



# Bridging Gaps, Building Opportunity

*Broadband as a Catalyst of Economic  
Growth and Social Progress in Latin America  
and the Caribbean*

A View from the Industry



March 2012

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The document preparation was led by team leaders Antonio García Zaballos of the Competitiveness and Innovation Division (CTI) and Ginya A. Truitt Nakata from the Office of Outreach and Partnerships (ORP), with the support of consultants Eloy Vidal, Grant Aldonas and David St. John. In addition to the valuable advice and guidance that was received from the industry Steering Committee members who endorsed this report, the team's work was considerably improved thanks to the generous feedback and direction received via peer review of the Technical Committee, the members of which are listed below:

### Alcatel-Lucent

Marie Thérèse Royce,  
*Senior Director International Affairs*  
Celedonio von Wuthenau,  
*Director CALA Public Affairs*  
Florence Gaudry-Perkins,  
*Director International Relations*

### Cable & Wireless LIME

Claire Downes-Haynes,  
*Manager, Regulatory Affairs*  
Frans Vandendries,  
*VP Legal & Regulatory*

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*Strategy and Economics*

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Regional Latin America*

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### GSMA

Mauro Accurso,  
*Media and Content Analyst, GSMA Latin America*

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*Director, Global Policy*

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for Latin America, World Ahead Program*  
John Roman,  
*Director of Broadband and Regulatory Policy*

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*Regional Vice President Latin American & Caribbean*  
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Government Relations*

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*Director for Latin America, Public  
Sector Cloud Computing*  
Miguel Susffalich,  
*Senior Enterprise Architect*

### Nokia Siemens Network

Kim Jones,  
*Program Manager, Connectivity Scorecard*

### Qualcomm

Gabriela Manriquez,  
*Sr. Director, Government Affairs Latin America*  
Anne-Lise Thieblemont,  
*Sr. Director, Government Affairs*

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*Managing Director, Strategic Accounts*

### Research In Motion

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*Global Public Policy*  
Adrean Scheid Rothkopf,  
*Senior Director, Government Relations, Latin  
America and the Caribbean*

### Telefonica Internacional

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*Director Regulatory Affairs and Wholesale  
Business, Telefonica Latin America*  
Verónica Mizushima,  
*Director Strategy, Telefonica Perú*

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Chris Taylor,  
*President & CEO*

### UNCTAD

Cécile Barayre-El Shami,  
*Economic Affairs Officer*  
Torbjörn Fredriksson,  
*Chief, ICT Analysis Section*

### UNE EPM Telecomunicaciones

Luis Alberto Sanchez Correa,  
*Corporate Development Manager*  
Diana Parra,  
*Professional, Regulation and Institutional Relations*  
Beatriz Yemal,  
*Counsel for Regulation and Institutional Relations*

### University of California San Diego

Michael Kleeman,  
*Senior Fellow, Institute of Global Conflict and  
Cooperation*

### Wesley Clover International Corporation

Andrew Fisher,  
*Executive Vice President*

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## A Common Statement On Accelerating Penetration And Usage Of Broadband Technology And Services In Latin America And The Caribbean

### President's Message

Broadband is vitally important to economic and social progress in Latin America and the Caribbean (LAC).

While the availability of fast digital networks is often compared to that of more traditional infrastructure such as roads, sanitation, electricity and transportation, in many ways broadband's significance is now paramount on the international development policy agenda.



In the global information age, broadband is essential for almost any business, anywhere and of any size, to conduct operations, gain access to markets and to prosper. Broadband services are critical to sustainable growth and job creation in our communities, as well as an ever-increasing standard of living for the population.

Around the world and in LAC, widespread broadband adoption via computers and mobile devices is a proven catalyst for enhancing social inclusion by opening new doors to innovation in education and health care, and for improving government efficiency and transparency.

In this context, the Inter-American Development Bank (IDB) will seek to generate the necessary discussions, collaborations and partnerships – across the public and private sectors – as well as the government and industry actions and investments that will leverage the power and promise of broadband for accelerated development in our region.

We intend to work with governments, the private sector, the ICT/telecommunications industry and other relevant stakeholders to overcome longstanding obstacles to the deployment of fast networks. Our aim is to help clear the way for a new era of digital inclusion and innovation where broadband flourishes and all people, no matter who they are or where they live, have the opportunity to achieve better lives through the connectivity, services and applications that are fast becoming the global norm. Indeed, this report itself is the product of a fruitful interchange between the IDB and many members of the telecommunications industry, as well as an indication of their determination to accelerate the penetration rate and usage of broadband services.

Broadband has moved decisively to the center of the development agenda. Rest assured that the Bank will make full use of its capabilities to bring the LAC region into the forefront of the digital revolution as a means of achieving higher productivity, improved competitiveness and a rising standard of living.

We have nothing but the highest expectations for what can be achieved through the modern communications technologies that are sweeping the planet and offering benefits and opportunities to so many. Let's work together to make it happen in Latin America and the Caribbean.

In partnership,

Luis Alberto Moreno

*We, the undersigned, are in agreement on the principles and objectives outlined in the following position statement on accelerating broadband deployment and use in Latin America and the Caribbean, and we support the contents of the accompanying report.*

Vastly expanding broadband coverage, access and adoption across Latin America and the Caribbean (LAC) is critical to the region's economic and social development. As representatives of a broad cross-section of information and communications technology (ICT) companies and organizations, we wish to offer our help and cooperation in promoting and nurturing a vigorous expansion of broadband access and adoption throughout the region.

There is ample evidence to support the vital role that broadband plays in economic development. According to a recent Inter-American Development Bank study, a 10 percent rise in the market penetration of broadband services in the LAC region increases the GDP in 3.2 percent on average and boosts productivity by 2.6 percent.

Broadband offers enormous opportunities to help raise the standard of living, quality of life and business competitiveness across the region. It has enormous potential to drive new, home-grown economic activities via emerging digital applications and services. It can help revolutionize education, health care and the delivery of government services in every LAC country, and it offers new and promising opportunities for countries and industries to reduce pollutants that cause climate change. Broadband also enhances opportunities for social networking, community organization and a more active engagement in the civic, political and democratic life of nations.

Mindful, as well, of what increased broadband penetration can do to drive innovation, improve the entrepreneurship and enterprise competitiveness and deliver broad quality of life enhancements to communities and their residents, growing numbers of our organizations are making significant investments in broadband deployment in the region. We firmly believe that these efforts are essential to the region's economic and social development.

Given this impact, we feel it is essential that LAC governments, their development partners and the ICT/broadband industry work together to promote and nurture a vigorous expansion of broadband access and adoption. The aim of this common industry statement is to set forth high-level priorities and commitments in furtherance of the IDB's commitment to support broadband development throughout the region, and particularly the guidance it is providing in the development of national broadband plans and other public policies; the updating of regulatory frameworks to encourage competition and innovation, lower prices, and the evolution toward universal broadband access and use; the nurturing of public-private partnerships and public investments and incentives aimed at deploying infrastructure to increase penetration and adoption of services and applications in under-served areas, with particular focus on providing last-mile and point-of-service access to technology for the people, businesses and others who currently lack it; and capacity building in the public and the private sectors to encourage development of innovative services and applications.

#### Signatory companies and organizations ("Industry") Considering...

(a) that there are promising indications of the potential of accelerated broadband deployment for invigorating economic development across Latin America and the Caribbean;

(b) that the LAC region generally lags behind much of the world in terms of deployment and adoption of fixed and mobile broadband;

(c) that the region is experiencing three types of broadband gaps. First, lower broadband availability in rural areas compared to urban centers. Secondly, variations in the deployment and adoption of broadband between countries in the LAC region. And thirdly, the lower penetration of broadband in the LAC region as a whole compared to the world's leading countries in



broadband deployment;

(d) that those gaps persist largely because of existing challenges related to low coverage of broadband, affordability of service and access devices, and low levels of digital literacy and awareness of the value that broadband can bring;

(e) that both governments and private companies in the region have been investing in the deployment of new infrastructure to meet current demand for more and better broadband in the region;

(f) that there are a variety of factors that discourage increases in broadband penetration within the LAC region: allocation schemes for mobile services spectrum that too often limit the availability of frequencies and inflate the costs of acquisition to carriers; regulatory hurdles to invest and build-out convergent next-generation networks; high tariffs and taxes on broadband equipment and services; limited physical infrastructure to support broadband network deployment; lack of a proper and updated ICT legislative and public policy framework

to foster the creation of local content, online applications and new businesses that will increase the demand for broadband services; and tariffs and taxes on personal computers and mobile devices that enable broadband access;

(g) that meeting the rising demand for broadband will require coherent national strategies and a far stronger enabling environment to incentivize business to accelerate broadband deployment throughout the region.

### Recognizing...

i. the efforts that governments across the region are making to address these challenges.

ii. the IDB's initiative to use its convening power to engage the region's governments, industry and other stakeholders in a discussion of best practices to accelerate the deployment and adoption of broadband throughout the region; and that the IDB's expertise and resources can help deepen the technical capacity of governments, finance the physical infrastructure needed to accelerate deployment and improve the enabling

environment in ways that encourage investment flows.

iii. that members of our industry stand ready to contribute technical assistance and business expertise to developing coherent national strategies that are tailored to each country's needs, and that we are committed to working with policymakers to foster an operating environment that encourages the competition, innovation and widespread access and capacity building that will lead to increased broadband deployment and adoption.

### Agreeing...

1. that vastly accelerated broadband deployment, coverage and adoption is vitally important to raising living standards and improving the quality of life throughout the LAC region.

2. that a strong partnership between the IDB, member governments, industry, and other stakeholders in forging national strategies to expand broadband availability and use can be enormously helpful in advancing the region's economic interests and addressing social challenges.

3. that our key role as ICT/broadband industry members is to develop and advance options for policymakers to improve the enabling environment for accelerated broadband deployment and adoption.

4. that our industry also has a role to play in cooperating with governments of the LAC region to develop projects aimed at illustrating the transformative power of ICT as a whole, and broadband in particular, to improve individual lives and to broadly advance social inclusion; and, further, that we can help by sharing experiences, best practices and relevant knowledge, as well as information on issues concerning regulation, security, free expression, free flow of information and privacy protection, as well as providing recommendations and technical support needed for successful and effective implementation.



**Alcatel-Lucent**  
Gabrielle Gauthey,  
Executive Vice-President,  
Global Government & Public Affairs



**Cable & Wireless LIME**  
David Crawford,  
Chief Operating Officer



**Dialcom**  
Javier Marín,  
Managing Director



**Google**  
Nelson Mattos,  
Vice-President of Product and  
Engineering for Europe and  
Emerging Markets



**Intel Corporation**  
John Davies,  
Vice-President,  
Sales and Marketing & General  
Manager, World Ahead Program



**KT Corporation**  
David Kyungmin Song,  
Managing Director/Global  
Business Unit



**Qualcomm**  
Bill Bold,  
Senior Vice President,  
Government Affairs



**Telefonica Internacional**  
Javier Delgado,  
Director Technical Secretariat,  
Telefonica Latin America



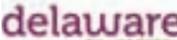
**Asociación Iberoamericana de Centros de Investigación y Empresas de Telecomunicaciones (AHCIT)**  
Pablo Bello Arellano,  
Secretary General



**Cisco Systems**  
Andres Maz, Executive Director,  
Advanced Technology Policy



**Ericsson**  
Lourenço Coelho,  
Head of Strategy & Marketing  
for Latin America



**Grupo Delaware**  
Luis Garma,  
Executive President



**Intelsat**  
Phillip L. Spector,  
Executive Vice President,  
Business Development &  
General Counsel



**LS Cable and System LTD**  
Jason A. Oh,  
Vice President,  
Global Solutions Group



**Redline Communications**  
Louis Lambert,  
Managing Director,  
Strategic Accounts



**Telecommunications Management Group, Inc.**  
Janet Hernandez,  
President



**Belize Telemedia Limited**  
Karen Bevans,  
Chief Operations Officer



**Connected Nation**  
Brian Mefford,  
Chairman and CEO



**FTTH Council LATAM Chapter**  
Eduardo I. Jedruch,  
Finance Committee Chairman



**GSMA**  
Sebastian M. Cabello,  
Director, GSMA Latin America



**Inveneo**  
Mark Summer,  
Co-founder & Chief  
Innovation Officer



**Mercado Libre**  
Stelleo Tolda,  
Chief Operating Officer



**Research In Motion**  
Clint Robinson,  
Vice President,  
Government Relations



**Tropical Telecom, Ltd.**  
Chris Taylor,  
President & CEO



**Corning Incorporated**  
Tim Regan, Sr. VP,  
Global Government Affairs



**Microsoft Corporation**  
Orlando Ayala,  
Corporate Vice President, Chairman  
Emerging Markets, Chief Strategist,  
National Competitiveness



# 1 Introduction to the Report

Broadband connectivity and access – and particularly the new communications technologies, applications and services enabled by high-bandwidth networks – are vital to economic, political and social progress in Latin America and the Caribbean. Accelerating broadband deployment in the region holds enormous promise for boosting growth, development and social inclusion.

There is ample evidence from around the world directly linking advancements in broadband connectivity to growth in the creation of high-skilled, high-paying jobs, improved international competitiveness, stronger performance among small and medium sized enterprises and overall quality of life improvements.

According to a recent econometric study done by the IDB specifically for the Latin American and the Caribbean region, a 10 percent rise in the market penetration of broadband services increases the GDP by 3.2 percent on average and boosts productivity by 2.6 percent.<sup>1</sup>

But for these far-reaching benefits to be realized in Latin America and the Caribbean, businesses, policymakers, regulators and other stakeholders in the region will need to work in concert to address the digital divides that exist between LAC and the most dynamic economies of the world, between many of the countries in the region itself and between urban and rural areas

within LAC countries.<sup>2</sup> Given the positive contributions that broadband-driven information and communication technologies (“ICT”) make to productivity, growth, and living standards – as well as in advancing social inclusion and more effective and transparent governance – the region and its people will continue to pay a significant economic price if these gaps do not close.<sup>3</sup>

Despite the existing gaps, there is cause for optimism. Demand in Latin America and the Caribbean for ICT goods, technology and broadband services in particular is growing rapidly, fueled by strong economic growth that has increased incomes throughout the region.<sup>4</sup> This rising demand has attracted the attention of both telecommunications service providers and developers of specific broadband applications,<sup>5</sup> who are now expressing enthusiasm for the region as a potential growth market.

<sup>2</sup> The gap between Latin America and the OECD economies in fixed broadband rose from 1 percent in 2000 to 17 percent in 2009, whereas the gap in mobile broadband rose from 5 percent to 44 percent over the same period. *Latin American Economic Outlook*, (Organization for Economic Cooperation and Development’s Development Centre and United Nation’s Economic Commission for Latin America and the Caribbean ECLAC, 2012), 16.

