23 BEYOND THE BASICS: QUALITY, SPEED, AFFORDABILITY, RELEVANCE

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ABSTRACT

Universal access to the Internet is a global goal. But digital divides based on gender and income will persist unless development actors and governments also aim for meaningful connectivity, measured in terms of the reliability, quality, speed and cost of digital services and devices. These targets should inform planning, regulation and policies for broadband development and markets. A number of developing countries have found creative solutions to lower costs and improve the quality of broadband connectivity. Development co-operation actors should support them to effectively track and measure meaningful connectivity and address inequities in targeted, inclusive ways.

Key messages

- National figures on Internet access currently overlook whether investments in broadband connectivity are improving quality, speed, affordability and relevance.
- Sound planning, an effective policy environment and incentives have helped developing countries lower the costs of digital services and devices.
- Using meaningful connectivity as the standard for truly universal, affordable and accessible broadband can help developing countries measure and better address income and gender disparities.
- Development co-operation actors should support regulatory and policy frameworks that encourage competitive markets and advance meaningful broadband connectivity.

Having access to the Internet is one thing. Having meaningful access – in terms of speed, devices, data and frequency of use – is another. As governments turn towards recovery from the shocks of the COVID-19 pandemic, improving citizens' access to affordable broadband should be a priority. The meaningful connectivity standard, developed by the Alliance for Affordable Internet (A4AI), raises the bar for Internet access. It can help governments set broadband policy targets and monitor whether their digital development is providing quality and affordable Internet access for all.

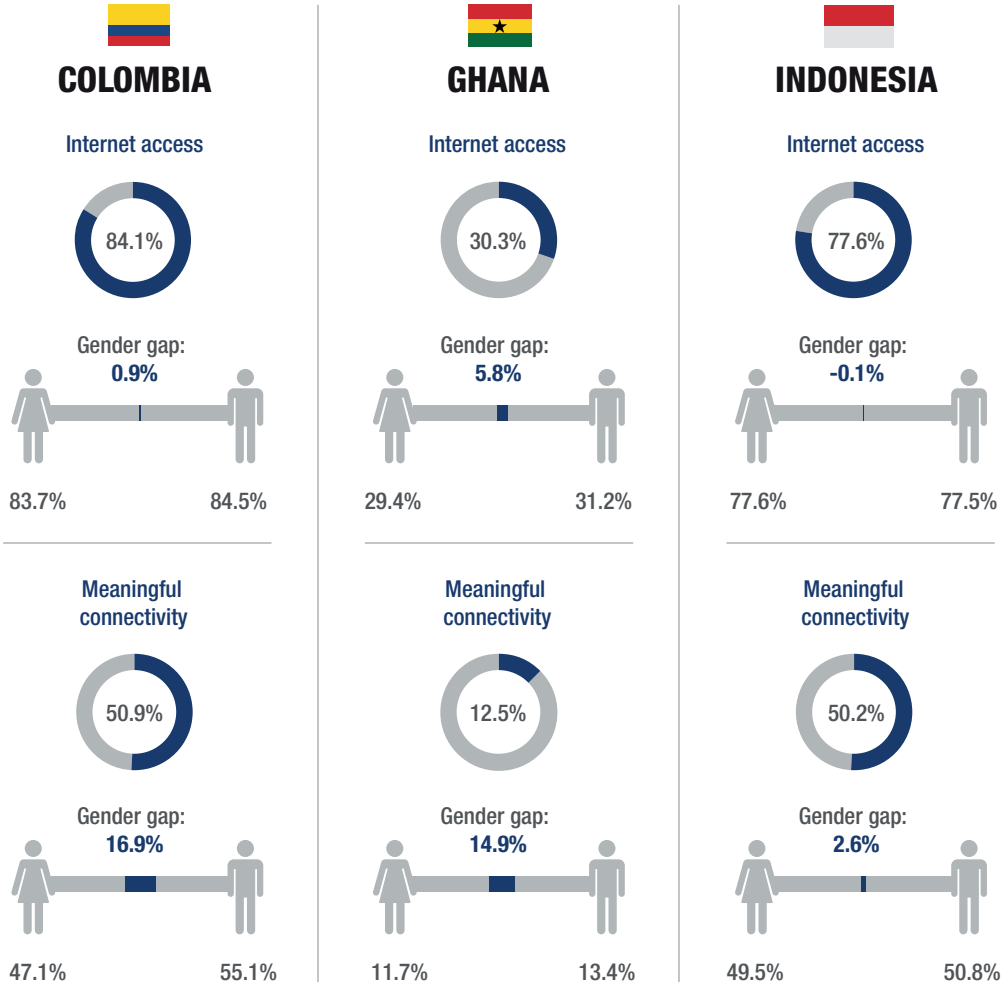
The right policies and planning can go a long way towards ensuring that broadband markets are healthy, competitive and serve the evolving needs of users. As private, government and development co-operation actors pursue the goal of universal access to 4G-equivalent mobile broadband,[1] they should consider how their investments and policies also can promote meaningful connectivity that is affordable, accessible and inclusive to all.

