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CASE STUDY

AFFORDABLE INTERNET ACCESS IN BRAZIL

Sugarloaf Mountain, Rio de Janeiro, Brazil (Photo credit: Boris G, Creative Commons 2.0)

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This case study was prepared by Carolina Rossini, under the direction of Kojo Boakye, Policy Manager at A4AI.

A4AI ALLIANCE FOR AFFORDABLE INTERNET

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Washington, DC 20005
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SUMMARY

Brazil is a global and regional powerhouse. The story of how this geographically and culturally diverse nation has enabled her citizens to enjoy affordable access to the Internet appears, at first glance, to be an unmitigated success. Just over two decades after the first Internet connection became available in the country, over 100 million Brazilians — around half the population — use the Internet, and broadband connectivity is available today in most areas of Brazil through a variety of technologies. Citizens enjoy access to fixed-line broadband at prices of around 2 percent of monthly gross national income (GNI) per capita — well below the UN Broadband Commission's target of 5 percent — and Internet and broadband are acknowledged as essential to Brazil's future social and economic development. Indeed, Brazil's government made access to the Internet a legal right for all Brazilians in April 2014, when it signed the landmark *Marco Civil da Internet* into law.[1]

Yet if one scratches the surface, a different picture begins to emerge. While Internet penetration tops 44 percent in Brazil's urban areas, the rural figure sits at just 10 percent. In fact, only 22 percent of rural dwellers have ever used the Internet.[2] Cities in the comparatively richer south of the country see penetration rates that are far higher than those of cities in the north. Meanwhile, mobile broadband prices remain relatively high, despite the fact that 90 percent of the country is covered by a 3G signal.

This short case study from the Alliance for Affordable Internet (A4AI) examines Brazil's remarkable progress, analysing some of the policies, regulations and programmes that have enabled the rapid expansion of Internet, as well as those that have been put in place to drive further progress. We hope that our analysis will prove a useful tool to policy makers, influencers and all those advocating for affordable Internet and broadband access around the globe.

[1] An English version of the Law is available at https://www.publicknowledge.org/assets/uploads/documents/APPROVED-MARCO-CIVIL-MAY-2014.pdf.

[2] Brazilian Internet Steering Committee (CGI.br), "ICT Households and enterprises 2012 - Survey on the use of Information and Communication Technologies In Brazil" pg. 380. Accessed on February 20, 2014, available at http://www.cetic.br/publicacoes/2012/tic-domicilios-2012.pdf.

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1. BROADBAND IN BRAZIL: STATISTICS, POLICIES, AND MARKET

Broadband in Brazil: Key Features and Statistics

	Total (Millions)	Percentage of Total Population
Population of Brazil	200.4	N/A
Personal Cell Phones in Use	272.4	136
Unique Mobile Subscribers	112.5	56
Personal Computers in Use	28.1	14
Unique Fixed Broadband Subscribers	17	8.5
Household Internet Penetration Rate	N/A	40
Urban Household Internet Penetration Rate	N/A	44
Rural Household Internet Penetration Rate	N/A	10

Table 1: Key Broadband Features & Statistics, Brazil (Source: Figures based on data available from Brazilian Internet Steering Committee, Teleco, and the GSMA as of late 2012 and 2013; population data from the World Bank)

A. PROGRESS

In 2013, over half (51.6 percent) of Brazil's 200 million people were reported to be online.[3] From 2008 to 2012, the percentage of households with computers increased from 25 percent to 46 percent,[4] and today, for the first time in Brazil's history, the proportion of those accessing the Internet at least once every three months (49 percent) has surpassed the number of those who have never accessed the Internet.[5] It is expected that by 2016, Internet penetration will reach nearly 60 percent.[6]

[3] World Bank: http://data.worldbank.org/indicator/IT.NET.USER.P2.

[4] Brazilian Internet Steering Committee (CGI.br), "ICT Households and enterprises 2012 - Survey on the use of Information and Communication Technologies In Brazil," pg. 370. Accessed on February 20, 2014. available at http://www.cetic.br/publicacoes/2012/tic-domicilios-2012.pdf.

[5] Brazilian Internet Steering Committee (CGI.br), "ICT Households and enterprises 2012 - Survey on the use of Information and Communication Technologies In Brazil" pg. 380. Accessed on February 20, 2014, available at http://www.cetic.br/publicacoes/2012/tic-domicilios-2012.pdf

[6] Anna Heim, "Forrester: Urban Consumers in Brazil and Mexico Spend More Time Online Than Watching TV," TheNextWeb (March 14, 2012), available at http://thenextweb.com/la/2012/03/14/forrester-urban-consumers-in-brazil-and-mexico-spend-more-time-online-than-watching-tv/#!xM43l.