<sup>3</sup> ICT investment accounted for 0.3 to 0.8 percentage points of GDP growth annually among OECD member countries from 1995-2001. *ICT and Economic Growth – Evidence from OECD Countries, Industries and Firms*, (Organization for Economic Cooperation and Development, 2003) 36.

<sup>4</sup> Across Latin America and the Caribbean, economic growth in 2011 rose above 5 percent and forecasters expect it to moderate only slightly to 4.4 percent in 2012. OECD/ECLAC, *Outlook*, 7.

<sup>5</sup> ECLAC’s most recent study of foreign direct investment (“FDI”) in Latin American and the Caribbean points to rising demand for telecommunications services as one of the key drivers of a 54 percent increase in FDI across the region in 2010. at 39. *Foreign Direct Investment in Latin America and the Caribbean*, (United Nations Economic Commission on Latin America and the Caribbean, 2010), 39.

<sup>1</sup> A. Garcia-Zaballos and R. Lopez-Rivas, *Governmental control on socio-economic impact of broadband in LAC countries*, working paper.

Ericsson has partnered with the Chilean mobile services provider Entel and, with financial support from the national government, has brought wireless broadband access to more than three million people living in rural communities across the country. The new 3G mobile network is enabling rural businesses to leverage the benefits of better connectivity to national, regional, and global markets. This project is the largest public-private partnership in Chile, improving broadband coverage to more than 90 percent of the country’s rural population.



Photo courtesy of Ericsson

Broadband is expected to grow by 16 to 18 percent across the region in both 2011 and 2012, stimulated by investments in networks by operators who are, in part, responding to consumer demand for bundled services.<sup>6</sup>

Even so, deployment and adoption of broadband in LAC will continue to lag that of other regions. While some of this can be attributed to low levels of education and income levels in many parts of the region, there are a number of infrastructure and public policy factors that are holding broadband back. These include high costs of broadband services, regulatory barriers to deployment, weaknesses in the physical infrastructure providing bandwidth to the region and low penetration of personal computers among the population.

All signs point to the need for a far stronger enabling environment to accelerate both deployment and adoption of broadband throughout the region. While governments across LAC have been moving forward on a variety of fronts with strategic measures to address these challenges, there is still much work to be done before the region will be in a position to close critical gaps.

This report is intended to encourage and reinforce the efforts of policymakers and industry stakeholders throughout the region to accelerate broadband deployment. The report has two primary aims. The first is to help identify public policy and regulatory issues that need to be addressed in order to eliminate the digital divide within and between LAC countries, and between the region and the world's leading broadband nations. The second is to highlight the range of options that policymakers have in achieving that goal by offering examples of specific solutions implemented in the region and elsewhere that have proved successful in accelerating

To enhance national competitiveness, the Australian government has launched an AUD 43 billion National Broadband Network project aimed at bringing a high-bandwidth fiber-optic Internet connection to every home in the country.

broadband deployment and adoption.

As a means of furthering the dialog on these issues, the IDB has, in the preparation of this report, used its convening power to engage telecommunications providers, the broader ICT industry and other stakeholders in the region in a discussion of the current environment for broadband in LAC and the key variables that are important to accelerating deployment and adoption. In particular, the Bank has sought to enlist industry

in the effort to identify potential areas or projects for collaboration that would accelerate the usage of broadband services by households and enterprises (with an emphasis on small and medium-sized firms), as well as government agencies looking to use digital means to improve education, health, civic participation and the delivery of public services. In addition, the Bank has looked at countries outside the region that could provide benchmarks for policymakers, and it has gathered examples of projects that have been successful in improving the environment for broadband deployment and adoption. This report summarizes the many useful contributions that arose from those discussions and the work that followed.

Going forward, we expect that this report will serve as a platform for engaging the region's governments, industry and other stakeholders in the preparation of action plans to accelerate the deployment and adoption of broadband throughout the region. We do intend to continue to use our expertise and resources, as well as our convening power, to help deepen the technical capacity of governments, finance the physical infrastructure needed to accelerate deployment and improve the enabling environment for private innovation and investment that will vastly increase broadband coverage, access and adoption in Latin America and the Caribbean in the shortest possible period of time.

<sup>6</sup> D. Berrios, "Faster Than a Speeding bullet - Broadband Growth in Latin America 2010," *ConnectWorld*, 2010, 34-35.





# 2 Availability and Adoption of Broadband

Graph 1 shows how Latin American countries are lagging the most advanced countries in fixed broadband penetration.<sup>7</sup> While the European countries have an average of 30 installed broadband lines for every 100 people, the LAC countries on average have about a third of that.<sup>8</sup>

The graph also shows the broad differences between countries in the region itself. While some countries like Barbados, Uruguay and Trinidad & Tobago have fixed line penetration rates near those of European and North American countries, others like Haiti, Paraguay and Nicaragua rank very low on a global scale, with fewer than one or two lines per 100 inhabitants.

The graph also shows a comparison between the situation in 2005 (in blue) and 2010. Some countries have made tremendous improvement in the last five years: Uruguay, Trinidad & Tobago, Mexico, Panama, Costa Rica, Colombia and the Dominican Republic, for example. However, even these countries still have a long way to go

<sup>7</sup> Data from the *World Telecommunications Indicators Database* (International Telecommunication Union, 2011).

<sup>8</sup> Although a better comparator might be the number of households connected to broadband, since an average of about two people live in a household in Europe while nearly 3.5 live in one in LAC. Latin American reality should be taken into account in analyzing penetration figures. Official information only considers “formal” access and overlooks the relevance of informality and illegal resale, which – in extreme cases like Peru – could represent an additional 20 percent of accesses on top of connections formally reported by operators. Access penetration data also fails to show the remarkably high number of people accessing the Internet through commercial stores or cyber-cafes. Informality, public access points as well as the number of people per household lead to a significant difference between the number of broadband clients and broadband users in the region, which should be duly considered in designing policies to promote adoption.

to catch up with the Netherlands, Denmark and Korea.

Graph 2, showing mobile broadband penetration rates, highlights the gap between the Latin American countries and Korea, Sweden and Japan, where penetration is about one mobile broadband line per person.<sup>9</sup> The LAC region as a whole has about 15 broadband-capable mobile lines for every 100 inhabitants.

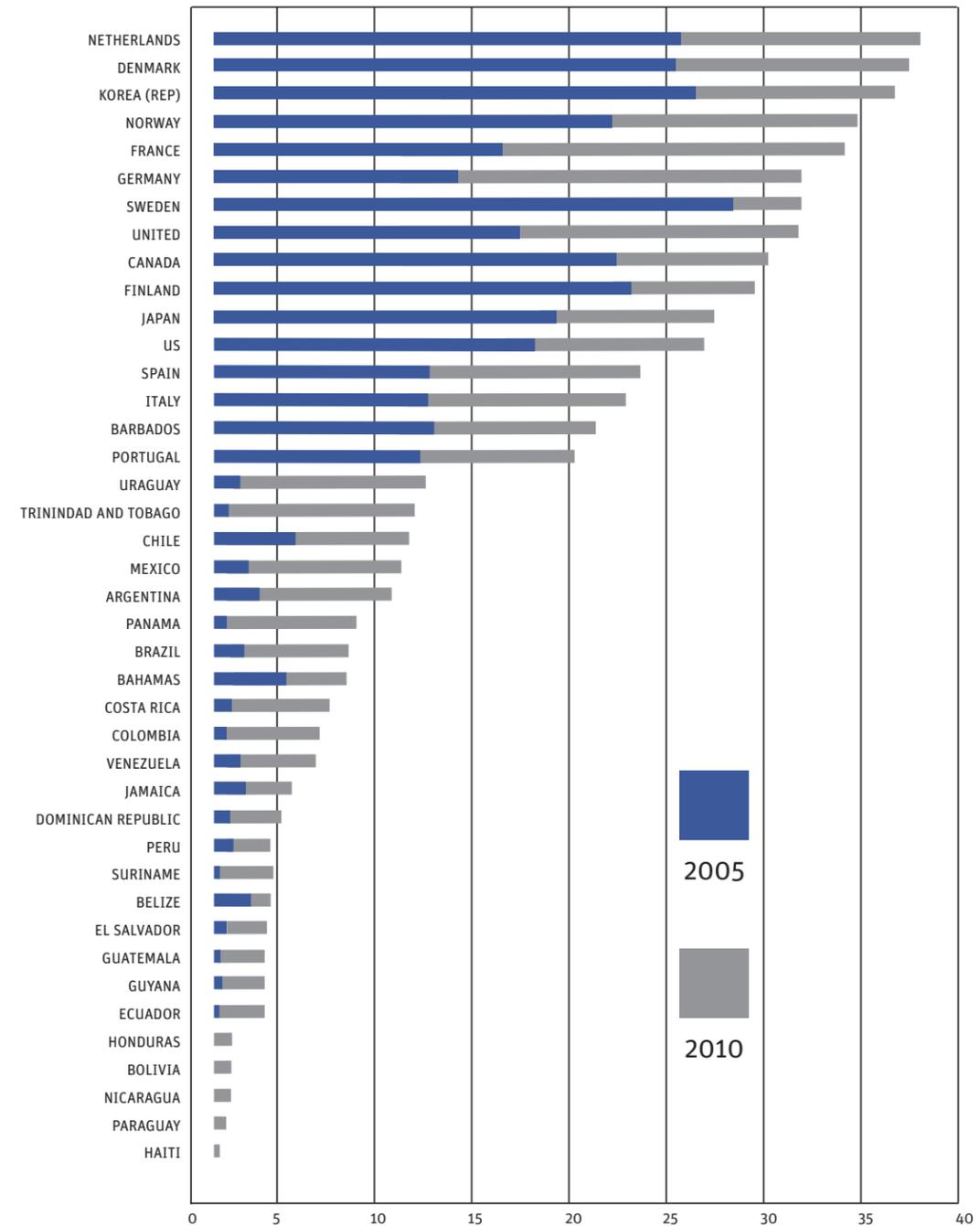
Here again, there are wide differences between LAC countries, with Venezuela, Brazil and Argentina among the most advanced in the region while Paraguay, Bolivia and Bahamas are at the bottom of the scale. The graph also indicates that some countries made great progress in the last two years, including Brazil, Argentina, Mexico, Costa Rica, Colombia, Peru and Uruguay.

Mobile broadband penetration in Latin America surpassed fixed broadband penetration in 2011, as the result of heavy private sector investment in mobile infrastructure, which is occurring in a largely competitive environment.<sup>10</sup> Telephone companies throughout the region have installed higher-bandwidth third generation (“3G”) mobile networks in the majority of the capitals and other major cities of the region, making mobile

<sup>9</sup> Mobile broadband data (3G) are from Wireless Intelligence: <http://www.wirelessintelligence.com>. Population Data are from <http://www.data.worldbank.org>

<sup>10</sup> In many LAC countries there are three or more companies competing in the mobile market as opposed to only one in the fixed market. (In some smaller markets there are only two companies in the mobile market.) Cable TV companies compete with fixed telephone companies to provide broadband using cable modems, although their networks have a smaller coverage area than fixed-line telephone networks.

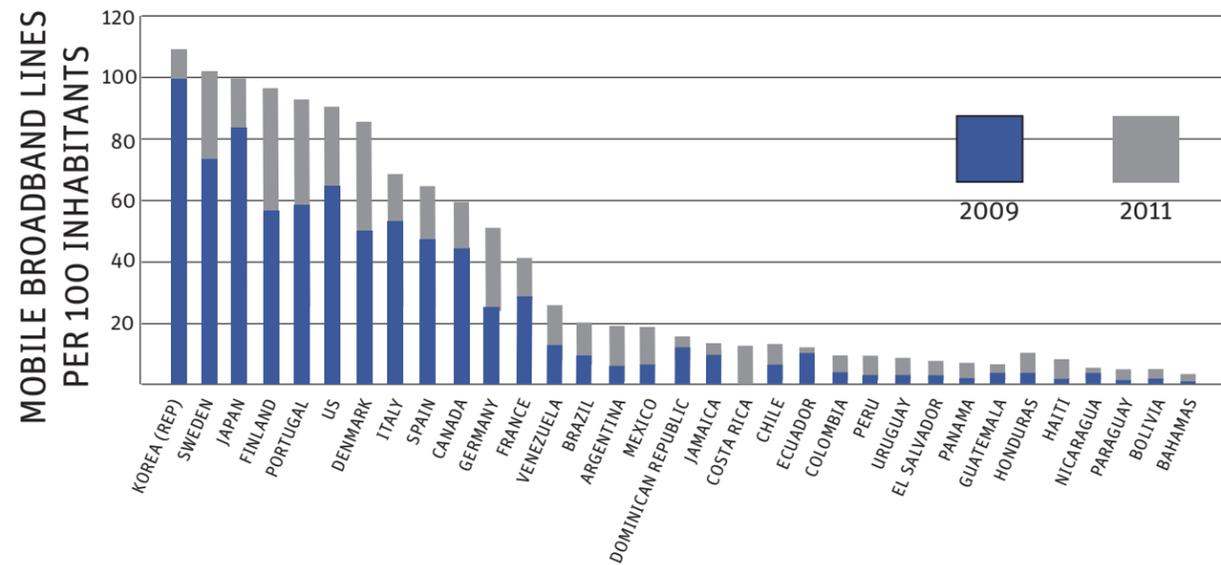
### FIXED BROADBAND PENETRATION %



### FIXED BROADBAND LINES PER 100 INHABITANTS

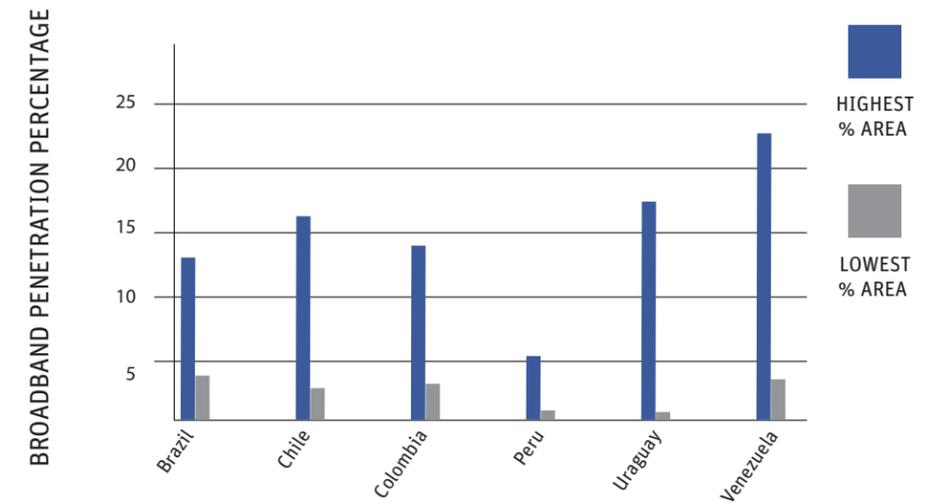
### Graph 1

## MOBILE BROADBAND PENETRATION %



Graph 2

## GEOGRAPHIC DISTRIBUTION OF BROADBAND



Graph 3

broadband available to the majority of the population in those cities through the use of smartphones or wireless modems that connect laptop computers to the Internet via cell towers. The availability of pre-paid service plans and other commercial innovations has also reduced the price-affordability barrier to entry for many people, as customers pay only for the amount of data they consume or the time they wish to connect. Just as mobile telephony has been key to vastly expanding telephone services in LAC countries, mobile broadband will be influential in making broadband services available to greater numbers of people in the region.

