



## ITU COUNCIL CONTRIBUTION TO THE HIGH-LEVEL POLITICAL FORUM ON SUSTAINABLE DEVELOPMENT (HLPF) 2022

**2022 Theme:** *"Building back better from the coronavirus disease (COVID-19) while advancing the full implementation of the 2030 Agenda for Sustainable Development"*

**SDGs under review:** The HLPF in 2022 will review the SDGs and will also discuss in depth Sustainable Development Goals: 4 (quality education), 5 (gender equality), 14 (life below water), 15 (life on land), and 17 (partnerships for the Goals).

### General Introduction

The International Telecommunication Union (ITU) is the United Nations specialized agency for information and communication technologies (ICTs). ITU allocates global radio spectrum and satellite orbits, develops the technical standards that ensure networks and technologies seamlessly interconnect, and strive to improve access to and use of ICTs to underserved communities worldwide. ITU is committed to connecting all the world's people - ensuring that everyone, regardless of age, gender, ability, location, or financial means have available, accessible and affordable access to ICTs.

Through ITU's work, we support everyone's fundamental right to communicate.

The Sustainable Development Goals (SDGs) and Targets stimulate global action in the coming years in areas of critical importance for humanity and the planet. As acknowledged by the 2030 Agenda for Sustainable Development, "The spread of information and communications technology and global interconnectedness has great potential to accelerate human progress, to bridge the digital divide and to develop knowledge societies, as does scientific and technological innovation across areas as diverse as medicine and energy".

Increased connectivity, digital technologies, information systems, digital skills and Internet use have the potential to reduce poverty and create jobs through applications and services, such as e-agriculture and digital finance; help end poverty and hunger; monitor and mitigate climate change and sustaining our natural resources; as well as improved efficiency and transparency. All three pillars of sustainable development – economic development, social inclusion and environmental protection – need ICTs as key catalysts. The development potential of ICT as crosscutting enablers must therefore be fully harnessed for achieving the SDGs.

To enable this vision, ITU and its members have adopted the ITU Strategic Plan for 2020-2023 (Resolution 71, Rev. 2018, Dubai) and the Connect 2030 Agenda (Resolution 200, Rev. 2018,

Dubai) which are based on 5 ITU strategic Goals. Each Goal has its own indicators that measure the progress towards this shared vision.

In line with UN [Resolution A/70/1](#) and [Resolution A/70/125](#), ITU, in collaboration with more than 30 UN agencies, is continuously working towards strengthening the alignment of the WSIS Process implementation activities with the 2030 Agenda for Sustainable Development, thereby highlighting the direct linkages between WSIS Action Lines and SDGs.

## **A. Impacts of the COVID-19 pandemic on the implementation of the SDGs under review in the 2022 HLPF from the vantage point of your intergovernmental body, bearing in mind the interlinkages with other SDGs**

If there was ever a reminder needed of the importance of the digital connectivity to the implementation of the SDGs, the COVID-19 pandemic has provided a powerful one. Since 2020, our ability to continue our social and economic lives has become crucially dependent on the access to the meaningful connectivity.

ITU's 2020 study on "[How broadband, digitization and ICT regulation impact the global economy](#)" establishes a clear link between the development of the digital infrastructure and economic development. This study suggests that 10 per cent increase in fixed broadband penetration results in 0.77 per cent increase in GDP per capita on average across the world, and the same increase in mobile broadband results in 1.5 per cent increase in GDP per capita. At the same time, 10 per cent increase in the Development Index of the Digital Ecosystem (an indicator of the broader digitization) adds 1.33 per cent to the GDP per capita. Digitization boosts labour productivity – 10 per cent digitization yields an increase of 2.62 per cent, and it yields an increase of 2.28 per cent in total factor productivity.

In addition, ITU's 2021 Report on "[The Economic impact of broadband and digitization through the COVID-19 pandemic: Econometric modelling](#)" examines the economic impact of fixed and mobile broadband, as well as of digitization on the economy through to the end of 2020 and assesses their contribution to increasing economic resilience to face the pandemic. The report shows how COVID-19 drove changes in ICT investment, deployment, and service adoption trends in 2020.

With the above in mind, since 2020 ITU has conducted a significant amount of work to assess and quantify the relationship between the impact of COVID-19 and digital infrastructure. Recent additions to this work include:

- The "Pandemic in the Internet Age" reports on "[Communications industry responses](#) (2020)" and "[From second wave to new normal, recovery, adaptation and resilience](#) (2021)";
- Outcomes reports from a series of roundtables of leading economic experts gathered by the ITU (ITU Economic Experts Roundtable) on: "[Economic Impact of COVID-19 on Digital Infrastructure](#) (June 2020)"; "[The Telecommunication industry in the post-COVID-10 world](#) (Feb. 2021)"; and "[The role of Government and the Public Sector in post-COVID-19 digital world](#) (Sept. 2021 to be released soon)".

Based on these reports, together with other relevant material, ITU has noted the following insights on the impact of the COVID-19 pandemic:

After the first anniversary of the COVID-19 pandemic there remains a need for continued investigation of the actual and potential responses of the telecommunication sector to the pandemic.

The [\*Economic impact of broadband and digitization through the COVID-19 pandemic: Econometric modelling\*](#) report highlights that while telecommunication/ICT capital investment in developed countries accelerated from 0.5 per cent compound annual growth rate (CAGR) between 2010 and 2019 to 1.8 per cent between 2019 and 2020 in Member States of the Organisation for Economic Co-operation and Development (OECD) to accommodate the increase in traffic, combined with the deployment of 5G and optical fibre, telecommunication/ICT capital investment in developing countries, on the other hand, declined 7.0 per cent between 2019 and 2020 in Latin America, 2.9 per cent in Asia and the Pacific, 3.4 per cent in the Arab States, and 7.0 per cent in Africa, thereby indicating a widening of the digital divide.

The report also shows that a decline of capital expenditures (CAPEX) per capita in developing countries resulted in a decreasing growth rate of 4G coverage and lagging deployment of 5G (5G currently reaching 3.34 per cent of the population in Latin America, and 0 per cent of the population in Africa). Fixed broadband adoption continued to grow around the world (from 53.3 per cent of households to 58.5 per cent in Latin America, from 53.2 per cent to 55.2 per cent in Asia and the Pacific, from 62.4 per cent to 67.0 per cent in Arab States, from 4.5 per cent to 6.0 per cent in Africa, and even from 84.4 per cent to 87.6 per cent in Europe and from 92.0 per cent to 95.5 per cent in North America), and broadband prices have continued to fall, which, even in the context of declining incomes, has increased affordability (worldwide fixed broadband prices as a percentage of gross national income (GNI) per capita dropped by 3.3 per cent and mobile broadband prices decreased by 5.1 per cent). In the Americas, Asia–Pacific and Arab regions, fixed broadband prices as a percentage of GNI per capita have increased, due to incomes decreasing at a higher rate than prices in the context of the severe economic recession.

Globally, the ICT industry has played a vital part in reducing the social and economic impacts of the pandemic, which has nonetheless caused the greatest worldwide economic and social disruption since the Second World War. Building on earlier work by ITU and a range of international institutions the *Pandemic in the Internet Age* report investigates the national, regional and global responses of the regulatory community and industry stakeholders (policy-makers, national regulatory authorities (NRAs), network operators/service providers, equipment manufacturers, digital players, governments, academics, international and regional agencies and civil society). It considers the critical actions and initiatives undertaken early in the pandemic and examines their efficacy and sustainability in the medium and longer term. It also considers the long-term adaptation of the telecommunication industry to the uncertain and still emerging “new normal”.

Governments and other stakeholders are all coming to understand that the COVID-19 crisis will not be short-lived. It is increasingly clear that COVID-19 has been a uniquely powerful gamechanger, with digital connectivity now at the top of every nation’s agenda. The crisis has acted as both catalyst, upending legacy processes and effecting cultural change, and accelerator, driving online trends that may otherwise have taken a decade to emerge. There is also clear recognition of a greater need for cooperation and collaboration at regional and global level, as long advocated by ITU. ICTs have an enormous role to play in helping society adapt to the dislocations caused by the pandemic.

This enhanced role comes in addition to the already central part that digital technologies have assumed in driving innovation, digital disruption and economic growth and development, particularly in emerging economies. It is critical, then, that national governments, regional cooperative organizations and NGOs collaborate with industry stakeholders to ensure that digital technologies are used as effectively as possible to soften the economic burden of the pandemic and ease, to the maximum extent possible, the social dislocations associated with it.

The *Pandemic in the Internet Age* report identifies four main themes that should be addressed globally by regional and national governments supported by national regulatory authorities and industry stakeholders: (i) addressing the digital divide; (ii) driving digital deepening; (iii) effecting digital transformation; and (iv) building digital resilience.

The huge shift to online activity means that social groups without affordable connectivity are now more disadvantaged than before the pandemic. The ability to participate socially and economically, to obtain education, medical and other government services, to communicate and to access e-commerce services is completely dependent on affordable connectivity. Addressing the digital divide therefore has important consequences in terms of economic efficiency and development, but it is primarily driven by considerations of equity, that is, providing equal access to opportunities to participate in the digital economy and society.

