

The State of Broadband: Tackling digital inequalities

A decade for action

September 2020



BROADBAND COMMISSION
FOR SUSTAINABLE DEVELOPMENT



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Commissioner Insights / Case Studies Summaries

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Executive Summary

The world in 2020 is in a state of flux. While much progress has been made globally over the past ten years in expanding access to, and adoption of, broadband infrastructure and services, significant challenges remain in tackling digital inequalities, addressing the current widespread impacts of the COVID-19 pandemic, and in accelerating efforts towards achieving the Sustainable Development Goals (SDGs) by 2030.

Ten years ago, the global community witnessed the significant impact and widespread adoption of mobile communications that expanded across the world in the first decade of the 21st century. But Internet usage and broadband were still at nascent levels, especially in developing countries. Least developed countries (LDCs), in particular, had mobile and fixed broadband subscriptions in 2010 that were both less than 1 per cent of their population levels.¹

In 2010, in response to UN Secretary-General Ban Ki-Moon's call to accelerate efforts towards meeting the Millennium Development Goals (MDGs),² the International Telecommunication Union (ITU) and the United Nations Educational, Scientific and Cultural Organization (UNESCO) established the Broadband Commission for Digital Development.

After a decade of high-level advocacy, policy recommendations, numerous working groups with research reports, and the incubation of several significant partnerships, the Broadband Commission is one of the leading global advocacy groups working towards universal broadband connectivity to ensure that the broadband ecosystem is being leveraged for broader development underpinning the SDGs.

However, much work remains. Digital inequalities and uneven access and adoption of the Internet is prevalent not only between countries, but also within countries. These inequalities existed before the current crisis, and the COVID-19 pandemic has further highlighted the disparities in access to high-speed connectivity and online safety issues as many, if not most, adults and children on the planet in some way shifted towards remote work, learning, and communication activities.

Emphasizing the sheer toll that the crisis is imposing, the United Nations Economic Commission for Africa (UNECA) has warned that even with intense social distancing, the African continent alone, with its population of 1.3 billion, could have nearly 123 million cases this year, and 300,000 people could die of the disease.³ Globally, the World Bank is forecasting that under a baseline scenario, COVID-19 may push 71 million people into extreme poverty.⁴ The efforts to respond to the crisis have been enormous. In the first 90 days of the crisis alone, nearly 1 700 economic policy announcements were made by governments and institutions to ameliorate the extent of the impacts of the COVID-19 pandemic.⁵

The impact on childhood education is particularly acute for countries where digital divides already exist. Based on an August 2020 policy brief presented by the United Nations, school closures and learning disruptions have impacted 94 per cent of the world's student population; in low and lower-middle income countries, up to 99 per cent of the student population have been affected.⁶ This amounts to nearly 1.6 billion learners in more than 190 countries and the largest disruption of education systems in history. Some 23.8 million children may not return to schooling in the coming year because of the pandemic's economic impact alone.

Figure 1. Education in the time of COVID-19⁷



Besides educational impacts, more, and younger, children than ever before are online often without adult supervision which on one hand allows them to learn, play and socialize, but also exposes them to heightened risks of abuse, exploitation and other harm. Ensuring their safety remains a major concern. Additionally, the United Nations Children’s Fund (UNICEF) is warning that in a worst-case scenario, as many as 1.2 million extra deaths among children under the age of five could occur as funds are diverted from existing health programmes in order to combat COVID-19.⁸ Because of the overall impact that COVID-19 will have on the entire global population, the United Nations Development Programme (UNDP) is forecasting an overall decline in global human development (as measured in via its Human Development Index) for the first time since 1990.⁹

Therefore, the need for the global broadband community and partners to maximize its potential positive contributions to the global community is significant and cannot be overstated. The broadband ecosystem has the opportunity to play a positive role in society and economies, strengthening infrastructure, institutions, and systems that not only address the current challenges posed by the COVID-19 pandemic, but also prepare the world for future disasters. Building back better with broadband, preparing against future shocks, and ensuring universal equitable access is part of the new normal will require an emphasis on digital infrastructure and technologies in the pandemic response, recovery, and resiliency-building efforts.¹⁰

As the Broadband Commission reaches its ten-year milestone and recognizing that only a decade remains for the global community to reach the SDGs, the 2020 State of Broadband report provides an important venue to reflect on progress made in directing broadband Internet deployment for social development and economic growth across the world. The challenge of this unprecedented global pandemic has demonstrated the unquestionable centrality of access to connectivity for all in order to effect sustainable development, economic growth, environmental sustainability and social inclusion. COVID-19 has also uncovered and highlighted

the inequalities among and within countries, and the urgency of achieving universal access to broadband connectivity. This serves as an opportunity for the Broadband Commission and the global community to recommit in leveraging information and communication technologies (ICTs) to accelerate interventions for human progress, as exemplified by the considerable beneficial interventions initiated by the Commission's own members during the COVID-19 pandemic crisis. The achievement of the SDGs will require affordable, ubiquitous and meaningful broadband connectivity with the associated essential competencies and applications.

The Broadband Commission stands ready to spearhead global efforts for a digitally-enabled and digitally-driven pandemic response, recovery, rebuilding, and resiliency effort. Already the Broadband Commission has released an "Agenda for Action" underpinned by the three strategic pillars supporting 1) resilient connectivity; 2) affordable access; and 3) safe use of online services for informed and educated societies, with a number of short-term actions for impact committed to by Commissioners and their organizations.¹¹ And the Commission will continue its efforts towards the 2025 Advocacy Targets and support the Decade of Action towards the SDGs by focusing on its core capabilities and strengths. These include:

- 1) Continued high-level advocacy efforts and high-quality research on key topics related to the 2025 Broadband Commission Targets and the impact of broadband on accelerating progress towards the SDGs, in particular SDG 9c;
- 2) Leveraging the momentum and reach of the Broadband Commission to support other related initiatives, such as the UN Secretary-General's High-Level Panel and Roadmap for Digital Cooperation; and,
- 3) Continuing collaboration among Commissioners and their organizations to incubate highly effective and impactful partnerships (such as EQUALS,¹² GIGA,¹³ Child Online Safety Universal Declaration¹⁴ and others), and commitments to moving forward the achievements of the UN's 2030 SDGs.

The world is in a critical moment in history. Achieving the Advocacy Targets and the SDGs will depend on all of our commitment to our common responsibility to collaborate, partner and develop more inclusive and sustainable models. It is essential that all stakeholders are involved along the process to leverage the power of broadband and promote a faster and better recovery for all.

Endnotes

- ¹ In fact, ITU leadership at the time called for the world to invest in broadband infrastructure deployment in order to replicate the 'mobile miracle' and do for the Internet what had been done to greatly expand access to mobile communications. See: <https://www.itweb.co.za/content/VgZeyvJVEP4vdjX9>
- ² The eight Millennium Development Goals (MDGs) galvanized efforts by the world's governments and leading development institutions towards global challenges. These were: 1) Eradicate extreme poverty and hunger; 2) Achieve universal primary education; 3) Promote gender equality and empower women; 4) Reduce child mortality; 5) Improve maternal health; 6) Combat HIV/AIDs, malaria and other diseases; 7) Ensure environmental sustainability; and 8) Global partnership for development. More information can be found at: <https://www.un.org/millenniumgoals/bkgd.shtml>
- ³ See: <https://graphics.reuters.com/HEALTH-CORONAVIRUS/AFRICA/yzdpxoqbdvx/>
- ⁴ <https://blogs.worldbank.org/opendata/updated-estimates-impact-covid-19-global-poverty>
- ⁵ See: <https://www.asiapacific.ca/publication/tracking-asia-pacifics-financial-policy-response-covid-19>
- ⁷ Salomón. <https://twitter.com/andrespayarico/status/1276957010655838208>
- ⁸ <https://www.unicef.org/press-releases/covid-19-devastates-already-fragile-health-systems-over-6000-additional-children>
- ⁹ https://www.undp.org/content/undp/en/home/presscenter/pressreleases/2020/COVID19_Human_development_on_course_to_decline_for_the_first_time_since_1990.html
- ¹⁰ <https://news.itu.int/hows-how-we-are-seizing-the-moment-to-build-a-better-digital-future-for-all/>
- ¹¹ <https://www.broadbandcommission.org/COVID19/Pages/default.aspx>
- ¹² EQUALS is a Global Partnership for Gender Equality in the Digital Age initiated by the ITU, ITC, GSMA, UN Women and others. See: <https://www.equals.org/>
- ¹³ GIGA is the ITU and UNICEF Global Initiative to Connect Every School to Internet by 2030. See: <https://www.gigaconnect.org/>
- ¹⁴ <https://www.childonlinesafety.org/>; See also the ITU 2020 Child Online Protection (COP) Guidelines which are a comprehensive set of recommendations for all relevant stakeholders on how to contribute to the development of a safe and empowering online environment for children and young people. Targeting children, parents and educators, industry and policy-makers, the COP Guidelines are meant to act as a blueprint, which can be adapted and used in a way that is consistent with national or local customs and laws. See: <https://www.itu-cop-guidelines.com/>

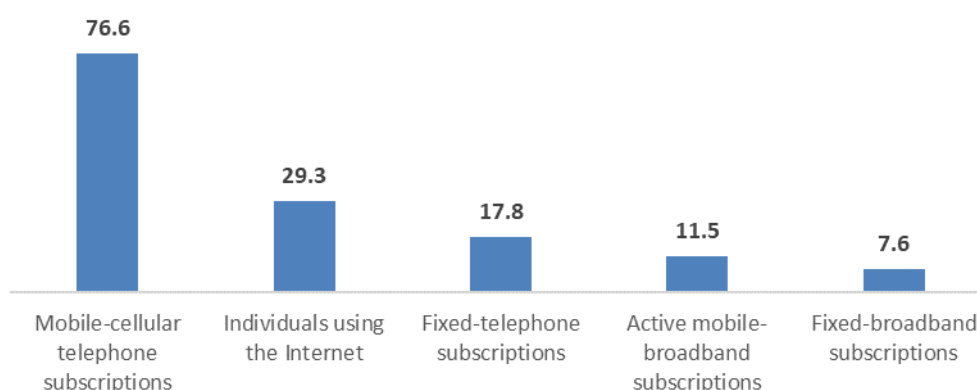
1. Introduction to the Broadband Commission - A decade of change and its role as a global multi-stakeholder partnership



1.1 The Broadband Commission: A decade of advocacy

Towards the end of the first decade of the 21st century, a growing public discourse recognized the transformational impact of telecommunications, particularly of mobile phones and the Internet. In 2005, *The Economist's* cover story focused on the "The Real Digital Divide"¹ with a photo of a young child holding a basic feature phone. By 2009, the cover story focused on "The Power of Mobile Money,"² as the proliferation of mobile telephony spread across Africa, Asia, and other parts of the developing world, and with it the range of benefits that mobile telephony makes possible.

Figure 2. Global information and communications technology (ICT) adoption in 2010 (per 100 inhabitants)³



While mobile-cellular subscriptions in 2010⁴ reached penetration levels of 77 per cent globally, and 68.5 per cent in developing countries, by comparison Internet usage was 29 per cent worldwide (2 billion users).⁵ But major disparities remained, as Internet usage in least developed countries (LDCs) in 2010 was only 5.5 per cent (a total of 46 million users). Broadband penetration in LDCs in 2010 was even lower, with 0.4 per cent penetration of mobile broadband (3 million subscriptions), and 0.1 per cent in fixed broadband (1 million subscriptions).⁶ As such, the former Secretary-General of the International Telecommunication Union (ITU) called for the world to invest in infrastructure deployment to replicate the ‘mobile miracle’ for broadband, urging countries “to do for the Internet and broadband what we have now so successfully achieved with mobile.”⁷

In response to UN Secretary-General Ban Ki-Moon’s call to accelerate efforts towards meeting the Millennium Development Goals (MDGs),⁸ ITU and UNESCO established the Broadband Commission for Digital Development in 2010. Its inaugural meeting was held on 11 July 2010 at ITU Headquarters in Geneva, led by co-Chairs President Paul Kagame of Rwanda and Mr. Carlos Slim Helú. The Commission is a high-powered community including CEOs and industry leaders, senior policy-makers and government representatives, heads of international agencies, academia, and organizations concerned with regional and global development.

The Commission defined a vision for a globally connected society with a focus on boosting the importance of broadband on the international policy agenda and expanding broadband access in every country to accelerate progress towards national and international development targets. The Commission’s first report and policy document, “A 2010 Leadership Imperative: The Future Built on Broadband,”⁹ called for a common vision of broadband inclusion for all, stressing the catalytic power of ICTs, and broadband in particular as a critical enabler for effective and sustainable solutions to the greatest global challenges in poverty, health, education, gender equality, climate change, and population shifts.

The work programme of the Commission centres around high-level advocacy to promote broadband in developing countries and underserved communities. One of the central roles of the Commission is to advocate for the development of broadband infrastructure and services to ensure that the benefits of this technology is realized in all countries – particularly by encouraging governments and industry to work together to devise strategies for driving the roll-out of these networks much more proactively.

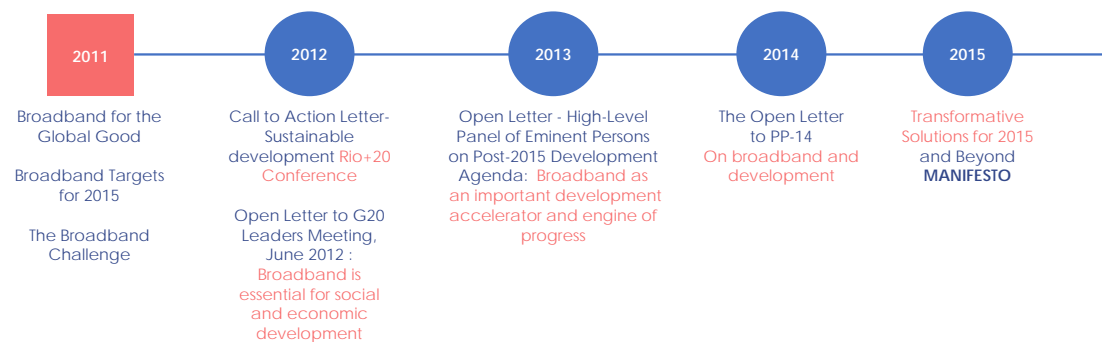
From 2010 through 2015, the Commission continued meeting bi-annually, launching working groups to explore key topics (for example, in September 2010, eight working groups were initiated focusing on science, youth, health, environmental sustainability, public-private partnerships, education, multilingualism, and science), and produced a range of policy documents, country analyses, and launched the annual State of Broadband report in 2012. That year, the Commission established a set of ambitious Broadband Targets for 2015, aligning its advocacy framework with the MDGs. When the first edition of the State of Broadband report was released,¹⁰ many countries had yet to implement any sort of formal national plan to promote broadband. In some regions, less than half of countries had developed broadband plans or comprehensive broadband policies such as the CIS region (only 43 per cent of countries in 2010 had a policy) and the Arab States (where 39 per cent of countries had a policy).¹¹

The first four advocacy targets identified by the Commission included:

- **Advocacy Target 1:** Making broadband policy universal – by 2015, all countries should have a national broadband plan or strategy or include broadband in universal access/service (UAS) definitions
- **Advocacy Target 2:** Making broadband affordable – by 2015, entry-level broadband services should be made affordable in developing countries through adequate regulation and market forces (amounting to less than 5 per cent of average monthly income)
- **Advocacy Target 3:** Connecting homes to broadband – by 2015, 40 per cent of households in developing countries should have Internet access (either fixed or mobile)
- **Advocacy Target 4:** Getting people online – by 2015, Internet user penetration should reach 60 per cent worldwide, 50 per cent in developing countries and 15 per cent in LDCs

That first State of Broadband report highlighted a phenomenon that has since continued: by the end of 2011 there were almost twice as many mobile broadband subscriptions as fixed broadband connections, and that ratio only continued to grow throughout the rest of the decade. Figure 3 highlights a number of the advocacy effort milestones during this initial period.

Figure 3. Highlights of advocacy efforts in the first five years of the Commission



Note: 14 thematic working groups were established over this time period and published topical research reports. See Box 1.

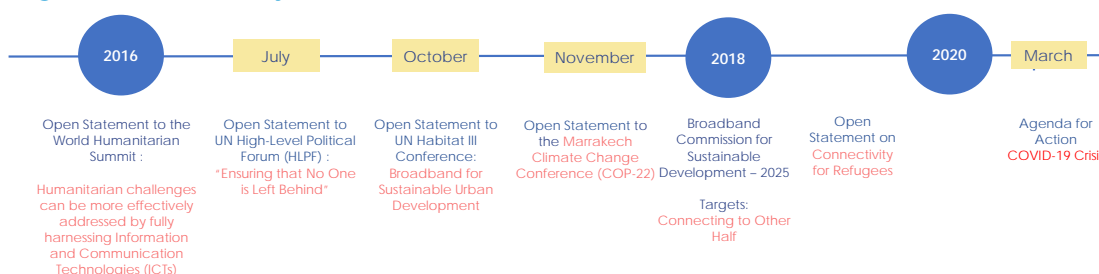
1.2 From Millennium Development Goals to Sustainable Development Goals

In September 2015, the Sustainable Development Goals (SDGs) replaced the MDGs as the international policy framework for socio-economic development and poverty reduction. In response, the Broadband Commission was re-launched as the Broadband Commission for Sustainable Development to showcase and document the power of ICT and broadband-based technologies for sustainable development.

The SDGs include ICT-specific targets in four of the 17 goals, particularly with regard to SDG 4 on Quality Education (target 4b), SDG 5 on Gender Equality (target 5b), SDG 9 on Industry, Innovation and Infrastructure (target 9c) and SDG 17 on Partnerships for the Goals (target 17.8).¹² There are at least 38 other targets that rely on universal and affordable access to ICT and broadband to reach achievement, including science and technology targets and references to Internet, infrastructure, innovation, information access, increased efficiency, early warning, disaster risk management, knowledge sharing, and data.

The revamped Commission continues its work and mandate, building upon the legacy of its predecessor by bringing together a high-powered community, including top CEO and industry leaders, senior policy-makers and government representatives, international agencies, academia and organizations concerned with development. As leaders in their fields, the Commissioners embrace a range of perspectives in a multi-stakeholder approach to promoting the roll out of broadband, as well as providing a fresh approach to UN and business engagement. Figure 4 highlights key advocacy milestones of the Commission between 2015 and 2020.

Figure 4. Advocacy Milestones, 2015 to 2020



Note: 15 thematic working groups were established over this time period and published topical research reports. See Box 1.

In 2018, given the shift towards the UN Development Agenda 2030 and new challenges of a digital world, the Commission re-evaluated and launched a revised framework of targets (Figure 5) for 2025 in support of 'Connecting the Other Half' of the world's population which is located mainly in the Global South where most children live today.¹³ These targets seek to expand broadband infrastructure, and Internet access and use by populations around the world in order to achieve the SDGs.

Figure 5. The Broadband Commission targets



Broadband Commission for Sustainable Development 2025 Targets include¹⁴:

Advocacy Target 1: *By 2025, all countries should have a funded national broadband plan or strategy, or include broadband in their universal access and services (UAS) definition*

Advocacy Target 2: *By 2025, entry-level broadband services should be made affordable in developing countries, at less than 2 per cent of monthly gross national income per capita*

Advocacy Target 3: *By 2025 broadband-Internet user penetration should reach:*

- i) 75 per cent worldwide;*
- ii) 65 per cent in developing countries; and*
- iii) 35 per cent in least developed countries*

Advocacy Target 4: *By 2025, 60 per cent of youth and adults should have achieved at least a minimum level of proficiency in sustainable digital skills*

Advocacy Target 5: *By 2025, 40 per cent of the world's population should be using digital financial services*

Advocacy Target 6: *By 2025, un-connectedness of micro-, small- and medium-sized enterprises should be reduced by 50 per cent, by sector*

Advocacy Target 7: *By 2025, gender equality should be achieved across all targets*

Chapter 2 of this report reviews progress towards achieving these targets.

1.3 The first decade of impact for the Broadband Commission Goals

As the Commission marks its tenth anniversary in 2020, its sustained advocacy efforts over the past decade have borne fruit across the global community as mindsets have changed in recognizing that ICTs and broadband are critical 'prerequisites' for economic and social development, rather than just mere potential 'enablers'. In 2019, several high-level organizations and groups launched reports advocating for greater emphasis on policy issues that focus on ensuring that the digital economy works in favour of everyone, with recommendations that mirror the advocacy efforts of the Commission. Most notably, the UN Secretary-General's High-Level Panel on Digital Cooperation report on "The Age of Digital Interdependence"¹⁵ and the European Union-African Union Digital Economy Task Force's report on "Accelerating the Achievement of the Sustainable Development Goals"¹⁶ were both released in June 2019. During the same period, the African Union Commission was developing the Digital Transformation Strategy (DTS) for Africa to harness digital technologies and innovation to transform African societies and economies. This strategy was adopted in February 2020 by African Union Policy Organs. Further, the "Road Map for Digital Cooperation" report of the UN Secretary-General released in May 2020 recognizes the role of the Commission in advocacy for global broadband targets.¹⁷

To date, the Commission's outputs have included an annual State of Broadband report published since 2010, 29 working groups on thematic areas from health to education, and two global convenings each year. The Commission also leverages its high-profile Commissioners to spread the message of Broadband for Sustainable Development at key events, conferences and functions. Since 2010, Commission membership has included 147 high-level Commissioners,

comprising 58 current Commissioners¹⁸ and more than 90 former members of the Commission. See [Annex 1](#) for the list of former Commissioners.

The Broadband Commission has issued a number of calls to action and high-level manifestos on behalf of the group's members, directed at Heads of State, key decision-makers at the G20, the United Nations and delegates at ITU's 2014 Plenipotentiary Conference (PP-14).

The Commission has also been instrumental in launching global initiatives:

- 1) "[EQUALS](#)", the ITU, ITC, GSMA and UN Women Global Partnership for Gender Equality in the Digital Age¹⁹;
- 2) "[GIGA](#)" the ITU and UNICEF Global Initiative to Connect Every School to Internet by 2030²⁰ and
- 3) [Child Online Safety Universal Declaration](#)²¹

The Commission's advocacy, research and engagement efforts are conducted in line with the Commissioners' own efforts to effect global progress towards the Commission's overarching advocacy targets. As an example, since 2010, much work has been done by the Commission and its working groups on various fronts to push towards Advocacy Target 2, 'Making Broadband Affordable'. These include a range of working groups dedicated to providing a strong message about broadband infrastructure financing and different investment models / approaches in addition to pure private or public investments (such as public-private partnerships, the strategic use of universal service funds (USFs), and others). The topic of investment and financing of broadband infrastructure has been a regular working group focus, and featured in several recommendations of the Commission. The first report of this kind was in 2013 with the Working Group report "Creating a Favorable Environment for Attracting Finance and Investment in Broadband Infrastructure."²² The topic was addressed again in the recently completed Working Group report on the Digital Infrastructure Moonshot for Africa²³ that addresses investment needs to achieve universal access in Africa by 2030, and will be analysed in the Working Group on 21st Century Financing and Funding Models (see Box 7).

Since 2010, the Commission has been on the leading edge, advocating for policies that can lead to universal and affordable broadband Internet access. The State of Broadband reports from 2012 to 2019 have presented 76 recommendations for stakeholders to take action. The range of unique messaging²⁴ includes:

1. Implement new approaches and frameworks for spectrum allocation and licensing
2. Use of universal service funds to develop broadband
3. Update ICT regulations and market approaches for sustainability
4. Converge regulation and convergent services
5. Lower taxations and duties
6. Make broadband affordable by adopting appropriate policy and regulation
7. Foster locally relevant content creation and local hosting
8. Promote free flow of data
9. Implement e-government initiatives
10. Monitor and collect reliable ICT data
11. Build human digital capacity and skills to help users, SMEs and public sector agencies make the most of digital opportunities
12. Apply open access approaches to infrastructure
13. Undertake public consultations on policy and regulation

14. Incentivize and accelerate broadband investment
15. Foster digital innovation by preserving intellectual property (IP) rights
16. Improve Internet of Things (IoT) and Smart City policy frameworks
17. Incentivize public-private partnerships (PPPs)
18. Promote advanced market commitments for rural broadband access
19. Identify champions or leaders in broadband to mobilize political and technology support
20. Improve right-of-way regulations
21. Encourage e-business and entrepreneurship
22. Support efforts to provide broadband connectivity to refugees and displaced individuals
23. Include in broadband plans efforts on digital inclusion, measures to protect children online, a focus on limiting environmental impacts and addressing climate, and public access initiatives
24. Expand initiatives to map network coverage and infrastructure needs, to develop priority lists for investment²⁵
25. Integrate gender in national broadband plans and strategies and undertake action plans to advance gender equality in access to broadband
26. Boost affordability and usability of broadband-enabled products and services, with a focus on addressing barriers faced by those at risk of being left behind

See [Annex 2](#) for the full list of recommendations since 2012 in the State of Broadband reports.

As the Commission reaches its 10th anniversary amid global Internet adoption levels passing the 50 per cent threshold, the work programme of the Commission enters a next phase to ensure no one is left behind.²⁶ Global efforts such as the UN Secretary-General's call for support in the SDG Decade of Action²⁷ and the work of the High-Level Panel on Digital Cooperation's Roadmap²⁸ can all leverage the momentum of the Commission's first decade of advocacy.

Box 1. Working Groups of the Broadband Commission from 2010 to 2020

Since 2011, the Broadband Commission has supported and encouraged Commissioners to self-organize around additional and related topics to the Commission's focus on sustainable digital development. As such, 29 working groups have emerged and developed research and policy position papers, presented on key issues, and have led to additional programmatic efforts.

- Broadband and Science (WG-Sci) - Chaired by VP European Commission - Ms Neelie Kroes-2011-2011
- Multilingualism (WG-M) - Chaired by President of CIPSH - H.E. Adama Samassekou- Since 2011
- LDCs (WG-LDCs) - Co-chaired by USG OHRLLS - Mr Sidi Diarra - Since 2011
- Health 1 (WG-H) - Director, The Earth Institute - Prof. Jeffrey Sachs - 2011-2013
- Climate Change (WG-CC) - Chaired by President & CEO Ericsson - Mr Hans Vestberg - 2011-2012
- E-Government and PPPs (WG-EGov) - Chaired by former minister of Telecommunications Finland - Ms Suvi Linden - 2011-2012
- Education 1 (WG-E) - Chaired by DG UNESCO - Ms Irina Bokova - 2011-2013
- Youth (WG-Y) - Chaired by Co-vice chair of the Commission and SG ITU - Dr Hamadoun Toure - 2011-2015
- Broadband and Gender (WG-BG) - Co-chaired by Administrator of UNDP & USG of UN Women - Ms Helen Clark & Ms Phumzile Mlambo Ngcuka - 2012-2015
- Financing & Investment (WG-FI) - Chaired by President IDB - Mr Luis Alberto Moreno - 2013-2014
- Task Force (WG-TF) - Chaired by President & CEO Ericsson - Mr Hans Vestberg - 2013-2014
- Platforms and Content In Support of the SDGs (PC-SDGs) - Director, The Earth Institute - Prof. Jeffrey Sachs - 2015
- Demand (WG-D) - Chaired by VP government and education of Intel - Mr John Galvin 2015-2016
- Digital Health 2 (WG-DH) - Co-chaired by CEO & President of Nokia and Head of Novartis Foundation - Mr Rajeev Suri & Dr Ann Aerts - 2015-2017
- Digital Gender Divide (WG-DGD) - Co-Chaired by DG of GSMA & DG of UNESCO - Mr Mats Granryd & Ms Irina Bokova - 2016-2017
- Technologies in Space and the Upper-Atmosphere (WG-Space) - Chaired by CEO of Inmarsat - Mr Rupert Pearce - 2016-2017
- Education 2 (WG-EDU) - Co-Chaired by DG UNESCO & VP Government and education of Intel - Ms Irina Bokova & Mr John Galvin - 2016-2017
- Digitalization Scorecard (WG-DS) - Chaired by CEO & President of Nokia - Mr Rajeev Suri - 2016-2017
- Epidemic Preparedness (WG-EP) - Chaired by CEO KT Corporation - Dr Chang-Gyu Hwang - 2017-2018
- Digital Entrepreneurship (WG-DE) - Chaired by VP European Commission - Mr Andrus Ansip - 2017-2018
- Digital Health 3 (WG-DH3) - Co Chaired by Intel and Head of Novartis Foundation - Dr Ann Aerts - 2017-2018
- Vulnerable Countries (WG-VC) - chaired by USG OHRLLS - Ms Fekitamoeloa Katoa 'Utoikamanu - 2017-2018
- Expert Group on a New Deal: Investing in our common future 2018
- Broadband for all: A "Digital Infrastructure Moonshot" for Africa - Chaired by CEO World Bank Ms Kristalina Georgieva -2018-2019
- Child Safety Online - Chaired by Dr Joanna Rubinstein and Mr Scott Gegenheimer - 2018-2019
- Working Group on Freedom of Expression and addressing Disinformation - Chaired by UNESCO and Dr Al Jaber
- Working Group on AI for Global Health - chaired by Novartis Foundation and Microsoft
- Working Group on 21st Century Financing Models for Sustainable Broadband Development, co-chaired by SAMENA Telecommunications Council and Zain Group
- Working Group on School Connectivity co-chaired by UNICEF, ITU and UNESCO

Endnotes

- 1 <https://www.economist.com/printedition/2005-03-12>
- 2 <https://www.economist.com/printedition/2009-09-26>
- 3 Source: ITU.
- 4 <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>; However, note this estimate is not for unique mobile subscribers and may overestimate true unique adoption because of multiple subscriptions per person.
- 5 This would double to 4.1bn by 2019. From ITU Key ICT Data, updated 28 October 2019. https://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2019/ITU_Key_2005-2019_ICT_data_with%20LDCs_28Oct2019_Final.xls; GSMA Intelligence data for 2010 is similar showing mobile-cellular telephone connections penetration was 76.0%, mobile broadband connections penetration was 12.7%.
- 6 From ITU Key ICT Data, updated 28 October 2019. https://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2019/ITU_Key_2005-2019_ICT_data_with%20LDCs_28Oct2019_Final.xls
- 7 <https://www.itweb.co.za/content/VgZeyvJVEP4vdjX9>; See also: <https://www.economist.com/special-report/2009/09/26/finishing-the-job>
- 8 The eight Millennium Development Goals (MDGs) galvanized efforts by world's governments and leading development institutions towards global challenges. These were: 1) Eradicate extreme poverty and hunger; 2) Achieve universal primary education; 3) Promote gender equality and empower women; 4) Reduce child mortality; 5) Improve maternal health; 6) Combat HIV/AIDS, malaria and other diseases; 7) Ensure environmental sustainability; and 8) Global partnership for development. More information can be found at: <https://www.un.org/millenniumgoals/bkgd.shtml>
- 9 https://www.broadbandcommission.org/Documents/publications/Report_1.pdf
- 10 <https://www.broadbandcommission.org/Documents/publications/bb-annualreport2012.pdf>
- 12 https://unctad.org/meetings/en/Presentation/cstd2016_p06_DoreenBogdan_ITU_en.pdf
- 13 See page 15 of the Broadband Commission Working Group report "Child Online Safety: Minimizing the Risk of Violence, Abuse and Exploitation Online" (October 2019). https://broadbandcommission.org/Documents/working-groups/ChildOnlineSafety_Report.pdf
- 14 https://www.broadbandcommission.org/Documents/BD_BB_Commission_2025%20Targets_430817_e.pdf
- 17 <https://undocs.org/A/74/821>
- 18 <https://www.broadbandcommission.org/commissioners/Pages/default.aspx>
- 19 <https://www.equals.org/>
- 20 <https://www.gigaconnect.org/>
- 21 <https://www.childonlinesafety.org>; See also the ITU 2020 Child Online Protection (COP) Guidelines which are a comprehensive set of recommendations for all relevant stakeholders

on how to contribute to the development of a safe and empowering online environment for children and young people. Targeting children, parents and educators, industry and policy-makers, the COP Guidelines are meant to act as a blueprint, which can be adapted and used in a way that is consistent with national or local customs and laws. <https://www.itu-cop-guidelines.com/>

- ²² <https://www.broadbandcommission.org/Documents/reports/WG-Fin-Invest-2014.pdf>
- ²³ See the report, "Connecting Africa Through Broadband: A Strategy for Doubling Connectivity for 2021 and Reaching Universal Access by 2030". https://www.broadbandcommission.org/Documents/working-groups/DigitalMoonshotforAfrica_Report.pdf
- ²⁴ Adapted from the Contribution from Commissioner Bocar Ba on an advocacy plan for the Broadband Commission.
- ²⁵ For example, the GSMA has created a tool that maps network coverage and overlays with population data to support MNOs identifying priority areas to expand their networks. The interactive maps are publicly available and are currently being used by a number of humanitarian organizations and private companies that need this connectivity data to offer their services in remote areas. The tool can be accessed at: www.MobileCoverageMaps.com
- ²⁶ <https://www.broadbandcommission.org/Documents/StateofBroadband19.pdf>
- ²⁷ <https://www.un.org/sustainabledevelopment/decade-of-action/>
- ²⁸ <https://digitalcooperation.org/>

2. Meeting the 2025 Targets: Connectivity, Affordability, Access, Equality and Use



The seven 2025 Advocacy Targets of the Broadband Commission reflect ambitious and aspirational goals and function as a policy and programmatic guide for national and international action. From the initial four connectivity goals established when the Commission was first organized, the targets were expanded to five in 2013 with the addition of the gender equality goal. In January 2018, at its Special Session at the Annual General Meeting of the World Economic Forum, the Broadband Commission extended and updated the five broadband targets to a total of seven targets focusing on the 2025 target date.¹ This chapter focuses on progress towards the 2025 Advocacy Targets, including a review of the progress made today since the start of the Commission in 2010.²

2.1 Advocacy Target 1

Making broadband policy universal: By 2025, all countries should have a funded national broadband plan or strategy or include broadband in their universal access and service (UAS) definition

Since 2011, the Commission has been tracking the number of countries with a national broadband plan or strategy as the first of its four main targets. In that year, data from the ITU noted that 112 countries worldwide had a national policy to promote broadband.

This target was revised, building on the Commission's previous target for national broadband plans, with an increased emphasis on implementation capacity through the specification that plans / strategies are funded. Box 2 highlights good practice elements of national broadband plans, digital agendas and digital strategies.