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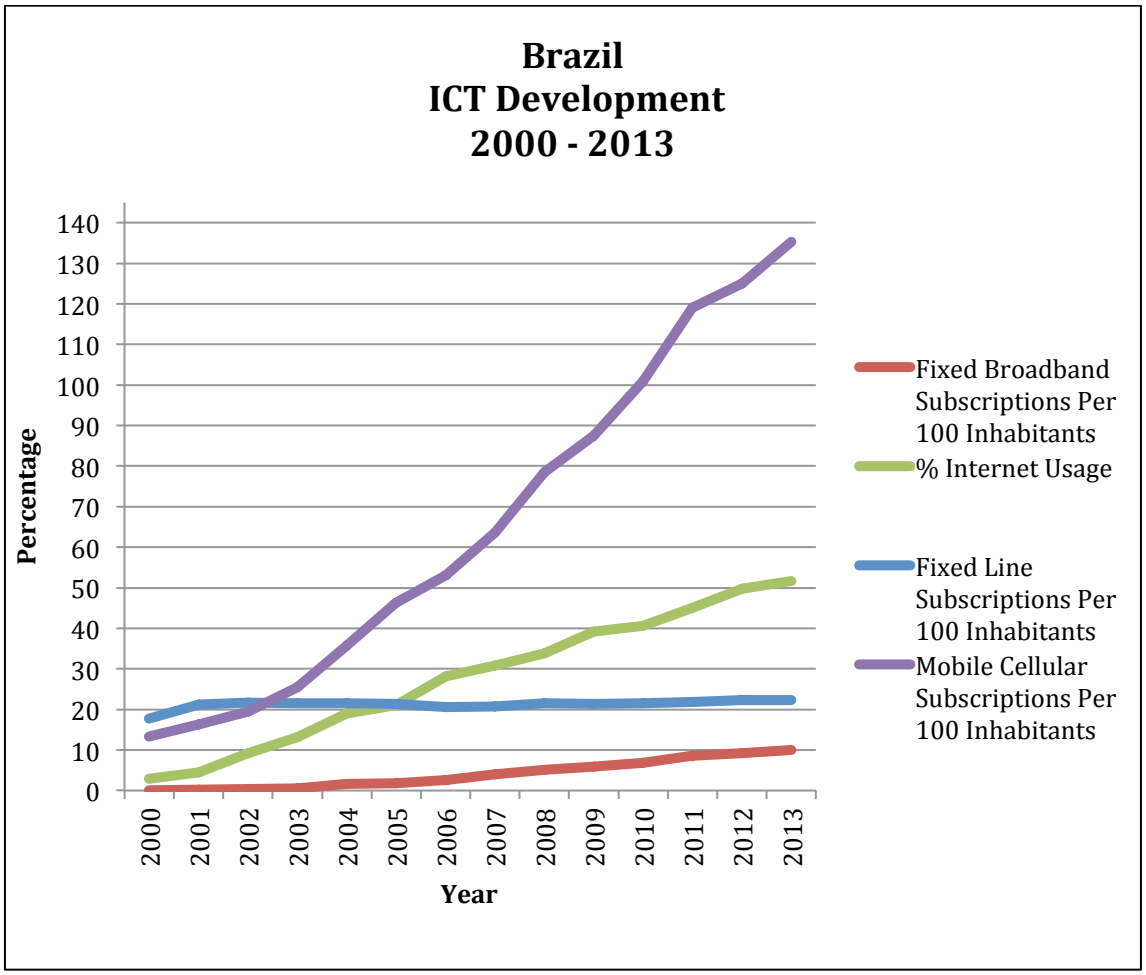

Figure 1: Brazil ICT Development, 2000-2013 (Source: ITU)

The World Wide Web Foundation's Web Index notes that in the past five years, Brazil has been one of the fastest growing countries in terms of Internet connectivity.[7] Brazil ranks 33rd overall on the Web Foundation's 2013 Web Index, and even higher at 27th on the Communications Infrastructure Sub-Index, which takes into account international bandwidth per Internet user, broadband subscribers, mobile phone subscriptions and the cost of access.[8] The International Telecommunications Union (ITU) also ranked Brazil as one of the most dynamic countries on their ICT Development Index, primarily due to improving rates of household connectivity.[9]

Brazil ranks third on the Alliance for Affordable Internet's 2013 Affordability Report, which

[7] The World Wide Web Foundation, "2013 Web Index Report," available at http://thewebindex.org/2013/11/Web-Index-Annual-Report-2013-FINAL.pdf.
[8] The World Wide Web Foundation, "2013 Web Index Report," available at http://thewebindex.org/2013/11/Web-Index-Annual-Report-2013-FINAL.pdf.
[9] International Telecommunications Union, "Measuring the Information Society 2013," p.30. Accessed February 26, 2014. http://www.itu.int/en/ITU-D/Statistics/Documents/publications/mis2013/MIS2013_without_Annex_4.pdf.

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examines the affordability of fixed-line and mobile broadband across 46 developing and emerging economies. This ranking was calculated using the scores from two sub-indices: 1) the Access and Affordability Sub-Index, which examines the price of services in a country and the policies and regulations in place to enable increased access and greater affordability; and 2) the Communications Infrastructure Sub-Index, which assesses the communications infrastructure in each country and the policy and regulatory environment in place to support its development. Brazil's third place overall ranking — the highest of all Latin American countries — came as a result of both its second place ranking on the Access and Affordability Sub-Index and its fifth place ranking in the Communications Infrastructure Sub-Index.[10]