As businesses and governments shift their activities online, they will require faster and higher capacity data services. Although there may be fewer people in central business districts for some time, the demand for data will likely stay high and continue to grow strongly. Particularly in emerging economies, it will be crucial rapidly to deploy 4G/5G coverage in urban and suburban areas, in order to support pandemic-driven data demand. In contrast to addressing the digital divide, digital deepening is primarily driven by economic objectives of increased efficiency, productivity, competitiveness and growth. It is not limited to access networks; backhaul, cloud infrastructure and international submarine/satellite capacity must also be properly dimensioned for the additional load and more.

The shift to digital processes requires a broad digital transformation in institutions and in business and government processes, including access to health care, financial services and government services. A critical component of this shift is to improve the digital literacy of less capable groups so that they are comfortable accessing services online. More difficult, but just as important, is cultural change in societies, government, and companies.

The rapid increase in demand for services experienced at the onset of the COVID-19 pandemic means that additional capacity and resilience have to be built into telecommunication infrastructure systems and services. In a period of uncertainty, the returns for building additional “headroom” are increased. Again, building digital resilience is not limited to access networks; backhaul, cloud infrastructure, international submarine/satellite capacity and ICT systems must be properly dimensioned for present and future crises and disasters. Specifically in the short to medium term, as ICTs have a great capacity to facilitate the move to the new normal, government and national regulatory authorities should endorse and support, as part of the ICT sector response to COVID-19:

- enhanced digital contact tracing (via smartphone) with public campaigns to promote public buy-in;
- strong digital supply chains for COVID-19 vaccines and their distribution;

- digital vaccine certificates and vaccine passports – where possible, utilizing digital IDs – to facilitate domestic and international travel and trade.

There is significant evidence on the importance of information and communication technologies (ICTs) as contributors to economic growth, productivity, and employment, as shown by the ITU study on “How broadband, digitization and ICT regulation impact the global economy”, supported by econometric models built on data collected from 139 countries between 2007 and 2018.<sup>1</sup> Since the publication of that research, the outbreak of COVID-19 has raised two critical policy questions:

- Given the changes in the deployment, adoption and use of ICTs since the beginning of the pandemic, has their economic contribution remained at the same level as measured before the occurrence of the pandemic?
- Can ICTs increase countries’ economic resilience to the pandemic?

These questions were addressed in the “*The Economic impact of broadband and digitization through the COVID-19 pandemic*” study, which provided the confirmation of the economic contribution of ICTs throughout 2020 and the assessment of the value of broadband in mitigating economic disruption caused by the pandemic provided support for the measures taken so far by policy-makers and regulators to accommodate the resulting changes in sector dynamics. Those measures include:

- granting mobile operators the use of additional spectrum in pre-determined regions of the country;
- temporarily reducing the traffic generated by some video-streaming providers by reducing the definition of video content;
- accelerating the deployment of a large number of base stations for mobile broadband, reducing the permit requirements for the deployment of antennas; and
- address some factors of the digital divide by providing devices (personal computers, tablets, Wi-Fi modems, subsidized broadband services) to vulnerable consumers, and combining this with distance learning training on e-education and telemedicine.

The evidence generated in this study provides additional guidance for some forward-looking actions:

- Policy-makers and regulators in developing countries need to consider initiatives for reversing the declining capital spending trend and stimulating telecommunications investment to ensure continuous roll-out of networks;
- The importance of ICTs in mitigating some of the pandemic-induced economic damage illustrates the need for policy-makers to reduce demand-side barriers (affordability, digital literacy, local content development) and stimulate the adoption of mobile broadband;
- The high value of fixed broadband as a mitigant of pandemic-induced economic disruption brings to light the urgency with which countries with underdeveloped fixed connectivity need to explore ways to expedite the roll-out of fixed networks, with an initial emphasis on high density urban concentrations.

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<sup>1</sup> The economic contribution of broadband, digitization and ICT regulation and Regional Econometric Modelling. Available at: <https://www.itu.int/en/ITU-D/Regulatory-Market/Pages/Economic-Contribution.as>

Impact on the telecommunication networks has effects beyond the sector. The participants of the ITU's 7<sup>th</sup> Economic Experts Roundtable<sup>2</sup> fully agreed on the capacity of digital infrastructure to enhance social and economic resilience in the face of the pandemic. While research on the contribution of digitization to mitigate the impact of pandemics is limited, emerging evidence is compelling about its positive effects. In the medium term (e.g. 2021), countries with top connectivity infrastructure could mitigate up to half of the negative economic impact.

An analysis of the relationship between the digitization of production index and GDP downward adjustment from COVID-19<sup>3</sup> was examined by assessing a correlation between the International Monetary Fund (IMF) GDP downward adjustments and an index of digitization of production. While these correlations indicated that while digitization had no apparent impact on a country's ability to mitigate the recession in 2020, countries with higher digitization of their economy tended to be associated with a smaller downward GDP adjustment in 2021, as forecasted by the IMF.

The economic fallout of COVID-19 includes a considerable disruption and contraction in economic activity, a steep decline in government and business revenues, losses in jobs as well as livelihoods, especially for informal daily wage earners. For instance, the average GDP for the Asia-Pacific region could contract by 4 per cent; the highest contraction on record. Several Asia-Pacific countries have already announced a range of unprecedented policy measures to stem the decline and eventually initiate economic recovery. Further efforts will be needed to ensure that such measures and recovery are not focused on reviving economic growth only, but are in line with inclusive, sustainable, resilient and low-carbon pathways.

A crucial role of digital technologies in the context of COVID-19 has been felt across many areas of social and economic lives. For instance, supercomputers analyse thousands of drug compounds to identify candidates for treatments and vaccines. E-commerce platforms enable households to access staples and medical supplies, while videoconferencing platforms enable education, remote working as well as continuation of the general economic activity. This transition to digital platforms and services is mainly enjoyed by the people with good connectivity. The others, especially vulnerable groups without the access to the Internet, have suffered job losses as well as severe restrictions to their lives.

Countries' lockdown and school closures have resulted in students being compelled to attend classes remotely. In this context, a critical question is the potential social impact of this move to home schooling supported by access to technology. As stated by a participant of the 7<sup>th</sup> Economic Experts Roundtable: "As a high percentage of the world's students are out of formal classes at the moment, the availability of remote learning for some students, but not others will create new digital divides which will impact the future career paths of students, particularly those in school-leaving years. The main cause of this new digital divide is a lack of affordable bandwidth, particularly outside major cities. But a secondary cause is a lack of suitable devices for remote learning, and a need to share them between several members of a family." The impact is likely to be long term with the loss of six month's education having a knock-on effect on future schooling, although the effects would be regional, with some areas suffering more than others. LDCs would likely fall into the category of areas which would suffer mostly. This will clearly have a significant impact not only on Goal 4 on quality education, but also such goals as Goal 1 and Goal 8.

It is also pertinent to examine teleworking's impact on the labour market and its social implications (directly related to Goal 8). In Chile, for example, 56.4 per cent were either not allowed to go to

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<sup>2</sup> <https://www.itu.int/en/ITU-D/Regulatory-Market/Pages/EconomicRoundTable2021.aspx>

<sup>3</sup> Katz et al (2020), *op. cit.*

work or could not continue to work by telecommuting.<sup>4</sup> In South Africa this number was 60.1 per cent.<sup>5</sup>

Beyond the impact on distance education and telecommuting, the digital divide is exacerbating the disadvantage of unserved or non-digitally literate populations, limiting their access to payments and commerce (for the unbanked) or healthcare services and information.

A key challenge for enterprises, especially small and medium-sized enterprises (SMEs), in LDCs in adapting to the challenges associated with COVID-19, have been their lack of access to digital tools. For example, the use of the Internet for business purposes in Sub-Saharan Africa is as low as 7 per cent on average.<sup>6</sup>

Ensuring that everyone has access to digital tools, importance of which has been particularly emphasized by the pandemic, requires substantial financial resources. ITU's 2020 "[Connecting Humanity: Assessing investment needs of connecting humanity to the Internet by 2030](#)" report estimates that achieving universal access to broadband will require bringing over three billion people online in the next ten years, at an estimated cost of US\$428 billion.

At the same time, the pandemic is making the task of making such investments harder, as the telecommunications industry has not been spared by it. A recent report from Analysys Mason<sup>7</sup> has suggested that the telecommunications industry will see a US\$43 billion fall in 2020, and it will take until 2023 to recover to the levels of 2019.

Furthermore, the increase in traffic, associated in particular with the pandemic-related lockdowns, has resulted in an acceleration of telecommunications operators' capital expenditure (CAPEX) related to the expansion of capacity (i.e. operations and maintenance CAPEX). Consequentially, spending not related to an increase in capacity (i.e. network modernization) is being postponed, especially among emerging countries. While the top five African operators spent US\$5.5 to 6 billion in 2019, it is expected that this would drop to US\$4.5 to 5 billion in 2020. This will have a clear impact on investment facilitation targets of Goal 17.

