The State of Broadband:

Digital connectivity

A transformative opportunity

September 2023

BROADBAND COMMISSION
FOR SUSTAINABLE DEVELOPMENT

ITU

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The State of Broadband 2023

Digital Connectivity
A Transformative Opportunity

ITU/UNESCO Broadband Commission
for Sustainable Development

September 2023

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The report has been written by Lim May-Ann, Director of the Fair Tech Institute at Access Partnership, with inputs from Dr. Peter Lovelock, Head of Fair Tech Policy at Access Partnership, a Knowledge Partner. From the International Telecommunication Union (ITU), Nur Sulyna Abdullah, Phillippa Biggs and Anna Polomska-Risler provided direction, guidance and inputs; Leah Mann provided review and Julia Gorlovetskaya designed the report.

The Commission contributors and reviewers listed in alphabetical order of their organization:

- African Union Commission (Commissioner H.E. Dr. Amani Abou-Zeid)
- America Movil (Commissioner Dr. Carlos M. Jarque)
- Communications, Space & Technology Commission (CST), Saudi Arabia (Commissioner H.E. Dr. Mohammed Saud Al-Tamimi)
- Digicel (Commissioner Mr. Denis O'Brien)
- Ericsson (Commissioner Mr. Erik Ekudden)
- Eutelsat IGO (Commissioner Mr. Piotr Dmochowski-Lipski)
- FAO (Commissioner Dr. Qu Dongyu)
- GSMA (Commissioner Mr. Mats Granryd)
- Intelsat (Commissioner Mr. David Wajsgras)
- IFC (Commissioner Mr. Makhtar Diop)
- ITC (Commissioner Ms. Pamela Coke-Hamilton)
- Meta (Commissioner Mr. Kevin Martin)
- Millicom (Commissioner Mr. Mauricio Ramos)
- Nokia (Commissioner Mr. Pekka Lundmark)
- Novartis Foundation (Commissioner Dr. Ann Aerts)
- SAMENA Telecommunications Council (Commissioner Mr. Bocar Ba)
- Smart Africa (Commissioner Mr. Lacina Koné)
- Telecommunications and Digital Government Regulatory Authority (TDRA), UAE (Commissioner H.E. Engineer Majed Sultan Al Mesmar)
- UNDP (Commissioner Mr. Achim Steiner)
- UNESCO (Commission Co-Vice Chair Ms. Audrey Azoulay)
- Verizon Communications Inc. (Commissioner Mr. Hans Vestberg

Table of Contents

List of Figures

Executive Summary

The events of the last three years, with a global health pandemic and the swift international pivot to digital delivery of goods, services, work, and play, have yielded unique insights into just how critical stable, broadband access is and will continue to be. While the global markets still face strong economic headwinds today, digital connectivity has accelerated as **people, businesses, and governments pivoted strongly towards online communications,** and we continue to see new internet devices and applications, growing broadband penetration into developing markets.

The Broadband Commission for Sustainable Development continues to see progress as we move towards universal and meaningful online activity. It is heartening to note that the global offline population continues to steadily decline to 2.6 billion people in 2023, a reduction from the estimated 2.7 billion people offline in 2022.[1]

"This improvement in connectivity is another step in the right direction, and one more step towards leaving no one behind in support of the UN Sustainable Development Goals," said ITU Secretary-General Doreen Bogdan-Martin."

> ***We won't rest until we live in a world where meaningful connectivity is a lived reality for everyone, everywhere."***

This year's ITU State of Broadband 2023 reviews the progress of the seven Advocacy Targets, and notes the wins that can be seen as we move towards broadband being universally available, equitable, and affordable. Yet despite the gains, market trends for consumption and supply are shifting, and may not be strong enough to guarantee that the objective of universal and meaningful connectivity will be met by 2030. It therefore looks at the cost of meeting Broadband Commission targets – **what are the considerations for how the next lap of connectivity for digital transformation can and should be financed and funded?** It offers five considerations for the road ahead, see below.

The Broadband Commission for Sustainable Development welcomes stakeholders and partners to work on achieving universal and meaningful connectivity by 2030, to ensure not just connectivity, but also that those who are connected have the skills and knowledge to use it.

Five considerations for the road ahead

1. Defining (and re-defining) measurable goals for "universal meaningful connectivity" to meet today's needs
2. Close the Usage Gap by addressing key barriers to people adopting and using the Internet where coverage is available
3. Broaden contributor base and implement creative funding approaches, including incentivising infrastructure funding, reforming USAF approaches
4. Alignment and incentivizing funding contributors is key for government connectivity plans, mobilizing all sectors' pools of capital by removing challenges and barriers to network infrastructure investment
5. Build network infrastructure policies to last with sustainable and agile plans

Chapter 1

The Broadband Landscape
New Opportunities

The events of the last three years have yielded unique insights into just how critical stable, broadband access is and will continue to be. As a knock-on effect of the digital transformation and pivot from the pandemic, new internet devices and applications, growing broadband penetration into developing markets, there is a stronger demand than ever for digital products and services.

Image source: Asian Development Bank

The events of the last three years, with a global health pandemic and the swift international pivot to digital delivery of goods, services, work, and play, have yielded unique insights into just how critical stable, broadband access is - and will continue to be. **While the global markets still face strong economic headwinds today, digital connectivity has accelerated[2] as people, businesses, and governments pivoted strongly towards online communications.**

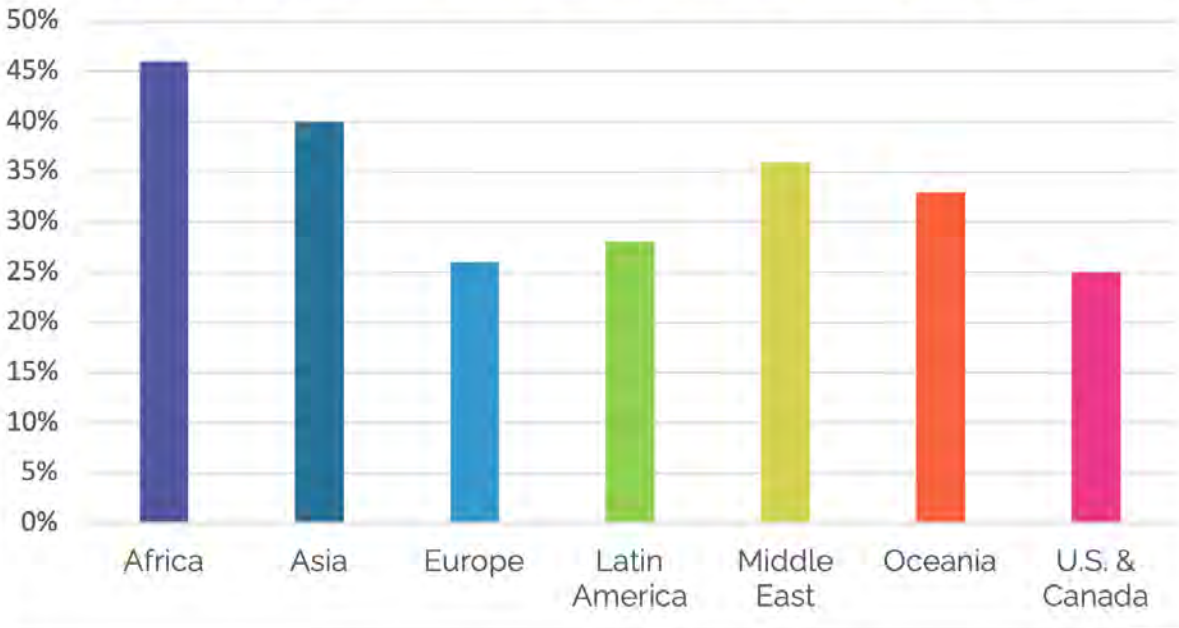
In this regard, the Broadband Commission for Sustainable Development continues to see progress as the world moves towards universal and meaningful activity. It is heartening to note that **the global offline population continues to steadily decline to 2.6 billion people** in 2023, a reduction from the estimated 2.7 billion people offline in 2022.[3] This improvement is a knock-on effect of the digital transformation and pivot from the pandemic, accelerating the development of new internet devices and applications, growing broadband penetration into developing markets, resulting in stronger demand than ever for digital products and services.

> ***In fact, there is a fundamental shift from supply-driven communications access to demand-driven communication.***

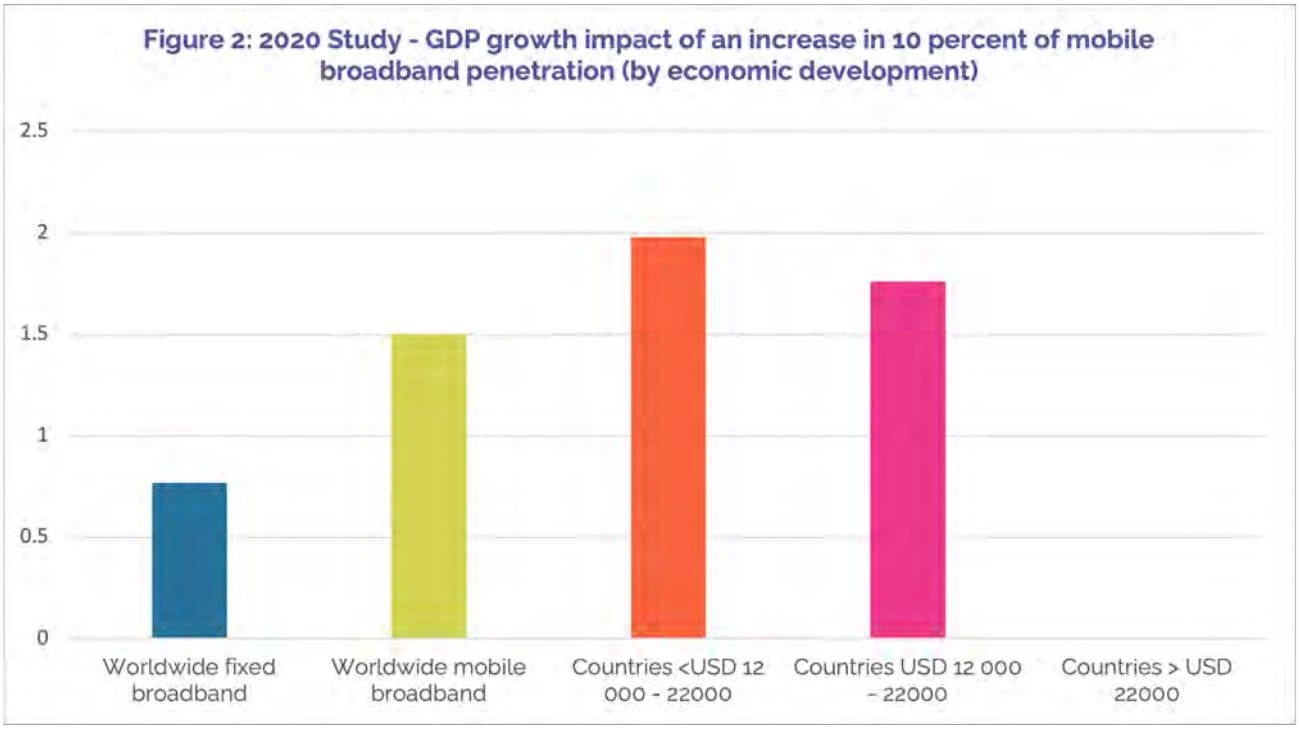
Recent events have demonstrated that the demand for connectivity is not only emerging but also substantial and sustained, particularly from the global South, where many remain unconnected or under-connected. This trend is expected to continue and potentially grow in the coming years. For instance, the following figure shows that the compound annual growth rate (CAGR) for bandwidth transmission capacity continues to be driven by Africa, Asia and the Pacific.

Taking stock of lessons learned during the pandemic, policymakers could consider the positive economic impact of infrastructure investment while reviewing progress towards achieving universal broadband access.[4] By recognizing the undergirding and cross-cutting enablement of communications for everything from health and education through to entertainment and transactions, the cost/return equation would be transformed.

Figure 1: CAGR Internet Bandwidth Growth by Region



Source: Telegeography, 2021[5]



Source: ITU, 2021[6]

Where previously the argument was –build it first, and the demand will come – it can now be seen that the demand is here, and it is growing. This tipping point has been reached and there is now a new trajectory in the cost/return journey.

However, the economic returns are not always fully recognized, let alone realized.

Where is the demand coming from? How are people using and adapting to these new releases of technology? Where are digital foundation investments looking to pay off with strong virtuous cycles of innovation and entrepreneurship? **And how much financing and funding is needed to prepare for this future?**

This year's State of Broadband Report 2023 sees a transformative opportunity for the world to capitalize on this strong shift towards digital foundation building. This has occurred in several demand-driven ways:

Consumers demanding faster, easier, safer services anddigital pay-ments

Citizens driving demand for **government** services, with governments moving towards delivering digital services pro-actively

New entrepreneurs leading micro, small, and medium enterprises (MSMEs) driving demand for demand for digital transformation and connectivity services.

Broadband Demand Driver 1

Consumers demanding faster, easier, safer digital services and payments

A big driver of today's broadband demand is consumer-driven demand from easier, safer, and faster digital services and payments. With governments establishing stronger and more verifiable digital identity systems, electronic Know-Your-Customer (eKYC) verification processes can be performed, with stronger verifiable payment mechanisms in place. Stronger financial inclusion programmes[7] can be provided to micro-, small, and medium-sized enterprises (MSMEs), and to minority and/or disadvantaged groups, such as rural communities, or female entrepreneurs, or in areas of conflict.

Asaan Mobile Account (AMA) platform

For example, Pakistan has launched the Asaan Mobile Account (AMA) platform, a joint initiative by the State Bank of Pakistan (SBP) and Pakistan Telecommunication Authority (PTA), in collaboration with branchless banking (BB) providers, telecom operators, and other development partners. This platform offers eKYC services, enabling citizens to quickly and affordably open digital accounts and access financial services with ease.