Rank (Overall Composite Score)	Sub-index: Communication Infrastructure	Sub-index: Access and Affordability	Affordability Index: Overall Composite Score
1. Malaysia	71.6	72.2	68.6
3. Brazil	52.6	72.6	58.0
4. Peru	61.1	60.8	56.4
5. Colombia	55.9	63.6	55.0
8. Ecuador	46.6	64.3	50.1
9. Costa Rica	38.7	71.5	49.5
10. Mexico	42.6	65.1	48.2
27. Venezuela	32.6	45.3	31.7
33. Argentina	28.9	37.9	25.5
46. Yemen	11.3	9.7	0.0

Table 2: Affordability Index 2013 Results (Source: A4AI 2013 Affordability Report)

While these high rankings are supported by ITU data that suggest Brazil does relatively well vis-á-vis its Latin American neighbours, the country must build upon its notable successes in order for its broadband services to be ranked among the world's most affordable. In 2012, the average price of a fixed broadband connection in Brazil was 2 percent of GNI per capita, behind Uruguay (1.5 percent) and Venezuela (1.5 percent), but still only the 55th most affordable in the world.[11]

[10] Alliance for Affordable Internet, "The Affordability Report 2013," p.13. Accessed on February 26, 2014. http://a4ai.org/wp-content/uploads/2014/01/Affordability-Report-2013_Final-2.pdf.

[11] International Telecommunications Union, "Measuring the Information Society 2013," p.82. Accessed February 26, 2014, available at http://www.itu.int/en/ITU-D/Statistics/Documents/publications/mis2013/MIS2013_without_Annex_4.pdf.

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B. MOBILE BROADBAND IN BRAZIL

In 2004, Brazil was one of the first Latin American countries to obtain operational third generation (3G) networks. There has been much progress in the last decade, and now 90 percent of the country is covered by a 3G network, and 99 percent by 2G.[12] Observers suggest a virtuous cycle now exists — the availability of services has driven the proliferation of smartphones and, in turn, has created greater demand for mobile broadband. Statistics show an average annual increase of 19 percent in the rate of mobile phone use in Brazil over the last five years.[13] In 2012, mobile phone penetration reached 145 percent [14], and sales of smartphones rose 77 percent (with 27.3 million units sold) in the first half of 2012, compared to the same period in 2011.[15]

Today, the mobile broadband market in Brazil consists of 112 million subscriptions, making it the largest in Latin America. Mexico, the next largest mobile market in the region, has over 50 million fewer subscribers.[16] With many countries focused on achieving universal access to broadband by leveraging 3G and 4G services, Brazil presents an interesting example from which other countries may be able to learn.

C. CHALLENGES TO AFFORDABLE ACCESS

Despite the progress seen over the past five years, the disparity between Internet access for those in urban areas of Brazil and those in its rural areas is growing at an alarming rate. In 2008, the household Internet penetration rate in urban areas was 20 percent, compared with just 4 percent in rural areas. By 2012 this schism had grown even further — while the urban penetration rate increased to 44 percent, the rural penetration rate languished at just 10 percent.[17] In rural areas of Brazil, only 22 percent of individuals have ever used the Internet.[18]

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[12] International Telecommunications Union, "Measuring the Information Society 2013," p.30. Accessed February 26, 2014, available at http://www.itu.int/en/ITU-D/Statistics/Documents/publications/mis2013/MIS2013_without_Annex_4.pdf.
[13] Teleco, "Seção: Telefonia Celular—Estatísticas de Celulares no Brasil" [Section: Cellular Telephony—Statistics of Cellular Telephones in Brazil], February 6, 2012, available at http://www.teleco.com.br/ncel.asp.
[14] Brazil - Telecoms, Mobile, Broadband and Forecasts 2012.
available at http://www.budde.com.au/Research/Brazil-Telecoms-Mobile-Broadband-and-Forecasts.html?r=51.
[15] Roberta Prescott, "Brazilian smartphone sales increase 77% to 6.8 million in 1H 12," RCR Wireless, (September 14, 2012), available at http://www.rcrwireless.com/americas/20120914/devices/brazils-smartphones-sales-increases-77-6-8-million-1h12/.
[16] GSMA, "Mobile Economy Latin America 2013," p.6, available at http://gsma.com/newsroom/wp-content/uploads/2013/12/GSMA_ME_LatAm_Report_2013.pdf.
[17] Brazilian Internet Steering Committee (CGI.br), "ICT Households and enterprises 2012 - Survey on the use of Information and Communication Technologies In Brazil" pg. 373. Accessed on February 20, 2014, available at http://www.cetic.br/publicacoes/2012/tic-domicilios-2012.pdf.
[18] Brazilian Internet Steering Committee (CGI.br), "ICT Households and enterprises 2012 - Survey on the use of Information and Communication Technologies In Brazil" pg. 381. Accessed on February 20, 2014, available at http://www.cetic.br/publicacoes/2012/tic-domicilios-2012.pdf.