Graph 3 shows the “geographic digital divide” between broadband in the capital cities and the rural regions in selected LAC countries,<sup>11</sup> highlighting differences between the availability of broadband in the area of highest penetration (usually the capital or major city area) and the one of the lowest penetration (usually a rural state or area). This is due not only to difference in purchasing power of the inhabitants of those regions, but also to

the higher cost of providing service in those sparsely populated areas.

These gaps are largely the result of both low availability and low adoption of broadband. Adoption (the demand side) is particularly important, as even areas in LAC with high availability (the supply side) are still characterized by low adoption rates. As Chart 1 demonstrates, in order to close the existing digital divides within countries and with the rest of the world, the region needs to move simultaneously toward stimulating both the supply of and demand for broadband.

Accordingly, national broadband policy planning initiatives should look beyond the traditional concerns of telecommunications policy, such as spectrum and infrastructure, to address the demand side of the equation. Shaping policies to encourage more widespread adoption and use will ultimately prove just as important as expanding fixed line infrastructure and available spectrum. The next section offers further analysis on ways to do that.

## DEMAND (ADOPTION) and SUPPLY (AVAILABILITY) OF BROADBAND

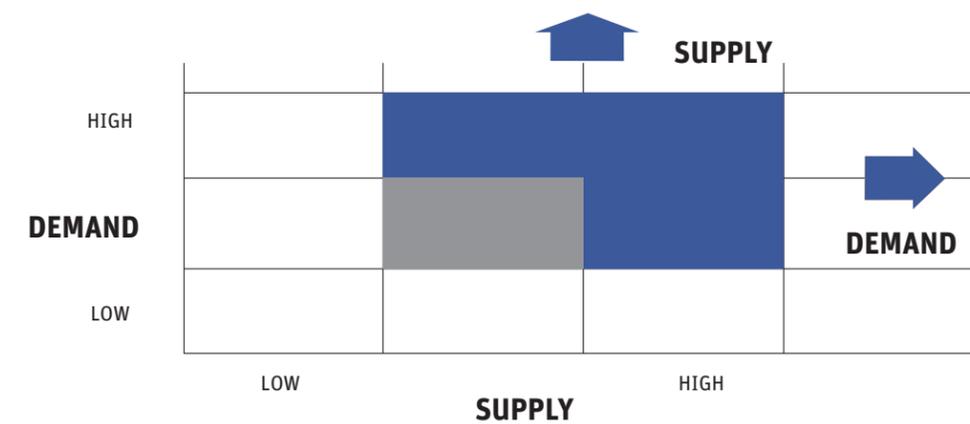


Chart 1

<sup>11</sup> Data are from: “Barometro Cisco de Banda Larga Brasil 2005-2010”, (Cisco, IDC, 2010), 17-21.



# 3 Encouraging Adoption and Use

When it comes to broadband, there are sound economic reasons<sup>12</sup> for adopting a more holistic approach to access that addresses the demand side as well as supply. From the perspective of encouraging investment, promoting adoption and utilization helps improve the business case for building the network and adding capacity. From a user's perspective, ensuring wide adoption helps defray the cost of supplying broadband services and thereby can lead to lower per-user pricing.

What that suggests is that a strategy to promote adoption and use will prove just as important as anything else in getting the policy framework right on the supply side. That means understanding broadband from the user's perspective and then adopting policies designed to meet their needs.

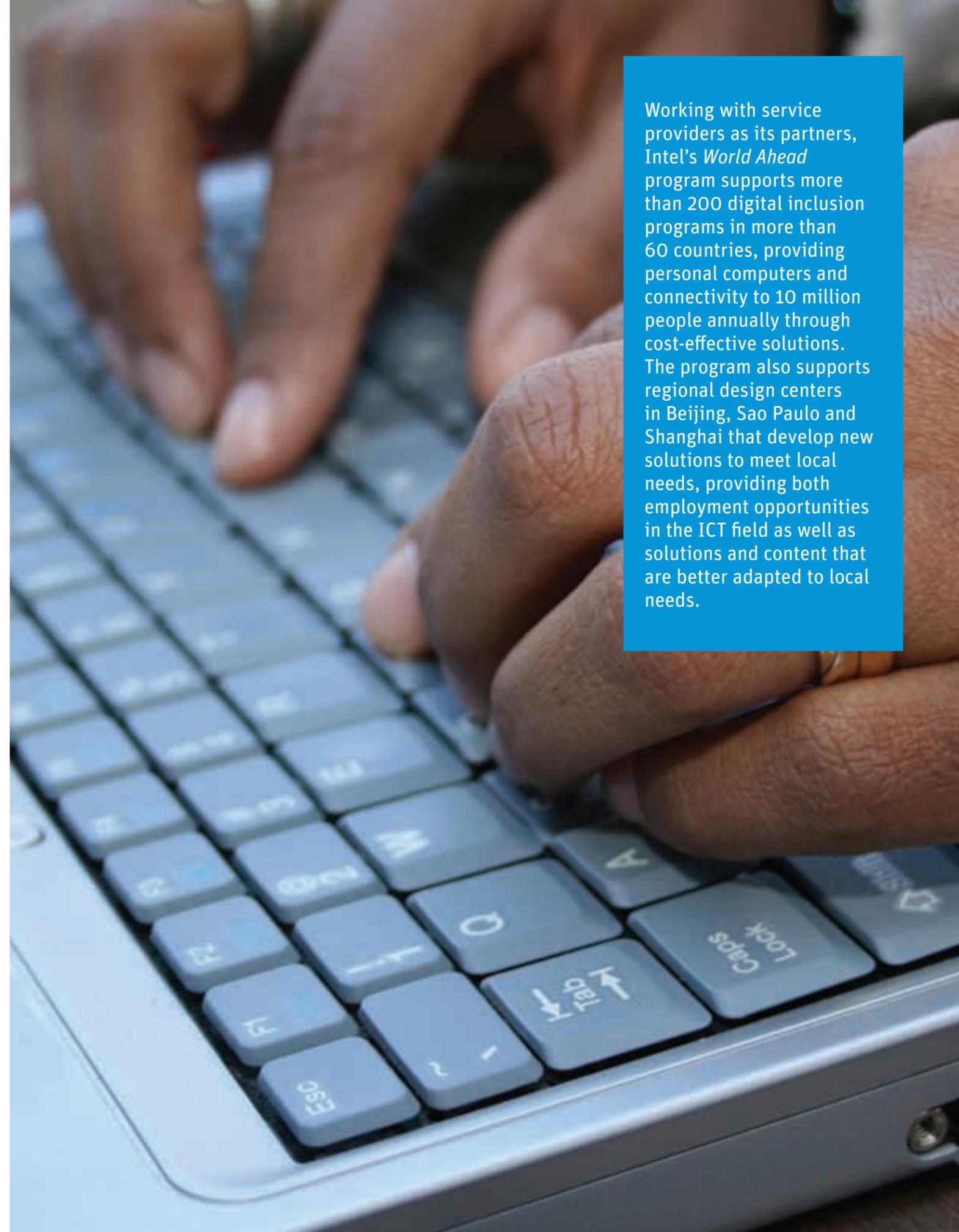
In 2007, the government in Portugal used funds from the auction of 3G licenses to provide subsidized laptops with 3G connectivity to all secondary students and teachers in the country. The program was extended to primary school students the following year, and it has since reached most of the students and teachers in the country.

## Education and Digital Literacy to Encourage Adoption and Use

Broadband holds enormous potential for individuals, both as a tool to improve their standard of living and as a means of social inclusion. Socially, broadband can make it easier to connect with family at home and abroad. It also makes it easier to participate in one's community and serves as a means of obtaining important information about current events needed for individuals to be an active part of civic discourse. Economically, broadband allows people to find a wider range of goods and services, as well as new buyers for what they produce. In

many instances, it can become a means of joining the formal economy. It can also expand access of banking and other needed financial services, such as facilitating remittances and micro-payments, making them both easier to execute and more secure. Broadband creates new ways of delivering education and skills training. It also offers a means of gaining access to high quality health care at a lower cost, particularly in rural areas.

Working with service providers as its partners, Intel's *World Ahead* program supports more than 200 digital inclusion programs in more than 60 countries, providing personal computers and connectivity to 10 million people annually through cost-effective solutions. The program also supports regional design centers in Beijing, Sao Paulo and Shanghai that develop new solutions to meet local needs, providing both employment opportunities in the ICT field as well as solutions and content that are better adapted to local needs.



<sup>12</sup> The latest McKinsey & Company study on Internet's economic impact suggest that the Internet contributes an average of 1.9 percent to GDP in aspiring countries, and 3.4 percent in developed countries. Online and upcoming: "The Internet's impact on aspiring countries" (McKinsey & Company, 2012), 2. For a comprehensive study of the value of the web around the world, see <http://www.valueoftheweb.com>, a website that gather studies from a variety of sources such as McKinsey & Company, Boston Consulting Group and the Internet Advertising Bureau.

The varied uses of broadband have, in part, driven the rising demand for devices that can connect to the Internet with improved speed, capability and mobility. Smartphone sales in the region, for example, grew by 117 percent in 2010 and that sharp upward trend is expected to continue.<sup>13</sup> Sales of other devices individuals use to link to broadband, such as laptops, notebook computers and tablets, have all risen rapidly as well.

Translating those sales into widespread adoption and use of broadband by individuals, however, depends entirely on their ability to make use of the technology, their understanding of the advantages of the technology and, importantly, the price they have to pay to use it.<sup>14</sup>

The ability to make use of broadband depends on literacy at two levels – basic education and ICT-specific skills. The LAC region has largely crossed the first hurdle in terms of basic literacy.<sup>15</sup>

What needs to happen now is to increase the focus on digital literacy and ICT-specific skills, and to raise

In 2010, the Malaysian government embarked on an initiative to get personal computers and Internet access to half the homes in the country. The program includes the use of Universal Service Funds to subsidize one million netbooks for students and connectable rural low-income families, and to improve broadband coverage in underserved areas. It is aimed at generating a one percent rise in GDP and the creation of 135,000 jobs.

general awareness of the life-enhancing tools that broadband makes possible. The region's relatively low level of penetration of personal computers and broadband connectivity – in both homes and schools – hampers progress toward that goal.<sup>16</sup>

Uruguay has led the way in answering a part of that challenge by fully implementing a “One-to-One” program that offers every school age child a laptop.<sup>17</sup> Other countries are following suit.<sup>18</sup> Another example is a public-private partnership in which the mobile technology company Qualcomm collaborated with the Guatemalan Ministry of Education, Telgua, Fundación Sergio Paiz and the U.S. Agency for International Development to connect teachers and students in 15 rural schools with wireless broadband Internet connectivity through Telgua's 3G network.

But these types of initiatives by themselves will not be sufficient to drive wider adoption of broadband, and national strategies will have to do more to promote effective use of broadband and ICT by both

13 Estimates suggest that smartphones will represent roughly half of all mobile phone sales in the LAC region by 2016. Pyramid Research, “Operators and Vendors Aim Smartphones at the Mass Market,” *Latin America Telecom Insider*, November 2011, 1.

14 *Exploring the Digital Nation – Computer and Internet Use at Home*, United States Department of Commerce, 2011.

15 *Global Education Digest 2010 – Comparing Education Statistics Across the World*, Table 15 (United Nations Economic, Social and Cultural Organization, Institute for Statistics, 2010) 225-226; see generally *Expanding the Knowledge Capital of Latin America and the Caribbean: An IDB Strategy for Education and Training*, (Inter-American Development Bank, 2005) with respect to the challenges the region faces in reaching beyond its success in achieving higher basic literacy.

16 For example, while a number of countries have made significant progress in providing connectivity to schools, most countries have yet to wire even a third of their schools and the percentage is far less in rural areas. W. Peres and M. Hilbert (editors.), *Information Societies in Latin America and the Caribbean – Development of Technologies and Technologies for Development* (United Nations Commission for Latin America and the Caribbean, 2010), 203. By way of contrast, Singapore, which is among the world leaders in ICT skills and learning, has 100 percent of its secondary school student population using online learning. J. Waz, “Our Broadband Opportunities in Education, and What Stands in the Way,” Comcast Voices, 2009: <http://blog.comcast.com/2009/04/our-broadband-opportunities-in-education-and-what-stands-in-the-way.html>

17 E. Severin and C. Capota, “One-to-One Laptop Programs in Latin America and the Caribbean Panorama and Perspectives,” (Inter-American Development Bank 2011), 3.

18 Ibid. Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, El Salvador, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Paraguay, Peru, Trinidad & Tobago, Uruguay and Venezuela have all implemented One to One models in one form or another.



In 2010, Telefonica invested roughly €432 million in support of its social innovation strategy in Latin America to improve delivery of public services and promote local economic development. In Peru, the company and its partners have connected 217 towns and more than 58,000 people to broadband via fixed line and mobile services.

Photo courtesy of Telefonica

teachers and students.<sup>19</sup> Also important to this task is ensuring that teachers have the necessary skills and familiarity with the tools that broadband makes possible,<sup>20</sup> such as what Mexico has done to provide teachers with laptops, along with training in how to use online learning.<sup>21</sup> And for students, promoting broadband adoption should go beyond giving them functional ICT skills in favor of preparing them “for the broader challenges of living in an information society.”<sup>22</sup> Thus far, few countries in the region have undertaken initiatives to do this and thereby help students become innovators themselves.<sup>23</sup> Critical to all of this is completing the task of wiring the region’s schools for broadband – in both urban and rural areas – and thereby enabling both teachers and students to tap into the deep pool of educational content that broadband makes available.<sup>24</sup>

In this regard, what is needed is the digital equivalent of the *Plan Iberoamericano de*

Connect Ohio, a subsidiary of Connected Nation in the US, launched its Every Citizen Online campaign to stimulate broadband adoption by building awareness, developing strategic partnerships and conducting training sessions at libraries, community colleges, and other anchor institutions throughout the state. The project includes extensive statewide advertising to raise awareness about training opportunities and deploys trainers statewide for instruction in personal computing, Internet use and broadband applications.

*Alfabetización y Educación Básica de Jóvenes y Adultos (2007-2015)*,<sup>25</sup> which was adopted by the region’s heads of state in 2006 and committed the countries of the region to full basic literacy by 2015. The countries of the region need to make a similar commitment to full digital literacy, preferably in the same time frame.