Figure 3: Pakistan Aasan Mobile Account

Source: Daily Outcome Pakistan, 2022[8]

MTN Mobile Money Open APIs

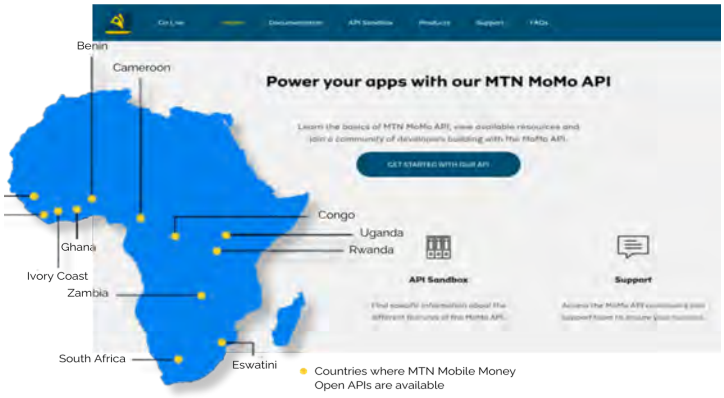


Figure 4: MTN Mobile Money Open APIs

Source: Ericsson, 2023[9]

Another example is MTN Mobile Money Open APIs which has helped to accelerate fintech innovation in Africa. To accelerate the growth of mobile financial services and to encourage fintech innovation in Africa, MTN made its Mobile Money platform available to third parties by launching the Mobile Money Open API platform. The MTN Mobile Money Open APIs provide developers complimentary access to the MTN Mobile Money proprietary software platform and enable them to create innovative digital financial services, meeting the growing financial needs of Africans.

Increased demand for strong and stable connectivity from consumers and businesses has also been boosted by new technological improvements. For example, the use of national and cross-border Quick Response (QR)-code payments has facilitated more convenient transactions. Additionally, businesses have adopted solutions, like blockchain-enabled logistics, through platforms like tradetrust.io[10], leading to greener paperless shipping and handling of physical goods, which, in turn, has reduced administrative costs.

Broadband Demand Driver 2

Citizens driving demand for government services, with **governments** moving towards delivering digital services pro-actively

The demand for citizen services has surged, driven by the establishment of foundational digital government products and services such as citizen digital identities, the capability to process government services online (including tax), and interoperable databases.

Governments are increasingly restructuring their approaches to digital governance and citizen services, as the pandemic triggered a virtuous cycle of creating digital government products and services, including interoperable databases for digital identities and online payment systems and regulations. This shift marks a significant focus on digital citizenry that may not have been as pronounced in the past.

Government TechStack, Singapore

In a whole-of-government (WOG) digital transformation of the country's public sector, the Singaporean government re-architected their public sector's digital infrastructure with the establishment of the Government TechStack (see figure). It identified four layers by which services could be provided, shared, and built from:

(4) digital services, which are the application layer that sits on top of the three foundational layers

(3) microservices which are re-usable common services across government platforms (such as citizen login functions)

(2) the middleware which provides interface structures such as Application Programming Interfaces (APIs)

(1) the hosting layer at the base

Figure 5: Singapore Government Tech Stack
Source: IMDA, 2018[11]

Strategy for Digital Transformation, Brazil

The Brazilian government also rebuilt their public sector for a stronger foundation. Brazil established the Strategy for Digital Transformation (E-Digital),[12] which drove a digital transformation of its public sector services, digitally upgrading and digitizing 68 public services, saving more than 90 per cent of service costs. Through the development of government services linked on Portal de Serviços, its single website for citizen services at servicos.gov.br, more than 1,750 citizen services can be accessed with citizen identification and login authentication. This government service portal allows citizens to access a variety of government services online, such as renewing their driver's licenses, paying taxes, and applying for social benefits.

Figure 6: Portal de Serviços Brasil on mobile
Source: Agensia Brasil, 2022[13]

Aadhaar initiative, India

India's Aadhaar initiative is another example of how governments re-architecting the foundation of digital government products and services will start a virtuous cycle of digitization in both the public and private sectors. Aadhaar was launched in 2010[14] to create a national biometric database for all Indian citizens, providing everyone with an Aadhaar number. With the authentication undergirding direct cash transfers during COVID-19, the Indian government was able to facilitate concession disbursements to more than 200 million women, and to over 18 million vulnerable building and construction workers in the country. Today, many banks and payment facilities in India have come to use Aadhaar as a facilitation mechanism. For example, the Reserve Bank of India's National Payments Corporation of India allows people to use Aadhaar to transfer money via its Bharat Interface for Money application entering the recipient's Aadhaar number.

Figure 7: India Aadhar Card
Source: PM Modi Yojana, 2023[15]

Broadband Demand Driver 3

New entrepreneurs leading micro, small, and medium enterprises (MSMEs) driving demand for demand for digital transformation and connectivity services

While this decade's entrepreneurship story is driven by the success of the "unicorn" – a start-up company with a valuation over USD 1 billion,[16] micro-, small, or medium-sized enterprises (MSME)[17] continue to dominate and drive the business landscape, representing about 90 per cent of all businesses and being responsible for more than 50 per cent of employment worldwide.[18] In this context, there is significant demand for broadband services driven by demand from MSMEs. This includes cloud-native companies, those rapidly pivoting to digital services/delivery, and companies seeking to expand their trading border.

GoJek, Indonesia

Indonesia's GoJek[19], which began as a SME, became one of the first unicorns in the country, disrupting the taxi industry with its ride-hailing app.[20] Together with other ride-hailing apps like Uber, Grab, Lyft, Ryde, Bolt, and others, these new entrepreneurial services drove consumer use and demand for always-on connectivity, fuelled by demand for local and international location-tracking services. The company has since merged in 2021 with another Indonesia unicorn Tokopedia, to form GoTo,[21] a company which provides on-demand, e-commerce and digital payments services, and is now responsible for nearly 2 per cent of the country's GDP. [22]

Figure 8: GoTo Business Units

Source: GoTo, 2023[26]

Jiji Online Marketplace

Figure 9: Jiji promotion

Source: Jiji Facebook page, 2019 [27]

Jiji[23] is an African online marketplace which launched in 2014 and grew rapidly to have more than 10 million unique visits per month, and hosts two million active ads worth a total of USD 10 billion. One of its successes is recognizing that the Nigerian home computer ownership was low and focused its growth strategy on being primarily mobile phone-based.[24] With this in mind, Jiji's mobile app has fuelled its growth in Africa, and allowed them to connect and engage with their customers quickly and easily. Since 2021 Jiji is present in Ethiopia, Nigeria, Kenya, Ghana, Uganda, and Tanzania, and in 2023 Jiji was the best e-commerce mobile app in Kenya .[25]

Chapter 2

Mapping Connectivity Gaps Broadband as Digital Foundation

With the understanding that broadband is indeed one key element for digital, the assessment of each of the 2025 Broadband Commission targets is critical to understand (1) the progress made, (2) the gaps to be bridged, (3) the urgency and importance of each of these for the future.

Image source: Sorapong, Canva

Advocacy Target 1

Make broadband policy universal

Target and rationale

By 2025, all countries should have a funded National Broadband Plan (NBP) or strategy in place or include broadband in their Universal Access and Service (UAS) Definition.[28] This target is founded on the belief that action to reach universal meaningful connectivity is more likely when there is a national broadband plan or strategy in place, and/or when broadband is included in countries' Universal Access/Service (UAS) definitions.

Status as of 2023, tracking progress

155 countries had a national broadband plan or other digital strategic document emphasizing broadband in 2022, down from 165 in 2021. [29] The number of economies with a broadband plan has slightly decreased over the past year, as several plans have expired and have not been renewed in some countries. One positive note is that the UNESCO Institute for Statistics (UIS) and the Global Education Monitoring (GEM) Report[30] has been working with countries towards the development of a benchmark on digital transformation as part of the follow-up to the 2022 Transforming Education Summit, following a decision of the SDG 4 High-level Steering Committee.[31] While no indicator can cover all three aspects of digital transformation comprehensively (i.e. content, capacity, and connectivity), school internet connectivity is already a Sustainable Development Goal (SDG) 4 indicator (4.a.1), and is therefore being monitored by countries and reported at the international level. Countries have been therefore asked to share by September 2023 their school connectivity national targets for 2025 and 2030. In the coming years, improvements can be made in how the indicator is sourced, such as adding information from internet service providers.

Fixed Wireless Access – a key tool to bridge the digital divide

Commissioner Impact Story from Mr. Erik Ekudden, Senior Vice President, CTO and Head of Strategy and Technology, Ericsson

Fixed Wireless Access (FWA) has great potential to deliver broadband to unserved and underserved areas, to households and businesses, in developed and emerging markets alike.

FWA's potential is being realized in its uptake; it is the largest 5G use case after mobile broadband and forecast to grow from 100 million connections in 2022 to 300 million in 2028 and account for 30 percent of all global mobile data traffic.

On the ground, its potential is seen in rural settings, such as Ohio, where great distances and natural obstacles make delivering broadband technically and economically challenging.

Based on Ericsson Massive MIMO technology, OhioTT and its FWA solution enables affordable high-speed broadband access to residents, farmers, and small businesses. The first customers were connected in less than 30 days following community leader approval and wireless performance expectations are being exceeded, attaining 100 Mbps over many miles and through trees.

As billions of people continue to wait for reliable fixed broadband connections, FWA is an efficient and scalable alternative with significantly faster time to market. The large unmet demand for broadband connectivity can be met most cost-efficiently with FWA when it is built on the large installed base and global reach of 3rd Generation Partnership Project (3GPP) mobile technologies.

Transformative risks and opportunities

Monitoring and evaluation needed

More work needs to be done to monitor and evaluate the current state of implementation of these national plans. While plans may have been announced, operationalization and implementation are key to providing actual access to broadband. In addition, as mentioned above, some plans have expired and have not been renewed in some countries. This decrease is linked to changes and evolution in the sector with several countries integrating broadband development plans within broader digital agendas, strategies, and/or masterplans. For example, Canada integrated its broadband plan within the High-Speed Access for All: Canada's Connectivity Strategy 2022.[32]

In addition, there was a change in policy focus, as noted in the ITU's Global Digital Regulatory Outlook 2023. The 2008 global financial crisis crowded out private investment in the short term but propelled broadband connectivity to the top of government agendas in all regions, unlocking both unprecedented state investment and market incentives for telecom players. Since then policy levers have targeted infrastructure challenges from investment to digital inclusion to innovation. Gradually, the link between development goals and telecom policies has matured, recognizing the contribution of digital technologies to national economies (see figure 10 below). Universal access and service policies – the bedrock of telecom reform – have been transformed into cross-sector infrastructure policy with an increasing number of countries now adopting a national broadband strategy.

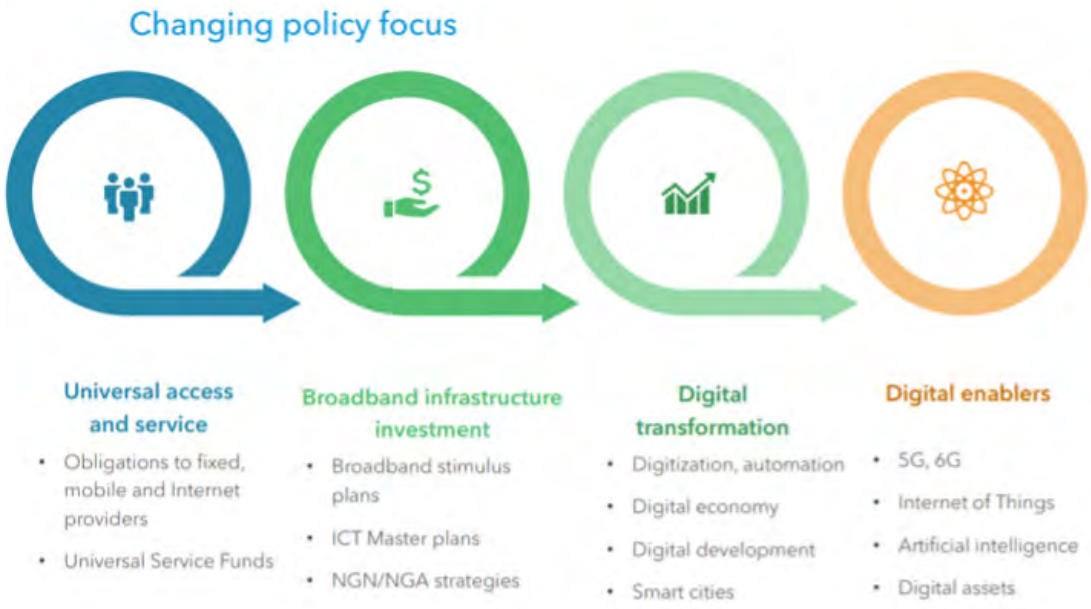


Figure 10: Changing policy focus for broadband and connectivity strategies

Source: ITU, 2023[35]

> ***The global pandemic has triggered market disruption as well as unprecedented policy responses, with native digital agendas leading the way to economic recovery.***

This new generation of policy narratives has reframed the surge of technologies and business models in the new normal, matching markets with future-facing legal frameworks, and shifting focus back to people and long-term development. Native digital agendas, such as the European Commission Digital Compass[33] (implemented through the Digital Decade Policy Programme[34]) for Europe and the Kenya (see Box 5) and Malaysia Digital Economy Blueprints, cover multiple economic sectors, setting holistic development and economic goals and identifying fast-track implementation mechanisms.

Four Key Dimensions of Digital Development
Commissioner Impact Story by Mr. Bocar Ba, Chief Executive Officer, SAMENA Telecommunications Council

To achieve the Broadband Commission's seven Advocacy Targets by 2025, assessing progress on the 17 Sustainable Development Goals (SDGs) is crucial for mobilizing commitments and resources. The SAMENA Council recently brought together leaders from various digital sectors to advance a sustainable digital ecosystem through mobile broadband technologies, inclusive partnerships, and strategies for digital inclusion. By expanding connectivity and digital services, unconnected communities can reap the benefits. Universal broadband remains a top priority, and four key dimensions of digital development are vital in driving progress:

1. New Approaches to Connectivity: To bridge the digital divide for the 2.7 billion people without access, innovative methods of providing, funding, and financing connectivity must be explored. Collaboration between the digital communication industry and financial institutions is essential to unlock access to capital.

2. Progressive Regulation: Creating a regulatory environment that promotes agility and fairness is crucial. This involves incentivizing infrastructure investments, reducing licensing fees and taxation, aligning with global efforts, and fostering equality. Regulatory agility can expedite administrative processes and encourage better collaboration between regulators and telecom operators.

3. Cybersecurity: Safeguarding cyberspace is of utmost importance due to the increasing threat of cybercrime. Establishing trust, ensuring inclusive and secure cyberspace for all, and addressing the challenges of digital inclusiveness are critical for building digital trust and bridging the gender digital divide.

4. Strengthening Telecom Operators: Telecom operators play a central role in societal and business development. It is essential to build resilient and adaptable networks capable of supporting new technologies and meeting global sustainable development goals. Governments should actively engage with network operators, viewing them as partners in nation-building rather than mere revenue generators.