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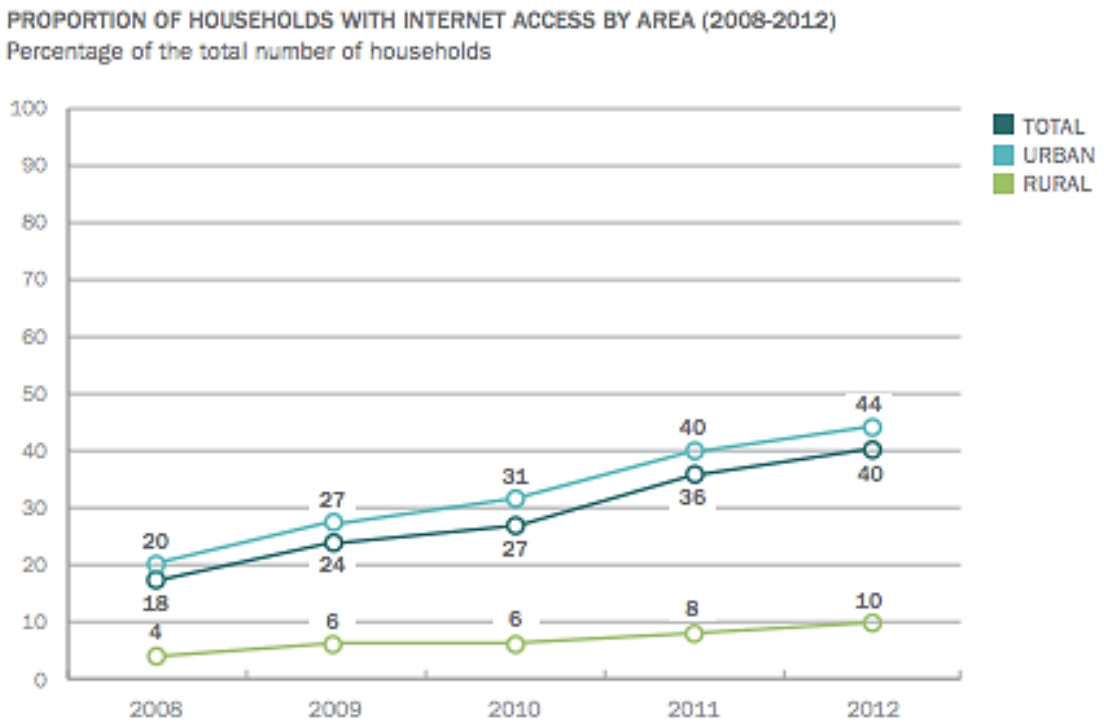

Figure 2: Proportion of Households with Internet Access by Area (Source: ICT Households and Enterprises 2012, Brazil Internet Steering Committee)

The difference in Brazilian penetration rates has created a classic North-South divide. In 2012, the urban areas in the South and Southeast regions of Brazil, home to São Paulo and Rio de Janeiro, recorded penetration rates of 48 percent and 47 percent, respectively; by comparison, the penetration rates in the North and Northeast regions reached only 21 percent and 27 percent, respectively.[19]

[19] Brazilian Internet Steering Committee (CGI.br), "ICT Households and enterprises 2012 - Survey on the use of Information and Communication Technologies In Brazil" pg. 374. Accessed on February 20, 2014, available at http://www.cetic.br/publicacoes/2012/tic-domicilios-2012.pdf.

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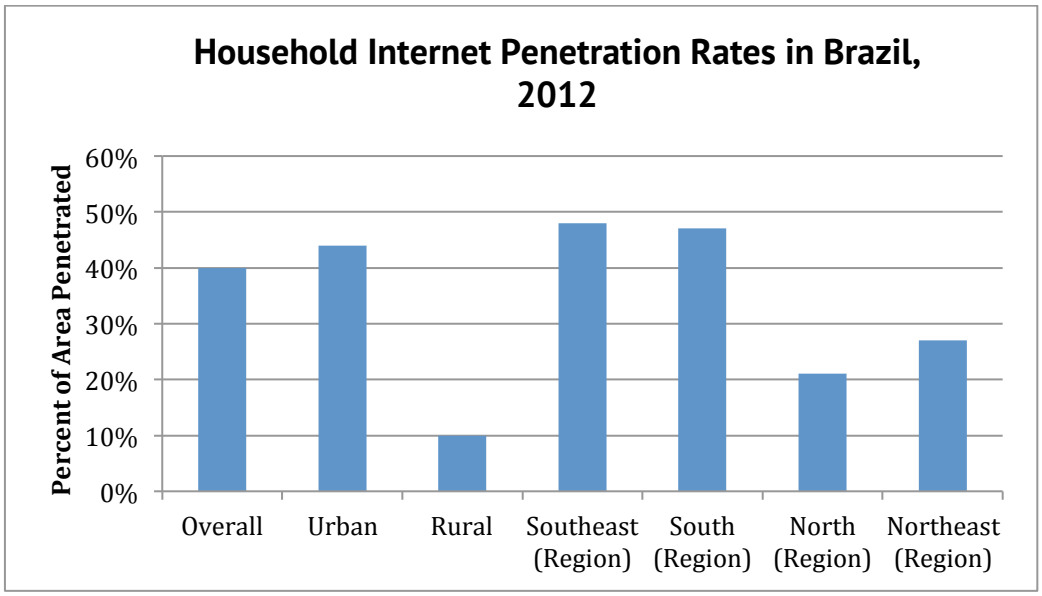

Figure 3: Household Internet Penetration Rates in Brazil, 2012 (Source: Brazilian Internet Steering Committee)

In both urban and rural areas, those without Internet cite the high cost of equipment and services as the primary reason they do not go online; in rural areas, lack of service availability is listed as the second most significant barrier.[20]

It is important to note that the broadband market in Brazil is not very competitive and, despite the country's achievements in the realms of affordability and access, this may create challenges in the future. The market is dominated by a handful of telecommunications companies — arguably making broadband Internet prices in Brazil higher than they could be. The lack of competition has also disincentivised network operators from investing in new services like 4G, especially in remote areas that may not generate large profits.