Additional specific telecommunications-related impact will likely be felt by countries that used to have a high inflow of tourism. As tourist traffic decreases, it is reducing revenues from the international mobile roaming, which in some countries may be a significant source of foreign currency. Juniper Research<sup>8</sup> predicts up to US\$25 billion in global losses to the mobile industry from the reduction in roaming revenues.

While a number of economic experts convened by us agreed with the need for counter-cyclical interventions, they raised the question as to whether developing country governments would have funds needed for investments into the digital infrastructure.

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<sup>4</sup> Katz, R., Jung, J. and Callorda, F. (2020). Facing the COVID-19 pandemic: digitization and economic resilience in Latin America. CAF Development Bank for Latin America, April.

<sup>5</sup> Katz, R., Jung, J. and Callorda, F. (2020). Digitization: a resiliency plan for developing countries facing pandemics. Presentation to the International Finance Corporation.

<sup>6</sup> OMDIA (2020). Telecoms regulation COVID-19 Tracker.

<sup>7</sup> <https://www.totaltele.com/view.aspx?ID=508040>.

<sup>8</sup> <https://www.juniperresearch.com/document-library/white-papers/coronavirus-the-impact-on-mobile-roaming>.



One expert also pointed to the industry exit by low-cost carriers in developing countries. These budget telecommunication operators originally entered the market with offers particularly targeted to low-income populations. Their business model could become stressed by the reduction in consumer spending.

The 8<sup>th</sup> Economic Experts Roundtable, held in September 2021 addressed the role of government and the public sector in the post-COVID-19 digital world. The roundtable was structured around two main panels, the first one focused on the current role of the government and the public sector in the ICT industry. The objective was to understand why, despite the shared understanding on the benefits of privatization and liberalization, so many countries continue to host state-owned service providers. The second panel addressed the role of governments in the management of ICT infrastructure, such as national backbones. In case the experience of state ownership of infrastructure has not been successful, what should governments do? The discussions were framed within the difficult economic conditions driving the digital divide, especially since the COVID-19 pandemic.

Economic contraction, slower growth and rising unemployment have resulted in significant economic challenges across users of digital services. Furthermore, the pandemic has widened the divide in the availability and quality of connectivity between markets, and just as significantly, within individual markets (between urban and rural, primary vs. secondary cities, etc.). The reduction of telecommunication capital spending because of the COVID-19 induced economic downturn is having a negative impact on the rate of network expansion, particularly in rural and isolated areas. What should the role of government be in this context?

Despite the research findings and best practices formulated around the need to privatize and liberalize the telecommunication/ICT industry, in 35 per cent of 189 countries surveyed by the ITU Regulatory Tracker<sup>9</sup> the fixed broadband operator remains under state ownership, out of which 7 per cent operate as a monopoly. The economic experts explained this situation as follows:

- First and foremost, privatization is a complex process, requiring changes in primary legislation and regulatory frameworks that take time to materialize. In a recent example, the restructuring of the telecommunications industry in Ethiopia is expected to require at least four years.
- Secondly, policy-makers are sometimes reluctant to proceed with the privatization of the state-owned telecommunication operator since in many countries this entity remains an important source of public income and employment.
- Lastly, the persistent role of state-owned telecommunication operators is prevalent in the fixed line sector, which adds to the limited interest on the part of private investors.

The ongoing role of governments can be explained by the legal complexity and implicit institutional inertia of privatization processes, the reluctance to relinquish control of an important source of income and employment.

While the experts backed the conclusions of the significant volume of research in support of privatization and liberalization, they also recognized that for these policies to be successful, they need to be accompanied by the establishment of an independent regulator staffed with technically

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<sup>9</sup> <https://app.gen5.digital/tracker/metrics>



capable professionals. Furthermore, they also acknowledge that in some very specific cases, state-owned operators continue to be successful infrastructure contributors.

In light of these conclusions, some practices were outlined that governments should follow going forward in terms of outlining their future role in the industry. Governments should create conditions that increase the ability of the private sector to continue investing in deploying networks especially in rural areas. If wholesale telecommunications infrastructure is in government hands, they should abide by clearly defined open access principles. That being said, privatization of wholesale infrastructure should continue to be explored in the context of a regulatory framework that stimulates capital to flow in the country. Finally, looking at the deployment of 5G networks, infrastructure sharing continues to be the most appropriate way to facilitate investment by the private sector.

The COVID-19 pandemic had also a clear and multidimensional adverse impact on the implementation of the Goal 3 related to health and wellbeing, not only due to the direct threat to health from the virus but also due to the wide-ranging disruptions of healthcare systems. Many countries had to discontinue preventive programmes and interventions. This has slowed down the progress achieved in the past years. The pandemic has highlighted, however, the relevance of digital platforms and solutions for maintaining the continuity of services and providing support and advice to populations and communities that are difficult to reach with conventional means. In particular, in many countries, digital health solutions were used to keep people connected to ensure social and business continuity, spread timely and verified warning information, remotely provide health services and automate diagnosis, gather data to monitor and contain virus spread, support adherence to safety measures (e.g. quarantine) and analyse data to aid research and to optimize response measures. This has provided an impetus for some digitization efforts that could have positive longer-term impact. For example, it seems to have resulted in the acceleration of investments into and adoption of digital health, with McKinsey Global Institute estimating a rise in the global digital-health revenues from US\$350 billion in 2019 to US\$600 billion in 2024<sup>10</sup>. The demand for digital-health as well as other digital services is evident at the level of individual countries as well. For example, as ITU has reported in the “[Measuring digital development: Facts and figures 2020](#)” report, in Brazil, a big increase was reported in Internet users searching for health information, in addition to the increase in the use of other digital services as well, including performing some form of public service; consulting, making payments or conducting other financial transactions; and buying products or services online.

Additionally, as the threat of misinformation has been highlighted in the official statement of the UN Secretary-General and the need to address the “infodemic” linked to COVID-19, digital health tools and solutions provided cost-efficient means to address the rise in mis- and dis-information surrounding the pandemic.

Finally, in the “[Facts and figures 2021](#)” report, ITU reports some infrastructure-strengthening effects of the pandemic-induced challenges. As networks around the world were put to the test during the COVID-19 pandemic, increased Internet traffic caused first a temporary drop in speed in many countries, but international bandwidth usage is estimated to have grown globally by 38 per

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<sup>10</sup> <https://www.economist.com/business/2020/12/02/the-dawn-of-digital-medicine>.

cent in 2020 and 30 per cent in 2021. Encouragingly, growth of international bandwidth usage in developing countries outstripped the growth in developed countries.

The role played by digital technologies in mitigating the impact of COVID-19 crisis has re-emphasized the importance of digital infrastructure, especially in terms of universal access and digital inclusion, and drew attention to such attributes of it as quality, resilience, security, and affordability. The increased reliance on digital infrastructure and services under the COVID-19-related lockdowns has been unprecedented and so has been the response of the information and communications technologies (ICT) sector. ICT sector policy makers, regulators, industry and academia have together contributed to meet the expectations placed on them by the newly rediscovered crucial role of the digital infrastructure in sustaining our economies and societies.

## **B. Actions, policy guidance, progress, challenges and areas requiring urgent attention in relation to the SDGs and to the theme within the area under the purview of your intergovernmental body**

As noted in the [2021 edition of the State of Broadband report](#), produced by the Broadband Commission for Sustainable Development:

- COVID-19 has crystalized the centrality of connectivity in public life. COVID-19 has demonstrated the unquestionable centrality of connectivity as many adults and children have shifted towards remote work, learning, and communication. At the same time, the pandemic is highlighting inequality among and within countries along a contour line between those with access and those without.
- A lingering digital divide remains, exacerbated by the pandemic. While the report acknowledges that individual data consumption has increased during the pandemic, others have had to limit their access because of the economic impact to income and affordability that most affects the populations that use the internet the least. In developing economies, however, the absence of broadband remains a key issue in many countries where investment in broadband infrastructure remains uneconomic under current financing models. In addition, the report notes that where broadband coverage exists, both broadband pricing and the cost of 4G devices before the onslaught of COVID-19 were already at prohibitive levels for significant segments of lower income populations. COVID-19 is reported to have exacerbated the situation, pushing between 80-115 million people into extreme poverty and the disruption to global supply (and demand side declines) is leading to reduced smartphone shipments and increased component costs. The digital divide exacerbates the negative social impacts of the COVID-19 pandemic and threatens to exacerbate overall divides. Even within developed countries, the pandemic has exposed digital divides between populations, communities and ethnic groups, and has been a wake-up call those efforts to simply apply more infrastructure and more technology at cheaper prices do not fully address systemic differences between peoples. More targeted interventions that are cognizant of social inequalities, and the complexities of digital disparities are required.
- Responses to the broadband challenges posed by COVID-19 have been effective, but now need to be translated from temporary to long-term improvements. Nearly every single country around the world implemented some form of emergency ICT policy or regulatory initiative in response to the COVID-19 crisis, and these have resulted in improvements, with particular emphasis on remote education, remote working and healthcare. The ITU's [Global Network Resiliency Platform REG4COVID](#) tracks many of those measures, highlighting that some countries implemented a

plethora of measures. Cementing temporary measures into long-term improvements in access and connectivity in order to increase the availability and efficacy of remote work options, distance learning and telehealth services still requires further commitment and action by governments, private sector and society.