One approach that was suggested in the U.S. government’s recent broadband strategy – and which could work for many LAC countries – is for the government to establish and maintain an Online Digital Literacy Portal in partnership with the technology industry and education sector. The goal would be to expand opportunities for citizens to gain basic education or acquire specific skills to enhance their prospects for employment. It could also offer a useful introduction to a variety of applications that would benefit users in their daily lives – such as email and inexpensive

video-telephony to connect with family and friends who have left the country to work elsewhere – or in their work lives, as with farmers or fishers monitoring weather patterns or market prices for their produce. Broadband can also unleash the power of the Internet for finding needed goods and services, facilitating remittances and payments, and gaining access to education, health care and other public services.

Another option that has worked elsewhere is support for the establishment of what are known as community technology centers (“CTCs”). Beyond encouraging digital literacy, the region will also have to confront the need to

make potential users aware of the services and applications that broadband makes possible.

Understanding that fact can help in the design of a national digital awareness campaign, which could be enhanced by building digital literacy programs into the platforms government agencies use to provide their services to the public. That approach would have the advantage of tailoring the learning experience directly to a service for which the use already has a demand.

The last issue for the end user is, of course, cost – for broadband service and for the device that an individual user relies on to connect to the Internet. Both are enormously influential in whether or not an individual will have the means to connect to the Internet and be able to experience the benefits of broadband. As in all things, the real key to driving down costs is to promote competition and innovation in both spaces. But, government policies, whether in establishing tariffs on broadband or tariffs and taxes on the sale of devices, or through other measures, typically have a huge impact on costs and, with that, on rates of adoption. Any strategy to increase broadband adoption and use needs to consider the full range of government actions or policies and the impact they have on the cost to consumers of services, devices and relevant applications.

Sweden, which ranked first in a recent United Nations e-government index, has launched a number of programs to expand broadband adoption and use, including a €570 million investment to bring broadband Internet services to small towns and areas with low population densities. In addition, Sweden has launched an IT in Schools program to train 75,000 elementary and secondary teachers, a National IT Training Program that teaches IT skills to unemployed workers and, in partnership with the Swedish private sector, a program that focuses on teaching IT capabilities to businesses with fewer than ten employees.

## Promoting Adoption and Use of Broadband in Business

A 2005 survey of business and technology leaders at 1,200 companies in six Latin American countries (Argentina, Brazil, Chile, Colombia, Costa Rica and Mexico) illustrated the extent to which broadband was seen as a key driver of improvements in organization, particularly with respect to business and process reengineering, better data processing and as a means of disseminating information and knowledge throughout their organizations.<sup>26</sup> More recently, a 2011 global study of 4,800 small and medium sized enterprises by McKinsey & Company found that all industries have benefited from the web, with 75 percent of the economic impact of the Internet arising from traditional companies that don’t define themselves as pure Internet players. Smaller firms utilizing the Internet also saw a 10 percent rise in profitability, half from higher sales and half from lower costs of goods sold and lower administrative costs. The study also found that SMEs with a strong web presence grew more

than twice as quickly as those that did not, while those that “took advantage of the Internet reported the share of total revenues that they earned from exports was more than twice as large as that reported by others. They also

19 W. Peres and M. Hilbert (eds.), *Information Societies in Latin America and the Caribbean – Development of Technologies and Technologies for Development* (United Nations Commission for Latin America and the Caribbean, 2010), 211.

20 Ibid.

21 J. Waz, “Our Broadband Opportunities in Education, and What Stands in the Way,” *ComcastVoices*, 2009.

22 W. Peres and M. Hilbert (eds.), *Information Societies in Latin America and the Caribbean – Development of Technologies and Technologies for Development* (United Nations Commission for Latin America and the Caribbean, 2010) 211.

23 Ibid.

24 According to ECLAC, for example, Brazil’s broadband-in-schools initiative has succeeded in reaching 43,192 urban public schools since its launch in 2008. Brazil expects to connect all of the country’s urban public schools by the end of 2010, but the planned expansion of service does not extend to rural areas. *Monitoring of the Plan of Action eLAC2010: Advances and Challenges of the Information Society in Latin America and the Caribbean*, (United Nations Economic Commission for Latin America and the Caribbean, 2011), 22.

25 R.M. Torres, *Educación Para Todos y Plan Iberoamericano – Una Visión y Un Plan Integrados de Educación Básica de Jóvenes y Adultos* (Instituto Fronesis, 2008).

26 *Net Impact Latin America: From Connectivity to Productivity*, (Momentum Research Group, 2005): [http://www.netimpactstudy.com/nila/pdf/netimpact\\_la\\_full\\_report\\_t.pdf](http://www.netimpactstudy.com/nila/pdf/netimpact_la_full_report_t.pdf).

created more than twice the number of jobs as others.”<sup>27</sup>

The conclusions of these studies underscore the critical importance of addressing the deficits that cause firms in the LAC region – particularly small and medium sized enterprises – to lag much of the world in adopting broadband business tools, just as their countries lag generally in broadband deployment.<sup>28</sup>

From a business perspective, broadband’s biggest impact lies in improving the communication and coordination within an enterprise and between a business and its suppliers and customers.<sup>29</sup> To be sure, the competitiveness of LAC enterprises can be greatly enhanced by broadband-enabled services such as VoIP and teleconferencing, IP VPNs, website hosting, managed e-mail accounts, Internet security features that protect against viruses and spam, data storage, archiving and back-up and desktop management. Increasingly, these and other features are being provided

Esoko, a Ghanaian firm, provides real time local market information, such as prices and inventory levels, to small farmers and SMEs in rural Africa, as well as a virtual commodity exchange matching buyers and sellers in 15 countries through a franchise network. Esoko provides a hosted application, in which the firm maintains, supports and upgrades the technology, so the individual farmer needs no special software or hardware other than basic broadband connectivity.

through software as a service (SaaS) – also known as managed software or “Cloud computing” applications – which rely heavily on robust broadband connectivity to deliver their value. There are a growing number of affordable cloud computing solutions now available in the region that could help to significantly reduce costs.

Additionally, with regard to small enterprises, broadband can lower the cost of starting a business or of joining the formal sector of the economy. It also offers existing small firms a range of services that were previously available only to larger firms, reduces their operating costs and increases the speed and reliability of transactions.<sup>30</sup> Broadband networks also boost the ability of smaller firms to expand their research and development, which is increasingly a key to becoming a part of a larger firm’s global supply chain as well as to encouraging startups in ICT and other high technology sectors.<sup>31</sup>

Unfortunately, limited digital knowledge often hinders SMEs from recognizing the benefits of broadband and how it can serve their businesses. Many have a similar lack of awareness of broadband products and services available in the market.<sup>32</sup> This is often compounded by

27 “Internet matters: The Net’s sweeping impact on growth, jobs and prosperity,” Briefing Note, (McKinsey Global Institute, McKinsey & Company, 2011), 3.

28 Two of the variables used by the WEF in their *Global Information Technology Report* are telling. In terms of using ICT to create new business models, services and products, Brazil (24th), Chile (27th), and Costa Rica (31st) all rank relatively high, in many cases on par with far more developed economies of the OECD. But Nicaragua, Paraguay, Bolivia, and Venezuela rank in the bottom 20 percent of the countries listed. The *Global Information Technology Report 2010-2011: Transformations 2.0* (World Economic Forum, 2011) . 384. But Nicaragua, Paraguay, Bolivia, and Venezuela rank in the bottom 20 percent of the countries listed. Ibid. A similar pattern prevails in terms of business Internet usage itself, with Brazil and Chile once again ranking quite high and Nicaragua, Paraguay and Venezuela trailing considerably behind. Ibid at 380.

29 *Broadband and the Economy*, (Organization for Economic Cooperation and Development, 2007), 10-12. Businesses use broadband in a wide variety of applications, including supply chain management, fleet management, e-procurement, e-invoicing, online recruitment, customer service, call centers, online payment systems, e-commerce, alignment of production processes both within and between firms, and the connection of teleworkers to their employers’ networks. Broadband and very high-speed networks also play an important role in driving innovation by enterprises, with the innovation leaders moving to the forefront of commercial competition.

30 *ICT, E-Business and SMEs*, (Organization for Economic Cooperation and Development, 2004), 9-10; A. Jordán, H. Galperin and W. Peres (eds.), “Fast-Tracking the Digital Revolution: Broadband for Latin America and the Caribbean,” Fast Tracking, (2011), 69.

31 Jordán et al, *Fast-Tracking the Digital Revolution*, 69-70.

32 Many firms have begun to adapt their services for smaller firms, such as SAP’s pre-packaged “mySAP all-in-one solutions” for SMEs and Oracle’s special edition of its e-business suite, which it rolled out in India. In those instances, broadband is essential to getting the most from the business solutions they provide. V. Kotelnikov, *Small and Medium Enterprises and ICT* (United Nations Development Programme – Asia-Pacific Development Information Programme and Asian and Pacific Training Centre for Information and Communication Technology for Development, 2007) 10-12

Google has worked to bring private sector partners and governments together to launch “Get Your Business Online,” which helps small businesses establish an Internet presence by registering a domain, creating and hosting a website and getting an email address. The United Kingdom launched the first such initiative, “Get British Business Online,” and the project has been replicated in 20 different countries, including Brazil and Mexico.

limited digital literacy among SMEs' employees, lack of products and services specifically tailored for SME needs, lack of financing and the absence of the necessary legal and regulatory infrastructure to enable e-commerce generally, such as with electronic payment and security issues.<sup>33</sup>

To help SMEs address these issues and encourage greater adoption of broadband technologies by SMEs, the United Kingdom has created a £23 million, three-year pilot program<sup>34</sup> aimed at going beyond broadband connectivity



and focusing primarily on raising awareness of how broadband can benefit a business. The program includes seminars for business owners that demonstrate benefits of broadband, training in digital skills, and assistance with key technology purchases and funding of ongoing tech support. Meanwhile, the U.S. national broadband strategy recommends a similar approach that calls for the federal Small Business Administration to provide, as a part of its normal suite of services, assistance to SMEs in

33 Ibid.

34 *Digital Britain*, (Department of Business Innovation & Skills, 2009), 185–86.

Competition in the mobile handset sector and growing demand in emerging markets in developing countries have resulted in a sharp decline in the price of a basic handset, which has fallen from near \$250 in 1997 to \$20 in 2009, with both Nokia and Vodafone selling entry-level models for \$15 to reach the lowest income households.

understanding how broadband could benefit their businesses and in acquiring the needed digital skills to take advantage of those benefits.

### Expanding Adoption and Use in Government

In many countries, broadband has improved basic public services such as traffic control, disaster preparation and response, monitoring of sewage systems and management of transportation facilities such as air traffic control and maritime and rail transport.

Broadband can also improve governance by enhancing the way governments communicate with their citizens, facilitating everything from license applications to filing tax returns. Perhaps most importantly, expanding government's use of broadband and ICT generally can have a positive effect in terms of promoting and enhancing the digital literacy of its citizens.

Governments in the region have, in a number of instances, moved rapidly to leverage broadband as a means for capacity building, as well as of delivering government services more efficiently:

**Barbados** has created a single online portal for its citizens to access the full range of e-government services made available by the Barbadian government.<sup>35</sup>

**Uruguay** offers citizens a highly customized approach – *Mi Portal* – that allows them a variety of opportunities to organize data around central themes in ways that are most useful to them.<sup>36</sup>

35 *E-Government Survey 2010 - Leveraging e-government at a time of financial and economic crisis*, (United Nations 2011), 65.

36 Ibid.

**Colombia** combines a broad range of online services on its e-government portal with a feature – *e-Ciudadano* – that offers courses for citizens and certification in digital literacy.<sup>37</sup>

Global experience shows that broad e-government strategies often founder on the “isolated islands of technology” created by individual agencies and even separate programs within particular agencies of government.<sup>38</sup> What's needed is to ensure that agencies use the technology consistently across every level of government, and often the most important step a government can take is to appoint a government-wide chief information officer capable of ensuring an integrated approach. The second most important step involves following the examples of Barbados, Uruguay and Colombia in developing a single portal for public services, which by its nature compels integration and a consistent approach of the public services being delivered online.

### Encouraging Adoption and Use in Health Care

By enabling sharing of information among various health care organizations, enterprises and delivery systems, ICT can reduce the cost of the services while improving quality of care. Online systems can enable advanced applications such as e-prescription, e-referrals, patient consultation, e-booking and e-reporting among doctors, hospitals, pharmacies and labs.

Health care is another example of how expanded

37 Ibid.

38 V. Weerakkody, M. Janssen and K. Hjort-Madsen, *Integration and Enterprise Architecture Challenges in E-Government: A European Perspective* (Idea Group Publishing, 2007), 14.

The Global Development Fund of GSMA, an association of 800 of the world's mobile operators, has an mHealth program to expand the use of mobile technology and applications in disease surveillance, testing and remote diagnosis, improving access to health information and resources, and facilitating health education, training and emergency support.

access to broadband can enhance social inclusion, as well as a demonstration of the need for both supply and demand side policies to overcome the challenges to adoption and use of broadband across the region. In addition to improving the quality of care and reducing its cost through efficiencies, investments in e-health create opportunities for patients to know more about their own health and their health care providers. Broadband adds value along four vectors – better informed patients and providers, delivery of information when it is most needed at the point of care, extension of care to previously underserved communities and efficiencies that lower the cost of delivery.

Expanding broadband adoption and use in the health sector would improve the quality of care throughout the region by enabling widespread use of electronic health records, broadband-enabled telemedicine such as medical consultations via the Internet, the instantaneous transfer of radiology scans and other complex medical information from remote sites to large medical centers, e-prescriptions and remote monitoring of patients to improve home care.<sup>39</sup> Accelerated and more widespread broadband deployment would also extend the reach of quality care to rural areas and underserved populations, such as the aged and people with disabilities.<sup>40</sup> That is particularly true of new m-health applications that allow users to access health

39 D. Araujo, “The Impact of Broadband Availability In Latin America on the Growth and Development of On-line Health Care and Educational Services, Latin America 2000,” (ConnectWorld, 2000): <http://www.connect-world.com/~cwiml/index.php/article/item/1998-the-impact-of-broadband-availability-in-latin-america-on-the-growth-and-development-of-on-line-health-care-and-educational-services>.

40 N. Neuberger, *Advancing Healthcare Through Broadband: Opening Up a World of Possibilities - A White Paper for the Internet Innovation Alliance*, (Internet Innovation Alliance, 2007) 4-6. For one example of how such an application might work in the region, see generally D. Rizou, I. Sachpazidis and P. Selby, “Broadband Health Care Network in Brazil and Peru,” Proceedings of the 2008 Euro American Conference on Telematics and Information Systems, 2008.



information, receive medical attention from their doctor or other health care provider, and have their condition monitored on an ongoing basis via their mobile phone.