Box 2. Good practice elements of a national broadband plan, digital agenda and strategies

- Escape 'silo thinking' and apply across a range of different sectors.
- Make the case for broadband, specific to the needs and economic structure of that country, based on thorough market analysis and benchmarking.
- Be developed in consultation and based on consensus with a broad range of stakeholders. However, to ensure effective implementation, plans should also assign a coordinating agency responsible for implementing the plan overall which nevertheless 'owns' the plan, in conjunction with other involved bodies. Also, ensure that at the local / municipality level, responsibilities are clearly identified and assigned (maybe install Competent Broadband Offices at different levels) and coordination procedures are in place with the overall coordinating authority.
- Consider the vital issue of enforceability / execution. Who is responsible for enacting the plan? Who will monitor progress? How will implementation be funded?
- Consider both demand and supply side considerations. This may mean supporting the development of human skills, literacy, and demand among, for example, schools and SMEs, as well as taking into account the role of government in driving demand in many developing countries.
- Be forward-looking over a timescale of maximum 3-5 years (as longer time horizons may be difficult to predict in a fast-changing industry).
- Be broadly technology-neutral. Plans can include technology-specific measures (for example, consideration of spectrum issues to facilitate the roll-out of mobile broadband). However, there should be no major implications in terms of favoring specific technologies over others.
- Contain detailed, measurable goals and strategies to allow evaluation of progress. They may often also contain consideration of 'special interest groups', such as schools, hospitals, universities, diverse languages and access by minorities or people with specific needs.
- Address related legislation - e.g. privacy and data protection, security and digital signature, Government Interoperability Framework to ensure that e-government systems all work together.
- Fully understand and address legislation, regulations and processes regarding land ownership, access to public and private buildings and supporting infrastructure, and the issuing of construction permits and provide clear guidance and time-frames.
- Ensure that a thorough understanding is created of existing active and passive infrastructure through an all-encompassing and continuous mapping exercise.
- Probably the hardest balance to strike is the balance between high-level strategic direction and detail, as it contains important options and input, but allows the various implementing agencies some flexibility in how they should go about implementation.

Source: "Trends in Telecommunication Reform 2012: Smart Regulation for a Broadband World": <https://www.itu.int/pub/D-PREF-TTR.13-2012>

While countries around the world have been implementing national broadband plans to varying degrees, some plans have been more effective than others. For example in Latin America and the Caribbean region, Colombia's original Plan Vive Digital, launched in 2010, established time-bound and measurable goals to achieve in five years: 1) triple the number of municipalities

reached by at least one fibre-optic network; 2) connect to the Internet at least 50 per cent of microenterprises and SMEs, as well as 50 per cent of households; and 3) quadruple the number of broadband connections nationwide.

By 2014, Colombia ranked second in the Alliance for Affordable Internet's Affordability Drivers Index, having addressed a number of supply and demand issues including extending a fibre-optic network reaching (at the time) 62 per cent of municipalities (with a goal of having shared access in all towns of more than 100 inhabitants); overhauling its regulatory framework to allow for full convergence; establishing rules for promoting local software and content development; reducing or eliminating some import taxes; and developing and implementing digital literacy programmes.³

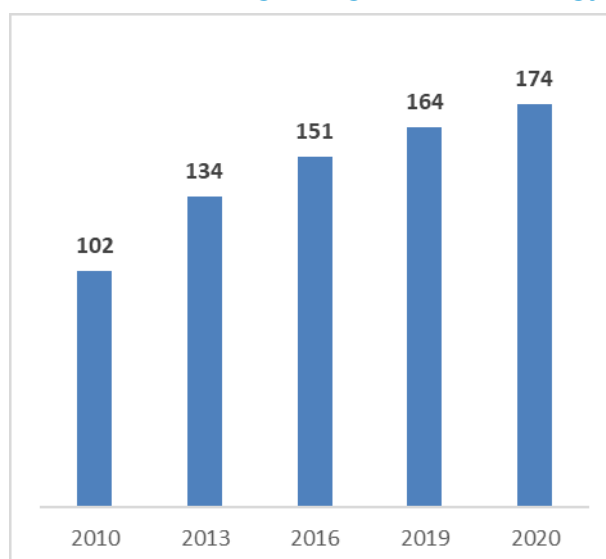
Building on the success of the first plan, the Colombian Government launched a follow-up plan, *Vive Digital para la Gente* focused on renewed targets, and projects around innovation, entrepreneurship, and wider economy effects. The eight years of the *Vive Digital* plans are credited with the significant expansion of Internet access and use in Colombia. Internet access has doubled, and aspects of the plan have led to closing of digital divides in education, income and age.⁴ Another example is Singapore's Next-Generation Nationwide Broadband Network (NGNBN), which is a pervasive and competitively priced ultra-fast fixed broadband network capable of delivering broadband speeds of 1 Gigabit per second or higher. The journey to roll out the network started in 2008 and achieved nationwide coverage in 2012. In addition, the open access framework that was put in place to support the network has spurred greater market vibrancy and helped lower the price of a typical 1 Gbps plan to about USD 28 per month.⁵ Singapore is also investing in its small- and medium-sized enterprises (SMEs) to digitalize them, through enabling easy-to-adopt, pre-approved solutions that can quickly be taken up and integrated with existing processes.

Today, 174 countries worldwide have a broadband plan of some sort, with several countries currently in the process of adopting one. This is an increase from 102 countries in 2010 (⁶). Policy emphasis has also shifted to encompass more balanced efforts to address supply and demand constraints (though some national fiscal measures are being implemented with a focus on broadband in response to the financial and economic downturn brought about by the COVID-19 pandemic, as discussed in Chapter 3).

Additionally, countries are focusing less on developing a new plan and rather looking to upgrade their universal access and service (UAS) definitions or terms of service, or developing broader digital transformation strategies and plans in which connectivity is one of the core components among other major issues. Annex 3: Countries with a focus on broadband in a National Broadband Plans, digital agenda or strategy includes the full list of countries achieving Advocacy Target 1.

Ensuring that national broadband plans are designed to increase network availability, affordability, safety and broadband adoption requires plans that are multifaceted, incorporating many, if not all, of the recommendations that the Commission has been advocating since its inception. Specifically, the State of Broadband reports have advanced recommendations to introduce, develop, and enhance broadband plans in the 2013, 2017 and 2018 reports, and in the 2019 report, ensure that broadband plans focus on digital inclusion, child online safety, limit environmental impacts and address public access initiatives. (See Annex 2: Full list of recommendations presented in the State of Broadband reports 2012 - 2019.) However, many recommendations from the reports directly address the goals intended of national broadband

Figure 6. Growth in the number of countries with a national broadband plan, or emphasis on broadband in a digital agenda or strategy, 2020



Note: National broadband plan or strategy includes: a plan, strategy or policy specific to broadband; digital plan, agenda, strategy or policy; ICT plan, strategy, or policy; or a communication plan, strategy, or policy. Countries may have identified several goals. A complete list of countries with NBP's will be available on the Broadband Commission's [website](#).

plans and these include, but are not limited to: plans that are focused on effective spectrum allocation, stimulating national fibre optic backbone and middle mile infrastructure, including potentially wholesale open access network infrastructure, as well as a focus on complementary issues such as broadband network mapping, updating building codes and regulations to ensure fibre-ready civil works, ensuring gender responsive broadband plans that specifically focus efforts on closing the digital divide and consideration of digital skills-building to increase child safety online as well as relevant enforcement mechanisms to protect children online.

While 174 countries now have a national broadband plan, more work must be done to monitor and evaluate the current state of implementation of these national plans. In some cases, even after publishing and endorsing a national plan, government transitions and competing priorities lead to situations where national plans are no longer effectively being implemented and/or targets need to be revised in order to have impact on broadband adoption.

As an example of one of the newest plans developed, Albania has adopted a new National Broadband Plan for Development (NBPD) for the period 2020-2025 in June 2020.⁷ The NBPD aims to further the development of broadband infrastructure throughout the country and address, in particular, the persistent digital divide. The four priority pillars that the new NBPD is built on are: (1) broadband infrastructure build-out, (2) strengthening of financing and broadening of funding basis, (3) spectrum management, and (4) sustainable competition. A key new element in the NBPD includes the planned enablement of public funding through universal service obligations (USOs) and State aid to further infrastructure coverage in rural and remote areas, mechanisms that were not available beforehand.

Beyond national plans, regional plans also exist. One such example is the ASEAN ICT Masterplan 2015 (AIM 2015) adopted by the countries of the Association of Southeast Asian Nations (ASEAN). The ASEAN ICT Masterplan 2015, "Towards an Empowering and Transformation ICT: Creating an Inclusive, Vibrant and Integrated ASEAN", was a five-year comprehensive plan outlining actions and projects in six pillars, and is linked to the 2016 Master Plan on ASEAN Connectivity.⁸ AIM

2015 has been superseded by the AIM 2020, “Propelling ASEAN towards a digitally enabled economy that is secure, sustainable, and transformative; and enabling an innovative, inclusive and integrated ASEAN Community.”⁹ ASEAN is cognizant that while achieving pervasive broadband speed is important, the broadband provided should be reliable and of high quality. Hence, Singapore facilitated the project on Transparency of Broadband Internet Access Speeds of ASEAN Member States under AIM 2015. The project sought to promote in ASEAN the provision of clear information on home broadband Internet access speeds that consumers could reasonably expect to experience, and to enable consumers to make informed choices on their selection of broadband plans. It also sought to promote better consumer protection and competition in the telecommunications sector of ASEAN Member States.

Another example is Africa’s Digital Transformation Strategy (2020-2030) adopted by the African Union in February 2020. One of its specific objectives is to create a harmonized environment necessary to guarantee investment and financing in order to close the digital infrastructure gap and achieve an accessible, affordable and secure broadband, across demography, gender and geography. The strategy also has a target for an additional 300 million people in Africa to come online by 2025.

Countries have adopted various approaches to funding these plans ranging from dedicated funds, to universal service funds, direct government subsidies and grants, government equity and debts to public-private partnerships.

2.2 Advocacy Target 2

Making broadband affordable: By 2025, entry-level broadband services should be made affordable in developing countries at less than 2% of monthly Gross National Income (GNI) per capita

In 2010, when the Broadband Commission was first established, available data on average broadband prices demonstrated prohibitive price levels close to, or above, total average monthly income. For example, in 2009 the ITU reported that entry-level fixed (wired) broadband connections cost nearly 174 per cent of monthly GNI per capita in developing countries. In Africa, the average monthly fixed broadband cost users nearly an estimated 483 per cent of monthly GNI per capita.

In purchasing power parity (PPP, in USD) terms entry-level fixed wired broadband connections cost on average 190 PPP\$ per month in developing countries in 2009, compared to only 28 PPP\$ per month in developed countries.¹⁰ Basic mobile services in 2009 averaged 15 PPP\$ in developed countries, compared to 18 PPP\$ in developing countries, demonstrating greater affordability in developed countries for basic voice and SMS service.

In USD terms, in 2010, fixed monthly broadband subscriptions costs ranged from a regional low in Europe at USD 26 to highs in Africa at USD 176 and in Asia & Pacific at USD 198 (Table 1).¹¹ By 2019, those prices dropped significantly from their base in 2010, and differences between regions have decreased as well.

Table 1. Average cost of a fixed broadband monthly subscription by region, in USD¹²

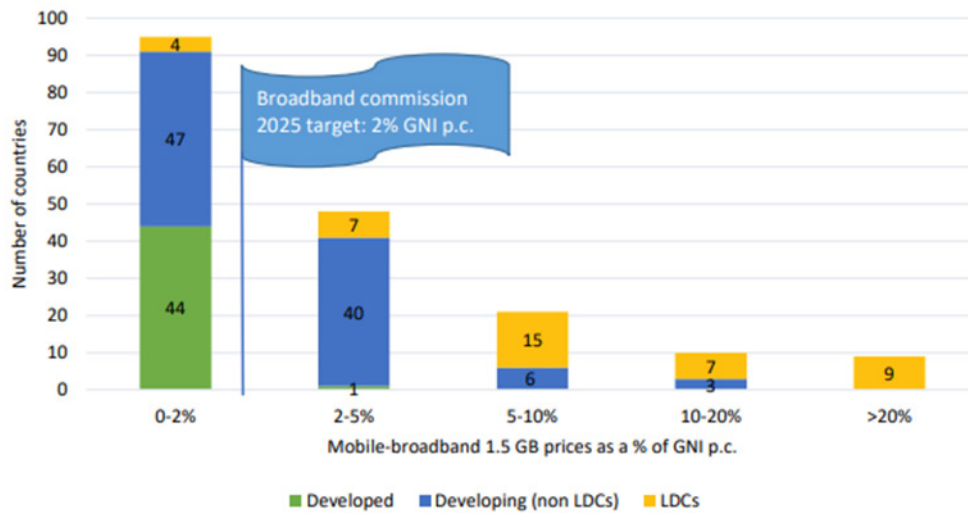
Region	2010	2019
Africa	176	33
Arab States	50	22
Asia & Pacific	198	22
CIS	83	11
Europe	26	29
The Americas	85	33

Note: Regions are based on ITU categories. Before the revision in 2017, the fixed-broadband basket was based on a monthly data usage of a minimum of 1 GB. In 2017, which was the last time data were collected with a 1 GB minimum monthly usage, in 154 of 177 countries the data cap was 5 GB or higher. Therefore, the impact of raising the minimum usage from 1 GB to 5 GB is minimal, and time series are therefore presented without a break in series.

The high cost of broadband service led the Commission to set affordability targets as a main focus of its advocacy efforts. In 2012, the first State of Broadband report noted that there were 48 developing countries that met the original 5 per cent threshold for monthly GNI per capita service costs for entry-level fixed broadband based on 2011 data.¹³ This was up from 35 developing countries the year before.

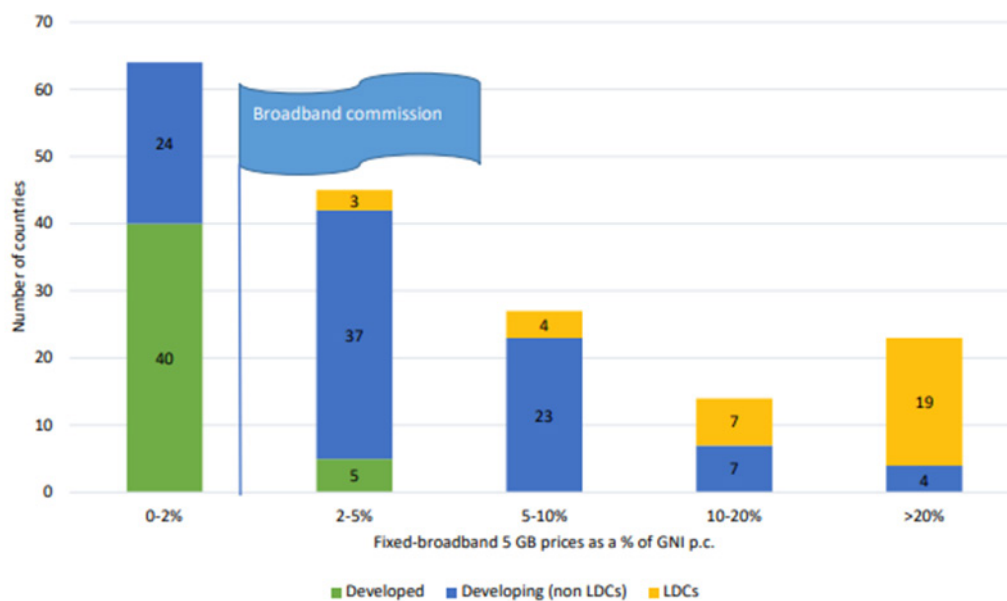
The affordability targets for entry-level fixed and mobile-broadband levels were adjusted to 2 per cent of GNI per capita with the revision of the Broadband Commission Advocacy Targets in 2018. The latest data from the ITU's May 2020 report on "Measuring Digital Development: ICT Price Trends 2019" demonstrates that 95 countries worldwide (of which 51 are developing, including four LDCs¹⁴) meet the 2 per cent affordability threshold for entry-level mobile-broadband service cost (for 1.5 GB of data) in 2019.¹⁵ While prices had been on the decline over the previous six years (the global average price of a mobile data basket of 1.5 GB shrank from 8.4 per cent of GNI per capita in 2013 to 3.2 per cent in 2019, at a compound annual growth rate of almost -15 per cent), for at least 40 countries, predominantly LDCs, entry-level mobile broadband services cost 5 per cent or more of average monthly GNI per capita. For 19 of those countries, the average cost is at alarming levels, greater than 10 per cent and 20 per cent (Figure 7).

Figure 7. Number of countries having achieved the Broadband Commission target with mobile broadband services, 2019¹⁶



In terms of entry-level fixed-broadband service, 64 countries worldwide meet the 2 per cent threshold for 5 GB of data. However, no LDCs meet the threshold. For 37 developing countries, including 26 LDCs, fixed-broadband price levels are above 10 per cent of monthly GNI per capita (see). For landlocked developing countries (LLDCs), only two meet the 2 per cent threshold for fixed-broadband services (Azerbaijan and Kazakhstan), as well as six small island developing States (SIDS). The six SIDS include the Bahamas, Bahrain, Mauritius, Seychelles, Singapore, and Trinidad and Tobago.

Figure 8. Number of countries having achieved the Broadband Commission target with fixed-broadband services, 2019¹⁷

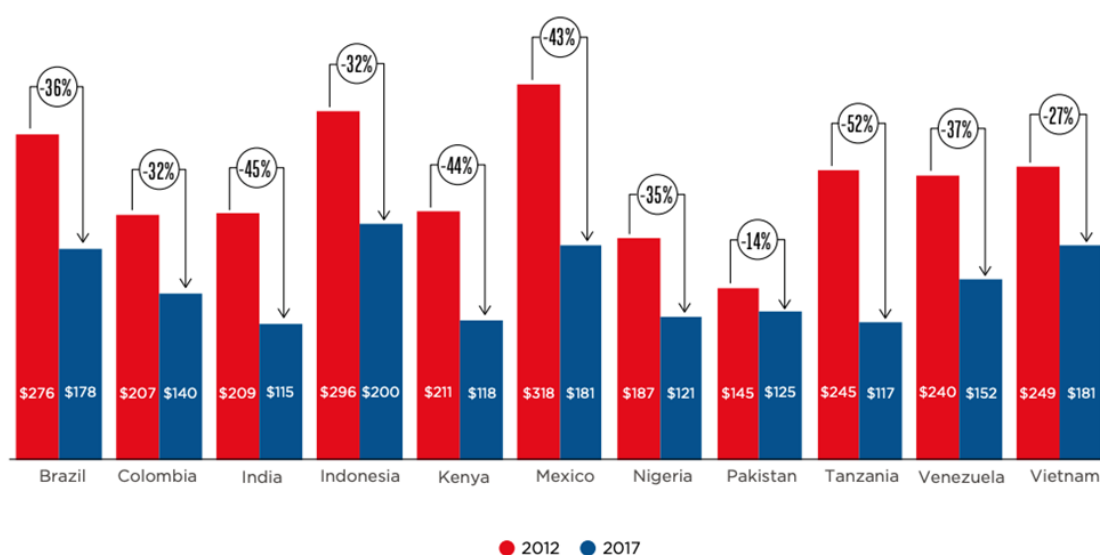


On the lower end of basic services, entry-level mobile voice price levels are broadly affordable across the world. In 107 countries, low-usage mobile-voice plans are available for less than 2 per cent of monthly GNI per capita; in 70 of those countries, it is below 1 per cent.¹⁸

However, while price levels for mobile-voice, mobile-broadband and fixed-broadband services have been on the decline and increasingly affordable over the past decade, and though the declines are even more dramatic when measured relative to incomes, these trends do not directly lead to rapid increases in Internet penetration. This suggests that other issues are posing significant barriers to Internet adoption. Greater affordability alone does not result in increased access.

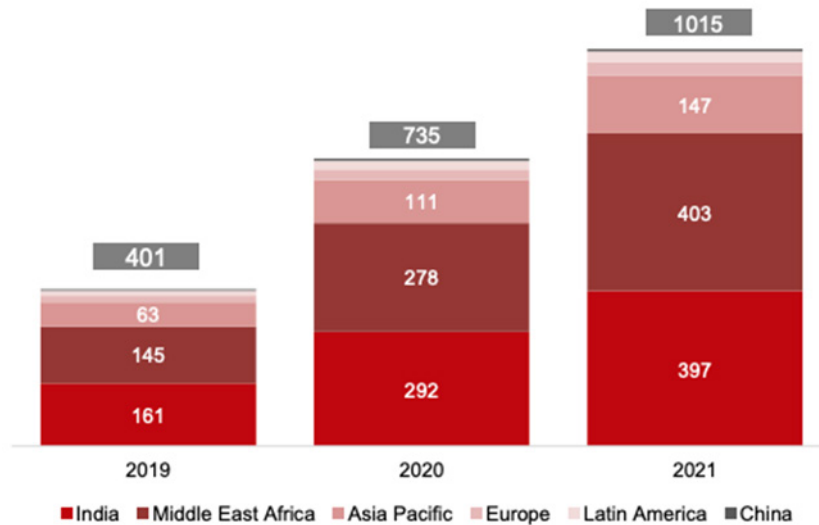
While Advocacy Target 2 is focused on the affordability of entry-level services, a concurrent focus on the cost of user devices is merited. Though the price of entry-level, Internet-enabled smartphones continues to decline rapidly, these costs remain prohibitive for hundreds of millions of users.¹⁹ A 2017 GSMA report notes that average smartphone prices remain between USD 100 to USD 200 in many markets, even while those prices have been on the decline²⁰ (see Figure 9). A 2020 report from the Alliance for Affordable Internet benchmarks the affordability of smartphones across 70 countries in the Global South and found that nearly 2.5 billion people live in countries where the cost of the cheapest available smartphone is a quarter or more of the average monthly income.²¹

Figure 9. Decrease in the average selling price of smartphones between 2012 and 2017²²



Smart feature phones, however, are playing a role in providing lower-income consumers with devices and services that have some elements of the smartphone ecosystem.²³ Smart feature phones are basic phones that include functionality replicating qualities of smartphones, such as operating systems that allow installation of third party applications, web browsers, higher resolution screens and cameras, all while running lower resource intensive processors with limited random-access memory (RAM). Estimates indicate there are approximately two billion active users of feature phones globally; between 700 million to one billion additional feature phones will be shipped in 2020 and 2021, respectively.²⁴ Device pricing data from the Alliance for Affordable Internet notes roughly a 50 per cent price drop between the cheapest-available smartphone and feature phone through mobile network operators across the Global South.²⁵

Figure 10. Cumulative Feature Phone Shipments Opportunity by Geography (Millions of Units)²⁶



Smart feature phones leverage the form factor of traditional feature phones, but with chipsets and operating systems that are able to support features that are similar to smartphones, such as high-speed Internet access and applications and services, at price points that are lower than average smartphone prices. One such comparison is in Figure 11.

Figure 11. Smart Feature Phone vs Entry Level Smartphone Example²⁷

Device Type	4G Smart Feature Phone	4G Smart Phone	BOM Cost Difference
Device	Jio Phone(2017)	Micromax Bharat 3 (2017)	
Baseband + Application Processor	LTE	LTE	1.5x
Display Size (in)	2.4	4.5	3.0x
Battery (mAh)	2000	2000	1.2x
RAM – Memory (GB)	512 – 4096	1024 – 8192	1.3x
Rear - Front Camera (MP)	2.0 – 0.3	5.0– 2.0	3.5x
Bluetooth, GPS, WLAN	Yes	Yes	1.1x
Others	PCBA and Passives	PCBA and Passives	1.5x
Application Ecosystem	KaiOS	Google Android	~
BOM Costs	\$23	\$55	2.4x

Contributing to affordability of services and devices is the issue of taxation as value added taxes increase the final prices that users pay and upstream taxation (such as import duties, etc.) is usually passed onto consumers directly. Sector-specific taxes on mobile communications companies differ significantly between countries and are in the range of 10 per cent for several regions (Asia-Pacific, Middle East & North Africa, and Sub-Saharan Africa), reaching as high as 20 per cent in Jordan, 24 per cent in Sri Lanka and 31 per cent in Guinea.²⁸

Taxation affects various elements of the connectivity value chain, including investment decisions, and is a topic that the Commission has been addressing in various advocacy and research documents. For example, taxation was a dominant topic in the 2013 Working Group report on attracting finance and investment²⁹ (including several recommendations of the Commission since 2012, see Annex 2: Full list of recommendations presented in the State of

Broadband reports 2012 - 2019), was addressed as part of the proposed roadmap in the Africa Moonshot Working Group,³⁰ and may be addressed again in the upcoming Working Group on 21st Century Financing and Funding Models (see Box 7). The uncertainty caused by the breadth, complexity, unpredictability, and levels of various taxes and contributions on digital infrastructure limits infrastructure deployment and reduces affordability (see Table 2). The use of different and complex taxes on broadband services needs to be balanced with policy priorities focused on digital inclusion policy.

Table 2. Types of taxes and ranges of rates applied to each ICT-related service, worldwide in 2018³¹

Type of taxes	Range of Rates										
	Content Services	Incoming international voice services	International Data Services	International Mobile Roaming	Internet Services	National Data Services	National Mobile Roaming	National Voice Services	OTT Content Services	Out-going International Voice services (IDD)	Pre-paid mobile top-up cards
VAT	0% - 27%	0% - 27%	0% - 27%	0% - 27%	0% - 25%	0% - 25%	0% - 27%	0% - 27%	0% - 27%	0% - 27%	0% - 27%
Sector Specific	0.1% - 17%	0.1% - 15%	0.1% - 13%	0.1% - 49.77%	0.1% - 40%	0.1% - 40%	0.1% - 26%	0.1% - 49.77%	1.5% - 13%	0% - 40%	0.1% - 49.77%
Sales	3% - 35%	0% - 27%	1.5% - 27%	4% - 27%	3% - 35%	1.5% - 35%	3% - 27%	1.5% - 35%	5% - 25%	3% - 27%	3.65% - 35%
Import Duties	5% - 40.55%	5% - 40.55%	5% - 40.55%	5% - 15%	5% - 40.55%	5% - 15%	5% - 15%	5% - 15%	7.7% - 15%	5% - 15%	5% - 25%

Investment in broadband network infrastructure can drive down end-user prices and increase affordability. For example, prior to the launch of the SEACOM undersea cable in 2009, Sub-Saharan Africa (SSA) was dependent on the 340 Gbps SAT-3 cable system for international bandwidth. During the period from 2009 to 2012, significant investment in seven new submarine cables occurred, bringing the total capacity on the continent to 25.7 Tbps. Today there are over 20 submarine cable operations connecting Africa and more are being planned that will double the existing submarine cable capacity.³² According to the World Bank, the new capacity has transformed the digital agenda in Kenya and East Africa in general with much higher quality and lower prices. In Kenya, spot short-term pricing terms for 1 megabyte of capacity dropped from more than USD 3 000 per month to a range of USD 400 to USD 600 per month. Longer term (for example, 15 to 20-year interregional unit basis) pricing terms were as low as USD 150 to USD 200 per megabyte a month. This pricing decrease resulted in a significant increase in bandwidth demand growing from 2 Gbps in 2008 to more than 50 Gbps by the end of 2011.

2.3 Advocacy Target 3

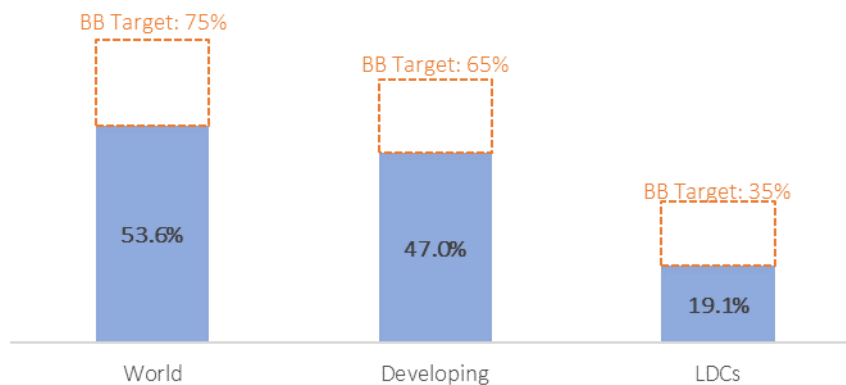
Getting people online: By 2025, Broadband-Internet user penetration should reach: i) 75% worldwide; ii) 65% in developing countries; and iii) 35% in Least Developed Countries

When the Commission first launched in 2010, global Internet usage was 29 per cent worldwide (2 billion users in 2010).³³ However, the global figure masked major disparities as Internet usage in LDCs in 2010 was only 5.5 per cent (a total of 46 million users). Broadband penetration in LDCs in 2010 was even lower with 0.4 per cent penetration of mobile broadband (3 million subscriptions) and 0.1 per cent in fixed broadband (1 million subscriptions).³⁴

As a result, broadband Internet user penetration became a key advocacy target by the Commission, starting first with a 2015 target of “Internet user penetration should reach 60 per cent worldwide, 50 per cent in developing countries and 15 per cent in LDCs.” This has evolved into the 2025 target as it stands today; ambitious targets aimed at connecting everyone, everywhere - with a special focus on developing country and LDC populations, which are the most vulnerable to being unconnected.

According to the latest ITU data, global Internet user penetration is currently at 53.6 per cent. (Note that the ITU tracks data on broadband as defined as more than 256 kbps.) Internet user penetration is 47 per cent in developing countries, and in LDCs, Internet adoption is at 19.1 per cent, well below the 35 per cent target. The proportion of individuals using the Internet in LLDCs in 2019 was 25.9 per cent and in SIDS it was 51.8 per cent.³⁵

Figure 12. Global Internet user penetration, and by region, vs Commission target, 2019³⁶



Note: For statistical purposes, broadband is defined as “everything greater than or equal to 256 kbit/s”. See ITU Handbook for the Collection of Administrative Data on Telecommunications/ICT, 2011: <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/handbook.aspx>.

However, it is important to note that although broadband penetration has continued to climb globally, the rate of growth varies greatly between different economic strata. The 2020 Inclusive Internet Index determined that only 9.9 per cent of households in low-income countries have access to the Internet, a figure that had risen a paltry 3.8 per cent over the prior year. Encouragingly, the Index also found that household connectivity in lower-middle income countries grew by nearly 12 per cent in the past year and has grown by 65 per cent since 2015.³⁷ Forecasts based on current growth projections suggest that global Internet adoption by 2025 may only reach 70 per cent, five percentage points below the 2025 Advocacy Target.³⁸ For LDCs, the forecasted level by 2025 is 31 per cent.

The tables and chart below highlight reference points of the changes in Internet user growth (millions and per 100 inhabitants), active mobile broadband subscriptions, and fixed broadband subscriptions between 2010 and 2019.

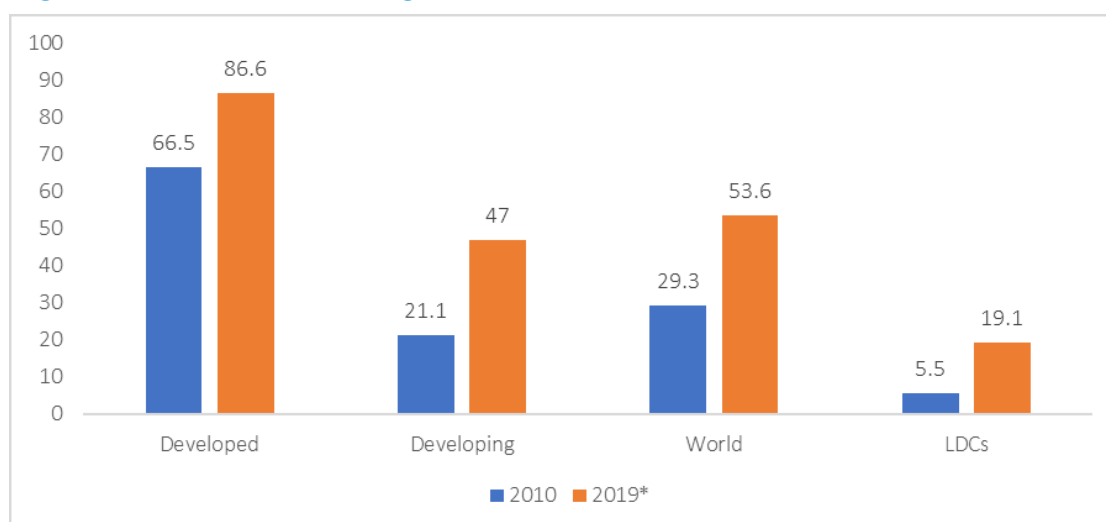
Table 3. Individuals Using the Internet, 2010 vs 2019 (in millions)³⁹

	2010	2019*
Africa	81	294

	2010	2019*
Arab States	85	221
Asia & Pacific	889	2,066
CIS	81	175
Europe	422	568
The Americas	453	779
TOTAL	2,012	4,103
Developed	826	1,107
Developing	1,203	3,020

Note: *estimate.

Figure 13. Individuals Using the Internet, 2010 vs 2019 (%)⁴⁰



Note: *estimate.

Table 4. Active Mobile Broadband Subscriptions, 2010 vs 2019⁴¹

	2010		2019*	
	(millions)	(per 100 inhabitants)	(millions)	(per 100 inhabitants)
Africa	14	1.7	354	34.0
Arab States	28	7.8	288	67.3
Asia & Pacific	286	7.3	3,802	89.0
CIS	60	25.7	206	85.4
Europe	190	28.7	671	97.4
The Americas	238	25.4	1,054	104.4

Note: *estimate.

Table 5. Fixed Broadband Subscriptions, 2010 vs 2019⁴²

	2010		2019*	
	(millions)	(per 100 inhabitants)	(millions)	(per 100 inhabitants)
Africa	1	0.2	5	0.4
Arab States	7	2.0	35	8.1
Asia & Pacific	214	5.5	614	14.4
CIS	19	8.3	48	19.8
Europe	151	22.8	220	31.9
The Americas	134	14.3	222	22.0

Note: *estimate.

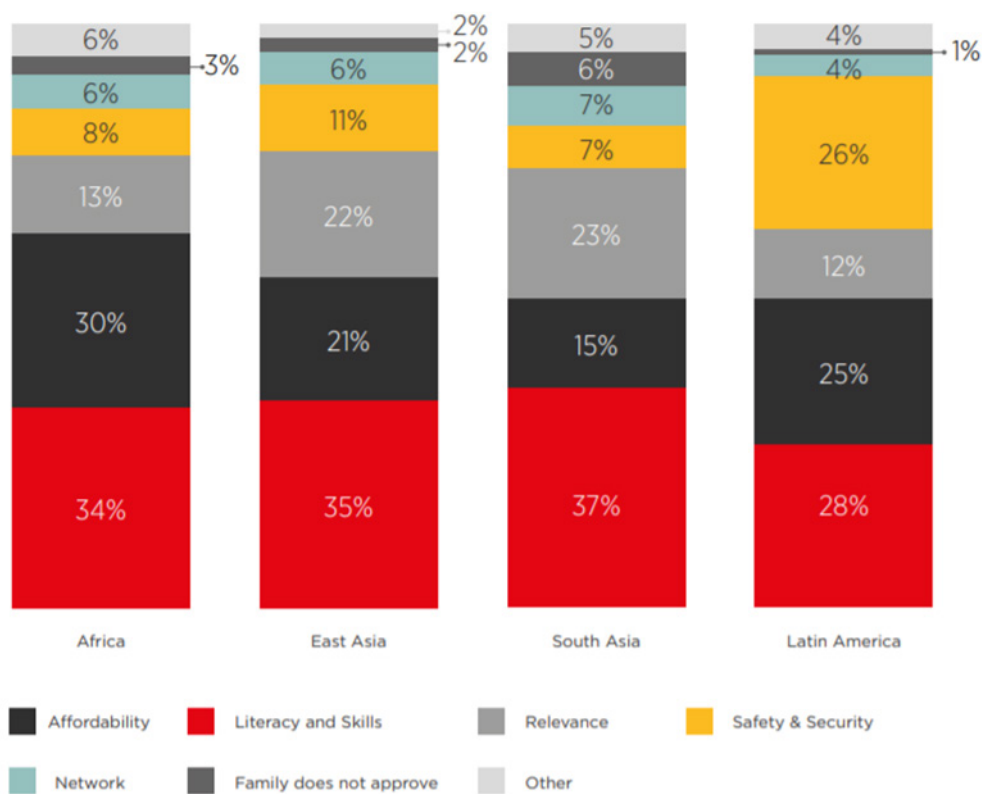
The gap in Internet adoption is driven by a number of barriers being addressed by the various advocacy targets and includes shortfalls in network coverage and user adoption even in areas where Internet connectivity is available, highlighting a usage gap driven by affordability, skills, and demand side issues.