COVID-19 has heightened the need to accelerate digitization of economies in ways that are inclusive of all people, everywhere. ITU works actively towards ensuring inclusive, equal access and use of ICTs for all, by supporting its membership in the formulation and implementation of policies and strategies that promote the digital inclusion of all, including people with specific needs, such as: children, youth, older persons, women, persons with disabilities and indigenous communities, while at the same time, supporting local communities through multi-stakeholder partnerships, collaborations, and initiatives, to implement scalable roadmaps to reduce the digital divide.

The State of Broadband report provides a global and authoritative read-out on progress towards the SDGs as far as the digital infrastructure is concerned. As less than a decade remains to reach the SDGs, assessment of the Broadband Commission's advocacy targets provides a direction for essential actions that need to be taken to spur achievement of the sustainable development agenda. Based on ITU's latest figures, the current status of the targets is noted below:

- 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. Assessment: currently, 174 countries worldwide have a broadband plan, with several countries currently in the process of adopting one. This is an increase from 102 countries in 2010.
- 2) Advocacy Target 2 - Making broadband affordable: By 2025, entry-level broadband services should be made affordable in developing countries at less than 2 per cent of monthly Gross National Income (GNI) per capita. Assessment: The latest data from the ITU report "[Measuring Digital Development: ICT Price Trends 2020](#)" show that in 2020, the mobile broadband basket remained unaffordable in 84 of the studied economies around the world (45 per cent), and the fixed broadband basket was unaffordable in 111 (56 per cent). Least developed countries (LDCs) are particularly affected. While the median price paid in those countries for entry-level broadband services has declined over the past year, mobile broadband remains beyond the means of the average consumer in 39 out of the 43 countries for which data were available, and fixed broadband in 32 out of 33. While broadband is becoming more affordable, other barriers, such as skills and literacy, continue to act as gating factors for non-users. In all areas of broadband accessibility and use, women and girls are left behind.
- 3) Advocacy Target 3 - Getting people online: 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. Assessment: According to latest ITU data, overall global Internet user penetration stands at 63 per cent. That figure drops to 57 per cent in developing countries, and to just 27 per cent in the world's Least Developed Countries (LDCs), falling below the Broadband Commission's advocacy Target 3, but on a path to achieving it.
- 4) Advocacy Target 4 - Digital skills and literacy: By 2025, 60 per cent of youth and adults should have achieved at least a minimum level of proficiency in sustainable digital skills. Assessment: In 40 per cent of the countries for which data are available, less than 40 per cent of individuals reported having carried out one of the activities that comprise basic skills, e.g. sending an e-mail with an attachment, in the previous three months. In just 23 per cent of the countries did more than 60 per cent of individuals report one of the basic skills activities. As for the standard skills components, such as creating an electronic slide presentation, in almost 70 per cent of the countries less than 40 per cent of individuals had used them in that time. In only 3 of the 76

countries for which data are available did more than 60 per cent of individuals report performing some of those activities.

- 5) Advocacy Target 5 - Digital financial services: By 2025, 40 per cent of the world's population should be using digital financial services. Assessment: 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. 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).
- 6) Advocacy Target 6 - Getting businesses online: By 2025, improve connectedness of Micro-, Small- and Medium-sized Enterprises (MSMEs) by 50 per cent, by sector. Assessment: 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.
- 7) Advocacy Target 7 - Achieving gender equality in access to broadband by 2025: By 2025, gender equality should be achieved across all targets. Assessment: Currently 62 per cent of men are connected, whilst only 57 per cent of women are able to benefit from access to the digital connectivity. The good news is that in all regions, the gender Internet divide has been narrowing in recent years. Parity has been achieved in developed countries as a whole and in the Americas, and almost achieved in the Commonwealth of Independent States (CIS) region, the small island developing states (SIDS) and Europe. The divide remains wide in the LDCs, where only 19 per cent of women are using the Internet (12 percentage points lower than men), the landlocked developing countries (LLDCs) (27 per cent of women versus 38 per cent of men), Africa (24 per cent versus 35 per cent) and the Arab States (56 per cent versus 68 per cent).

Having regard to the importance of the digital infrastructure for sustainable development, it is clear that decisive action is needed for the world to progress towards ensuring that everyone can benefit from the enabling power of digital connectivity.

With the above in mind, the Broadband Commission for Sustainable Development has issued a [Global Goal of Universal Connectivity Manifesto](#), in which it calls on world leaders and heads of industry to put universal connectivity at the very forefront of sustainable development efforts and recognize its central role in 2030 Agenda. The Commission is convinced that achieving affordable universal connectivity is essential for achieving the 17 Sustainable Development Goals (SDGs). The pandemic and its socio-economic impacts have underscored the urgency of concrete, coordinated actions across all sectors and geographies. With less than ten years remaining until 2030, now is the time to establish digital connectivity as the foundational pillar for our shared Global Goals. This goal of universal connectivity will require collective, collaborative efforts by all stakeholders. This Broadband Commission's Manifesto is a rallying cry, calling for collaboration in:

- Establishing a baseline for universal digital connectivity;
- Identifying and supporting public-private financing of universal broadband, pioneering innovative hybrid and/or complementary, replicable and sustainable financing and investment models for all types of networks, and catalysing impactful partnerships;

- Advocating for enabling ICT regulatory environments, ICT capacity building and online safety and security, especially for children, as integral to efforts to achieve the Global Broadband Targets 2025 and the SDGs.

Connecting the unconnected is also one of the main Goals of ITU's strategy, as agreed by Member States in the framework of the Connect 2030 Agenda. Indeed, Goal 1 specifically focuses on enabling and fostering access to and increased use of telecommunications/ICT in support of the digital economy and society.

It is also important to note that the [ICT accessibility](#) implementation at global level is key to ensure that everyone's right to communicate and be part of the digital world is fulfilled – during and beyond the global COVID-19 pandemic. That means, ensuring that digital information is designed and developed considering all users' needs and/or abilities to perceive it, regardless the ICT tools used to access it. Efforts on this require: (1) involving Persons with Disabilities in development, promoting and monitoring digital accessibility policies and programs; (2) adopting standards for accessibility; and (3) promoting the understanding of disability and training and certification of accessibility professionals.

The question of how to ensure children's online safety in the age of COVID-19 is now more pressing than ever. ITU recently launched the new Guidelines on Child Online Protection, as a very timely tool to safeguard the well-being, integrity, and safety of all children around the world.

ICTs can enhance education, reduce youth unemployment and promote social and economic development. However, for youth to benefit from this transformative power of ICTs, they must be equipped with a range of digital skills and have affordable access to connectivity. In this regard, ITU recently launched Generation Connect, the overarching initiative of the ITU Youth Strategy which is structured around three main pillars: Supporting youth empowerment by creating a community of young leaders; Bringing young people together to engage with ITU and its members; and fostering youth dialogue and participation in ITU activities and decision-making processes.

There is a growing demand for digital health programmes and initiatives such as telemedicine and virtual care solutions as an efficient strategy for mitigating the disruptions caused by COVID-19. Capacity development efforts and tools to support governments and private sector in establishing national digital health platforms and solutions need to be made readily available to encourage the adoption, integration and scale up of such initiatives.

The proliferation of mis- and dis-information through digital communication channels needs to be addressed. The COVID-19 is the first pandemic in history where technology and social media are being used on a massive scale to keep people safe, productive and connected while being physically apart. At the same time, the networks we rely on to keep ourselves connected are enabling and amplifying an "infodemic." To address that "infodemic", more collaboration with Mobile Network Operators (MNOs) and Social Media platforms, as well as building technical capacities for more effective use of such mass media communication channels are needed.

Governments everywhere need to accelerate the deployment and scaling up of impactful public service citizen-centric digital solutions and innovations in support of COVID-19 economic recovery and the SDGs. To achieve that, governments need to lay out their overall digital government transformation strategies and to build common and reusable digital platforms and systems that can scale and integrate services around the needs of citizens and businesses.

ITU would also like to note that the COVID-19 pandemic has caused a number of challenges to statistical operations in countries (which are covered by Goal 17). In addition to problems such as staff sickness, and lockdowns, there are also problems specific to measuring people's ICT use: this should normally be achieved via face-to-face interviews, since contacting interviewees via ICTs (phone or Internet) could bias

the results obtained. However, face-to-face surveys have been cancelled in many countries for health reasons.

ITU Membership has stepped up and engaged in activities that have proven essential in saving lives and sustaining economies (please see information on such measures at the ITU's [REG4COVID](#) platform). ITU is helping countries to fully utilize digital technologies to respond to and recover from the COVID-19 pandemic and to build preparedness for future global emergencies. Now more than ever, the world needs to promote universal, secure, reliable and affordable connectivity and access.