While many countries in the LAC region have adopted new and innovative approaches to health care, additional advancements that would be enabled by broadband have been held back in many areas due to the lack of broadband availability.<sup>41</sup> As with education, there are a number of actions governments of the region could take on the broadband demand side that would enable broadband to become a more common element in the delivery of health care services.

### 3.1 Policy Recommendations for Encouraging Adoption and Use

A “state of the art” strategy for encouraging adoption and use of broadband would involve a number of mutually reinforcing elements. The starting point should be a regional digital literacy campaign – with public awareness components – built on a commitment by countries of the region to achieve full digital literacy in a

In Bangladesh, Grameen phone and the Telemedicine Reference Center Limited have teamed to create HealthLine provided health advice over the phone on drugs, on doctor referrals and medical facilities, reaching more than 3.5 million users between 2006 and 2010.

very short period of time. Within the framework of a regional effort, each country would be encouraged to adopt the most appropriate mix of tactics that suits its own needs from an array of options including a national digital literacy portal, digital literacy tutorials provided along with public services online, the wiring of all public schools and the wiring and organization of libraries, media centers and other public spaces, and the development of a network of community telecommunication centers.

In addition to encouraging One-to-One programs that have proved successful in a number of countries, governments should also take more focused measures such as creating national grants to improve the development of educational content, as well as professional development programs for teachers to enhance their ability to use broadband tools and encourage their use by students. Other goals should be incorporating IT education into the teaching of mainstream subjects like math and science, developing a core curriculum for students in ICT skills, and creating certification programs that reward the acquisition of ICT skills after graduation or as part of a professional certification program.<sup>42</sup>

Another approach that would have a large impact on expanding broadband adoption would be for government to incorporate ICT skills training for entrepreneurs in the suite of services that they already make available for small and medium-sized enterprises to get started and build their markets. With broadband, hotel operators and other businesses in the tourism industry, for example, can offer their services to potential customers in locations all over the world, as well as through tour operators who

41 The most recent monitoring report on ECLAC's Regional Action Plan for the Information Society in Latin America and the Caribbean (“eLAC2010”) reflects the diversity of initiatives that governments of the region have undertaken to take advantage of ICT in general and broadband in particular in the health care sector. Monitoring of the Plan of Action, eLAC2010, Advances and challenges of the information society in Latin America and the Caribbean, (United Nations Economic Commission for Latin America and the Caribbean, 2010), 47-54. Various studies have emphasized the extent to which open access to quality eHealth “is completely dependent on the availability of broadband connectivity and the necessary hardware and software tools.” K.D. Stoll, Information and Communication Technologies to Meet Health and Education Needs in Latin America, (Canadian Foundation for the Americas, 2011), 3. Weak telecommunications infrastructures, lack of access to bandwidth, and high Internet access costs “continue to be major impediments to diffusion of Internet applications to the point of care.” R. Rodrigues, “Deploying e-Health Solutions in Latin America and the Caribbean: Development and Policy Issues,” ITU Telecom World 2003 Forum PL11: Workshop on Telemedicine, (International Telecommunication Union, 2003), 5.

42 C. Wilson, L.A. Sudol, C. Stephenson and M. Stehlik, *Running on Empty: The Failure to Teach K-12 Computer Science in the Digital Age*, (Association for Computing Machinery and Computer Science Teachers Association, 2010), 10.



Hospital Israelita Albert Einstein (HIAE) in Brazil deployed the BlackBerry® solution to give doctors access to the hospital's information management system, and with that the ability to quickly access up-to-date patient information and hospital records, while ensuring patient privacy. Using the smartphones in a clinical setting allows doctors to access patient test results, medical history, patient charts and prescriptions no matter where they happen to be working at the time. The solution has resulted in improved communication between medical teams, faster and better patient care and improved efficiency for doctors.

Photo courtesy of Research In Motion

are involved in arranging packaged holidays. Artists, craftspeople and small factories would have new opportunities to gain new customers in distant places through websites, social media and additional e-commerce channels. Meanwhile, businesses large and small could benefit from new sources of critical market information that the Internet can put at their fingertips, as well as from savings of more than 30 percent in energy and operational costs that ICT solutions can make possible by increasing efficiency.

More broadly, policymakers need to think in terms of public awareness campaigns and vehicles for training adults in ICT skills. These can have broad impact in areas ranging from

Colombia's broadband-enabled Sistema Integrado de Emergencias y Seguridad Metropolitano ("Sies-M") is designed to integrate emergency services, improve response times and strengthen urban security. First deployed in Medellin, the system involves the use of 350 cameras at strategic points in the city that transmit real-time data to a video wall that enables local officials to examine traffic patterns, fight crime and coordinate responses to emergencies and natural disasters.

of telemedicine to reach rural communities that lack easy access to healthcare.<sup>43</sup> Mexico's *National Health Program for a Healthy Mexico* represents a comprehensive strategy to link health professionals at the different levels of health systems, offer online health information to the entire population via a single e-health portal, build health professionals' skills by means of distance education and in-service training, introduce electronic medical records and modernize the delivery of services and administration of healthcare.<sup>44</sup>

There are certain common themes that flow through all of these national health care strategies. First, there is an opportunity to use existing government programs as a means of expanding the use of broadband to deliver higher quality, lower cost care to rural areas and underserved

populations. Second, there is an enormous advantage to patients, providers and public health officials in moving the entire health care sector fully into the digital age, both in terms of cost and quality of care. What that suggests for policymaker is that investments in e-health in public health programs and systems that offer nationwide assistance offers an opportunity to push the health sector generally in a new and promising direction.

improving job skills and employability, enabling citizens to more effectively engage in community and civic affairs, and even improving the ability of parents to help their children with homework.

Countries of the region have already moved on multiple fronts to embrace the use of ICT generally and broadband specifically in their health care strategies. Many of these, such as Colombia's National Health Plan, focus on the use

<sup>43</sup> *Monitoring of the Plan of Action*, eLAC2010, 49.

<sup>44</sup> *Ibid.*

Access Haiti has introduced 4G services with mobile WiMAX and 2mbps service for \$30/month in a footprint of more than five million people. And cable TV operator TeleHaiti will soon launch 10mbps service as part of its triple play offering in Port au Prince.

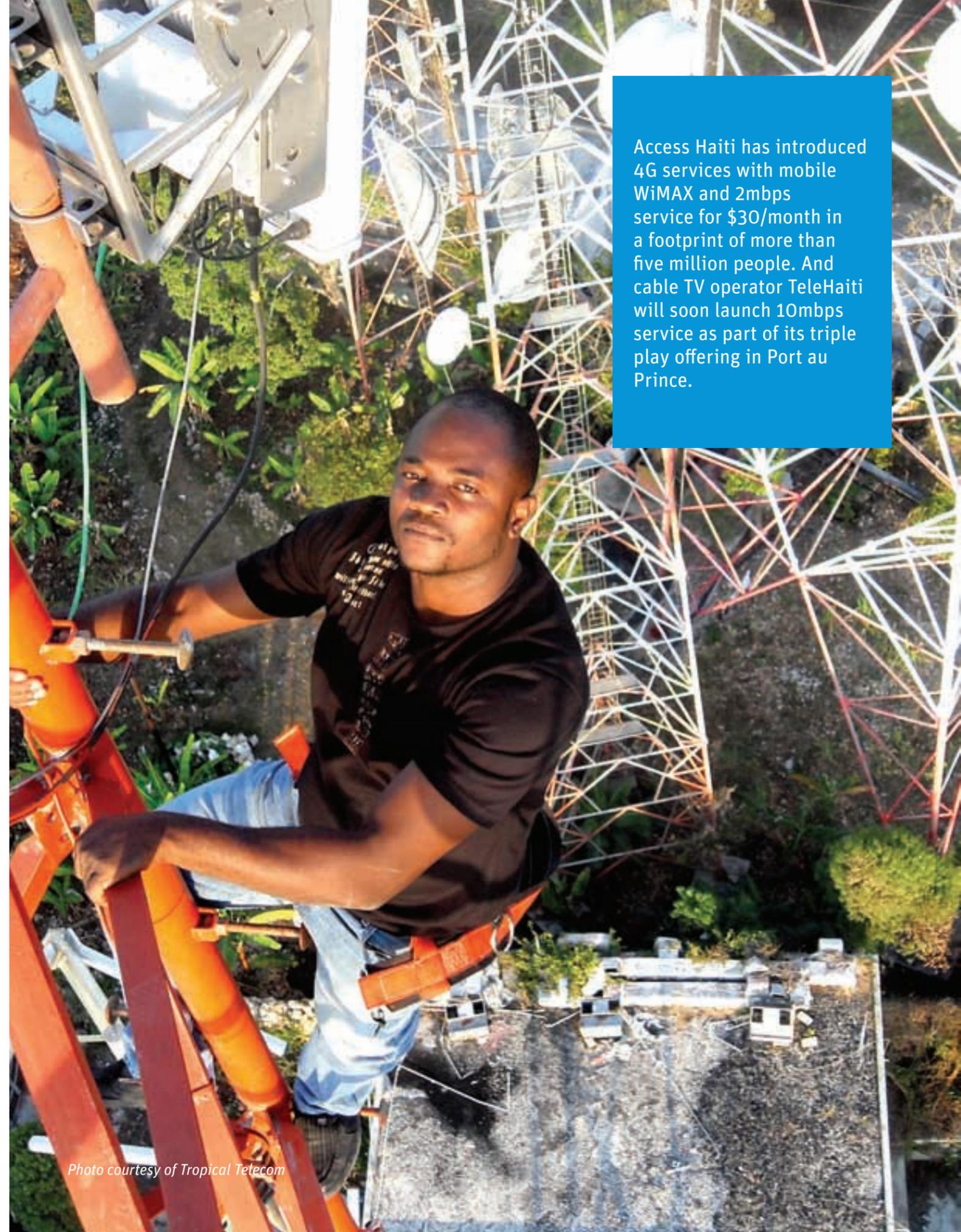


Photo courtesy of Tropical Telecom



# Affordability of Broadband

Graph 4 compares the lowest prices of fixed-broadband connections in countries of LAC and the OECD average, in U.S. dollars converted at Purchasing Power Parity (PPP) for 2011.<sup>45</sup> The prices shown are for the capital cities. Prices in the smaller towns and rural areas are higher. The graph shows that the LAC countries' average is much higher than that for the OECD.<sup>46</sup>

Average connection speeds in LAC are one fourth of the OECD average,<sup>47</sup> which represents a constraint for businesses, which need high quality Internet connections for e-commerce, to communicate with suppliers and customers and for normal business operations.

Lowest prices are a good benchmark for the affordability of broadband of lower income quintiles of the population. The highest prices in this range are in Honduras, Belize and Haiti, while the lowest are in Venezuela, Uruguay and Brazil.

45 Data from Dialogo Regional sobre la Sociedad de la Informacion ("DIRSI"): <http://dirsi.net/indicadores>.

46 The average shown is the simple average. A better comparison would be the weighted average: this is about \$25 PPP for LAC, although this calculation is a complex one to make because it depends on the estimating population that has access to the lowest price plan.

47 H. Galperin, "Las tarifas de banda ancha en America Latina y el Caribe", (Dialogo Regional sobre la Sociedad de la Informacion DIRSI, 2011), 1: <http://www.dirsi.net>.

A report by the International Telecommunication Union (ITU) estimates that as the annual cost of broadband drops below three percent of a family's annual income, its use begins to increase dramatically.

Higher prices for broadband service in LAC partly explain why penetration is lower than in Europe, especially considering that incomes are higher across Europe and therefore consumers have more disposable income to spend on broadband than is typically the case in Latin America and the Caribbean.

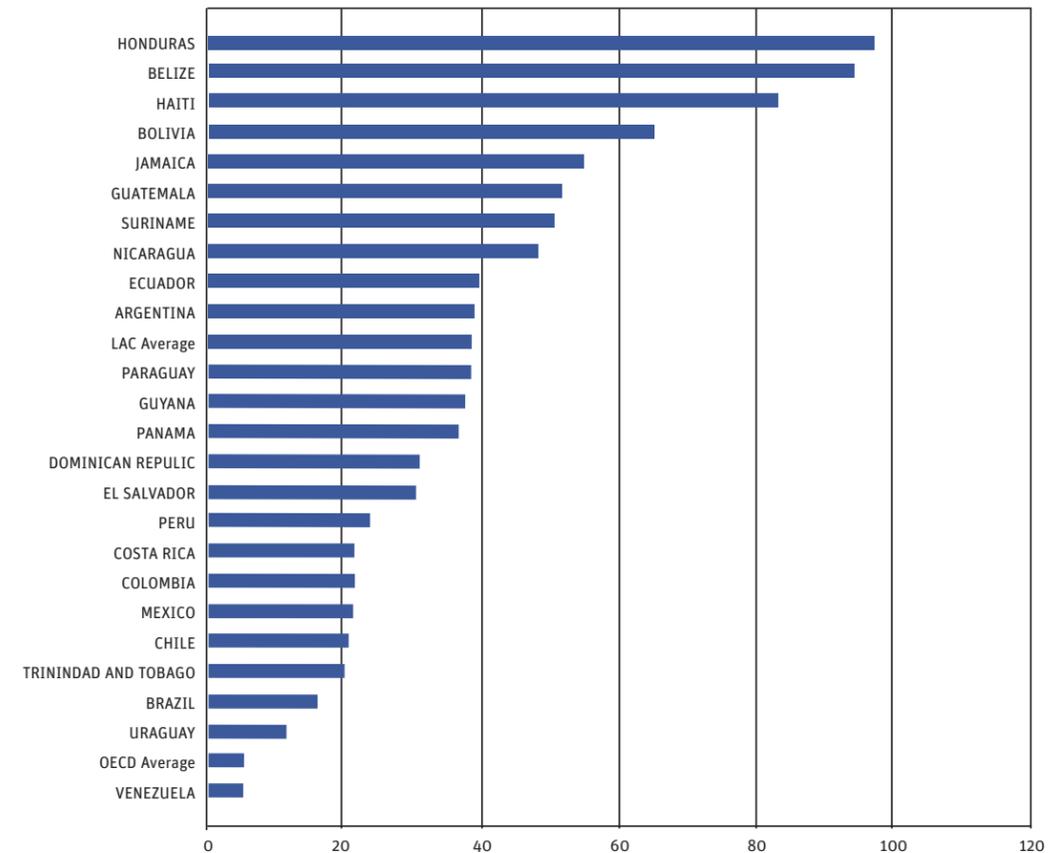
Nevertheless, broadband prices in LAC have been falling in the past few years due to increased competition among providers. This trend is expected to continue and accelerate as

mobile operators introduce faster broadband options that will compete with fixed-line broadband.<sup>48</sup>

What are the reasons for high broadband prices? To answer this question, this report looks at the prices of three essential elements needed to provide broadband: terminals, wireless service and backbones.