Measures of meaningful connectivity highlight digital gender and quality gaps

The meaningful connectivity standard captures users' evolving expectations for their digital experiences across four dimensions: a fast and affordable Internet connection with enough data available at all times using appropriate smart devices to access relevant digital content.[2] This approach looks beyond the traditional binary metric of connectivity – whether people are on line or offline – and evaluates the quality of their access. The distinction can alter the connectivity picture within and across countries significantly. For example, 84.1% of people in Colombia have Internet access, according to the International Telecommunication Union (ITU). But, using the A4AI measure, only 50.9% have meaningful connectivity (A4AI, 2020[1]). Meaningful connectivity metrics also highlight digital inequality between men and women: In Ghana, for example, the gender gap in terms of daily use of the Internet is 5.8%; when measured in terms of meaningful connectivity, though, the gender gap more than doubles for daily Internet use to 14.9% (Figure 23.1). This suggests that in addition to factors such as lack of digital skills and their greater concerns over privacy that affect their level of Internet use, women who are connected often have poorer quality of access or inadequate devices relative to connected men (World Wide Web Foundation, 2020[2]).

By adopting national targets for meaningful connectivity, policy makers can set more ambitious and specific goals that aim for higher quality and more inclusive broadband connectivity. To meet the target in their particular national context, governments should use an evidenced-based approach to identify disparities and gaps, develop policy solutions through inclusive and

Figure 23.1. The gender gap in meaningful connectivity is higher than for Internet use



Source: World Wide Web Foundation (2020[2]), *Women's Rights Online: Closing the Digital Gender Gap for a More Equal World*, http://webfoundation.org/docs/2020/10/Womens-Rights-Online-Report-1.pdf.

participatory processes, and tackle the four dimensions of meaningful connectivity in phases where necessary. Box 23.1 describes how policy makers in Indonesia are using 4G signal data to measure subnational disparities in meaningful connectivity and help target mobile infrastructure investments.

Connectivity is only meaningful if devices and data are affordable

No matter how fast the connection, how many data are available, how smart the device or how relevant the digital content, people do not have meaningful connectivity if they cannot afford mobile services. Almost 2.5 billion people live in countries where the most affordable smartphone costs more than a quarter of the average monthly income (A4AI and World Wide Web Foundation, 2020[4]).

Countries' progress towards providing affordable broadband is tracked in two ways: The Affordability rankings and the Affordability Drivers Index[5] (ADI). Progress in infrastructure and access, as well as improvements in the policy environment that enables them, are critical criteria that improve a country's ADI score. A high ADI score corresponds to reduced broadband costs for consumers.

BOX 23.1. INDONESIA: MEASURING MEANINGFUL CONNECTIVITY TO TARGET AND CLOSE DIGITAL DIVIDES

Spread across 17 000 islands, Indonesia has an extensive, country-wide 4G network, but with disparities in coverage and availability as measured by consumer time on a 4G signal.[3] Using Opensignal[4] data to measure disparities, policy makers test the amount of time smartphone users have a 4G signal on their phone to determine the extent to which people in various parts of Indonesia experience high-quality mobile connectivity. A minimum threshold of a 4G connection supports applications such as the streaming of educational content, gaming or business transactions. Using information on connectivity gaps, policy makers working to develop the country's digital economy can better focus their mobile infrastructure efforts to ensure reliable, high-quality connectivity is available to all. Investments such as the Palapa Ring project aim to connect seven of the archipelago's groupings through a public-private partnership to address mobile geographical divides in availability and speed.

[3] Broadband speed data can be used as a proxy for access to a fast connection in lieu of direct surveys.
[4] OpenSignal is a globally recognised organisation that measures mobile connectivity speeds and customer experiences on broadband speed. See: https://www.opensignal.com.

Source: A4AI (2020[3]), *4G for Meaningful Connectivity: Indonesia*, https://1e8q3q16vyc81g8l3h3md6q5f5e-wpengine.netdna-ssl.com/wp-content/uploads/2021/09/WF_A4AI_MC-in-Indo_Screen_AW-1.pdf.