Re-examining the gaps, understanding their nuances

When considering the goal of achieving "universal broadband access," it is essential to review various gaps in access. As observed earlier, relying solely on the presence of the USAF is insufficient to assess the achievement of universal broadband access, even though it represents a step in the right direction. In the next stage of developing broadband accessibility, there is a need to check where access gaps persist, the nature of these gaps, and breaking down the USAF to parts to understand and update concepts such as what constitutes "sufficient" broadband – for what kinds of activities e.g. education, business, socialising etc? Where is the demand coming from, what will be driving the request for connectivity? And are there assessments of the quality of broadband being delivered, including sustained access? While these nuances will overlap with other Advocacy Targets, a holistic view of these nuances will be critical in seeking to close these gaps.

Understanding mobile broadband coverage and usage gaps within a country can support with the creation of national broadband plans and with the effective utilisation of existing USAFs. The coverage gap, the percentage of people not yet covered by mobile broadband, can help countries determine where to focus efforts on mobile infrastructure expansion. [36]Addressing the

usage gap is a much larger challenge. The usage gap is the percentage of people living within the footprint of a mobile network but not yet using mobile internet.[37] Research conducted by the GSMA has found that people face five main barriers to mobile internet adoption: access, affordability, knowledge and digital skills, relevance, and safety and security.[38] By understanding the size and nuances of the usage gap, countries can make policy decisions to address these five barriers.

Millicom Tigo: building reliable and sustainable digital highways
Commissioner Impact Story by Mr. Mauricio Ramos, CEO and Executive Chairman of the Board, Millicom Tigo

There isn't just a single story to be told. There are thousands. Millions. Why? Because every citizen of Latin America has a necessity: to stay connected for work, to remain close to their dear ones, to bridge distances, to access education and services, to run businesses and navigate daily challenges and opportunities. And right there, Millicom Tigo and the rest of the Digital sector come into play making sure digital inclusion is a reality.

Our purpose, to build reliable and sustainable digital highways comes to life every day. This is the path forward. These actions have an influence on both the present and the future of the region, considering that the progress and competitiveness of nations are inextricably tied to investments in digital infrastructure. For decades, a nation's progress was gauged by the expansion of its roadways. Today, the deployment of networks carries immense significance, serving as a foundational pillar not only for achieving inclusivity but also for nurturing a country's development. We remain mindful of this aspect, which is why we carry out our digital education programs which have so far benefitted over 2 million women, teachers, parents, and children.

It is crucial for the public and private sectors to synergize, each contributing their expertise, priorities, and capacities to the improvement of the region, ultimately focusing on the communities which rely at the core of our purpose if we wish to make sure everyone will embrace the digital present and future.

No one-size-fits-all technology solution

In addition, the technology funded by USAFs should depend on the specific area and complementary connectivity solutions, and should not be a single, one-size-fits-every person, area, and situation. A mix of different technologies e.g. fibre, terrestrial wireless and satellite technologies – should be available for funds as is most appropriate. Recent entry into service of Very-High-Throughput Satellites in the Geostationary Orbit, rapid advances in development of satellite constellations in the Low-Earth Orbit as well as several business partnerships between satellite and terrestrial telecommunications actors (e.g. advanced efforts to provide in the future ubiquitous and cost-effective direct satellite-to-mobile capabilities) point to the existence of numerous possibilities for service providers to extend their networks to achieve unlimited global coverage. The criteria for allocation of funds could consider a combination of technology-neutral approaches, consultations with industry etc.

Rethinking funding programmes

Around 100 countries call on the use of universal service and access funds (USAFs) to deploy infrastructure in unserved areas. [39] However, not all funds have been successful in extending coverage for a variety of reasons e.g. by policy design, mismatch in funding and disbursements etc. For example, an ITU report on financing universal access in 2021[40] highlights the need for a change in thinking including alternative funding models as a way forward to "Universal Service and Access Fund 2.0".

The scope of such funding could also extend beyond infrastructure to digital transformation (such as in the scope of the European Union's Recovery and Resilience Facility (RRF) for digital) [41] including targeting underserved groups such as women and girls, people with disabilities and the elderly regardless of where they live, as well as the micro, small, and medium enterprises (MSMEs).[42] Other considerations could include alignment of incentives with implementation partners and long-term bankability / financial sustainability of the project. Reforms to existing USAFs should also be informed by internationally recognized best practice, such as the recommendations developed by the Broadband Commission's Working Group for 21st Century Financing Models. [43]

> ***Among others, measures can include broadening the base of contributors to USAFs and other mechanisms by including companies participating in and benefitting from the digital economy [44].***

Getting everyone in the Caribbean online
Commissioner Impact Story by Mr. Denis O'Brien, Chairman, Digicel

Over the past half a decade or so, Digicel invested in 4G and FTTH/B networks to bring connectivity to 25 Caribbean countries even where it was economically challenging to do so. For us, ubiquitous coverage to ensure no community and no one was left behind was a priority.

In the Caribbean, Internet access is primarily through 3G and 4G mobile networks with less than 10% of the region's population connected to a fixed network. Today 4G availability stands at over 90% population coverage in most Caribbean markets. We are proud of this achievement which has transformed the lives of many. We are working hard to bring more people online as the average Internet penetration rate in the region remains at 66%. In countries such as Haiti, Jamaica and Trinidad & Tobago up to 30% of users still spend the majority of their time on 2G and 3G. The return on investment in 4G networks is a challenge in such markets due to low ARPU and lack of economic scale.

Investors are likely to be much less forgiving where investment in 5G is concerned. There is no credible business case for 5G in most Caribbean countries. Wealthy 5G nations will enjoy a different Internet experience. Countries that do not have 5G, or even 4G networks will be left behind. This outcome will exacerbate the digital divide.

Globally the Telecoms sector is out of favour with investors as it delivers low returns, faces high Government fees and taxes and as networks are now dominated by OTT traffic. Continuing Capex outlays of 18% per annum to cater for this is not viable in emerging markets. The Broadband Commission's 2021 'Report 21st Century Financing Models for Bridging Broadband Connectivity Gaps' proposed broadening the base of contributors so that 'all who derive benefits from the digital economy, as consumers or as producers contribute objectively, equitably and fairly', in particular by including digital service providers.

The Commission must ensure that Broadband coverage equivalent to the coverage available in wealthy nations becomes available across large swathes of the developing to achieve its 2030 targets to close the digital divide and ensure a two-tier digital world does not become a reality. We have 6 years left to achieve this and it will be a big mountain to climb.

Case Study on the Republic of Korea's Universal service obligation (USO)[45]

The Republic of Korea has one of the highest rates of broadband adoption in the world, with over 99 per cent of households having access to broadband at speeds of at least 100 Mbps. This is largely due to the unique situation of the country which saw the government's sustained commitment to making broadband a universal service.

In 2004, the government introduced a USO that required all telecommunications operators to provide broadband services to all households, regardless of location or income. The USO also set minimum speed requirements for broadband services. In addition to the USO, the Korean government has used Public-Private Partnerships (PPPs) to facilitate rural broadband deployment. Through these partnerships, the government provided financial assistance to telecommunication operators for building broadband networks in rural areas.

The combination of the USO and PPPs has been successful in making broadband a universal service in the Republic of Korea. As a result of these policies, the digital divide in the country has been virtually eliminated. This unique case study – which is not universally-applicable to all countries – provides several lessons for other countries that are seeking to make broadband a universal service. These lessons include:

- The government has a role to play in ensuring that broadband is accessible to all citizens.
- USOs and PPPs can be effective tools for deploying broadband in rural areas when well designed with medium/long term in mind, from both technical and financial perspectives to align incentives and optimize risk distribution between public and private partner.
- It is important to set minimum speed requirements for broadband services.

Smart Africa's One Africa Network (OAN) and Smart Africa Trust Alliance (SATA)

Commissioner Impact Story by Mr. Lacina Koné, CEO, Smart Africa

Smart Africa, in partnership with its member states, is dedicated to the transformation of Africa into a single digital market by 2030, employing a range of technology-driven projects. Notable among these is the "One Africa Network (OAN)" project, which aims to bolster communication and connectivity across the continent. This project enables seamless travel devoid of SIM card changes, while also advancing affordable mobile services and reducing roaming expenses.

Another significant initiative, the "Smart Africa Trust Alliance (SATA)," serves to facilitate cross-border utilization of digital identities and data. Aligned with the African Continental Free Trade Area and Protocol on Digital Trade objectives, SATA strives to enhance trade and services within Africa. Launched in May 2023, this effort has garnered commitments from 10 member states, with additional participation underway.

Furthermore, through collaboration between Smart Africa and the Zimbabwean government, the Agriculture Information Management System (AIMS) has emerged as a vital IT solution for managing diverse agricultural facets. AIMS integrates databases encompassing finance, input suppliers, farmers, service providers, buyers, and logistics, harmonizing with the AgriTech Strategy 2021-2025 and AgriTech Blueprint for Africa. This includes an agronomy application for extension services. These collective initiatives harness technology to drive sustainable development and amplify intra-African collaboration.

Advocacy Target 2 | Make broadband affordable

Target and rationale

By 2025[46], entry-level broadband services should be made affordable in low- and middle-income countries (LMICs) at less than 2 per cent of monthly Gross National Income (GNI) per capita.[47] Making broadband affordable is a critical step in achieving meaningful universal connectivity.

Status as of 2023, tracking progress

According to the ITU's 2022 Facts and Figures report, where data are available for both 2021 and 2022, more economies met the two percent affordability target for all five baskets of ICT services in 2022 than did so in 2021. Thus, 103 economies met the target with respect to the data-only mobile broadband basket in 2022 and 71 economies met the target with the fixed broadband basket (in each case seven more than in 2021).

After a brief uptick in 2021, income-adjusted cost of fixed and mobile Internet services resumed its downward trend in 2022. A 2023 ITU Brief report shows that mobile internet services depend on a complex interaction of factors and that while there are affordability differences across regions, most of the variation in affordability across countries depends on income level.[48]

GSMA: transitioning the industry to net zero emissions by 2050
Commissioner Impact Story by Mr. Mats Granryd, Director General, GSMA

SDG 13 Climate Action requires urgent intervention. The GSMA works with Mobile Network Operators (MNOs) worldwide to transition the industry to net zero emissions by 2050.

Connected mobile technology helps avoid emissions by improving efficiency and supporting behaviour change, forming an important part of the decarbonisation solution.

To date, 62 operators representing 61% of the industry by revenue have committed to rapidly cut their direct and indirect emissions by 2030, and almost half the industry have committed to reach net zero by 2050 or earlier.

To achieve these reductions, operators need to take a holistic approach including switching to renewable energy (RE) sources, moving to a circular business model, incorporating digital solutions to improve efficiency and utilising energy efficient technologies such as 5G.

In 2022 almost a quarter of electricity used by MNOs globally came from direct RE purchases. Operators in Europe are leading the way, with 83% RE use. And BT Group, Proximus, TDC, Telefonica, Telenor, Telia and Vodafone have already achieved 100% renewable electricity for their European operations.

The GSMA is working with the industry on circularity and in June twelve leading operators committed to boost take-back of mobile phones and prevent any devices going to landfill.

Transformative risks and opportunities

Where is demand coming from? Mobile data from smartphones; current data does not show full picture

The COVID-19 pandemic prevented accurate measurement of Target 2. ITU price baskets are used to track this target, based on 2 GB of data per month for mobile and 5 GB for fixed. Yet data from Ericsson show that average mobile data usage per smartphone has been growing steadily, reaching 11 GB per user in 2021 and forecast to more than triple by 2027, driven by 5G technologies. [49] Global figures on fixed broadband data consumption are far from complete. In the United States, demand for fixed broadband was estimated to be over 500 GB per subscription in the last quarter of 2021. [50] In Bahrain, fixed broadband traffic per subscriber was 183 GB in 2019. [51] In Malaysia, fixed broadband traffic amounted to 281 GB per subscriber per month in 2021 compared to 21 per mobile broadband subscriber. [52]These figures suggest that both mobile and fixed broadband actual usage are typically far higher than expected in many countries – which is a positive sign that the demand driver for data is present and increasing.

Demand from changing work patterns: videoconferencing driving consumption

Data traffic has grown significantly due to COVID-19 and widespread use of videoconferencing. One hour of videoconferencing alone uses between 540 MB -1.62 GB of data, depending on the quality and number of participants. [53]

Communications, Space & Technology Commission: Connecting the Unconnected
Commissioner Impact Story from H.E. Dr. Mohammed Saud Al-Tamimi, Governor of CST, Saudi Arabia

As a fifth-generation digital regulator, the Communications, Space & Technology Commission (CST) has outlined a roadmap to steer the Saudi ICT sector toward meaningful, sustainable growth that facilitates the Kingdom's goals for 2030. The "C.I.R.C.L.E" framework is CST's commitment to advancing the United Nations Sustainable Development Goals (SDGs) through six key priorities, which translates into Cutting Edge Infrastructure, Innovation, Renewable Energy, Circular Economy, Leading Cities, and Equality and Inclusion, aiming for the development of a sustainable and resilient ICT sector. As a result, Saudi Arabia achieved 96% of ITU "Connect 2030" targets in 2022, and is on track to meet the 2025 Broadband Advocacy Targets with high-speed broadband networks covering 100% of populated areas, and with almost 90% of the population have at least basic ICT skills according to the ITU.

Furthermore, Saudi Arabia ranked 2nd among the G20 Members and 4th globally in the preparedness of digital systems following its success in building a sustainable regulatory framework and shifting towards digital collaborative regulation to empower the digital economy, according to the ITU report "Global Digital Regulatory Outlook 2023".

Most importantly, we have recognized that connecting the unconnected, as well as being a social good in its own right by enabling access to digital opportunities for all, will also play a key part in achieving the SDGs. Yet 2.6 billion people – around 33% of the world's population – are still unconnected. Thus, we are exploring a range of emerging technologies such as Non-Terrestrial Networks (NTN), which leverage space for digital transformation and will go a long way towards bridging the digital divide and connecting the unconnected.

Baselining data demand may be needed: key online activities and cost of baseline devices

The World Bank estimated in 2021 that the amount required for popular online activities (i.e., online public services, health information, shopping, learning and news) is around 660 MB per user per month, and if common recreational online activities such as social media use are included, an extra 5.2 GB is added, to give a total of approximately 6 GB per month. [54]

> ***In addition to the amount (and price) of data needed for basic online activities, the price of a broadband-enabled device is often a big barrier to accessing broadband, especially for non-Internet users.***

In 2021, the median cost of an entry-level internet-enabled handset was 19% of monthly GDP per capita across LMICs. The cost and affordability of entry-level internet-enabled devices remained relatively unchanged across LMICs overall in 2021 but with regional variations. By region, the median cost was 25% of monthly GDP per capita in Sun-Saharan Africa and 23% in South Asia.

