 per cent.<sup>50</sup> As a region, Latin America has only allocated 19.8 per cent of the total amount of spectrum recommended by the ITU to meet broadband demand by 2015.<sup>51</sup>

**Table 3: Supply and demand driven initiatives**

Country	Percentage completed of the ITU Recommendation for 2015 (1300 MHz)	Percentage completed of the ITU Recommendation for 2020 (1720 MHz/1280 MHz)
Argentina	14.42%	11.05%
Bolivia	13.85%	10.47%
Brazil	38.65%	29.22%
Chile	30.38%	22.97%
Colombia	31.73%	23.98%
Costa Rica	20.05%	15.15%
Dominican Republic	16.49%	12.47%
Ecuador	13.85%	10.47%
El Salvador	15.69%	11.86%
Guatemala	16.20%	12.24%
Honduras	13.08%	9.88%
Mexico	18.70%	14.13%
Nicaragua	20.15%	15.23%
Panama	10.00%	7.56%
Paraguay	16.92%	12.79%
Peru	23.38%	17.67%
Uruguay	20.77%	15.70%
Venezuela	15.69%	11.86%

Source: 4G Americas, August 2013, available at p.10.

To address this shortfall, many countries in the region have assigned or are considering auctioning the so-called “digital dividend” in the 698-806 MHz band (“700 MHz band”) as it becomes available after terrestrial television broadcasters complete the digital television transition. The United States auctioned this band in 2008, while Canada and Chile auctioned the 700 MHz in early 2014.<sup>52</sup> Many countries in the region are not waiting for the analog switch-off, which in many countries will occur between 2015 and 2021 (see Table 4), to take place before auctioning spectrum in the 700 MHz band.

<sup>49</sup> 4G Americas, “Analysis of ITU Spectrum Recommendations in the Latin American Region,” p. 3.

<sup>50</sup> 4G Americas, “Analysis of ITU Spectrum Recommendations in the Latin American Region,” p. 3.

<sup>51</sup> 4G Americas, “Analysis of ITU Spectrum Recommendations in the Latin American Region,” p. 3.

<sup>52</sup> Industria Canada, Spectrum Management and Telecommunications, 700 MHz auction, available at [http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/h\\_sf10598.html](http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/h_sf10598.html).

Table 4: Status of the 700 MHz in selected countries

Country	Award Status	Allocated to Mobile Services	Band Plan Selected/Proposed	Analog Switch-off
Argentina	Planned for 2014	Yes	APT	2019
Bolivia	2012 (granted to state run operator) and 2013 (awarded)	Yes	APT	2020
Brazil	Planned for 2014	Yes	APT	2015-2018
Canada	On-going	Yes	U.S.	2011
Chile	Planned for 2014	Yes	APT	2018
Colombia	Planned for 2014	Yes	APT	2019
Costa Rica	Possibly for 2016	Yes	APT	2017
Dominican Rep.	N/A	Yes	N/A	2015
Ecuador	2012 (granted to state run operator); further spectrum planned to be awarded in 2014	Yes	APT	2019
El Salvador	N/A	Yes	N/A	2018
Jamaica	Originally planned for 2012, delayed due to lack of interest	Yes	U.S.	2015
Mexico	No. Planned to be granted to state run Telecomm Telegrafos.	Yes	APT	2012-2015
Panama	N/A	Yes	APT	N/A
Paraguay	Planned for 2014 to 2015	Yes	pending	2024
Peru	2014	Yes	APT	2020
United States	Awarded in 2008	Yes	U.S.	2009
Uruguay	2014	Yes	APT	2013-2015

Source: TMG.

As part of the process to make digital dividend spectrum available, countries throughout the Americas are deciding which band plan to adopt for the 700 MHz band. The two options being considered are the U.S. band plan and the APT band plan. This decision is significant because it will determine, in large part, economies of scale for devices and equipment and will impact regional initiatives that enable cross-border harmonization.

Across the region, countries have taken different approaches to their 700 MHz band plans. Canada and Jamaica officially adopted the U.S. band plan, while Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru and Uruguay have decided to adopt the APT band plan. In June 2013 the Eastern Caribbean Telecommunications Authority (ECTEL) – the telecommunications regulator for Dominica, Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines aligned its plan with the

United States, creating some spectrum blocks that are harmonized with the U.S. 700 MHz band plan, but without adopting the U.S. band plan in its entirety.

#### 4. ITU-D ACTIVITIES AND AMERICAS REGIONAL INITIATIVES

In addition to the specific national or regional policies and plans discussed in section 2, the countries in the Americas region are also engaged in several important initiatives to advance broadband with the support of the ITU. The ITU has long played a significant role in supporting initiatives to spur the development of broadband infrastructure in the developing world. The ITU Development Sector (ITU-D) carries out various projects designed to help countries further develop their ICT infrastructures. Each of the ITU-D regions identifies its most pressing needs, which then become the focus of Regional Initiatives (RIs) that are formally adopted at the ITU-D's World Telecommunication Development Conferences. Over the last several years, several of the RIs for the Americas have focused on various aspects related to promoting broadband networks and services. This section discusses the broad outlines of the ITU's interest in promoting broadband development, the current Americas RIs, as well as the preliminary RIs agreed upon at the last WTDC-14 Regional Preparatory Meeting (RPM) in the Americas.

##### 4.1. ITU Activities supporting broadband

The need to assist developing countries in maximizing the use of and access to broadband infrastructure was identified by the ITU-D in the 2010 Hyderabad Action Plan (HAP) as a priority, and WTDC-10 adopted the following as part of its work programme:

**Programme 1:** Information and communication infrastructure and technology development, in which the priority areas include mobile, broadband communications, and rural communications;

##### **Regional Initiatives:**

- "Development of a broadband infrastructure and achievement of regional interconnectivity and universal access" in Africa;
- "Broadband access and uptake in urban and rural areas" in the Americas and Asia-Pacific;
- "Broadband access networks" in the Arab States; and
- "ICT applications, including e-health" in Europe.

**Study Questions:** Eight questions currently being worked on focus on broadband issues, particularly with the aim of increasing access and uptake. Indeed, as evidenced through the regional preparatory meetings for WTDC-14, the need for assistance on broadband access and uptake continues to exist. Stakeholders in the six regions have met and preliminarily agreed on RIs, including the following broadband-related RIs:<sup>53</sup>

- Africa: RI-3 Development of broadband infrastructure and achievement of regional interconnectivity and universal access;
- Americas: RI-3 Broadband access and uptake;
- Arab States: RI-1 Broadband; and
- Asia Pacific: RI-4 Broadband access and uptake in urban and rural areas;
- CIS Countries: RI-4 Development of broadband access in the CIS countries;
- Europe: RI-2 Broadband ubiquity, including smart grids.

In highlighting the importance of continuing the work of the ITU-D in this area, countries should also undertake specific national and regional broadband initiatives to maximize the use of and access to broadband infrastructures.

<sup>53</sup> Director BDT, Document WTDC14/2-E, "Report of the Chairman of the RPM Coordination Meeting," Jan. 16, 2014, available at <http://www.itu.int/md/D10-WTDC14-C-0002/en>.

## 4.2. Current RIs for the Americas

WTDC-10 adopted the HAP to enable developing countries to promote the equitable and sustainable development of ICT networks and services.

HAP is a comprehensive package of activities, to be implemented by the ITU Telecommunication Development Bureau (BDT) over the 2011-2014 study period, and which includes: (i) a study group programme with 18 Study Questions assigned to two Study Groups; (ii) five programmes set as the area of focus for the BDT to apply over the 2011-2014 period; and (iii) 28 RIs to be implemented by Member States with the support of BDT.

For the Americas region, RIs on the following five topics were approved:

- RI – 1 Emergency communications
- RI – 2 Digital broadcasting;
- RI – 3 Broadband access and uptake in urban and rural areas;
- RI – 4 Reduction of Internet access costs; and
- RI – 5 Human capacity building for ICTs, with emphasis on persons with disabilities and people living in rural and deprived urban areas.

### 4.2.1. RI – 1 Emergency communications

**Objective:** Provide assistance to ITU Member States on disaster management (i.e., preparedness, including early warning, disaster response/relief, and rebuilding of telecommunication networks):

**Expected outputs:**

- ✓ Identification of suitable technologies to be used for emergency communications;
- ✓ Creation of common databases to share information on emergency communications;
- ✓ Design of national and subregional emergency communication plans and early-warning systems, taking into account the impact of climate change;
- ✓ Development of appropriate policy, regulatory and legislative frameworks on emergency communications at national and regional levels; and
- ✓ Increased emergency communications human capacity skills.

#### Box 4: BDT activities on RI

##### BDT activities on RI-1:

- ITU organized a “Workshop on the use of telecommunications in disaster prevention and mitigation,” in Argentina in 2011.
- Regional multi-stakeholder fora on Emergency Telecommunications to enhance awareness were held in Colombia and Guatemala in 2012, with the adoption of an Action Plan to be implemented through August 2014
- In October 2012, an ITU-ECLAC Seminar was organized in Chile on experiences and policy initiatives on ICTs and sustainable development in Latin America and the Caribbean.

*Source:* Director Telecommunications Development Bureau (BDT), Report on Implementation of HAP Plan in the Americas Region.<sup>54</sup>

<sup>54</sup> Director BDT, Document RPM-AMS13/2-E, “Report on implementation of the Hyderabad Action Plan in the AMS Region,” ITU-D, Regional Preparatory Meeting for the Americas, July 16, 2013 *available at* <http://www.itu.int/md/D10-RPMAMS-C-0002/en>.

#### 4.2.2.RI – 2 Digital Broadcasting

**Objective:** To assist ITU Member States in making a smooth transition from analogue to digital broadcasting.

**Expected outputs:**

- ✓ Policy and regulatory frameworks for digital terrestrial broadcasting, including mobile television;
- ✓ Digital broadcasting master plans for the transition from analogue to digital broadcasting, including mobile TV and IPTV;
- ✓ Appropriate mechanisms for converting archives from analogue to digital;
- ✓ Provision of assistance in the field of interactive multimedia services to broadcasters;
- ✓ Enhanced human resources skills in the area of digital broadcasting technologies;
- ✓ Comprehensive guidelines on the transition from analogue to digital broadcasting; and
- ✓ Creation of a compendium of public policies on the transition to digital terrestrial radio and television.

#### 4.2.3.RI – 3 Broadband access and uptake in urban and rural areas

**Objective:** To assist Member States in the development of broadband access strategies in urban and rural areas.

**Expected outputs:**

- ✓ National ICT master plan to meet the requirements of developing countries;
- ✓ Improved broadband infrastructure and access to affordable ICT services in urban and rural areas;
- ✓ Promotion of access to ICTs in public social service institutions such as educational centres, health centres and social rehabilitation centres, and of the use of ICTs by the population to access these social services;
- ✓ Development of ICT applications that address local needs;
- ✓ Enhanced human resources skills in the area of broadband communication networks;
- ✓ Support for non-profit cooperatives that provide services in underserved rural and suburban areas; and
- ✓ Provision of used computers to educational institutions in rural areas.

#### Box 5: BDT activities on RI-2 and RI-3

Since RI-2 and RI-3 have potential synergies, a number of projects and activities have sought to address them in a combined way. Details are available at [https://www.itu.int/ITU-D/connect/americas/projects\\_home.asp](https://www.itu.int/ITU-D/connect/americas/projects_home.asp).

- Direct assistance was provided to St. Kitts & Nevis for the development of a business case for a government-wide area network and to Jamaica and Saint Vincent and the Grenadines on the structuring of ICT centres.
- Assistance was provided to Haiti in the field of spectrum monitoring and training
- Events on the digital television transition were carried out in Barbados, Honduras and Uruguay.

- A Public Private Partnership (PPP) opportunity on the transition from analogue to digital broadcasting and in Broadband Networks was launched at the Connect Americas Summit in July 2012. The project is expected to be implemented in 2014.

Source: Director BDT, Report on Implementation of HAP Plan in the Americas Region.<sup>55</sup>

#### 4.2.4.RI – 4 Reduction of Internet Access Costs

**Objective:** To assist Member States in identifying ways and means to reduce the cost of Internet access and interconnection.