### **C. An assessment of the situation regarding the principle of “ensuring that no one is left behind” at the global, regional and national levels against of background of the COVID-19 pandemic in achieving the 2030 Agenda and the SDGs, within the respective area addressed by your intergovernmental bodies**

The COVID-19 crisis has dramatically illustrated the vital importance of broadband networks and services in driving robust, resilient and well-functioning societies and economies. Yet today, 2.9 billion people remain offline. Lack of affordability, constrained access to infrastructure and devices, poor digital skills and/or the absence of relevant content mean they, and billions of other marginalized people struggling with poor connectivity, are unable to leverage the power of digital transformation in a way that could catalyse seismic shifts in development outcomes.

The disparities in connectivity are affecting some countries, some areas within countries and some groups of people more starkly than others – specifically:

- The digital divide has been highlighted as a critical barrier to the mitigation value of digitization. While in developed countries, 90 per cent of individuals used the Internet in 2021, in developing countries this number stood at 57 per cent, and in the least developed countries (LDCs) only 27 per cent were online.<sup>11</sup>
- The headline divide in usage is even starker when we look at the underlying infrastructure. For example, an Internet user in an LDC has access to 8.5 times less international bandwidth than one in a developed country<sup>12</sup>.
- ITU's “Facts and figures 2021” reveals that people in rural areas continue to face greater challenges than people in urban areas in terms of remaining online during the lockdown, especially in developing economies. According to 2021 data, globally about 76 per cent of individuals in urban areas used the Internet, almost twice as much as in rural areas (39 per cent). Large swathes of the rural landscape are still not covered by mobile broadband networks, and fewer households in these areas have access to the Internet. While virtually all urban areas in the world are covered by a mobile-broadband network, worrying gaps in connectivity and Internet access persist in rural areas. Lack in rural connectivity infrastructure has a clear impact on the implementation of Goal 2.
- The urban-rural gap was small in developed countries, but in developing countries urban use of the Internet was 2.1 times as high as rural use. In Africa, 50 per cent of individuals in urban areas were using the Internet, which was still 3.3 times as high as the percentage in rural areas, which stood at 15 per cent.

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<sup>11</sup> <https://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx> .

<sup>12</sup> *Ibid.*



- In Africa, 18 per cent of the rural population has no mobile network coverage at all, and another 11 per cent has only 2G coverage. This means that almost 30 per cent of the rural population cannot access the Internet. The coverage gap is almost as significant in the Americas, where 22 per cent of the rural population is not covered at all and another 4 per cent is covered only by 2G.
- There is a pronounced inequality between men and women in terms of the internet connectivity. While 62 per cent of men were using the Internet in 2020, only 57 per cent of women were. In LDCs this numbers stand at 31 per cent and 19 per cent respectively.

Importance of those issues have already been recognized in the ITU's Connect 2030 Agenda. Its Strategic Goal 2 ("Bridge the digital divide and provide broadband access for all") confirms ITU's commitment to ensuring that everyone without exception benefits from telecommunications/ICTs. It focuses on global telecommunication/ICT inclusiveness, fostering telecommunication/ICT access, accessibility, affordability and use in all countries and regions and for all peoples, including women and girls, youth and marginal and vulnerable populations, people from lower socio-economic groups, indigenous peoples, older persons and persons with disabilities.

An important barrier in the uptake and effective use of the Internet is a lack of ICT skills. In 40 per cent of the countries for which data are available, less than 40 per cent of individuals reported having carried out one of the activities that comprise basic skills, e.g. sending an e-mail with an attachment, in the previous three months. In just 23 per cent of the countries did more than 60 per cent of individuals report one of the basic skills activities. As for the standard skills components, such as creating an electronic slide presentation, in almost 70 per cent of the countries less than 40 per cent of individuals had used them in that time. In only 3 of the 76 countries for which data are available did more than 60 per cent of individuals report performing some of those activities. Finally, only 15 per cent of the countries had more than 10 per cent of individuals report that they had written a computer program using a specialized programming language in that time.

Affordability is also a key barrier to the ability to use broadband services. The Broadband Commission for Sustainable Development has set the broadband costs affordability threshold at 2 per cent of GNI per capita. In developed countries such services cost 0.6 per cent of GNI per capita (for mobile broadband). In developing countries this figure is 2 per cent, but in LDCs it is 6.1 per cent.

While large enterprises benefit from access to well-established digital solutions in place (collaboration tools, employee devices, cloud, VPN, etc.) and connectivity, this is not the case for a large portion of small and medium-sized enterprises (SMEs), particularly in developing countries. The use of the Internet for business purposes in Sub-Saharan Africa is as low as 7 per cent on average. South Africa has the highest Internet use by informal enterprises (24 per cent), followed by Senegal (20 per cent). Internet use by informal enterprises in Ghana and Mozambique is slightly higher than the overall average, at 8 per cent and 7 per cent respectively, but in Kenya (4 per cent) and Uganda (4 per cent) it is far lower. In Rwanda, only 1 per cent of informal entrepreneurs are using the Internet.

People unserved or underserved by broadband cannot benefit from distance learning for children, telecommuting, access to e-commerce and healthcare information. Importantly, the digital divide exacerbates other inequalities, even more so in this crisis. For example, broadband has been supporting the ability to telework for 20-40 per cent of the workforce across various countries, with those not able to telework usually in lower paid jobs and of lower educational attainment. This clearly will have longer term economic consequences, as income disparities will only be made more significant. Closure of schools also means that educational opportunities for the unconnected children would be affected even more than before the pandemic.



## D. Cooperation, measures and commitments at all levels in promoting sustainable and resilient recovery from the COVID-19 pandemic

The COVID-19 crisis has underscored the urgent need for the global digital cooperation. It is now more urgent than ever that we leverage ICTs to connect everyone everywhere and achieve the United Nations Sustainable Development Goals (SDGs). Cooperation among ITU Members and partners, including sister UN agencies, is central to ITU's multi-stakeholder response to the COVID-19 pandemic. There is a clear need to increase digital cooperation, across borders and sectors, and accelerate the development of digital societies.

As part of the effort, ITU has been actively engaged in and contributed to the UN Secretary-General's activities on digital cooperation, which promote the development of ICTs to support achieving the SDGs as well as using ICTs to respond to the such global crises as the COVID-19 pandemic. The UN Secretary-General António Guterres, in his recently released 'Roadmap for Digital Cooperation (A/74/821)', calls for the improved global connectivity as a prerequisite for all other subjects in digital cooperation, and highlights that "in the present crisis, connectivity needs to be prioritized as foundation to ensure the continuation of critical services, enable digital literacy and promote social inclusion." ITU has been working closely with the office of Office of the Secretary-General's Envoy on Technology, sister UN agencies and other stakeholders to develop the UN-wide strategies on digital cooperation, by leading the development of action plans to implement key actions and recommendations outlined in the Roadmap, especially focusing on the areas of global connectivity and digital capacity building.

This crisis has also highlighted the importance of the work of the ITU in the framework of its Strategic Goal 3 of the Connect 2030 Agenda, i.e. "manage emerging risks, challenges and opportunities resulting from the rapid growth of telecommunications/ICT". In particular, ITU focuses on enhancing the quality, reliability, sustainability and resilience of networks and systems as well as building confidence and security in the use of telecommunications/ICTs, all key issues during the COVID-19 crisis. Accordingly, the Union is working to make it possible to seize of opportunities presented by telecommunications/ICTs while working towards minimizing the negative impact of undesired collaterals.

ITU, including in partnership with other organizations, have conducted substantial work aimed to set a direction for action, collect best practices and provide comprehensive recommendations on policies and regulatory frameworks in the area of digital technologies, to enhance resilience, mitigate impact of COVID-19 as well as aid recovery. Such work includes:

- 1) Partner2Connect Digital Coalition, which will serve as a leadership level platform to engage all stakeholders to mobilize and announce new resources, partnerships, and commitments to foster meaningful connectivity and digital transformation in the hardest-to-connect communities, with a focus on, but not limited to, Least Developed Countries (LDCs), Landlocked Developing Countries (LLDCs) and Small Island Developing States (SIDS). The Partner2Connect Digital Development Roundtable will take place in June 2022 at the WTDC where these new pledges and commitments will be announced;
- 2) [Global Network Resiliency Platform REG4COVID](#), which has collected over 500 regulatory, policy and industry responses that countries and other stakeholders have taken in ensuring that digital networks and services continue to serve people and businesses in the face of COVID-19. The platform includes a collection of regulatory practices and lessons learned in keeping the networks the whole world is now relying on up and running, as well as examples of how key public and private sector stakeholders from countries across the world are working together to meet the unprecedented demand for the digital connectivity. ITU is also looking at the "recovery" phase of the crisis to address sustainability of measures, evolution of regulatory frameworks, including long-term policy and regulatory initiatives to build back better;