The GSMA has also published a report with an overview of business models, innovations and policies that are helping to improve the affordability of Internet-enabled handsets in LMICs, particularly for underserved populations. Recommendations included reducing sector-specific taxes and fees and public-private partnerships to de-risk handset financing. [55] The Broadband Commission launched a Working Group to investigate device/handset affordability in more detail.

Reviewing cost recovery vis-à-vis need to upgrade and update both networks and regulatory policy to promote digitally-enabled economic growth and digital inclusion

The policy debate on whether infrastructure providers alone should bear cost recovery is gathering pace, or should governments consider broadening this cost base. Increasing the cost base should also recognise increasing market participation to fair market access. The key issue is that telecommunications operators have invested to ensure that their networks can support the exponential growth in network traffic but are, to date, only able to recover network costs from end users. This question was investigated in the Broadband Commission's 2021 'Report 21st Century Financing Models for Bridging Broadband Connectivity Gaps' which recommended broadening the base of contributors so that 'all who derive benefits from the digital economy, as consumers or as producers contribute objectively, equitably and fairly'. [56]Frontier Economics has since estimated that in the EU the weighted average incremental cost of carrying OTT traffic is EUR 11-29 per subscriber on fixed networks and EUR 20-33 per subscriber on mobile networks. In recent months, some countries have begun to revisit and review these policies related to data delivery and the cost associated with network infrastructure (e.g. European Union, Brazil and the Caricom States of the Caribbean.) In 2020, Republic of Korea proposed legislation for large OTT platforms to agree commercial terms for network access with South Korean ISPs.[57]

Case Study: One million school locations mapped: UNICEF and ITU's Giga initiative[58]

Giga - founded by UNICEF and the International Telecommunication Union (ITU) in 2019 - aims to connect every school to the internet by 2030 and every young person to information, opportunity, and choice. With support from its partners such as Ericsson, Giga maps schools and their connectivity levels to help target investment to where it is most needed and to measure progress toward increasing Internet access. To date Giga's achievements include mapping over 2 million schools, as well as connecting over 5,500 schools and over 2 million students.

ITC Ready4Trade Central Asia Project
Commissioner Impact Story by Ms. Pamela Coke-Hamilton, Executive Director, ITC

In today's interconnected world, connectivity is crucial for development and economic growth, and this holds true, especially in Central Asia, as the region has undergone significant changes in its business landscape these last few years. Since 2020, ITC has been supporting businesses in five countries of the region through the EU-funded Ready4Trade Central Asia project.

In a challenging economic climate, the power of digital platforms has enabled these landlocked countries to overcome geographic barriers and access new international markets. This is where ITC's work is especially valuable, as it assists businesses to leverage digital technologies to engage in online trade.

Initially, a network of national e-commerce advisors were trained to assist 200 businesses, 57% of which were led by women. Subsequently, tailored activities or eLabs were designed to focus on specific sales channels, expand partnerships and resolve challenges. With the eBay eLab, ITC worked with 400 new businesses, providing them with valuable expansion opportunities to sell internationally. 100 eBay stores were opened, and sales have been realized to buyers in 26 countries. To this extent, our work not only promotes gender equality but also contributes to decent work, economic growth and partnerships. (SDG 5,8,17).

By equipping businesses with the necessary knowledge and skills and linking them to markets, ITC empowers them to navigate the complexities of the digital landscape and tap into new opportunities. As part of this project businesses have gained a staggering $2.7 million in online sales through newly opened or improved online channels.

Source: ITC ecomConnect Programme

Advocacy Target 3 | Get everyone online

Target and rationale

By 2025[59], broadband-Internet user penetration should reach: i) 75 per cent worldwide; ii) 65 per cent in low- and middle-income countries; and iii) 35 per cent in least developed countries. [60] This goal holds significant importance, as internet access is fundamental to inclusive and sustainable development, serving as a gateway for global connection, digital education and acquiring knowledge and skills, broadens access to job markets and professional development, economically empowers online business, and more.

Ensuring meaningful and affordable internet access to all is a priority that needs concrete measures that will lead to increased inclusiveness, for all to reap the benefits of digital transformation. These include:

- Policy interventions that prioritize rural connectivity initiatives to bridge the urban-rural digital divide;
- Availing relevant content that attracts the end user to buy the hand set and stay connected. Almost 90 per cent of the population in some African countries live within range of a mobile internet signal, however internet use may be 20 per cent or less. [61] Despite increased access to the internet, its use in Africa is generally low as there is very little content generated locally and or available in local languages which prevent populations from accessing new opportunities;
- Solutions that bundle different services including digital literacy, affordable devices, relevant content and maintenance support;
- Public Private Partnerships and donor support to provide low cost devices to targeted group (including marginalized groups) such as girls and women, youth and those living in rural and remote areas to empower these groups with the overall objective of bridging the digital divide impacting them;
- Regulatory reforms to create favourable conditions where industry players in digital value chain invest in producing and distributing affordable smartphones.
- For this reason, the Broadband Commission established the "Global Goal of Universal Connectivity" in the 2020 Manifesto. [62] This target is a key element to achieving the United Nations Sustainable Development Goals.

Digital Transformation Strategy for Africa 2020 - 2030
Commissioner Impact Story by H.E. Dr. Amani Abou-Zeid, Commissioner for Infrastructure and Energy at the African Union Commission

Digitalisation is transforming societies and economies around the world. Africa's digital transformation is also progressing with the implementation of the Digital Transformation Strategy for Africa 2020 - 2030 that envisioned "An Integrated and inclusive digital society and economy in Africa", which is in alignment with the Agenda 2063: The Africa we want: and SDG 2030 despite the gaps in digital infrastructure, meaningful connectivity, digital literacy among others.

Cont...

For example, the implementation of the AU Interoperability Framework for the Digital ID that envisioned legal identity for all Africans using digital technologies and allow Africans (majority women and children) to exercise their right to participate in social, economic and political life is expected to play a significant role in achieving Aspiration 1 of AU Agenda 2063 and SDG target 16.

In addition to the implementation of the AU Digital Education Strategy that that focuses mainly on accelerating the adoption of digital technologies for teaching, learning, research, assessment and administration, and creating digitally empowered African citizens to fully benefit from the digital economy and society as well improving digital literacy and skills for all, especially for teachers and students are well underway with the aim to fulfil the objectives of Aspiration 1 of Agenda 2063 and SDG Target 4.

Status as of 2023, tracking progress

ITU data [63] find that Internet penetration increased as a result of the pandemic, growing to an estimated 66 per cent of the total global population in 2022, up from 54 per cent in 2019. This represents an annualized growth rate of 6.1 per cent over 2021, up from 5.1 per cent for 2020-2021, but pales in comparison with the 11 per cent for 2019-2020 seen at the beginning of the COVID-19 pandemic. As of 2022, Internet usage stood at 93 percent in high-income countries, 61 percent in low- and middle-income countries (LMICs), and a mere 36 percent in the least developed countries (LDCs), according to the latest estimates from the ITU. This indicates that 2.7 billion people are still without online access, [64] underscoring the substantial work that lies ahead to achieve the world's 2030 goal of universal and meaningful connectivity.

Continued digital exclusion

While Internet use is increasing, some groups are being left behind, such as the elderly, girls and women, people with disabilities, people in rural and remote areas, and displaced persons, including migrants and refugees.

> *Special effort is needed to understand and address the specific needs of people in these categories, including content that meets accessibility standards and customized training.*

There are positive developments in this arena, as there is strong work being done to advise on how to plan for policies for digital inclusion. For example, in April 2022, the GSMA published a report drawing on the insights of policy approaches in 28 countries providing a clear framework for action, with policy recommendations for the digital inclusion of persons with disabilities. [65] In July 2022, UNDP published an "Inclusive by Design" policy brief with 10 good practices that the countries can use to approach their digital transformation in a more inclusive way. [66]

Moving target

As can be seen by the adjustment to this target since 2015, the original target of getting 60 per cent of persons online worldwide had to be adjusted in 2018 to reflect a need to reach up to 75 per cent online globally. This adjustment demonstrates that this Advocacy Target to "get everyone online" is a moving one, and other factors will be needed to adjust alongside, including network coverage, and resilience measurements, and other regulatory considerations (such as having a favourable fiscal and communications policies in place).

Novartis Foundation: CARDIO4Cities - an innovative cardiovascular (CV) population health approach

Commissioner Impact Story by Dr. Ann Aerts, Head of the Novartis Foundation

The Novartis Foundation implemented an innovative cardiovascular (CV) population health approach, CARDIO4Cities[1] codesigned with local authorities and partners. It rapidly improved blood pressure control rates in urban populations, translating into a reduction of up to 13% of strokes.[2,3] The approach was successful thanks to its data driven approach, allowing periodic review of real time data to redesign interventions where needed. HealthTech solutions were used to accelerate CV risk detection and mend gaps in the population health roadmaps.

Eg. in Dakar, the Ministry of Health, the Novartis Foundation and the HealthTech Hub Africa selected the startups BAAMTU and ByFilling to roll out an innovative solution for hypertension detection and management. Saytu Tension is a multichannel solution, including web content, chatbots, mobile monitoring, and data dashboards. One of the first HealthTech PPPs in Senegal, Saytu Tension has reached about one million people and will launch its pilot phase in 20 city health facilities.

In São Paulo, a digital Screening Corner[4] for CV risk was introduced by CARDIO4Cities, measuring blood pressure and other biometrics of every visitor of the city's primary health centers. People screening positive were immediately referred to the consultation, resulting in significantly accelerated CV risk detection. Prompt and standardized management of diagnosed patients resulted in improved outcomes.

The approach is now being scaled through the CARDIO4Cities Accelerator, a new organization, aiming to further reduce the global cardiovascular burden and accelerate SDG3 achievement.

1 Aerts A, Boufford J. (2021) A new whole-of-city strategy for addressing cardiovascular population health, Cities & Health, 7:3, 296-302.
2 Boch et al. (2022). Implementing a multisector public-private partnership to improve urban hypertension management in low-and middle- income countries. BMC Public Health 22, 2379.
3 Reiker et al. (2022). Population health impact and economic evaluation of the CARDIO4Cities approach to improve urban hypertension management. PLOS Global Public Health 3, 4.
4 https://sdgs.un.org/partnerships/cantinho-cuidando-de-todos-l-ncd-screening-corners

Advocacy Target 4 | Promote Digital skills development

Target and rationale

By 2025, 60 per cent of youth and adults should have achieved at least a minimum level of proficiency in sustainable digital skills.[67] Absence of media, information, and digital literacy/ competencies is one of the main causes of digital exclusion, misuse and underuse of digital technologies, and often among the top answers when people are surveyed about why they do not use the Internet and challenges when they use the internet.

Digital transformation has become one of the highest priorities for public organizations worldwide. Although governments are increasingly digitizing their services in response to growing public expectations, they are asked to do more to create an enabling environment in which a sustainable and equitable digital transformation strengthens economies and societies.

However, governments need to invest in data collection – this is an important goal, but data is difficult to collect, and the definitions of digital skills continues to shift rapidly, making data collection even more challenging. About 90% of countries aspire to develop digital skills, and 54% have tablished digital skills standards according to the 2023 Global Education Monitoring Report.[68] As self-reporting of individuals' ICT skills may be subjective, the ITU has measured ICT skills based on whether an individual has recently performed certain activities that require different types of skill, with the assumption that performing these activities implies that one has a certain level of five categories of digital skills: communication/ collaboration; problem solving; safety; content creation; and information/data literacy. [69]

Similarly, definitions were also shifting over time for media and information literacy as an interrelated and complementary set of information, digital and media competencies to those of digital skills. However, the harmonized approach put forward by UNESCO is taking traction. All Member States of the United Nations have recognized the importance of citizens acquiring media and information literacy and digital skills. [70]

Status as of 2023, tracking progress

According to the latest available data from the ITU (self-reported), the relatively low level of digital skills in the 74 countries providing data contrasts against their high share of overall Internet use – 86 per cent, whereas over the five categories of digital skills - communication/ collaboration; problem solving; safety; content creation; and information/data literacy, 47 countries reported averages of at least 25 per cent in multiple areas, 22 reported averages of over 50 per cent in multiple areas and only five reported averages of over 75 per cent in multiple areas. [71] This gap between individuals using the Internet and those with digital skills demonstrates that many people may be using the Internet without being able to fully benefit from it or avoid its dangers.

America Movil (AMX): Weaving the Recovery in Rural Mexico
Commissioner Impact Story by Dr. Carlos M. Jarque, Executive Director, America Movil

The SDGs are a global compact to reduce poverty and create a better world. America Movil (AMX) is committed to these objectives. It has numerous programs that support the SDGs. As an example, it has launched (with GSMA) the project "Weaving the Recovery". *Cont...*

We chose two poor indigenous rural localities in Mexico that had no connectivity. We used an offline version of the Digital Education Platform "Aprende", developed by the Carlos Slim Foundation, to provide free training on digital abilities, commerce, health and education. AMX donated tablets with this preloaded content. AMX also trained indigenous women weavers on how to use the device and how to navigate within the platform. Courses included digital marketing, e-commerce and export plan. Weavers were eager to learn. Having a Platform Certificate became a motivator. After training in their rural localities, they were periodically taken to community centers with free broadband connectivity to access the web, promote their weaving products and revise purchase orders. Their income has increased. They also used connectivity for better health and general e-education.

This project not only supported several of the SDGs, but also attended the three gaps: the infrastructure gap, the adoption gap and the meaningful use gap. It is an impactful project of digital inclusion, which significantly increased welfare. Like many other initiatives of AMX, it will be scaled up.

Transformative risks and opportunities

Definitional challenges of measuring "digital skills"; multiple definitions exist

Challenges persist with regards to the data availability and interpretation of this indicator, which limit interpretations about global digital literacy can be made. There are documented gaps in government basic facts and figures on young children's access to and use of technology in LMICs. In addition, digital skills' definitions constantly evolve. About 90% of countries aspire to develop digital skills, and 54% have established digital skills standards according to the 2023 UNESCO Global Education Monitoring (GEM) Report. [72]

This is reflected in the ITU survey, to which only 78 provided data. Another challenge may be the indicator's complexity, as a broad range of skills is measured, which complicates assembling the results into one figure. Instead of averaging these figures, the approach UNICEF adopted another approach using Multiple Indicator Cluster Surveys,[73] in which one activity was chosen as a proxy indicator.