**Expected outputs:**

- ✓ Study of the policy and regulatory aspects of Internet exchange points (IXPs);
- ✓ Establishment of national and regional IXPs; and
- ✓ Promotion of cooperation and regulatory information sharing.

#### Box 6: BDT activities on RI-4

- Carry out a regional study and activities towards the establishment of policies and regulation for Internet interconnection points since 2011.
- Support to Suriname in the Development of a National School Connectivity Plan and Model Connected Schools, which was implemented in 2012.
- Regional assessment of the “Regulatory Impact for Convergence of Broadband” and on “Telecommunication and ICTs in the Americas Region” delivered at Connect Americas.<sup>56</sup>
- Assistance provided to Costa Rica to assist its goal of providing free access to Internet services.
- The AMS Centre of Excellence (CoE) provided online courses to more than 720 participants from Member States on technological issues as part of the online Postgraduate Programme in Strategic Telecommunication Management,
- Face-to-face workshops were carried out in the region related to new telecommunications services and new technologies.

Source: Director BDT, Report on Implementation of HAP Plan in the Americas Region.<sup>57</sup>

#### 4.2.5.RI – 5 Human capacity building for ICTs, with emphasis on persons with disabilities and people living in rural and deprived urban areas

**Objective:** To provide, on a sustainable basis, training programmes on ICTs addressing the particular needs of persons with disabilities and people living in rural and deprived urban areas.

**Expected outputs:**

- ✓ Human capacity building programmes especially tailored to the needs of persons with disabilities and people living in rural/remote areas, and
- ✓ Identification of training centers to deliver the programmes at the community level.

<sup>55</sup> Director BDT, Document RPM-AMS13/2-E, “Report on implementation of the Hyderabad Action Plan in the AMS Region.”

<sup>56</sup> The publications can be found at ITU Web <https://www.itu.int/ITU-D/connect/americas/DisplayCategory.asp?Language=en&Cat=9>.

<sup>57</sup> Director BDT, Document RPM-AMS13/2-E, “Report on implementation of the Hyderabad Action Plan in the AMS Region.”

#### Box 7: BDT activities on RI-5

- Capacity building for over 600 people from the Americas through online courses dedicated to the indigenous communities.
- Support to Suriname through the Education Ministry, with training of teachers on the use of ICTs and incorporated ICTs in school curricula in the framework of their National School Connectivity Plan and Model Connected Schools.
- Capacity building initiatives through the Americas CoE and Internet Training Centres Initiative.

Source: Director BDT, Report on Implementation of HAP Plan in the Americas Region.<sup>58</sup>

#### 4.2.6. RIs considered for WTDC-14

The 2014 World Telecommunication Development Conference (WTDC-14) will define and establish the new RIs for the development of telecommunications in the region over the next four years. Importantly, the theme of WTDC-14 is Broadband for Sustainable Development. As evidenced by the work done as part of the various regional preparation processes for WTDC-14, the following issues are expected to be raised for discussion at the conference:

- Cybersecurity;
- Online protection;
- Infrastructure deployment;
- Internet governance;
- Network neutrality;
- Enabling environment for the development of new infrastructure and service;
- International roaming;
- Facilitation of interactions between financial sectors and telecommunication sectors;
- Emergency telecommunications;
- e-health, e-education, e-libraries;
- Conformance and interoperability testing;
- ICT applications and standards for e-health as well as e-government and e-learning;
- Interconnection and charges of converged networks;
- Migration from IPv4 to IPv6;
- Digital inclusion;
- Digital literacy and human and institutional capacity; and
- Cloud services.

These issues may or may not be approved by WTDC-14 as formal work items.

The WTDC-14 regional preparatory meeting for the Americas (RPM-AMS) took place in Montevideo, Uruguay from August 18 to 22 in 2013. In total, 96 participants representing 15 Member States from the Americas Region, international organizations and sector members participated in the meeting.<sup>59</sup> The primary objective of the RPM-AMS was the identification of five RIs and priorities for the development of ICTs in the region. The region preliminarily agreed on the following five RIs (see **Table 5**), which will be submitted to WTDC-14 for consideration and approval.<sup>60</sup> Notably these RIs largely continue the work of the current RIs, with some minor changes.

<sup>58</sup> Director BDT, Document RPM-AMS13/2-E, "Report on implementation of the Hyderabad Action Plan in the AMS Region."

<sup>59</sup> The list of participants can be found [here](#).

<sup>60</sup> Chairman RPM-AMS, Document RPM-AMS13/61-E, "Report by the Chairman," Aug. 22, 2013, available at <http://www.itu.int/md/D10-RPMAMS-C-0061/en>



**Table 5: Proposed RIs for the Americas 2015-2018**

Proposed RIs for the Americas 2015-2018	
Objective	Expected Results
<b>1 - Emergency communications</b>	
To assist Member States in all phases of disaster management, i.e. preparedness including early warning, disaster response/relief, and rehabilitation of telecommunication networks, particularly in Small Island Developing States and the Least Developed Countries.	<ul style="list-style-type: none"> <li>✓ Identify suitable technologies to be used for emergency communications.</li> <li>✓ Improve linkages and information sharing on emergency communications in order to maximize resources, and lead to more innovative and effective programmes, and allow coordinated actions at the border zone.</li> <li>✓ Development of national and subregional emergency communication plans and early-warning systems, particularly in Small Island Developing States and in least developed countries, taking into account the impact of climate change.</li> <li>✓ Development of appropriate policy, regulatory and legislative frameworks on emergency communications at both the national and regional levels.</li> <li>✓ Increased human capacity skills for emergency communications</li> <li>✓ Temporary availability of emergency communication equipment in the Americas region, at the initial stage of a disaster response.</li> </ul>
<b>2 - Transition to Digital Broadcasting and Spectrum Management</b>	
To assist Member States in the transition to digital broadcasting and spectrum management.	<ul style="list-style-type: none"> <li>✓ Support for the development of spectrum management plans at the national, regional and global levels, including the transition to digital broadcasting.</li> <li>✓ Assistance in using the tools to improve the international coordination of terrestrial services in border areas.</li> <li>✓ Capacity building for spectrum management and digital broadcasting technologies.</li> <li>✓ Development of studies, benchmarks and guidelines on the economic and policy aspects of the assignment and use of the radiofrequency spectrum, taking into account Resolution 9 (Rev. Hyderabad 2010).</li> <li>✓ Assist countries in fostering inclusive strategies in digital broadcasting, including promoting the availability of universal broadcasting receivers at affordable prices.</li> </ul>
<b>3 - Broadband Access and Uptake</b>	
To assist Member States in the development of policies to increase access to broadband infrastructure and uptake.	<ul style="list-style-type: none"> <li>✓ Development or improvement of National Broadband Plans to guide policies for increasing access to broadband services and promoting investment in networks.</li> <li>✓ Improved access to broadband infrastructure, services and applications in urban and rural areas, especially access for Landlocked Developing Countries.</li> <li>✓ Assistance to countries in promoting access to ICTs in public social service institutions such as educational centres, health centres and social rehabilitation</li> </ul>

	<p>centres, and of the use of ICTs by the population to access these social services.</p> <ul style="list-style-type: none"> <li>✓ Capacity building for broadband communication networks and ICT applications development that address local needs, including applications relating to e-government, e-health, e-education and e-commerce.</li> <li>✓ Support non-profit cooperatives that provide services in underserved rural and suburban areas.</li> <li>✓ Collection and dissemination of information related to the deployment and operation of networks based on interoperable IMT, satellite and fibre optic networks suited to provide enhanced broadband coverage and connectivity in rural areas at affordable prices.</li> </ul>
<p><b>4 - Reduction of Telecommunication Services Prices and Internet Access Costs</b></p>	
<p>To assist Member States in defining and coordinating policies, ways and means destined to reduce both the cost of access and interconnection as well as the prices of telecommunication services and Internet for users, through necessary investments.</p>	<ul style="list-style-type: none"> <li>✓ Studies of policies that enable the reduction of the prices paid by users for telecommunication services.</li> <li>✓ Study of legal and regulatory options and actions at the regional, subregional and local levels to be implemented in order to achieve an effective reduction in the cost of international mobile roaming for the user.</li> <li>✓ Study of the policy and regulatory aspects for enabling the implementation of IXPs.</li> <li>✓ Promotion of the development, as appropriate, of national, sub regional and regional IXPs.</li> <li>✓ Promotion of cooperation and information sharing on cost issues.</li> <li>✓ Reduced cost of access to international fibre-optic networks, especially for landlocked developing countries and Small Island Developing States.</li> <li>✓ Capacity building for the administration and management of IXPs.</li> </ul>
<p><b>5 - Capacity building to engage in global ICT policy, with special focus on improving cybersecurity and developing countries' participation in the existing Internet Governance institutions</b></p>	
<p>To enhance the capacity building of Member States, especially developing countries, with a view to promoting an enabling environment, supporting the implementation of ICT initiatives and encouraging developing countries to actively participate in fora on global ICT policy, in close collaboration with existing institutions</p>	<ul style="list-style-type: none"> <li>✓ Enhanced coordination and sustained national and regional approaches to cybersecurity.</li> <li>✓ Support for institutional and organizational mechanisms at the national and regional levels to effectively implement cybersecurity strategies.</li> <li>✓ Strengthen the ability of developing countries to fully engage in existing Internet governance fora in collaboration with the existing internet institutions.</li> </ul>

Source: TMG, based on Chairman Report RPM-AMS, Document RPM-AMS13/61-E.

## 5. RECOMMENDATIONS TO PROMOTE THE RAPID DEPLOYMENT AND UPTAKE OF BROADBAND

In order to foster growth, innovation and investment in broadband, it is essential for policymakers and regulators to provide an enabling regulatory environment. No single solution is right for every

country, or for every country in the Americas. However, there are general recommendations that can apply to all markets that seek to expand broadband access and adoption.

- Policymakers and regulators should develop plans and policies to encourage the expansion of broadband supply and demand, whether as standalone national broadband plans or as components of other sectoral development plans.
- Regulatory frameworks should be sufficiently flexible to allow and encourage the deployment of new technologies and services.
- Legal and regulatory frameworks should minimize or eliminate artificial barriers to market entry, or outdated market entry rules based on legacy technologies and services.
- Fair competition both within and between broadband technologies and operators should be encouraged.
- Governments should enable and encourage fair and reasonable access to resources that enable broadband services, such as spectrum, conduits, towers and points of interconnection.

Since the development of rules and regulations typically lags behind fast-paced technological developments, policies and regulations that are flexible enough to accommodate changing technologies and services while encouraging the continued development of broadband services and networks will be a key component of any successful, stable enabling regulatory environment.

As evidenced by the regional preparatory meetings for WTDC-14, there seems to be a common view among the various ITU regions that the following matters should be addressed when developing policies to increase access to broadband infrastructure and uptake:

- National broadband plans should seek to establish specific goals for access to broadband, increase regulatory transparency, and promote investments in networks. This will lead to improved access to broadband infrastructure and access to affordable telecommunications services in urban and rural areas.
- Policymaker and regulators should monitor the technical, regulatory and economic issues related to broadband access networks, including quality of service and consumer protection in the provision of broadband services.
- ICT applications that can support multilingualism and address social needs should be developed, including applications relating to e-government, e-health, e-education and e-commerce.
- To support the expected increases in network traffic due to greater broadband use, national and regional IXPs should be established.
- The development of local content and localized access solutions should be promoted as a way to drive demand for broadband services.



## B. State Members Contributions

ANATEL

**João Rezende***President**Brazilian National Telecommunications Agency  
(ANATEL)*

Brazil

### ITU-D AND ANATEL COOPERATION FOR DEVELOPMENT

The National Telecommunication Agency (ANATEL) was created in 1997 as the regulatory body in charge of organizing the exploration of telecommunication services in Brazil. The Agency operates in aspects such as regulation, monitoring, licensing, use of orbit and radio frequency resources, supervision and sanctions. ANATEL's mission is to promote the development of telecommunications in the country in order to provide a modern and efficient infrastructure, able to offer to society services that are adequate, diverse and fairly priced, throughout the national territory.