There is evidence to suggest, however, that Brazilian operators will have to compete on quality of service. Brazilians want better, faster Internet services and are prepared to switch between the country's existing players to get it. In the third quarter of 2013, four telecommunications companies — Net, Oi, Telefonica, and GVT — represented 87.8 percent of the broadband market.[21] Oi and Telefonica, which mainly use ADSL technology, have been losing market share to Net and GVT, which offer faster connections — NET over

[20] Brazilian Internet Steering Committee (CGI.br), "ICT Households and enterprises 2012 - Survey on the use of Information and Communication Technologies In Brazil," pg. 375. Accessed on February 20, 2014, available at http://www.cetic.br/publicacoes/2012/tic-domicilios-2012.pdf.

[21] Teleco, "Seção: Banda Larga—Market Share de Banda Larga no Brasil," Accessed on February 21, 2014, available at http://www.teleco.com.br/blarga.asp.

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hybrid fibre-coaxial (HFC) cable, and GVT over a next-generation network (NGN) that uses fibre-to-the-cabinet (FTTC) architecture.[22]

[22] "Brazil - Broadband Market - Overview, Statistics and Forecasts," available at http://www.budde.com.au/Research/Brazil-Broadband-Market-Overview-Statistics-and-Forecasts.html#sthash.ua2p4W5M.dpuf.

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2. BRAZIL'S NATIONAL BROADBAND PLAN

A. OVERVIEW

In 2010, Brazil's government launched the National Broadband Plan (PNBL), which aims to triple fixed-line and mobile broadband access in Brazil, bringing broadband access to 40 million households (with a particular focus on rural areas) by the end of 2014.[23] The PNBL engages the private sector in public-private partnerships (PPPs) by auctioning off licenses for 4G and mobile and fixed broadband, and by providing tax incentives to both companies and consumers, amongst other initiatives.

The PNBL is not restricted to a single document of stated policies, actions or goals, instead comprising a number of diverse documents. These documents include, among others:

- Decree 7.175;
- Decree 7.512;
- The 2009 Ministry of Communications proposal;
- The "base document" of the PNBL;
- Outcomes from the "Brazil Connected Forum," which is designed to be a permanent roundtable of government, private sector and civil society representatives to monitor, discuss and propose actions and guidelines for the PNBL;
- Agreements with concessionaires; and
- The 2012-2015 Pluriannual Plan.[24]

Decree 7.175 affirms that the objective of the PNBL is to promote and increase the use and delivery of ICT products and services, in order to:

- Expand access to broadband Internet connection services;
- Accelerate economic and social development;
- Promote digital inclusion;
- Reduce social and regional inequalities;
- Promote employment and income creation;
- Expand e-government services and facilitate the use of government services by citizens;
- Promote training of the population on the use of information technologies; and
- Increase Brazilian technological autonomy and competitiveness.

[23] Ministry of Communications, "Um Plano Nacional para Banda Larga" [A national plan for high bandwidth], Accessed on August 30, 2012, available at http://www4.planalto.gov.br/brasilconectado/pnbl.
[24] Planalto, "Fórum Brasil Conectado [The Brazil Connected Forum]," available at http://www4.planalto.gov.br/brasilconectado/forum-brasil-conectado

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The PNBL also revived the state-owned telecommunications operator, Telebrás, which will play a significant role in the development of Brazil's broadband, becoming both a provider of backbone and of services to public institutions and underserved areas. Under the PNBL, Telebrás is responsible for implementing the private communication network of the federal public administration. It must also provide assistance and support in implementing public policies for broadband connections to universities, research centres, schools, hospitals, service stations, community telecentres, and other locations of public interest. It will provide a supporting network infrastructure for telecommunication services delivered by private companies, states, federal districts, municipalities and non-profit entities.

Most importantly, Telebrás will provide Internet connection services to end users in localities and communities that currently do not have adequate service. To achieve this, Telebrás is offering to either build its own infrastructure or to use other government-owned telecommunications infrastructure assets (*e.g.,* the underused capacity of fibre optic networks owned by Petrobras and Eletrobras, the state-owned petroleum and electricity companies).[25]

B. BROADBAND QUALITY

To further efforts to achieve universal broadband access, the federal government enacted the General Plan for Universalisation Targets (PGMU III) in 2011. It directs Brazil's National Telecommunications Agency, ANATEL, to establish appropriate quality of service regulations and procedures for broadband. The focus is upon minimum and median actual speed, service readiness and transparency of connection.