48 Data from DIRSI, at <http://www.dirsi.net> with the following exceptions: Lowest prices for Honduras, Mexico and OECD average are for 2010. Lowest Prices for the following countries and operators, for 2011, were provided by Telefonica: Brasil: NET and TEF; Chile: VTR; Colombia: UNE; and Peru: Claro. Lowest prices for Haiti are from Access Haiti. These Prices were converted to PPP using IMF PPP \$ exchange rates, at <http://www.imf.org/data> using September 2011 World Economic Outlook Database.

### LOWEST BROADBAND PRICES, in US \$



Graph 4

## 4.1 Prices of Terminals: Trends, Issues and Options

### Prices of Personal Computers and Smartphones.

A major step toward expanding adoption of broadband in Latin America and the Caribbean would be to lower the prices that end-users pay for the equipment they need to access broadband services.

Fortunately, this is beginning to happen. Graph 5 shows the historical trend lines regarding the number of weeks of average income that is needed to purchase an average

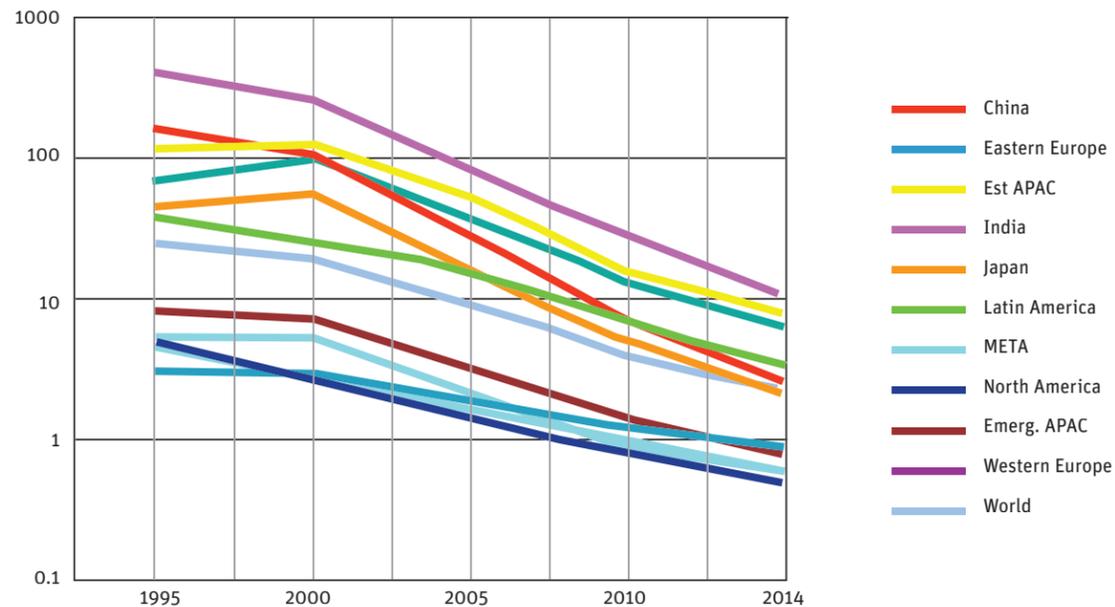
priced notebook personal computer.<sup>49</sup> It reflects the fact that prices of the notebooks are falling while incomes of the Latin Americans are rising, and that the affordability of PCs is becoming less of an issue in the region as it is in other parts of the world.

However, there are still millions of people in LAC who cannot afford to buy a computer. For them, the availability of low cost telephones with Internet capabilities offers possibilities as basic first step to learn about the benefits of being connected to the Internet. Spreadtrum recently introduced in China a \$50 smart-phone that promises to reduce the barrier of entry to millions of people in developing countries.<sup>50</sup> And in many areas, cybercafes

49 S. Smith, "Investor Meeting 2011 INTEL Financial Update," 27: [http://intelstudios.edgesuite.net/im/2011/pdf/2011\\_Intel\\_Invsetor\\_Meeting\\_Smith.pdf](http://intelstudios.edgesuite.net/im/2011/pdf/2011_Intel_Invsetor_Meeting_Smith.pdf)

50 "Spreadtrum Introduces World's Lowest Cost Android Smartphone Platform for TD-SCDMA and EDGE/WiFi", (Spreadtrum Communications Inc, Shanghai, PRENewswire-Asia-FirstCall, December 8, 2011): <http://www.prnewswire.com/news-releases/spreadtrum-introduces-worlds-lowest-cost-android-smartphone-platform-for-td-scdma-and-edgewifi-reaffirms-q4-guidance-135240113.html>

## MOBILE BROADBAND PENETRATION %



Graph 5

have emerged as an affordable introduction to a computer – a person can use one hour of a computer connected to the Internet for as low as \$0.50. And what the chart reflects regarding notebook computers is also true of a variety of other terminals in the region; smartphones and tablet prices are falling due to advances in microelectronics and competition among numerous suppliers.

Given the negative impact that the high cost of ICT equipment can have on adoption by business, government and individuals, it is essential that policies encourage these trends so that they can propel improved productivity and economic growth across the region.

The emerging availability of Cloud Computing – whereby shared software and other resources are made available to computers and low cost terminals as a metered service over the Internet – will likely help further these trends. Companies large and small are recognizing the cost savings and functionality improvements associated with this new technology. In a new global survey of nearly 1,500 business and technology leaders conducted by *Harvard Business Review Analytic Services*, the majority – 85 percent – said their

organizations will be using Cloud tools moderately to extensively over the next three years. They cited as the drivers for this aggressive rate of adoption the Cloud's ability to increase business speed and agility, to lower costs and to enable new channels of growth, innovation and collaboration.<sup>51</sup>

There are, however, other factors influencing equipment prices. For example, many governments in the LAC region impose an especially heavy tax burden on mobile phones and other wireless devices, a hold-over from the days when the perception was that cellular telephones were luxury goods that required special taxation. And these have remained in place despite the fact that cellular phones are now used by the majority of people in many countries and are not a luxury item anymore, but truly a necessity.

Many LAC countries assess import duties on electronic equipment, and these also add to high costs to the consumer. As manufacturing and assembly has shifted

<sup>51</sup> *How the Cloud Looks from the Top: Achieving Competitive Advantage In the Age of Cloud Computing*, (Harvard Business Review Analytic Services, sponsored by Microsoft, 2011): <http://download.microsoft.com/download/1/4/4/1442E796-00D2-4740-AC2D-782D47EA3808/16700%20HBR%20Microsoft%20Report%20LONG%20webview.pdf>

to low cost countries like China and Vietnam, most Latin American countries can no longer compete with those countries on labor costs, so the import duties they continue to charge on personal computers, smartphones, tablets and other telecommunications equipment are no longer serving to protect home-grown industries. Meanwhile, the increases in consumer prices they cause are serving to limit the expansion of broadband within their own borders.

### Policy Recommendation:

#### Reduce or eliminate special taxes that apply solely to the telecommunication sector

Governments should reduce or eliminate special taxes, import duties and/or surcharges that apply solely to telecommunications services, equipment and terminals (smartphones, tablets, laptops and netbooks), with the aim of creating a level playing field and ending the discriminatory treatment and bias against the sector. Reducing or eliminating these taxes and tariffs would also help curb the sale of counterfeit and branded goods sold through illegitimate channels, something that has been expanding rapidly and which reduces incentives for suppliers of the highest quality and most innovative products and services to enter the market. Lowering taxes and tariffs on ICT goods and services is the surest way to take the profit out of black market and grey market sales, which provides a stronger environment for the diffusion of technology and future innovation.

Since 2009, when Sri Lanka reduced its taxation of ICT products and services, broadband adoption has been growing at a rate of 100 percent year over year, as the number of people who could afford broadband went from approximately 3.5 million to more than 13 million in 18 months.

## 4.2 Prices of Wireless Broadband Service: Trends, Issues and Options

Even though mobile infrastructure costs are much lower than wire-line costs, there are several factors that keep the comparative cost of providing mobile broadband relatively high in the LAC region. These are (1) high cost of spectrum licenses and (2) the high cost of infrastructure, including backbone and backhaul to provide service.

### Policy Recommendation:

#### Impose coverage obligations in spectrum auctions

An example of good policy was the case of the 3G auctions in Brazil, where the government imposed coverage obligations. As a result of these auctions, coverage was extended significantly in the country for the benefit of the people living in smaller towns. The more such coverage that can occur, the sooner the urban-rural divide will be closed, and the economic benefits of widely available broadband will extend to all the population.

## Policy Recommendation:

### Ensure sufficient spectrum

Graph 6 shows the spectrum assigned to mobile services in Latin America.<sup>52</sup> The majority of the countries have assigned less than 200 MHz for cellular use. To promote competition, many countries have imposed spectrum caps on operators, limiting the amount of spectrum that a single operator can have to 85, 70, 60 or even 50 MHz maximum. What countries need to do now is to adapt any spectrum caps to the market changes that have taken place in the last few years (in some cases spectrum caps were set more than 10 years ago and haven't been changed despite the enormous growth of mobile services in this period) and, going forward, to avoid imposing artificial restrictions to spectrum availability.

## Policy Recommendation:

### Auction new spectrum for 4G quickly

Given the lead time that companies need to design and roll out the networks, all LAC countries should move immediately to auction at least 500 MHz of new spectrum so that 4G can be deployed across the region as soon as possible. It is important that countries follow the ITU standard recommendations and use the same 700 MHz, 1.7 / 2.1 GHz (AWS), and 2.6 GHz frequency bands for 4G, as harmonization brings the benefit of lower terminal costs due to mass production.

<sup>52</sup> S. Cabello, "Temas Claves en la Administración del Espectro en América Latina," presentation on Latin American Spectrum Conference, Mexico, DF (GSMA, 7 September, 2011).

Turkey recently enacted a temporary reduction of its VAT on personal computers, from 18 to 8 percent, while providing \$100 million in financial support to small and medium businesses for ICT purchases. After seeing increased ICT purchases and a 4.3 percent increase in local PC production, along with an increase in nominal tax revenues, the government decided to extend the stimulus program.

And countries that have not done it yet should auction the remaining parts of what was originally 2G and 3G spectrum bands to allow operators to expand service accordingly. 4G should also be allowed in these bands. Governments should also consider setting reasonable roaming terms of agreements or making spectrum available on dynamic basis.

3G allows mobile data connectivity and applications such as email and basic web browsing. However, only the more robust fourth generation ("4G") wireless technology, which is now being rolled out by providers in OECD countries, offers increased bandwidth and faster connectivity, as well as a myriad of new applications and capabilities for mobile devices, and constitutes a clear alternative

to fixed broadband networks. But to be able to provide good 4G service, operators will need more spectrum to carry the expected huge increases in data traffic. Cisco estimates that mobile data traffic will grow 42-fold from 2010 to 2015, a compound annual growth rate of 111 percent in Latin America.<sup>53</sup>

The ITU estimates that deployment of 4G will need at least between 1.3 to 1.7 GHz of new spectrum for 2020. CITEC estimates that Latin America will need between 721 MHz and 1.16 GHz of new spectrum in the next decade.

Given the lead time that companies need to design and roll out the networks, all LAC countries should move immediately to auction new spectrum so that 4G can be deployed across the region as soon as possible. The ITU

<sup>53</sup> Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2010-2015, Latin America 2015 Forecast Highlights, (Cisco, 2011), 2.

The people of Chile access e-government services and can find jobs, health information and more through the free Internet services offered in the network of 412 public libraries run by the Directorate of Libraries, Archives and Museums.

Photo courtesy of Bill & Melinda Gates Foundation, Global Libraries Initiative

standard recommendations allow carriers, if they choose, to gain the benefits of lower terminal costs due to economies of scale.

Another important factor that reduces mobile broadband deployment costs has to do with spectrum frequency. Since signals at lower frequencies travel longer distances than at higher ones, a company that deploys its cellular infrastructure in the 700 MHz band will spend three times less than it would to deploy in the 1.9 GHz band, for the same area of coverage. Accordingly, in areas where capacity and peak data loads are not an issue – most rural areas – using the 700 MHz band will allow operators to provide broadband at much lower costs than using higher frequencies. However, higher frequency bands are more appropriate for capacity and are normally used in cities. Setting coverage obligations solely for higher bands may not be a good decision from the efficiency point of view. A better approach would be to carry out simultaneous auctions of different bands (high and low bands) and define joint coverage obligations that would help to fulfil coverage goals in a more efficient way.

### ••• Policy Recommendation:

#### **Do not wait until the digital TV switchover to allocate the 700 MHz Band for mobile broadband**

The upcoming migration from analog to digital TV also provides an opportunity to expand mobile broadband coverage, since that process will free up a lot of spectrum that is presently needed by analog TV channels. The conversion to digital TV means there will be a four-fold reduction in the use of spectrum in the upper part of UHF

In Egypt, the telecom provider Mobinil is offering a netbook with six months of Internet access, capped at 110 MB a month, for \$300. The service can be upgraded to a high-speed data package with a 1.5 GB cap for about \$8.50 a month.

TV band,<sup>54</sup> which is very attractive for deployment of mobile broadband. Latin American countries should follow the lead of the U.S., Germany and Spain in auctioning these lower bands for deploying 4G systems and thereby reaping the benefits of this “digital dividend.” And the transition would be easier in Latin America than elsewhere, since not all the UHF channels in the region are presently in use. For example, Mexico could move forward quickly with the allocation of 700 MHz band since only a small portion of the band is assigned

today. Therefore many LAC countries do not have to wait for the digital TV switchover to auction the 700 MHz Band.

## 4.3 Prices of Infrastructure: Trends, Issues and Options

In this section the report focuses on infrastructure – backbone networks, backhaul, ducts, cables, poles, towers, buildings and equipment – and, with specific regard to impact broadband deployment and adoption, (1) the high cost of wholesale bandwidth (backbone), (2) the high cost of the civil works to deploy infrastructure and (3) the high costs of building out access to remote or poor areas.

**Wholesale Prices.** A recent study by the IDB<sup>55</sup> showed that high prices for wholesale access to the Internet are partly responsible for high retail prices of broadband services. Accordingly, Graph 7 shows that wholesale

<sup>54</sup> The UHF band for TV broadcasting in the Americas Region is from 470 to 806 MHz. The upper part is from 698 to 706 MHz, and is called “the 700 MHz Band”

<sup>55</sup> A. Garcia-Zaballos, F. Painter and V Radaelli, “The Problem of International Connectivity Costs: Recommendations and Lessons Learned,” (Inter-American Development Bank, 2011), 28: <http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=36545787>.

IP transit prices per megabit for Gigabit Ethernet capacity are near \$40/month in Latin American cities while near \$7/month in U.S. and European cities.<sup>56</sup> Prices in

Tokyo and Hong Kong are lower than in Latin America, in spite of the longer distance and cost of the submarine cable connection.