The development of telecommunications in Brazil has been very effective. The year 2014 begins with more than 340 million accesses across the country with services such as fixed and mobile telephony, multimedia communications and cable TV, among others. In view of the growth and evolution of the sector, the Agency recently reorganized its administrative structure. The objective was to adapt it to the scenario of technological convergence. It is increasingly common the offer of multiple services by the same providers, based on common platforms, enabled by the Information and Communication Technologies (ICTs). The telecommunication infrastructure of the country, an essential part of the ICTs, is a recognized engine of the social and economic development.

In the globalized scenario of ICTs, it is crucial for the Agency to keep up with the evolution of technology and markets and to follow the best international practices in the regulation of the sector. Since its creation and throughout its sixteen years, ANATEL counts on the support of the International Telecommunication Union (ITU). One example is the ITU Project 9BRA98006 through which ANATEL implements actions of modernization, training, and cooperation with neighboring countries and with those of the Portuguese Speaking Countries Community (CPLP). This regulatory improvement contributes for its modern regulation, which is consistent with its market developments, and with initiatives such as the implementation projects of cost modelling and electronic management of documents.

Another area where Brazil profits from ITU-D expertise is indicators. ITU is recognized as the main source for statistics and data on ICTs at the international level, with more than 100 indicators, which are compared between some 200 economies in the world. The Telecommunication Development Bureau of the ITU provides technical assistance to Member States through training courses and guidelines oriented to the practice of data analysis and collection. Other areas to highlight are emergency telecommunications and cybersecurity. ITU provides assistance to Member States

offering expertise in supervision, detection, and prediction of disasters; design of emergency telecommunication plans. As for cybersecurity, ITU is the organization responsible the Action Line C5, resulting from the World Summit on the Information Society, which gives to ITU the leading role on such themes within the framework of the United Nations. In all of these areas, Brazil counts on the expertise and capacity of ITU to improve its own technical and regulatory framework.

In addition to the above mentioned, the collaboration of ITU and ANATEL has impacted various regulatory processes. Among others, the following aspects can be highlighted:

- Strengthening of institutional capacity and staff training at the international level on issues of strategic importance to the country, such as: Conformance & compliance and Interoperability, expansion of broadband networks, spectrum management, interconnection, orbit and satellite resources, among others;
- Definition of methodologies on the collection, treatment, and dissemination of indicators and statistics on telecommunications/ICTs, as mentioned;
- Exchange of information and development of studies and benchmarking on topics of direct interest to the Agency, such as: digital broadcasting, protection and defense of consumers of telecom/ICT services, emergency telecommunications, climate change, digital inclusion for different disadvantaged groups, development of next generation networks, expansion of service to rural and remote areas, among others.

This direct interaction has provided an increase in the development of ICTs in the country, as it can be seen in the evolution of the indicators of the sector.

INDOTEL

**Gedeón Santos***President, Consultative Committee**Dominican Institute of Telecommunications (INDOTEL)*

Dominican Republic

**TELECOMMUNICATIONS/ICTs IN DOMINICAN REPUBLIC:****CURRENT SITUATION AND RECENT DEVELOPMENTS**

In Dominican Republic the telecommunications sector represents 16.3% of the real GDP. The country has 105.76% of teledensity and has surpassed 2 million internet lines, which represents an increase of 843,562,000 new lines in two years when there was a 1.2 million. Similarly, the number of mobile lines in the country amounted to nine million and 25 million fixed lines, which shows that in Dominican Republic the use and access to the Information and Communication technologies (ICTs) has grown steadily in the last eight years.

According to the National Household Survey of Multiple Purposes (ENHOGAR) the access to ICTs in 2005 was 14.8% of the population aged 12 years and older; 35.6% in 2011; and 41.2% in 2012; which indicates that the digital gap has been closing gradually.

As we can see, in Dominican Republic the growth of Internet boom is consistent, however, contrasts that are presented in terms of the use and access in the field of Information and Communication Technologies (ICTs) in the country have been characterized by marked differences mainly by age, as well as different socio-economic levels and also by different territorial areas that demonstrate the existence of a generation gap, as well as a social and geographical gap.

To achieve the digital inclusion of large sectors of the population the Dominican Institute of Telecommunications (INDOTEL), through the Telecommunications Fund (FDT) implemented throughout the national territory (in rural areas and suburbs with poor coverage) projects "Connectivity of Rural Broadband I and II", Digital Rooms and Wi-Fi allowing its residents to access Internet.

On the other hand, the development of e-government through services offered to citizens and the major investments of service providers and other companies shows a consistent picture of growth in the use of ICT in the country.

Currently in Dominican Republic there are very interesting initiatives in various institutions and sectors to boost the use and access to the Information and Communication Technologies (ICTs).

INDOTEL for the biennium 2014-2015 will implement the following projects:

### **Universal Access and infrastructure development**

- Connected Homes
- Digital Multi Service Centers
- Strengthening Plan of Wi-Fi Networks in Public Places
- Development of Infrastructure of Access to Broadband based on Fiber Optics
- Computer Assembly Project in Dominican Republic
- Installation Project of the Transmission Station in The Mogote

### **Capacity Building in Information and Communication Technologies (ICTs)**

- Project to support the development of SMEs through ICT
- Certification and Digital Literacy Plan
- Dominican Free Software Development Project



ASEP



**Zelmar Rodríguez Crespo**  
*General Administrator*  
*National Authority of Public Services (ASEP)*

Panama

### **BROADBAND IN PANAMA**

Broadband and the information technology and communications (ICT) have transformed and improved the quality of life of Panamanians, allowing more and better services every day, using and transforming the social model and improving the economic environment. This has been achieved thanks to the efforts of the Government of the Republic of Panama, which with its development of infrastructure at the national level programs and regulations that encourage broadband providers to offer better services, has placed our country, in these respects, as a regional leader in Latin America and the Caribbean.

Panama is ranked in position 46 among 144 world economies. We have advanced by more than 16% in terms of broadband penetration since 2009 to date. The fixed broad band is currently at 7.9%; the mobile broadband at 14.5% and the international connectivity is 44 Kbps per user in relation to 11 Kbps in Latin America and the Caribbean.

We have the challenge of providing broadband connectivity to all corners of the country, especially those who are not financially attractive to the private sector. In this sense, our country has excellent opportunities in the mobile broadband, since Panama presents a high penetration in mobile telephony (188.6%), which facilitates access of clients and/or users to it nationwide.

Similarly, the Panamanian State has been making major efforts to promote the use of broadband and the information technology and communications (ICT) among citizens, businesses and Government institutions. Programs such as "InternetParaTodos", "Infoplazas", the project "Panama without paper", the plan for e-Government and support for "Intered" (current IXP in the Republic of Panama), are examples of initiatives carried out, which are allowing that the effort to deploy infrastructure, has its counterpart in fostering a demand and, at the same time, to create services and local innovation to be capable of generating economic growth and social inclusion we pursue.

The Government of his Excellency Mr. Ricardo Martinelli Berrocal, President of the Republic, together with the International Telecommunication Union (ITU), held in Panama City the Summit "Connect America" that brought together the main actors of the Telecommunications Sector at the regional and global levels, public and private sector entities and financing entities, with the purpose to find alternatives to the broadband and ICT, reach all countries of America.

In summary, the efforts and commitments that have positioned ourselves as regional leaders for access and use of broadband and ICT, have been highlighted. At the same time, it has been projected to keep initiatives in time and add new programs, public policies and regulatory updates, allowing continuing closing the digital divide for the benefits of all the people.



**Eduardo Neri González Martínez**  
*President of National Telecommunications Commission*  
 CONATEL

Republic of Paraguay

Paraguay is facing the challenge of taking effective advantage of broadband connectivity benefits.

The market penetration in Paraguay on June 2013 reached 7,43 lines per 100 inhabitants (including fixed and mobile lines, considering broadband a speed higher than 512 kbps); which is low (according to the average of 1.8 Mbps in fixed lines), and the price is high compared with other countries in the region (offering plans of around USD 30 per 1 Mbps). However, Paraguay have a steep and constant growth for international connectivity, in 2013 Paraguay moved from 21 Gbps to 30 Gbps by the end of year.

In this sense, among the main barriers identified to increase penetration, adoption and use of broadband are: lack of awareness of how broadband and the Information and Communication Technologies (ICT) benefits can contribute to the innovation and competitiveness, the low institutional capability and the lack of a governance model to design, implement, and control specific policies addressed to promote the incorporation and efficient use of ICTs for the entire population, out-dated regulatory frameworks that do not response properly to the dynamic evolution of the Telecommunications sector, uneven distribution of infrastructure and technology, lack of reliable, measurable and updated data, to control and evaluate the ICT policies.

The National Telecommunications Commission (CONATEL), as telecommunications regulatory body, it has renewed its commitment to reverse this situation in its competency areas and has been available to other central government entities to collaborate in the comprehensive promotion of the broadband.

The newly renovated Directory of CONATEL aims to carry out a feasibility study to determine the necessary investment for broadband deployment, and review and update the regulatory framework of the telecommunications sector in order to enhance broadband access, adoption and use.

The study will allow refocusing the National Plan of Telecommunications (PNT) adopted in 2011, which contemplate in one of its goals to bring fiber optics to 200 municipalities by 2015 (from 240 municipalities existing in 2011). This objective will be surpassed considering the approval of the recent infrastructure projects subsidy that will allow having 216 municipalities connected by 2015.

In the same way, in order to promote the broadband use, CONATEL with the support of international organizations has restarted discussions with providers and the Academy to establish a national IXP or NAP, and to extent the possibilities of other IXPs throughout the territory.

At international level, landlocked becomes a disadvantage in terms of connectivity. However, Paraguay can become the hub of the region, interconnecting the Atlantic and the Pacific NAPs. On this path, we have undertaken the coordination of the Working Group for Telecommunications of the Union of South American Nations (UNASUR) seeking the integration of fiber optic national networks and the establishment of IXPs, to boost the development of the Member States. In this

project, through the ITU Connect Americas initiative should become a strategic ally, seeking also to integrate it with other similar projects such as the Mesoamerican Information Highway (AMI) of the Regional Telecommunications Technical Commission (COMTELCA) and the Caribbean Programme for Regional Communications Infrastructure (CARCIP) of the Caribbean Telecommunications Union (CTU).



**Sen. Hon. Dr. James Fletcher**

*Minister for Sustainable Development, Energy, Science and Technology*

St. Lucia

### **Overview**

The Government of Saint Lucia established the Division of Public Sector Modernization (DPSM) in the Ministry of the Public Service, Information and Broadcasting from April 2012. The Ministerial portfolios of Information and Communications Technology (ICT), E-Government and Telecommunications are also assigned to this Ministry, under the DPSM. The DPSM was established to provide leadership, coordination and cohesion to the implementation and monitoring of several key aspects of the modernization agenda: i.e. strategic human resource management, information and communications technology, e-government, telecommunications, legal and regulatory frameworks, structures, policies and processes.

The **vision** is that of a “modernized Public Service delivering quality, equitable, efficient and responsive services, capable of enabling and facilitating the achievement of the national goals and aspirations”.

The mandate and strategic context for the work of the DPSM can be found in **“Our Blueprint for Growth, Building a Better Saint Lucia”, Saint Lucia Labour Party Manifesto 2011.**

### **Highlights**

In November 2012, the National Electronic Commerce Policy, Strategy and Action Plan 2012 - 2015 was approved by the Government of Saint Lucia and a Steering Committee, comprising of key stakeholders was established to oversee the implementation of the Policy, Strategy and Action Plan. The implementation of a Multichannel Contact and Data Center (MCDC) Project, which forms a key part of the Government’s Multichannel Service Delivery Strategy commenced in April 2013. The key components of the project are as follows:

- Integrated Contact Centre (311/911/St. Lucia Tourist Board).
- Data Centre Upgrade (Ongoing)
- Analysis, design and development of a government wide Electronic Document and Records Management System (EDRMS)
- Establishment of a Digitization Centre
- Implementation of a Vehicle Fleet Monitoring and Tracking System

In November, 2013, Government also:

- Approved the National Information and Communications Technology (ICT) Policy and Strategy, 2013 - 2018.