2.4 Advocacy Target 4

Digital skills and literacy: By 2025, 60% of youth and adults should have achieved at least a minimum level of proficiency in sustainable digital skills

As noted above in Advocacy Target 2, while broadband Internet is becoming more affordable, lowering access prices does not directly translate into increased Internet adoption. Other barriers, such as skills and literacy, continue to act as gating factors for non-users.⁴³ Indeed, for mobile Internet use, literacy and skills remain the most significant self-reported barrier across the world: accounting for 37 per cent of responses in South Asia, 35 per cent in East Asia, 34 per cent in Africa and 28 per cent in Latin America (Figure 14).⁴⁴

Figure 14. The top barriers to mobile Internet use in surveyed low- and middle-income countries, by region⁴⁵



At a country level, the impact of literacy and skills is even more stark. For example, in 2010 in Brazil, a lack of Internet skills was the primary reason for not using the Internet (). And still today, in Bangladesh’s recent National ICT Household Survey 2018-2019 (Figure 16), the number one reason for not using the Internet is related to a lack of skills and ability: “Cannot use Internet”.⁴⁶

Figure 15). And still today, in Bangladesh’s recent National ICT Household Survey 2018-2019 (Figure 16), the number one reason for not using the Internet is related to a lack of skills and ability: “Cannot use Internet”.⁴⁷

Figure 15. Non-users in Brazil cite lack of skills as reason for not using the Internet⁴⁸

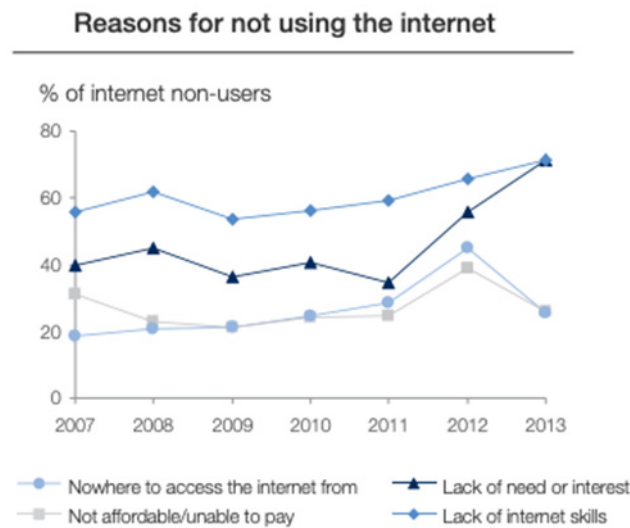
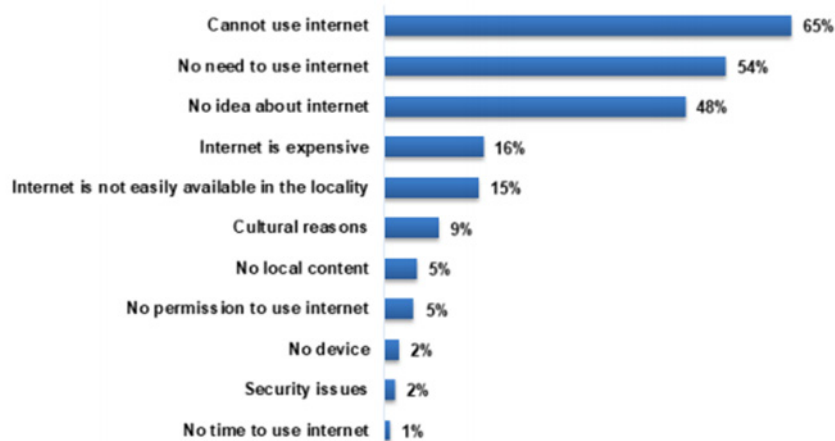
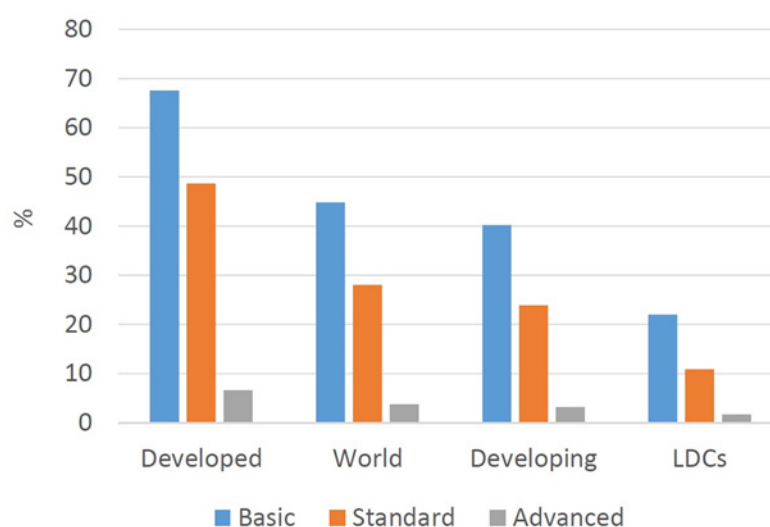


Figure 16. Self-reported reasons for not using the Internet⁴⁹



As Figure 17 notes, less than half of the world’s population even have the basic skills for computer-based activities, including sending e-mails with attachments, moving files, using copy and paste, and transferring files between devices. The figure demonstrates that across the world in 2017, less than 30 per cent of the world’s population was proficient in standard ICT skills (using basic formulas in a spreadsheet; and finding, downloading, installing and configuring software). Note that country-level data for certain countries is available from the ITU.⁵⁰

Figure 17. Percentage of individuals with ICT skills, by development status, 2017⁵¹

Note: As per the ITU, for each country, the value for basic skills is the highest value among the following four computer-based activities: copying or moving a file or folder, using copy and paste tools to duplicate or move information within a document, sending e-mails with attached files, and transferring files between a computer and other devices. The value for standard skills is the highest value among the following four computer-based activities: using basic arithmetic formula in a spreadsheet; connecting and installing new devices; creating electronic presentations with presentation software; and finding, downloading, installing and configuring software. The value for advanced skills is the value for writing a computer program using a specialized programming language.

However, these data are only a proxy for proficiency in digital skills as these measures are not comprehensive assessments of each individual's ability to engage in online activity. As part of the Global Alliance to Monitor Learning (GAML), the UNESCO Institute for Statistics (UIS) works with other partners towards establishing a framework and identifying assessment tools to monitor digital literacy skills.⁵²

Introducing digital skills into a school's core curriculums will help children build resilience and develop critical thinking⁵³ to engage in a harmonious way with technology, allowing them to maximize the opportunities of connectivity onward. It should also be a requirement for the educators. For example, Africa's Digital Transformation Strategy calls for the *review of education curricula in accordance with the evolving needs and trends in the digital economy and society, and to provide schools and other educational institutions with technology equipment and broadband Internet connections.*

Some of the challenges related to skills originate in the mismatch between the dominant languages used online compared to the actual composition of the global population. For example, 75 per cent of the world's online population is currently from the Global South and only 7 per cent of the world's languages are captured in published materials. Similarly, a bias online is toward sharing written content whereas the majority of the world's languages are oral.⁵⁴ The Commission also recognizes that some challenges are linked to, if not originate from, gaps in offline literacy. Data from 2019 show that millions of children are not in school, and more than half of those in school do not meet reading and numeracy proficiency standards. Among adults, 2018 data show that 773 million (of whom two-thirds are women) are illiterate (lacking reading and writing skills). Regions showing low Internet uptake are home to about half of the global illiterate population (South Asia) and to one-quarter of the population (Sub-Saharan Africa).⁵⁵ This underlines the need to look at digital literacy also in the frame of offline

literacy in order to develop appropriate policy action, and to demonstrate meaningful online engagement as linked to human development challenges.

Another challenge is the lack of impact and evidence of digital skills programmes for educators and students, including skills related to child online safety. This became all the more apparent during COVID-19. The Broadband Commission's Agenda for Action discussed in Chapter 4 provides a concrete solution by promoting the use of broadcasting capacity of the platforms. Considering the high level of criminal activity against children online and other risks and harms, investment in development and deployment of technologies to minimize risks, improve detection and reporting of illegal content is needed.

Acquiring digital competencies / skills should be considered as a lifelong learning endeavour. With the increasingly rapid pace of change in both technology and job requirements, as well as the penetration of technology in our daily life, the set of core digital skills is changing and will continue to change in the future. One example is security and data privacy skills, or more recently, the importance of engaging with artificial intelligence. Hence, the proficiency in digital skills should be a continuous and dynamic process. Government, private sector and other stakeholders should consider strategies as the ones included in the Agenda for Action for the safe use of online services for informed and educated societies to promote quality education and programmes that offer individuals lifelong learning opportunities to acquire digital skills and to recognize and value digital skills learnt in different settings (for example, through recognition of prior learning schemes).

Additionally, digital skills are becoming increasingly important to access employment and entrepreneurship opportunities. This reflects an agreement that these skills are more likely to be relevant across a very wide set of socio-economic and labour markets and that equipping individuals, especially children and youth, with these skills contributes to, among others, inclusive growth and decent work as targeted in SDG 8, as well as promoting peaceful and inclusive societies for sustainable development in SDG 16 by growing digital citizenship, among others.

Recognizing that digitalization will have a deep impact on our quality of life, Singapore strives to ensure that no one is left behind in this digital transition. Hence, Singapore launched the *Digital Readiness Blueprint* in 2018, which provides ten recommendations to equip everyone with access to technology and the skills needed to use that technology actively, meaningfully and safely. For example, one recommendation is to identify a set of basic digital skills for everyday activities, such as transacting digitally and using digital government services. In this regard, the Infocomm Media Development Authority of Singapore (IMDA) has created a *Basic Digital Skills* course,⁵⁶ which is open to all participants, especially seniors. Another Blueprint recommendation is to establish a *Digital Participation Pledge* (DPP), for businesses to commit to providing digital literacy training to employees and giving support for Digital Readiness activities and initiatives (amongst others). For example, in 2019, four special needs schools adopted the DPP and planned to incorporate basic digital skills into their academic curricula, to support the learning needs of students with mild intellectual disabilities and those with autism spectrum disorder aged between 13 to 20 years old.

Box 3. Working Group on School Connectivity

The Broadband Commission Working Group on School Connectivity has been positioned as a key consultation group and provider of advisory and advocacy guidance for the implementation of key projects related to this theme.

With the combined efforts of the Broadband Commissioners and other development partners and relevant external experts, the Working Group Members have advised on challenges and opportunities related to connecting schools around the world including: technologies, business models, funding mechanisms, articulating the link to quality and inclusive learning, ensuring schools provide the right skills for employability, and ensuring every young person has access to information, opportunity, and choice. Working Group Members also recognize that providing connectivity to every school - which are often the most ubiquitous public institution in even the most remote areas of a country - when designed properly also provides digital connectivity to the surrounding community and citizens.

Members of the Broadband Commission Working Group serve as an 'Advisory Group for GIGA', a Global School Connectivity Initiative coordinated by UNICEF and ITU with an objective to connect every school to the Internet and every young person to information, opportunity, and choice (see <https://gigaconnect.org/>). The Advisory Group act as a key consultation group that provides advisory and advocacy guidance on the development of the GIGA project. The output of the group will build on the work and research of the various members and their real market experience based on projects related to education connectivity, access, demand, etc. The work of the Advisory Group was designed so as to not cause any perceived or potential conflict of interest in future phases of the GIGA project that may involve procurement or implementation. The Working Group also acts as a key consultation group that provides advisory and advocacy guidance on the development and financing of the UNESCO led e-schools initiative which aims at ensuring connectivity of schools is articulated with inclusive and quality teaching and learning, and better learning outcomes and employability of learners.

The aim is to benefit from the unique composition of the Commission and its expertise and perspective of key members of the ICT industry, policy-makers and IGOs and to engage with all relevant stakeholders and sharing knowledge about other existing resources and initiatives.

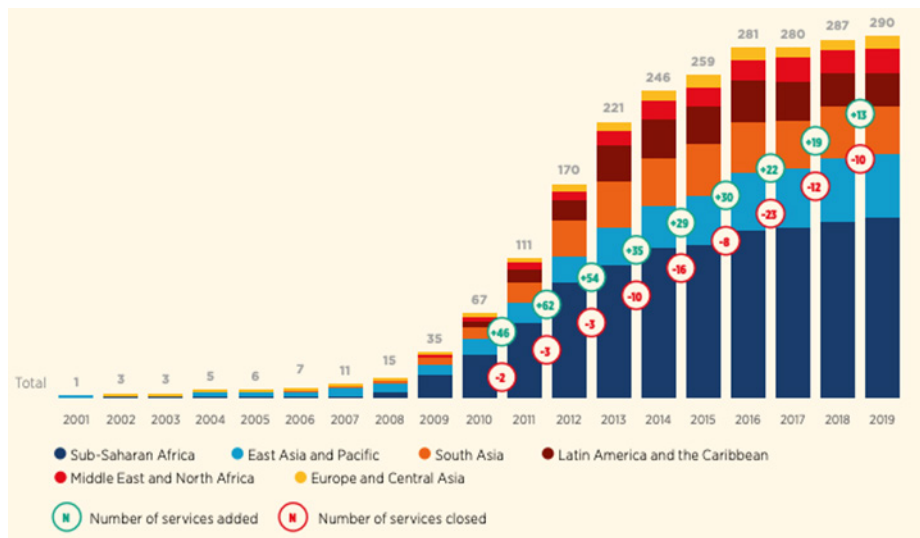
2.5 Advocacy Target 5

Digital financial services: 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 broadband and the Internet to realize the social and economic benefits of these digital resources, particularly for the billions of people without access to formal financial accounts.

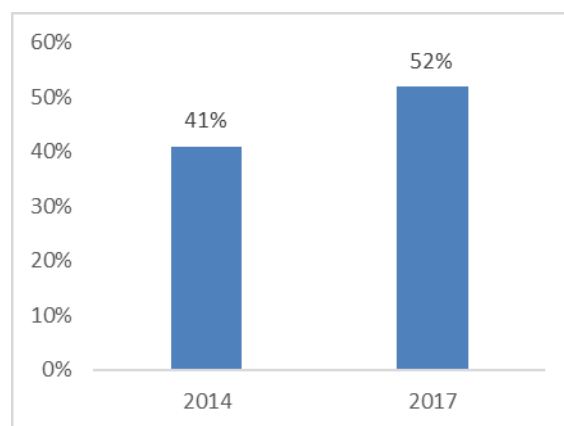
Towards the end of the first decade of the 21st century, Internet banking was at nascent levels in many developing countries. Currently, two billion adults are still without access to a bank account, but some 1.6 billion in this group have access to a mobile phone, presenting the opportunity to explore strategies that leverage the widespread use of mobile phones to offer financial inclusion options.⁵⁷ The first mobile money payment system was launched in the Philippines in 2001, while M-Pesa was launched in 2007 in Kenya.⁵⁸ By 2019, the number of registered active mobile money accounts reached 372 million worldwide, with 290 live mobile payments services across 95 countries (Figure 18).⁵⁹

Figure 18. Evolution of global mobile money landscape, 2001 to 2019⁶⁰



According to the World Bank’s Global Findex database, the number of people worldwide who have utilized digital financial systems in the previous 12 months increased from 41 per cent of the global population (above the age of 15) in 2014 to 52 per cent in 2017 (with women representing 46 per cent and men 54 per cent).⁶¹ Specifically, this indicator shows the percentage of respondents who report using mobile money, a debit or credit card, or a mobile phone to make a payment from an account, or report using the Internet to pay bills or to buy something online, in the past 12 months. It also includes respondents who report paying bills, sending or receiving remittances, receiving payments for agricultural products, receiving government transfers, receiving wages, or receiving a public sector pension directly from, or into a financial institution account, or through a mobile money account in the past 12 months.

Figure 19. Globally, percentage of the population that have made or received digital payments in the past year (% age 15+) (female and male) (2014 versus 2017)⁶²



However, significant regional differences exist in terms of overall percentages of the adult population who have made digital payments with regional lows in the Arab world (26 per cent in 2017) and Sub-Saharan Africa (34 per cent), compared to 92 per cent in Europe and North America (Table 6).⁶³

Table 6. Proportion of Individuals who made or received digital payments in the past year⁶⁴

Region	2014	2017
Arab world	20%	26%
East Asia & Pacific	44%	62%
Euro area	87%	92%
Europe & Central Asia	69%	78%
Latin America & Caribbean	38%	46%
Middle East & North Africa	-	45%
North America	92%	92%
Sub-Saharan Africa	27%	34%
World	41%	52%

As women are the most excluded from the formal financial sector, the African Union (AU) Summit, in February 2020, offered African women and girls various platforms and opportunities to rally support and advance actions towards the implementation of commitments on gender equality and women's empowerment (GEWE). In this respect, The AU Commission works with relevant partners, including the private sector, towards promoting and advocating greater financial inclusion and the greater use of digital financial solutions across the continent. Two programmes have been developed. These are (1) "An African Union Financial Inclusion Policy And Regulation Initiative" focusing on coordinating continental and national Digital Financial Services policies and regulation, providing technical advisory services to Member States and developing harmonized policy and regulation frameworks to advance financial inclusion in Africa, and (2) "The establishment of a Pan African Accelerator Centre" to support the development of DFS Innovative solutions catered to excluded segments of the population. In addition, it is expected that the development of financial services will facilitate greater intra-African trade and put in place the needed cross border payment systems in the operationalization phase of the African Continental Free Trade Area (AfCFTA).

Other efforts to increase the number of people engaged in the digital financial transactions include Mastercard's recent commitment to financially include one billion people by 2025, as well as 50 million small business and 25 million women entrepreneurs, to the digital economy.⁶⁵ This builds on the programme's success of connecting 500 million into the digital financial economy.⁶⁶ New digital payments innovations, such as Libra and digital wallets like Facebook's Novi, also are working toward greater financial inclusion in an increasingly mobile-connected world. Furthermore, the G20 has espoused High-Level Principles for Digital Financial Inclusion,⁶⁷ the International Monetary Fund (IMF) tracks financial access in its annual Financial Access Surveys (FAS)⁶⁸, and other efforts, such as by the UK Space Agency International Partnership Programme, incorporate the use of Earth Observation (EO) satellite systems and Global Navigation Satellite System (GNSS) to allow for greater access to financial services in development countries (see Figure 20⁶⁹).

Figure 20. Use cases for space technology in the finance sector

Insurance	Credit	Payment and transactions
<ol style="list-style-type: none"> EO and GNSS support risk modelling to inform insurance policies EO and GNSS support portfolio monitoring and risk mitigation EO and GNSS facilitate the design of efficient index-based insurance products EO and GNSS supports remote decision-making on verification of insurance claims 	<ol style="list-style-type: none"> EO and GNSS support loan portfolio monitoring EO and GNSS support remote decision-making on credit risk profile 	<ol style="list-style-type: none"> Satellite communication enables payments and transactions in remote areas

The adoption of digital payments and the expansion of digital payment infrastructure are accelerating, according to the Bank of International Settlements (BIS).⁷⁰ Forecasts published before the pandemic predicted that non-cash transactions will post a compound annual growth rate (CAGR) of 12.7 per cent through to 2021, with developing markets set to show a 21.6 per cent CAGR, led by emerging Asia at 28.8 per cent over the next five years. These rates may accelerate as the world transitioned to rely more heavily on cashless transactions during the pandemic. Developing markets are expected to account for around half of all non-cash transactions worldwide by 2021, overtaking the mature markets for the first time, whose current share stands at 66.3 per cent. The BIS notes, however, that this trend toward digitization could negatively impact unbanked and older consumers.

Singapore has invested early in digital transformation, working with industry partners to digitalize businesses to seize opportunities in the digital economy, for example, enabling digital processes such as paperless trade, e-invoicing and e-payments. In 2020, Singapore allocated more than SGD 500 million (approximately USD 359 million) to support businesses to acquire and deepen digital capabilities, including support for e-payments such as PayNow⁷¹ Corporate, amidst the COVID-19 pandemic. For example, the Digital Resilience Bonus (DRB) is provided as an additional incentive to encourage businesses to take action and adapt to the new normal, and to uplift the digital capabilities of a broad base of enterprises. Eligible enterprises that adopt PayNow Corporate and e-invoicing, as well as pre-defined categories of solutions for business process improvements, e-commerce and data mining and analytics can receive one-time cash payouts of up to SGD 10 000 (approximately USD 7 000).

In addition to the DRB, in helping drive e-payment adoption among hawkers and stallholders, Enterprise Singapore (ESG) and the Infocomm Media Development Authority (IMDA) are partnering the Housing and Development Board (HDB), JTC Corporation (JTC) and National Environment Agency (NEA) to accelerate the roll-out of a unified e-payment solution⁷² nationwide in HDB coffee shops, NEA hawker centres and JTC industrial canteens.

This initiative aims to reach out to 18 000 stallholders by June 2021. As of April 2020, approximately 3 500 stalls in these segments have adopted the unified e-payment solution. To encourage adoption, an e-payment bonus of up to SGD 1 500 (approximately USD 1 075) is being offered. SGD 300 per month (approximately USD 215) for any five months will be given to all stallholders (both existing users and new sign-ups by 31 December 2020) who have demonstrated sustained use of the e-payment solution.

Lingering challenges remain in the expansion and further adoption of digital financial services, such as regulatory hurdles, technical interoperability, illiteracy and limited skills, lack of identity and trust, and complementary services and solutions. See Box 4 on developments in digital identification and its role in increasing financial inclusion.

To propel further action toward the achievement of the SDGs, the UN Secretary-General established the Task Force on Digital Financing of the Sustainable Development Goals in November 2018, co-chaired by the UNDP Administrator (a member of the Broadband Commission) with Maria Ramos, previously Chief Executive, ABSA Group Ltd. Two other Broadband Commissioners are members of the Task Force: Phumzile Mlambo-Ngcuka, Executive Director of UN Women and Mats Granryd, Director General of GSMA. The Task Force launched its final report in August 2020, "People's Money: Harnessing Digitalization to Finance a Sustainable Future",⁷⁸ which points to digital disruption as a historic opportunity to reshape finance, amidst and beyond the current unprecedented crisis that has amplified the importance of digital technologies. Digitalization of finance is already making a difference, such

Box 4. Digital identification platforms - an enabler for financial inclusion

Almost everywhere in the world, having a government-recognized identity credential is a prerequisite for opening a bank account.⁷³ Yet, millions of people still lack trusted credentials. Globally, 20 per cent of unbanked adults cite lack of documentation as a reason for not having a bank account.⁷⁴ By enabling unserved and underserved people to prove who they are, and for financial institutions to verify identities with a high degree of assurance, including remotely, digital ID systems help minimize barriers to access for digital financial services. In turn, they help enable the transition to digital payments, which facilitate more transparent, efficient, and presence-less delivery of social assistance as well as more convenient payment for goods and services offered by the private sector, including those offered online.

The digital identity verification and authentication processes enabled by inclusive and trusted ID systems can greatly streamline bank account opening processes, enabling financial institutions to onboard customers at a fraction of the time and cost associated with traditional, paper-based processes, and reducing the documentary burden on customers. For example, India has been able to leverage the digital and biometric capabilities offered by Aadhaar ID system to open 150 million new accounts, contributing to an increase in financial inclusion from 35 per cent to 80 per cent within six years.⁷⁵ In Peru, over 680 000 people have been able to open a Billetrera Móvil (Bim) e-wallet remotely thanks to the digital identity verification enabled by the country's national ID system.⁷⁶ The platform enables users to transfer funds to relatives, pay bills, taxes, and school fees, facilitating over 1 million digital transactions per month.

Being able to verify identities remotely and to provide cashless transfers can be particularly important in emergency situations, such as the COVID-19 pandemic. Several countries have been able to leverage their digital ID systems to support the rapid disbursement of emergency transfers. In Chile, the national ID-linked basic account - Cuenta Rut - allowed the government to deposit payments of the 'Bono COVID-19' directly into the bank accounts of more than 2 million vulnerable Chileans within weeks of the start of the pandemic.⁷⁷

Digital identity and trust services are therefore a core foundational layer to support inclusive financial services. Together with digital payment platforms, they provide the means to move toward a cashless society, creating productivity gains, improving transparency, reducing fraud and leakage, and further improving user convenience while banking the unbanked.

Source: The World Bank

as increasing financial inclusion, embedding SDG risks and impacts in financial markets, and supporting citizen-centric finance. Fintech also underpins multi-billion dollar carbon markets, thus playing an essential role in the fight against illicit financial flows, and is pivotal to improving tax collection and boosting the effectiveness of public spending. By the end of 2020, 1 billion people worldwide are projected to use mobile money, with the highest penetration rates in Sub-Saharan Africa.⁷⁹

2.6 Advocacy Target 6

Getting businesses online: By 2025, improve connectedness of Micro-, Small- and Medium-sized Enterprises (MSMEs) by 50%, by sector

This target is particularly ambitious for MSMEs in those sectors that remain largely unconnected and incentivizes well-connected sectors to close the final gap. As an example, a sector in which MSMEs are 80 per cent unconnected, should have only 40 per cent unconnected by 2025. A sector in which MSMEs are 30 per cent unconnected should have only 15 per cent unconnected by 2025.

Measuring progress against this target is highly specific to the unit of observation (i.e. by country, or by sector within a country) and therefore necessitates disaggregation. An additional challenge is that MSMEs can be defined in very different ways between countries even within regional trading blocs. For example, in OECD's 2019 report on Southeast Asian SMEs going digital, each country in the region defines SME differently; aggregating nationally collected data is difficult.⁸⁰ As an example, in Cambodia, a micro firm is one with up to ten employees; in Malaysia, the threshold is five; in Myanmar, a small enterprise has 10 to 50 employees and in the Philippines, the definition is of firms between 10 to 99 employees. SMEs also vary in levels of ICT adoption. See Table 7.

Table 7. Stages of ICT adoption in SMEs⁸¹

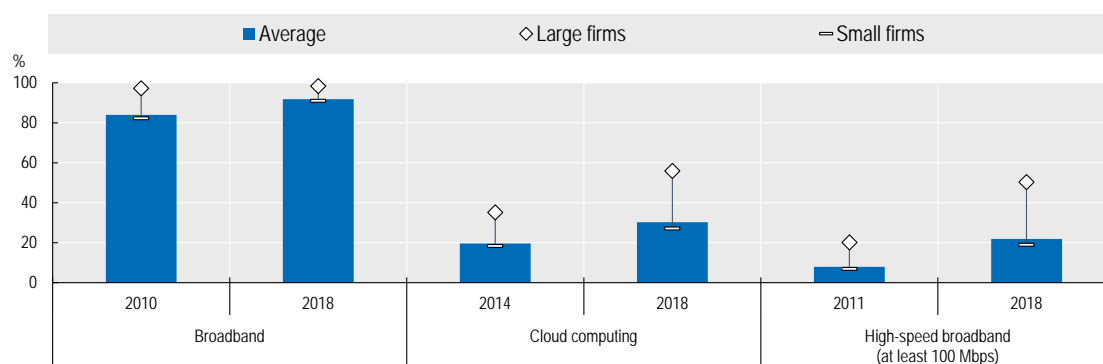
	Stage 1: Basic Communications	Stage 2: Basic Information Technology	Stage 3: Advanced Communications	Stage 4: Advanced Information Technology
Telecommunications	Wireline Wireless Facsimile		E-mail Broadband Video conferencing File sharing E-commerce VoIP	
Information Technology		Personal computer Basic software (spreadsheet; word processing)		<ul style="list-style-type: none"> • Database management • ERP • Inventory management • CRM

One relevant data source to track individual country progress is UNCTAD's database⁸² on core indicators on ICT use in business by enterprise size class, tracked annually, particularly indicator B3 (proportion of businesses using the Internet).

This data source segments businesses by size (all, micro-enterprises with 0-9 employees, small enterprises with between 10-49 employees, medium enterprises with between 50-249 employees, and large enterprises with 250 or more employees). However, this data is more robust for developed economies, with more limited reporting for developing countries. In 2019, a new Working Group on Measuring E-commerce and the Digital Economy was set up in UNCTAD, with a view to promoting better availability of relevant statistics, including on the share of businesses using ICTs for various purposes.⁸³

OECD's "Measuring the Digital Transformation 2019" report measures the diffusion of select ICT tools and activities in large and small businesses, providing comparisons between 2010 and 2018. This figure is indicative of the overall level of broadband access and ICT usage in large and small businesses in OECD countries.

Figure 21. Diffusion of selected ICT tools and activities in large and small businesses, OECD, 2010 and 2018⁸⁴



Note: Broadband includes fixed connections with an advertised download rate of at least 256 Kbps. For each ICT tool or activity, based on data available for 2010 and 2018, a simple OECD average was calculated for large and small firms.

Across the sample, MSMEs have lower levels of connectivity and technology utilization than large enterprises. Another OECD source illustrates different levels of adoption of digital technologies amongst SMEs in the OECD.⁸⁵

Data from the World Bank's Enterprise Surveys shows that worldwide, on average, 44.5 per cent of enterprises have a website and 68 per cent utilize e-mail, however, this ranges widely by country and between regions. The most recent data collected by country ranges over the past 14 years.

Table 8. World Bank Enterprise Survey Data on enterprises with web sites and using e-mail (latest available data by country, accessed May 2020)⁸⁶

Economy	Percent of firms having their own website	Percent of firms using e-mail to interact with clients/suppliers
All	44.5	68
East Asia & Pacific	33.7	68
Europe & Central Asia	62.5	82
Latin America & Caribbean	49.7	84
Middle East & North Africa	52	60.5
South Asia	31.4	54.9
Sub-Saharan Africa	30.5	56.9

Ensuring that MSMEs are connected improves their own competitiveness, particularly if they are located in expanding digital economies where online business transactions are increasingly the norm. A key barrier in this regard is the difference in skills between age groups, income levels, gender, and education levels, as noted above. Other measures to support greater adoption of broadband by MSMEs include adjusting building and civil works codes to include duct work for fibre optic cabling, and targeted training programmes for business use of broadband.

Also, connectivity for MSMEs requires firstly sustainable funding. African economies unfortunately, for example, are extremely exposed to external shocks due to dependence to external financing. For instance, remittances that have been the largest source of international financial flows to Africa since 2010, accounting for about a third of total external financial inflows as a share of GDP stands at 11.6 per cent of Africa's GDP. Due to the impact of COVID-19 on all economies including countries of origin of Africa's external financial flows, this trend has to be addressed through improvement of domestic resources mobilization and subsequent reduction of the continent dependence and assurance sustainable financing schemes.

In Singapore, the country launched the *SMEs Go Digital* programme in 2017 to make going digital simple for SMEs. Over 20 000 businesses have benefited, by adopting digital solutions to achieve internal efficiencies, cost reductions and better service offerings. There are three parts to the programme for businesses at different stages:

- (i) *Start Digital* provides simple tools for new SMEs to use in basic business functions, such as accounting and digital transactions;
- (ii) *Go Digital* allows SMEs to take up tried-and-tested digital solutions that are pre-approved by IMDA, in accordance with sector-specific Industry Digital Plans. SMEs can also tap on the Productivity Solutions Grant to subsidize the costs of taking up such pre-approved solutions; and
- (iii) *Grow Digital* connects SMEs to Business-to-Business and Business-to-Consumer e-commerce platforms that have regional or global reach. Through such platforms, SMEs can get matched to more overseas customers, with more access to financing and integration with cross-border logistics.

In addition, Singapore, with the support of countries like India and the Philippines, is driving *Business sans Borders* (BSB), an initiative to connect domestic and cross-border online business platforms and marketplaces. Leveraging artificial intelligence to match buyers with sellers

across participating platforms, BSB has the potential to improve discovery of SMEs domestically, regionally and internationally, increasing their trading opportunities. Supplementary value-added services such as logistics and trade financing will also be made available on BSB, and recommended to the SMEs after a trade is matched.

2.7 Advocacy Target 7

Achieving gender equality in access to broadband by 2025: By 2025, gender equality should be achieved across all targets

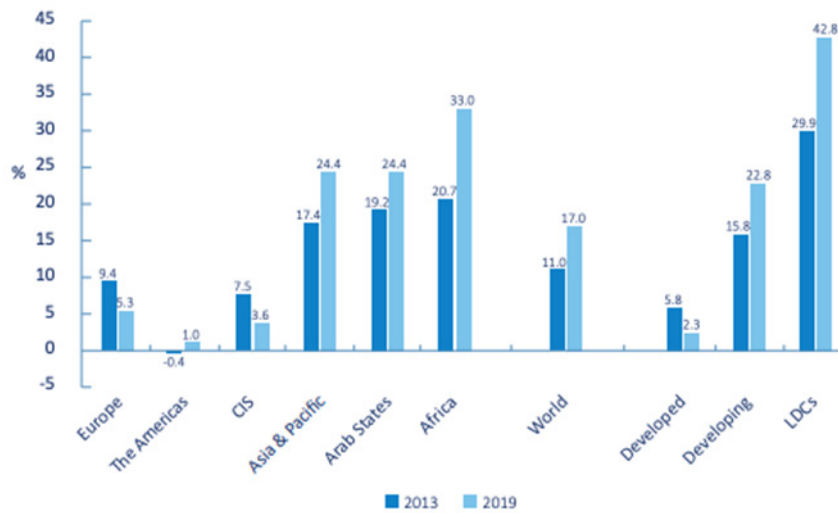
Since 2004, under the framework of the [Partnership on Measuring ICT for Development](#), the ITU has been working with National Statistical Offices from developing countries to collect gender-disaggregated ICT data through official household surveys.⁸⁷ This provides an input into policy-making, and also includes breakdowns by age, educational attainment, urban/rural, labour force status and occupation, among other attributes.

In all areas of broadband accessibility and use, women and girls are left behind. Gender equality must be realized in order to achieve all the 2025 Targets – including Internet users, digital skills, digital financial services, and MSMEs – and bring broadband and Internet connectivity to everyone, everywhere. In 2013, the Broadband Commission drew attention to the importance of gender equality among Internet users by introducing an additional target so that the benefits of broadband Internet reach everyone. As a result, from 2013 onwards, important disaggregated data has been collected to inform effective decision-making by policy-makers. While the gender gap has decreased in many developed countries, it has expanded in some developing countries – creating a specific need to support digital gender equality in these countries. Part of this effort also depends on ensuring that national broadband plans (as part of Advocacy Target 1) are gender responsive, building in a focus on programmes and policies designed to close the digital gender divide.