Within the mandates of the PNBL and the PGMU III, ANATEL determined in October 2011 (Regulamento de Gestão de Qualidade do SCM9) that a key target would be universal access to broadband with a minimum speed of 1 MBPS for approximately $35 Brazilian reais (US $15.50).[26] This published norm also clarified the targets for minimum and median speed — to be measured by an independent entity:[27]

[25] "Broadband in Brazil," ITU News, available at https://itunews.itu.int/En/2729-Broadband-in-Brazil.note.aspx.
[26] The National Telecommunications Agency(ANATEL), "Anatel Publica Regulamento com Padrões Mínimos de Qualidade para Internet Fixa [Anatel Publishes Regulation with Minimum Quality Standards for Fixed Internet," (October 31, 2011), available at http://www.anatel.gov.br/Portal/exibirPortalNoticias.do?acao=carregaNoticia&codigo=24110.
[27] The Entidade Aferidora de Qualidade (EAQ) - http://www.brasilbandalarga.com.br/index.php/

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	10/31/2012	10/31/2013	10/31/2014
Minimum Speed*	20%	30%	40%
Medium Speed**	60%	70%	80%

Table 3: Minimum and median broadband speed requirements as determined by ANATEL

** The minimum speed is assessed by an evaluation of the speed accessed by the subscriber in regard to the speed hired by the subscriber.*

*** The medium speed is the average speed taken on the network of a specific operator.*

C. FISCAL MEASURES

To further broadband infrastructure and investment, the PNBL has developed three mechanisms, which constitute a mix of fiscal and financial incentives: (1) subsidies through tributary cuts; (2) use of public funds; and (3) loans with subsidised rates.

Some examples of these fiscal and financial instruments include: financing with lower interest rates and tax cuts for the acquisition of equipment with Brazilian technology; granting fiscal incentives to small providers; cutting taxes on modems; stimulating the supply of low-cost broadband subscriptions; and financing service providers and cybercafés.

In 2012, Provisional Measure 563/2012 (later passed into law) created a special tax regime for the implementation, expansion and modernisation of PNBL — the National Broadband Special Tax Regime (REPNBL-Redes). As part of the regime, the Brazilian government is to apply R$3.8 billion (US$1.7 billion) of tax relief by 2016; as of 2013, R$1.4 billion (US$622.2 million) had been applied.[28] Through the measures laid out in the special tax regime, the federal government aims to stimulate between R$16 and R$18 billion (US$ 7.1 billion to US$8 billion) of increased investment until 2016.[29]

Provisional Measure 563/2012 also provides for the suspension of taxes the federal excise tax (IPI), the Program for Social Integration Contribution (P.I.S./Pasep) tax, and the Contribution for the Financing of Social Security Tax (COFINS) for those Brazilian companies that provide equipment and services for civil works under REPNBL-Redes, and provides tax relief for the following costs:

- Imported products acquired in the national territory;
- Construction materials;
- Services associated with civil works;

[28] "Projetos do REPNBL Somam Investimento Total de R$ 13,2 Bilhões [Projects REPNBL total investment of U.S. $ 13.2 billion], Teletime (August 6, 2013), available at http://www.teletime.com.br/06/08/2013/projetos-do-repnbl-somam-investimento-total-de-r-13-2-bilhoes/tt/350300/news.aspx.

[29] http://blogs.estadao.com.br/link/tag/banda-larga/page/3/ and http://blogs.estadao.com.br/link/banda-larga-no-brasil-esta-abaixo-da-media/

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- Cooling, radio towers, batteries, etc.;
- Imported products acquired in the national territory;
- Acquisition of equipment and network components produced according to the Basic Production Process; and
- Acquisition of equipment and network components developed with domestic technology.

The normative instruction RFB nº 1.355, published in May 2013, lays out eligibility guidelines for those companies that wish to submit proposals requesting tax relief under REPNBL-Redes. The deadline for submitting these tax relief proposals was extended to June 2014, following protests by some of the largest companies in the Brazilian telecommunications market, including Telefonica/Vivo and Tim.[30] As of January 2014, more than 1,100 proposals from 12 companies had been submitted, representing an investment of more than R$15 billion (US$6.6 billion); of those 1,100, 40 have so far been approved.[31] Twenty of these 40 approved proposals focused on optical infrastructure.[32]

D. MOBILE SPECIFIC TAX AND OTHER INCENTIVES

In February 2012, as part of the PNBL, Brazil's President Dilma Rousseff signed a number of additional laws and decrees to further expand tax incentives and tax relief. Law 12.715, passed in mid-February 2012, creates tax incentives worth millions of dollars for telecommunications companies that are working to expand mobile networks and equipment availability. One of Brazil's largest telecommunications unions, the National Union of Telephone Companies and Mobile Service (SinditeleBrasil), predicted that this law, by establishing incentives for both telephony and broadband equipment deployment and network building, would help reduce the cost of both fixed and mobile broadband in Brazil.[33] Another law, Decree 7291, promises R$6 billion (US$2.7 billion) in tax breaks for telecommunications companies by 2016, with the hope of increasing telecommunications infrastructure investments by over twice that.[34]

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[30] http://www.mc.gov.br/telecomunicacoes/noticias-telecomunicacoes/27325-prazo-de-adesao-ao-repnbl-e-prorrogado

[31] Em seis meses, MiniCom aprova 40 projetos de construção de redes com isenções. (January 24, 2014), available at http://telesintese.com.br/index.php/plantao/25229-em-seis-meses-minicom-aprova-40-projetos-de-construcao-de-redes-com-isencoes

[32] NET já tem projetos aprovados de redes com isenções que somam R$ 27 milhões, (January 13, 2014), available at http://telesintese.com.br/index.php/plantao/25143-net-ja-tem-projetos-aprovados-de-redes-com-isencoes-que-somam-r-27-milhoes

[33] Roberta Prescott, "Industry applauds Brazil's new tax incentive law for telecom sector," RCR Wireless (September 19, 2012), available at http://www.rcrwireless.com/americas/20120919/networks/analysts-see-positive-brazils-new-law-tax-incentives-telecom-sector/.