In addition to definitional challenges, there are also policy challenges to addressing digital skills development. A lack of awareness, digital skills, as well as reliable data to steer policy interventions, is preventing individuals from participating fully online. The GSMA's report on digital skills in low-and-middle income countries puts forward several recommendations for promoting digital skills including investing in training and capacity building initiatives that cover a broad range of competencies, and focusing digital skills strategies on use cases that help targeted user segments meet their life goals and needs. [74]

For governments to effectively address the challenges of digital transformation and its governance, the public sector also needs to develop new competencies and policies, including through the AI and Digital Transformation Competency Framework developed by the Broadband Commission in 2022, under the leadership of UNESCO and Nokia. [75]

> ***In addition, countries need to invest more in prioritizing other competencies relevant to media and information literacy and digital competencies that enables critical thinking, civic participation, and their resilience to disinformation.***

The UNESCO Global Standards for Media and Information Literacy Curricula Development Guidelines offer approaches for harmonizing media and information literacy and digital skills. [76]

Intelsat Connectivity Transforming Lives and Livelihoods in the Marshall Islands
Commissioner Impact Story by Mr. David Wajsgras, CEO, Intelsat

Situated midway between Hawaii and Australia, the Marshall Islands are an isolated and sparsely populated collection of five volcanic islands and 29 remote coral atolls. While the Islands offer much in beauty, the country and its citizens lacked the connectivity needed to thrive in a modern and digitized world.

Intelsat recently partnered with the Marshall Islands National Telecommunications Authority (NTA) to develop a multi-phase approach, utilizing small cell technology to establish a 2G network and provide voice communications to the remote islands.

Despite challenges such as transportation difficulties and the impact of the COVID-19 pandemic, Intelsat and NTA successfully deployed 60 small-cell bay stations, a satellite hub, and other equipment across the islands. Thanks to this partnership voice connectivity was offered to 100 percent of the country, transforming the lives, and opening new opportunities for communication, and economic growth.

This successful project highlights Intelsat's commitment to bridging the digital divide and paving the way for future broadband expansion. The upcoming phases will bring 3G and 4G data connectivity to enhance education and healthcare services.

"Computer use" as flawed indicator

One activity to estimate and interpret digital skills is computer use. Many digital skills involve the use of a computer (e.g., moving files, using office applications, etc.) and the level of expertise required is higher than using apps on a smartphone. There is also a strong correlation between using one of the digital skills (defined above) and computer use. Globally, 54 per cent of individuals used a computer, according to the latest available data.

> ***However, there are wide differences by income and region. In high-income nations, 79 per cent of the population used a computer in the last three months compared to just 7 per cent of the population in low-income countries.***

Lack of skilled instructors

An individual's digital skills are strongly influenced by their access to and guidance from digitally literate instructors. As such, digital literacy has a strong socially dependent dimension, as human intervention has been shown[2] to address digital literacy over access to digital technology alone, or the simplification to a question of "have-or-have-not." The 2023 UNESCO Global Education Monitoring (GEM) Report [77] has noted that it will be costly for education systems to develop the necessary conditions, including training educators, to keep up with a pace of change that well exceeds what education systems are used to: curricular reforms are estimated to take place every 10 years on average. The report also noted that in the2018 OECD Teaching and Learning International Survey (TALIS), [78] only 56% of lower secondary school teachers in the 48 participating education systems had received training in the use of ICT as part of their formal education or training, ranging from 37% in Sweden to 97% in Viet Nam. Meanwhile, only 60% of teachers had received training in the use of ICT as part of their in-service training in the 12 months prior to the survey, ranging from 40% in Belgium to 93% in Viet Nam.

Verizon: Putting Vision into Action
Commissioner Impact Story by Mr. Hans Vestberg, CEO, Verizon Communications Inc.

I have long believed that technology is the critical tool to achieve progress toward realizing the Sustainable Development Goals (SDGs). As a leading technology and telecommunications company, Verizon puts this vision into action. We have made a multi-year pledge of $3 billion USD to uplift vulnerable communities, help close the digital divide, and contribute to the achievement of the UN SDGs. As part of this effort, we are providing 10 million youths with digital skills training, supporting 1 million small businesses with tech resources and tools and upskilling 500 thousand individuals with tech training, all by 2030.

Our significant investments in digital skills training through our transformative education program, Verizon Innovative Learning, have helped to build and administer technology integrated programs that develop digital skills for students and teachers. Since 2012, Verizon Innovative Learning has reached more than 3.1 million students and invested over $1 billion in market value to support STEM education. We are also investing in technology-focused career training for individuals who are facing job displacement due to automation. And we sponsor a number of programs designed to support small businesses as they navigate and compete in an ever expanding digitally-driven business environment. Programs such as Verizon Small Business Digital Ready give small businesses personalized tools to succeed in today's digital world.

Through these efforts and partnerships with the UN Broadband Commission, Partner2Connect, and the World Economic Forum's Edison Alliance, we can make a difference. Technology is the essential enabler of the SDGs and working together we can make the progress needed.

Young and "digital native" may not necessarily equate to digital literacy nor labour/productivity skills

Age, too, is not an accurate predictor of digital skills, and the concept of the young "digital native" has been debunked in numerous studies. A study of the level of digital skills of first-year University Students by ICDL Europe across a number of countries including Denmark, Finland, Germany, Finland, India, and Singapore, showed that youth do not automatically have the required and sufficient skills to enter the labour market, even if they count as among one of the most connected groups. Young people in particular may lack productivity skills such as working with spreadsheets, word processing and presentation software.

> ***There is no guarantee that frequency of computer use in young people correlates with the development of productive, work or education-related digital skills (rather than to play a computer game or scroll through social media).***

A study by ICDL compares self-assessment with actual digital test results and shows that "digital skills" among youth are much below their perception, highlighting that many young people still lack the productivity skills needed for their studies and future work , and that the validity and rigor of self-reporting digital skills are often in doubt.

Digital literacy does not equate data literacy

Further, digital literacy does not, by default, determine data literacy.

- Digital literacy is the ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital technologies for employment, decent jobs and entrepreneurship. [79]
- Data literacy is the ability to read, write and communicate data in context, including an understanding of data sources and constructs, analytical methods and techniques applied, and the ability to describe the use-case application and resulting value.[80]

Media and information literacy is an interrelated set of information, digital and media competencies that help people to maximize advantages and minimize harm in the new information, digital and communication landscapes. Media and information literacy covers competencies that enable people to critically and effectively engage with information, other forms of content, the institutions that facilitate information and diverse types of content, and the discerning use of digital technologies. It takes into consideration, the informational, digital, data media, and social cardinals of the benefits and challenges in digital transformation processes. It draws on the continuum of data-information-knowledge-innovation and wisdom.

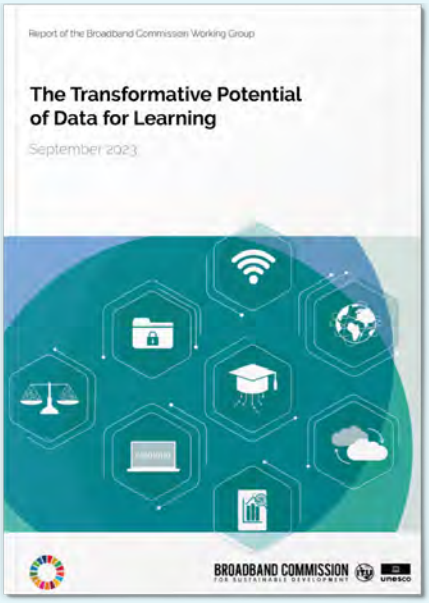
This returns us to the challenge of defining "digital skills" through the lenses of digital and data literacy alone, bringing to the fore questions around the user ability to use information, media, and digital skills to both protect themselves online, as well as maximise the opportunities ICT provides to them, in education and jobs and other aspects of life.

Broadband Commission Working Group on Data for Learning 2023

Chaired by UNESCO

For the past two years, the UNESCO-chaired Data for Learning working group has met in monthly meetings to discuss the question: How can we harness the potential of data to drive the safe, inclusive, and equitable transformation of education? The discussions broke down the broad theme of education data into 3 dimensions: infrastructure, capacities, and governance.

The report takes the position that data for learning is a double-edged sword that hangs in a balance between benefits and risks. The potential power of leveraging data to improve learning is unevenly distributed around the world, resulting in global asymmetries related to data access, skills, and sovereignty. Overall, this asymmetrical data landscape has led the dialogue about education data to become polarized rather than inclusive and constructive.



The Working Group on Data for Learning brings these varied perspectives together to build sustainable multistakeholder partnerships that advance impactful and ethical applications of education data that benefit all learners. Drawing from nearly two years of discussions, the Working Group report "The Transformative Potential of Data for Learning" and its accompanying "Job Board for Education Data Governance and Management" are global public goods that contribute to our common understanding of how to balance the opportunities and risks of data use in education.

Media, Information and Digital literacy, Online Safety, and Misinformation

The questions of critical civil engagement, privacy and discernment when navigating the Internet remain closely related concepts. It is necessary then that media and information literacy be taught in addition to skills that support productive use of technologies. Media and information literacy is a significant area, championed by UNESCO and numerous stakeholders around the world. In a digital era plagued by complex interactions that feed misinformation, disinformation, polarization, hate speech and other types of online violence, it is vital to strengthen citizens' capacities to access, search for, critically assess, use and contribute to information and media content, both online and offline; and to improve their understanding of evolving communication technologies, the modalities by which these are governed, developed and used, as well as digital rights.

This is all encompassed by media and information literacy, which is an essential characteristic of an informed, resilient and empowered society in the digital age. Advancing media and information literacy for all will be crucial to complement initiatives to address issues such as disinformation and online hate speech, and build long-term sustainable solutions to such challenges. While the advancements of modern technology make a trade-off between security and freedom online which is difficult to define, regulate and adjudicate locally and internationally, individuals should be empowered to discern trustworthy and safe information and understand the workings of the information ecosystem and the major players that govern it. Only then can they help mitigate the undesired consequences of insufficient regulation or self-regulation measures aimed at improving the transparency of the operations of Internet companies. In this regard, it is worth mentioning UNESCO's guidelines for a multistakeholder approach in the context of regulating digital platforms.[81]

At the same time, the ability to access accurate information online which represent different points of view, read through the lens of information literacy is indispensable if people are to have the ability to express themselves freely and be protected from reprisal, and understand international standards that should inform the development and use of ICTs.

Smartpur – digital village with a real-life impact
Commissioner Impact Story by Mr. Pekka Lundmark, President and CEO, Nokia

At Nokia, we create technology that helps the world act together. Our Smartpur project in India demonstrates what this looks like in reality.

Smartpur is designed to make it as easy as possible for remote communities in India to use digital technology in their daily lives. It allows villagers to access digital services related to education, healthcare, financial inclusion and other essential assets, which would be hard to access via traditional means.

Smartpur started as Nokia's flagship CSR initiative in 2017 with 10 Smartpur centers in the state of Haryana, in partnership with Save the Children India and Digital Empowerment Foundation. The number of centers has since grown to 350.

The project has allowed us to prove that delivering connectivity can bring concrete benefits to local communities. Villagers use Smartpur centers to make use of skill-based training programs, telemedicine services, education in computer literacy, banking and government services.

The project has reached over one million beneficiaries since launch. Of the 350 current centers, 40 are now entirely self-sustaining and operate without Nokia's support. These results show that the faster digitalization is rolled out, the more people will benefit – including in the most remote of communities.

Case Study: Designing new Frameworks for Digital Literacy, Skills and Readiness, by the IEEE Standards Association, World Economic Forum, and others

To promote a digital skills development narrative, there should be some form of systematic teaching available to both educators and students to follow – including the upskilling of those already in the workforce, and at risk of marginalization with evolving requirements. [82] In recent months, work has ramped up to ensure that educational curriculums are future-proofed around digital literacy and skills, such as:

- Work is underway by the DQ Institute, IEEE SA and World Economic Forum (WEF), to develop a framework for Digital Literacy, Skills and Readiness. [83]The premise for the discussion then in 2019 was that there was no shared baseline understanding of the level of digital skills in the world today, and as such it is difficult to address how to improve and sustain digital literacy.
- The CSIS Indonesia's G20 Toolkit for Measuring Digital Skills and Digital Literacy 2022, [84] proposes measurements along four pillars: infrastructure and ecosystem, literacy, empowerment, and jobs.
- The Reskilling 4 Employment (R4E) [85] was officially announced by the European Round Table for Industry (ERT) in May 2021, to serve as a hub that stimulates partnerships that provide reskilling opportunities to unemployed and 'at-risk' workers, so they can find employment in new occupations that are in-demand. The ERT is a high level forum which brings together CEOs and Chairs from a cross-section of 60 European industrial and technology companies, and the R4E was devised by ERT's Committee for Jobs, Skills and Impact, over a period of sustained research, outreach and consultation, to identify how best to address reskilling and upskilling needs in the European Union.

Case Study: Media and information literacy for sustainable digital transformation

Ensuring sustainable and inclusive digital transformation process that put people at the centre cannot be achieved with affording them the media and information literacy skills to understand its broader societal context. UNESCO has been supporting countries around the world to take steps to develop national media and information literacy polices and strategies; integrating these with national ICTs or digital transformation policies.

Through collaborative, cross-disciplinary and cross cultural knowledge development, occasioned through UNESCO Global Media and Information Literacy Alliance, UNESCO has increased awareness of media and information literacy in over 100 countries. Experts from over 100 countries contributed to a common framework on media and information literacy in the standard setting resource Media and Information Literacy Citizens: Think Critically, Click Wisely (Media and Information Literacy Curriculum for Educators and Learners, UNESCO 2021). This standard setting resource being piloted in countries across the world also published a study offering the Five Laws of Media and Information Literacy to help stakeholders to respond to the multimodal and multifaceted digital transformation process. The Five Laws of Media and Information Literacy is intended to guide all stakeholders involved in the application of media and information literacy in all forms of development.

UNESCO is taking this further considering that media and information literacy learning is equally urgent in the classroom as well as in digital spaces. As one step to operationalize the "Guidelines for Safeguarding Freedom of Expression and Access to Information in the Governance of Digital Platforms: A multistakeholder approach", UNESCO is developing a 2023 Action Plan to Integrate Media and Information Literacy in Digital Platforms Strategic Plans, Policies and Products. [86]

Advocacy Target 5

Increase use of digital financial services

Target and rationale

By 2025, 40% of the world's population should be using digital financial services. Digital financial services present a tremendous opportunity to swiftly increase the number of people using the Internet and extend access to the social and economic benefits of digital resources.[87] In 2018, when the Commission first began tracking this target, 2 billion adults did not have access to a bank account, and yet 1.6 billion adults had access to a mobile phone, creating the potential for e-finance access, and with this, access to economic empowerment.