In most countries, the digital divide in gender circa 2008 to 2010 was in the single digits (with more men than women using the Internet).⁸⁸ However, there were some notable exceptions such as in New Zealand and Thailand where more women than men were using the Internet. However, there were also countries with divides in the double-digit percentage points where more men were online versus women, such as in Turkey, where in 2010, 50.1 per cent of men aged 15 to 74 were using the Internet, whereas only 29.9 per cent of women were online.

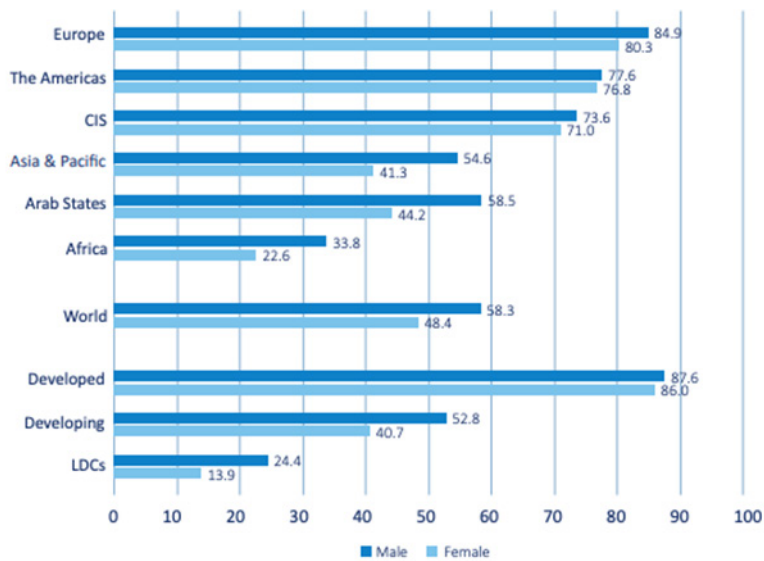
In 2019, the ITU published robust comparisons of the gender gap in Internet adoption around the world and the progress between 2013 and 2019. That analysis showed that the gender gap appeared to have widened significantly, with the proportion of men using the Internet versus women using the Internet rising from 11.0 per cent in 2013 to 17 per cent in 2019.

Figure 22. Internet user gender gap (%), 2013 versus 2019⁸⁹



Note: According to the ITU, the gender gap represents the difference between the Internet user penetration rates for males and females relative to the Internet user penetration rate for males, expressed as a percentage.

Figure 23. Internet penetration rate for men and women, 2019⁹⁰



Note: According to the ITU, penetration rates in this chart refer to the number of women/men using the Internet, as a percentage of the respective total female/male population.

The ITU data indicates that in almost two-thirds of countries worldwide, women are lagging behind men in the opportunity to take advantage of the power of digital technologies. Further, that gap has been growing in the world’s major developing regions: Africa, the Arab States and Asia-Pacific. Only in the emerging economies of the Commonwealth of Independent States (CIS) and the highly-connected countries of Europe have the digital gender divide slowly been narrowing. The Americas, as a region, stand alone in achieving near-parity in men’s and women’s digital use with a difference of less than one percentage point. Overall, the proportion of all women using the Internet globally is 48 per cent, compared with 58 per cent of all men. Also note, in LLDCs significantly more men than women use the Internet (31.7 per cent versus 20.2 per cent), however in SIDS, slightly more women use the Internet than men (52.5 per cent versus 51.1 per cent).

More men than women use the Internet in every single region of the world except the Americas where the differences are less than one percentage point. Similarly, across countries covered in the Inclusive Internet Index, men are 13 per cent more likely than women to have access to the Internet (down 3 per cent from last year), and the gender gap is a remarkable 34.5 per cent in low-income countries.⁹¹

Barriers to participation persist for women, even when access is widespread. The ITU data also show that fewer women than men own a mobile phone. Out of 85 countries surveyed, a substantially higher proportion of men had mobiles than women in 61 countries, with near-parity or a gender divide in favour of women in just 24 nations.

Since 2010, the GSMA has focused on sizing and addressing the mobile gender gap, launching the GSMA Connected Women Programme a decade ago.⁹² Their latest report highlights that currently 54 per cent of women in low- and middle-income countries use mobile Internet, but that women remain 20 per cent less likely than men to use mobile Internet. The mobile Internet gender gap is closing quickly, driven by South Asia, and women's awareness and perception of relevance of mobile Internet is increasing. Cost and digital skills remain key barriers to mobile ownership and mobile Internet use. And while video consumption is growing rapidly among men and women, lower levels of smartphone ownership limit women's use of mobile services. Overall mobile ownership helps women feel safer and more informed.⁹³

While mobile phone ownership and mobile Internet use have increased significantly among women, there is still a persistent gender gap. Women's lower levels of mobile ownership and use not only reflect existing gender inequalities, but also threaten to compound them. If the mobile gender gap is not addressed, women risk being left behind as societies and economies digitize. Considering Advocacy Target 3 (broadband-Internet user penetration levels by 2025), the result of this target would be that by 2025, 75 per cent of women worldwide would be using the Internet, as well as 65 per cent in developing countries, and 35 per cent in LDCs.

It is also important to note that while the available data focused on mobile access, ownership and Internet use, Target 7 is also about access to affordable and meaningful broadband. Government policy can play a particularly impactful role in supporting gender equality in the digital economy. For example, a 2018 analysis by the Web Foundation, A4AI and UN Women found that universal service and access funds (USAFs) could be a mechanism to financially support targeted programmes to increase Internet use by women.⁹⁴ In Africa, over 68 per cent of countries had a USAF in place; however, only three of 37 countries with USAFs have universal access policies that explicitly aim to connect women and girls through the fund.⁹⁵ Similarly, a 2018 report by the Web Foundation found that only a handful of countries are taking steps to meaningfully address issues of gender inequities online, and that even these actions in place are inadequate to advance true progress toward digital equality.⁹⁶

At a country level, in Bangladesh's recent National ICT Household Survey 2018-2019, over 90 per cent of responses by women who are not using the internet attribute 'cultural reasons', 'no permission to use Internet' and 'security issues'.⁹⁷ The household survey highlights the offline factors of the digital gender divide, such as cultural barriers and points to the importance of public access facilities, for instance, to support women's use of the Internet in certain places. The survey also showed that for-profit telecentres / cybercafes were used mostly by men, but that 45 per cent of respondents who accessed the Internet did so through public access points (such as libraries), and the vast majority of these users are women (82.5 per cent in the survey).

In Singapore, for example, the challenge for gender equality is not so much about an access gap, but rather ensuring that women have equal access to opportunities and are represented in the technology sector. To address this, the Singapore Women in Tech initiative was launched in 2019, with the aim of raising awareness on the benefits of gender diversity in business, and establishing Singapore as a global leader with an excellent environment of support for women in technology.

Other efforts in this regard include Mastercard's recent commitment to financially include all 25 million women entrepreneurs in the digital economy,⁹⁸ the USAID Women Connect Challenge,⁹⁹ including the recent awardees of the Advancing Women's Empowerment Fund,¹⁰⁰ and GSMA's "Reaching 50 Million with Mobile: A Practice Guide".¹⁰¹

2.8 Data Collection Challenges

Accurate and up-to-date data collection remains a challenge for some for the advocacy targets, as noted in the sections above. Many of the data series used for these targets come from national statistical agencies. The process of collecting data at these levels of granularity remains labour-intensive and incurs high cost burdens. Some of the data available for measuring progress against the targets is more robust for developed countries and remains a challenge for some developing countries. There may be other methodologies to collect similar, or proxy, datasets, and/or consider reporting on a semi-annual basis rather than annual. As such, further discussion on these challenges, possibilities and trade-offs is required.

Endnotes

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- ⁶⁸ <https://data.imf.org/?sk=E5DCAB7E-A5CA-4892-A6EA-598B5463A34C>
- ⁶⁹ UK Space Agency International Partnership Programme. "Space for Finance in Developing Countries". https://www.spacefordevelopment.org/wp-content/uploads/2020/01/118601_UKSA_Finance-Report-2019_EL_v9.pdf
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- ⁷² The system was rolled out in mid-2019 and unifies payments from 23 providers, so customers can use different cashless payment options at a single payment terminal at a food outlet. This also saves hawkers from the hassle of dealing with multiple e-payment firms.
- ⁷³ https://www.gpfi.org/sites/gpfi/files/documents/G20_Digital_Identity_Onboarding.pdf
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- ⁷⁶ <https://www.findevgateway.org/blog/2020/03/empowerment-begins-identity>
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- ⁸⁰ OECD. 2019. "Southeast Asia Going Digital: Connecting SMEs". <http://www.oecd.org/going-digital/southeast-asia-connecting-SMEs.pdf>

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- 83 <https://unctad.org/en/Pages/MeetingDetails.aspx?meetingid=2259>
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- 90 Source: ITU: <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2019.pdf>
- 91 theinclusiveinternetindex.eiu.com
- 92 <https://www.gsma.com/mobilefordevelopment/blog/10-years-since-the-launch-of-the-gsma-connected-women-programme/>
- 93 The full GSMA report: <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2020/02/GSMA-The-Mobile-Gender-Gap-Report-2020.pdf>; webinar recording and presentation slides available at: <https://www.gsma.com/r/gender-gap/>
- 94 <http://webfoundation.org/docs/2018/03/Using-USAFs-to-Close-the-Gender-Digital-Divide-in-Africa.pdf>
- 95 Note, however, that in some cases, USAFs have performed poorly and countries with USAFs typically have not experienced better results in Internet growth than countries without such funds. See for example: <https://www.unescap.org/sites/default/files/Universal%20Access%20and%20Service%20Funds.pdf>
- 95 Studies by GSMA and the ITU show that disbursement rates remain low in countries around the world.
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- 99 <https://www.usaid.gov/wcc>
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3. Meaningful digital transformation: Preparing for the next decade



With ten years remaining before the target year of 2030 for the SDGs, and five years before the 2025 Broadband Commission Advocacy Targets, much action is needed. Digital inequality persists in a range of different forms, and the COVID-19 pandemic has brought further attention to the gaps in digital infrastructure, digital skills, and safety and security as the world has been forced to live, work and learn remotely. This chapter focuses on preparing for the next decade: where we are heading and what needs to be done to succeed, both in terms of the 2025 Advocacy Targets as well as the UN Sustainable Development Goals global agenda. A specific emphasis is on addressing lingering barriers to connecting the unconnected while taking into consideration the lessons learned from the COVID-19 crisis.

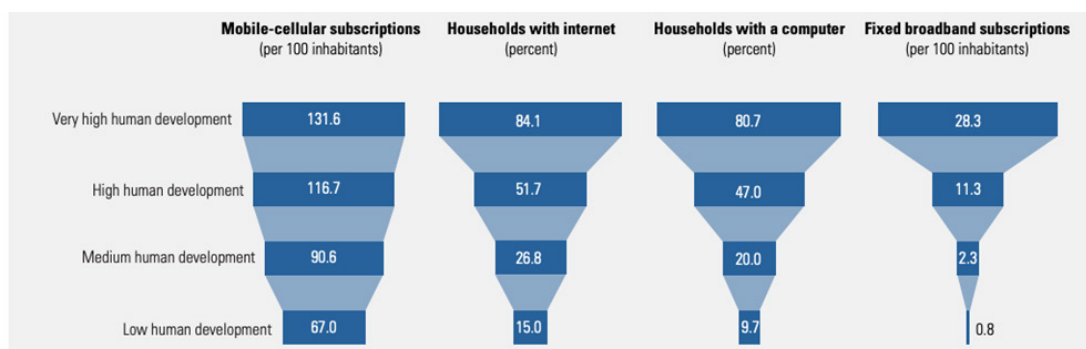
3.1 Persistent Digital Inequality

Digital inequality persists around the world, particularly gaps in universal access, even in countries with high-speed connectivity infrastructure. As the COVID-19 pandemic took hold across the globe in the first half of 2020, stark disparities in access emerged into the spotlight as most countries in the world issued home quarantine measures, and workers, families and individuals relied on Internet connectivity to communicate with the outside world and conduct commercial transactions.¹

Though the world celebrated major Internet connectivity milestones in 2019,² significant gaps and disparities in access and adoption of ICT remain both between countries and within.

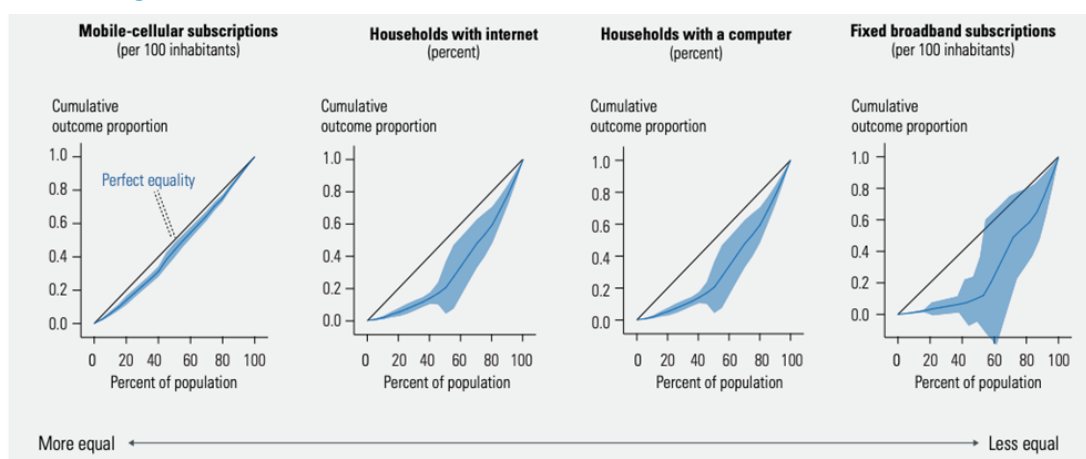
For example, the higher the level of overall human development of a country,³ the greater the access to technology. Digital divides between countries is greatest for high-speed fixed broadband subscriptions. See Figure 24.

Figure 24. Digital Divides by Human Development Index Groupings and by ICT, 2017⁴



Note: Data are simple averages across human development groups.
 Note that for advanced technologies and more intensive ICTs, inequalities are much greater. See Figure 25.

Figure 25. Concentration curves showing greater inequalities for advanced technologies¹²⁴



Note: Shaded areas are 95% confidence intervals.

Digital inequalities may also be widening within individual countries. Widespread requirements to shift to remote learning and remote working options for students and employees during the COVID-19 pandemic has particularly laid bare differences in network infrastructure, safety and readiness, as well as access to connectivity in both developed and developing countries. In the United States, differences in rural connectivity remain⁵ and some estimates, including from the US Federal Communications Commission (FCC), point to tens of millions of people without access to high-speed Internet in the country.⁶ Recent data from Pew Research Center from 34 different countries around the world show markedly different Internet user adoption rates within each country based on age, education levels, and income.⁷

Within countries, digital inequality is particularly stark with regard to students' lack of access to the Internet. Based on monitoring by UNESCO, at least 190 countries closed schools and education institutions nationwide as a result of the COVID-19, impacting 1.6 billion students globally.⁸ Even in urban areas, many students do not have broadband access at home, or

sufficient quality of service, and as a result of distance learning requirements put into place by their schools, are resorting to accessing Internet connectivity outside of local restaurants and libraries that are continuing to broadcast Wi-Fi networks.⁹ Some school districts in the United States are custom fitting Wi-Fi enabled school buses and driving them through neighborhoods for students to access¹⁰ and a number of schools and libraries have introduced or expanded programmes that provide Wi-Fi hotspot rental. See Box 5

Box 5. The Mobile Citizen program providing hotspots to non-profits

The COVID-19 pandemic has forced many Americans to work, learn, and entertain themselves from home. As a result of social distancing, there is significant increased interest in mobile hotspot programmes, which can provide Internet quickly and affordably to families.

Mobile Citizen, an EBS (Educational Broadband Service) success story is one such programme. Championed by a Voqal, a national collaboration of EBS licensees, Mobile Citizen provides low-cost mobile Internet with unlimited data plans exclusively to non-profit organizations, educational entities, and social welfare agencies. Mobile Citizen's service is available nationwide.

Qualified organizations can apply to buy Mobile Citizen devices and service by providing proof of their non-profit or educational entity status. Low-cost devices are usually available under USD 75 (plus shipping) and service is offered at an annual rate of USD 120. Made possible by EBS, and at the equivalent of USD 10 a month for unlimited Internet access, Mobile Citizen delivers service that provides more data and costs less than standard retail offers.

Mobile Citizen also partners with resellers that serve low-income individuals throughout the United States. Resellers pair Mobile Citizen's low-cost unlimited Internet service and devices with other programmes such as refurbished computers and digital literacy training.

Mobile Citizen's impact is significant. The organization serves over 350 non-profits and nearly 135 educational entities, including school districts, daycares, and camps. As of 31 March 2019, the estimated subsidized service provided was USD 12.1 million.

Mobile Citizen is currently expanding its reach across the United States by partnering with organizations that service those most vulnerable to COVID-19 and the downturn in the economy. By working with schools and non-profits to meet the needs of families in the areas of housing, food, education, and securing public resources, Mobile Citizen is dedicated to tackling the challenges of inequity head on.

Source: <https://voqal.org/>

The pandemic has heightened the risk of abuse and exploitation associated with children and young people spending more time online.¹¹ The technical note released this year by a number of organizations, "COVID-19 and its implications for protecting children online", recommends that industry should detect and address any sort of abuse (classified as criminal activity) against children online, and to protect children as they represent one-third of all Internet users.¹²

Providing educators and children with digital competencies relating to child online safety and effective reporting mechanisms of inappropriate content or contacts on platforms used for education and games would contribute to reducing the escalating violence against children online. A meaningful digital world should be safe per design, built with children's safety in mind. This is how the industry could play a prominent role in protecting children online.¹³ See Box 6.

Box 6. Child Online Safety Universal Declaration



The COVID-19 pandemic has revealed the urgency in prioritizing protection of children online. There are more and younger children than ever before accessing the Internet for learning, entertainment, gaming and socializing. This has heightened the risk of child abuse and exploitation online. According to NCMEC and Europol, it has led to a significant increase in the number of child sexual abuse material (CSAM) images and videos reported by tech companies.

Together we can support child-friendly digital services and cybersecurity measures to protect systems and platforms used by children. And we can promote educational campaigns and the training of children, educators and parents in online safety.

We can join forces, and, through collective action, we can tackle child online safety by providing a safer online environment for children and by blocking the proliferation of child abuse content over the Internet, all as an integral part of the public good that our institutions do every day.

As Broadband Commissioners, we invite all private and public sector entities, and non-governmental organizations to sign this Universal Child Online Safety declaration, based on their respective roles and mandates, and demonstrate their commitment to collaborate in their actions to ensure that all children can be safer online.

The ITU also released the [2020 Child Online Protection \(COP\) Guidelines](#) which are a comprehensive set of recommendations for all relevant stakeholders on how to contribute to the development of a safe and empowering online environment for children and young people. Targeting children, parents and educators, industry and policy-makers, the COP Guidelines are meant to act as a blueprint, which can be adapted and used in a way that is consistent with national or local customs and laws.

In developing countries, the impact on school age children is magnified. In Sri Lanka, less than 40 per cent of households with school-aged children have any sort of Internet-connected device, and less than 52 per cent have any sort of Internet connection.¹⁴ The risk of a digital divide also exists in highly connected countries and, for example, in Singapore the government introduced the *NEU PC Plus*¹⁵ programme to address this. Launched in 1999, the programme is continually enhanced to address the evolving needs of low-income households with students or person with disabilities, providing them with the opportunity to own a new digital device at an affordable price and free fibre broadband. It has helped more than 63 000 beneficiaries to date. In addition, Singapore also rolled out the *Home Access Programme* to support low-income

households without school-going children with subsidized broadband, and these households could bundle the fibre broadband with device bundles as options. Since its launch in 2014, more than 14 000 beneficiaries have benefitted.

Additionally, heavy reliance on mobile data for access to the Internet for many students makes learning from home cost-prohibitive in many countries such as the Philippines,¹⁶ while anecdotes from around the world highlight the lengths that students are going to access connectivity to continue their schooling and education at a distance.¹⁷ More can be done to improve affordability and digital skills preparedness among parents and children in order to break the cycle, and introduce the most vulnerable communities to the digital world smoothly and in a safer way.

Box 7. Working Group on 21st Century Financing and Funding Models for Sustainable Broadband Development

The UN Broadband Commission Working Group for 21st Century Financing and Funding Models for Sustainable Broadband Development is a cross-sector group of thought-leaders with representation from national regulatory authorities, telecommunications operators, digital Internet players, financial institutions, trade associations, academics and not-for-profit development organizations operating under the auspices of the Broadband Commission for Sustainable Development. It is co-chaired by Scott Gegenheimer, Group CEO – Operations of Zain Group, and Bocar A. Ba, CEO of SAMENA Telecommunications Council.

The Working Group has a mandate to explore and identify new and innovative funding, financing and investment strategies to address the challenge of extending broadband connectivity and services to the 3.6 billion people who remain unconnected today, particularly in Africa, Asia, South America and the Pacific Islands. Moreover, a significant proportion of micro-, small- and medium-sized businesses do not have sufficient connectivity to participate in the digital revolution meaningfully.

The goal of the Working Group is to provide governments and policy-makers with a set of policy recommendations for consideration to foster innovative funding, financing and investment strategies which can enable and empower existing and new business models to achieve the Commission's targets for broadband connectivity and adoption. To achieve this goal, the Working Group will study and explore different approaches in a technology- and business model-agnostic and objective manner to develop a set of policy recommendations for consideration. This may include examining how existing and new funding and investment models, including financing, can be adapted, augmented and expanded for the 21st-century digital economy, and where relevant, to address existing barriers to investment and funding.

3.2 Technology / Telecom response to COVID-19

As the world tackles the global COVID-19 pandemic, technology companies, and the broadband Internet ecosystem are addressing existing challenges directly through collaborative action. The COVID-19 pandemic has placed significant demands on telecommunications networks and technology applications and services worldwide. As the International Finance Corporation (IFC) has noted, the pandemic has unleashed a number of external shocks (both positive and negative) affecting demand for technology infrastructure, as well as the provision of supply (Table 9).

Table 9. Potential Demand and Supply Shocks of COVID-19 on Digital Infrastructure¹⁸

	Demand for digital connectivity and services	Supply of digital connectivity and services
Short-term (during lockdown)	Change in consumer usage patterns , including new data-intensive applications for individuals (such as video conferencing or streaming) and organizational change from business (including Cloud storage and computing, home-based work)	Disruption in the digital infrastructure supply chain , resulting in a higher cost of inputs (such as IT equipment and energy) and delays in investment projects Organizational changes stemming from social distancing of workers, resulting in higher costs of operations
Long-term (after lockdown)	A shift in consumer behavior , including permanent change in usage patterns for individuals and increased virtualization of business operations—both public and private—to strengthen resilience Income loss resulting from unemployment and the exit of private sector businesses	Exit of critical suppliers and distributors resulting from financial distress

In particular, data from networks around the world demonstrate significant spikes in residential, and overall, network demand and utilization as work and learning activities have shifted to online platforms. For example, Cloudflare data in Europe reveals up to 50 per cent increases in Spain and the UK,¹⁹ similar such increases year-on-year in-home broadband in the US,²⁰ and a 30 per cent surge in Internet traffic measured by Akamai and its content delivery network (CDN).²¹

For the most part, networks have managed the surges in traffic well, though in some instances, increased network congestion has resulted in declines in download speeds and increased network latency, such as measured by Ookla in Hubei, China at the start of the pandemic lockdown.²² In another example, COVID-19 measures in Singapore have also underscored the importance of Singapore’s continual post investments in connectivity infrastructure. While day-time network traffic has grown due to changed usage patterns driven by telecommuting and home-based learning, this is well within Singapore’s telco operators’ network capacity. Singapore’s telecommunications regulator continues to work with telecoms operators to further increase their buffers and ensure people can continue going online. In some countries, online streaming services and other content service providers have voluntarily reduced resolution levels and data file sizes to proactively and pre-emptively prevent network congestion issues.²³

The telecommunications and technology sectors are at the forefront of efforts to address the global pandemic head-on, as well as efforts to mitigate and address economic challenges caused by the pandemic disruption. The Broadband Commission has released an “Agenda for Action” underpinned by three strategic pillars supporting 1) resilient connectivity; 2) affordable access; and 3) safe use of online services for informed and educated societies, with a number of short-term actions for impact committed to by Commissioners and their organizations.²⁴ See Chapter 4, Figure 29 and Figure 30 for more information on the Commission’s Agenda for Action.

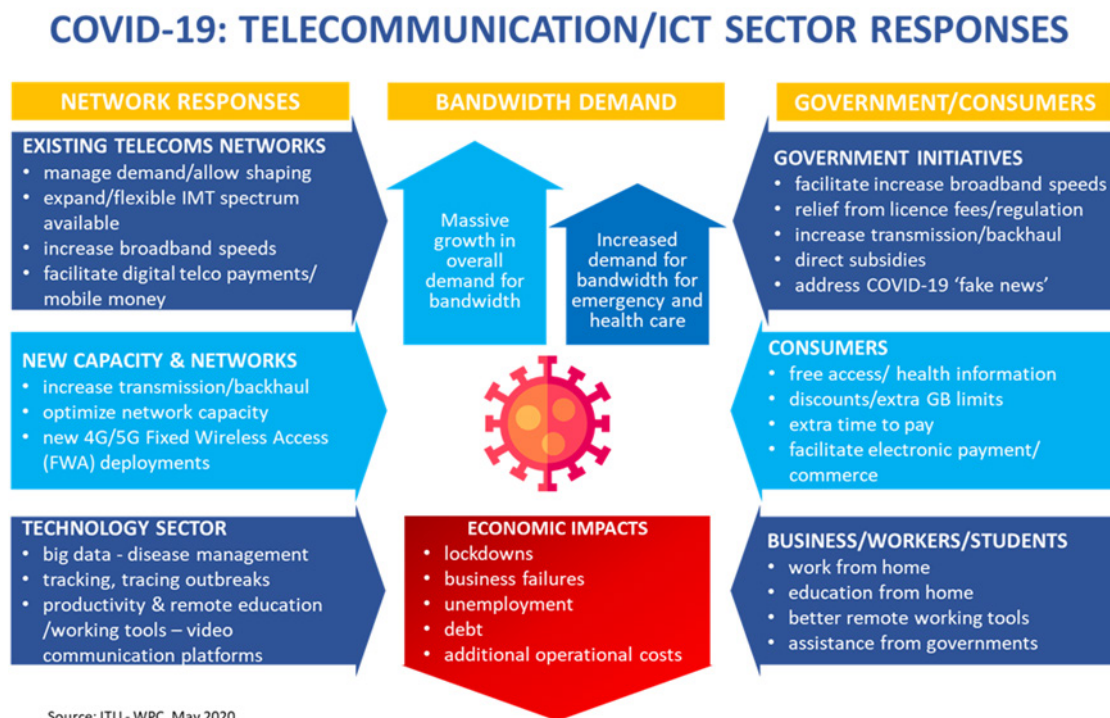
The ITU, GSMA, the World Bank and the World Economic Forum issued a Digital Development Joint Action Plan and call for action seeking to pursue five objectives: increasing bandwidth, strengthening resilience and security of networks, and managing congestion; connecting vital services and ensuring the continuity of public services to safeguard the welfare of populations; powering Fintech and digital business models to support the most impacted businesses and communities; promoting trust, security and safety online; and, leveraging the power of mobile big data.²⁵ The SAMENA Telecommunications Council’s Working Group on Digital Services has published a “Call to Action” that sets out immediate actions and recommendations for governments and regulatory authorities to ensure that current challenges and barriers to the

provision, availability and accessibility of relevant digital services can be flexibly and quickly addressed.²⁶

The ITU has established a Global Network Resiliency Platform (#REG4COVID) for regulators, policy-makers, industry and other interested stakeholder to share information, view what other initiatives and measures have been introduced around the world, and to exchange data and commentary on experiences, ongoing initiatives, and innovative policy and regulatory measures designed to ensure communities stay connected and encourage cooperation among stakeholders. See <https://reg4covid.itu.int/>, the output document²⁷ and Figure 26 for a summary of responses.

UNDP quickly mounted a strong defense against the pandemic and its impact across its 170 programme countries by establishing, among others, a facility to deploy USD 500 million to support innovative solutions²⁸ and mobilizing its Accelerator Labs in 60 countries to quickly develop and scale innovative solutions responding to local and national needs.²⁹ It repurposed other funds and re-oriented global and country teams towards fighting the pandemic and its multidimensional impact, identifying the most effective digital solutions particularly in countries facing vulnerabilities, and thus severely and disproportionately affected.³⁰

Figure 26. Framework summary of responses on #REG4COVID³¹



The World Bank is also tracking digital responses worldwide, noting that various actors in the connectivity ecosystem are deploying a range of measures to address the challenges brought on by the pandemic. From the private sector, ISPs are making services more affordable by relieving data caps, upgrading speeds, zero-rating traffic to specific websites and offering special low-cost voice and data packages. Network operators and ISPs are expanding capacity on existing networks and technologies, while deploying a range of emerging technologies. And governments are encouraging these responses by easing regulatory requirements and through recommendations, including emergency spectrum allocation, elimination and reduction of fees

for network deployment and spectrum usage, enabling zero-rating, publication of information on network sharing, allowing VoIP, providing subsidies for users and the purchase of SIM cards and devices, and financial assistance to ISPs and wholesale broadband providers.³² There have also been limited proposals to provide temporary exemptions to net neutrality to allow prioritization of traffic, but such measures have been met with opposition.³³

Other crowdsourced efforts are also collecting a list of country (government and private sector) responses to address Internet access challenges during the COVID-19 pandemic with over 280 examples collected to date.³⁴ Many content providers are also taking steps to provide greater access to accurate health information during the pandemic.³⁵

One major population around the world that is systematically disadvantaged with limited access to digital technologies are forcibly displaced persons. However, there are increasing global efforts to provide broadband connectivity access to forcibly displaced persons at their hosting communities.

One core focus of organizations taking action in this space is the movement towards creating an enabling and legal regulatory environment for refugees and other forcibly displaced persons. In many countries forcibly displaced persons are excluded from broadband access due to their location or legal and regulatory barriers preventing them from accessing commercial services. This is often due to a lack of recognition of credentials issued to refugees whether by the hosting nation State or international organizations, such as the United Nations Refugee Agency (UNHCR).

Specifically, UNHCR and the GSMA have been active in highlighting this issue, having collaborated on numerous reports that outline the regulatory barriers across a selection of countries hosting a significant number of refugees. The report *Displaced and Disconnected*,³⁶ was a product of the partnership which covered these issues and are building evidence to support advocacy with governments and regulatory authorities to extend legal pathways to accessing broadband connectivity to forcibly displaced persons.

As an example, in Uganda a Technical Working Group on enhancing connectivity for refugees and their host communities has been established to extend access. Co-chaired by UNHCR and UNCDF, this forum has been utilized to bring mobile network operators (MNOs), ISPs, and humanitarian response actors together to strategize on how to extend connectivity to refugees and their hosting communities, largely rural populations in remote areas of the country. The telecommunications regulator and the Office of the Prime Minister (OPM) were also part of the discussion. Following collective advocacy resulting from *Displaced and Disconnected*, and another joint research between the GSMA and UNHCR, "*Digital Lives of Refugees*,"³⁷ the working group facilitated the issuance of a directive from the Uganda Communications Commission (UCC) to MNOs to open SIM card registration to those with refugee identity cards and attestation letters. To strengthen implementation, the process for automated biometric and biographic verification during SIM registration has now been expanded to also cover the refugee population resulting in comparable levels of identity assurance and process integrity.

This directive provided over 600 000 refugees with a legal pathway to accessing cellular connections for the first time and preliminary data demonstrates at least a 50 per cent increase in mobile subscriptions amongst the adult refugee population since the directive came into effect, with the directive being a key contributing factor to such an increase. The full case study has been documented by the GSMA.³⁸

Due to the COVID-19 response, a number of humanitarian organizations have been extending access to broadband connectivity issuing guidance³⁹ with the Broadband Commission, including forcibly displaced persons explicitly within its COVID-19 Agenda for Action.⁴⁰

In the Americas, in response to the Venezuela displacement crisis and displacement in North and Central America, organizations such as NetHope and their members, and UN agencies such as UNHCR, are providing connectivity. Specifically, NetHope have been enhancing services they are providing in light of COVID-19.⁴¹

Providing connectivity to vulnerable populations like displaced persons is a challenge under normal circumstances, but a pandemic like COVID-19 makes it all the more difficult. Aid organization Télécoms Sans Frontières (TSF) has been stepping up its efforts to fulfill its mission.⁴² For example, TSF has already connected ten medical centres in Syria with satellite-enabled broadband, covering more than 160 000 patients, and it is increasing the number of vital connections in support of medical teams on the ground, to enable them to be better equipped in the face of this crisis.⁴³

3.3 Economic impacts of broadband for the 2030 Agenda

As Iqbal Z. Quadir, the founder of GrameenPhone in Bangladesh, wrote in 2003, “for the poor, connectivity means economic opportunity.”⁴⁴ Recent addition to economic literature in the past year continue highlight the importance of broadband infrastructure for increasing household employment and poverty alleviation through the income effects of expanding Internet infrastructure.

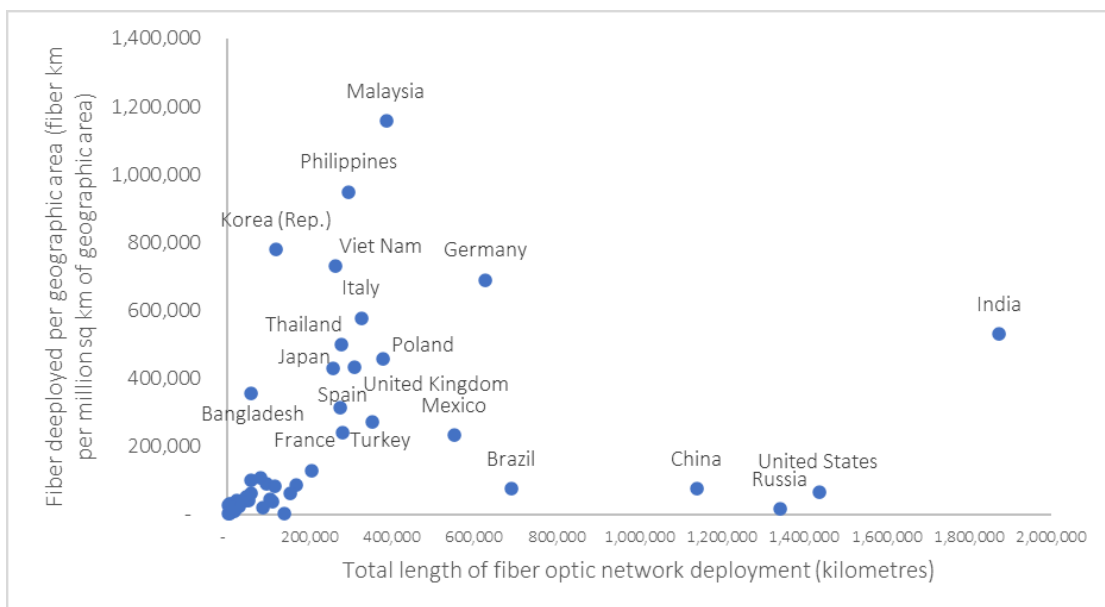
Expanding fibre network deployment for both middle mile and access networks, for example, particularly in countries with low fiber penetration, enables greater bandwidth throughput for end users and results in positive economic impact. From undersea and terrestrial fibre deployments across 12 African countries, researchers found that the expansion of fibre networks led to large positive effects on employment rates, increased firm entry, productivity and exports, and increases in average income.⁴⁵

ITU analysis of the 50 largest countries by population in 2019 demonstrates varying densities of fibre network deployment per geographic area. Figure 27 maps countries on the basis of total kilometres of fibre network deployment (x-axis) against density of deployment (fibre kilometres per million square kilometres of country area) on the y-axis. Policy measures, such as standardizing rights-of-way policy, enabling non-discriminatory and non-exclusive sharing agreement, and supporting public investment in rural fibre deployments could accelerate deployment.