[34] Roberta Prescott, "Brazil Signs Tax Relief Measure for Telecom Network Construction," RCR Wireless (February 19, 2012), available at http://www.rcrwireless.com/americas/20130219/spectrum/brazils-government-signs-decree-relieve-tax-construction-new-telecom-networks/.

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The PNBL also promotes the expansion of mobile broadband as a way to increase broadband coverage and Internet usage in the country. In 2013, a US$9 billion federal government stimulus package was passed to encourage the further expansion of 3G and 4G infrastructure in Brazil through increased backbone deployment and construction.[35]

The government has also taken a number of regulatory decisions that are designed to maintain momentum in the mobile broadband market and stimulate further investment. In June 2012, Brazil's National Telecommunications Agency (ANATEL) auctioned off 269 4G frequencies to four of the top mobile telephone companies. All of the winning companies have to follow a strict timetable to provide broadband access to 30 percent of rural areas by June 2014, 60 percent by December 2014, and 100 percent by December 2015.[36] According to ANATEL's bidding terms, the municipalities designated as host cities for FIFA's 2013 Confederations Cup and the 2014 World Cup are priority areas for creating and expanding 4G and mobile broadband coverage.[37]

While access to 4G will be more prevalent if these goals are met, 4G services might be costly in comparison to fixed broadband connections. The current cost of 4G services varies from as low as US$17.35 per month to US$48.76 per month, not including the costs associated with a standard voice and text plan.[38] The cheapest 4G plans cost approximately 2 percent of monthly GNI per capita, which is comparable to the monthly cost of fixed-line broadband in the country. On the higher end of the scale, 4G plans could cost up to 10 percent of monthly GNI per capita.

E. ADDITIONAL POLICIES

Other recent policies, plans and programmes launched by the Federal Government of Brazil are designed to ensure effective digital inclusion of all Brazilians, regardless of their geographic location or socio-economic status.

Geographically remote and with dispersed communities that are relatively poor, the Amazonian regions present some of Brazil's most significant challenges to achieving the

[35] Richard Berger, "$9 Billion Tax Stimulus For Brazil's 3G/4G Infrastructure Is A Rising Tide To Float All Boats," Seeking Alpha (February 13, 2013), available at http://seekingalpha.com/article/1210031-9-billion-tax-stimulus-for-brazils-3g-4g-infrastructure-is-a-rising-tide-to-float-all-boats.
[36] Telegeography, "Big Four Secure Frequencies in Brazil's 4G Auction, But 450 MHz Band Fails to Excite," (June 13, 2012), available at http://www.telegeography.com/products/commsupdate/articles/2012/06/13/big-four-secure-frequencies-in-brazils-4g-auction-but-450mhz-band-fails-to-excite/.
[37] Telegeography, "Big Four Secure Frequencies in Brazil's 4G Auction, But 450 MHz Band Fails to Excite," (June 13, 2012), available at http://www.telegeography.com/products/commsupdate/articles/2012/06/13/big-four-secure-frequencies-in-brazils-4g-auction-but-450mhz-band-fails-to-excite/.
[38] Ibid

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country's digital inclusion goals. These challenges have led the Brazilian government to seek innovative solutions to the problem. In January 2014, Brazil's National Institute for Space Research (INPE) announced the Conectar project, which aims to provide broadband access to rural communities in northeastern Brazil, like those in the Amazonian region, by sending a signal through Internet-transmitting balloons that will float more than 300 metres above the land.[39]

In addition to tackling the rural/urban connectivity divide, the Brazilian government is working to develop solutions to problems posed by low levels of education and income in many parts of Brazil. In order to increase youth access to the Internet and embed the use of computers in technical and vocational training, President Rousseff in 2011 enacted a law that created the National Programme of Access to Technical Education and Employment (PRONATEC). The programme — which by the end of 2014 will have invested over US$10.5 billion — will focus on providing technical and vocational education, giving priority to rural dwellers and indigenous people in the less prosperous North and Northeast of the country. Among other things, the goals of the programme will be achieved by: developing well equipped units in order to expand the Federal Network of Professional Education, Science and Technology; offering distance education; and providing subsidies for low income participants.[40]

F. EARLY OUTCOMES

A year after the launch of the National Broadband Plan (PNBL), only 1.2 million Brazilians across 2,300 towns and cities had installed fixed broadband connections in line with the PNBL and related norms (R$35 (US $15.5) for 1 mbps). One of the contributing factors for the relatively low uptake is the fact that mobile Internet, free Wi-Fi hotspots and widely available *LAN houses* (Internet cafés) remain popular. The fact that personal computers are present in only 40 percent of homes has also contributed to this low uptake. To spur demand further, the Ministry of Communications' Department of Broadband in January 2013 vowed to facilitate the provision of 2 Mbps download speed for the price of the plan's 1 Mbps service, and by mid-2013, PNBL subscribers had hit 2 million.[41]

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[39] CBR, "Brazil to Bring Internet to Rural Communities via Balloons," (January 10, 2014), available at http://www.cbronline.com/news/tech/networks/networking/brazil-to-bring-Internet-to-rural-communities-via-balloons-100114-4158537.