- 3) [Agenda for Action for Faster and Better Recovery](#) of the Broadband Commission for Sustainable Development, which outlined immediate measures that governments, industry, the international community, and civil society could take to shore-up digital networks, strengthen capacity at critical connectivity points like hospitals and transport hubs, and boost digital access and inclusion;
- 4) [COVID-19 Crisis Response Digital Development Joint Action Plan and Call for Action](#) by ITU, World Bank, World Economic Forum and GSMA outlining a number of immediate and short-term measures to make affordable and better use of digital technologies and connectivity for citizens, governments and businesses during global lockdowns;
- 5) [Guidelines for the development and implementation of national emergency telecommunication plans](#) (NETPs), which aim to help countries take immediate actions, especially as the pandemic underlined the need to be prepared;
- 6) Partnership Dialogue for Connectivity Joint-Statement on “[Accelerating Digital Connectivity in the Wake of COVID-19](#)”, which set out relevant recommendations to national governments and other stakeholders;
- 7) [Virtual WSIS TalkX](#) explored an aspect of the global response to COVID-19, providing WSIS Stakeholders with a platform to create partnerships for on-the-ground action. More than 30 physical and virtual sessions have been conducted, which have all been adapted to podcasts and are available to listen and download at WSIS TalkX Podcast [here](#);
- 8) [A Global WSIS Response - Amid the Pandemic documentary](#). The first-ever WSIS documentary in response to COVID-19 pandemic. As part of the WSIS Stocktaking: Coronavirus (COVID-19) Response – ICT Case Repository, this short film depicts efforts of WSIS stakeholders from across the world using ICTs to address some of the challenges caused by the pandemic. This in turn will help to further promote ICTs and WSIS as efficient tools to address emergencies and achieve the SDGs;
- 9) [COVID-19 related workshops at WSIS Forum 2021](#) - The [WSIS Forum 2021](#) was held under the theme of *ICTs for Inclusive, Resilient and Sustainable Societies and Economies (WSIS Action Lines for achieving the Sustainable Development Goals)*. More than 70 workshops organised by various stakeholders highlighted issues and efforts related to the topic of COVID-19 at the WSIS Forum 2021. Many emphasised the importance of ICTs, in particular internet access and connectivity for all during the COVID-19 pandemic;
- 10) [ICTs for Well-being and Happiness special track](#): The new special track was launched at the WSIS Forum 2021, which consisted of a series of workshops focusing on efforts and success stories to promote healthy lives and well-being for everyone at all ages, in the context of COVID-19 pandemic;
- 11) ITU-D Study Groups web dialogues, held in July 2020 to share responses to the global COVID-19 pandemic and focus on ways to leverage ICTs to ensure business continuity, contribute towards social goals and enable fair innovation opportunities. The insights and findings gathered through the web dialogues fed into the final output reports of relevant ITU-D Study Group Questions;
- 12) CYB4COVID, a comprehensive [repository of cybersecurity expertise](#) related to COVID-19, to assist countries, businesses and citizens in their response to amplified and new threats in the digital space during the COVID-19 pandemic;
- 13) The latest version of ITU’s [Guidelines for Parents, Carers, Guardians, and Educators for Child Online Protection](#), which offers tips for parents to minimize online risk in the current pressing situation of online safety. Furthermore, in partnership with UNICEF, UNESCO, UNODC and others, ITU collaborated in the launch of “COVID-19 and its implications for protecting children online”, a technical note that established some of the key priorities and recommendations on how to mitigate those risks and promote positive online experiences for children in this specific context;

- 14) BeHealthy BeMobile collaboration with WHO and UNICEF, which has been [leveraged to ensure that reliable and trustworthy information on COVID-19 reaches people](#) not only via the broadband Internet but also 2G mobile networks, and has been successful in sending COVID-19 notifications to millions of people;
- 15) Smart Villages platform, which has been leveraged to establish interactive voice services on COVID-19 to everyone in Niger. The service, created in collaboration with operators and SMEs, is available via the short code 701 in the five local languages in Niger. Through the service, citizens are able to access important messages from the Ministry of Health regarding prevention and diagnosis of COVID-19;
- 16) SATCOM Emergency telecommunication capacity upgrade conducted under the project funded by the ITU's ICT Development Fund as well as external partners. Through this project ITU Regional Office for Asia and the Pacific was able to assist 9 countries in developing strategic resources of satellite connectivity equipment (in total 93 satellite terminals in C, Ku and Ka band) that can be mobilized or utilized during emergency response. The impact of partnership project has been widely covered by media, and further partners like the Asian Development Bank have shown interest in continuing to build on the project successes. In the Pacific, ITU provided over 90 units of satellite ground terminal equipment and several hybrid solar power solutions for remote sites with no electricity, in collaboration with satellite service providers. The equipment was primarily intended for rural satellite connectivity and development of emergency telecommunications capacity, but advanced applications, such as e-health, e-government, long distance education and financial transfers, have also been used by the communities. In order to assist the countries in measuring the impact of the above project and providing them options for a sustainable operational model of the deployed ICT connectivity, ITU has conducted a study on the project impact assessment. Information and data for the study was not only compiled from the information provided by ministries and regulators involved in the project, but also end users and communities, which have been remotely consulted, to identify comprehensive demand and supply scenarios. The information is expected to inform the ICT sector as well as national disaster management agencies and other relevant stakeholders of importance of the impact of mainstreaming digital technology;
- 17) [Digital Transformation Centres Initiative](#), through which ITU, in collaboration with Cisco, offer free-of-charge basic level and intermediate level digital skills development courses, providing trainees with tools and skills on how to conduct leverage digital technologies, which is especially relevant in the wake of COVID-19;
- 18) [Digital Skills Assessment Guidebook](#), launched by the ITU to assist Member States in addressing the critical importance to rapidly improve access to digital skills training, particularly for vulnerable nations and communities;
- 19) Digital Skills Insights, a publication, which provides expert insights to equip policy makers and regulators for informed decision-making, encourage further research on the impact of COVID-19 on skills development, and help anticipate rapidly evolving digital skills requirements. The 2021 edition examines the future digital skills ecosystem and the importance of digital skills in a world shaped by the pandemic;
- 20) ILO-ITU Digital Skills Campaign, launched by partners of the Global Initiative on Decent Jobs for Youth, and led by ITU and ILO, the Digital Skills Campaign recognizes that investing in youth by developing their digital skills is a win-win strategy: The campaign addresses the skills gap by encouraging partners to make commitments to invest in digital skills development for young people. This can increase young people's employability and innovation capabilities, contributing to other sectors of the digital economy;

- 21) The AI for Good Global Summit was conducted fully virtual as an all-year round event. ITU was drawing upon expertise from the AI for Good Global Summit community and launched its [AI for Good webinar series](#) delving into promising use cases of artificial intelligence in healthcare and other global challenges, including how to combat COVID-19;
- 22) A series of webinars on "[Digital Cooperation during COVID-19 and beyond](#)", launched in collaboration with the UN Under Secretary General and Special Advisor to the Secretary-General, with the aim of identifying the challenges and their root causes, and finding immediate possible solutions and strategies for safe, stable and inclusive digital connectivity during the COVID-19 pandemic. ITU Regional Office for Asia and the Pacific is now developing the Connect2Recover initiative with the support of the Government of Australia, as ITU Members in the Asia-Pacific region have requested the Telecommunication Development Bureau to provide assistance in their fight against COVID-19 and to assist in building back better. Recognizing the special requirements of LDCs, SIDS and LLDCs in building their digital infrastructure and services ecosystem and incorporating the lessons from COVID-19, the ITU and Australia's Department of Infrastructure, Transport, Regional Development and Communications have agreed to undertake a project to provide technical assistance to four Asia-Pacific countries;
- 23) ITU and Asian Development Bank (ADB) jointly organized a webinar on ICT connectivity as an opportunity for sharing and discussing advances in tackling the digital divide in the Asia-Pacific region. Equitable information and communications technology (ICT) connectivity around the Asia-Pacific region remains a development bottleneck as is a particular concern in the context of the COVID-19 pandemic which has accelerated digitalization trends and requires policy makers, development partners and investors to review their strategies, fiscal space and investment priorities. ADB and ITU experts presented their views and recent initiatives in this space and invited experts presented relevant analysis and solutions that can help better understand and bridge the digital divide. This meeting was attended by public policy makers, regulators, private sector representatives, development partners, special interest groups, experts and academics;
- 24) ITU together with the Ministry of Foreign Affairs of the Republic of Estonia (MFA Estonia), The Federal Ministry of Economic Cooperation and Development of the Federal Republic of Germany (BMZ), and the Digital Impact Alliance (DIAL) at the UN Foundation are collaborating to [accelerate digital transformation and digitalization of government services](#) for the achievement of Sustainable Development Goals (SDGs) particularly in low-resource settings. The collaboration will establish a global high-level framework for digital government cooperation to assist countries in learning and implementing scalable digital services and applications in a cost efficient, accelerated and integrated manner and that are built applying best software development principles and best countries' experiences and practices;
- 25) ITU and the World Health Organization (WHO) are collaborating on [the topic of "Digital Vaccination Certificate"](#). A joint ITU-WHO workshop was held virtually on 11 August 2021. Attended by 158 participants from 50 countries, the objectives of this workshop included, but not limited to, considering various case uses for digital certificates for COVID-19 including vaccinations, sharing on-going activities among relevant technical groups and international organizations, as well as identifying challenges for implementing and federating these vaccination certificates. The [second joint ITU/WHO workshop](#), scheduled to take place virtually on 26 November 2021, will build on the outcomes from the first event to explore further development and adoption of interoperable solutions for digital COVID-19 certificates.