In terms of mobile coverage, a new paper by the World Bank and the GSMA demonstrates how network expansion between 2010 and 2016, focused on 3G and 4G upgrades, resulted in large and positive impacts on household consumption levels.⁴⁷ And that mobile broadband coverage reduced the proportion of households below the poverty line, because of effects mainly due to increasing labour participation and employment, particularly among women.

Additionally, one of the first randomized controlled trials (RCTs) focused on mobile cellular telecommunications deployment also recently published results demonstrating the statistically significant impact of basic mobile communications. Researchers at University of California and the US Federal Reserve worked with implementation partners at the University of the Philippines and others to measure the impact of mobile phone service extended to isolated and previously

Figure 27. Total fibre deployment and fibre density by total geographic area, 2019⁴⁶



unconnected villages in a remote part of the Philippines. Though the RCT is based on a limited number of observations in the control and treatment groups, the researchers found that the expansion of service and adoption of basic mobile phones had a large and significant impact on household income and expenditure, in part due to increases in migration, remittances and self-employment.

These studies highlight how digital infrastructure impacts various aspects of economic growth that are linked to overall social development. For example, the Sustainable Economic Development Assessment (SEDA) analysis, by the Boston Consulting Group, measures objective elements of country level well-being (based on ten dimensions of income, economic stability, employment, health, education, infrastructure, equality, civil society, governance and environment). The analysis found that the ability to convert wealth (measured in GDP per capita) into improvements in well-being is clearly associated with a country's level of technology adoption, measured by Internet usage and mobile adoption.⁴⁸ The higher the level of Internet usage and mobile subscription, the more impact wealth and GDP per capita has on overall well-being, except for those countries already at the highest usage levels. For those countries, additional investment in digital infrastructure does not yield much more increases in overall well-being. See Figure 28.

Figure 28. Digital Infrastructure Increases and the Ability to Convert Wealth into Well-Being - Up to a Point⁴⁹



Box 8. Working Group on Data, Digital and AI for Global Health

Digital and artificial intelligence (AI) technology offer an unprecedented opportunity to transform health systems from being reactive to preventative and even predictive. The Broadband Commission Working Group on Data, Digital and AI in Health is tasked with generating knowledge about how these technologies can advance health and care globally.

The Working Group has published a new report “Reimagining Global Health through Artificial Intelligence: A Roadmap to AI Maturity” that identifies five use cases (Population Health, Preclinical Research & Clinical Trials, Clinical Care Pathways, Patient-facing Solutions, Optimization of Health Operations) for how AI is applied to address global and public health priorities, strengthen health systems, and improve outcomes for patients. A comprehensive landscape review identified actionable recommendations for how governments and other stakeholders can create the ecosystem necessary to achieve mature integration of AI in health.

These actionable recommendations aim to enable policy-makers, health organizations, civil society, the private sector and other stakeholders to capture the game-changing capabilities of AI for health. The report introduces a maturity roadmap for AI in health, which describes the stepwise progression for LMICs towards AI maturity and the enabling environment that fosters it.

Taking the six areas for AI maturity in health as its canvas to highlight benchmarks, milestones, and enablers, the roadmap maps the progressive path towards maturity for:

1. People & Workforce
2. Governance & Regulatory
3. Data & Technology
4. Design & Processes
5. Partnerships & Stakeholders
6. Business Models

These six areas for AI maturity comprise an ecosystem of interdependent areas: no single one can be prioritized. Rather, investments into maturity should advance the progression on all fronts. Given that countries and health systems begin or continue their AI journey from different starting points, the goal is to advance AI maturity by identifying specific gaps and existing capabilities. We describe three distinct maturity levels across areas of maturity.

Endnotes

- 1 See for example: https://unctad.org/en/PublicationsLibrary/dtlinf2020d1_en.pdf
- 2 2019 was the first full year when more than 50% of the global population was online, at a time 50 years after first data packets were transmitted over what is now known as the Internet.
- 3 As measured by the Human Development Index, a composite index includes a range of life expectancy, education and per capita income indicators. <http://hdr.undp.org/en/content/human-development-index-hdi>
- 4 UNDP, "Human Development Report 2019", based on ITU data. <http://hdr.undp.org/sites/default/files/hdr2019.pdf>
- 5 <https://www.csmonitor.com/Business/2020/0506/Rural-America-lags-on-fast-internet.-Now-small-co-ops-are-building-it>
- 6 <https://www.axios.com/newsletters/axios-deep-dives-301b96de-cd85-474a-a587-aa954aaaf7d1.html> and <https://www.washingtonpost.com/business/2020/03/22/working-home-reveals-another-fault-line-americas-racial-educational-divide>
- 7 <https://www.pewresearch.org/fact-tank/2020/04/02/8-charts-on-internet-use-around-the-world-as-countries-grapple-with-covid-19/>
- 8 <https://en.unesco.org/themes/education-emergencies/coronavirus-school-closures>, <https://reliefweb.int/report/world/coronavirus-school-closures-mean-over-one-billion-children-and-youth-are-now-shut-out>, and https://www.un.org/sites/un2.un.org/files/sg_policy_brief_covid-19_and_education_august_2020.pdf
- 10 <https://www.kut.org/post/austin-isd-rolling-out-110-buses-equipped-wi-fi-neighborhoods-limited-online-access>; https://www.virginiamn.com/covid-19/virus-exposes-minnesota-s-broadband-gap/article_6af369ee-6a52-11ea-be5d-1389941d4ca9.html
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- 15 The NEU PC Plus Programme offers low-income households with student or person with disabilities the opportunity to own a brand new computer at an affordable price.
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- 23 See: <https://www.bloomberg.com/news/articles/2020-03-25/netflix-reduces-video-quality-in-more-countries-to-handle-surge>
- 24 <https://www.broadbandcommission.org/COVID19/Pages/default.aspx>. This Agenda for Action was presented to various global stakeholders, including the UN Secretary-General.
- 25 This action plan is separate from other plans presented, such as the Broadband Commission's Agenda for Action discussed below. The World Bank, ITU, GSMA and WEF COVID-19 Crisis Response: Digital Development Joint Action Plan and Call for Action can be accessed at: <http://pubdocs.worldbank.org/en/788991588006445890/Speedboat-Partners-COVID-19-Digital-Development-Joint-Action-Plan.pdf>
- 26 https://www.samenacouncil.org/initiatives/working-groups/SAMENA_Council-Digital_Services_Working_Group-Call_to_Action%20_COVID-19.pdf
- 27 https://reg4covid.itu.int/wp-content/uploads/2020/06/ITU_COVID-19_and_Telecom-ICT.pdf
- 28 <https://www.undp.org/content/undp/en/home/coronavirus.html>
- 29 <https://acceleratorlabs.undp.org/>
- 30 <https://undpdigital.pory.app/>. See UNDP Administrator Insight for more details.
- 31 #REG4COVID: <https://reg4covid.wpengine.com/wp-content/uploads/2020/05/ICTsector-response.jpg>
- 32 https://blogs.worldbank.org/digital-development/covid-19-were-tracking-digital-responses-worldwide-heres-what-we-see?cid=SHR_BlogSiteShare_EN_EXT
- 34 See the list started by Steve Song: <https://docs.google.com/spreadsheets/d/1DsJ6YS8hBlpD9CQqVcrASCgGsFo6syDlakZCQohABGQ/edit#gid=0>
- 36 <https://www.unhcr.org/innovation/displaced-and-disconnected/>
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- 38 <https://www.gsma.com/mobilefordevelopment/resources/proportionate-regulation-in-uganda-a-gateway-for-refugees-accessing-mobile-services-in-their-own-name/>
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- 40 <https://broadbandcommission.org/COVID19/Pages/default.aspx>

- ⁴¹ <https://nethope.org/2020/04/22/nethope-partners-with-facebook-connectivity-to-increase-internet-access-during-covid-19/>
- ⁴² <https://www.tsfi.org/en/our-missions/disaster-response/covid-19>
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- ⁴⁴ Also, "connectivity is productivity", page 27. http://www.infodev.org/sites/default/files/resource/InfodevDocuments_24.pdf
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- ⁴⁶ ITU.
- ⁴⁷ Bahia *et al.* 2020. "The Welfare Effects of Mobile Broadband Internet: Evidence from Nigeria". World Bank Policy Research Working Paper. <http://documents.worldbank.org/curated/en/626011588705072099/pdf/The-Welfare-Effects-of-Mobile-Broadband-Internet-Evidence-from-Nigeria.pdf>
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- ⁴⁹ BCG. "Striking a Balance Between Well-Being and Growth". https://image-src.bcg.com/Images/BCG-SEDA-Striking-a-Balance-Between-Well-Being-July-2018_tcm9-207940.pdf

4. Action for the next ten years



The world in 2020 is in a state of unprecedented flux because of the COVID-19 pandemic. As the virus rages around the globe infecting millions and resulting in hundreds of thousands of deaths, connectivity has emerged as one ally in the fight against COVID-19. The broadband ecosystem has proven its scalability and resilience to keep health, education and financial systems, and whole economies, operating. Once again broadband has demonstrated its essential role in fueling the achievement of the SDGs. But COVID-19 also uncovered how the lack of connectivity especially among marginalized communities is widening the gap between rich and poor, and further growing the digital divide. Building back better and faster with broadband will require an emphasis on digital infrastructure and technologies in the pandemic response, recovery, and resiliency-building efforts to prepare against such future shocks, but more importantly to spur achievement of the SDGs.¹

It is time to act now and put into action the recommendations presented by the Broadband Commission for medium- and long-term impact to tackle digital inequalities and ensure resilient connectivity, affordable access and safe use of online services for informed and educated societies, including children, people with disabilities, women and the most vulnerable communities, based on the three pillars of the Commission's Agenda for Action. Figure 29 and Figure 30 highlight concrete actions identified by the Commission in its Agenda for Action, focused on immediate actions, and activities for the medium term.

Figure 29. The Immediate Actions in the Commission’s Agenda for Action²

	Resilient and secure connectivity	Affordable access	Safe use of online services for informed and educated societies
Industry / private sector	<p>Ensure connectivity and network continuity, increase bandwidth capacity and network resilience and security, including for vulnerable populations in LDCs and in refugee camps</p> <p>Manage capacity to ensure rational use of the network</p> <p>Provide vital/emergency services to support general population as well as emergency responders</p> <p>Lease spare satellite transponder capacity at very nominal costs during emergency crisis</p> <p>Provide temporary royalty-free software licenses for capacity augmentation, and Intellectual Property rights for related vital service delivery</p>	<p>Provide in-kind support through donation of ICT services, cloud services, software, equipment and end user devices, and support working from home</p> <p>Identify solutions for liquidity and financial shortage to ensure service continuity</p> <p>Offer special tariffs for related health, education, humanitarian and emergency workers/services</p> <p>Offer free SMS and zero rating for access to health, educational content and government information services</p>	<p>Make available broadcasting capacity for education and health</p> <p>Make available safe and secured digital platforms and open source software for health, education, food security, financial and governmental services, including sharing open-source Digital Public Goods</p> <p>Promote quality education and information content and services; enhance policies against disinformation, increase transparency</p> <p>Provide online training and safe digital tools to parents and teachers to keep children safer online</p> <p>Share data on a voluntary basis and use AI to perform analytics for prevention and monitoring purposes, ensuring data anonymization</p> <p>Use AI to support medical institutions</p>

	Resilient and secure connectivity	Affordable access	Safe use of online services for informed and educated societies
Government / policy makers / regulators	<p>Implement policy and regulatory actions to:</p> <ul style="list-style-type: none"> - temporarily relieve network capacity constraints and keep networks running and operational (including decreasing taxes and fees, offering wholesale services, temporarily freeing up additional spectrum which can be immediately deployed, infrastructure sharing, using existing USF funds, promoting cross border roaming etc) - maintain internet access - support urgent requirements to expand bandwidth and connectivity, inclusive of marginalized groups and vulnerable populations, including refugees - streamline customs processes and classify network equipment as essential infrastructure to ensure supply chain continuity 	<p>Facilitate delivery of (and remove barriers to) industry commitments, and general provision of ICT services</p> <p>Use USF funding to support affordable access to health, education, humanitarian and emergency services and people and communities with special needs</p>	<p>Provide guidance to consumers and the general population in areas including child online safety, data protection and cybersecurity measures</p> <p>Increase proactive publishing to promote access to information, support learning institutions to conduct distance classes, take actions to foster media and information literacy</p>
UN / IGO / international financial institutions	<p>Mobilize expertise, foster better coordination and international technical support</p>	<p>Finance national digital connectivity initiatives, and electricity generation, transmission and distribution vital for digital service provision</p> <p>Create pricing strategies and financing/investment documents to help finance national connectivity in schools, to be extended to health centres, emergency hubs, etc.</p>	<p>Promote and nurture innovative partnerships among organizations and with the private sector</p> <p>Support norms and provide resources to educational and media institutions</p>
Academia / NGOs / non profits / civil society	<p>Provide support with expertise, research, innovation and thought leadership</p>	<p>Provide online educational content in local languages, training in health care and emergency services, and training for (non-IT) teleworkers</p>	<p>Provide digital skills training programmes, programmes to promote online safety</p> <p>Monitor and promote open educational Resources, enhance online capacity building around issues relating to information and disinformation</p>

Figure 30. The Medium-Term Agenda for the Commission's Agenda for Action³



Ten years since the start of the Broadband Commission, the policy, advocacy, and programmatic implementations of broadband infrastructure, and the applications and services that ride over networks are as important as ever. As the UN Secretary-General has called on all sectors of society to mobilize for a decade of action towards meeting the Sustainable Development Goals, expanding broadband infrastructure and ensuring universal access to the connectivity ecosystem is critical for the global community to make progress towards the SDGs.

As noted above, some countries have successfully implemented a number of policy reforms echoed by the Broadband Commission which has helped to improve broadband universality in their countries. The opportunity remains for countries to further their efforts to improve the broadband ecosystem in their countries by continuing to adopt more of the recommendations put forth by the Commission, with a focus on implementation. See Table 10, encompassing the policy recommendations presented by the Commission over the past decade to be leveraged and effected in the decade of action.

Table 10. Policy recommendations by the Broadband Commission for the Decade of Action

1. Implement new approaches and frameworks for spectrum allocation and licensing
2. Use of universal service funds to develop broadband
3. Update ICT regulations to promote more investment and market approaches for sustainability
4. Merge regulation and convergent services
5. Lower taxations and duties
6. Make broadband affordable by adopting appropriate policy and regulation
7. Foster locally relevant content creation and local hosting
8. Promote free flow of data
9. Implement e-government initiatives
10. Monitor and collect reliable ICT data
11. Build human digital capacity and skills to help users, SMEs and public sector agencies make the most of digital opportunities
12. Consider and, if appropriate, apply open access approaches to infrastructure
13. Undertake public consultations on policy and regulation
14. Incentivize and accelerate broadband investment
15. Foster digital innovation by preserving intellectual property (IP) rights
16. Improve IoT and Smart City policy frameworks
17. Incentivize PPP
18. Promote advanced market commitments for rural broadband access
19. Identify champions or leaders in broadband to mobilize political and technology support
20. Improve right-of-way regulations
21. Encourage e-business and entrepreneurship
22. Support efforts to provide broadband connectivity to refugees and displaced individuals
23. Include in broadband plans efforts on digital inclusion, measures to protect children online, a focus on limiting environmental impacts and addressing climate, and public access initiatives
24. Expand initiatives to map network coverage and infrastructure needs, to develop priority lists for investment
25. Integrate gender in national broadband plans and strategies and undertake action plans to advance gender equality in access to broadband
26. Boost affordability and usability of broadband-enabled products and services, with a focus on addressing barriers faced by those at risk of being left behind

As part of the strategy moving forward, it is necessary to develop common metrics to monitor and evaluate achievements, as well as correct the approach when necessary. This will facilitate that all stakeholders track progress.

The Commission will continue its efforts towards achieving the 2025 Advocacy Targets and support the Decade of Action towards the 2030 Sustainable Development Goals and transform people's lives with broadband by particularly focusing on its core capabilities and strengths. This includes:

- 1) Continued high-level advocacy efforts and high-quality research on key topics related to the 2025 Targets and the impact of broadband on accelerating progress towards the SDGs;

- 2) Leveraging the momentum and reach of the Broadband Commission to support other related initiatives, such as the UN Secretary-General's High-Level Panel and Roadmap for Digital Cooperation; and
- 3) Continuing collaboration among Commissioners and their organizations to incubate highly effective and impactful partnerships (such as EQUALs, GIGA, and others), and commitments to moving forward the achievements of the 2030 UN SDGs.

The world is in a critical moment in history. Achieving the targets will depend on all of our commitment to our common responsibility to collaborate, partner and develop a more inclusive and sustainable society. It is essential that all stakeholders are involved along the process to leverage the power of broadband and promote a faster and better recovery for all.

Box 9. Working Group and Report on “Freedom of Expression and Addressing Disinformation on the Internet”

The Broadband Commission Working Group on Freedom of Expression and Addressing Disinformation, co-chaired by UNESCO and Dr. Hessa Al-Jaber with the multisectoral engagement of Commissioners, has commissioned comprehensive research on online disinformation which will be published as a report later in 2020.

“The Balancing Act: Countering Digital Disinformation while Respecting Freedom of Expression” examines global online disinformation, including deadly disinformation around COVID-19, which it calls a ‘disinfodemic’. The report contrasts disinformation with its opposite – information. If information is empowering, then disinformation is disempowering. Online access to verifiable, reliable information makes the right to freedom of expression meaningful. Disinformation works diametrically against this right – while thwarting progress on sustainable development.

In June 2020, more than 130 United Nations member countries and official observers have endorsed a [Cross-Regional Statement on “Infodemic” in the Context of COVID-19](#) (12 June 2020). This calls upon countries to take steps to counter the spread of disinformation, saying these should be based, *inter alia*, “on freedom of expression, freedom of the press and promotion of highest ethics and standards of the press, the protection of journalists and other media workers, as well as promoting information and media literacy, public trust in science, facts, independent media, state and international institutions.”

The statement adds: “Many countries, including ours, and international institutions, such as the WHO and UNESCO, have worked towards increasing societal resilience against disinformation, which has improved overall preparedness to deal with and better comprehend both the ‘infodemic’ and the COVID-19 pandemic.”

The forthcoming research highlights that disinformation cannot be addressed in the absence of freedom of expression, and that actions to combat disinformation should not violate freedom of expression. It also underlines that freedom of access to trustworthy information is a counter to disinformation, combatting vacuums where disinformation may monopolize the communication landscape.

The Broadband Commission report assesses four top-level response categories and 11 sub-categories of disinformation responses mobilized around the world. It examines their character, underlying assumptions and freedom of expression implications. These responses target one or more of the four points of the ‘disinfodemic’ life cycle: namely production, transmission, reception and reproduction. Thus, the research assesses responses that:

- work to cut the supply of production;
- filter disinformation during transmission;
- help inoculate targets from reception; and
- prevent viral re-circulation.

The research further provides a policy framework that can be helpful for stakeholders, particularly in government and the broadband content and development community. It proposes that all response activities build in systematic evaluations: whether such responses are algorithmic, educational, ethical, legal, etc. These should monitor effectiveness and unintended impacts on the right to freedom of expression and access to information, as well as privacy.

The Broadband Commission research underscores that the disinformation challenge is bigger than any single Internet company, any single actor, or any single content provider. No singular approach may work, but a diversity of action by different stakeholders represented by the Broadband Commission membership may come together to see what common ground can be developed. As the Internet industry has shown through the counter-terrorism initiative and COVID-19 co-operation, so too can Commission sector members work more closely together – and with other stakeholders – around tackling disinformation in a range of spheres.

The report calls for increased transparency and proactive disclosure. This aligns with Sustainable Development Goal 16.10 that calls for public access to information and fundamental freedoms.

Among other measures, the research encourages the broadband community to invest further in critical independent journalism and media and information literacy, especially through educational interventions targeting children, young people, older citizens, and vulnerable groups.

The report was lead and co-authored by Prof. Kalina Bontcheva, University of Sheffield, UK, and Dr. Julie Posetti, International Center for Journalists (ICFJ), through key contributions by Denis Teyssou, Agence France Presse, France; Dr. Trisha Meyer, *Vrije Universiteit Brussel*, Belgium; Sam Gregory WITNESS, US; Clara Hanot, EU Disinfo Lab, Belgium; and Dr. Diana Maynard.

Endnotes

- ¹ See for instance the UNGIS Dialogue on the Role of Digitalization in the Decade of Action, containing a number of contributions by current UN Broadband Commissioners: https://unctad.org/en/Pages/DTL/STI_and_ICTs/UNGIS-Dialogue.aspx
- ² Source: Broadband Commission, <https://broadbandcommission.org/COVID19/Pages/default.aspx>
- ³ Source: Broadband Commission, <https://broadbandcommission.org/COVID19/Pages/default.aspx>

5. Commissioner Insights / Case Study Executive Summaries



These Commissioner Insights / Case Study Executive Summaries are arranged alphabetically by organization. They are executive summaries only; the full Case Studies and Insights are available on the Broadband Commission website.

Insight from Commissioner Mr. Ramin Guluzade (Republic of Azerbaijan)

Experience of Azerbaijan in broadband Internet development and its regional dimension

Given the role of economic, social, and humanitarian aspects, as well as the multiplier effect of broadband Internet access infrastructure development, this area was announced a priority in our country. Azerbaijan made huge progress in broadband Internet infrastructure development and its application in all areas of society for the last ten years. The percentage of Internet users rose from 46 per cent to 80 per cent, the rate of broadband Internet users rebounded from 15 per cent to 75 per cent, while the rate of household users increased from 45.1 per cent to 78.2 per cent in the last ten years.

Ninety-five per cent of rural telephone stations have already been provided with fibre optic cable connection. Half of the country's telephone system is reconstructed based on cutting-edge NGN technologies, which enable users to benefit from a single line for phone connection, high-speed Internet and IP TV. Besides, GPON technologies-based high-quality Internet service is being provided in the capital city of Baku and other big cities. Moreover, high-quality wireless LTE technologies-based Internet service is being rendered with the application of technological approach. "Public Wi-Fi" project was already successfully implemented in the parks, avenues, and other public areas of Baku city, where people can get access to free Internet.

At present, the coverage of the 3G mobile network in Azerbaijan is 97.6 per cent, and the coverage of the 4G mobile networks is 93.0 per cent. These coverage rates played a crucial role in broadband Internet development across the country.

Now, Azerbaijan's Internet market is fully liberalized and no licenses are required for rendering Internet access services, which gives impetus to development. More than 40 Internet service providers operate in the Internet market of Azerbaijan; only three of them are public operators, while the others are private. Government support, a healthy competitive environment, and public-private partnerships underpin the success of broadband Internet development in the country.

Ninety-six per cent of schools in the country have been provided with computers and more than 60 per cent of schools have broadband Internet access. Currently, 84 per cent of men and 76 per cent of women use Internet in the country. Various projects are being implemented in the country to develop the information society, increase the ICT knowledge of the population, and promote the use of electronic services. Social projects are being implemented in cooperation with UN specialized agencies and their representation in the country in order to reduce inter-gender digital differences and support women's digital skills and personal development.

Today, the achievements in the development of Internet in Azerbaijan are highly valued by international organizations. Thus, in the World Economic Forum's "Global Competitiveness Report 2019", Azerbaijan ranked 43rd out of 141 countries in terms of the number of Internet users per 100 people, and according to this indicator, Azerbaijan exceeds the world average by 1.5 times.

The development of broadband services in the country is carried out within the framework of the adopted National Strategy and State Programs. The "Strategic Roadmap for the Development of Telecommunications and Information Technologies in the Republic of Azerbaijan" approved by the relevant Decree of the President in 2016 sets ambitious goals for the development of services and broadband infrastructure with wide coverage in the country. Thus, increasing the coverage of the broadband network to 95 per cent by 2025 by transferring broadband Internet services (which is currently through copper lines) to fibre-optics, the speed of Internet use per user in the fixed broadband network in Azerbaijan will increase from the average speed of 3.6 Mbps in 2016, to 50 Mbps in 2025, and from 2025 then to reach the level of developed countries set as main goals. At the same time, increasing the coverage of broadband services on LTE and other wireless technologies by 10 per cent annually to 85 per cent in 2025 and 100 per cent after 2025 are targeted.

Furthermore, Azerbaijan takes initiatives to build a high-capacity data transmission fibre-optic network in the region. Bilateral agreements have already been signed between Azerbaijan and Kazakhstan, as well as Azerbaijan and Turkmenistan to launch fibre optic cable connection through the Caspian Sea.

Insight from Commission Co-Chair Mr. Carlos Slim (Carlos Slim Foundation)

COVID-19 protocol, health initiatives, and connectivity

The Carlos Slim Foundation designed and executed a comprehensive COVID-19 Contention Protocol to support Carso Group's companies to cope with the pandemic. Amongst the different measures implemented, employees started working from home, and several prevention and contention strategies at offices and work spaces were put in place, such as staggered working schedules, use of face masks, hand sanitizer and maintaining physical distance between desks.

In addition, the Foundation designed, developed and implemented via connectivity a Health Intelligence Ecosystem that operates through a step-wise approach:

- a) Employees register to the MONITOR Platform, developed by the Foundation, either through a secure web portal or a mobile phone application, and report their health status on a daily basis. MONITOR, through an algorithm, automatically assesses.
- b) Those who feel ill, or would like to know more about COVID-19 or how to access medical care, contact a call centre, where a general practitioner provides remote consultation and assesses if an employee needs a lab test, or an in-person medical consultation.
- c) Employees with symptoms, or those who have been in contact with a person with COVID-19, visit a lab facility to undergo a RT-PCR test to confirm initial diagnosis.
- d) If an employee becomes a confirmed case of COVID-19, an epidemiologic analysis is performed to assess if there could be an outbreak at the work space, or at the household (in case the employee is doing home office).
- e) If the employee was in contact with family members or other work colleagues, an epidemiologist performs a study of the outbreak, and both employees and family relatives are closely monitored to prevent or contain further spread of the disease.

Teams can monitor employees' current risk profile and its evolution over time, as well as results of lab tests, and counselling is provided by a call centre, among other analytics.

Joint coordination between human resources departments and the Carlos Slim Foundation, and the use of a robust digital health platform have been instrumental in maintaining the operations and productivity of Carso Group's enterprises whilst protecting employees' well-being.

In addition to the patient self-monitoring, a general practitioner provides remote medical consultation through COVID360, following a systematic protocol. The Foundation, in alliance with AstraZeneca, the University of Oxford and the Governments of Argentina and Mexico will produce the COVID-19 vaccine for most of Latin America.

COVID-19, Education Initiatives, and Connectivity

PRUEBAT.ORG

PruebaT is an online platform whose objective is to provide free essential knowledge in verbal, numerical and digital skills, for students, teachers and parents which are fundamental throughout life.

In response to COVID-19, Fundación Carlos Slim Education has contributed to the following actions:

Collaboration with the Ministries of Education of Mexico, Panamá, Colombia, Guatemala, Ecuador, Dominican Republic, Costa Rica and Peru, offering quality content aligned to curricular themes that allow strengthening knowledge and continuing with teaching and learning during the period of confinement by COVID-19, through the "Keep Learning" strategy.

ES.KHANACADEMY.ORG

Online platform that offers practical exercises, instructional videos, and a personalized learning dashboard in subjects such as Math, Biology, Chemistry, Physics, Finances, and Computer Science through an adaptive technology that identifies strengths and learning gaps.

- This platform was created in 2006 by Salman Khan. In response to COVID-19, Khan Academy launched a special microsite for learners in Mexico to access quick links to resources.
- Daily schedules for students aged 5-16 for using Khan Academy to keep learning.
- It has 16.1 million students.

CAPACÍDATE PARA EL EMPLEO (TRAINING FOR EMPLOYMENT)

Capacitateparaempleo.org is a Carlos Slim Foundation initiative created to contribute to the development of borderless productive competencies, through free online training for all sectors.

During the pandemic, it reached 1 500 000 new users in three months, men and women between 18 to 35 years old, who enrolled in Information Technology courses and Diplomas.

In all, connectivity was able to support health, education and job training during the lockdown period, and is essential as economies and social life begin the period of re-incorporation.

Insight from Commissioner H.E. Dr. Mohammed S. Al Tamimi (Communications and Information Technology Commission of Saudi Arabia, CITC)

How Saudi Arabia is deploying ICTs against COVID-19

Since the coronavirus pandemic (COVID-19) emerged in early 2020, the Kingdom of Saudi Arabia has implemented a wide range of precautionary measures to limit its spread, and to provide the highest levels of protection and safety for citizens and residents in all regions of the Kingdom. For the Kingdom, and for the Communications and Information Technology Commission, this consisted of the deployment of a number of measured strategies in the context of its continuing role as a world leader in ICT.

It has been our privilege to be part of the development of the global broadband community through our involvement with the ITU and other leading organizations. During this extraordinary time, we recognize the need for all participants to maximize our potential positive contributions to the global community and to the health of people around the world. The broadband ecosystem has the opportunity to play a positive role in strengthening infrastructure, institutions, and systems that not only address the current challenges posed by the COVID-19 pandemic, but also prepare the world for any future disasters.

As a consequence, all sectors in the Kingdom of Saudi Arabia are working together with great cooperation and coordination to prevent the spread of the virus and to reduce its effects, but the communications and information technology sector has emerged as a critically important force in supporting government, the private sector, education and health care during this extraordinary time.

The Kingdom of Saudi Arabia's Communications and Information Technology Commission (CITC) has worked with other government entities to energize the ability of vital sectors including health and education so they can reach out more effectively in a variety of important ways.

In collaboration with the Ministry of Health, we made the move to give our entire population free access to e-health earlier this year. This strategy ensures that getting information about health digitally does not consume data from anyone's Internet plan. The Health Ministry is able to analyse user data to detect and track COVID-19 cases and provide treatment. This is a pivotal strategy because it eliminates any barriers to access, and allows peoples to leverage technology for the benefit of their knowledge and their health.

Education is a tremendously important sector in Saudi Arabia. As traditional attendance in classes has been limited during the COVID crisis, CITC arranged the technological framework that has allowed the government to enable free access to e-learning applications, and waive data costs for university students using educational platforms.

Overall, since the start of the lockdown, the volume of digital services and conversion of traditional services previously provided by government agencies has increased by 70 per cent from the same period last year.

These kinds of strategies have been made possible because the Kingdom's government and the private sector have invested more than USD 15 billion in just the last three years to ensure a robust and reliable digital communications framework for Saudi Arabia. This early investment culminated in providing forward-looking ICT services for 99 per cent of the vast area of the Kingdom of Saudi Arabia. This has been 'stress tested' during the COVID-19 pandemic, as networks have been called upon to absorb significant data traffic demand in local networks. Data consumption per capita in the Kingdom has tripled due to the pandemic, and mobile and fixed data usage in Saudi Arabia has grown 34 per cent, rising from 52 417 TB to 70 120 TB monthly as governments, businesses, and families find virtual ways to stay in touch.

Providing excellent services for users and preparing a nation for the next digital revolution takes time, but it also takes targeted investment and farsighted regulatory action. To enhance the future readiness of the ICT sector, the CITC has set up a National Spectrum Strategy, which aims to optimize national spectrum usage and efficiency by 2025. The plan seeks to allocate a total of 4 660 MHz for commercial use, contribute over USD 133 million to the GDP annually, and position Saudi in the world's top countries for investment in radio systems by 2025. Furthermore, there are over 7 000 commercial 5G towers across Saudi Arabia, which serve 30 per cent of the population. The nation ranks third globally for volume of 5G networks deployment and first in the Middle East, Europe, and Africa. By 2030, it is estimated that 5G deployment will contribute to 10x faster average Internet speeds in the Kingdom of Saudi Arabia, over USD 8 billion additional revenue in the telecom market and more than 45 million new devices connected via the Internet of Things (IoT).

The Kingdom of Saudi Arabia's story shows precisely how investing heavily in ICT and digital infrastructure can reap unexpected rewards. The COVID-19 pandemic, the severity of which few could have imagined, has shown that people can depend on the digital lifeline provided by ICT when they need it most. For this reason, the Kingdom of Saudi Arabia finds itself as the top digital nation in its region and among the world's most advanced digital societies.

Insight from Commissioner Mr. Denis O'Brien (Digicel Group)***The COVID-19 pandemic has accentuated the digital divide - a global response is required to solve this.***

For the past decade the Broadband Commission has been focused on the danger that a two-tier digital world might emerge - where developed countries transition to an online economy while persons in less developed regions remain in the offline economy.

Unfortunately, with the COVID-19 pandemic this danger has become a reality as the trend towards an online economy was greatly accelerated. The experiences over the past few months have shown what the future might look like with online education, telehealth, remote working, and online services becoming established in developed economies.

Half of the world remains excluded from this new reality and the tremendous opportunities that the digital economy can provide. Children without access to remote learning opportunities are at a disadvantage compared to children who can access online education. The benefits of telehealth solutions for communities that are already struggling with access to basic health care are obvious. Those with the ability to work remotely over the Internet can continue to earn and contribute to the economy, while those online can continue to avail of online services that are not available to offline communities. The digital economy is opening a new world of opportunities also as geographic location is no longer the barrier it used to be. Global markets are opening to service providers regardless of their location as are employment opportunities for persons when relocation formalities are no longer obstacles.

The digital divide poses a public safety issue also for the global community. Digitization is necessary for social distancing and if these measures cannot be enforced in the developing world, the threat of COVID-19 (and future pandemics) will remain for everyone.

Many of the countries in which Digicel operates are small island developing States in the Caribbean and the South Pacific regions. Many have been successful, and some exemplary, in controlling the spread of COVID-19 and in this regard, their preparedness for natural disasters such as hurricanes and cyclones has stood them in good stead.

However, while COVID-19 numbers vary across regions, the economic impact on the developing world is devastating. Many countries are heavily dependent on tourism and some will see half or more of their GDP disappear. This will severely challenge governments and populations in countries where the safety nets of social security and public health structures are limited. A number have sought IMF assistance and it seems clear that this economic crisis will continue for years.