- Directed that the acquisition of all Information and Communication Technology (ICT) and telecommunications goods (equipment, devices and systems) and services be subject to technical evaluation by the Division of Public Sector Modernisation, Ministry of the Public Service, and
- approved the reassignment of ICT personnel in the Public Service so that these officers fall under the purview of the Division of Public Sector Modernisation in the Ministry of the Public Service, Information and Broadcasting.

Apart from HIPCAR assistance by the International Telecommunications Union (ITU), also in November 2013, the Government, in collaboration with ITU Area Representative for the Caribbean, completed a National Broad Band Policy (2013 - 2018). Guided by the National ICT policy, the Government is committed to a national strategy to strengthen the information and communication technology sector in St. Lucia with countrywide broadband infrastructure - an essential enabler for economic and social development of the country. Three main considerations were taken into account in setting the priorities for the National Broadband Policy and Plan:

- i. Supply side policy initiatives to support broadband;
- ii. Demand side policy initiatives to support broadband;
- iii. Machinery of government initiatives to support broadband.

Each of these broad elements is further defined by specific actions which are described in the Policy, including discrete targets and timeframes, where applicable. Priorities and policies to promote and expand use of broadband technologies are presented within a three phased framework and reflect high impact transformative policy initiatives.

A new Government of Saint Lucia Portal was launched in January 2014: <http://www.govt.lc/> which marked the successful completion of the first phase of a project to redesign and upgrade the Government's online presence. The new portal, branded: "Our Government" provides enhanced features and services to the general public by serving as a central access point and facilitate increased collaboration and communication among Government departments and agencies. It supports the strategy of "a user-centric, online gateway for citizens, businesses, and non-residents to Government information and services" as outlined in the National ICT Policy and Strategy. This development is expected to bring about greater accessibility and transparency in Government operations, as members of the public will have easier, continuous and convenient access to public sector services and information.



**Dr. The Honourable Rupert T Griffith**  
*Minister of Science and Technology*

The Republic of Trinidad and Tobago

The Government of the Republic of Trinidad and Tobago (GoRTT) has identified ICT as a critical tool for sustainable development and, by extension, recognises the importance of broadband for exponential ICT uptake and usage. Thus, the Ministry of Science and Technology, lead Ministry for ICT, has developed several key initiatives for creating an e-Ready Generation and transforming Trinidad and Tobago into a country that innovatively applies ICT to improve socio-economic development.

Noting the alignment between national objectives and those of the ITU's *Connect the World (CTW)* initiative, Trinidad and Tobago actively participated in the Americas Region's iteration, *Connect the Americas (CTA)* and ensuing activities. Since the CTA, a key national undertaking has been the elaboration of the National ICT Plan, 2014 to 2018. Entitled *smarTT*, the Plan includes a broadband strategy cognisant of the importance of widespread access to affordable, robust broadband services in building a knowledge-based economy. Other related developments include:

- **Community-based ICT Access Centre Initiative, *STAR.TT*** – aimed at reducing the *digital divide* by implementing user-friendly ICT facilities for un-served/underserved communities and stakeholder groups such as persons with disabilities, the elderly and at-risk youth. The Centres will provide access to, *inter alia*, government services, free Internet access, ICT and community “needs-based” training and teleworking facilities. Phase I of the initiative will establish six (6) Centres, the first of which is scheduled to open in February 2014.
- **Trinidad and Tobago Research and Education Network (TTRENT)** - launched in 2012 with the strategic objective of enhancing the country's competitiveness by connecting institutions, research organisations and related agencies to indigenous and global pools of knowledge. It is the first such domestic network to be deployed in the Caribbean and is part of the Regional Research and Education Network for the Caribbean (C@ribNET). It provides connection with other research and education communities through AMPATH (North America), GÉANT (Europe) and RedCLARA (Latin America).
- **Internet Exchange Point (IXP)** - to be established by second quarter 2014 to facilitate the exchange of local Internet traffic between ISPs and to bring benefits to consumers including faster and more robust Internet access for locally-based content and services. The Trinidad and Tobago Internet Exchange (TTIX), a non-profit company, comprised of the country's seven major Internet Service Providers (ISPs), has been incorporated for this purpose.
- **Trinidad and Tobago Single Electronic Window, TTBizLink** - rollout and enhancements to the trade and business facilitation tool continued, with reduced duplication and delays while improving public agencies' delivery of business services. In 2013, TTBizLink was awarded First

Place in the UN Public Service Awards, in the category of "Promoting Whole-Of-Government Approaches in the Information Age."

The above activities are being pursued in the context of ongoing efforts to establish an enabling environment for successful ICT deployment and creation of a vibrant ICT sector. Thus, Trinidad and Tobago, an active member of the ITU since 1965, has worked collaboratively with the ITU and benefited from its assistance in elaborating key components of an e-legislative agenda and in developing critical strategies in areas such as cyber security. Such partnership is expected to continue in the future given the ITU's critical role in establishing norms and standards for ICT.



**Senator the Honourable Fazal Karim**  
*Ministry of Tertiary Education and Skills Training*

The Republic of Trinidad and Tobago

Between 2009 and 2013, Trinidad and Tobago's GDP improved from TT\$121 (US\$19) Billion to TT\$157 (US\$24) Billion. However, poverty in non-urbanized districts continues to attract the attention of central Government. Data from the Survey of Living Conditions (2005) reported higher levels of poverty in the north-eastern and south-western regions of Trinidad. The communities of Sangre Grande, Princes Town, Point Fortin, Mayaro/Rio Claro and Siparia were reportedly more vulnerable, with scores of citizens living below the poverty line of TT\$665 (US\$100) per month.

It is within that context that the Ministry of Tertiary Education and Skills Training (formerly the Ministry of Science, Technology and Tertiary Education) was established in July 2012 with a mandate of promoting human capital development across the island. Since its inception, the Ministry has embraced Information Communications Technologies (ICTs) to increase access to its services.

Tertiary education and training have been expanded to reach all nationals free of charge<sup>61</sup> through the Government Assistance for Tuition Expenses (GATE) Programme which is valued at TT\$650 (US\$100) Million per annum and administrated through the Ministry. Beyond this financial incentive to promote human capital development, the Ministry has engaged in direct outreach to support underserved communities. A recent innovation has been the introduction of YTEPP Mobile Computer Training Units through the support of USAID. These units have exposed over 6,500 young persons to desktop publishing and computer literacy in underserved communities such as Sangre Grande, Las Lomas, Moruga and Barrackpore, to name a few.

Another vanguard initiative of the Ministry has been the introduction of Public Access Learning Systems (PALS) in underserved communities across the country. PALS apply the Minimal Invasion Education methodology whereby ICT access is provided openly and freely in public spaces. In addition to physical infrastructural investments in these communities, the MIC (a portfolio agency of the Ministry) will introduce on-line courses for Technical Vocational Education and Training (TVET) to support remote locales on the island.

The universities have also embraced ICTs to transform the delivery of academic offerings. The national university – the University of Trinidad and Tobago (UTT) – partnered with Oracle to establish an Oracle Academy which will train young people in cutting-edge technologies. UTT will also establish a multi-media, multi-channel knowledge network (LEARN.TT) which will expand tertiary education access to the wider citizenry using internet, television, mobile and face-to-face channels. The University of the West Indies (UWI) St. Augustine has deployed ICTs to support sectorial

<sup>61</sup> The GATE Programme funds 100% of student tuition fees at the tertiary level – 100% for approved undergraduate programmes and 50% for approved post-graduate programmes.



innovation. One such project was the development of an mFisheries mobile application which integrated open source technology to support small scale fisher-folk, processors and retailers.

Collectively, these programmes and projects provide complete knowledge opportunities for all citizens. Recognizing the observable poverty gaps in identified regions, the Ministry has initiated an outreach strategy to improve access to underserved communities whereby socio-economically challenged citizens and young people (above 15 years old) are direct beneficiaries.



## C. Sector Members Contributions

## AMÉRICA MÓVIL



**Daniel Hajj Aboumrad**  
General Director

América Móvil, S.A.B. de C.V.

### CHALLENGES FOR BROADBAND DEVELOPMENT IN LATIN AMERICA

The potential of the broadband telecommunications networks to positively impact social and economic growth of countries has been widely discussed and confirmed.

In this sense, the deployment of infrastructure continues to be an indispensable element and the role of the private sector is essential for this purpose, to that end it is necessary that Governments promote and encourage investment, through an adequate regulatory policy to enable and stimulate.

The mobile industry has grown exponentially in recent years, with subscriber penetration close to 6,800 million at the end of 2013<sup>62</sup>. Of these, about 2,100 million are mobile broadband users.<sup>63</sup>

Therefore, the need for having one of the basic inputs for this industry, such as radio spectrum, in greater quantity, has become increasingly urgent.

According to the Cisco report "*Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2012-2017*", global mobile data traffic increased by 81% in 2013, reaching the figure of 1.5 *exabytes* per month by the end of this year, compared with the 820 *petabytes* per month at the end of 2012. While in the year 2000 Internet presented a global traffic of 1 *exabyte*, for 2013, mobile networks traffic transported 18 *exabytes*. The report prediction is that global mobile data traffic will increase 11 times for 2018.<sup>64</sup>

On the other hand, prices of telecommunications services, and even *smartphones*, as mobile broadband access affordable tools, have consistently decreased. From 2002 to 2013, the average revenue per minute (ARPM) at global level has fallen by more than 70%.<sup>65</sup>

However, today still persist different barriers hindering investment that would lead to further development of networks and offer of new technologies, as well as more and better services; These range from over regulation in general, the need to standardize legislation at national, State and municipal level, the lack of availability of radio spectrum, to the simplification in obtaining permits and licenses, and, most importantly, the lack of regulatory certainty.

<sup>62</sup> ITU News. International Telecommunication Union

<sup>63</sup> The State of Broadband 2013: Universalizing Broadband. A Report by the Broadband Commission

<sup>64</sup> [http://www.cisco.com/en/US/netsol/ns827/networking\\_solutions\\_sub\\_solution.html](http://www.cisco.com/en/US/netsol/ns827/networking_solutions_sub_solution.html)

<sup>65</sup> Global Wireless Matrix 4Q13, Bank of America Merrill Lynch.

Some regulatory measures and public policy are not in full accordance with principles driven by the ITU itself, such as the adoption of adequate regulatory frameworks, aimed at competition and investment, promoting private investment and establishment of positive incentives, among others.

The lack in the availability of spectrum is one of the biggest problems faced by mobile operators in the region. According to the report ITU-R M. 2078<sup>66</sup>, for 2010 the required minimum spectrum was 840 MHz, for 2015 will be 1300 MHz and 1720 MHz for 2020 , targets not met on one hand, and far to be met on the other.

It is a priority to recognize the role of the private sector in the development and deployment of telecommunications services, as fundamental elements for the own development of the countries of the region.

Similarly, it is essential to the establishment of a regulatory environment conducive and enabling that encourages investment in broadband networks, based on a public policy that generates legal certainty.

The liberalization of spectrum is also essential, making it soon available to operators under bidding processes tied to investment commitments, that not only respond to fundraising criteria.

The reduction of barriers to the deployment of infrastructure at government different levels, based on harmonization and consistency between laws, rules and regulations, State and municipal, with the proper technical support, will allow an adequate development of broadband networks.

As it has been supported by the ITU in various forums, a light touch *regulation*, opposed to an over-regulation on key aspects of the Telecommunications ecosystem, will result in higher profits for the sector, users and society in general.

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<sup>66</sup> ITU - R M. 2078 "Estimated spectrum bandwidth requirements for the future development of IMT-2000 and IMT-Advanced"

CISCO



**Jordi Botifoll**  
*President Latin America*  
 Cisco Systems Inc.

### **DEVELOPING LATIN AMERICA THROUGH WIRELESS BROADBAND AND ICT ENABLED PUBLIC SERVICES**

In recent years, the Latin America and Caribbean (LAC) region has made substantial progress in prioritizing ICT development and recognizing the important economic and social contribution from a robust broadband ecosystem.

International indicators, such as the World Economic Forum's Networked Readiness Index highlight significant improvement in countries such as Chile, Mexico and Panama, while the ITU's ICT Development Index demonstrates strong development in Costa Rica and Brazil. However, significant challenges remain as several countries in Latin America and the Caribbean fall below global averages on these, and other, international measures including fixed and wireless broadband prices.