In Latin America, these data transit prices fell from about \$80/month in 2008 to \$40/month in 2011, due to the 10-fold increase in traffic from 392 Gb/s in 2006 to 4.1 Tb/s in 2010. Cisco estimates that Latin America’s Internet traffic



will grow seven-fold from 2010 to 2015, a compound annual growth of 48 percent.<sup>57</sup> IP transit wholesale prices move by supply and demand forces. At present, many countries in the region have very little international IP traffic and this leads to a high price per Mbps. Prices for IP transit go down as traffic increases, and this trend will continue. The constant growth in international IP traffic

<sup>56</sup> Data from *Global Internet Geography Pricing* (TeleGeography, 2011), 23: [www.telegeography.com](http://www.telegeography.com).

<sup>57</sup> *Cisco Visual Networking Index: Traffic Forecast 2010-2015, Latin America 2015 Forecast Highlights*, (Cisco, 2011), 1.

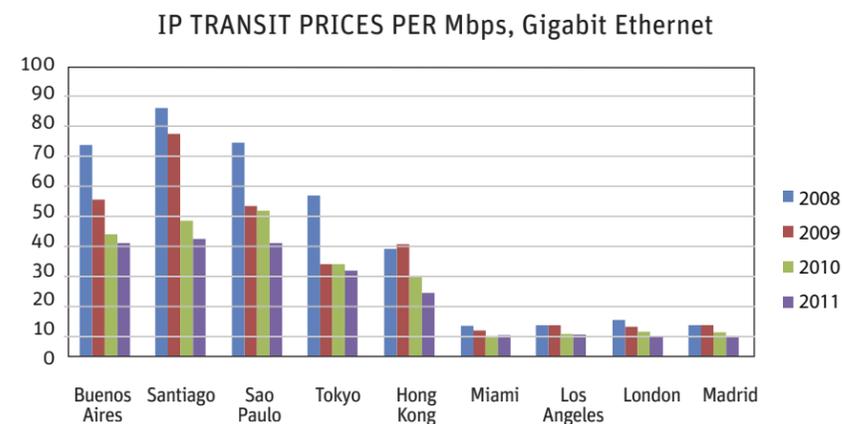
The Colombian government’s 13-year-old Compartel program was recently expanded to provide broadband services to rural schools, town halls and public hospitals. Working with Intelsat to deploy a satellite solution in the most remote areas, the program’s partners have thus far connected nearly 10,000 schools and more than a million children to the Internet.

will require substantial new infrastructure investments in many markets. Public measures should be focused on encouraging new investments to build terrestrial backbones within and between countries to give operators more choices to connect to the main Internet Transit Points and to build Internet Exchange Points in cities that still do not have them.

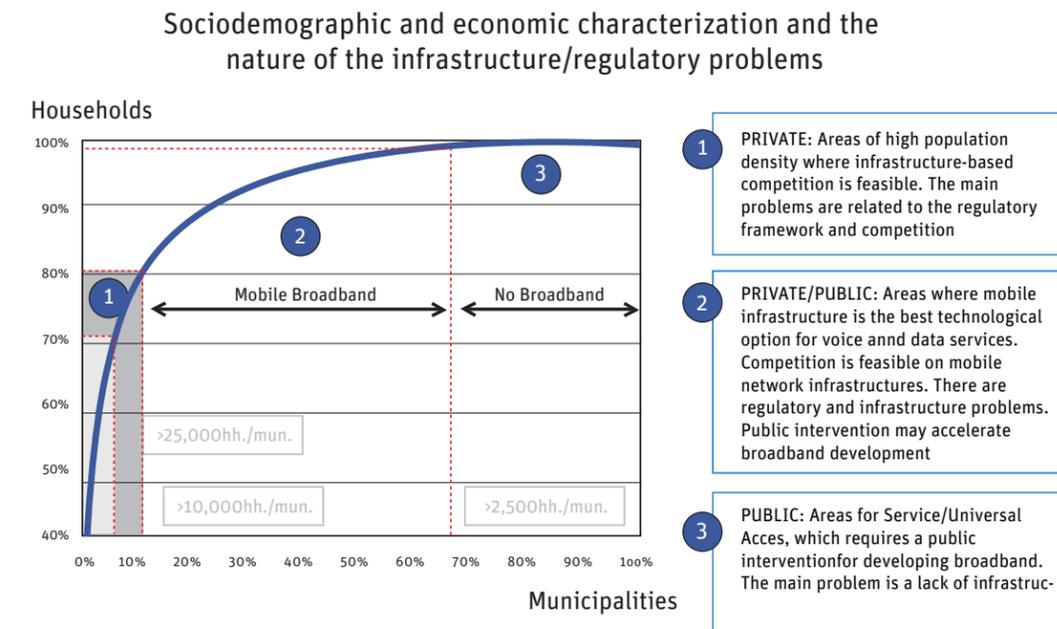
#### **High cost of civil works.**

Telephone companies throughout the LAC region are looking at upgrading their last-mile networks from copper to fiber optics as a means of providing the video offering they need to deliver triple play services (in addition to voice and Internet) and thereby enhancing their ability to compete with cable television

providers services. Bundling these services provides higher revenues to operators and simplifies billing to consumers. However, the cost of laying fiber optic cables is high, with the most important driver of costs being construction (civil works) involving trenching, duct or cable laying and backfilling. National and local policies could require including ducts or other facilities capable of carrying fiber while doing civil works, such as roads, railroads, power lines, gas, water, sewer and oil pipelines (“Dig Once” policies). Another important problem that telecommunication operators face is obtaining rights-of-way and permits for the construction of fiber optic cables and cell towers as federal, state and local governments impose regulations and demand payment for approvals, creating additional costs and delays in the deployment of the plant. To address this, most European countries require infrastructure sharing, including ducts, cables, towers and facilities. By sharing facilities, operators save resources to expand in other areas. However, it should be noted that Latin American operators are increasingly using infrastructure sharing negotiated under voluntary



Graph 7.



Graph 8

terms for the deployment of new networks (3G, LTE, etc.).

**Policy Recommendation:**

**Implement “Dig Once” policies and expedite rights of way and construction permits at national and local levels.**

Federal/national governments should declare that it is in the public interest to build infrastructure for broadband, and thereby facilitate access to rights-of-way in national highways, pipelines and electrical transmission systems, as well as on municipal roads and public land.

Governments can use infrastructure maps as a tool to coordinate investment projects in new roads, as well as

In 2011, to address low bandwidth capacity resulting from limited undersea connections in the Caribbean, LIME built the East-West Cable system in 2011 to connect the Dominican Republic with both Jamaica and the British Virgin Islands. The new submarine cable system has tripled the available bandwidth in the country and lowered interconnection costs to local network operators.

power transmission, gas, oil, water and sewer lines to include fiber optic cables or ducts to provide broadband.

**Policy Recommendation:**

**Use Universal Service Funds (USFs) and other government subsidies to develop broadband**

Graph 8 illustrates the need for public intervention to reach rural and remote areas, because in rural and sparsely populated areas the cost of providing access is often too high to justify private investments.

Governments should not choose technologies for USF projects, but let private operators decide

which mix of technologies are the best for the specific initiative. For example, in rural and remote areas satellite solutions can provide instant infrastructure since the

costs are independent of the distance covered, and can then be extended within the villages with other wireless technologies.

A 2006 study by Regulatel, the Public-Private Infrastructure Advisory Facility (PPIAF) and the World Bank<sup>58</sup> recommended adjustments to Universal Service Fund (USF) policies to finance investments in broadband and especially in backbones to reach rural and un-served areas.

Several countries have used public funds or funds from USFs to develop broadband in areas where it had not been commercially available. The lead example is Korea, where the government has implemented a series of development programs of five to 10 years duration, each with the aim of promoting broadband development in the country.

The results of these programs have made Korea the leader in mobile broadband in the world, with 95 percent mobile broadband penetration and more than half the population now connected to very high-speed, all-fiber networks. The broadly available fixed-line speeds

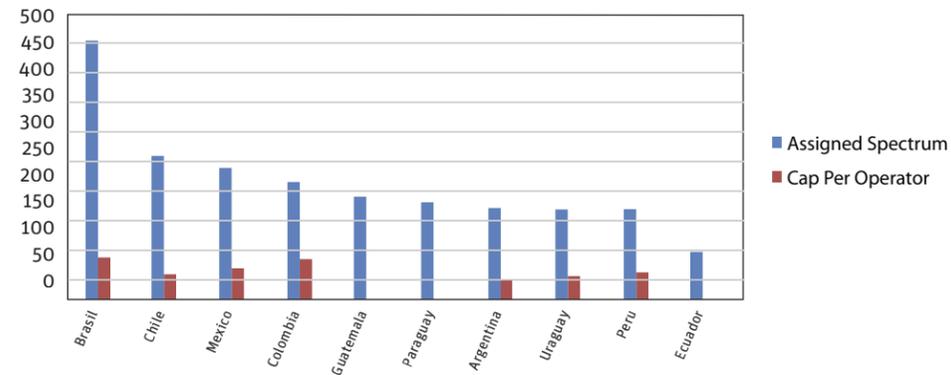
offered in Korea are the fastest in the world, with many households receiving services of more than 100 Mb/s. Korea aims to have widely available fixed speeds of 1 Gb/s in 2013.

Heavy competition among cable TV and telephone companies, as well as government support, have made this country the leader in the world in broadband development.

But the value of USF funding schemes can go well beyond building network infrastructure. They can be used to bring about more affordable services, devices and financing, as well as to drive improvements in digital literacy, public access to the Internet, network coverage and content creation, depending on the individual country’s needs.

<sup>58</sup> P. Stern and D. Townsend, *New Models for Universal Access to Telecommunications Services in Latin America: Lessons from the Past and Recommendations for a New Generation of Universal Access Programs for the 21st Century*, (Regulatel, World Bank, PPIAF, GPOBA, EU, CEPAL, 2006), 186-198.

Spectrum Assigned for Mobile Services and Cap per Operator, MHz



Graph 6

**Policy Recommendation:**

**Build regulatory frameworks for using ICT for reaching sustainability goals**

Recognizing that few industries have as much potential as the ICT industry to reduce CO2 emissions and reach climate change goals, LAC governments should adopt policy frameworks that accelerate their migration towards low-carbon networked societies. In particular, the use of ICT applications should be incentivized in the areas of electricity generation and public transportation.

For example, smart grids based on ICT applications enable the exchange of detailed information about electricity consumption patterns, pricing signals and remote control of smart energy devices such as meters, sensors and systems that facilitate better management of electricity in homes, factories and offices. This can reduce overall generation costs and power consumption, and with that lower CO2 emissions.

In addition, energy-smart transport solutions that move information as well as products and people can

Partnering with local governments, Redline employs broadband wireless networks to bridge the digital divide, such as its program in Brazil, where, in partnership with Cisco, Redline offers free Wi-Fi hotspot access in several rural communities outside of Rio de Janeiro.

help municipalities reduce the energy resources they require and the associated costs. Intelligent transport systems can benefit from a wide range of innovative ICT-based applications such as web conferencing, traffic monitoring, remote public transport system management and connected vehicles, all of which can help optimize transport services and reduce travel time and costs.

So far in LAC, a number of telecoms have begun upgrading their copper networks to fiber to the home (FTTH) as they look to vastly expand the bandwidth they offer and to add video services so they can offer a competitive triple play. Among the private companies most active in FTTH deployment are Telmex, Totalplay and Axtel in Mexico, Telefonica Brasil, Telefonica de Chile, GTD, ENTEL and Telefonica del Sur in Chile, and COTAS Bolivia, while ANTEL of Uruguay is the leading government-owned carrier deploying an all-fiber network.





# 5 Regulatory Framework to Foster Broadband Benefits

To benefit from the expansion of broadband and from the advantages that Cloud computing offers, LAC countries need to upgrade their IT legal and regulatory framework so that it fosters business and consumer adoption.<sup>59</sup> Citizens need privacy protection for their personal information. Businesses need effective e-commerce legislation. Internet service providers need clear rules on limitation of liability for user-generated content that might affect third parties' rights.<sup>60</sup> Governments need to create a framework to use the Cloud, including interoperability, security, digital signature and data privacy standards. Law enforcement agencies and the judiciary need to be trained to protect citizens and businesses from abuses to these laws and regulations. The key objective of all such regulation should be creating trust and confidence among users of broadband services,

In 2009, Safaricom, the largest Internet service provider in Kenya, launched a prepaid broadband access service capped at 200 MB of data for \$5 a month. Over the next year, the Kenyan personal computer market grew by more than 100 percent, compared to average PC market growth of only three percent across Africa.

whether in business or among consumers.<sup>61</sup>

Fostering broadband deployment and adoption can also be facilitated by a solid structure for solving intellectual property disputes in digital contexts and finding the adequate balance with other fundamental rights of consumers, such as privacy and freedom of expression. That requires rules that “create the right kind of incentives for individuals and firms to advance in the production of new hardware and software, as well as in the development of digital content,” while promoting technological development and innovation.<sup>62</sup>

In a recent study on harmonizing legal regimes from country to country, UNCTAD described the current situation as “a complex mosaic of regulations under which a country may be required to comply with provisions issued by different bodies.”<sup>63</sup> The UNCTAD study highlighted the “tensions resulting from incompatible requirements,” “uneven

59 *Road Maps Towards an Information Society in Latin America and the Caribbean*, (United Nations Economic Commission on Latin America and the Caribbean, 2003), 25.

60 See, EU Directive 2000/31/EC on Electronic Commerce. See Section 230 Communications Decency Act (CDA) (47 US CODE) available at <http://www.law.cornell.edu/uscode/47/230.html>.

61 *Ibid.*

62 *Ibid.*

63 *Ibid.*, 34.

Mexico recently launched a new “technological platform” to strengthen its Sistema Nacional e-México by building out statewide networks capable of delivering a variety of programs, from education to health to e-government. The strategy offers an example of integrating wireline, wireless and satellite technologies to connect schools, clinics and hospitals, and government offices to broadband and related services.