For policy-makers, COVID-19 has made clear the broadband connectivity and accessibility gaps that exist and that action is urgently needed to address these in the developing world. Funding is a key issue and digital players will have to contribute to the build cost.

The traditional model, where the costs of network investments made by telecommunications companies are recovered by offering services to end users, has failed to connect the unconnected even prior to the COVID-19 crisis and this shortfall has been exacerbated by the economic challenges of the pandemic and the unviability of rural broadband network construction. World Bank funded projects can assist in some cases and the ITU/UNICEF GIGA project to connect schools in the developing world provides an example of international collaboration. However, the costs are enormous and in Africa alone, USD 82.5 billion will be required for infrastructure CAPEX, network operation and maintenance to reach universal, affordable, and good quality broadband Internet access by 2030. At the policy level, there is a recognition that an end-to-end solution is required and that the siloed approach has not produced the results that were required.

COVID-19 has also emphasized the different fortunes of the stakeholders at either end of the digital divide. It cannot be right that half of the world's population is excluded from the digital economy at the very time when the digital economy is roaring ahead and generating extraordinary wealth that remains detached from the solutions to connect those excluded persons. As the maxim quoted by Winston Churchill and others goes: "Where there is great power there is great responsibility".

It is clear that new financing approaches are required. This brings into focus the importance of the work being undertaken by the Broadband Commission's Working Group on Financial Models for the 21st Century. The Working Group is examining the crucial question how all actors in the digital ecosystem can contribute to the financing of broadband coverage, focusing in particular on Africa and the developing world.

The COVID-19 pandemic has accentuated the fissures in the digital economy and highlighted that, at present, the digital economy is not (yet) global. The digital divide remains a global challenge and all stakeholders have a responsibility to engage in the quest to solve this. It's time for a new funding model.

Insight from Commissioner Mr. Erik Ekudden (Ericsson)

Connectivity is essential in the 'new normal'. Directly or indirectly, COVID-19 has affected everyone around the world. Social distancing and keeping millions at home has placed significant demands on infrastructure. Systems supporting health care, education and businesses of all types are under stress. Today, connectivity is key and so far, telecom networks have stood up to the task. This massive disruption has highlighted the value of the network.

As a case in point, in May 2020 there are 1.2 billion children out of the classroom, and as a result, education has changed dramatically, with the distinctive rise of e-learning, whereby teaching is undertaken remotely and on digital platforms. Broadband is central to providing access to education and education itself is key to breaking down barriers to digital inclusion.

However, access to connectivity is still an issue. Regardless of the massive progress in Internet connectivity today, over 40 per cent of the world's population, around 2.6 billion people, still do not have access to the Internet. These were the findings of the 2019 World Economic Forum edition of Ericsson's "Enabling internet for all" report¹, all of which are based on the Ericsson Mobility Report data.

However, lack of access to Internet usage is not the same thing as lacking mobile network coverage. Ericsson estimates that global 4G population coverage was around 75 per cent at the end of 2018 and is forecast to reach over 90 per cent in 2025 (Ericsson Mobility Report, 2020²). Clearly there is a big gap between those having mobile network coverage, even 4G, and those actually using the coverage for Internet access.

Whilst improving capacity and extending coverage is a priority, it alone cannot address the problem of digital inclusion. Beyond the 'the coverage gap', in order to address the 'usage gap' the Internet must also be accessible, affordable and ready for use for all. Driving digital inclusion goes beyond the provision of network coverage, with accessibility and affordability as key barriers for potential users.

Following up on the case of education, as magnified during the COVID-19 pandemic, schools and communities without connectivity can put education at risk. We argue that increasing broadband usage in community-based institutions, particularly focusing on schools, can be an effective way to increase broadband usage across the globe.

For the past decade, through the Connect To Learn initiative, Ericsson has actively advocated on the importance of bringing connectivity to all schools. We are now doubling down on our efforts and in August 2020 we announced a multimillion-dollar commitment to support UNICEF in their activities to map connectivity in schools as part of the broader Giga initiative with ITU and UNESCO (<https://gigaconnect.org>). In addition to funding, Ericsson is committing resources for data engineering and data science capacity and is actively engaging its customer base in the mission to accelerate school connectivity mapping.

In the GIGA initiative schools are used to identify demand for connectivity, as well as being used for learning and connecting where the community can come together and support its next generation in a world where we are all increasingly digital, where the skills that are required are not formal ones, necessarily, and where learning happens continuously.

To close the usage gap related to accessing Internet, we advocate the deployment of fixed wireless access (FWA) that leverages on existing network infrastructure and assets for institutional coverage.

An existing mobile radio network, normally designed for voice and mobile broadband, is an excellent base for offering an FWA service.³ By taking advantage of existing network infrastructure and assets which serve 92 per cent of the world population, broadband connectivity can be provided in an economical and practical way.

In summary, neither spectrum nor technology are barriers to broadband Internet access. The key challenge is primarily anchored in socio-economics. Mobile technology is proven and provides economies of scale – rural connectivity solutions need to scale and be built on proven technology, with sustainable business models.

We recommend regulators and policy-makers to back increased coverage for institutions like schools by supporting requirements of coverage when licensing spectrum, financial support for rural sites that cover schools, and regulative support with e.g. site permits.

Insight from Commissioner Mr. Piotr Dmochowski-Lipski (European Telecommunications Satellite Organization, EUTELSAT IGO)

Since its creation in 2010, the Broadband Commission, of which one of my predecessors in the post of Executive Secretary of the European Telecommunications Satellite Organization (EUTELSAT IGO) was a founding Commissioner, has continuously demonstrated the importance of utilizing satellite telecommunications resources in media, broadband, information and communication technologies as a contributing factor to the realization of the United Nations goals. In turn, the United Nations fully acknowledges the paramount importance of ICT as an enabler to accelerate progress towards each 17 Sustainable Development Goals (SDGs) and considers that it is an essential support to the advancement towards targets in areas of health, education, finance and energy – as well as meeting some of the most important global challenges related to poverty, inequality, climate, environmental degradation, prosperity, peace and justice.

The Broadband Commission demonstrated its leading role as an influencer and ambassador for the promotion of the development of broadband infrastructure and services so that no one is left behind. Maintaining the multi-stakeholders' approach at the core of what defines the Commission, numerous working groups were also set up in the past ten years, to privilege the promotion of broadband in different areas of activities or for specific issues. Today, with the latest advocacy targets set for 2025, the Broadband Commission has firmly reaffirmed its ambitions and with the publication of the annual State of Broadband reports, is continuing to establish its legitimacy.

In the past ten years, the space and satellite telecommunications industry went through a radical change and experienced a technological revolution. Barriers to entry in the space sector collapsed and new fully-private players were able to join and challenge the inner circle of governmental launchers with the development of reusable launch system technologies which soon became a game changer for the overall industry. Mega constellations, such as Starlink of Space X⁴ in the low-Earth orbit or O3B⁵ of SES in the medium-Earth orbit are all dedicated essentially to Internet connectivity in areas of the planet that lack them. In parallel, demand for ever-faster satellite broadband Internet connections led to the development of increasingly more powerful satellites in the geostationary orbit. The deployment of high-throughput satellites (HTS) constituted a quantum shift for satellite telecommunications with satellite operators able to offer reliable coverage together with a cost effective and easily installed consumer systems with high speed Internet connectivity in urban, rural or the remotest locations. This leap was made possible thanks to innovations enabling the reuse of frequency for HTS coverage thus reducing the cost of bandwidth while maintaining increased performance.

For the near future, considering the advent of next generation satellites networks and the entry into services of new ultra-or very-HTS globally, competition will grow between satellite broadband players forcing the industry to reduce the costs borne by the end users while constantly improving the reliability and quality of service. The challenge of connecting the other half and leaving no one behind at an affordable price can only become a reality if national broadband plans support and recognize the need for combining hybrid solutions with a smart ICT strategy.

The most recent data of the European Commission in the Digital Economy and Society Index 2020⁶ indicates that on average, 17 per cent of European Union households (80 million citizens) are not reached by next generation access broadband at 30 Mbps which illustrates the persistence and importance of the digital divide in one of the richest consumer market of the world. With satellite broadband available in Europe,⁷ the use of alternative technologies to complement fibre deployment is a prerequisite for guaranteeing broadband Internet access for all, which needs to remain a public policy imperative at the EU level.

In all, only with the construction of smart networks can services be provided regardless of the delivery of technology in order for broadband connectivity to increase employment, spur economic growth and act as an accelerator to social and digital inclusion.

EUTELSAT IGO is a regional organization of Member-States of all regions of Europe and the adjacent parts of Central Asia. Our principal role is to ensure that public interests of satellite telecommunications are respected and observed during the process of commercial exploration of orbital positions and spectrum resources by the operator Eutelsat S.A. It is my pleasure to note that the company is vigorously committed and observant of its 'corporate citizen' role as a provider of vital infrastructure. We share a strong European focus which includes understanding of Europe's obligation to the rest of the world, especially developing nations in need of expanding, through the power of satellite telecom resources of connectivity for all, in cooperation with other technology platforms. This is what United Europe is about and should remain so in the future, as we work together toward the attainment of our Sustainable Development Goals.

Insight from Commissioner Mr. Kevin Martin (Facebook)

Supporting sustainable development through investments in broadband availability and affordability (Broadband Commission's 2025 Targets #2 and #3)

Connectivity is at the heart of Facebook's mission: to give people the power to build community and bring the world closer together. To advance this mission, we have invested in projects that make broadband connectivity more accessible and affordable in underserved regions of the world, contributing to the Commission's overall cause of sustainable economic development.

According to Analysis Mason, Facebook investments in [Sub-Saharan Africa](#)⁸ (SSA) and the [Association of Southeast Asian Nations](#)⁹ (ASEAN) region will deliver economic benefits of over USD 57 billion and USD 70 billion, respectively, over the next five years. NERA Economic Consulting predicts that Facebook's investments in [Latin America](#)¹⁰ will generate USD 27 billion per year in economic growth and create 178 000 new jobs in the region's economy.

For example, Facebook is a major investor in submarine cables, which increases the supply of international bandwidth, reduces costs for ISPs and results in a combination of more connectivity and lower prices for end users.

In Latin America, Facebook is part of a consortium deploying the Malbec cable between Brazil and Argentina that will double international capacity to the latter. The cable is expected to halve international capacity prices, allowing operators to pass on those savings to their customers. NERA estimates that the cable will increase Internet penetration in Argentina by 6 per cent and 3 per cent in Brazil.

In ASEAN, Facebook invested in the APG cable and Southeast Asia Japan Cable 2, as well as three new trans-Pacific cables connecting to ASEAN that will go live in 2020-21. We also announced in May that we joined a consortium to build the 2Africa cable that will circle the continent, interconnect 23 countries, and triple the capacity of all the subsea cables serving Africa today.

Facebook also invests in edge network infrastructure including Points of Presence (PoPs) and local co-located caches that support economic development by allowing operators to access Facebook content at locations closer to their own networks. This cuts international connectivity and transit costs for operators and improves user experience.

In SSA, 70 per cent of Facebook traffic is now served from within the region. Across SSA, Facebook's investments in edge network and international capacity together will enable Internet traffic to increase by 9 per cent by 2024 and generate an increase of GDP of USD 53 billion. In ASEAN these investments may increase Internet traffic by 9 per cent by 2024 and generate a GDP contribution of USD 64 billion over a five-year period.

In Latin America, our edge network investments are expected to reduce operators' international connectivity costs by about USD 440 million per year, which can be passed on to customers through lower prices.

Facebook also invests in [Open Transport Networks](#) (OTNx) that deploy fibre infrastructure for backhaul. These projects are deployed with local operators to introduce 3G/4G or deploy new network technologies.

Facebook has deployed fibre through OTNx in Indonesia, Uganda, Nigeria, and South Africa. The two live OTNx deployments in Uganda and Nigeria have enabled an extension of 3G/4G coverage to over 4 million people.

OTNx initiatives spur economic development by improving the quality and affordability of services and allowing more users to get online. In Indonesia, OTNx is expected to help bring 900 000 people online and generate over USD 6 billion in GDP between 2020 and 2024. An estimated 700 000 people in Uganda and 300 000 people in Nigeria got online earlier than they would have without the OTNx investments, producing an economic impact of almost USD 4 billion between 2020 and 2024.

For more information on the economic impact of Facebook's investments in connectivity, read these reports on [Sub-Saharan Africa](#), [ASEAN](#), and [Latin America](#). We look forward to working with our fellow commissioners to furthering the promise of sustainable economic development through our pursuit of the 2025 Targets.

Insight from Commissioner Mr. Mats Granryd (GSMA)

The mobile industry has never been more important to the world's citizens and economy. We have seen in the COVID-19 crisis that more and more people are depending on digital services as they work or learn from home, manage their businesses, and communicate remotely with friends and family. The experience has highlighted the strategic importance of a robust, resilient and secure digital infrastructure, and access to services, in which mobile plays a key role. Representing 750 mobile operators, the GSMA has consistently been focused on unlocking the power of connectivity so that people, industry and society thrive. We continue to play a leading role in supporting and amplifying the vital work our industry is doing at this time, contributing to the Broadband Commission for Sustainable Development 2025 Targets. In particular, we have made good progress towards the achievement of Targets 4, 5, and 7.

The wide-scale social and economic challenges created by the COVID-19 pandemic are providing stronger incentives for individuals, businesses and governments to more actively pursue digital solutions, and the importance of digital skills has never been more critical. The GSMA is supporting industry initiatives by:

- Enhancing the GSMA Mobile Internet Skills Training Toolkit (MISTT), to support safe access training materials with a range of new modules available remotely.
- Launching a [GSMA Innovation Fund](#) to encourage the development of innovative solutions for mobile Internet adoption and digital inclusion, including overcoming digital skills barriers. The fund focuses on countries in Asia and Sub-Saharan Africa with grants of up to GBP 250 000.

The reach of a mobile money agent is now seven times that of ATMs and 20 times that of bank branches. The GSMA's Mobile Money team estimates that there will be 1.5 billion registered mobile money accounts and 529 million active accounts by the end of 2025. To drive financial inclusion through innovation, [the GSMA Inclusive Tech Lab](#), that focuses on a range of innovative areas developing and implementing technical solutions, launched [updated harmonised mobile money APIs](#) and [a new platform to test mobile money interoperability](#). Mobile money is emerging as a powerful tool to deliver humanitarian assistance to the most vulnerable in times of crisis. Sixty per cent of mobile money providers reported partnering with a humanitarian organization to deliver mobile money-enabled cash and voucher assistance with digital cash assistance delivered to over 2.7 million unique mobile money accounts.¹¹

While Internet connectivity is spreading rapidly, it is not spreading equally. Mobile operators are driving efforts to address the gender digital divide. As part of the [GSMA Connected Women Commitment Initiative](#) which launched in 2016, 39 mobile operators have made formal commitments to reduce the gender gap in the customer base of their mobile Internet or mobile money services, driving an effort to accelerate digital and financial inclusion for women across Africa, Asia and Latin America. So far they have collectively reached over 35 million additional women with these services. Their efforts include offering low-cost Internet-enabled handsets to address women's price sensitivity, savings and loans products aimed at women, emergency balance and alerts to help women feel safer when using mobile phones, increasing the number of female agents and merchants, and improving digital literacy among women through educational programmes and interactive content.

Whilst we are making great strides towards achieving the 2025 Targets, much more can be done to leverage the power of mobile and support the delivery of services to those most in need. In the coming years, operators must continue to expand connectivity for the underserved and continue innovating to enable more people to realize the benefits of life-enhancing, mobile-enabled services. They must also operate responsibly by integrating social, environmental and ethical issues into their business practices. By coming together, collaborating across industries and across the public and private sectors, even during these challenging times, we can deliver on our ambitions.

Insight from Commissioner Ms. Sun Yafang (Huawei)

Inclusive technology: Leaving no one behind in the digital world

Huawei's vision is to bring digital to every person, home and organization for a fully connected, intelligent world. According to a GSMA report, nearly 750 million people worldwide still have no mobile network coverage, while 3.5 billion people don't have Internet access. The majority of these people live in remote areas with limited access to networks and electricity, and where it is expensive to build infrastructure. Traditional solutions need eight to ten years to recover their costs, so telecom operators are unwilling to roll out networks in remote areas. Huawei launched the RuralStar solution, which greatly reduces site construction costs. Huawei RuralStar series has been deployed in over 50 countries in Africa, Southeast Asia and Latin America, providing connectivity to more than 40 million people worldwide since 2017. The solution offers connectivity across all types of terrain, across plains, hilly regions, deserts, and island chains. Huawei hopes to provide mobile broadband to serve 100 million people in the emerging market within five years to solve local communications, e-education, health care and other livelihood issues.

The world is increasingly driven by digital technologies and Huawei believe that no one should be left behind. Huawei set up the DigiTruck mobile digital classroom in partnership with the Belgian non-profit organization Close the Gap, the UNESCO Regional Office for Eastern Africa, GSMA, Computers For Schools Kenya (CFSK), and the Kenyan telecom carrier Safaricom. DigiTruck is the latest programme under Huawei's TECH4ALL initiative that supports access to high-quality education. It focuses on providing digital skills training for rural teachers, unemployed young people, and women in Kenya. DigiTruck has benefited nearly 1 000 people from five counties in Kenya. In the future, DigiTruck will provide digital skills training to more people in remote regions, includes a target of 9 000 people to be trained in France next year.

Huawei also believe that technology should not be in opposition to nature - it should help nature thrive. Rainforests absorb about 30 per cent of the world's carbon dioxide and play an important role in mitigating global warming. However, illegal logging, poaching, and insufficient conservation efforts threaten its very existence. In fact, the world's rainforests could disappear in just 40 years if current trends continue. Huawei cooperated with Rainforest Connection (RFCx) to develop a 'Guardians' solution based on Huawei's Cloud AI technology to detect the sounds of spider monkeys and chainsaws used for illegal logging. These solar-powered Guardians use upcycled Huawei phones to detect forest sounds. Running autonomously, each Guardian can cover an area of 3 km² and run 24/7 for up to two years. Guardians have now been deployed in more than ten countries around the world to save our rainforests.

COVID-19 has changed our lives, but digital technology likes 5G, Full-fibre, big data, and AI are helping us to fight back. In China, Huawei worked with our customers to build an emergency 5G network for the Huoshenshan field hospital in Wuhan. We got the entire network up and running in only three days, providing the hospital with the high-speed connections they need for remote consultations. Our remote videoconferencing systems are also helping medical institutions in countries like Thailand and Italy to communicate more efficiently. We have deployed an AI-based diagnostic solution in over 60 medical institutions across Asia, Europe, and Latin America to boost diagnostic efficiency. It normally takes 12 minutes to review a CT scan. With AI, hospitals can do so in just two minutes.

Moving forward, we will continue creating value for our customers and for the wider global community. We will work together with our ecosystem partners to promote shared success, and use that success as the foundation for sustainable development. No matter how bumpy the road ahead may be, we will stay the course and remain committed to our vision and mission: To bring digital to every person, home and organization for a fully connected, intelligent world.

Insight from Commissioner Mr. Keng Thai Leong (Infocomm Media Development Authority of Singapore, IMDA)

The Broadband Commission's Agenda for Action provides a strategic framework for us to build our COVID-19 response upon, by ensuring that everyone is connected and able to use digital tools in their everyday lives. Singapore recognizes that COVID-19 has changed the way people live and work, and how businesses operate. Hence, Singapore is prioritizing our push towards digitalization, with an emphasis on helping those who require more assistance.

A. Helping businesses

Recognizing that it is vital for businesses to embrace digitalization and overcome the challenges posed by COVID-19, Singapore rolled out *Stay Healthy, Go Digital* as a call for individuals and businesses to adopt digital solutions so that life can carry on as much as possible. One resource provided is the *Digital Solutions Directory* which comprised relevant digital solutions that helped businesses with remote working, visitor management, selling, billing and paying online. These solutions are provided in partnership with industry players for free or with limited time offers.

To help businesses take action to digitalize and adapt to the new normal with COVID-19, the Singapore Government also increased its financial support for digitalization. The *Productivity Solutions Grant* has been enhanced to provide higher levels of funding support for SMEs to adopt digital solutions. New solution categories for remote working and visitor management have also been added. Furthermore, the *Digital Resilience Bonus* is an incentive for qualifying enterprises to adopt nationwide e-payment and e-invoicing solutions, as well as pre-defined digital solutions that help them improve business processes, access customers online and make data-driven business decisions.

B. Support Workers

In the push for digitalization, national broadband infrastructures will serve as a critical foundation for enterprises to tap on emerging technologies and develop new microservices. To ensure a digitally-skilled economy, the *TechSkills Accelerator* (TeSA) initiative was started in 2016 to support information and communications technology (ICT) professionals and non-ICT professionals to upgrade and acquire new skills and domain knowledge that are in demand, and to stay competitive and meet the challenges of a fast-moving digital landscape. Through partnerships with leading companies in various sectors, TeSA has helped trained and placed Singaporeans into in-demand tech jobs such as Artificial Intelligence, cybersecurity, software development, and network engineering.

C. Helping people

Ensuring that services remain accessible to seniors during the crisis, the SG Digital Office was set up to help 100 000 seniors learn to use digital tools, like communication and e-payment apps through the Seniors Go Digital initiative. Complementing this are webinars and one-on-one, volunteer-supported Virtual Digital Clinics. Prior to COVID-19, Singapore had extensive efforts to help seniors through *Silver Infocomm Junctions* and *Digital Clinics* that have been expanded and adapted to meet the urgent needs of the community.

Ensuring that all students are able to carry out home-based learning during the pandemic is crucial. Singapore's NEU PC Plus programme launched in 1999, has been continually enhanced to address the needs of low-income households with school-going children or persons with disabilities with broadband access and digital device ownership. To further support school-going children's needs during COVID-19, Singapore enhanced the programme's eligibility criteria to allow more applicants to qualify.

D. Conclusion

Singapore recognizes that the fight against COVID-19 will be long-drawn. Digitalization plays a key role in ensuring that our communities and economy can recover and emerge stronger and more resilient. Singapore is cognizant that this recovery should be inclusive and affordable. Singapore will continue to support the Commission's implementation of the Agenda for Action.

Insight from Commissioner Mr. Rupert Pearce (Inmarsat)

A reflection on the COVID-19 initiatives from Inmarsat in implementing the Broadband Commission's Agenda for Action

Ten years ago, the International Telecommunication Union (ITU) and United Nations Educational, Scientific and Cultural Organization (UNESCO) brought together a diverse group of senior telecommunication leaders including government, industry, international agencies and academia to form the Broadband Commission for Sustainable Development. As a Member of this venerable team and former Working Group Chair, I am proud of the progress we have made over this decade to further the United Nation's Sustainable Development Goals through our actionable, forward-looking policy, recommendations, and expert advice and guidance.

This year, the Broadband Commission articulated its Agenda for Action organized around the three pillars of Resilient Connectivity, Affordable Access, and Safe Use of Online Services for Informed and Educated Societies, to mitigate the impact of the COVID-19 pandemic and ease the immediate adverse impacts for economies and societies. Inmarsat supports the Broadband Commission's Agenda for Action. The values implicit in the three pillars of the Agenda are consistent with Inmarsat's own values, as reflected in the steps Inmarsat has taken in response to COVID-19.

Resilient connectivity is essential to the effective functioning of the modern digital society, and even more so during times of crisis. The increased emphasis on services such as telework, telemedicine, and remote education during the COVID-19 pandemic has highlighted the urgency of closing the digital divide. Satellite providers are at the forefront of this endeavour, providing robust connectivity to people around the world, even in the most challenging environments.

Critical connectivity needs that are outside the reach of fixed broadband networks have grown as a result of the novel coronavirus. Inmarsat has been proud to take steps to ensure that mobile satellite services remain safe, accessible, ubiquitous, resilient and affordable for the essential workers and emergency responders that rely upon them in the majority of the world that is not served by terrestrial networks, including on land, in the air, and at sea.

Here are a couple examples of the steps we are taking to support vital safety and humanitarian services, and to keep the arteries of global trade flowing, consistent with the pillars of the Broadband Commission's Agenda for Action.

Support for Aid and the Non-Governmental Organization (NGO) Sector

Inmarsat is providing enhanced support to the vital aid and NGO sector during the COVID-19 pandemic. These organizations are at the forefront of the medical response, supporting health services through telemedicine in remote or developing areas. Elsewhere, the impact of the disease has caused impacts to the wider economy and people's day-to-day lives, which are being addressed through the work of NGOs, such as distributing food and other resources. COVID-19 adds increasing complexity to the daily operations for aid and NGO organizations, causing remote connectivity to be more critical than ever.

Aid organizations rely upon Mobile Satellite Services (MSS) communications in support of COVID-19 relief operations. For example, Télécoms Sans Frontières (TSF) has deployed satellite phones to help in coordination of COVID-19 response in Mozambique and elsewhere. With land-based networks unreliable in many places, especially in times of crisis, satellite connectivity promotes the safety and efficacy of relief work. To further assist aid organizations, Inmarsat's new initiatives include expanding the geographic availability of some Broadband Global Area Network (BGAN) satellite services, offering these organizations the capability to operate globally as they carry out their missions. Inmarsat is also offering new service plan options for aid and NGO organizations, ensuring they have affordable access to the connectivity they need to do their job, wherever they are.

Connecting critical supply chain workers at sea during COVID-19

Anxiety levels at sea have been on the rise, as seafaring crews deal with concerns about their own health and that of their families, isolation while at sea often for extended periods, as well as the global economic and social impacts of COVID-19. Inmarsat took steps to ensure that crew have access to important information and connectivity during this pandemic. In conjunction with its partners, Inmarsat has deployed an innovative telemedicine solution enabling maritime users to benefit from free video calls with a trained health professional, to help these essential workers cope with the impact of the crisis. Using a pro bono dedicated bandwidth service, the Master or Chief Officer can connect by video call over satellite to a trained healthcare professional offering real-time advice on the coronavirus, its symptoms and what to look out for. Additionally, to further support mariner mental health during this pandemic, calls made to the SeafarerHelp service provided by welfare organization International Seafarers' Welfare Assistance Network (ISWAN) are being made available free of charge.

These are only two examples of the myriad ways Inmarsat and other companies in the ICT sector are deploying innovative technologies and business models to help manage this global crisis, in furtherance of the Broadband Commission's Agenda for Action. At this crucial time, we recognize the even greater importance of supporting governments, humanitarian organizations, the maritime and aviation industries and the worldwide community of public and private enterprises, as they respond to such a difficult range of challenges.

Insight from Commissioner Mr. Stephen Spengler (Intelsat)***The role of geostationary satellite networks in meeting the rural connectivity challenge***

Today we are seeing the connectivity gap closing, with mobile broadband coverage reaching an additional 1 billion people in the last five years, according to GSMA's 2020 Mobile Economy report. Yet there are still many challenges that remain in bringing affordable access to broadband in rural areas, especially those with sparsely populated remote communities often dispersed across distances. In most cases, the only viable solution for bringing broadband to these hard-to-reach unserved areas is by means of wireless networks encompassing mobile (3G/4G) and Wi-Fi technologies. However, building out wireless communications networks in rural and remote areas using traditional means of terrestrial backhaul, such as fibre and microwave, has continued to prove challenging both from an economic as well as a geographic feasibility standpoint. Running terrestrial backhaul across long distances, often made more difficult because of topographical challenges like dense forests, mountains and valleys, becomes cost-prohibitive quickly when factoring the high CAPEX investment of physical backhaul infrastructure in these scenarios against the limited revenue that can be generated from smaller user populations.

As has always been the case, satellite-based backhaul for wireless networks (cellular and Wi-Fi) is the only viable solution to connecting most rural areas and remote communities from both an economic and geographic feasibility standpoint. Only satellite offers the means to connect hundreds even thousands of rural and remote sites, spread out geographically, to a provider's core network and the Internet using a single pipe of satellite capacity, which is then distributed across the entire network of sites (cellular and or Wi-Fi) based on peak usage per site. Only by including satellite-based backhaul in a strategy to bring connectivity to rural areas and remote communities can the connectivity gap ever be closed.

As the digital divide shrinks, social and economic improvements follow. Communities once living in areas without access to the Internet can now, through mobile and Wi-Fi broadband backhauled over satellite, access online information, web-enabled applications and a variety of public and private online services that help drive improvements in health, education, overall quality of life, and social progress. Men and women can learn new skills that equip them to compete for higher-paying jobs or for launching a small business, helping them escape poverty. Access to the Internet over satellite-backhauled mobile broadband and Wi-Fi enables them to sell their local products and crafts in the global marketplace. Local connectivity means communities now have access to banking services, real-time telemedicine, regional news and weather reports, and emergency alerts. It means people in these communities can now communicate with friends, loved ones, and others real-time wherever they are.

Today's advanced geostationary satellite networks are being leveraged to quickly and economically bring life-changing 3G/4G and Wi-Fi service to rural and remote communities for the first time. For example, a leading mobile operator in Uganda is providing connectivity to hard-to-reach communities, providing access to mobile money services and education for primary schools. Another example is mobile network infrastructure company Africa Mobile Networks (AMN), which created a unique business model for enabling mobile operators to expand coverage into remote, hard-to-reach areas across sub-Saharan Africa. With low-cost cell site equipment, and use of solar power and satellite backhaul, AMN's solution means mobile operators can quickly and cost-effectively provide coverage for small, remote communities in countries like Cameroon, DRC, Liberia, Nigeria and Zambia, bringing life-changing connectivity to these communities for the first time. In addition to mobile coverage, Wi-Fi service is also being used to support projects underway in many countries like Rwanda, where solar-powered Wi-Fi service backhauled over satellite is providing schools access to quality educational programmes. And refugee camps are utilizing satellite-backhauled Wi-Fi service, most often powered by solar energy, to support ICT labs and other applications, which equip refugees with the knowledge and skill needed to eventually leave the refugee camps and rebuild their lives.

While there has been much progress in closing the global connectivity gap, there is still much work to be done, especially in bringing access to broadband to the 750 million people who still live in areas without access. While investments continue to be made in expanding mobile broadband and Wi-Fi service beyond urban borders using traditional backhaul approaches of fibre and microwave, this will never close the gap, and any impact to it will take months to years using these approaches. Only by integrating satellite backhaul into strategies to deploy mobile and Wi-Fi networks into rural and remote communities can the gap be closed quickly and economically. With satellite-enabled mobile and Wi-Fi broadband services, every man, woman and child around the globe can have access to the social and economic advantages that result from Internet connectivity.

Insight from Commissioner Mr. Andrew Sullivan (Internet Society)

The Internet Society's vision, since our inception in 1992, is that the Internet is for Everyone. In other words, connectivity and opportunity are for everyone. In this context, the Internet Society's mission, to support an open, globally connected, trustworthy, and secure Internet, has never been so critical. Our efforts are aimed at not only increasing the reach and reliability of the Internet in the short term, but also ensuring the foundations for continued growth are solidly in place for the long term.

The COVID crisis has shed light on the importance of connectivity in a way that we never could have imagined. The question is no longer whether we need connectivity, but how fast we can extend connectivity for business to continue, for children to learn, and for families and people to stay in touch. In a matter of weeks, millions of school children that have connectivity are learning from home online vs. in physical school buildings. People who have connectivity are working online from home and turning to tele-health solutions, overnight. In a world where social distancing and isolation are the new 'normal', never before has the critical role of connectivity been brought into our homes and every aspect of our lives.

The very nature of the Internet – a layered architecture, a common protocol, a global routing system, and an architecture that supports innovation – has proven its importance. The Internet has become a lifeline for those that have it, and it no longer is an option. This is why the Internet Society has been [deploying efforts](#) over the years to grow the Internet and make it stronger.

The pandemic taught us several things. There are lessons to be learned, but also calls to action for better preparedness. The Internet Society would suggest that international community needs to:

- Voice support for infrastructure providers and limit restrictions on them: Over the past few months, some have been wondering if the Internet could handle the strain of rapid traffic growth and increased latency. Will it cause a catastrophic failure of the Internet? The answer is that such a failure is not likely to happen. Core Internet infrastructure providers have been able to absorb the increases in traffic and demand, and should continue to be able to do so over the coming days, weeks, and months. Cloud infrastructure providers should also have sufficient additional compute, storage, and bandwidth capacity to enable their customers, including the e-learning, messaging, and videoconferencing tool providers, to scale their systems as necessary. This said, with the COVID crisis, now is the time to call for more aggressive closure of the digital divide – increasing the availability of affordable high-speed broadband connectivity to unserved and underserved users.
- Support Internet exchange points (IXPs): Because IXPs help keep traffic local, giving local network providers a place to interconnect and exchange traffic with one another, as well as interconnecting with major content providers.
- Support Community Networks: Because community networks, from New York City to Nairobi, are providing people access to the Internet for the first time, and serving communities by providing information about COVID-19 to their communities.
- Support Alternative Funding Models: Provide universal service funding or other emergency funds to networks that are in need of immediate funding to support network build-out or emergency power redundancy support, including community networks. Consider providing immediate funding in smaller increments to local and community networks providers.
- Keep cross-communication channels and the Internet 'on' and call on policy-makers to allow providers to keep networks up and fully operational: Now is the time to anticipate short-term and long-term policy and regulatory changes that are, and will be, required in the aftermath of the COVID-19 crisis. Some may be tempted to challenge the open and globally connected Internet model that we know. We would suggest that UN BBC members issue a call to resist the temptation to close networks. Keeping cross-border communication channels open is critical. Indeed, the Internet can only offer its full potential if it is locally and globally connected, and available, accessible, and affordable to all.

Insight from Commissioner Dr. Hyeonmo Ku (Korea Telecom - KT)***Korea's Infectious Disease Control and Prevention on COVID-19 (by GEPP's Digital Tracing)***

The new pandemic, COVID-19, has been spreading all around the world, causing a huge impact on economic and social crisis. South Korea has been touted as one of the most successful countries in responding to COVID-19, having flattened the curve on COVID-19 in 20 days. The key factor of successful response is a 3T (test-trace-treat) system on the basis of ICT, and tracing is the most pivotal given, enabling early detection to prevent spread. KT's Global Epidemic Prevention Platform (GEPP) is assisting the national effort to contain COVID-19 with digital tracing.

Digital tracing helps to prevent the spread of infectious disease by identifying the pathway of confirmed cases using mobile location data. Digital tracing is classified into two models: one is international mobility tracing and the other is domestic mobility tracing. International mobility tracing serves to prevent overseas infectious disease by identifying citizens traveling to epidemic-prone countries and notifying the information to KCDC (Korea Center for Disease Control) for monitoring. Traveler receives SMS alerts on disease information of the country and preventive measures. Domestic mobility tracing helps the government to make quarantine efforts timely by identifying a travel history of the confirmed cases. Digital tracing assists the government to make an immediate announcement and polices for quarantine.