In 2020, broadband prices in 57 of the 100 countries where prices were measured failed to meet the so-called "1 for 2" affordability threshold; that is, 1 gigabyte (GB) of mobile broadband data available at a cost equal to or less than 2% of per capita gross national income (GNI)[6] (A4AI, 2020[3]). This means that more than 1 billion people live in countries where 1 GB of data is simply too expensive (A4AI, 2020[5]). While improving, progress towards attaining universal affordability has been generally slow. For example, in 52 of the low- and middle-income countries that A4AI analyses each year, 1 GB of mobile data has become more affordable on average, with costs falling from 7% to 2.7% of GNI per capita over the period 2015-20.[7] Least developed countries enjoyed a 15% improvement in affordability from 2018 to 2020, with costs at 7.2% of GNI per capita in 2020. However, huge disparities persist between countries (Figure 23.2). The least affordable country for mobile broadband is the Central African Republic, where 1 GB of data is priced at 24.4% of GNI per capita.

More than 1 billion people live in countries where 1 GB of data is simply too expensive

Government regulation and incentives can reduce broadband costs and inequities

Given income and other disparities within countries, it is important for governments to track subnational broadband and device affordability. Data costs in South Africa, 1.4% of GNI per capita (A4AI, 2020[6]), meet the national affordability target, for instance. Yet, 60% of the population cannot afford 1 GB of data.[8] To address this, South Africa's Competition Commission launched a market inquiry into the factors driving high data services prices[9] and issued a ruling in 2020 to force operators to drop prices by between 30% and 50%. The country's two leading mobile operators, MTN and Vodacom, complied with lower prices, with Vodacom

Figure 23.2. Ten least affordable countries for 1 GB of mobile data

GNI per capita, 2020

COUNTRY	MONTHLY COST OF 1GB OF DATA IN USD	MONTHLY AFFORDABILITY OF 1GB OF DATA (AS A % OF GNI PER CAPITA)
1 Central African Republic	USD 10.37	24.44%
2 D.R Congo	USD 8.00	20.67%
3 Togo	USD 8.64	15.10%
4 Chad	USD 8.64	14.66%
5 Malawi	USD 4.69	14.01%
6 Burundi	USD 2.92	13.83%
7 Madagascar	USD 5.51	13.78%
8 Solomon Islands	USD 19.95	11.97%
9 Sierra Leone	USD 3.87	10.73%
10 Papua New Guinea	USD 24.26	10.69%

Source: A4AI (2020[6]), *Mobile Broadband Pricing: – Data for 2020* (database), https://a4ai.org/extra/baskets/A4AI/2020/mobile_broadband_pricing_gni#.

cutting the effective price of some of its lower cost bundles by half (Buthelezi, 2020[7]).

In some countries, income inequality means some people cannot access broadband services because they cannot afford a mobile device, for example a smartphone. In 2021, the country with the most affordable smartphones was the United Kingdom, where the lowest priced smartphone cost the equivalent of 0.70% GNI per capita (Figure 23.3). By contrast, Figure 23.4 shows that smartphones in Azerbaijan are unaffordable, with the lowest priced smartphone costing consumers 333.37% of GNI per capita.[10]

Subsidies and tax breaks, including removing luxury taxes on digital devices, can increase device uptake and may incentivise manufacturers to produce low-cost devices for consumers (A4AI and World Wide Web Foundation, 2020[4]). For example, in Costa Rica, the National Telecommunications Fund, FONATEL, offers qualifying families subsidies of up to 100% of the cost of a laptop.[11] In Kenya, removing the 16% value added tax (VAT) on handsets in 2009 resulted in a 200% increase in handset purchases within two years of the tax exemption. Similarly, Colombia saw a rise in mobile adoption in 2017, one year after exempting mobile devices from VAT (up to USD 245) and removing VAT on personal desktop and laptop computers valued up to USD 550 (A4AI, 2020[9]).

The right planning and policies for broadband can build meaningful connectivity

The ITU estimates that a total investment of USD 428 billion is required globally for broadband infrastructure, digital skills, local

Figure 23.3. The five most affordable countries for smartphones

GNI per capita, 2021

	COUNTRY	AFFORDABILITY OF A SMARTPHONE (AS A % OF GNI PER CAPITA)	COST OF A SMARTPHONE IN USD
1	United Kingdom	0.70%	USD 26
2	Turks & Caicos Is.	0.74%	USD 19
3	Liechtenstein	0.78%	USD 143
4	Bermuda	0.90%	USD 89
5	Ireland	1.07%	USD 60

Source: A4AI (2021[8]), *Device Pricing 2021* (database), https://a4ai.org/research/device-pricing-2021/.