A number of ITU initiatives and toolkits have been supporting development of resilient ICT infrastructure, including:

- 26) [Connect2Recover](#) – an ITU initiative, launched in 2020 with the kind support of governments of Saudi Arabia, Japan, and subsequently supported by Lithuania and Australia, to help countries strengthen resilient digital infrastructures and ecosystems so that they are able to better cope with COVID-19, reinforce their recovery efforts and “build back better” as countries prepare for the ‘new normal’. In 2021, Connect2Recover has also launched a global research competition aimed to identify promising research proposals to accelerate digital inclusion during the COVID-19 recovery globally, attracted submissions of 307 proposals from each of the six regions this will result in 15 research grants to academic institutions around the world to develop frameworks, methodologies, and use cases to help countries leverage digital infrastructure and technologies to recover from post disaster events;
- 27) [GIGA](#) – a joint initiative of UNICEF and ITU to connect every school to the internet, and every young person to information, opportunity, and choice. Giga is working in partnership with governments to map school connectivity and develop financial models to make connectivity affordable and sustainable. Need to respond to the challenges of the COVID-19 pandemic led to added Giga’s focus on health centres as well as extending connectivity to communities around schools;
- 28) [Policy and Regulation Initiative for Digital Africa \(PRIDA\)](#), implemented by ITU as per the appointment of the European Union. PRIDA’s overall objective is to foster universally accessible and affordable broadband across the continent to unlock future benefits of internet-based services;
- 29) [ICT Infrastructure Business Planning Toolkit and Expert Training](#) developed by ITU this material offers ICT regulators, policymakers, and stakeholders a practical methodology for the accurate economic evaluation of proposed broadband infrastructure installation and deployment plans. The expert guidance offered by the toolkit and training greatly facilitates the development of credible and coherent business plans that could be adaptable to a wide range of broadband infrastructure deployment projects;
- 30) [Broadband Maps](#), a cutting-edge ICT-data mapping platform, taking stock of the national broadband connectivity;
- 31) [The Last-mile Internet Connectivity Solutions Guide](#), part of a broader Last-mile Connectivity Toolkit part of a broader Last-mile Connectivity Toolkit, offering guidelines that can help policymakers and professionals select and customize appropriate last-mile connectivity solutions.

ITU has also produced several reports to determine the latest trend analysis in response to COVID-19:

- 32) [Economic impact of COVID-19 on digital infrastructure](#), which reports on the outcomes of the ITU Economic Experts Roundtables and argues that the digital infrastructure is crucial for COVID-19 response and recovery;
- 33) The ITU’s 2020 report on [how broadband, digitization and ICT regulation impact the global economy](#) offers important and practical guidance for developing and developed countries on how to maximize the economic impact of strategic ICT investment decisions. The report is based on recent high-quality data, is global in scope, and offers four clear high-level recommendations;
- 34) [The Economic impact of broadband and digitization through the COVID-19 pandemic: Econometric modelling 2021 Report](#), builds on ITU’s global and regional economic research, this economic study examines the economic impact of fixed and mobile broadband penetration and digitization levels on the global economy through to the end of 2020;
- 35) [Data insights: analytics of REG4COVID data](#), bringing together the main insights from the REG4COVID platform during the crisis and quantify the initiatives and measure implemented by countries to prepare for the medium and long-term recovery from COVID-19;



- 36) [Pandemic in the Internet Age: communications industry responses 2020](#), which provides case studies and ITU's analysis of initial key initiatives in response to COVID-19 and describes key short-term regulatory and commercial initiatives by national regulatory bodies, operators, content and online providers, collected through ITU's Global Network Resiliency Platform (REG4COVID);
- 37) [Pandemic in the Internet age - From second wave to new normal, recovery, adaptation and resilience 2021](#), which contains key insights on the main issues and recommended regulatory actions to prepare the recovery;
- 38) The [Financing universal access to digital technologies and services report 2021](#), designed to provide policy, regulatory and financing practical guidance to stakeholders, and contribute to reviewing and rethinking funds as a concept, exploring alternative models using a combination of monetary and non-monetary contributions and implementing innovative risk-mitigation mechanisms and financial solutions for smarter investments;
- 39) [Last mile connectivity in the context of COVID-19](#), an ITU REG4COVID discussion paper, which analyses measures taken in the COVID-19 context to address Last Mile Connectivity (LMC) issues, and identifies best practices in this regard. It examines market aspects of last-mile connectivity, with a view towards promoting and developing sustainable infrastructure solutions, and provides guidance for private sector and civil society stakeholders to act upon the LMC opportunities available today;
- 40) Connect2Recover: A methodology for identifying connectivity gaps and strengthening resilience in the new normal: *A methodology for identifying connectivity gaps and strengthening resilience in the new normal* report outlines how governments and regulators can use the national broadband planning process to help close the digital divide, collect trustworthy sources of data to carry out gap analysis, increase network redundancy and resiliency, and be prepared to move quickly should future disasters occur.

Specific challenges related to ensuring equal ability to access and make use of digital technologies irrespective of gender are addressed by [EQUALS Global Partnership for Gender Equality in the Digital Age](#) - a committed group of corporate leaders, governments, businesses, not-for-profit organizations, academic institutions, NGOs and community groups around the world dedicated to promoting gender balance in the technology sector by championing equality of access, skills development and career opportunities for women and men alike. In the context of the EQUALS, the ITU and the Enhanced Integrated Framework (EIF) have launched a cooperative project to enhance the digital ecosystem and build digital skills for women in LDCs.

Connecting rural populations and empowering them with digitally-enabled services is a powerful and highly cost-efficient catalyst of positive rural transformation and to mitigate the effects of the disruptions caused by COVID-19 (e.g. closure of local agricultural markets, failures of supply chains, closure of schools, and growing burden on the very scarce healthcare facilities). Through the broader [Smart Villages](#) project piloted in Niger, ITU advocates for a whole-of-government approach for rural digital transformation to provide meaningful connectivity and ICT infrastructure to remote rural communities as a sustainable and scalable strategy to provide better access to the essential social services to the populations that need them the most.

ITU is actively engaging in collaboration with other UN agencies in promoting digital tools and solutions that could be effectively used to deliver timely and reliable health information to people through the ITU-WHO joint Mobile Health initiative "[Be Healthy, Be Mobile](#)", with an aim to induce positive health behaviour change and that they are not mis- or dis-informed.

ITU also supported the G20 Digital Economy Ministers in their commitment to sharing information in a secure manner and encouraging the research and development of digital technologies for health. The meeting highlighted importance of communication infrastructure and network connectivity for all, including those in underserved areas, and for pledging to work together with private sector and business entities to maximize the delivery of ICT services.

Recognizing how small-scale producers have been severely affected by the disruptions caused by COVID-19 due to decreased purchasing power, loss of income and increased indirect costs imposed by the pandemic which have inevitably exacerbated the global challenges of poverty and hunger (Goal 2), supporting agriculture should become a key component of the global effort to build back better. ITU is working closely with FAO and other relevant stakeholders to support scaling up of digital technologies and innovations for agriculture that can produce tremendous benefits to empower agriculture workers to monitor their crops and livestock, timely detect pests and diseases, optimise the use of water and fertilisers, better forecast demand for their products, and gain access to new markets at more favourable financial conditions.

Furthermore, and specifically in relation to ICT accessibility and inclusion (related to Goal 10), ITU has actively participated in the emergency time-bound working group “Covid-19 and Disability” to ensure the implementation of the recommendations, in a coordinated manner, outlined in the UNSG’s a policy brief on persons with disabilities and COVID-19. This WG was created with the main objective of identifying specific priorities and entry points and take action to strengthen disability inclusion in the mainstream COVID-19 response and recovery, at HQ and country levels. It has established four workstreams which are undertaking concrete actions to support greater inclusion of persons with disabilities across the following areas: 1. Funding, including mainstream COVID-19 funding mechanisms; 2. Health response and recovery; 3. Socio-economic response and recovery; 4. Humanitarian response and recovery. One of the outcomes of the workstream on Health response and recovery, led by WHO, will be the first WHO-ITU Standard for accessibility of telehealth and e-health applications.

ITU also participated in the COVID-19 funding mechanisms workstream, which produced a checklist on what needs to be considered to ensure that COVID-19 funds are disability inclusive, and a mapping of target funds within the UN and World Bank to assist in defining which funds should be approached.