Since its inception in 2016 after the first MERS outbreak, GEPP has been making a case for effect of the improvement of national surveillance in two ways: one was to improve risk awareness of citizens who are exposed to infection risk, helping citizens' early reporting to the government and taking their own precautions, and the other was to improve authority's capability of detecting the entry of citizens from epidemic-prone countries. Nearly half (47 per cent) of citizens who had travelled to epidemic-prone countries opt to do more self-reporting on their risk. In addition, the government could identify almost 90 per cent of citizens who returned from epidemic-prone countries in 2019, compared to that of 2017. After the first outbreak in 2015, MERS-CoV broke out again in 2018 but the Korean Government swiftly contained it without an additional case. This year, the government has well-managed to flatten the COVID-19 curve through the consolidated response policy on the basis of diverse data from digital tracing, including close contacts. GEPP's digital tracing is duly supporting the government to conduct fast response to terminate COVID-19. Contact tracing helps to mitigate economic loss that can be caused by pandemics because it does not require city lockdowns. Therefore, the Korean Government did not consider lockdowns from the beginning of the COVID-19 outbreak. Contact tracing is helping the Korean economy to be more sustainable during the pandemic situation.

The world worries over possibilities of future outbreaks after COVID-19. Efficient testing and treatment are crucial to reduce spread and swiftly terminate a virus. Nevertheless, medical resources such as test kits are not always available, and developing vaccines can take a long time. Therefore, prevention through non-pharmaceutical interventions (NPIs) - including washing hands, wearing masks, and social distancing - is crucial. Mobile ICT solutions can enhance the effectiveness of NPIs and also help the stages of the national response framework. In this regard, GEPP is working to become a global model of comprehensive mobile response system that assists a national framework of countries, including advancing a prediction area at the back-end, using AI and big data to align with a national framework. KT trusts that such a comprehensive mobile response system can help the world to prepare for future pandemics and to save people's life and dignity.

Insight from Commissioner Mr. Paul Mitchell (Microsoft)

The Airband Initiative

In the summer of 2017, we launched the [Microsoft Airband Initiative](#) to address Broadband Commission Targets and bring broadband connectivity to people living in unserved rural areas globally. To eliminate the rural broadband gap, we brought together private-sector capital investment in new technologies and rural broadband deployments, with public-sector financial and regulatory support. We set an ambitious goal: to provide access to broadband to 3 million people in unserved rural areas of the United States by 4 July 2022.

To achieve this, we shared three commitments when we announced the Initiative in 2017:

1. Providing direct investment to telecommunications companies for projects to expand access to broadband in rural areas of 12 US states within 12 months.
2. Investing in digital skills training for people of all ages in newly connected communities.
3. Offering royalty-free access to Microsoft's patents and sample source code related to TV white spaces (TVWS) technology, a wireless technology that leverages unused broadcast frequencies.

In October of 2019, we announced an expanded goal to extend high-speed Internet access to 40 million unserved people around the globe outside the US by July 2022. Our efforts are concentrated towards areas with significant unserved populations – initially, Latin America and Sub-Saharan Africa – that also have regulatory interest in solving connectivity issues.

Our goal is to empower local partners who know their communities' geographies and needs to solve their community's last-mile connectivity challenges and to combine our and our partners' expertise and assets.

Airband International relies on a four-part approach:

1. Removing regulatory obstacles to TVWS and other technologies that help our partners extend their networks quickly in unserved, predominantly rural, areas.
2. Partnering with local Internet service providers (ISPs) to provide affordable, reliable Internet services.
3. Enabling rural digital transformation in newly connected areas, with a focus on supporting agriculture, education, rural entrepreneurship and telemedicine.
4. Building a larger ecosystem of support, with a focus on stimulating international financing, to scale connectivity projects beyond our own direct investments.

We are now beyond the halfway point of the time we gave ourselves to meet our goal and we're making steady progress against our three-million-person goal. As of 31 March, we're in 25 US states and territories and we've helped provide 1.2 million people with access to broadband in rural, previously unserved areas of the United States. As our partners' network deployments accelerate, we will be reaching many more. All our experiences have reinforced our belief that the rural broadband gap can be eliminated by 2022.

Outside of the United States we've also seen great progress, particularly in Colombia and Ghana, as regulatory hurdles have been removed.

The economic and social ramifications of the COVID-19 crisis have significantly impacted those who do not have reliable access to high-speed Internet. Today broadband connectivity is a prerequisite for full participation in modern life, health, learning, and commerce.

Microsoft Airband and partners have engaged to address the broadband gap during the crisis, by:

- Constructing hundreds of public Wi-Fi hotspots to provide community services;
- Providing free access to informational health and education videos about COVID-19 prevention through partnerships with the WHO (Ghana);
- Providing complimentary connectivity to quarantine centres (India);
- Connecting 174 healthcare clinics, including video conferencing tools and inventory management tools to provide quality care to remotely located patients (Kenya).

To close the digital divide once and for all, we must connect the world quickly. Through our work and our engagement, we hope to provide a blueprint for other public and private sector entities to think about connectivity as a core part of their investments in health, gender equity, water, energy, or any other core area of sustainable development.

Insight from Commissioner Ms. Makiko Yamada (Ministry of Internal Affairs and Communications of Japan)

Japan's broadband strategy for closing the digital divide

Introduction

This year marks ten years since the Broadband Commission was established. The Government of Japan (GOJ) appreciates that the 2020 State of Broadband report provides an important opportunity to reflect on our efforts which have been made nationally and globally to expand broadband Internet connectivity. The GOJ has promoted various strategic plans for broadband deployment since 2000. As a result, as of March 2019, the coverage of high-speed fixed broadband (FTTH, CATV and FWA) capable of delivering at least 30 Mbps download had reached 99.5 per cent, and wireless broadband (LTE and BWA) had reached 99.9 per cent. This was achieved by developing a competitive environment in the telecommunications business field with the private sector's investment as the main principle. In addition, the Ministry of Internal Affairs and Communications (MIC), in partnership with local governments, has supported broadband deployment in disadvantaged areas in order to bridge the digital divide. Japan believes that these achievements could contribute towards progress for No. 1 and No. 3 of the Broadband Commission's 2025 targets.

Development of national broadband plan and competition policies

In November 2000, the GOJ introduced the 'IT Basic Law', which defines the promotion of information technology (IT) as an important national policy, and indicates both its direction and the measures to be implemented to promote it. In 2001, the e-Japan Strategy was established in order to promote investment for broadband access networks by the private sector. With this strategy, Japan achieved the goal of providing high-speed access services to at least half of all national households within five years. In addition to the national broadband plan, competition policies, such as interconnection rules and asymmetric regulations for incumbents, have been promoted in order to further accelerate private-sector investment. A frequency policy has also been implemented to adequately allocate frequency resources for mobile networks.

Support for the development of ICT infrastructure

In an effort to bridge the digital divide, the MIC is subsidizing the building of broadband networks in rural areas that cannot be covered under private investment. This programme aims to eliminate the 'broadband zero area' - areas where there are households with no broadband access at all. The costs of installing fibre optic lines are subsidized when a local government installs them in non-profitable areas, such as rural areas and remote islands, in order to promote ultra-high-speed broadband infrastructure.

Leveraging achievements and ensuring resilience for application

The GOJ has been currently promoting initiatives under its "Declaration to be the World's Most Advanced IT Nation" (2013). This Declaration was adopted as a national vision for building a future where government, industry, academia, and individual citizens can share, collaborate on, and use ICT and information resources.

Japan's achievements have also been used to contribute to supporting the development of telecommunications networks in developing countries. Projects to improve communication infrastructure have been implemented in countries such as Myanmar and Uzbekistan in collaboration with Japanese private companies. New technologies, such as HAPS (high altitude platform station), are also being demonstrated in Rwanda.

It is exactly as a result of its continuous efforts to develop high resilient broadband services that Japan has also been able to respond appropriately to increased demand for broadband access under the COVID-19 pandemic. This stable and robust broadband network is being used effectively, and is contributing to the introduction of teleworking, e-health, and remote learning to help ensure social distancing. Japan will continue to further bridge the digital divide and use ICT to find a variety of social and economic solutions.

Insight from Commissioner Mr. Rob Shuter (MTN)

Building Africa's largest digital community using Ayoba

Ayoba is MTN's instant messaging platform. Launched in March 2019, it leverages our established customer base and insights as well as our local knowledge and presence. It is a key part of MTN's work to bring more people into the digital world and is directly aligned with three of the Broadband Commission's 2025 targets. It aims to enable communication and connection, education and empowerment, entertainment through locally-curated channels, local content and financial services and e-commerce.

The platform is highly localized and tailored for African and Middle East consumer needs. Users can send and receive encrypted messages, share photos, videos, files and voice notes and can also subscribe to live channels, micro-apps and payment solutions. These offer local content to entertain, educate and enable access to mobile financial services. It also allows seamless communication between customers on Ayoba and customers still utilizing SMS services to be accessible to all.

Ayoba aims to build the largest digital community in Africa. So far, it has 2.6 million monthly active users on Android devices in 16 markets and supports 16 languages including isiZulu, isiXhosa, Dari, Yoruba, Swahili, Arabic and Hausa. As its user base grows, MTN will provide platform access to innovators and businesses to enable more digital solutions to meet the needs of more local communities. Micro, small, medium and even large enterprises, entrepreneurs and innovators will be able to use the platform to offer their products and services. Among partners already providing locally relevant content are Pulse Ghana, Pulse Nigeria, Content Connect Africa and the African educational pregnancy app, My Pregnancy Journey.

In early 2020 as COVID-19 spread across Africa, Ayoba's free daily lifeline data allocations allowed users to connect with loved ones and gave them access to credible information through special COVID-19 channels. This translated into some 6 144 terabytes of free data and around USD 147.7 million of value across the continent.

Ayoba contributes to the UN Broadband Commission 2025 advocacy targets in the following ways:

Target 4: By 2025, 60% of youth and adults should have achieved at least a minimum level of proficiency in sustainable digital skills

MTN is taking a 'market-creating' approach to the development of the Ayoba ecosystem. The supporting initiatives include upskilling a community of developers (focusing on youth and women) across Africa and the Middle East to build, operate and maintain the micro-apps on the platform; and educating business owners on how to take advantage of Ayoba's e-commerce capabilities.

Target 5: By 2025, 40% of the world's population should be using digital financial services

The accessibility of financial services through Ayoba is central to our plans to drive greater financial inclusion. Our aspiration is, over the next few years, to reach 100 million digital subscriptions, including 60 million Mobile Money (MoMo) users. At end-2019, we had 35 million MoMo users and 2 million Ayoba users. Among our digital financial services plans for Ayoba are transfers, deposits, loan applications and insurance. Recently MTN integrated its Mobile Money offering into Ayoba in both Cameroon and Ghana.

Target 6: By 2025, overcome un-connectedness of Micro-, Small- and Medium-sized Enterprises (MSMEs) by 50%, by sector

Ayoba's micro-apps and marketplace provide MSMEs with e-commerce capabilities to make their services available online. In onboarding local-content MSMEs, we offer zero-rated channels to grow audiences. To stimulate e-commerce, we hold hackathons, inviting developers to create micro-apps on the platform.

Insight from Former Commissioner (Nokia)

Building a better, more sustainable world for all

Of the many learnings to be gained from the current pandemic challenges, perhaps one of the most significant is that we need to make a better world, where equity of opportunity and access is a cornerstone. Access to services, education, health care, job opportunities, decent working conditions and a clean environment, no matter who you are or where you live. Connectivity should be a human right, not a privilege.

We believe our efforts to build a more connected world will help create new solutions and new opportunities to work, travel, learn, and live more healthy sustainable lives for all.

The current crisis has created a further spur to trends and technologies that were already happening. People begin to see the real positive effect of 5G. The connectivity that was good to have is now becoming critical for everything from digital health to trading and manufacturing, to virtual classrooms, to government and international diplomacy – providing a fundamental fabric to how we all live and work.

Connecting to digital health

Using connectivity to improve social and environmental sustainability has been a key focus for Nokia, with the ultimate purpose to improve lives. In the digital health arena, for example, our cooperation with UNICEF in Indonesia on an mHealth programme started in 2018 and supported the Indonesian Government in driving basic childcare vaccination and mother-baby health monitoring with various programmes including MR and other vaccination programmes, as well as healthcare issues such as malaria protection and most recently HIV patient care. The robust flexibility of this programme, platform and the partners involved has meant that the UNICEF staff and systems funded by Nokia are now being leveraged on the ground in response to the COVID-19 pandemic.

Nokia Enterprise and Services Cloud (NESC) also supports the World Community Grid initiative by contributing its spare computing power available to researchers to run research calculations. Virtual machines used for 5G software development are now also being used in the fight against COVID-19. NESC is one of the world's largest openstack based clouds and Nokia has already donated approximately 18 years' worth of computing time to COVID-19 research, putting it in the top ten of contributors during this time of need.

Access to digital learning

The need to connect the unconnected is also critical to enable access to learning and digital skills. Much of the world's learning has become digital over this last year due to physical distancing and lockdowns. UNICEF has worked jointly with the Government of Kenya and Nokia for more than a year to improve the quality and equity of education for children in Kenya by working to connect schools and enable digital skills which align with the SDG goals 4, 9 and 17.

Connecting unconnected small enterprises and driving inclusion

The capacity to run your business digitally, especially for micro-, small- or medium-sized enterprises (SMEs) provides not only a lifeline in times of crisis but also more inclusive market opportunities. SMEs can benefit from broadband connectivity while communities can benefit from digitalized services. To this end, in India we have been working for some time on the Smartpur project to connect villages and create digital hubs.

Digitalization and connectivity are already having a profound effect on improving equality of opportunity, access and inclusion, and 5G will accelerate this. Collaboration is a must to achieve the global goals. This will not be the last crisis we face as humanity, and climate change still remains the biggest existential threat, but we can seize the opportunity to build better.

The World Community Grid: <https://www.worldcommunitygrid.org/>

Our sustainability work: <https://www.nokia.com/about-us/sustainability/>

Our work with HAPS Alliance: <https://www.nokia.com/blog/reaching-skyward-bridge-digital-divide/>

Insight from Commissioner Mr. Stéphane Richard (Orange)

Bridging the digital divide through network coverage, affordable devices, and innovative services

Our industry has a great power connecting people, providing them with access to essential services such as education, jobs, information, finance, etc. With our influence comes a great responsibility for a long-term sustainable growth. Orange believes that digital technologies contribute to the achievements of the SDGs (cf. SDG 9). At Orange we are committed to reducing our environmental footprint (SDG 12 and 13) and fighting for the reduction of inequalities (SDG 10). We advocate advanced cooperation (SDG 17), and business practices that are consistent with the respect of fundamental freedoms and with ethical and responsible behaviour (SDG 16).

With the SDGs at the heart of our actions, the Orange strategic plan "Engage 2025" renews the Group's environmental and societal commitments, and formulates ambitious engagements:

- (1) To fight global warming by achieving carbon neutrality in 2040 - ten years before the mobile industry commitment through GSMA - and
- (2) To reduce the digital divide by expanding network coverage, providing inclusive offers and affordable devices (such as the Sanza phone), offering training and coaching.

Efficient and affordable ICT infrastructure

Broadband network deployment in all countries, in urban, suburban and rural areas, is key to increase broadband Internet user penetration. In order to deliver connectivity to all, Orange continues to deploy 3G and 4G networks on its footprint: Every year Orange invests EUR 1 billion in Africa and the Middle East, mostly for network deployments and upgrades. Orange is committed to deploy 8 000 new 4G mobile sites by 2023 (vs 2018) in Africa and the Middle East.

In order to increase rural area coverage, Orange also leverages innovative technical solutions and partnerships, in France and in Africa and the Middle East. In Cameroon and in the Democratic Republic of the Congo, 460 mobile solar-powered 'ultra-rural' micro-sites have been deployed, covering a population of 1.2 million.

Backbone cables (undersea and inland) are essential to reinforce broadband capacities. Orange has initiated the "Africa Coast to Europe" (ACE) undersea cable, connecting 24 Western African countries to France and Portugal, and is part of the 2Africa consortium. 37 000km long, 2Africa will be the most comprehensive subsea cable to serve the African continent and Middle East region. When it goes live in 2023-24, it will deliver more than the total combined capacity of all subsea cables serving Africa today. Inland connectivity is also essential to reach the whole population of the continent: at the end of 2019, Orange announced the construction of a new international backbone network in West Africa.

However, only 20 per cent of the digital divide is due to a lack of coverage: one of the main obstacles to getting people online is their lack of resources and know-how. This is why Orange has launched an affordable smart feature phone: Sanza, which is being sold for around EUR 20, with an offer that includes calls, SMS messaging and data. Apps and information can be accessed by voice in order to lower literacy access barriers.

Inclusion by access to financial services

With access to digital technology comes access to essential and innovative services for education, jobs, information, finance, etc. One striking example is mobile money.

Launched in 2008, Orange Money has enabled millions of Africans excluded from traditional banking to deposit, withdraw, transfer and make payments, right from their mobile phone, in a 100 per cent secure manner. Micro-credits are available through Orange Money in Madagascar and Côte d'Ivoire; in Mali a micro-saving service is converted into a health insurance for pregnant women as soon as a certain threshold of savings is reached. Orange Money has 48 million customers in 18 countries and is distributed via around 220 000 points of sale.

Most recently Orange launched Orange Bank Africa with NSIA, to provide greater access to financial services and improve the financial inclusion of people living in West Africa. Orange Bank Africa via its Orange Money service offers a range of savings and micro-credit services allowing customers to borrow as little as 5 000 CFA francs instantly using their mobile phone.

In conclusion, Orange's corporate purpose sums it all up: "As a trusted partner, Orange gives everyone the keys to a responsible digital world". A purpose that was integrated into the company's bylaws in May 2020, and that drives us and brings us together as a community.

Insight from Commissioner Mr. Bocar Ba (SAMENA Telecommunications Council)

Reflection of COVID-19 Initiatives in the SA-ME-NA Region in implementing the Broadband Commission's Agenda for Action

The UN Broadband Commission for Sustainable Development since 2012 has made a number of valuable recommendations to address the availability of inclusive, affordable and advanced broadband infrastructure. The current COVID-19 crisis has demonstrated more than ever that access to inclusive and affordable connectivity is integral to preparedness for embracing a sustainable and more resilient future. A key component of such a future are sustainable local and regional 5G ecosystems, in which telecom operators have a significant role to play.

As a matter of priority, and in line with the near-to-medium term agenda defined by the UN Broadband Commission to accelerate and implement digital cooperation and digital strategies and policies, SAMENA Council has drawn the attention of regional regulatory authorities to the implementation of agile and flexible regulatory measures to support an inclusive and competitive digital environment and foster the roll out of 5G networks. Despite uncertainty surrounding 5G use-cases and adequate business models, and long before 5G networks were actually tested in the combat against COVID-19, SAMENA Council had emphasized the benefits that 5G networks can bring to the region. From improved delivery of public services, such as education, telemedicine and real-time data exchanges to contain widespread diseases, to better resource management in urban and rural areas, including energy and traffic management, as well as water and crop management, 5G networks can augment current capabilities considerably. This can significantly contribute to the fulfillment of the globally agreed Sustainable Development Agenda - which is of immense importance to operators, regulators, and policy-makers alike.

In the wake of COVID-19, and in accordance with the Agenda for Action defined by the UN Broadband Commission, a leading example among operators, which demonstrated prescience and reacted to ensuing challenges posed by the pandemic, includes stc (Saudi Telecom Company) Group of Saudi Arabia, which have formally switched on 5G networks. Eng. Nasser Al Nasser, stc Group CEO, in his detailed thought-leadership piece developed with SAMENA Council, drew parallels between what stc carried out during COVID-19 and the imperatives identified by the UN Broadband Commission in the wake of the pandemic, demonstrating that digital infrastructure and the private sector's readiness are fundamental to succeeding in the digital world post COVID-19.

In accordance with the proposed immediate actions for impact identified by the UN Broadband Commission with respect to the need to achieve resilient and secure connectivity, ensure affordable access, and to promote safe use of online services for informed and educated societies, SAMENA Council is bringing together leaders with expertise and driving thought leadership in the area of accelerated digital cooperation building toward achieving mass-scale adoption of 5G in the SA-ME-NA region. To this effect, SAMENA Council, in collaboration with private sector entities, including stc Group, is organizing its annual leaders' congregation, with the agenda specifically focusing on cross-industry engagement on the accelerated developing of 5G and allied technologies. This may help accelerate implementation of streamlined actions and partnerships to promote the expansion of broadband connectivity, digital services and digital inclusiveness to unconnected communities and populations still lacking access.

As the UN Broadband Commission marks its tenth anniversary in 2020, its sustained advocacy efforts will bear fruit across the world, including in the SA-ME-NA region, where the SAMENA Council is fully engaged with operators and regulators. With ten years remaining before the target year of 2030 for the SDGs, and five years before the 2025 Broadband Commission Advocacy Targets, much action is needed, and the SAMENA Council is fully committed to continue contributing to the fulfillment of these target both as an industry association as well as an operator representative group.

Insight from Commissioner Mr. Lacina Koné (Smart Africa)

Brief introduction and background:

The Smart Africa Alliance is a Pan-African institution with 30 Member States with a vision is to transform Africa into a single digital market. We believe that accessible and affordable connectivity is a basic enabler to achieving the vision.

Some of the initiatives in the domain of broadband are as below.

SMART Broadband 2025 Strategy Project:

Under the guidance of the Smart Africa Alliance, the Smart Africa Secretariat convened a Working Group co-chaired by the Republic of Senegal and Facebook Inc. The Working Group comprising of Member States and the private sector underscored the complimentary role to realize broadband in Africa and through a consultative process. The SMART Broadband 2025 Strategy document will serve as a guideline for Member States to increase broadband penetration.

Cloud and Data Centres for Africa Project:

The creation of data centres in Africa represents one of the foundations for a single digital market and for the continent's digital future. Content and services hosted locally are cheaper to download. The security of sensitive data, as well as African States' ability to regulate digital activities can also be improved.

The project is a flagship led by the Republic of Djibouti and will be carried out through the creation of a working group made up of Member States, partner organizations, and private sector members. The project will deep-dive into a 360 degree on the reasons for lack of data centres in Africa and steps to overcome them.

The Intra-African Connectivity Project:

The purpose of this project is to connect each African country to the other, to allow for access and affordable Internet either by submarine, terrestrial or satellite technology. The project is under the flagship of Guinea in collaboration with some private sector members of the Smart Africa Alliance.

The initial phase, which is completed, involved the interconnection among three countries comprising of Mali, Guinea, and Senegal. Processes have been initiated for the subsequent phases of the project. We believe interconnecting all countries will open up the bottleneck of consumption and cause an exponential growth in data consumption in Africa.

Bulk Purchase of Submarine and Satellite Broadband Bandwidth Capacity Project:

Affordability of broadband is key to Smart Africa and this has led us to launch an initiative by working to secure collaboration with international broadband providers for long-term bulk sub-marine and/ or satellite bandwidth.

Based on surety of aggregated projections of broadband volumes from all Member States, this should give the providers an assured, steady level of income over a long period, hence the need to reduce costs. At present and for the initial phase is a study that will focus on the current 30 Smart Africa countries with best efforts for the remaining 24 countries. This is expected to bring a 30 per cent reduction in price of Internet across the Member States.

Smart Africa COVID-19 related activities

The onset of COVID-19 presented an opportune time to accelerate the digital transformation of Africa ranging from health, education, finance, and business, among others. On the 25th of March 2020, the Smart Africa Secretariat released a call for projects to develop a common platform that can support Member States to mitigate the global impact of COVID-19, using widely available and familiar channels such as unstructured supplementary service data (USSD), SMS, interactive voice recognition (IVR), WhatsApp and the web.

The Secretariat has also released a technical document that addresses issues ranging from broadband connectivity, financial support, data protection, food security and education.

Insight from Commissioner Ms. Fekitamoeloa Katoa 'Utoikamanu (High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States, UN-OHRLS)

Closing the digital divide; supporting vulnerable countries

It is now irrefutable that access to the Internet is an essential public service. While most vulnerable countries have made progress towards increasing access to ICTs, particularly mobile service, the majority have no access to the Internet. The gap in Internet usage between more developed countries and the vulnerable countries is very stark. While 87 per cent of individuals in developed countries used the Internet in 2019, Internet access and use in the least developed countries (LDCs) stood at just 19 per cent. In the landlocked developing countries (LLDCs), about a quarter of the population used the Internet. In the small island developing States (SIDS), the figure is about 50 per cent, on average. This implies that most people in vulnerable countries, especially LDCs, do not fully benefit from the rapid expansion of digital technology and the opportunities it offers.

The coronavirus (COVID-19) crisis has exposed the disadvantages that vulnerable countries have been facing in carrying out online activities, which are being leveraged in developed and advanced developing countries. During the lockdown period, advanced economies were using online platforms to undertake many of their daily activities. Similarly, digitalization has allowed remote learning for millions of students in these countries. However, ironically, many vulnerable countries (LDCs, LLDCs and SIDS) have not been able to avail online facilities primarily due to insufficient broadband services. COVID-19 and its impact sound a clarion call for the need to promote digital access and broadband connectivity in LDCs, LLDCs and SIDS as one of the effective ways to build a resilient society in the face of new and emerging challenges.

There are several barriers to greater ICT uptake and use in vulnerable countries. These include; inadequate infrastructure, high costs of access and usage, limited relevant online content and services, and limited skills.

While vulnerable countries are making steady progress towards developing their key national Internet infrastructure, the majority of the population, especially in LDCs remain offline. This is partly a result of the high cost of rolling out services in the remote rural areas where roads are scarce, grid electricity rare and incomes low.

Affordability is another notable barrier. The UN Broadband Commission set a target for affordable entry-level service as 2 per cent of GNI per capita. While 64 countries worldwide had achieved this target for fixed broadband, none of the LDCs meet the threshold. Only two LLDCs and six SIDS meet the threshold. Inadequate skills and digital literacy are increasingly emerging as a leading barrier to Internet use in many vulnerable countries, especially LDCs. Lack of Internet skills is linked to educational attainment, in particular, upper secondary school.

Without a doubt, once leveraged, investing in broadband can have both direct and indirect positive impacts on the economy. In order to close the digital gap, some of the actions to be taken include:

- It is important that supply and demand are developed in tandem. While some progress has been achieved on the supply side, the latter is lagging;
- There is a need to identify rural, remote, low-population density and hard-to reach communities that lack broadband coverage and that cannot be served through terrestrial connection. Governments should include satellite broadband as an available alternative and make it an integral part of any national broadband plan to bring broadband to rural and remote areas;
- In many SIDS, efforts need to be explored between public, private and international partners, for developing redundancy through additional cables and satellite back-up. Ultimately, these actions would make Internet infrastructure, e.g. submarine cables, more resilient in case of a cable cut. In addition, addressing transit challenges hindering LLDCs to access submarine cables is fundamental;
- Promoting a competitive market so that operators will compete for low-use customers through a variety of Internet plans that cater to different income levels;
- Digital literacy needs to be strengthened to enhance productive use of broadband and increase absorptive capacity. Digital literacy in vulnerable countries can be boosted through increased school enrolment and targeted programmes for those out of school.

Ultimately, in order to boost broadband, all three categories of access: availability, affordability and capacity to use need to be dealt with holistically.

Insight from Commissioner Mr. Achim Steiner (United Nations Development Programme)

Beyond Recovery, Towards 2030:

Securing the Decade of Action Through SDG-anchored Digital Development

The COVID-19 pandemic has demonstrated the fundamental need for broadband connectivity and enhanced digital capacities worldwide. The question is no longer why they should be prioritized, particularly in countries lagging behind, but how to accelerate action in the face of unprecedented setbacks brought on by “a crisis unlike any” in the United Nations’ 75-year history.¹²

Countering the Spectre of a “Lost Decade for Development”

The debt crisis of the 1980s led to a recession so severe it took many economies a decade to recover. The period became known as “the lost decade for development”.¹³ As we take stock of the pandemic’s impact around the world, the spectre of another “lost decade” hangs heavy. Rich and poor countries alike are facing health,¹⁴ humanitarian¹⁵ and socio-economic¹⁶ challenges that are reversing decades of progress on poverty, healthcare, education¹⁷, gender equality and women’s rights.¹⁸ 70-100 million¹⁹ people may be pushed into extreme poverty. An unprecedented human development crisis²⁰ is still unfolding -- affecting the vulnerable disproportionately.

Decision-makers now face difficult policy, fiscal and regulatory choices in the immediate term that may shift attention from long-term development goals. Indeed, the expected decline in financing flows²¹ that could support digital infrastructure and capacity-building may put developing countries at risk of missing out on new opportunities associated with the Fourth Industrial Revolution²² to fast-track progress on the SDGs.

Securing the Next Decade for Sustainable Development

UNDP recognizes digital transformation as one of the seven tipping points²³ that could transform societies and our planet for the better. On the ground in 170 countries, UNDP sees a growing need for “best-fit” digital solutions, new ways to address digital inequality, and increased focus on building digital capacities.

When the pandemic hit, UNDP quickly utilised digital technologies to ensure full business continuity.²⁴ We extended our own digital assets to governments, along with technical and funding support, so they could continue core functions and operations.²⁵ We were able to rapidly mount a strong defence²⁶ against COVID-19 -- launching nearly 200 digital solutions to address pressing country needs including via the 60 UNDP Accelerator Labs, and set up a Rapid Response Facility²⁷ to assist vulnerable countries on a range of innovative solutions.

Much more is required, particularly to close the digital divide. Most of the unconnected live in developing countries where seven of 10 workers likely make a living in informal sector,²⁸ lacking social safety nets. Indeed, as the world went into lockdown, many people were unable to leave their homes to receive critical state payments in person. Governments turned to the power of digital finance to transfer payments electronically -- constituting sometimes lifesaving support to people around the world. Complementing this clear shift, the final report of the UN Secretary-General’s Task Force on the Digital Financing of the SDGs²⁹ demonstrates how digital finance can expand financial inclusion by giving people choice and power over their money - as savers, investors, borrowers, lenders and taxpayers. The People’s Money³⁰ also demonstrates how digitalization will play a fundamental role in other critical areas - for instance, to ensure that global capital markets worth \$185 trillion³¹ take greater account of social and environmental risks and outcomes. In sum, the Task Force argues that we now must seize this historic opportunity to accelerate and expand the transformative impact of digitalization in financing the SDGs.

Beyond Recovery, Towards 2030

Recovery trends³² point to a long period of global uncertainty so developing countries need sustained support to recover and to build forward better with the SDGs as a compass. As the technical lead for the UN response to the socio-economic impact of the pandemic,³³ UNDP sees the Broadband Commission’s intensified efforts to expand connectivity in the coming decade as vital in helping to avert the worst development crisis of this century.³⁴

A critical step forward is to anchor digital development in the SDGs. Connecting the unconnected needs to go hand-in-hand with poverty eradication, tackling inequalities and protecting the planet for all generations. As the UN Secretary-General’s Roadmap for Digital Cooperation³⁵ states, we all need to “play a role in advancing a safer, more equitable digital world, one which will lead to a brighter and more prosperous future for all.”

Insight from Commissioner Mr. Filippo Grandi (United Nations High Commissioner for Refugees)

As the United Nations Refugee Agency, UNHCR is no stranger to emergencies. Over the last decade alone, a series of major crises have driven the number of people forcibly displaced by conflict, violence and persecution to almost 80 million – one per cent of the global population. Yet the COVID-19 pandemic is an emergency without precedent in UNHCR's 70-year history – affecting refugees, internally displaced and stateless people in all 135 countries where we work, many of whom are particularly vulnerable to the health and socio-economic risks presented by the pandemic.

The overarching aim of UNHCR's response has been to support governments to include refugees and other displaced people in national public health measures and services, and also measures to mitigate its socio-economic impact. This principle of inclusion is at the heart of the Global Compact on Refugees, adopted by UN Member States in 2018.

Digital inclusion is a key aspect of this broad inclusion agenda – and also a key enabler of other forms of inclusion – helping link refugees to national systems and services, and making them truly part of the communities around them. Yet even prior to the pandemic, many refugees and internally displaced people continued to encounter significant obstacles with regard to connectivity, including lack of affordability, poor or non-existent network coverage, and exclusive regulatory environments. And in the context of COVID-19, as direct interaction with refugees is unavoidably reduced, access to key services such as registration, asylum interviews, counselling, health support, education and cash safety nets, is now even more heavily dependent on digital channels and connectivity.

The Global Compact on Refugees emphasizes the importance of meaningful engagement between international organizations, government, the private sector and community organizations in addressing challenges around inclusion. Since becoming a Broadband Commissioner at the end of last year, I have seen for myself the vital convening role that the Broadband Commission plays in providing strategic directions and building consensus in the context of a dynamically evolving connected society.

In this regard, the Commission's role in spearheading the inclusion of forcibly displaced persons in efforts to connect the world's unconnected has been commendable. As the COVID-19 pandemic took hold, the Agenda for Action articulated a forward-leaning, inclusive stance that sought to give space to the most marginalized. As governments and connectivity providers took measures to enhance network resilience and capacity, forcibly displaced persons' and host community needs were also included in the blueprint.

For some years, UNHCR has been working together with partners across government, private sector, civil society and with communities themselves, to address challenges and break down barriers to digital inclusion for refugees and their hosts. Uganda is one example, where specific measures were taken by the government to create a more enabling regulatory environment. With mobile operators now electronically authenticating refugees' identity credentials, SIM card registration has increased significantly amongst refugee communities, demonstrating that such collective efforts make a tangible difference to people's everyday lives.

These efforts have been stepped up in the context of the pandemic, in line with the Agenda for Action. For example, with support of the Government of Luxembourg we are pursuing a series of initiatives in our country operations to address barriers to digital access for marginalized refugee and host community members, such as people with disabilities. Our field teams are working to analyse the degree of 'connectedness' of different groups, and designing solutions to address barriers to inclusion, and to pivot our response towards digital interventions – from connected education, to digital cash assistance – so that as humanitarians, we can stay and deliver in spite of the pandemic restrictions.

I wish to commend the considerable work of the Broadband Commission in this vital area. Through digital inclusion, refugees are empowered to become part of the connected societies emerging around them. I firmly believe that the Commission's focus on digital inclusion has the potential to transform the lives of millions of refugees around the world – opening up digital avenues for accessing information, social support, education, and work opportunities; thereby enhancing their ability to contribute to their new communities and eventually, to rebuild their lives.

Insight from Commissioner Phumzile Mlambo-Ngcuka (UN Women)

Technology and innovation as means to tackle gender inequalities and support women's recovery amid COVID-19

With nearly half the world's population – 46 per cent – without Internet³⁶ and 165 million fewer women owning a mobile phone compared with men³⁷, the COVID-19 pandemic has highlighted the importance of online access to information and communication. Internet access and connectivity are fundamental enablers of human rights³⁸. Yet, fewer than 20 per cent of the population in least developed countries use the Internet³⁹, and digital divides and broadband gaps exist also in developed countries, such as the US, where about 42 million people lack fixed or wireless broadband.⁴⁰

In 2013, Broadband Commission members committed to achieve gender equality in Internet users, digital skills, digital financial services and to bring broadband and Internet connectivity to everyone, everywhere by 2025.⁴¹ The two Working Groups on Broadband and Gender, and the Digital Gender Divide, intended to address connectivity, digital inclusion and digital equality issues. This agenda was also at the core of the EQUALS Global Partnership, launched by UN Women, ITU, GSMA, ITC and the UN University in 2016.