Regulatory bureaucracy, enhancing general ICT skills and a focus on innovation and entrepreneurship, are general policy issues that demand attention, but particular focus is needed to address two main issues in Latin America:

**1) Expanding broadband infrastructure to ensure ubiquitous connectivity, particularly through wireless access.** While companies and governments in the region have redoubled efforts to build out and upgrade broadband infrastructure, the timeline, upfront cost of fixed wired investment, and the geographic challenges of the region point to wireless broadband as the best way to start reaching most of the region's population that reside in areas without access. The critical challenge in wireless build out is the release of spectrum in the 700 MHz band, which is best suited to provide high-speed wireless access. The LAC region has a unique opportunity to accelerate this process by moving forward with the auctions of this spectrum band in 2014.

**2) Transforming the delivery of government services particularly in education, healthcare and justice by leveraging connectivity and ICT.** With rapid economic growth across the region resulting in per capita income growth and lifting tens of millions of people into the 'middle class', more Latin American and Caribbean citizens are demanding better public services from their governments. City mayors and national leaders can leverage the power of ICTs and broadband connectivity to improve the way they manage government, deliver basic services and interact with local constituents. Video and collaboration technologies can provide real-time interactions across large geographic distances, embedded devices can sense and measure environmental conditions to improve management of resources and the provision of e-government services and broadband access together support greater interaction with government.

As the world shifts in the next major technology transition to the Internet of Everything (IoE), where devices, data, people and processes become even more closely connected, countries that have invested in their ICT environment will benefit from first mover advantage. A greater focus today on expanding wireless infrastructure and building the capabilities to deliver ICT-enabled services, will help ensure social and economic development for the countries in Latin America and the Caribbean.

**DirecTV – LATIN AMERICA**

**Bruce B. Churchill**  
*President*

DIRECTV Latin America, LLC

### **FOSTERING ICT COMPETITION IN LATIN AMERICA**

Latin America is currently experiencing a major surge in all kinds of information and entertainment services, whether provided by satellite or terrestrial means. The region has benefited from significant economic growth and a rising middle class, but the key has been the increasingly liberalized and competitive nature of the ICT market. This opening of the sector has led to new services, new players and many benefits for consumers and businesses alike.

DIRECTV Latin America (DTVLA) has been serving the needs of the region since the late 1990s. As the largest pay-TV provider in Latin America, with over 17 million subscribers, and as a new provider of wireless broadband services, DTVLA has benefited directly from the increasingly favorable regulatory climate in the region. Our satellite platform allows us to efficiently deliver our pay-TV services not just in the most highly developed neighborhoods, but also in underserved areas, including places not reached by traditional cable television. DTVLA is an innovator in its industry. We have been among the first to be all digital and to offer DVRs, HD and pre-paid services.

More recently, based on our optimism for the region's future growth prospects, DTVLA entered the fixed wireless broadband market. Over the last several years we have acquired spectrum in many of the most important markets in the region. Having launched commercial services in Argentina and Brazil, we continue building out fixed wireless broadband networks using LTE technology, and are currently in the process of launching services in Colombia and Peru. Our goal is to compete with incumbent broadband providers by leveraging the advantages of fixed wireless networks to offer high-quality services at competitive prices in underserved areas, thus contributing significantly to broadband penetration in the region.

In undertaking this initiative, we have been reassured, and even enabled, by a growing awareness in Latin America that competition is a key driver for increased investment in ICT. For example, some countries in the region have made new spectrum available in an effort to promote market entry by new companies, to increase competition. Importantly, regulators have adopted measures that reserve spectrum for new entrants, or that limit the amount of spectrum the incumbents can acquire, effectively opening the market to new players. In other markets, where there are concerns about dominance by a particular player, regulators are actively confronting such challenges by seeking to create a level playing field for all competitors.

Such initiatives are critical to encourage companies like DTVLA to make further investments in the region. This is particularly true in the ICT sector, where traditional, public service-style, regulatory frameworks can hold back the fast-paced technological changes that characterize the sector. A regulatory framework that primarily focuses on fair competition and transparency promotes

certainty and encourages operators to invest in support of public policy goals, such as serving underserved areas, and providing the highest quality services to consumers at the lowest cost. Countries where market forces drive competition receive more investment and have historically seen better services at affordable prices.

The ongoing development of such policies helps DTVLA reaffirm its commitment to the region and its contribution to the broader public policy objective of ensuring citizens in Latin America have access to, and benefit from, the opportunities provided by innovative technologies and services critical for the 21<sup>st</sup> century economy.



GSMA



**Anne Bouverot**  
*Director General*

GSMA

### CAPITALISING ON THE POWER OF MOBILE IN LATIN AMERICA

With total revenues of US \$107 billion in 2012, Latin America now accounts for ten per cent of the worldwide mobile market, more than double the figure of just ten years ago, and with a year-on-year growth rate of nine per cent, Latin America is the second-fastest growing market globally. As of the middle of 2013, the region was home to nearly 319 million unique subscribers, a penetration rate of just over 52 per cent. While Latin America is entering a more mature phase in its development, there is significant opportunity to further expand the reach of mobile throughout the region.

Mobile broadband has played a key role in Latin America, both in boosting growth and meeting social targets. The region had 164 million mobile broadband subscribers as of June 2013, a figure that is forecast to grow by 30 per cent per annum over the next five years. With fixed broadband in the region limited in terms of its household coverage, and also relatively expensive, mobile will continue to play a major role in bringing internet access to the mass market. Mobile data plans have seen significant price reductions in the last three years due to the introduction of innovative pre-paid daily plans which are providing many low income sectors in Latin America, particularly households at the “bottom of the pyramid”, access to the internet for the first time.

Mobile is already making an important social contribution in Latin America and has played a key role in addressing the digital divide, bringing voice and, more recently, broadband services to an increasingly wider population across the region. According to Boston Consulting Group, the mobile ecosystem contributed approximately 3.7 per cent of the region’s GDP in 2012, well ahead of the comparable figure for other regions (1.4 per cent of GDP in Asia Pacific and 2.1 per cent in Europe). With increasing penetration rates, smartphone adoption and new network deployments, there is the potential for much greater impact in the future.

There is the scope for a range of new mobile services and applications that can make important contributions to a number of challenges in the region, in areas such as health, education and access to financial services, among others. For instance, a recent study with PwC indicates that mHealth could enable an additional 28.4 million people access to the healthcare system in Brazil, and an additional 15.5 million to the same in Mexico, without having to add a doctor. Pyramid Research forecasts that the number of mobile banking customers will grow from approximately 18 million today to more than 140 million by 2015.

The GSMA is focused on working with its operator members, as well as companies across the mobile ecosystem, to capitalise on the many opportunities before us to bring the power of mobile to consumers and businesses in Latin America. However, to fully realise the social and economic

development potential of mobile in Latin America, there also needs to be a supportive and transparent regulatory environment in place. This includes the need for a clear and consistent approach to license renewals; releasing adequate spectrum for mobile use (especially the Digital Dividend bands); and a coordinated policy and regulatory regime to allow operators to address the pressing issues around quality of service.

INICTEL



**Modesto Palma Garcia**  
*Executive Director*

National Institute for Research and Training in  
Telecommunications (INICTEL) - Peru

## THE AMERICAS REGION AND ITS PROGRESS IN BROADBAND ACCESS

### **Broadband Contribution to the growth of GDP in Latin America**

The general use of technology affects the economic activities of individuals and organizations, for that reason the countries have prioritized projects on broadband networks. The implementation of these networks generates employment and the need for goods and services which stimulate the economy of a country. Then, the networks provide the necessary support to develop activities that contribute to its Gross Domestic Product – GDP.

A study carried out in developed countries has found that a 10% increase in broadband penetration generates a growth of 1,21% in the GDP (Qiand 2009).

A similar study in Latin America has estimated that an increase of 1% in broadband penetration contributes to a growth of 0,0158% in the GDP. (Katz, 2010).

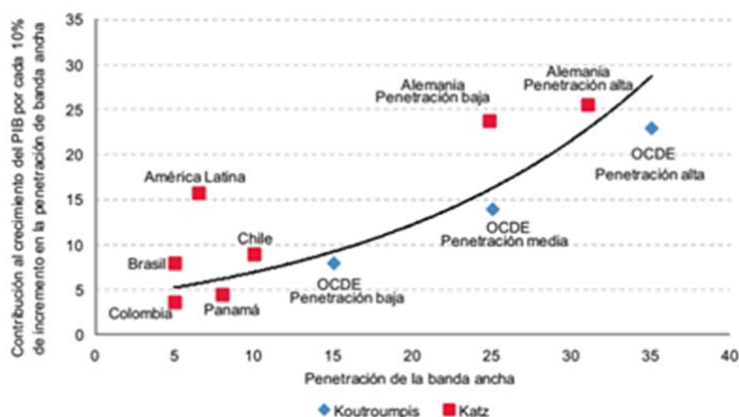
### **Economic impact of the broadband**

There are studies which indicate that the use of broadband by the productive sector increases productivity, therefore leads to a growth in GDP (Katz 2013). In addition to this economic result, the residential broadband users receive the so-called consumer surplus (difference between the willingness to pay for service and the market price) which translates into greater access to information, public services and entertainment. Additionally another result is the growth of average income of households which reduces poverty (Katz, 2013).

According to a study by CEPAL (Katz, 2013), even when specific models are applied in a different way, the general result is that the greater the broadband penetration is, the greater is the impact on GDP growth. Consequently, in order to achieve maximum economic impact, broadband penetration needs to be increased significantly. See Figure 1.

The economic impact of information and communication technologies – ICT is the cumulative result of technology adoption, assimilation of content and applications, and high broadband penetration (Katz, 2012). This digitalization process is referenced to categorize the economies' advance in four stages (limited, emergent, transition and advance), among the contemplated indicators is the broadband penetration (Katz, 2013). Latin America has economies in transitional (43,3%) and emerging (46,7) stage, only 10% are in limited stage; for that reason it is necessary to implement public politics in telecommunication, information technology, contents and applications (Katz, 2013).

**Figure 1. Comparative broadband contribution to the economic growth**



Source: Katz, 2012

### Productivity Increase

The productivity of information technology (TI) workers depends on the investment in ICT (Katz, 2009).

To obtain a greater impact of broadband on productivity, a sufficiently developed ICT ecosystem is needed (Katz, 2013). The studies shows that there is a causality between broadband and productivity.

### Impact on Innovation

Digitalization impacts innovation by facilitating the creation of products and services of high value. A 10% increase in digitalization leads to a growth of 6,4% in innovation (new applications, services, forms of trade and financial intermediation). See Figure 2.

**Figure 2. Latin America: Estimated economic impact of digitalization**

País	Indicadores en 2011			Cambio como resultado de un aumento de 10% en el índice de digitalización*		
	Índice de digitalización	PIB per cápita <sup>a</sup> (dólares)	Índice de innovación	Índice de digitalización	PIB per cápita <sup>a</sup> (dólares)	Índice de innovación
Argentina	41,32	10 881	34,40	45,45	10 969	36,60
Brasil	36,61	12 594	36,60	40,27	12 696	38,94
Chile	45,33	13 738	42,70	49,86	13 849	45,43
Colombia	38,33	7 121	35,50	42,16	7 179	37,77
Costa Rica	37,33	8 644	36,30	41,06	8 714	38,62
Ecuador	32,75	4 504	28,50	36,03	4 540	30,32
El Salvador	29,56	3 602	29,50	32,52	3 631	31,39
México	37,05	9 980	32,90	40,76	10 061	35,01
Panamá	44,29	8 740	30,90	48,72	8 811	32,88
Paraguay	28,68	3 594	31,60	31,55	3 623	33,62
Perú	32,20	5 860	34,10	35,42	5 907	36,28
Uruguay	42,78	14 294	35,10	47,06	14 410	37,35

Source: Katz, 2013

### **ITU and INICTEL-UNI Activities**

ITU and INICTEL-UNI share activities related to the Access of Broadband in the Americas Region. INICTEL-UNI as a center of excellence of ITU has developed various activities in recent years, such as:

- Hosting the AMS CoE Steering Committee meeting in October 2012
- Implementation of the course “4th Generation Network Technologies”

INICTEL-UNI also participates in ITU activities to increase the vocation of women and girls in technical careers in order to augment the number of specialist for broadband support. Thus the Americas Region will be prepared for the challenges of future systems and broadband services.