Status as of 2023, tracking progress

According to the latest data from the World Bank's Findex survey[88] , 64 per cent of people aged 15 years and older made and/or received digital payments in 2021. This figure exceeds the target of 40 per cent on a global basis. While low-income, lower-middle income countries and South Asia have not yet reached the target, they remain on track to achieve it by 2025.

As with other digitally-enabled services that improve daily life, digital financial services, or e-services, have been heavily utilized during the COVID-19 pandemic for payment of transactions. These digitalized services enable new and innovative businesses and interactions to thrive on a global scale, whereas in the past, they may have been constrained by a user's physical location.

The ability to pay with a mobile phone, scanning a QR code or swiping an app-based credit or debit card facilitates greater access to financial services, access to payments such as for online shopping and receiving government disbursements, as well as access to credit such as loans. Not only are digital financial transactions generally more secure than cash, but they can also reduce close contact with other persons, an important consideration during the pandemic.

UNDP supporting safe and inclusive Digital Public Infrastructure

Commissioner Impact Story by Mr. Achim Steiner, Administrator, UNDP

Over 40 countries have requested the United Nations Development Programme (UNDP) to accompany them in their national digital transformation journey. Our approach is not merely focused on deploying smart technology or the latest app. Rather, it pivots on supporting countries to invest in their underlying network of digital systems, or digital public infrastructure (DPI).

These railroad tracks of our new era allow countries to easily 'transport' life-changing digital solutions like digital cash transfers or e-health to communities. That includes assisting Malawi to invest in its DPI via a national digital identity system. This new infrastructure has allowed it to drive progress across the Sustainable Development Goals (SDGs) including enhancing access to justice and social protection. It has also generated cost savings of some $20 million – finances that can be redirected towards the SDGs. Indeed, DPI investments in the financial sector alone could increase a country's GDP growth by 33%. [89]

For many parts of the world, the future is already here with digital solutions easily accessible at people's fingertips. Global digital cooperation, such as that orchestrated by the Broadband Commission and the International Telecommunication Union, are critical to assist countries with DPI and ensure that all communities, everywhere can realise their own digital futures.

Transformative risks and opportunities

Opportunity to continue the pandemic-driven digitization effort with digital financial services, particularly in mobile money and cashless payments

The adoption of digital finance has grown sharply since 2017, mainly due to COVID-19. According to the World Bank, the pandemic led to an increase in digital financial services: four in 10 people in developing economies (excluding China) made a digital payment for the first time after the start of the pandemic. This increase was also driven in part by developments in e-commerce leading many to making payments online. Cash on delivery, popular in developing countries, was discouraged due to fears of cash spreading the disease.

In 2021, there were more than 1.35 billion registered mobile money accounts worldwide, a tenfold increase from 134 million in 2012. Year-on-year growth in new registrations continues, defying initial expectations that it would taper off. Demand for mobile financial services is likely to remain high among financially excluded and often marginalized populations. However, even among registered account holders, about 1 billion are not active on a monthly basis, representing an important opportunity for the industry to deepen financial inclusion and economic participation.

The volume of cashless payments rose during the pandemic with contactless payments increasing to its highest rate since 2015 with many card companies raising the daily limit on contactless payments. While demand for large size cash denominations increased, this was due to the use of cash as a store of value rather than for payments. A European Central Bank survey found that 87 per cent of the respondents who had made fewer payments in cash during the pandemic wanted to continue to do so after the pandemic. The Bank for International Settlements finds that COVID-19 has accelerated the drive among central banks to launch digital currencies.

Even though the COVID-19 pandemic had a negative impact on most economic sectors that require physical interaction, the number of mobile money agents has continued to rise. Between 2012 and 2021, the number of active agents multiplied more than ten times, from 534 000 to 5.6 million. There is a clear trend towards a more digitized mobile money ecosystem as more cash is converted into e-money and either continues to circulate as such or is spent digitally rather than being cashed out.

The implementation of Digital Public Infrastructure (DPI) - open and technology infrastructure that enable access to public and private services at societal scale - can improve access to finance, expand access to new types of financial services such as digital payments, lead to inclusive economic growth, tackle corruption, and strengthen the economic resilience of households. A 2023 study by UNDP and Dalberg on the Human and Economic Impact of Digital Public Infrastructure estimates that the adoption of finance-related DPI can accelerate GDP growth by up to 33% in LMICs[90] .

Digital finance for social protection by governments providing a foundation for accelerated digital trade

Another opportunity to capitalize on is the enabling of payment of COVID-19 benefits by governments to digital accounts. Almost 60 governments in LMICs used digital payments for COVID-19 assistance. For example, in Paraguay, some 300 000 people were reached with emergency assistance through transfers from the government using telecommunication operators' mobile money platforms. Among adults in Argentina who received government transfers nearly half of recipients received them digitally for the first time during the pandemic; in Mexico, the share was nearly a fifth. In Latin America as a whole, 11 per cent of the population (almost 50 million individuals 15 years and older) started using digital payments for the first time in 2020 amid COVID-19.

While these programmes are rooted historically in a response to the COVID-19 pandemic, they built a strong foundation for further acceleration of digital finance and trade, spurring economic activity. For example, because of the impetus of needing digital finance during the pandemic,

some countries have also adopted a new regulatory framework to enable the uptake of digital finance, such as Mauritania, which adopted a draft law related to electronic payment services in June 2021. [91] Colombia also adopted the low-value payment system in 2020 with Decree 1692, which modifies Decree 2555 of 2010. [92] The Decree aims to increase financial inclusion and facilitate access to the low-value payment system and its financial services. Similarly, in Indonesia, the issuance of Presidential Regulation No. 114 in 2020[93] on the National Strategy for Financial Inclusion that covered "improved digital financial products and services" has provided an impetus to accelerate Indonesia's financial inclusion.

On a more practical front, Kenya replaced all insurance cards with biometric fingerprint identification in July 2021, reducing the possibility of insurance fraud and manual processing, and opening up the possibility of using the biometric-identity approach to increase further trust and authentication mechanisms in other national financial systems. [94]

Case Study: Novissi: Empowering the economically vulnerable in Togo[96]

Togo's Novissi cash transfer scheme uses existing data and machine learning systems to identify the most vulnerable households eligible for government social protection schemes and executes quick and cost effective social payment transfers in partnership with mobile network providers. It filled gaps in household level economic data using machine learning predictions that pulled from open geospatial and mobile usage data. Novissi propelled financial accessibility by enabling anyone with a SIM card to register for the scheme. This spurred the creation of 170,000 new mobile money accounts, representing a 7 percent increase in mobile money penetration as of 2021. It disbursed nearly $24 million to 820,000 vulnerable beneficiaries. As 65 percent of beneficiaries were women, it also made strides in empowering women. The Togo Novossi scheme helped avert human crisis during the COVID-19 pandemic, and is designed to last beyond the pandemic, future-proofing its design to adjust to the changing needs of the population through real-time tracking of cash transfer registrations, stages of disbursement and allocation.

Case Study: Brazil's Pix[95]

Brazil's real-time retail payment system Pix is another example of how connectivity has accelerated digital finance for strong social inclusion. Pix charges zero fees for senders and receivers of payments, and enables frictionless payments between individuals, companies and the government using a QR code, or a unique identifier alias linked to a bank account. Pix is available on many platforms which has increased its adoption, and today, nearly all bank and non-bank payment service providers in Brazil have adopted the payment protocol.

UAE PASS digital identity for greater digital inclusion

Commissioner Impact Story by H.E. Engineer Majed Sultan Al Mesmar,Director General of the TDRA, UAE

The Telecommunications and Digital Government Regulatory Authority, in collaboration with Digital Abu Dhabi and Digital Dubai, spearheaded the creation of the UAE PASS digital identity in 2018. The core objective was to streamline access to services for both citizens and the business community.

UAE PASS aligns seamlessly with multiple sustainable development goals, prominently including the aspiration to diminish inequalities. By offering digital services that extend equal opportunities to all, it embodies this principle. Moreover, its commitment to climate action is evident through the reduction of paper usage in service transactions, contributing to environmental sustainability.

A pivotal role is played by the UAE PASS in fortifying institutions, aligning resolutely with Goal 16. Similarly, Goal 17's emphasis on forging partnerships finds resonance, as UAE PASS stands as a meticulously integrated project interlinking governmental and private entities. The success of this venture hinges on comprehensive partnerships that cater holistically to the needs of customers.

Since its inception, the digital identity initiative has achieved resounding success, underscored by the exponential demand it has garnered. To date, the enrolment count stands at an impressive 5.5 million individuals. These individuals have reaped the benefits of a vast array of services provided by 216 governmental and private establishments within the UAE.

The ultimate pinnacle of the digital identity initiative is set at achieving universal utilization by the end of the current year, 2023. This forward-looking vision propels the UAE towards an era of fully realized digital accessibility and streamlined service provision for all.

Advocacy Target 6 | Get MSMEs online

Target and rationale

This target aims to improve the connectivity of micro-, small- and medium sized enterprises (MSMEs) by 50 per cent, by sector by 2025,[97] as the connection of MSMEs with broadband will increase their competitiveness and allow them to participate in the global marketplace where online business transactions are increasingly the norm.

In 2018, when this target was established, these goals were considered particularly ambitious, calling for a 50 per cent increase in broadband connectivity in MSMEs by sector. For example, a sector in which MSMEs are 80 per cent un-connected in 2018, will have only 40 per cent unconnected by 2025. MSMEs also face several challenges in broadband adoption, including the:

- availability of necessary technologies to digitalize (high-speed connectivity in urban and rural areas) and suitable digital tools and services;
- capacity of SMEs to digitally transform, when it comes to financial resources and time (and the pandemic has deepened these constraints); and
- capability of SMEs to gauge, plan, finance, implement and optimize their transformation through digital skills.

However, since the onset of the COVID-19 pandemic, MSMEs in particular have experienced extreme consequences, with 8% more likely to have (temporarily) shut down due to the pandemic than larger firms. [98] Many MSMEs, particularly in low- and middle-income countries, were caught off-guard following the introduction of quarantines. With no broadband Internet access, they were unable to pivot swiftly to online operations to sell products and services.

> *Digitalization can give MSMEs a competitive edge during normal times and enable them to better cope with the increasing challenges brought by the pandemic and strengthen their future resilience.*

Status as of 2023, tracking progress

Connectivity data disaggregated by enterprise size is widely available for high-income nations, although not always for micro-enterprises. For most low- and middle-income countries, even aggregated data on total enterprises with Internet access is not available, let alone by sector. Hence it is difficult to gauge the severity of the problem. The nature of the connectivity is also important. A one-person micro enterprise might find having a smartphone with wireless access sufficient to carry out operations, particularly for social media based online selling.

A survey of informal enterprises in nine African countries found low levels of ICT use. Use of the Internet for business purposes was 7 per cent on average ranging from 24 per cent in South Africa to 1 per cent in Rwanda.[99] Computer ownership is also low with over 90 per cent of businesses surveyed in Ghana, Kenya, Mozambique, Nigeria, Rwanda, Tanzania and Uganda reporting not having one. Most cited not having a need for Internet access or computers in their business. A UNDP survey focusing on MSMEs in Kenya [100] revealed that they were adversely affected by the pandemic, with one out of every 10 enterprises surveyed indicating a shutdown of their businesses due to the pandemic. However, MSMEs that have higher digital maturity reflected lower levels of negative impact on income.

FAO Hand-in-Hand (HiH) Geospatial Platform enabling free and equitable access to data
Commissioner Impact Story from Dr. Qu Dongyu, Director General, FAO

The responsible collection, use, and integration of different data from diverse domains unlocks critical information that can be applied to sustainable development interventions, early warning systems and natural resource management.

FAO Hand-in-Hand Geospatial Platform is a digital public good [101] that helps analyze and compare data on food and agriculture, enabling targeted interventions towards reducing poverty, hunger, help increase economic development while holistically respecting our environment. The platform unlocks over 2 million of data layers from different domains and sources to serve as key enabling tool for FAO's HiH Initiative.

With the aim of turning data into action, bringing together geospatial and statistical data for more targeted agricultural interventions, the HIH GP enables free and equitable access to targeted information resources and data driven solutions through innovation, reducing inequalities (SDG 10). The platform makes information available to all stakeholders involved in food and agriculture, including remote and rural areas, enabling better production and consumption levels (SGD 12) and development of the policy and strategic implementation mechanisms.

HandInHand platform, includes elements advantageous for early warning systems as well, enabling stakeholders to focus on relevant situations and getting up to date information on mitigation measures, for example on water resources (SDG 6), optimized land use/management (SDG 15), and are thus able to better adapt in terms of decision making -including policy regulations for climate action (SDG16)- to maximize efficiency and build strategic partnerships in the field (SDG 17).

Transformative risks and opportunities

Tracking, and target definitions may require refining, to achieve inclusive entrepreneurship and trade

One of the biggest challenges for improving MSME policy is the lack of standardized definitions for MSMEs, as well as difficulties in tracking the impact that policy has on MSMEs. As highlighted, connectivity data is not always available, and in many instances, aggregated data is not available for all enterprises, but not by sector and not by enterprise size.

> *Unless such data is collected, it will be difficult to formulate and monitor policies that promote inclusive entrepreneurship and trade.*

Broadband Commission Working Group on Connectivity for MSMEs 2023

Chaired by UNESCO Co-Chaired by ITC and GSMA

The Working Group on Connectivity for MSMEs has sought to define the key challenges and opportunities associated with MSME connectivity and its enablement in low- and middle-income countries (LMICs). The working group relied on input from its members, interviews, desk research, and studies provided by its co-chairs: the ITC study on MSME connectivity in Francophone Africa, and the GSMA study on the use of mobile connectivity by women micro-entrepreneurs in LMICs.

MSME connectivity is a journey through several stages of connectivity. While micro-enterprises rely on individual connectivity to conduct business and engage in online trade, larger enterprises require more advanced connectivity and 'digital enablers' such as webhosting, platforms and digital financial services. MSMEs face several barriers to leveraging digital connectivity, related to access, affordability, relevance, knowledge and digital skills, as well as safety and security. Women micro-entrepreneurs are heavily impacted by the social norms and structural inequalities of their respective regions and stand to benefit from approaches to advance digital connectivity that are gender inclusive.