The pandemic has redefined the way we live, work, earn and learn. Quarantine measures and self-isolation policies have increased Internet usage between 50 to 70 per cent, as women and men turn to the Internet for work, school, and social activities. Women and girls are using social media avenues to address the systemic discrimination that has been exposed by the pandemic and the ensuing global crises. We celebrate their leadership, creativity, and commitment to gender equality, justice and human rights.

However, not everyone has been in a position to compensate for the changes in our world, and for many an already-bad situation has become worse. COVID-19 has exposed severe digital gender gaps and even reversed the limited progress made. Essential cash transfer programmes implemented in times of crisis cannot reach women with no online access when those payments come as digital transactions. Women and girls with limited digital skills are more at risk of cyberviolence in the form of physical threats, sexual harassment, stalking, zoom bombing and sex trolling.⁴² Without these resource limitations, women can make immense progress, for example, the women peace mediators in Libya who continue their work in calling for a ceasefire and following up on cases of threats of violence against women, using their mobile phones.

Recovery efforts must take these facets into account if we are to emerge stronger, more inclusive and more equal from the post-COVID plans being put in place. And women and girls must play a central role in designing and using digital technologies to ensure their innovation and scope.

The deep consequences of lack of connectivity, digital inclusion and digital equality for women and girls have been well established. It is equally clear that urgent resolution of those gaps is a critical accelerator of progress, not simply to get us back on track, but to put women and children onto a new track. STEM and technology related companies have an opportunity to join us in making history, putting women's leadership and contributions at the heart of resilience and recovery. Some companies have already risen to the challenge and have offered flexible working arrangements, paid medical and sick leave, income protection and emergency childcare for frontline workers.

In just a few examples: UN Women is partnering with the "Big Five" tech giants to provide life-saving information to survivors of domestic violence, using WhatsApp to disseminate reliable information on COVID-19 prevention and services; we are providing support, information and essential services to more than 5,700 Syrian refugees in Za'atari and Azraq refugee camps; and we are supporting the young 'African Girls Can Code' trained girls during school closures so that they can best use their skills within their communities during the pandemic.

There are millions of people, most often women and girls, who still have no access to electricity, internet and computers. When we work in solidarity to address these needs, through global and multistakeholder coordination, we can fast-track more resilient and regenerative societies and economies that are better for all of us.

Insight from Commissioner Mr. Hans Vestberg (Verizon)***A reflection on the COVID 19 initiatives taken by the Commissioner's organization in implementing the Agenda for Action, identifying lessons learned so far for better preparedness***

Verizon's purpose is to create the networks that move the world forward. We recognize that our networks are instrumental in helping society respond to the COVID-19 pandemic. Consistent with the Broadband Commission's Agenda for Action, Verizon has worked to: (1) sustain and extend resilient and secure network infrastructure, including for emergency responders; (2) increase affordability, availability and accessibility of services and devices; and (3) support safe use of online services for informed and educated societies.

Resilient connectivity

Verizon has focused particular attention on the connectivity needs of those on the frontlines, including first responders and healthcare providers. We have deployed portable cell sites to add network capacity at Emergency Operations Centers, mobile testing sites, and quarantine areas across the United States. To date, our Response Team has supported more than 270 such engagements.

Affordable access

Since the pandemic began, we have offered new pricing plans, provided additional data, and offered flexibility in payments and late fees. Early on, we joined other broadband providers in responding to the Federal Communications Commission's call to 'Keep Americans Connected'. By pledging our support for this initiative, we affirmed that we would not terminate service nor charge late fees to any residential or small business customers through June 30 as a result of their inability to pay their bills due to disruptions caused by the pandemic.

Safe use of online services for informed and educated societies

Access for students

The pandemic has created a critical need for online access for America's students. In response, Verizon tripled the normal data allowances, to 30 GB per month, for schools that are part of Verizon Innovative Learning, the company's philanthropic initiative targeting Title 1 middle schools. We expect the data increase to benefit up to 116 000 students and teachers. We also worked with school systems to enable remote learning through the provision of MiFi devices, connectivity, or both.

Promoting safety online

Verizon has worked to empower parents to help keep their children safe online. We are working to increase the adoption of parental controls through public outreach and guidance.

Providing access to information

Verizon Media has created a coronavirus hub, covid19.yahoo.com, across the Yahoo ecosystem that includes news about the pandemic, including specific content for specific markets.

Lessons learned

- *Values matter.* By leaning into our values, we have been able to be nimble in making decisions at a time when our business has faced unprecedented challenges. We know that we must address the needs of employees, customers, and society, in addition to the needs of shareholders. It is easier to make decisions to assume short-term costs when we are guided by a long-term commitment to responsible business conduct.
- *Build for a crisis.* The resilience of our network despite surging demand during the pandemic reflects years of investment intended to ensure that we can serve our customers even in times of crisis. In order to maintain the performance of our networks going forward, we recently increased our guidance with respect to 2020 capital expenditures from USD 17 - USD 18 billion to USD 17.5 - USD 18.5 billion.
- *Recognize the opportunity to innovate.* Times of crisis force new ways of thinking, and we have developed innovative solutions to address the needs of our customers and our employees during this time. For example, we have virtualized many command centre functions to make it easier for our engineers working on network repairs and the deployment of mobile assets to remain socially distanced. These experiences have taught us to be mindful of the need to question preconceived notions of 'the right way' to do things and to always be looking for ways to improve.

Insight from Commissioner Mr. Adrian Lovett (Web Foundation)

Digital technology and the web are today embedded at the heart of our societies. It's how we talk to each other, learn about the world, bank, shop and, increasingly, how we access government services and even vote. And with COVID-19, we have turned to the web like never before.

If digitization is to continue to play such a central role in our world, two things are absolutely clear: these technologies must be available for everyone, everywhere, and they must be safe and trustworthy.

I'd like to suggest three areas where action is needed in this next decade.

Closing the digital divide

First, we must not forget that half the world can't access the web at all.

We need to close the digital divide quickly. We have a UN Sustainable Development Goal to connect everyone in the world by this year. We have a target of this UN Broadband Commission to ensure three-quarters of the world's people are connected by 2025. We are currently set to fall short on both these targets. And this at a time when we know more than ever, in this global pandemic, that access to the web is not a luxury. It is a lifeline. It should be seen as hardly less fundamental a need than clean water or basic education.

We need to be ambitious, going beyond basic access to embrace meaningful connectivity so that people can use the full power of the web. As the members of the Alliance for Affordable Internet (A4AI) – a coalition we proudly host and lead here at the Web Foundation – have said, we can no longer see digital access as simply 'off' or 'on'. A4AI's research proposed that meaningful connectivity is when we have daily access to the Internet, access to a smartphone, at least a 4G mobile speed, and unlimited broadband connection. Without meaningful connectivity, the true value of the web – one with trust and security at its heart – will remain out of reach.

Ensuring that the web works for women

Second, we must address the gender digital divide and in particular, the way the web doesn't work for women.

Men are 21% more likely to be online than women, rising to 52 per cent in the world's least developed countries. But that's just the start of the problem. We need to tackle the digital barriers facing women and girls or we risk further deepening existing gender inequalities and marginalizing women across the world.

One of the biggest threats is the rising tide of online violence and abuse. Women bear the brunt of this, and women of colour in particular. A Web Foundation survey found that 52 per cent of young women and girls had experienced online abuse. And the problem has grown worse with COVID-19. We are now working with women's rights organizations and major tech platforms to build innovative policy and product solutions to tackle this problem.

Working together to reach our destination

A safe and empowering web for everyone is our destination. We must embrace global multi-stakeholder initiatives to guide us there.

Launched by Sir Tim Berners-Lee at last year's Internet Governance Forum in Berlin, the Contract for the Web lists the high-level principles and the concrete commitments needed by governments, companies and all of us as citizens, to get us to the web we want.

Already 1 300 organizations have endorsed the Contract, including tech firms with global reach, businesses at national level in countries around the world, NGOs and activist groups, academics and many more. We're now developing ways for endorsers to demonstrate how they're living up to their commitments.

We're pushing for governments and companies to showcase their best practices. We want to see governments in a 'race to the top' to develop the best national policies to ensure digital trust and security for all their citizens, and companies competing to design privacy settings that actually deliver meaningful transparency and control to consumers.

A safe and empowering digital world for all the world's people has never been more important. And we must all work together to make it a reality for everyone.

Insight from Commissioner Mr. Makhtar Diop (The World Bank)

What will it take for Africa to bridge the digital connectivity gap? That is the question the Broadband Commission Working Group on “Broadband for All: A Digital Infrastructure Moonshot for Africa” decided to tackle to further the agenda on digital inclusion. Established in November 2018, the Working Group (WG), representing over 25 institutions, under the leadership of the World Bank Group, spent the following 12 months examining underlying conditions, investment requirements, technology solutions, and policy and regulatory frameworks to achieve an interim milestone to double broadband connectivity by 2021 and achieve universal affordable and good quality broadband access in Africa by 2030. Not a simple task but working together made it easier. To achieve the targets, the WG estimated that the cost of closing the digital divide would be approximately USD 110 billion or close to USD 9 billion a year. But quantifying the cost of bridging the broadband gap was only the first step of a more ambitious undertaking. The Working Group also proposed a roadmap to achieve universal access to affordable and good quality broadband stressing the need to include more than just capital investments in the estimates but also for investments in basic digital skills, content, enabling policy and regulations, and operating expenses.

The Africa Moonshot report was officially launched in a global event in October 2019 during the World Bank Group Annual Meetings. Since then a global awareness-raising and advocacy campaign aimed at putting broadband access at the centre of the development agenda has attracted various stakeholders including governments, the private sector, development partners and the public. Acknowledging the significance of the agenda, the stakeholders agreed to continue the momentum towards the universal and affordable good quality broadband under two follow-up Working Groups under the UN Broadband Commission, notably through the “GIGA School Connectivity Working Group” and the “21st Century Financing Models for Sustainable Broadband Development Working Group”. In addition, the World Bank, ITU and UNICEF are working towards specific implementation scenarios to support affordable access to broadband connectivity to schools in select countries. Little did we know how timely our work on this digital connectivity for all agenda was about to be. The world got hit by a pandemic of unprecedented magnitude, COVID-19, reinforcing the urgent need for connectivity. Digital resilience quickly became a priority for governments across the globe. Nowhere is it truer than in Africa where a majority of the populations do not have access to affordable and reliable connectivity.

The World Bank Group is committing a significant financing to support Africa’s digital transformation in the next ten years. This commitment has accelerated the implementation of the Moonshot Roadmap across the continent under the Digital Economy for Africa (DE4A) Initiative. Under the DE4A Initiative, the digital infrastructure has been identified as one of the critical foundations for the emergence of a vibrant, inclusive and safe digital economy while other key areas include digital public platforms, digital entrepreneurship, digital financial services, and digital skills. The cost breakdown provided by the WG demonstrates the size of financing requirements to be mobilized primarily by the private sector and supported by public expenditures and additional resources by donors. The DE4A Initiative takes the approach to systematically leverage public and private investments for priority areas and to address regulatory and policy barriers to develop an enabling environment for the needed investments in the digital economy.

The WG also facilitated a partnership between the World Bank and Facebook to support affordable access to devices to address a critical barrier to a massive broadband uptake in developing countries. The members of the WG have since coalesced to conduct an in-depth study to present various options to address the affordability gap throughout the device value chain and devise innovative mechanisms to de-risk private financing. The collaboration will be designed to engage other interested stakeholders and to help design and implement relevant programmes in each specific context.

Insight from Commissioner Dr. Joanna Rubinstein (World Childhood Foundation USA)

Children need to feel safe online

One-third of all Internet users today are children. Soon with the expansion of connectivity in the near future, every second user of the Internet will be a child. If child online safety was one of the biggest concerns for this first generation of 'digital natives' even before the COVID-19 pandemic, the situation has now catapulted to extreme heights as children are spending more time online than ever before.

In 2019, the Broadband Commission's Working Group on Child Online Safety launched its report about the risks and harm children are experiencing online along with a set of actionable recommendations to prioritize child online safety, such as:

- Include child online safety strategies in national broadband and digital plans by 2021;
- Prevent, detect and respond to Child Sexual Exploitation and Abuse (CSEA);
- Use age-appropriate design and data consent for all digital services for children;
- Invest in research and development of technology-driven solutions;
- Implement universal digital skills education.

Today's children - as children last year, and the year before and ever since the dawn of the Internet - continue to be exposed to inappropriate content, bullying, radicalization, grooming, trafficking, and child sexual exploitation and abuse. CSEA has already reached epidemic proportions, but it is not a new phenomenon. In 1998, there were 3 000 images and in 2008, 100 000 images of child sexual abuse material (CSAM) reported to the CyberTipline of the National Center for Missing and Exploited Children (NCMEC).⁴³ In 2018, the number increased up to 45 million and, in 2019, close to 70 million pictures and videos⁴⁴ were reported.

With the COVID-19 pandemic and school closings - more and younger children than ever before are spending more time online, learning, playing and socializing. As a result, more offenders have become even more vigilant in their efforts which has contributed to the significant rise in CSAM. In April 2020, NCMEC received more than 4.1 million reports of CSAM to its CyberTipline, compared to 1.2 million in April of 2019.⁴⁵

Unquestionably, we are not doing enough to protect children and to stop the tsunami of CSAM. The COVID-19 pandemic has only exacerbated the problem. We urgently need to act and improve the safety of the devices and networks, provide mandatory training for educators and children, and parents and caregivers. In addition, the pandemic also uncovered that many children from marginalized communities lack access to Internet. Some of them, abused at home are not able to reach for help.

In April, the Broadband Commission launched the COVID-19 Agenda for Action, which scaled up accessibility to connectivity and services, and prioritized access to health and safe education services for children and youth. Leveraging this effort, Childhood USA, together with partners, swiftly developed the following resources for parents, caregivers, as well as teachers and governments on child online safety:

- A [one-pager](#) guide for keeping children safe online (in [90 languages](#).) Partners included: UNICEF, WHO, Center for Disease Control, Global Partnership to End Violence Against Children (EVAC), Australian e-Safety Commissioner, and Childhood USA.
- A [Technical Note](#) developed with EVAC, ITU, UNESCO, UNODC, WePROTECT Global Alliance, WHO, UNICEF and Childhood USA to help governments, the ICT industry and educators to ensure children's online experiences are safe and positive.
- The Global Online Safety Advice for Parents and Caregivers (in six UN languages available [here](#)) and the Early Years Online Safety Advice for Young Children, Parents and Caregivers were developed in collaboration with the Australian e-Safety Commissioner.
- In June, ITU, with Childhood USA participation launched the 2020 ITU Guidelines for Child Online Protection (available [here](#)).

We count on The Economist Intelligence Unit index, [Out of the Shadows: Shining Light on the Response to Child Sexual Abuse and Exploitation](#), to keep us accountable by measuring public and private sector responses to CSEA.

According to the *Small Voices Big Dreams* survey (2019⁴⁶), children feel as unsafe on Internet as on the streets. It is on us to change that so they can instead feel safe and empowered.

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Annex 1: Former Commissioners of the Broadband Commission

Since 2011, the Broadband Commission has had more than 90 former Commissioners as part of the membership of the UN Broadband Commission over the years. This includes:

- H.E. Prof. Dr Ali M. ABBASOV (Republic of Azerbaijan)
- Mr. Gyan Chandra ACHARYA (UN-OHRLS)
- H.E. Sheikh Abdullah Bin Mohammed Bin Saud AL THANI (Ooredoo)
- Mr. César ALIERTA (Telefónica)
- Dr. Saad zafer ALKAHTANI (Telcotank Consulting Company)
- Mr. Andrus ANSIP (European Commission)
- Ms. Irina BOKOVA (Co-Vice Chair, UNESCO)
- Prof. Gloria BONDER (Latin American Postgraduate Institute of Social Sciences, FLACSO)
- Dr. Vanu BOSE (Vanu INC)
- Mr. Giancarlo Innocenzi BOTTI (Invitalia)
- Dr. Anne BOUVEROT (GSMA)
- Mr. Paul BUDDE (Managing Director BuddeComm)
- Dr. Kathy CALVIN (UN Foundation)
- H.E. Mr Victor CALVO-SOTELO (Spain)
- Mr. John CHAMBERS (Cisco)
- Mr. Jean-Yves CHARLIER (VEON Ltd.)
- Ms. Helen CLARK (United Nations Development Programme, UNDP)
- Mr. Peter CLEVELAND (Intel Corporation)
- Mr. Michel COMBES (Alcatel-Lucent)
- H.E. Senator Stephen CONROY (Commonwealth of Australia)
- H.E. Dr Siyabonga Cyprian CWELE (Republic of South Africa)
- Mr. John DAVIES (Intel Corporation)
- Mr. Edouard DAYAN (Universal Postal Union)
- Ms. Milagros DEL CORRAL (National Library of Spain)
- Ms. Ingrid DELTENRE (European Broadcasting Union)
- Mr. Cheick S. DIARRA (United Nations)
- H.E. Mr. Ricardo EHRlich (Oriental Republic of Uruguay)
- H.E. Ambassador Walter FUST (Swiss Development Corporation (SDC))
- Mr. John GALVIN (Intel Corporation)
- Dr. Debretsion GEBREMICHAEL (Ethiopia)
- Mr. Julius GENACHOWSKI (US Federal Communications Commission)
- Ms. Kristalina GEORGIEVA (World Bank)
- Ms. Arancha GONZÁLEZ (ITC)
- Mr. Gordon G. GRAYLISH (Intel Corporation)
- Mr. Angel GURRÍA (Organisation for Economic Co-operation and Development, OECD)
- Mr. Francis GURRY (World Intellectual Property Organization, WIPO)
- Dr. Chang-Gyu HWANG (KT Corporation)
- Dr. Mo IBRAHIM (Mo Ibrahim Foundation)
- Mr. Ivo IVANOVSKI (Republic of Macedonia)
- Dr. Paul JACOBS (Qualcomm)
- Mr. A. Reza JAFARI (E-Development International)
- Mr. Wang JIANZHOU (China Mobile Communications Corporation)
- Mr. In-Kyu KIM (Asia-Pacific Broadcasting Union)
- Dr. Seang-Tae KIM (Sungkyunkwan University)
- Mr. Boris KOPRIVNIKAR (Republic of Slovenia)
- V.P. Neelie KROES (European Commission)
- Mr. Anthony LAKE (UNICEF)
- Mr. Bruno LANVIN (INSEAD)
- Dr. Suk-Chae LEE (Republic of Korea)
- Prof. Dr Klaus M. LEISINGER (Foundation Global Values Alliance)
- Ms. Sivi LINDÉN (Broadband Commission)
- Mr. Mark MACGANN (VEON Ltd.)
- Dr. Nasser Mohammed MARAFIH (Ooredoo Group)
- H.E. Dr. Fred MATIANG'I (Kenya)
- Ms. Jasna MATIĆ (WitNet Chair and Founder)
- Mr. Philipp METZGER (Swiss Federal Office of Communications)
- Mr. Luis Alberto MORENO (IADB)
- Prof. Romain MURENZI (The World Academy of Sciences)

- Prof. Burton LM MWAMILA (The Nelson Mandela African Institution of Science and Technology, Arusha Tanzania)
- Mr. Jay NAIDOO (Global Alliance for Improved Nutrition, GAIN)
- Dr. Speranza NDEGE (Kenyatta University)
- H.E. Youssou N'DOUR (Republic of Senegal)
- Mr. Phuthuma NHLEKO (MTN GROUP)
- H.E. Mr Nikolay NIKIFOROV (The Russian Federation)
- Ms. Catherine A. NOVELLI (US Department of State)
- Mr. Günther H. OETTINGER (European Commission)
- H.E. Prof. Naana Jane OPOKU-AGYEMANG (Ministry of Education (Ghana))
- Mr. AYALA Orlando (Microsoft)
- Dr. Armen ORUJYAN (Athgo Corporation)
- H.E. Safuneituuga PAAGA NERI (Independent State of Samoa)
- Mr. Esteban PACHA-VICENTE (International Mobile Satellite Organization, IMSO)
- Dr. Supachai PANITCHPAKDI (UNCTAD)
- H.E. Dr. Jernej Pikalo (Slovenia)
- Dr. Sam PITRODA (Republic of India)
- H.E. Ms. Anusha RAHMANKHAN (Pakistan)
- Mr. Christian ROISSE (EUTELSAT IGO)
- Dr. Abdulaziz Bin Salem AL RUWAIS (Kingdom of Saudi Arabia)
- Atty. Rodolfo A. Salalima (Philippines)
- H.E. Mr. Adama SAMASSÉKOU (International Council of Philosophy and Human Sciences, IBPHS)
- Mr. Jean-Louis SCHILTZ (Schiltz & Schiltz)
- Sir Martin SORRELL (WPP)
- Mr Rajeev SURI (Nokia)
- Dr. Shashi THAROOR (Republic of India)
- H.E. Mr. Masahiko TOMINAGA (Japan)
- Mr. José Manuel Do Rosario TOSCANO (International Telecommunications Satellite Organization (ITSO))
- Dr. Hamadoun TOURÉ (Co-Vice Chair, ITU)
- H.E. Mr. Malcolm Bligh TURNBULL (Australia)
- Mr. Sunny VARKEY (GEMS Education)
- Mr. Ben VERWAAYEN (Alcatel-Lucent)
- Professor Muhammad YUNUS (Yunus Centre)
- H.E. Ambassador Sha ZUKANG (United Nations Department of Economic and Social Affairs)

Annex 2: Full list of recommendations presented in the State of Broadband reports 2012 - 2019

Category	Recommendation
ICT Policy and Regulatory Regimes	<p>2012 - 7.4 Consider Reviewing and Updating ICT Regulations</p> <p>2012 - 7.5 Consider a Unified Licensing Regime; 2012 - 7.6 Consider Converged Regulation</p> <p>2012 - 7.11 Incorporate Sustainability Principles into ICT Regulations and Policies</p> <p>2013 - 7.1 Promote Market Liberalization</p> <p>2013 - 7.2 Review and Update Regulatory Service Obligations</p> <p>2013 - 7.6 Review Licensing Schemes</p> <p>2016 (6.1) & 2017 (5.1) Review and Update Regulatory Frameworks for Broadband</p> <p>2018 - 5.7 Review and Adapt Legal Frameworks to Take into Account Digitalization</p>
Improving Data / Statistics / Monitoring	<p>2012 - 7.10 Monitor ICT Developments, based on Statistical Indicators</p> <p>2013 - 7.10 Support Accurate and Timely Statistical Monitoring</p> <p>2014 (7.6) & 2015 (6.9) Engage in Ongoing Monitoring of ICT Developments</p> <p>2016 - 6.12 Benchmark and Monitor Developments in Telecom and ICT</p> <p>2017 - 5.4 Benchmark Trends and Developments in Telecom and ICTs</p> <p>2018 - 5.3 Benchmark and Monitor ICT Developments</p>
Increasing Skills / Human Capital / Capacity-Building	<p>2012 - 7.12 Promote the Skills and Talents Necessary for Broadband</p> <p>2014 - 7.2 Promote Education for All (EFA), including the Use of Broadband, as well as the Skills and Talents Necessary for Broadband</p> <p>2015 (6.7) & 2016 (6.8) & 2018 (5.2) Promote Training and Measures to Stimulate Demand</p> <p>2018 - 5.5 Strengthen Digital Skills & Literacy</p>
Universal Service Approaches: USFs, USOs	<p>2012 - 7.3 Use Universal Service Funds and Other Financial Mechanisms to Develop Broadband</p> <p>2013 - 7.5 Update and Utilize Universal Service Funds</p> <p>2014 - 7.7 Utilize Universal Service Funds (USFs) to Close the Digital Divide</p> <p>2015 (6.2) & 2016 (6.4) Make Full Use of Universal Service Obligations (USOs)</p> <p>2018 - 5.4 Review Universal Service Measures, including RoW Regulations:</p>
Taxation	<p>2012 (7.7) & 2014 (7.3) & 2015 (6.5) & 2016 (6.7) & 2018 (5.8) Reduce Taxes and Import Duties on Telecommunication/ICT Equipment and Services</p> <p>2013 - 7.7 Review & Reduce Taxation</p>

Category	Recommendation
A Focus on Local: Content, Language, Hosting, Entrepreneurship	2012 - 7.8 Stimulate the Creation of Local Content in Local Languages 2013 - 7.9 Spur Demand and Introduce Measures to Stimulate the Creation of Local Content 2014 - 7.5 Enhance Demand for Broadband Services through New Initiatives and Local Content 2015 - 6.8 Invest in the Creation of Local Content in Local Languages 2018 - 5.6 Support Local e-Businesses and Local Entrepreneurship 2016 - 6.9 Encourage Local Innovation through Strategic Local Hosting
Financing and Investment	2014 - 7.4 Accelerate Investment in Broadband Infrastructure 2015 - 6.6 Promote Investment in Broadband Infrastructure 2016 - 6.3 Encourage Investment by Both the Public & Private Sectors 2016 - 6.11 Promote Advanced Market Commitments for Rural Broadband Access 2017 - 5.3 Encourage Investment in Internet Infrastructure
Open Access and Infrastructure Sharing	2013 - 7.3 Consider Open Access Approaches to Infrastructure 2015 - 6.3 Consider Infrastructure-Sharing and Open Access Approaches to Publicly Funded Infrastructure 2016 (6.5) & 2017 (5.5) Consider Infrastructure-sharing
Spectrum Policy	2012 - 7.1 Explore Fresh Approaches to Spectrum Management 2013 - 7.8 Review Policy Frameworks for Spectrum 2014 - 7.1 Monitor, Review and Update ICT Regulations and Regulatory Approaches to Spectrum 2015 - 6.1 Review and Update ICT Regulatory Frameworks, including Regulatory Approaches to Spectrum
National Broadband Plans / strategies	2013 - 7.4 Introduce and Develop a National Broadband Plan 2017 - 5.2 Develop and Enhance National Broadband Plans 2018 - 5.1 Build National Leadership for Broadband 2019- Include in broadband plans: Digital inclusion, Measures to protect children online, A focus on limiting environmental impacts and addressing climate, Public access initiatives
Others (Everything Else: Rights of Way / Dig Once, E-Government Initiatives, Public Consultation, Affordability, Climate Change, Intellectual Property, Internet of Things and Smart Cities and Cross-Border Data Flows)	2012 - 7.2 Implement "Dig Once" Policies & Expedite Rights of Way and Construction Permits 2012 - 7.9 Enhance Demand for Broadband through E-Gov Initiatives; 2013 - 7.11 Consider Undertaking Public Consultations on Policy 2015 (6.4) & 2016 (6.6) Consider Measures to Make Broadband More Affordable 2014 - 7.8 Review Frameworks for Intellectual Property (IP) 2016 - 6.2 Improve Policy Frameworks for IoT and Smart Cities 2016 - 6.10 Promote Free Flows of Information

Annex 3: Countries with a focus on broadband in a National Broadband Plans, digital agenda or strategy

- Afghanistan
- Albania
- Algeria
- Andorra
- Angola
- Antigua and Barbuda
- Argentina
- Armenia
- Australia
- Austria
- Azerbaijan
- Bahamas
- Bahrain
- Bangladesh
- Barbados
- Belarus
- Belgium
- Belize
- Benin
- Bhutan
- Bolivia (Plurinational State of)
- Bosnia and Herzegovina
- Botswana
- Brazil
- Brunei Darussalam
- Bulgaria
- Burkina Faso
- Burundi
- Cabo Verde
- Cambodia
- Cameroon
- Canada
- Central African Rep.
- Chad
- Chile
- China
- Colombia
- Comoros
- Congo (Rep. of the)
- Costa Rica
- Côte d'Ivoire
- Croatia
- Cuba
- Cyprus
- Czech Republic
- Dem. Rep. of the Congo
- Denmark
- Djibouti
- Dominican Rep.
- Ecuador
- Egypt
- Equatorial Guinea
- Estonia
- Eswatini
- Ethiopia
- Fiji
- Finland
- France
- Gabon
- Gambia
- Georgia
- Germany
- Ghana
- Greece
- Grenada
- Guatemala
- Guinea
- Guyana
- Honduras
- Hong Kong, China
- Hungary
- Iceland
- India
- Indonesia
- Iran (Islamic Republic of)
- Iraq
- Ireland
- Israel
- Italy
- Jamaica
- Japan
- Jordan
- Kazakhstan
- Kenya
- Kiribati
- Korea (Rep. of)

- Kuwait
- Kyrgyzstan
- Latvia
- Lesotho
- Liberia
- Liechtenstein
- Lithuania
- Luxembourg
- Macao, China
- Madagascar
- Malawi
- Malaysia
- Maldives
- Mali
- Malta
- Marshall Islands
- Mauritania
- Mauritius
- Mexico
- Micronesia
- Moldova
- Mongolia
- Montenegro
- Morocco
- Mozambique
- Namibia
- Nauru
- Nepal (Republic of)
- Netherlands
- New Zealand
- Nicaragua
- Niger
- Nigeria
- North Macedonia
- Norway
- Oman
- Pakistan
- Panama
- Papua New Guinea
- Paraguay
- Peru
- Philippines
- Poland
- Portugal
- Qatar
- Romania
- Russian Federation
- Rwanda
- Saint Lucia
- Saint Vincent and the Grenadines
- Samoa
- San Marino
- Saudi Arabia
- Senegal
- Serbia
- Seychelles
- Sierra Leone
- Singapore
- Slovakia
- Slovenia
- Solomon Islands
- Somalia
- South Africa
- South Sudan
- Spain
- Sri Lanka
- Sudan
- Sweden
- Switzerland
- Syrian Arab Republic
- Tanzania
- Thailand
- Togo
- Tonga
- Trinidad and Tobago
- Tunisia
- Turkey
- Uganda
- Ukraine
- United Arab Emirates
- United Kingdom
- United States
- Uruguay
- Vanuatu
- Viet Nam
- Yemen
- Zambia
- Zimbabwe

Acronyms

3G	Third Generation of wireless mobile telecommunications technology
4G	Fourth Generation
5G	Fifth Generation
A4AI	Alliance for Affordable Internet
ACE	Africa Coast to Europe
AfCFTA	African Continental Free Trade Area
AI	Artificial Intelligence
AIM	ASEAN ICT Masterplan
AMF	Africa Mobile Networks
APG	Asia-Pacific Gateway (cable)
ASEAN	Association of Southeast Asian Nations
AU	African Union
BGAN	Broadband Global Area Network
BIS	Bank of International Settlements
BSB	Business Sans Borders
BWA	Broadband Wireless Access
CAGR	Compounded Annual Average Growth Rate
CAPEX	Capital Expenditure
CATV	Cable Television
CDN	Content Delivery Network
CFSK	Computers For Schools Kenya
CIS	Commonwealth of Independent States
CITC	Communications and Information Technology Commission
COVID-19	Coronavirus Disease
CRM	Customer Relationship Management
CSAM	Child Sexual Abuse Material
CSEA	Child Sexual Exploitation and Abuse
DE4A	Digital Economy for Africa
DPP	Digital Participation Pledge
DRB	Digital Resilience Bonus
DTS	Digital Transformation Strategy

EBS	Educational Broadband Service
EO	Earth Observation
ERP	Enterprise Resource Planning
ESG	Enterprise Singapore
EU	European Union
EUTELSAT IGO	European Telecommunications Satellite Organization
EVAC	End Violence Against Children
FAS	Financial Access Surveys
FCC	Federal Communications Commission
FCS	Fundación Carlos Slim/Carlos Slim Foundation
FTTH	Fibre-To-The-Home
FWA	Fixed Wireless Access
G20	Group of Twenty
GAML	Global Alliance to Monitor Learning
GB	Gigabyte
Gbps	Gigabyte per second
GDP	Gross Domestic Product
GEPP	Global Epidemic Prevention Platform
GNI	Gross National Income
GNSS	Global Navigation Satellite System
GPON	Gigabit Passive Optical Networks
GSMA	GSM Association
HAPS	High Altitude Platform Station
HDI	Human Development Index
HIC	High-Income Country
HTS	High-Throughput Satellite (satellite system)
ICT	Information and Communication Technology
IFC	International Finance Corporation
IGO	Intergovernmental Organization
IoT	Internet of Things
IMDA	Infocomm Media Development Authority (of Singapore)
IMF	International Monetary Fund

IP	Intellectual Property
ISP	Internet Service Provider
ISWAN	International Seafarers' Welfare Assistance Network
ITSO	International Telecommunication Satellite Organization
ITU	International Telecommunication Union
IVR	Interactive Voice Recognition
IXPs	Internet Exchange Points
KCDC	Korea Center for Disease Control
KT	Korea Telecom
LDCs	Least Developed Countries
LLDCs	Landlocked Development Countries
LMICs	Low- and Middle-Income Countries
LTE	Long-Term Evolution
Mbps	Megabytes per second
MDGs	Millennium Development Goals
MISTT	Mobile Internet Skills Training Toolkit
MNOs	Mobile Network Operators
MoMo	Mobile Money
MSMEs	Micro-, Small- and Medium-Sized Enterprises
MSS	Mobile Satellite Services
NBP	National Broadband Plan
NBPD	National Broadband Plan for Development
NCMEC	National Center for Missing and Exploited Children
NEA	National Environment Agency
NESC	Nokia Enterprise and Services Cloud
NGO	Non-Governmental Organization
NGN	Next-Generation Network
NGNBN	Next-Generation Nationwide Broadband Network
NPIs	Non-Pharmaceutical Interventions
OECD	Organisation for Economic Co-operation and Development
OTNx	Open Transport Networks
OTT	Over The Top (or OSPs)

PoP	Point of Presence
PP-14	2014 Plenipotentiary Conference
PPP	Purchasing Power Parity, in USD
PPPs	Public-Private Partnerships
RAM	Random-Access Memory
RCT	Randomized Controlled Trials
RoW	Right of Way
RPL	Recognition of Prior Learning Schemes
RT-PCR	Reverse Transcription Polymerase Chain Reaction
SAMENA	Subcontinent, Asia, Middle East and North Africa
SEDA	Sustainable Economic Development Assessment
SDGs	Sustainable Development Goals
SIDS	Small Island Developing States
SIM	Subscriber Identity Module or Subscriber Identification Module
SMEs	Small- and Medium-Sized Enterprises
SMS	Short Message Service
SSA	Sub-Saharan Africa
stc	Saudi Telecom Company
Tbps	Terabyte per second
TeSA	TechSkills Accelerator
TSF	Télécoms Sans Frontières
TVWS	TV White Spaces
UAS	Universal Access and Service
UCC	Uganda Communications Commission
UIS	UNESCO Institute for Statistics
UN	United Nations
UNCDF	United Nations Capital Development Fund
UNCTAD	United Nations Conference on Trade and Development
UNDP	United National Development Programme
UNECA	United Nations Economic Commission for Africa
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNGIS	United Nations Group on the Information Society

UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USD	United States Dollar
USDD	Unstructured Supplementary Service Data
USF	Universal Service Funds
VAT	Value-Added Tax
VoIP	Voice over Internet Protocol

**BROADBAND
COMMISSION**
FOR SUSTAINABLE
DEVELOPMENT

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