**Steve Collar**  
CEO

O3b Networks Ltd

## CONNECT AMERICAS UPDATE

### Uneven development

Latin America has seen a significant increase in Internet penetration while at the same time average connection speeds have increased greatly over past years. The increase has largely been made possible by availability of Internet access to more of the population and more affordable devices. The underlying infrastructure performance has benefited from more efficient transmission technologies such as fiber cables and third generation mobile networks (3G).

Development has however been very uneven. The Latin American continent is one of the most urbanized in the world with around 80% of all inhabitants living in urban areas<sup>67</sup>. As these areas today enjoy good connectivity, rural areas are lagging far behind. In Peru less than 1% of households in the rural areas have access to the Internet, compared with more than 44% in the Lima metro area<sup>68</sup>. In Brazil it is a similar story where a survey showed that 77% of Brazilians living in rural parts of the country have never had access to the Internet<sup>69</sup>.

### Beyond the cities

Fortunately, Governments across the region have realized the value of getting the entire population connected. Twenty-three countries in Latin America and the Caribbean have adopted National Broadband Plans, which will support the economic as well as social development in rural and remote areas (ITU)<sup>70</sup>. Applications such as e-government, e-health, e-learning and m-banking, will have a large impact upon the societies outside of the mega cities throughout the region.

Next generation 3G/4G mobile networks have been selected as the best way to get people connected outside the main urban areas and it is up to the telecommunications industry to support that. Satellite has played a vital role in increasing 2G coverage because of the prohibitive cost of building terrestrial fiber for trunking and backhaul to remote and rugged areas. Next generation mobile networks come with requirements demanding next generation satellites. Higher data rates and more importantly lower latency will be required in order to deliver a service that will ensure a satisfactory quality of experience when utilizing the applications of the present and the future: e.g. cloud services, e-commerce or VoIP.

<sup>67</sup> United Nations Economic & Social Affairs. World Urbanization Prospects, The 2011 Revisión

<sup>68</sup> Instituto Nacional de Estadística e Informática. Las Tecnologías de Información y Comunicación en los Hogares, Trimestre : Enero-Febrero-Marzo 2013. *Informe Técnico No 06 Junio 2013*

<sup>69</sup> Centro de Estudos sobre as Tecnologias da Informacao e da Comunicacao. ICT Households and Enterprises 2012, Survey on the use of Information and Communication Technologies in Brazil.

<sup>70</sup> The Broadband Commission (2013). Planning for Progress, Why National Broadband Plans Matter.

### Fiber speed with satellite reach

O3b Networks was founded to connect the unconnected across emerging markets in Africa, Middle East, Asia, the Pacific Region as well as Latin America. By offering connection speeds of above 1 Gbps and latency below 150 msec the performance is comparable to fiber. The main differentiator is the unlimited reach. Latin America has a wonderful geography with deep jungles, high mountains and far distances of undisturbed nature. This creates a challenge for building terrestrial networks, which in these circumstances become prohibitively expensive. This year O3b Networks starts commercial services. Customers in rural Colombia and Brazil and other Latin American nation will finally enjoy being truly connected with the world, with high performance broadband and modern software applications.



**Rafael Steinhauser**  
*President Latin America*

Qualcomm Incorporated

The Americas are a fast-growing and dynamic market for broadband services, particularly those delivered via mobile networks. Those services are increasingly being leveraged to expand access to education, health care, financial resources, and to drive economic growth. Qualcomm believes that expanded access to mobile broadband services will continue to provide the foundation for socioeconomic development in the Americas.

As policymakers consider how best to expand access to broadband, many have highlighted the key role of mobile networks. National broadband plans and other policy initiatives in Brazil, Colombia, Costa Rica, the Dominican Republic, Mexico, Panama, and Paraguay reference the importance of integrating wireless networks into plans to improve broadband access and penetration. A crucial element of such efforts is the availability of spectrum for mobile services. As a result we have seen successful auctions of spectrum intended for mobile broadband services in the region – most recently in Colombia (2013). The availability of additional spectrum allows operators to expand their capacity to offer broadband services, expand the quality of services offered, and improve the user experience.

In 2013, approximately half of the region’s population subscribed to a mobile service, compared to closer to 80 percent in developed markets. As the overall mobile market expands, Qualcomm expects to see increasing adoption of smartphones - perhaps by as much as 50 percent of the population in the next five years. As smartphone adoption increases, users’ ability to access a wide range of services will also increase.

In addition to increased access to mobile broadband through smartphones and tablets, Qualcomm has been working with local governments and other stakeholders worldwide to implement innovative programs in underserved communities. Qualcomm Wireless Reach invests in projects that use 3G, 4G and other advanced mobile technologies to foster entrepreneurship, aid in public safety, enhance the delivery of health care, enrich teaching and learning, and improve environmental sustainability. Wireless Reach aims to select projects that can be sustained and replicated to achieve large-scale social and economic benefit.

In the Americas, Wireless Reach supports projects including:

- Fishing with 3G Nets (Brazil): Integrates mobile and web-based applications and handheld devices to support sustainable fishing practices, business operations and deliver real-time market information to participating community members.
- Dulce Wireless Tijuana (Mexico): Is a feasibility study that examines combining 3G mobile service and applications with a community and patient focus on diabetes care and education.



- **Wireless Security (El Salvador):** Uses 3G technology to enable law enforcement and municipal government personnel to increase public safety through the mapping and sharing of information of crimes as they occur.

Looking forward, Qualcomm expects to see continued investment in mobile networks across the Americas as operators implement 4G networks. As these higher capacity networks expand they will, in turn, enable wider access to broadband-enabled services that are expected to bring increased economic and social opportunity to the entire region.



**Santiago Fernández Valbuena**

*Chief Strategy Officer of Telefonica S.A.*

*Former Chairman & Chief Executive Officer for Telefonica Latin America*

Telefonica S.A.

### **LATIN AMERICA: A SUCCESS STORY FOR THE INFORMATION SOCIETY**

ICTs on our continent are a genuine success story, since they are based on a model that allowed private investment to operate in a regulatory and legal environment of competition, thus facilitating the development of industry in an astonishing way.

In Latin America, both governments as well as companies are aligning interests for the benefit of society and, although with imperfect regulatory models, we have nevertheless managed to achieve goals that once seemed impossible.

In 2000 the industry was still in its infancy. Mobile market penetration exceeded 12% of the population while the Internet only reached a penetration rate of 3%. The challenges involving the rollout and modernization of networks to cover areas, where the population and routes over which they were being transported, were huge. We expanded networks, exceeding the minimum requirements of the concession contracts, we improved transmission to handle increased traffic, we strengthened partnerships for ecosystem development and each year we grew in the share of industry and in regional GDP.

At Telefónica we are moving forward in the rollout of infrastructures in 14 countries on the continent with investments amounting to around € 118 billion, while the natural and legal persons have shown us that, in Latin America, the rules were not written; that our customers were able to adopt services bypassing the traditional steps of the industry; and we learned that growth can occur simultaneously: increase penetration and incorporate innovative services.

During those years, competition grew and we became a significant industry in society. Companies as well as governments appreciated the benefits of new technologies in order to move forward in transparency, improved services to citizens, more competitive value chains and new business models. Currently we find a sector where nearly the entire population is using mobile phones and about 43% have Internet access, and where we are becoming a cornerstone for development in those countries where we operate.

Given the constant change that the digital revolution entails, today we face new challenges: we must reach half the population that is not connected to the Internet, whereas the other half requires that we make improvements to the networks in order to handle the explosion in traffic. In order to meet market demands, companies must make greater investments than those that were made over the past five years.

This quantum leap requires a commitment between companies and governments to ensure that the opportunities of the digital economy become a reality. Companies must gear their revenue towards “innovinvestment” as the factor that allows technology to become the driving force behind change and improvement in society. Governments, in turn, must adapt regulations to the digital world. We must both find models of public-private involvement that guarantee stable rules for investment, promote healthy competition and also strengthen the growth of the digital ecosystem.

The digital era does not recognize geographic barriers or show respect for companies that were successful in the past. The technological revolution that we are now experiencing has the potential – and it has demonstrated this during its initial years – to bring about changes to societies. In this new economy, only those who are able to evolve will prosper, thus making this transformation a necessity for which we are all responsible.



## D. Regional/International Organizations



**Pablo Bello**  
*General Secretary*

Ibero-American Association of Centers for  
 Research and Telecommunications  
 Companies(AHCJET)

### LATIN AMERICA MOVES FORWARD

Recent years have seen significant progress in the development of Information and Communication Technologies (ICT) in Latin America. Statistics endorse such fact: Latin Americans are increasingly connected with improved services; broadband grows significantly while prices in real terms are moving down. This follows from a set of both macroeconomic and sectorial factors. Growth in the region is certainly an important factor. But it is also the growing relevance that telecommunications have today in the public agenda, as well as in building a holistic view on the nature of policies, the investment commitment and competing will of the companies and the strengthening of intra-regional dialogue through extensive efforts from ITU, ECLAC, GSMA, CAF and AHCJET, among others.

This sectorial progress is highlighted by continuous and massive deployment of mobile broadband in the region, the consolidation of 3G, the start-up of LTE services and the advancement in 4G spectrum auctions processes. A course of technological transformation that places the region very close to the most advanced countries of the world.

No one doubts that Latin American telecommunications should be a strategic pillar of regional development. If we aspire to be first world nations, we must necessarily go for more innovation and creativity, raise the value added of our economies, increase the efficiency of processes, among others. But also advance transparency and participation in the political process to improve the quality of our democracies, dramatically improving the quality of education, strengthening public services. In short, build equality of opportunities and progress. To this end, information technology plays a central role.

In Latin America it has been developing a very significant environment for dialogue and collaboration. We have set an ambitious goal: bridging the digital divide in this decade. This requires a significant investment of effort, which is necessarily increasing by 10 % the investment trend projected to 2020. The challenge is to build the conditions for that investment to be accomplished. This requires multi-stakeholder dialogue and public and private leadership.

In this context, in the year 2013 AHCJET organized together with GSMA, BID, ITU, ECLAC, LACNIC, Internet Society, SEGIB, REGULATEL and the Government of Panama, among others, the First Regional Congress on Telecommunications as reference forum for governments, regulators, associations and civil sector telecommunications companies to discuss the state of telecommunications in the region and promote the construction of an agenda that is consistent with this objective.

This Congress was made in line with the challenges posed by Connect Americas 2012 and the Ministerial Conference on Information Society eLAC-ECLAC. In 2014 it will be essential to strengthen these areas, increasing cooperation among various international organizations related to telecommunications and deepen public-private dialogue with a very pragmatic approach to identify and remove barriers for sectorial development.

The Second Regional Telecommunications Congress, to be held in early August in Panama, will be a great opportunity to take another step in consolidating advances and presenting specific initiatives to further accelerate in building a digitally inclusive region moving towards development. The community of wills and joint efforts between governments, regulators, companies, international organizations and civil society will continue being the main asset to achieve that goal.



**Marcelo López Arjona**  
*Secretary General*

Association of Telecommunications Companies  
from the Andean Community (ASETA)

## BROAD BAND – INFRASTRUCTURE AND INTERNET

### From “sow” to “harvest”

The Latin American countries and in particular those of the Andean Subregion (Bolivia, Colombia, Ecuador, Peru and Venezuela), like others in Latin America that are considered “developing countries”, have reached levels of penetration with mobile voice services similar or superior than those of developed countries, as shown on the graph. The achieved process has contributed in a significant and positive manner to the universalization of voice and basic message services (SMS). Since the emergence of mobile broadband, it is taking a similar process.

Within this context it is important to notice how the relationship between infrastructure development for broadband and Internet access and the social and economic impact is being considered with new approaches. One of the most original approaches is the development of penetration of services and the available time of the necessary infrastructure for broadband networks.

Recent studies like the one generated by professor Ernesto Flores-Roux, from the Center of Economic Investigation and Teaching (CIDE) in Mexico City, consider that “earlier deployment guarantees early adoption, independent of how wealthy a country is or the estate of development of the previous technology”<sup>71</sup>.