Overall, increasing MSME participation in the digital economy will require stakeholders such as governments, international organizations, companies, and NGOs, to fully participate in facilitating this trajectory: closing connectivity gaps; creating digital enablement to drive awareness and usage, and programmatically supporting underserved and marginalized communities.

Case Study: Nigeria's informal economy and Asusu's digital cooperative management software[102]

Nigeria's informal economy is primarily made of MSMEs, and accounts for approximately 65 per cent of the country's GDP. The challenge for this informal sector is the lack of record-keeping and documentation, which leaves these MSMEs unprotected by government regulations, and vulnerable to fraud and other business inefficiencies. Some start-ups, such as Asusu, have begun to develop and provide digital solutions to the MSME and informal sector.

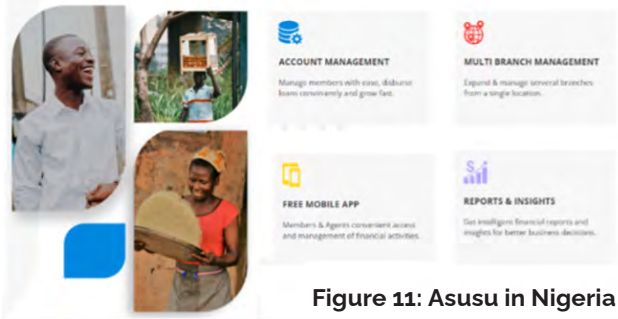


Figure 11: Asusu in Nigeria

Source: Asusu, 2023

Asusu offers a cloud-based software management solution that is tailored to the unique economic landscape of Nigeria - its solutions help the informal sector and MSMEs digitize their village savings and loan system known as a "cooperative". To date, Asusu has processed over USD 2.5 million in savings and credit for about one hundred cooperatives across northern Nigeria.

Case Study: Uganda's Jumia and the UNDP: An e-commerce MSME supporting other MSME informal vendors[103]

E-Commerce company Jumia Food Uganda partnered with the United Nations Development Programme (UNDP) Uganda Accelerator Lab to establish a new market segment on their e-commerce platform to enable informal market vendors to continue sales when the COVID-19 pandemic measures were put in place. This initiative allowed many MSMEs, particularly in the informal sector – opportunities to sustain their business through the pandemic, and even expand.

Today, more than 4000 vendors are successfully registered on the platform, with more than 60% of vendors being women, youth, and people with disabilities. This new model has also created jobs for more than 900 youth and young people, with varied functions such as market agents to customer care providers, and delivery riders.

Figure 12: Jumia's E-Commerce Partnership Enabling MSMEs and the Informal Sector
Source: UNDP, 2022 [104]

Advocacy Target 7 | Bridge the gender digital divide

Target and rationale

By 2025, gender equality should be achieved across all global advocacy targets. [105]The Broadband Commission introduced the seventh advocacy target in 2013, drawing attention to the importance of gender equality among Internet users, so that the benefits of broadband Internet reach all. This is also aligned with the United Nations' Sustainable Development Goal 5: to achieve gender equality and empower all women and girls. [106]

Status as of 2023, tracking progress

According to the latest ITU estimates, 69 per cent of all men were using the Internet in 2022 compared to 63 per cent of women. Gender parity increased from 0.90 in 2019 to 0.92 in 2022. Some regions and income groups have achieved gender parity in Internet usage, including some among high-income countries, SIDS, Latin America and the Caribbeans, CIS countries, and Europe. However, notable gender gaps in mobile Internet access persist in LMICs. The substantial gender gap in mobile Internet use in LMICs had been improving, driven primarily by South Asia where it decreased significantly from 67 per cent in 2017 to 36 per cent in 2020, according to GSMA. However, this progress has now stalled across LMICs and in some countries the mobile Internet gender gap has even increasing.

As reported by GSMA, women were 19 per cent less likely than men to use mobile Internet across LMICs in 2023. [107] By comparison, this gender gap was 15 per cent in 2020, and prior to that it had reduced every year from 25 per cent in 2017. While more women continue to use the mobile Internet than ever before, and it remains the primary way most people access the Internet in LMICs, their rate of adoption has slowed over the last year, and historically it can be noted that rural women in developing countries are particularly disadvantaged.[108]

> *Furthermore, in some countries, men's rates of mobile Internet adoption have been higher than that of women's, driving an increase in the mobile Internet gender gap.*

In addition, the UNESCO 2023 GEM Report[109] found that according to UIS data, women in STEM accounted for just one third of global tertiary graduates in 2016–18. Gender is one of the strongest determinants of the likelihood of pursuing education and careers in STEM. Boys in grade eight were more willing to pursue a mathematics-related occupation than their female schoolmates in 87% of the education systems participating in the 2019 Trends in International Mathematics and Science Study (TIMSS).

IFC and the road to robust connectivity for digital economy development in emerging markets
Commissioner Impact Story from Mr. Makhtar Diop, Managing Director, IFC

Our dependency on digital infrastructure and increased reliance on secure online services are greater than ever. At the beginning of the pandemic, the World Bank Group's call to action focused on increasing bandwidth, strengthening the resilience of networks, connecting vital services, and powering FinTech and digital business models.

The World Bank Group has delivered on this challenge with its private sector arm, IFC, deploying more capital over the last four years to support digital transformation than in the 20 years prior, to a record of

over US$2 billion in the last fiscal year, turning IFC into one of the largest global investors supporting the development of digital economies in emerging markets.

The World Bank Group has also played a pivotal role in opening up the telecommunications sector and supporting market liberalization, including the entrance of the first private mobile operator in Ethiopia and the independent tower model in the Philippines.

Robust connectivity, however, is a means to an end. Ultimately, developing vibrant digital economies drives competition, boosts productivity, increases employment, promotes gender equality, and enhances services for the base of the pyramid. IFC reaches about 7 million M/SMEs through the digital companies and digital platforms in our venture portfolio, such as Wave Mobile Money, and has the potential to reach more through the supply and distribution chains of larger IFC clients such as Nubank and Orange Money.

The challenges ahead are many, including developing regulatory frameworks to tackle the pitfalls and opportunities of AI and accelerating the transition to a carbon-neutral world. The need for strong partnerships such as the one between the World Bank Group and ITU has never been greater.

Transformative risks and opportunities

Internet use parallels smartphone ownership gaps – with similar socio-economic challenges resulting from lack of access to information

Similar to the story seen in mobile Internet use, the gender gap in smartphone ownership had been reducing year-on-year across LMICs – from 20 per cent in 2017 to 16 per cent in 2020—but over the last year this has reversed. Women are currently 17 per cent less likely than men to own a smartphone. [110] These gender gaps also exist in women's access to and use of mobile money services as well as digital literacy, which are helping drive financial inclusion for women, can increase their economic independence, and strengthen their role as financial decision-makers. Additionally, mobile ownership would facilitate women's access to information, foster their digital and media and information literacy ensuring that they are equipped for the challenges of the new digital era. Improved digital skills would also enable them to contribute to shaping the digital environment, as bolstering their digital defences against discrimination and other violence against them, such as gender-based violence online.

Opportunity to improve the affordability of smartphones and data to drive digital inclusion of women

Affordability, particularly of handsets, is the primary barrier to mobile ownership, and a challenge for both men and women to start using mobile data and services. [111] Women usually experience the affordability barrier more acutely than men, due to lower average incomes, lower access to external sources of finance and less financial independence. To make handsets and data more affordable, governments can ensure policies and regulations help lower the cost of handsets and data for consumers, which is likely to disproportionately benefit women.[112] For example, governments can review and remove sector-specific taxes and fees for handsets and data including import taxes that treat handsets as luxury items. Governments can also consider subsidy programmes in consultation with the private sector to help improve the affordability of handsets and data. This could include subsidies that increase smartphone ownership among women or subsidising data for underserved women. [113]

Gender gaps must be bridged on all economic landscapes and at all levels of the ICT value chain

Significant gender gaps remain at other levels of the ICT value chain. The UNESCO Report on "The Effects of AI on the Working Lives of Women" found that women represent only 29% of science R&D positions globally. [114] Among the world's leading tech companies, just 23 per cent of women were engaged in roles such as software development and engineering, and women represented only 26 per cent of board members in 2020. [115]

Case Study: UNDP's Mildet Chatbot helping women with family law issues

In Kyrgyzstan, UNDP helped develop Mildet,[116] a Telegram chatbot trained with a specialist functional on family law issues such as dissolution of marriage, division of property and determination of paternity.[117] Essentially a virtual lawyer-bot, it provides basic advice on alimony, tax regimes, labour and consumer issues, and has the ability to draft up basic legal documents such as application for alimony recovery, promissory notes etc.

Chapter 3

Key Considerations
Advancing Universal Broadband Connectivity

The State of Broadband 2023 report highlights progress toward universal connectivity, with the global offline population decreasing from 2.7 billion to 2.6 billion.[118] Yet despite the gains, the practicalities of financing and funding connectivity may lag behind demand. Therefore, this year's report focuses on the cost of meeting Broadband Commission targets and delves into the considerations for how the next phase of digital transformation can and should be financed and funded.

Image source: Pixabay

Conclusions

With this year's State of Broadband 2023 report, we see some wins as we move towards universal and meaningful online activity. It is heartening to note that the global offline population continues to steadily decline to 2.6 billion people in 2023[119], a reduction from the estimated 2.7 billion people offline in 2022, This demonstrates positive movement and is good news for the community as we work together to move broadband to being universally available, affordable, and providing fair and equitable access to all opportunities which communication technologies can afford individuals and businesses alike.

Yet despite the gains, in many instances, trends are shifting, and the practicalities of financing and funding connectivity may lag behind demand. Therefore, this year, the State of Broadband 2023 focuses on the cost of meeting Broadband Commission targets:

> ***What are the considerations for how the next lap of connectivity for digital transformation can and should be financed and funded?***

1 *Consideration*
Defining (and re-defining) measurable goals for "universal meaningful connectivity" to meet today's needs

Definitions. As observed earlier in this report, the goals for "universal meaningful connectivity" can vary greatly, particularly when viewed through different lenses and approaches. For example, what would "meaningful" require when discussing access via mobile vs desktop computer vs new devices such as augmented/virtual reality, and what would it mean when discussing goals sufficient for education or entertainment, other enabled services, or by speeds vs capacity etc?

Methodology and metrics. In this report, we have identified that clearly identifiable and measurable outputs are a content gap which must be plugged if we are to understand how to progress. Apart from "universal meaningful connectivity", we note that there are different approaches towards "affordability", and defining "digital skills" has continued to prove elusive on many fronts. Notwithstanding, a harmonized approach is being implemented by UNESCO and thousands of partners around the world to promote media and information literacy competencies for all – integrating information, digital and media skills.

The global community may want to consider the development or, and/or inclusion of a methodology to identify key performance indicators and metrics, to be then tracked and updated on a regular basis. One possible way forward would be a review and consolidation of existing approaches towards connectivity from other multilateral agencies such as the ITU, UNESCO, and UNICEF.

Prioritizing connectivity. While governments should be supporting infrastructure incentives in high-cost areas, demand support initiatives, and digital ecosystem initiatives, countries should avoid falling into a digital chasm of seeking to meet minimum standards only; countries should also be aiming for high-performing, high-capacity connectivity, setting the connectivity ambition bar as high as possible, such as India is doing with broad 5G rollout.

2 *Consideration*
Close the Usage Gap by addressing key barriers to people adopting and using the Internet where coverage is available

There has been a fundamental shift from supply-driven communications access to demand-driven communication. Research conducted by the GSMA has found that fewer than 5% of the world's population do not have mobile broadband available. We now need to focus on the Usage Gap to connect the almost 3 billion people who could be, but are not yet, online.[120] GSMA found that people face five main barriers to mobile internet adoption: access, affordability, knowledge and digital skills, relevance, and safety and security. Addressing these barriers to getting online, using and benefiting online services will increase adoption and close this Usage Gap.

Almost 90 per cent of the population in some African countries live within range of a mobile internet signal, however internet use may be 20 per cent or less. Despite increased access to the internet, its use in Africa is generally low as there is very little content generated locally and or available in local languages. In addition, a lack of awareness, digital skills, and reliable data to steer policy interventions, are preventing individuals from participating fully online.

Policies and initiatives addressing digital literacy, affordable devices, relevant content and maintenance support are powerful tools to increase adoption and close the Usage Gap.

The residual coverage gap, particularly in low density rural areas will be met by a mix of fibre, terrestrial wireless and satellite technologies should be available for funds as is most appropriate. Recent entry into service of Very-High-Throughput Satellites in the Geostationary Orbit as well as new low earth orbit satellite constellations have begun to provide low cost, high quality broadband connectivity to previously inaccessible and costly areas to serve.

3 *Consideration*
Broaden contributor base and implement creative funding approaches, including incentivising infrastructure funding, reforming Universal Service and Access Funds (USAF) approaches

For digital transformation to fully benefit everyone and close the digital divide, industry and governments must work together to put high-performing, high-capacity connectivity in place at speed and scale. Governments can broaden the base of contributors[121] by including companies participating in and benefitting from the digital economy. Governments could be ear-marking ICT sector contributions to governments and spending it on initiatives supporting connectivity and adoption goals, and reforming USAFs to be more effective financing mechanisms that support and expand connectivity to ICT services.

Governments could also be exploring policies to incentivize voluntary contributions from new types of contributors, e.g. improving project business cases through cross-collaboration between different public and private, national, and international contributors, and collaborating across public, private, national, and international organizations.

Acknowledging different types of contributions from other stakeholders could also expand the scope of demand. Governments could balance the broadband infrastructure development approach by catalyzing additional stakeholders to contribute to broadband development and via regulatory reform and demand side measures.

Crosscutting and integral to broaden funding is to also ensure that meaningful percentages of funding are allocated to user empowerment through improved media and information literacy and digital skills. This emphasis will bring both economic and social benefits to citizens and governments alike, resulting in a more sustainable digital transformation.

4 *Consideration*
Alignment and incentivizing funding contributors is key for government connectivity plans, mobilizing all sectors' pools of capital by removing challenges and barriers to network infrastructure investment

This requires governments to go with the grain of development finance institutions (DFIs), as well as ensure that challenges and barriers to private sector investment are removed and reduced, e.g.