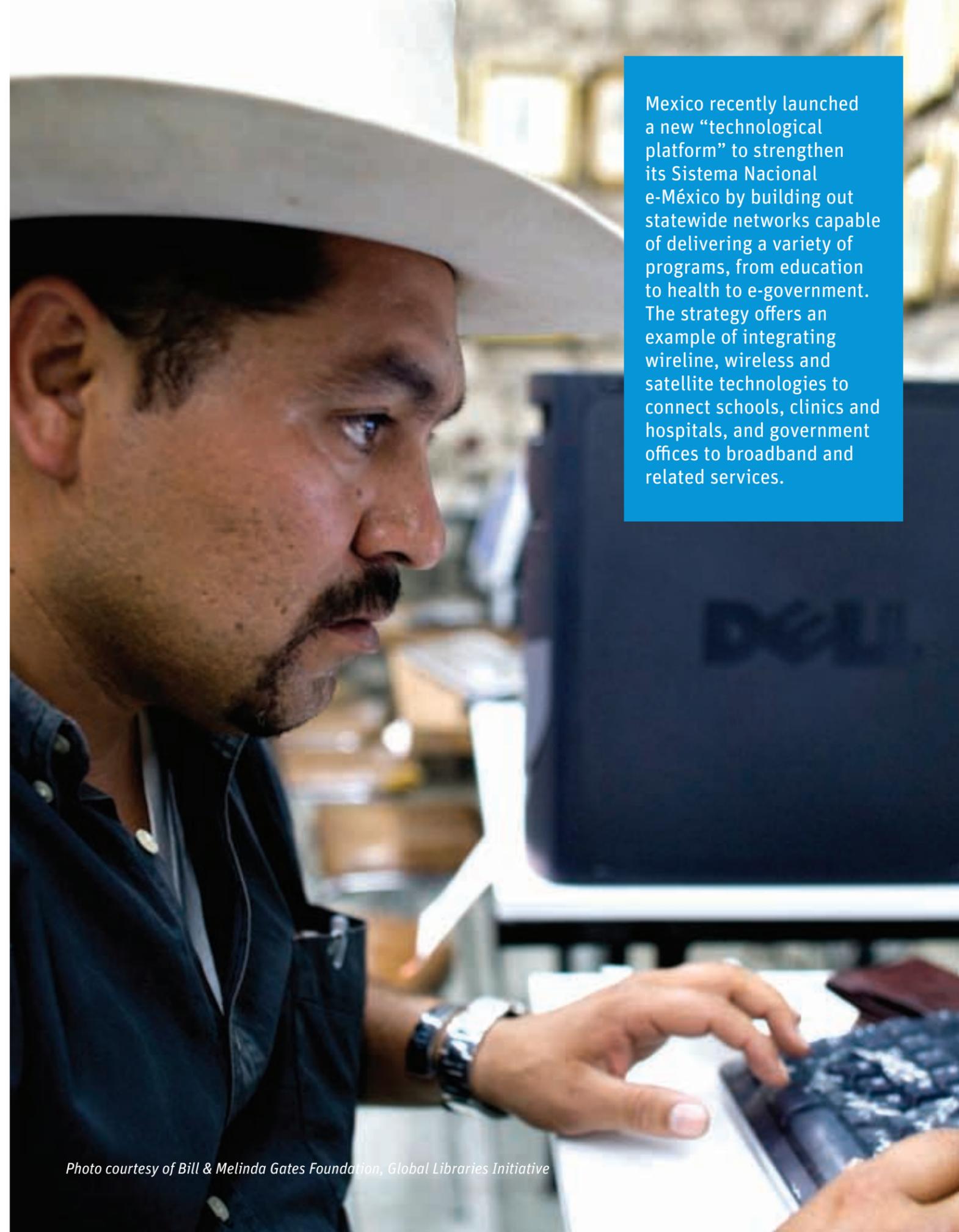


Photo courtesy of Bill & Melinda Gates Foundation, Global Libraries Initiative

development of regulations and public policy,” “duplication of efforts,” and “lack of coordination between international institutions, as well as between domestic government agencies.”<sup>64</sup>

### Policy Recommendation:

#### Enact IT regulations

Whether in the form of a single, unified statute or as amendments to various different parts of a region’s civil and commercial codes, the countries of the region need to update their legislative and regulatory framework to provide both businesses and consumers



with legal certainty that allows for expanded electronic commerce, as well as the proper protection of personal data, copyright, liability limitation for user-generated content, and other issues. With respect to electronic commerce and information society services, the basic steps that countries of the region can take in upgrading

Argentina’s *Conectar Igualdad* program is promoting the nation’s effort to distribute three million personal computers to ensure that every secondary school student and teacher, along with the broadband connectivity to the Internet. The program has established technology as part of the country’s educational system, and includes courses, teacher training, learning content, and services as well as security.

their legislative and regulatory frameworks for broadband and ICT generally would be to base their laws on the most recent international guidelines for ICT regulation and national laws in the region,<sup>65</sup> and on internationally accepted instruments like the UNCITRAL Model Law on Electronic Commerce. That step, combined with complementary steps on privacy, security of personal data and cybercrime (e.g., identify theft, copyright infringement, etc.), would lead toward upward harmonization on a regional basis to begin creating the seamless legal environment needed to accelerate broadband deployment and adoption throughout LAC.

Beyond the immediate steps that the countries of the region should take with respect to the legal regime that directly affects broadband and ICT goods and services, there is also room for progress in developing the broader legal framework for doing business in the region generally. The goal of that effort should be, again, to create as seamless a legal environment for doing business as possible, whether in the regulation of investment, commercial sales, labor laws or other institutional underpinnings of open markets, such as property rights and contract enforcement.

### Policy Recommendation:

#### A Common Licensing Regime

In the 2000s it became clear that companies were interested in providing a wide range of services, like the “triple play” (bundled telephone, Internet access, television programming), or even a “quadruple play” that includes mobile services. Service providers throughout the region have struggled with antiquated laws and regulations that award licenses on a per service basis, and many companies have taken the issue to court, particularly cable TV companies seeking to provide telephone service over their networks and telephone companies wanting to upgrade their networks to offer a video programming service and thereby be able to compete with the cable companies. A more modern set of laws is needed to simplify the licensing regime: one single license should allow any telecommunications company to provide any service, as long as consumer rights are protected.

### Policy Recommendation:

#### Converge Regulators

The majority of the countries in the region have two regulators: one for telecommunications and the other for radio and television broadcasting. This arrangement

Korea, a world leader in broadband strategy, made demand facilitation a key part of its holistic approach to expanding broadband. The country’s focus on e-government, e-commerce, and e-learning has driven high broadband adoption, and now more than half the households in the country are connected with fiber. Korea has launched the Ten-Million-People Internet Education program to reach underserved parts of its population, focusing on groups like the elderly, farmers, the disabled, and housewives, with government-subsidized training.

broadband to the majority of the population. Having a single regulatory authority to take the technical decisions with respect to spectrum allocations would make it more likely that a common sense decision such as this would be taken. However, the scope of the responsibilities of the converged regulator should be carefully designed to avoid interference with free flow of information, free expression, and the free nature of Internet content, which should not be subject to national regulation.

was acceptable in the distant past when the two industries were not related, spectrum was clearly divided for each industry and regulation of content was the major topic of the broadcasting agency.

However, with the proliferation of a “triple play” service offering, there is no longer any reason to regulate services separately. In fact the division of regulation into two agencies, operating under separate legal frameworks, creates a problem for companies. One example of this is the conversion from analog to digital TV, whereby the majority of the countries in the region have established 10 or 15 year transition periods to allow the TV stations to purchase digital equipment. This is an unnecessarily lengthy period of time, especially given that the frequencies from the “digital dividend” are needed today in the mobile broadband industry. There is no apparent reason to extend the time allotted for this switchover to more than two years. Reducing this time period in this way would have an enormous impact on deploying

64 Ibid.

65 For instance, see the recently approved Consumer’s Statute of Colombia, Chile’s 2010 copyright reform Law, and 2010 Federal Data Protection Law of Mexico.





# Conclusions and next steps

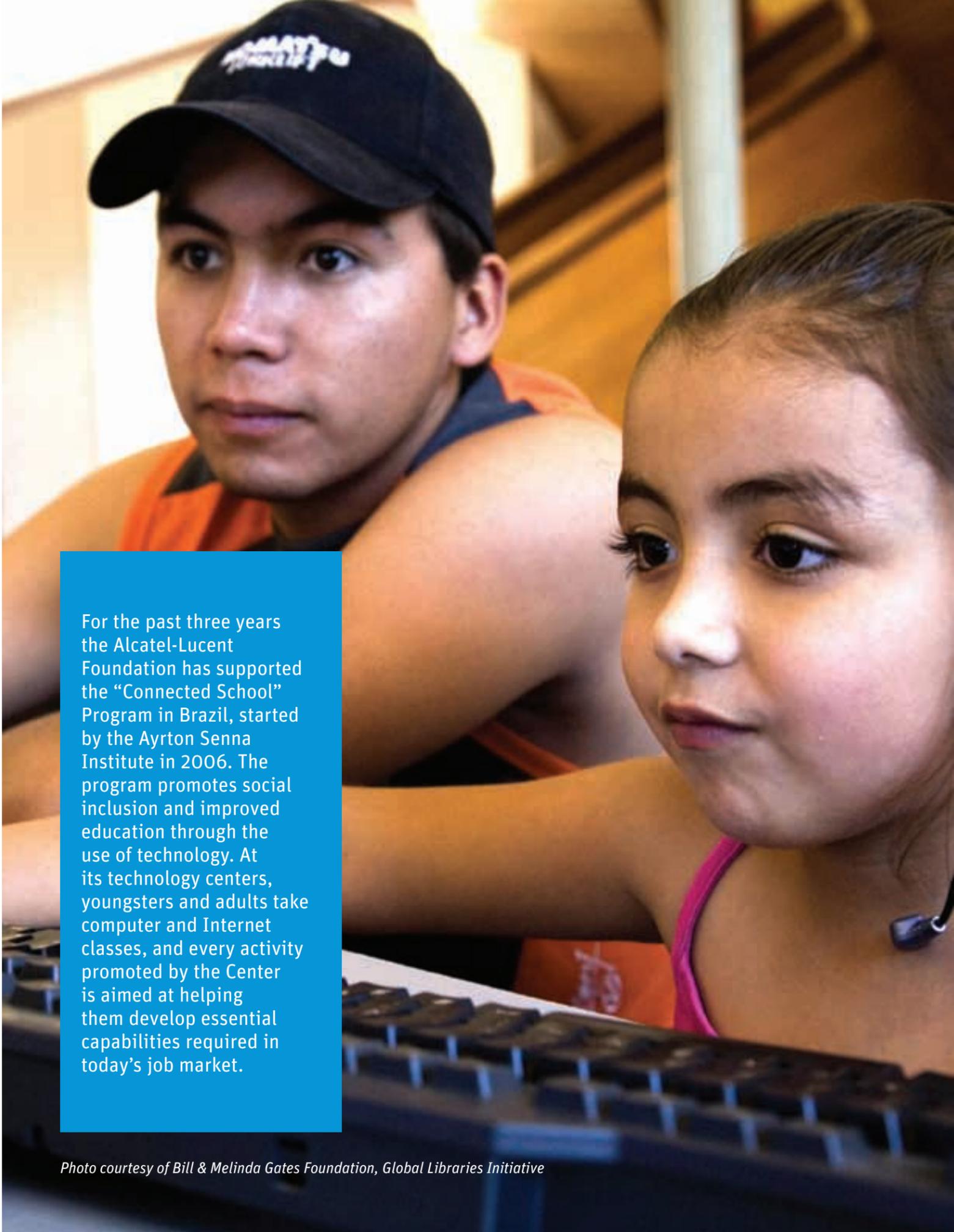
There are four primary reasons for the lagging performance of the LAC region when it comes to broadband deployment and adoption:

- ▶ A longstanding lack of awareness among civil servants, business people and the public at large of how the ICT sector can contribute to general economic growth and stimulate development of sectors such as health, education and trade.
- ▶ The resulting low institutional capacity in the region to design, implement and supervise specific measures that foster the use and adoption of ICT at all levels of society.
- ▶ Outdated regulatory schemes that have not kept pace with major trends in the industry, particularly the convergence of services, networks and applications that are driving the dramatic growth in data traffic worldwide.
- ▶ Lack of understanding of how variances in socio-demographic and economic conditions between metropolitan and rural areas are creating gaps in broadband availability and use, as well as an under-appreciation of how those gaps suppress economic and social development in under-served areas.

Nowadays, governments around the world are realizing the importance of ICT sector in general and broadband services in particular. Even countries that already have relatively high levels of broadband penetration have specific initiatives underway for increasing the breadth and quality of penetration. For instance, the U.S. government recently allocated \$7.2 billion in public monies to expand broadband access to un-served and under-served communities. Another example is Australia, where the 90 percent of homes, schools and workplaces will soon receive 100 Mbit/s broadband under plans to build a National Broadband Network.

The challenges of developing broadband are so formidable that the private sector will not be able to face them alone. Indeed, there is a need for governments to join with the private sector and to provide leadership on initiatives to reduce not only the digital divide but also to use digital means to narrow the social divide. Clearly, the LAC region is at a crossroads. Failure to act could result in even larger connectivity gaps, with spillover effects that would further stifle development and frustrate social progress in the region.

Accordingly, governments in the region need to take stock of the critical importance of widely available broadband to their economic and social progress, and to work with industry to ensure that the goal of accelerated broadband deployment and adoption is placed at the very top of their national agendas.



For the past three years the Alcatel-Lucent Foundation has supported the “Connected School” Program in Brazil, started by the Ayrton Senna Institute in 2006. The program promotes social inclusion and improved education through the use of technology. At its technology centers, youngsters and adults take computer and Internet classes, and every activity promoted by the Center is aimed at helping them develop essential capabilities required in today’s job market.

*Photo courtesy of Bill & Melinda Gates Foundation, Global Libraries Initiative*

The design of their national broadband programs should be centered on the following three components:

### **Component 1, development of human skills to increase demand of broadband services.**

Countries in the region should undertake comprehensive strategies best suited to national conditions and requirements, beginning with a commitment to digital literacy along the lines of the *Plan Inter-Americano* on basic literacy and furthering efforts to wire schools, train teachers in digital education and get laptop computers into the hands of schoolchildren. They should look to adopt other initiatives that have proved successful in expanding digital literacy, including linking national e-government portals to existing government services, special programs to increase business use of digital applications by small and medium-sized firms, and efforts to integrate e-health into existing government services.

### **Component 2, deployment of telecom infrastructure in coordination with private industry.**

This report highlights three areas where governments can play an important role to promote broadband deployment: (1) reducing or eliminating special taxes, surcharges and/or import duties that apply solely to broadband services and terminals; (2) quickly auctioning spectrum for 2G and 3G bands where available, and new spectrum for 4G, and not waiting for the digital TV switchover to auction the 700 MHz band for mobile broadband infrastructure; and (3) targeting use of Universal Service Funds to finance critical broadband infrastructure and elements of adoption such as subscriptions, content, devices and training.

### **Component 3, improvement of the legal and regulatory framework and institutions in order to improve the enabling environment for accelerated broadband deployment and to vastly expand coverage among individuals, households and businesses.**

Given what broadband can do to help raise the standard of living, quality of life and business competitiveness across Latin America and the Caribbean, it is essential that governments in the region, their development partners and the ICT/broadband industry work expeditiously and in harmony to promote and nurture a vigorous expansion of broadband access and adoption. The benefits of their success in doing so will provide enormous dividends to the people of the region for many generations to come.

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