[40] Office of the Presidency, "Presidenta Dilma sanciona Lei que cria o Programa Nacional de Acesso ao Ensino Técnico e Emprego" [President Dilma Sanctions Law That Creates the National Access to the Technical Education and A) OverviewsEmployment Program], available at http://www2.planalto.gov.br/acompanhe-o-planalto/releases/presidenta-dilma-sanciona-lei-que-cria-o-programa-nacional-de-acesso-ao-ensino-tecnico-e-ao-emprego-1

[41] Ben Tavener, "Broadband Slow To Increase In Brazil," (January 15, 2013), available at http://riotimesonline.com/brazil-news/rio-business/brazil-broadband-access-slowly-increasing/#.

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According to a 2013 report, average broadband connection speeds increased 148 Kbps from January to June 2012, resulting in a 2013 average connection speed of 4.88 Mbps.[42] In terms of pricing, Brazilian service providers are concentrating offerings on intermediate (2 Mbps) and higher (5 Mbps or more) speeds, with an average access price of R$63 (US$24.90) in the first half of 2012.

[42] http://newsroom.cisco.com/release/1135514/Brazil-Surpasses-25-Million-Broadband-Connections

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SPECIAL FEATURE: THE IMPACT OF THE 2014 WORLD CUP AND 2016 OLYMPICS ON BROADBAND

Since Brazil successfully won the bid to host both the 2014 FIFA World Cup and the 2016 Summer Olympics, there has been increased attention on spreading fixed and mobile broadband services around the host cities and across the country. Of the twelve host cities chosen for the World Cup, five are located in the North or Northeast regions of Brazil, which, as noted previously, have lower Internet penetration and availability rates than the South and Southeast regions. In May 2013, Brazil's Communication Minister Paulo Bernardo promised that all the stadiums, regardless of region, would have increased 50-gigabyte 4G network accessibility.[1] Rollout of Wi-Fi has been particularly fast, and the number of Wi-Fi hotspots is expected to reach approximately one million in 2014 — double the number of hotspots available in 2012 — primarily due to the increased development of community hotspots for the World Cup.[43]

In order to comply with FIFA regulations regarding technology requirements at stadiums and the surrounding areas, it was predicted that telecommunications companies in Brazil would spend US$1.5 billion on infrastructure and equipment for the World Cup alone.[44] This could adversely affect Brazilian consumers because the country's telecommunications companies, who face little restriction and competition, might raise rates to cover the costs associated with the international sporting event.

Even with the billions invested, the infrastructure developed for large international sporting events such as the Olympics and World Cup is often not maintained once the event is over, due to a decrease in the number of international tourists using the services and the decreased profit margins associated with continuing a high quality of service. This has led many to wonder whether the new IT infrastructure in Brazil will follow the same pattern. Only time will tell if Brazil will be left with huge, broadband-enabled ICT white elephants.

[43] Renato Pasquini, "Frost & Sullivan: 2014 Predictions for Telecom in Latin America," Nearshore Americas (February 12, 2014), available at http://www.nearshoreamericas.com/frost-sullivan-2014-predictions-telecommunications-services-latin-america/.
[44] GSMA, "Brazil Mobile Observatory 2012," p.50, available at http://www.gsma.com/latinamerica/brazil-mobile-observatory-2012

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3. CONCLUSIONS

Brazil's rapid economic growth in recent years has been mirrored by a rise in Internet penetration rates. Yet the country still faces significant challenges if it is to achieve its goals with respect to digital inclusion. A robust policy framework is in place to drive progress, which is yielding early results.

The following areas will be crucial to success in the years to come:

- Following the successful 4G frequency auctions, will the winning bidders meet their strict rollout targets and provide access to 100 percent of rural areas by 2015?
- Will the tax incentives provided by the National Broadband Special Tax Regime and legislation such as Law 12715 lead to operators making the necessary investments in infrastructure?
- Will the National Broadband Plan stimulate enough competition between operators?
- With the coverage so extensive and uptake slow, what demand stimulation initiatives will be put in place?
- What measures will the Brazilian government take to make demand for services sustainable in the areas around World Cup venues?

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USA
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ABOUT THE ALLIANCE FOR AFFORDABLE INTERNET

Launched in October 2013, the Alliance for Affordable Internet (A4AI- www.a4ai.org) is a global coalition committed to driving down the cost of Internet access in less developed countries.

A4AI focuses on creating the conditions for open, efficient and competitive broadband markets via policy and regulatory reform. Through a combination of advocacy, research and knowledge sharing, the Alliance aims to facilitate the achievement of the UN Broadband Commission target of entry-level broadband services priced at less than 5 percent of average monthly income. In doing so, A4AI will help to connect the 60 percent of people in developing countries who currently cannot access the Internet.

A4AI's 60+ members and local partners are drawn from both developed and less developed countries and include public, private and not-for-profit organizations. The World Wide Web Foundation, founded by Web inventor Sir Tim Berners-Lee, initiated the Alliance. Members include Google, Omidyar Network, USAID and the UK DFID.

For more information, visit: http://www.a4ai.org