- Ensuring market structures are sustainable and incentivise investment,
- Ensuring technology and vendor neutrality; where governments avoid picking winners, distorting markets and impinging on private sector investment.
- Enabling a fair competition / level playing field, spurs investment, innovation and cooperation. It also means that the best technologies rise and scale on their merits, securing broad use, interoperability and affordability.
- Trading off spectrum fees and extending license lengths for commitments to build out meaningful connectivity infrastructure to areas where it is lacking rebalance, fostering transparency and efficient permit granting procedures, providing harmonized mobile spectrum in a timely and affordable manner, focusing on harnessing long-term societal value.
- Direct government interventions should be limited to market failures alone and in helping meet the needs of underserved households and businesses, again without distorting competition dynamics and in a way that amplifies private sector investments, respecting technology neutrality.

5 *Consideration*
Build network infrastructure policies to last with sustainable and agile plans

Finally, governments should consider building sustainable policies that are both robust and resilient, giving policymakers the agility to scale up and/or adjust plans where necessary. A number of approaches should be considered:

- Using global, open standards within the network infrastructure. Without global standards, it would not have been possible for communication network technologies to compete, succeed and scale globally. Because the industry adopted and used international standards widely, it resulted in the expansion of communication technology coverage to regions not previously covered, and scaling up improves affordability and enable cost reduction for the entire supply chain: manufacturers, operators, and users. Countries should seek to prevent fragmentation of standard setting for telecommunications and digital technologies, and pursue the continuation of and adherence to global open standards as is the case with mobile technologies in 5G, extending to 6G.
- Creating a database of funding best practices and their impact on broadband adoption and economic development,
- Creating an international ICT investment fund with the objective of supporting sustainable development of broadband connectivity, and hosting the fund in a multilateral development bank (MDB) or an existing international organization.

Endnotes

1 https://www.itu.int/en/mediacentre/Pages/PR-2023-09-12-universal-and-meaningful-connectivity-by-2030.aspx
2 https://blog.cloudflare.com/recent-trends-in-internet-traffic/
3 https://www.itu.int/en/mediacentre/Pages/PR-2023-09-12-universal-and-meaningful-connectivity-by-2030.aspx
4 https://www.itf-oecd.org/sites/default/files/infrastructure-investment-covid-19.pdf
5 https://blog.telegeography.com/internet-traffic-and-capacity-return-to-their-regularly-scheduled-programming
6 https://www.itu.int/dms_pub/itu-d/opb/pref/D-PREF-EF.COV_ECO_IMPACT_B-2021-PDF-E.pdf
7 https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099650005162214653/p16477001277440f10b8080dc6f51daf2dc
8 https://dailyoutcome.pk/sbp-launches-media-campaign-on-asaan-mobile-account/
9 https://www.ericsson.com/en/cases/2023/mtn-mobile-money-open-apis
10 https://dimuto.io/2021/02/10/how-dimuto-uses-tradetrust-blockchain-validation-to-strengthen-trust-in-global-trade/
11 https://www.tech.gov.sg/products-and-services/singapore-government-tech-stack/
12 https://apolitical.co/solution-articles/en/in-brazil-were-putting-hundreds-of-services-online-and-saving-millions, https://www.oecd.org/digital/digital-government/digital-government-review-brazil-2018-key-findings.pdf
13 https://agenciabrasil.ebc.com.br/economia/noticia/2022-03/receita-libera-servicos-do-imposto-de-renda-para-portal-govbr
14 https://www.eastasiaforum.org/2021/10/01/leveraging-indias-aadhaar-platform-to-ease-covid-19-pain/, https://www.deccanherald.com/national/aadhaar-act-verdict-history-693614.html
15 https://pmmodiyojana.in/aadhar-card/
16 https://www.investopedia.com/terms/u/unicorn.asp
17 We note that there are overlaps between MSMEs, small companies, born-in-the-cloud companies, entrepreneur and start-up companies, cloud-native companies.
18 https://www.worldbank.org/en/topic/smefinance
19 https://www.gojek.io/
20 https://publishing.insead.edu/case/gojek-ride-sharing-super-app-fintech-ecosystem-leader
21 https://www.gotocompany.com/
22 https://www.cnbc.com/2021/06/09/goto-how-gojek-and-tokopedia-teamed-up-in-indonesias-biggest-merger.html
23 https://jiji.ng/
24 https://www.appsflyer.com/customers/jiji/
25 https://www.africa.com/jiji-kenya-crowned-best-e-commerce-mobile-app/
26 https://www.gotocompany.com/en/about-us#group-structure
27 29 https://www.facebook.com/Jiji.Nigeria/posts/dont-be-the-reason-why-youre-stressed-use-jiji-todayjijinigeria-sellfasterbuysma/3777080735643397/
28 30 https://www.broadbandcommission.org/advocacy-targets/1-policy/
29 31 https://www.broadbandcommission.org/advocacy-targets/
30 32 https://unesdoc.unesco.org/ark:/48223/pf0000385723
31 33 https://www.un.org/en/transforming-education-summit
32 34 https://ised-isde.canada.ca/site/high-speed-internet-canada/en/canadas-connectivity-strategy
33 35 https://commission.europa.eu/system/files/2023-01/cellar_12e835e2-81af-11eb-9ac9-

01aa75ed71a1.0001.02_DOC_1.pdf

34 36 https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en

35 https://www.itu.int/pub/D-PREF-BB.REG_OUT01-2023

36 https://broadbandcommission.org/wp-content/uploads/dlm_uploads/2021/11/21st-Century-Financing-Models-Broadband-Commission.pdf

37 https://www.gsma.com/r/wp-content/uploads/2022/12/The-State-of-Mobile-Internet-Connectivity-Report-2022.pdf

38 https://www.gsma.com/r/wp-content/uploads/2022/12/The-State-of-Mobile-Internet-Connectivity-Report-2022.pdf

39 41 https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7595 and https://internetforall.gov/funding-recipients

40 https://www.itu.int/pub/D-PREF-EF-2021-ECO_FIN

41 https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/digital.html

42 https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/digital.html

43 https://broadbandcommission.org/working-groups/21st-century-financing-models-2020/

44 https://broadbandcommission.org/wp-content/uploads/dlm_uploads/2021/11/21st-Century-Financing-Models-Broadband-Commission.pdf

45 https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Universal%20Access%20to%20broadband%20trends%20and%20practices.pdf

46 https://www.broadbandcommission.org/advocacy-targets/2-affordability/

47 As of 2022, in LMICs (low- and middle-income countries).

48 https://www.itu.int/en/ITU-D/Statistics/Documents/publications/prices2022/ITU_Price_Brief_2022.pdf

49 https://www.ericsson.com/en/reports-and-papers/mobility-report/dataforecasts/mobile-traffic-forecast

50 https://unesdoc.unesco.org/ark:/48223/pf0000383330

51 https://unesdoc.unesco.org/ark:/48223/pf0000383330

52 https://unesdoc.unesco.org/ark:/48223/pf0000383330

53 https://www.satelliteinternet.com/resources/how-to-reduce-zoom-data-use

54 https://worldbank.org/en/topic/digitaldevelopment/brief/minimum-data-consumption-how-much-is-needed-to-support-online-activities-and-is-it-affordable

55 https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2022/04/Making-internet-enabled-phones-more-affordable-in-low-and-middle-income-countries.pdf

56 https://www.broadbandcommission.org/publication/21st-century-financing-models/

57 https://www.anewsa.com/detail.php?number=2687256

58 https://www.ericsson.com/en/press-releases/2021/10/one-million-schools-mapped-unicef-and-itus-giga-initiative-with-support-from-ericsson-reaches-milestone-towards-connecting-every-school-to-the-internet2

59 https://www.broadbandcommission.org/advocacy-targets/3-universal-broadband/

60 The original 2015 target was set to reach user penetration of i) 60% worldwide, ii) 50% in developing countries and iii) 15% in LDCs. This target was amended in 2018 to reflect a user penetration of i) 75% worldwide; ii) 65% in developing countries (as of 2022, in LMICs (low- and middle-income countries); and iii) 35 per cent in least developed countries.

61 African Union Commission, 2023 correspondence.

62 https://www.broadbandcommission.org/publication/manifesto2020

63 https://www.itu.int/itu-d/reports/statistics/2022/11/24/ff22-internet-use/

64 https://www.un.org/en/desa/27-billion-people-still-left-offline

65 https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2022/04/GSMA_Assistive-Tech_Driving-the-Digital-Inclusion-of-Persons-with-Disablities-2022_ACCESSIBLE.pdf
66 https://www.undp.org/sites/g/files/zskgke326/files/2022-07/UNDP-Inclusive-by-Design-Accelerating-Digital-Transformation-for-the-Global-Goals.pdf
67 https://www.broadbandcommission.org/advocacy-targets/4-skills/
68 https://unesdoc.unesco.org/ark:/48223/pf0000385723
69 https://www.itu.int/en/ITU-D/Statistics/Pages/SDGs-ITU-ICT-indicators.aspx
70 https://digitallibrary.un.org/record/3906257?ln=en
71 https://www.itu.int/dms_pub/itu-d/opb/ind/d-ind-ict_mdd-2022-pdf-e.pdf
72 https://www.unesco.org/gem-report/en
73 https://data.unicef.org/data-for-action/ict-skills-divide-todays-youth-prepared-digital-economy/
74 https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2021/11/Developing-mobile-digital-skills-in-low-and-middle-income-countries.pdf
75 https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2021/11/Developing-mobile-digital-skills-in-low-and-middle-income-countries.pdf
76 https://www.unesco.org/sites/default/files/medias/files/2022/02/Global%20Standards%20for%20Media%20and%20Information%20Literacy%20Curricula%20Development%20Guidelines_EN.pdf
77 https://www.unesco.org/gem-report/en
78 https://www.oecd.org/education/talis/
79 https://unevoc.unesco.org/home/TVETipedia+Glossary/show=term/term=Digital+literacy
80 https://www.gartner.com/en/information-technology/glossary/data-literacy
81 https://www.unesco.org/en/internet-conference
82 https://reskilling4employment.eu/en/who-we-are/
83 https://engagestandards.ieee.org/registration_UNHLPF_IEEE-roundtable.html
84 https://www.csis.or.id/publication/g20-toolkit-for-measuring-digital-skills-and-digital-literacy-framework-and-approach/
85 https://reskilling4employment.eu/en/who-we-are/
86 https://www.unesco.org/en/weeks/media-information-literacy-2023/plenary-sessions
87 https://www.broadbandcommission.org/advocacy-targets/5-e-finance/
88 https://www.worldbank.org/en/publication/globalfindex
89 https://www.undp.org/publications/human-and-economic-impact-digital-public-infrastructure
90 https://www.undp.org/publications/human-and-economic-impact-digital-public-infrastructure
91 https://policyaccelerator.uncdf.org/whats-new/mauritania-regulatory-framework
92 https://www.jra.legal/post/the-low-value-payment-system-in-colombia
93 https://setkab.go.id/en/govt-issues-regulation-on-national-strategy-for-financial-inclusion/
94 https://findbiometrics.com/kenya-replaces-insurance-cards-with-fingerprint-biometrics-070904/
95 https://www.undp.org/publications/human-and-economic-impact-digital-public-infrastructure
96 https://www.undp.org/publications/human-and-economic-impact-digital-public-infrastructure
97 https://www.broadbandcommission.org/advocacy-targets/6-msmes/
98 https://documents1.worldbank.org/curated/en/729451600968236270/pdf/Small-and-Medium-Enterprises-in-the-Pandemic-Impact-Responses-and-the-Role-of-Development-Finance.pdf
99 https://www.undp.org/kenya/blog/supporting-msme-recovery-and-resilience-during-and-post-covid-19
100 https://www.undp.org/kenya/blog/supporting-msme-recovery-and-resilience-during-and-post-covid-19
101 Alongside others that the FAO develops, such as the Digital Services Portfolio (DSP) https://www.fao.org/agroinformatics/projects/projects-detail/digital-services-portfolio-(dsp)/es

102 https://techcabal.com/2019/08/09/meet-asusu-the-startup-digitising-informal-savings-and-credit-associations-in-northern-nigeria/ and https://www.asusu.ng/about.html
103 https://www.undp.org/uganda/blog/undp-jumia-and-market-vendors-all-benefiting-unique-e-commerce-partnership
104 https://www.undp.org/uganda/blog/undp-jumia-and-market-vendors-all-benefiting-unique-e-commerce-partnership
105 https://www.broadbandcommission.org/advocacy-targets/7-equality/
106 https://sdgs.un.org/goals/goal5
107 https://www.gsma.com/r/wp-content/uploads/2023/07/The-Mobile-Gender-Gap-Report-2023.pdf
108 https://documents1.worldbank.org/curated/en/492871616350929155/pdf/A-Demand-Side-View-of-Mobile-Internet-Adoption-in-the-Global-South.pdf
109 https://unesdoc.unesco.org/ark:/48223/pf0000385723
110 https://www.gsma.com/r/wp-content/uploads/2023/07/The-Mobile-Gender-Gap-Report-2023.pdf
111 https://www.gsma.com/mobilefordevelopment/resources/policy-considerations-to-accelerate-digital-inclusion-for-women-in-low-and-middle-income-countries/
112 https://www.gsma.com/mobilefordevelopment/resources/policy-considerations-to-accelerate-digital-inclusion-for-women-in-low-and-middle-income-countries/
113 https://www.gsma.com/mobilefordevelopment/resources/policy-considerations-to-accelerate-digital-inclusion-for-women-in-low-and-middle-income-countries
114 https://www.unesdoc.unesco.org/ark:/48223/pf0000380861/PDF/380861eng.pdf.multi
115 https://blogs.worldbank.org/jobs/how-achieve-gender-parity-boardrooms
116 https://t.me/MildetBot
117 https://www.undp.org/kyrgyzstan/press-releases/eu-undp-spotlight-initiative-has-expanded-functionality-lawyer-bot-most-pressing-legal-issues-women
118 https://www.itu.int/en/mediacentre/Pages/PR-2023-09-12-universal-and-meaningful-connectivity-by-2030.aspx
119 https://www.itu.int/en/mediacentre/Pages/PR-2023-09-12-universal-and-meaningful-connectivity-by-2030.aspx
120 https://www.gsma.com/mobilefordevelopment/blog/slowdown-in-mobile-internet-connectivity-calls-for-urgent-action/
121 https://www.broadbandcommission.org/wp-content/uploads/dlm_uploads/2021/09/Executive_Summary_financing-broadband.pdf

Annex: Measuring progress towards achieving the 2025 targets

To read more about our advocacy targets and download our progress update infographic: https://broadbandcommission.org/advocacy-targets/

International Telecommunication Union
Place des Nations
CH-1211 Geneva 20
Switzerland

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