As a matter of fact, the analysis of how penetration increases according to the antiquity of the networks, it can be observed that de adoption velocity increases in a significant manner with the time the network provides service. This conclusion is coherent with previous findings published in studies by UIT and ASETA<sup>72</sup>.

The study regarding “Broadband in the Andean countries: technology, regulation and market. Current situation and perspectives 2012 – 2015”, recently performed by the UIT in collaboration with the Telecommunications Companies Association of the Andean Community – ASETA, indicates that the number of broadband subscribers exceeds the ones for fixed broadband in various countries.

<sup>71</sup> “Mobile broadband: the urgency of accelerating its deployment” in “Broadband in Latin America : beyond connectivity” CEPAL. DIRSI. European Commission: Program @LIS. 2013.

<sup>72</sup> “Contribution of mobile services to connectivity and universalization of telecommunications in the Andean Countries”. UIT. ASETA. 2009.

Within this group of Latin American countries, the forecast for mobile broadband within the group of referred countries is a similar tendency of that occurred with mobile voice services.

Based on these ideas, we can be concluded that it is fundamental for our countries to promote and support early development of infrastructure, that allows massive access to broadband services and applications, thus the sooner the sowing the earlier the harvest with favorable results within social and economic aspects because of their positive influence in the GDP and in their own social activities in these countries.



## CANTO



**Ayanna T. Samuels**  
*Broadband Infrastructure Inventory  
 and Public Awareness Project  
 (Biipac)*  
*Regional Coordinator*

Caribbean Association of  
 National Telecommunication  
 Organizations (CANTO)

### THE CARIBBEAN SHIFTING TOWARDS A BROADBAND-ENABLED FUTURE

There is ample literature, experiences and studies that provide evidence of the critical role broadband Internet plays in economic and social development. It is estimated that a 10% rise in market penetration of broadband services in the LAC region is correlated to average increases in GDP of 3.2% and a boost in productivity of 2.6%.<sup>73</sup>

2013 saw the Caribbean making positive strides in the creation of a facilitating atmosphere for rapid broadband adoption. LTE for instance, took firm root as increased demand for instant access to data added pressure on operators to upgrade their networks.

Additionally, numerous operators progressively upgraded networks in different countries to HSPA+, which is considered 4G. As of September 2013, there were HSPA+ services in 22 markets throughout the Caribbean.<sup>74</sup>

2013 also saw the much-anticipated launch of a satellite company that aims to provide fast and cheap broadband to billions of people in underserved areas.

The Company is O3b, which stands for the “other three billion” people that have limited or no access to connectivity. O3b is currently inviting applications from Caribbean countries. Further, they have urged the writers of national broadband plans to include satellite provision as a bona fide option for closing the digital divide.

Deployment of IXPs is another strident step the Caribbean has taken to realize the socio-economic benefits of broadband deployment. The regional IXP initiative has been spearheaded by the CTU and the Packet Clearing House. Benefits include reducing Internet traffic latencies and costs by allowing traffic to be routed locally instead of depending on expensive international connections.

To close the digital divide by 2020 in the region would require significant investment in fixed and wireless networks. Most of that investment would have to come from the private sector and regional development banks, but the idea is to employ various means to create favorable conditions to encourage investment.

<sup>73</sup> Garcia-Zaballos, A / Lopez-Rivas, R: Governmental control on socio-economic impact of broadband in LAC countries, working paper.

<sup>74</sup> Source: Informa Telecoms & Media.

CANTO is currently undertaking a Broadband Infrastructure Inventory and Public Awareness in the Caribbean Project, which will contribute significantly to laying the groundwork for increased proliferation of broadband throughout the Caribbean.

The HIPCAR project, currently in its second phase, continues to make notable inroads in its effort to help to harmonize the Caribbean's policy, regulatory and legislative atmosphere.

Additionally, the CTU's Spectrum Planning and Management project, intended to build spectrum management expertise in the Caribbean and to reform and harmonise policy approaches to spectrum management.

The ITU continues to build on the successes achieved in its Connect Americas effort. With 39 Caribbean related projects budget totaling just below US\$1B, the scope for significant progress to be achieved in broadband proliferation is far reaching. Already, interest has been shown in many projects and the sourcing of donor funders is in progress.

Furthermore, I have been personally most pleased with the ITU's level of involvement with the other ICT involved agencies in the Caribbean, namely the CARICOM Secretariat, the CTU and CANTO. They have added valued insight to initiatives en train and have made strong efforts to join forces wherever possible and prudent.

Data for this report was taken from CANTO's 2013 year in review available at <http://canto.org/2013/12/27/canto-caribbean-roundup-year-in-review-2013/>.



**Clóvis Baptista**  
*Executive Secretary*

Inter-American Telecommunications  
Commission - CITEL

### AMERICAS: LOOKING TO THE FUTURE

The Inter-American Telecommunications Commission (CITEL) is a consultative body of the Organization of American States (OAS) that deals with a variety of strategic matters of public policy such as the planning the use of the radio spectrum, the public policy issues related to the Internet, cyber-security, the regulatory environment of the sector and the promotion of universal access to the Information and Communication Technologies (ICTs).

CITEL has been constituted in order to serve as a permanent consultative and collaborative forum among Governments, the private sector and civil society. It also acts as a regional mechanism of articulation and political coordination that generates prospects and common points of view among Member States in preparation for the world conferences of the International Telecommunications Union (ITU) on issues that include the obligatory nature of a treaty. CITEL activities also aim at the scientific and technological development, building national capacity and strengthening the role played by States in the promotion and regulation of the sector.

Representatives of the 34 OAS Member States, associate members of the Permanent Consultative Committees of CITEL (companies and non-governmental institutions) and observers from different parts of the world participate of the work of CITEL.

In the framework of the VI Summit of Heads of State and Government of the Americas, held in Cartagena de Indias, Colombia, in April 2012, the leaders of the Region pledged:

- To foster increased connection of telecommunications networks in general including fiber optics and broadband, among the countries of the region, as well as international connections, to improve connectivity, increase the dynamism of communications between American countries and reduce international data transmission costs and thus, promote access, connectivity and converged services for all sectors of society in the Americas.
- To expand access to and use of ICT services, through the following actions:
  - Foster the participation of all sectors to promote access to ICTs and broadband in educational and health centers
  - Promote training programmes for teachers through ICTs
  - Expand ICTs' contribution to competitiveness, productivity, entrepreneurship and innovation
  - Increase transparency and accountability in Government matters with the support of ICTs
  - Promote transparency and combat corruption in the private sector with the support of ICTs

The CONNECT AMERICAS SUMMIT 2012 (CAS), allowed us to reflect on the setting up of political commitments made at the VI Summit of the Americas and identify the needs of the different countries of the region in relation to infrastructure, ICT applications and services. It has allowed us to also develop an inventory of projects that are currently being evaluated/implemented. The proposals are the result of the close coordination between CITELE and ITU Americas Regional Office. Among such proposals, it has been possible to also identify several issues that are intended to promote actions to reduce the digital divide in the region.

In addition to collaborating with ITU in the materialization of the results of the Summit, CITELE also seeks to assist the countries of the region in the implementation of the Regional Initiatives for the Americas adopted in the framework of the World Telecommunication Development Conferences, in close coordination and collaboration with the ITU Americas Regional Office. Five Regional Initiatives that will be proposed to WTDC-14 will serve as reference for the prioritization of CITELE-ITU joint actions during the period 2015-2018.

Despite of all efforts undertaken in a coordinated manner by ITU and CITELE in the region and despite the very positive results achieved through this important strategic alliance established and fully consolidated, we can clearly see that there is still much to do.

In fact, if not all, most of the countries of the region has defined development strategies for broadband and Internet, which are under implementation. However, according to current statistics on the rate of penetration of broadband and the development of the Internet, there are still persistent gaps within countries in the region and among themselves. CITELE seeks to continue coordinating actions with the ITU with a view to digitally include the citizens of the region.

With the support and collaboration of CITELE, ITU is engaged in a major regional study entitled Regulatory Legal Framework and Research on the Behavior of Consumers of Telecommunications Services of in Latin America, which focuses mainly on the rights' protection of consumers. This important work will be available to Member States at the end of the first semester of 2014 and represents one of the many results of the successful partnership between the two institutions.

Finally, it is important to highlight the main results of the VI Assembly of CITELE which closed on February 13, 2014 in Santo Domingo, Dominican Republic, with a call to strengthen cooperation in the formulation of strategies for broadband development and deployment, aiming at improving the connectivity and the social, economic and cultural development of the countries of the continent.

The VI Assembly of CITELE approved the Declaration of Santo Domingo, which calls to assist low-income populations in the region so that they benefit from the new Information and Communication Technologies (ICTs). The 34 Member Countries agreed to "devote special attention to the most disadvantaged, remote, and/or hard-to-access populations, persons with disabilities, older persons, women, children, indigenous peoples, with the aim of digital inclusion, and ensuring that telecommunications/ICT facilitate their development".

In the same line, the Declaration of Santo Domingo agreed that countries in the region encourage broadband access, "in order to reduce the technological gap among and within societies of the Hemisphere, placing special emphasis on the reduction of costs of international Internet connectivity for landlocked developing countries and small developing island States".

The Declaration also emphasizes that ICT-related regulatory frameworks raise and strengthen "competition, investment, innovation, users' rights, and public-private partnerships". Also calls to "identify measures to promote the affordability and transparency of international roaming services, focusing especially on the realities and needs of border areas".

On the other hand, the VI Assembly of CITEC expressed concern with some hazards arising from the advance of new technologies in calling for the promotion of "most effective ways to support regional cooperation to enhance cybersecurity and to protect children on the Internet".

OAS Member States also agreed to promote the development of strategies that allow the recognition of telecommunications/ICT infrastructure as a key element to successfully deal with cases of natural disasters, "as a determining factor in natural disaster prevention and mitigation, rescue and relief, and reconstruction actions".

Likewise, the Declaration calls to promote international networking through national and regional traffic exchange points (IXPs) to improve quality, increase connectivity and resilience of networks, promoting competition and the reduction of international interconnections. The document also called "to promote the creation of local content that facilitates growing use of broadband access, promoting cultural exchange and the digital inclusion of all peoples".

CITEC will continue to provide the assistance required by the countries of the Region so that the action priorities identified in the Declaration of Santo Domingo can materialize with maximum efficiency and effectiveness. We rely upon the invaluable support of the ITU to achieve such purposes.



**Oscar Estrada**  
Executive Secretary

Telecommunications Regional Technical  
Commission (COMTELCA)

### BROADBAND PROGRESS IN THE CENTRAL AMERICAN REGION

Implementation and use of information and communication technologies ICT, and progress in broadband penetration generate a series of economic and social benefits improving productivity, employment, community development, the quality of education and health, access to information and economic growth in general in the countries as well as providing connectivity for rural areas.

In recent years the Central American countries, members of *La Comisión Técnica Regional de Telecomunicaciones* - COMTELCA (The Regional Technical Commission for Telecommunications), have made joint efforts on initiatives that promote broadband development.

In the context of *La Agenda Mesoamericana de Integración de los Servicios de Telecomunicaciones* - AMIST (the Mesoamerican Agenda for the integration of the Telecommunication services) of *El Proyecto Mesoamerica* (the Mesoamerica Project) and *el Sistema de Interconexión Eléctrica para los países de América Central-SIEPAC* (the system of electrical interconnection for the countries of Central America), it took advantage of that infrastructure to install fiber optics in addition of those for telemetry and control of the regional electrical network, giving rise to the fiber optic backbone network project, known as *Autopista Mesoamericana de la Información* -AMI (Mesoamerican information highway).

The AMI has fiber optics from Guatemala to Panama, being planned and pending connections with Mexico and Colombia. The system includes an interconnection point in each country.

In order to bring the benefits of AMI to the populations, it is necessary the design and deployment of complementary infrastructure. In this sense COMTELCA member countries presented, among others, a project of complementary broadband infrastructures to the 'Connect Americas Summit', held by the International Telecommunication Union (ITU) in coordination with *La Autoridad Nacional de los Servicios Públicos* -ASEP (the National Authority for Public Services in Panama), in July 2012, in Panama City.