Figure 23.4. The five least affordable countries for smartphones

GNI per cpaita, 2021

	COUNTRY	AFFORDABILITY OF A SMARTPHONE (AS A % OF GNI PER CAPITA)	COST OF A SMARTPHONE IN USD
1	Azerbaijan	333.37%	USD 1 158
2	Tajikistan	290.02%	USD 221
3	Comoros	137.20%	USD 170
4	Lebanon	123.79%	USD 1 157
5	Liberia	110.94%	USD 49

Source: A4AI (2021[8]), *Device Pricing 2021* (database), https://a4ai.org/research/device-pricing-2021/.

content development and policy support to ensure universal access of 4G equivalent quality by 2030 (ITU, 2020[10]). The policy environment and planning around these investments will have a significant impact on the quality, accessibility and affordability of broadband for users. Thanks to sound broadband planning, a number of countries have made remarkable improvements in data affordability over the last six years, among them Colombia, Costa Rica, Malaysia and Rwanda. In Rwanda, for instance, the price of 1 GB of data has fallen from 20.2% to 3.39% of average monthly income since 2015 (A4AI, 2020[5]) as a result of its Vision 2020 plan and support from development co-operation partners.

Moreover, the policy environment and planning for broadband can shape how broadband markets and the industry react. Good broadband policies and practices set out a clear vision and specific and inclusive objectives and targets. The A4AI good practices database[12] and Rural Broadband Policy Framework[13] offer guidance for policy makers. Its review of good practices across countries suggests that broadband

planning should address three important areas:

1. broadband infrastructure provisions including updating licensing frameworks towards technology neutrality; strengthening spectrum management; and removing or at least reducing tariffs and import duties on devices and exploring financing schemes to help expand device ownership
2. inclusion targets to improve the availability of high-quality, affordable broadband services across geographies and particularly in underserved rural areas (Nakagaki and Sarpong, 2021[11]) and specific strategies to improve gender and social inclusion
3. demand-side objectives to increase the uptake of digital devices and services, with a focus on improving digital skills and supporting local and relevant content creation.

Stakeholder roles in broadband planning must be well defined and targets backed by adequate resources and funding. Plans

Subsidies and tax breaks, including removing luxury taxes on digital devices, can increase device uptake and may incentivise manufacturers to produce low-cost devices for consumers.

that ensure healthy, competitive broadband markets, for example, could save users in low- and middle-income countries up to USD 3.42 per GB (A4AI, 2019[12]). Open inclusive and consultative policy making is also encouraged as a way to strengthen broadband frameworks. In the Philippines for example, the country's 2019 ADI score was increased by enhanced participatory processes in regulations (A4AI, 2019[12]).

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NOTES

1. The International Telecommunication Union defines universal Internet access as connecting 90% of the global population aged 10 years and older. See: https://www.itu.int/en/myitu/Publications/2020/08/31/08/38/Connecting-Humanity.
2. Meaningful connectivity is when a person can use the Internet every day using an appropriate device with enough data and a fast connection. For more detail, see: https://a4ai.org/meaningful-connectivity.
5. A4AI developed the ADI as a tool to assess how well a country's policy, regulatory and overall supply-side environment is working to lower industry costs and ultimately create more affordable broadband.
6. The Broadband Commission calculates this "1 for 2" target using World Bank data for GNI per capita and the monthly price charged by a country's largest operator for the cost of 1 GB of mobile broadband.
7. See: https://a4ai.org/mobile-data-costs-fall-but-as-demand-for-internet-services-surges-progress-remains-too-slow.

8. Based on internal A4AI modelling.
9. See: https://www.compcom.co.za/newsletter/data-market-inquiry.
10. These figures are based on an A4AI research. Affordability was determined by calculating the price relative to GNI per capita (https://a4ai.org/research/device-pricing-2021).
11. Through the Connected Households (Hogares Connectadas) programme, FONATEL also subsidises up to 80% of the cost of an Internet connection for families that qualify based on their household income. See: https://a4ai.org/studies/closing-the-digital-divide-with-universal-service-leadership.
12. The database and case studies are available at: https://a4ai.org/good-practices-database.
13. The Rural Broadband Policy Framework presents eight elements that policy makers should consider making affordable, high-speed Internet accessible more quickly in rural areas. See: https://a4ai.org/rural-broadband-policy-framework.

From:

Development Co-operation Report 2021

Shaping a Just Digital Transformation

Access the complete publication at:
https://doi.org/10.1787/ce08832f-en

Please cite this chapter as:

Sarpong, Eleanor (2021), "Beyond the basics: Quality, speed, affordability, relevance", in OECD, *Development Co-operation Report 2021: Shaping a Just Digital Transformation*, OECD Publishing, Paris.

DOI: https://doi.org/10.1787/bc7b62dc-en

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