This initiative starts with RG-T2242 broadband project, financed by the IDB. The project includes four components:

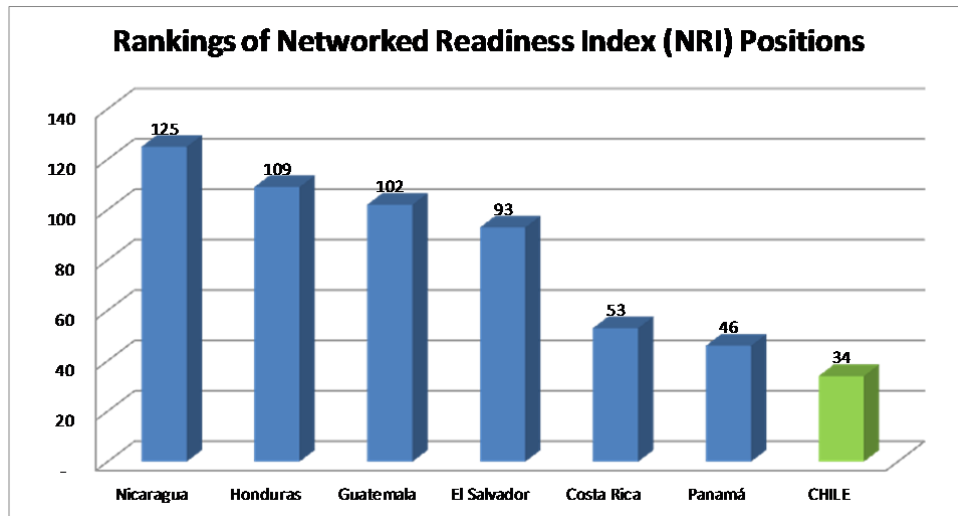
- **Market study.** Improve the understanding of the market dynamics in each country of Central America, including an analysis on the socio-demographic and economic conditions, an analysis of supply and demand for current services associated with broadband, and a projection of the demand for these services.
- **Technical study.** A logical and physical design of complementary infrastructure for a broadband network deployment in the countries, in order to use the facilities of the AMI.

- **Financial economic study.** Analyze the economic and financial viability of the technical proposals and present models of governance.
- **Regulatory recommendations on interconnections.** Analysis of countries’ regulatory frameworks, presentation of modification proposals and a mechanism for the establishment of interconnection rates.

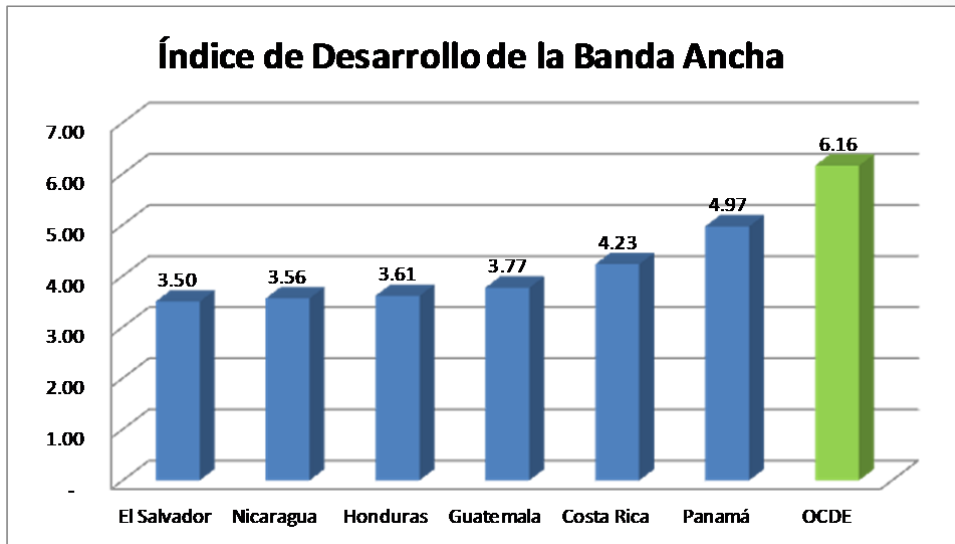
The project started in January 2014 and considers its completion for July of this year.

Throughout the formulation and implementation process of the initiative, it has counted with the support of the ITU officials located in Honduras, contributing with their experiences and knowledge.

In general, regarding the implementation of new technologies of information and communication, Central American countries have considerably improved their position in comparison to 2012, as shown in the Networked Readiness Index (NRI), which evaluates the degree of preparation of the network to take full advantage of ICT. In this sense Panama raised 11 positions and is ranked 46, Costa Rica climbed five positions and is in position 53, El Salvador climbed 10 positions to 93 and Nicaragua went up 6 positions to place 125. Guatemala fell down 4 positions to the 102 place and Honduras fell down 10 positions to place 109. The following chart shows the position of the countries compared with Chile, which leads Latin America at position 34.



The following chart shows the current situation of the countries according to the broadband development index (IDBA), in comparison to the countries of the Organization for Economic Cooperation and Development (OECD):



Notwithstanding the efforts made, the countries of the region continue to develop initiatives and mechanisms that allow the improvement of citizens conditions, seeking to bridge the digital divide and achieving the goals set by agencies and/or international institutions.





**Embert Charles**  
*Managing Director*

Eastern Caribbean Telecommunications  
Authority (ECTEL)

### BROADBAND IN THE ECTEL COUNTRIES

Affordable and reliable broadband services are now undoubtedly viewed as an essential pillar of the development strategy of the Caribbean countries. The smaller states, which are grouped as the Organisation of Eastern Caribbean States (OECS), are implementing several initiatives, which have integrated ICT into critical government functions.

In addition to separate national programmes where ICT has been integrated in financial management and national security, new harmonized initiatives such as the EGRIP (E-Government for Regional Integration Project) have expanded ICT usage. The immediate and long-term impact of these programmes will hinge on affordable and reliable broadband services for all sectors and citizens of the region.

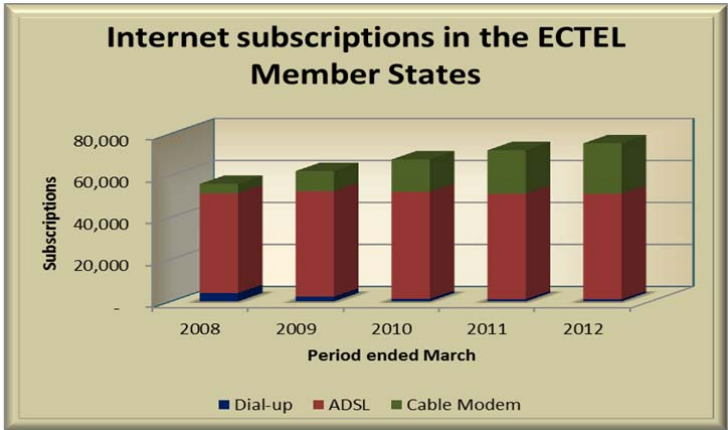
The development of effective and successful broadband policies and implementation of strategic plans therefore must include the widest possible national consultations. The consultation process should include residential, business and government consumers, service providers, regulators, innovators and policy makers. Recent experiences have shown that the development of broadband policies and plans often stem from the need to jump-start expanded service provision, but the process of formulating and reviewing goals, actions, and of mapping out institutional roles and responsibilities into a cohesive programme is an ongoing exercise.

The OECS Member States are taking these factors into consideration. While there is the immediate need to implement projects successfully and immediately, the broadband initiatives are also driven by the urgency to pull up Member States from their current lagging positions in the world (re broadband penetration), to a competitive position on the global stage. The rate of growth in broadband penetration in recent times has increased, but the indicators of aggregate usage put the ECTEL region as a whole low down in global rankings. The policy approach has been to clearly identify the critical supply side as well as the critical demand side issues related to broadband expansion.

On the supply side the policy initiatives are aimed at ensuring that high quality reliable service is available to all households on the one hand and to all citizens as well. The regulatory arrangements are therefore designed to move beyond the rules for open entry and to ensure that right of way and interconnection are seamless. Spectrum for broadband rollout is available to the potential providers at rates, which ensure that the prices of services to consumers enable increase in access. The release of 700 MHz spectrum by the telecommunications regulator Eastern Caribbean Telecommunications Authority (ECTEL) paves the way for the introduction of the most advanced broadband technologies to the governments and people of the region. Additionally, collaboration between ECTEL and the ITU under the HIPCAR project has resulted in the development of regulatory frameworks, which

significantly minimize the barriers to entry of new broadband service providers into our markets, including cable operators. The net effect of this development is the expansion of supply.

Recent data from ECTEL illustrate that in the ECTEL countries, the number of cable broadband subscriptions has increased at a compound annual growth rate (CAGR) of fifty percent over the past five years. The table below presents information on the steady increase in Internet and broadband services in the ECTEL states.



Another project CARCIP (Caribbean Regional Communications Infrastructure Programme) will, as one of its components, focus on expanding infrastructure- subsea fiber cable options and also microwave capacity in some of the countries.

On the demand side programmes are being developed to increase availability and demand for content and services that are practical, relevant and accessible. This approach has led to region-wide programmes on innovation as well as the establishment of national Internet Exchange Points (IXPs) in all the countries. In the countries, which are grouped under the ECTEL regulatory system, the IXPs have been established and ICT innovation and development programmes are underway, which in the short term will provide the content to make these IXPs relevant.

The critical success factors in all the broadband related initiatives will continue to be quality, affordability and relevance to developmental needs.

**FONDO INDÍGENA**

**José Roberto Alulima Gordillo**  
*Technical Secretary*

Fund for the development of indigenous peoples of Latin America and the Caribbean  
[www.fondoindigena.org](http://www.fondoindigena.org)

### **TRAINING OF INDIGENOUS TECHNICIANS IS SUPPORTED BY INFORMATION TECHNOLOGY**

Since 2005 Indigenous Peoples Fund and the International Telecommunication Union have a fruitful partnership allowing the formation of more than five hundred indigenous technicians on indigenous rights, identity development and project management with intercultural approach, among other relevant topics.

As is known, the Indigenous Peoples of Latin America and the Caribbean have undergone historical processes of exclusion, and currently a large majority still live in poverty, without health, education, basic supply of food, water, shelter, electricity and other basic infrastructure.

However, short while ago Indigenous Peoples promote processes of cultural and identity revitalization, focusing on the struggle for the full exercise of their collective rights and seeking their cultural diversity, languages, wisdom, and ancestral knowledge are recognized by societies and the States in which they live and thus develop on equal conditions with other citizens.

Indigenous Peoples are now determined to be protagonists in decision-making on issues related to their present and future, and the Indigenous Peoples Fund contributes to this process of empowerment by facilitating new framework formation opportunities, who acquire the necessary training to influence the public policies generation in a more inclusive and intercultural way.

The formative experience driven by the happy alliance between ITU and the Indigenous Fund allowed to strengthen the capabilities of a large number of indigenous technicians and leaders in strategic issues of the indigenous agenda in the region, while equipping them with skills in the use of ICTs to improve their communities situation, transcending from the strictly technical to creating virtual discussion and reflection networks with local, national and international environments.

A real time interaction spaces were generated from over 70 different Latin American cultures that are united by a common indigenous identity, based on a shared history of domination, marginalization and struggle for their rights. Participants were able to share and exchange experiences from their own communities and with their particular worldviews, enriching the technical contributions provided by the teachers with the ancient cultures legacy.

According to the Indigenous Peoples worldview, communication has historically been a base for their survival, having been created the most diverse and creative communication forms, such as symbolic messages, ceremonial, spiritual rituals, the use of wind instruments, screams, dreams, smoke or assemblies, among others, to communicate between each other and with the supernatural beings.

Today these Villages appear as information society claimants, and increasingly use technological advances to their political articulation and technical training, making ICTs a key instrument to manage their development with identity and the full exercise of their rights as culturally distinct peoples.

The ITU - Indigenous Fund Alliance shows up to date significant results in the formation process and digital divide reduction and is projected towards into a new phase in the context of the Indigenous Fund re-launch, recently declared as Heritage of Peoples and States of Latin America.