Aligned with UNDIS commitments to achieve sustainable and transformative progress on disability inclusion, ITU has been also working with ILO on the project “Accessibility of Online Job Application and Recruitment Systems” to provide guidance and develop the capacity of governments and UN agencies.

ITU has also been working closely with the United Nations Inter-Agency Network on Youth Development (UN IANYD), and among other, ITU together with other organizations of this network, launched a call to action through a statement on COVID-19 and Youth, to create strong and sustainable partnerships with young people during and after the pandemic, recognize their role in advancing the fight against the pandemic, and understanding the specific impacts it can have on youth while ensuring the responses are inclusive of their specific needs.

Finally, ITU’s Information Services Department, has been able to successfully deliver business continuity, and ensure that its staff and delegates had connectivity for all virtual and hybrid meetings, council consultations, workshops, trainings and other events that have been convened since March 2020. ITU staff was able to effectively telework during the pandemic. The business



continuity initiative ensured that all the ITU Sectors were able to continue their mandate of supporting its Member States.

## **E. Various measures and policy recommendations on building an inclusive and effective path for the achievement of the 2030 Agenda in the context of the decade of action and delivery for sustainable development**

Having regard to a call in the Broadband Commission's for Sustainable Development Global Goal of Universal Connectivity Manifesto, and aiming to bring the UN Secretary-General's Roadmap for Digital Cooperation into practice, ITU suggests that the universal connectivity is put at the very forefront of sustainable development efforts and its central role in 2030 Agenda is recognized. To support this objective we suggest that:

- a baseline for universal digital connectivity is established that builds on ITU's work to define a meaningful connectivity baseline and framework, as part of the Universal Connectivity Roundtable group of the UN Secretary General's Roadmap for Digital Cooperation;
- public-private financing of universal broadband, pioneering innovative hybrid and/or complementary, replicable and sustainable financing and investment models for all types of networks are identified and supported, and impactful partnerships are catalysed;
- enabling ICT regulatory environments, ICT capacity building and online safety and security, especially for children are advocated for, as integral to efforts to achieve the Global Broadband Targets 2025 and the SDGs.

Partnership Dialogue for Connectivity Joint-Statement on "Accelerating Digital Connectivity in the Wake of COVID-19" sets out recommendations in this domain to national governments and other stakeholders. This statement has been developed and agreed within the framework of the UN75 Global Governance Forum, by a multi-stakeholder group convened by the ITU, namely representatives from EMEA Satellite Operators Association, Facebook, GSMA, Loon, Microsoft, SpaceX, UN Global Compact, UNICEF and the World Economic Forum. In this Joint-Statement, the Partnership Dialogue agreed to collaborate to amplify the impact of individual initiatives of partners; support digital connectivity efforts of others by leveraging partner experiences; and identify and promote good practices on accelerating connectivity including through an upgraded REG4COVID platform. While efforts of all stakeholders are crucial in bridging the connectivity gap, the Joint-Statement recognizes that governments play an especially critical role in enabling and facilitating such efforts, and calls on national governments to:

- Give due recognition to the crucial role of network infrastructure and services in underpinning the global recovery from the COVID-19 pandemic;
- Ensure that their digital development plans are updated;
- Take a holistic, multi-sectoral and pragmatic approach to expanding connectivity, recognizing the key role that all digital technologies play in the provision of health, education, financial and public services; the role for supporting infrastructures, especially energy; and the fundamental need for digital inclusion to be an integral part of an overarching social and economic inclusion;
- Reduce existing and refrain from erecting new and unnecessary barriers to investment in, development, deployment and use of digital infrastructure;
- Support digitalization efforts of local businesses.

The Joint-Statement also highlights the role of responsible business practices in securing a genuinely sustainable recovery, and notes the importance to encourage adherence to the [Ten Principles of the UN Global Compact](#), including the guidance they provide in such areas as human rights, labour, environment and anti-corruption.

## ANNEX 1

### IN-DEPTH VIEW OF THE ROLE OF ICTS AND ITU'S CONTRIBUTIONS TO GOALS: 4 (QUALITY EDUCATION), 5 (GENDER EQUALITY), 14 (LIFE BELOW WATER), 15 (LIFE ON LAND), AND 17 (PARTNERSHIPS FOR THE GOALS)

#### (SDG MAPPING OF ITU'S STRATEGIC AND OPERATIONAL PLANS)

#### **Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**

*ICTs are powering a revolution in digital learning, which has become one of the world's fastest-growing industries. Mobile devices now allow students to access learning assets anytime, anywhere. Teachers are now using mobile devices for everything from literacy and numerical training to interactive tutoring. Indeed, mobile learning has the ability to help break down economic barriers, divides between rural and urban, as well as the gender divide.*

#### **ITU contributes to targets 4.1, 4.2, 4.3, 4.4, 4.5, 4.7, 4.b, 4.c through:**

- Ensuring equal access for women to technical, vocational and tertiary education by leading the global International Girls in ICT Day campaign to encourage and empower more young women and girls to choose ICTs studies, and by providing information about scholarships for ICT studies and other ICT learning opportunities, as well as practical assistance to Girls in ICT Day event organizers through the Girls in ICT Portal;
- Increasing the number of youth and adults with relevant ICT skills for employment, decent jobs and entrepreneurship by sharing innovative strategies with all ITU Members on how to build their national digital skills development strategies (ITU Digital Skills Toolkit, 2018), and raising awareness on the importance of a range of digital skills for youth employment and entrepreneurship (from basic digital literacy to advanced coding skills);
- The project "Capacity Building at Rural Internet Centres (Thailand)" providing skills development and access to ICTs to rural communities;
- Supporting countries in developing ICT policies and legislation that contribute to the development of a new generation of educated and technology-savvy workforce by ensuring the timely and effective introduction and spread of new and improved products and processes in the economy, reinforcing the ability of individuals and businesses to continuously create wealth;
- Monitoring of Target 4.4 by collecting and disseminating data on individuals with ICT skills;

- Ensuring equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, elderly persons, and indigenous peoples, by: providing assistance to ITU Member States on how to formulate a national ICT Accessibility Policy and providing them key resources in digital content promoting affordable and accessible ICTs for persons with disabilities that facilitate the education and vocational training and by providing online digital skills training to indigenous peoples;
- Ensuring the access of training material on ICT-related topics, including on specialized topics such as cybersecurity in order to increase opportunities for employment;
- The advocacy and promotion of the power of mobile communications for socio-economic development. The ITU m-Powering Development Initiative is creating a resource and an action plan to facilitate the deployment of mobile-based services particularly for m-Health, m-Learning, m-Governance, m-Commerce, etc;
- Offering a number of tutorials on ICT technology and on the standardization process. Some of the training offered is web-based, i.e. by using current ICT technology. Using electronic working methods EWM help to drastically reduce the costs of training. ITU sees itself at the forefront of this, acting as a role model within the UN system and as the main entity which should further promote EWM for training purposes. The Ad-hoc Group on Education on Standardization is actively filling a gap in current education systems;
- Providing globally harmonized spectrum and standards, ITU enables the development of mobile broadband and its wider penetration, thus permitting E-education to become available throughout the world;
- Several ITU standards provide technical specifications of telepresence systems and services, and of audio-visual multiparty tele meetings, in support of ubiquitous self-directed learning and for distance learning, and a language learning system based on speech/NLP technology;
- Disseminating its outputs through on-line publications, seminars and workshops, ITU contributes to capacity building on information and communication technologies throughout the world;
- Open events and symposia in developing countries raise awareness of ITU services, and encourage peer-learning and best-practices in standards-based innovation;
- Efforts to improve the capacity of developing countries to participate in the development and implementation of international ICT standards, using the vehicle provided by ITU's Bridging the Standardization Gap (BSG) programme;
- Enhancing awareness of the role of capacity building through the implementation of regional workshops and the organization of the ITU Global ICT Capacity Building Symposium.

## **Goal 5. Achieve gender equality and empower all women and girls**

*ICTs allow women and girls to access information of importance to their productive, reproductive and community roles and to obtain additional resources. Access to ICTs can enable women to gain a stronger voice in their communities, their government and at the global level. ICTs also offer women flexibility in time and space and can be of particular value to women who face social isolation. There is a growing body of evidence on the benefits of ICTs for women's empowerment, through increasing their access to health, nutrition, education and other human development opportunities, such as political participation. Women's sustainable livelihoods can be enhanced through expanded access of women producers and traders to markets, and to education, training and employment opportunities. ICT can provide new opportunities for women's economic empowerment by: creating business and employment opportunities for women as owners and managers of ICT-accessed projects, as well as employees of new business ventures; creating an environment, including through training, where women feel comfortable participating in community development activities and advocating for their needs and priorities; developing ICT-based tools that address women's specific needs and are run by women (for example, literacy programmes, business planning courses, ICT training, access to market and trading information services and e-commerce initiatives); and offering economic opportunities in salaried employment and entrepreneurship, as well as in the ICT sector itself and in jobs enabled by ICT.*

### **ITU contributes to SDG5 Targets 5.5 and 5.b:**

- By leading the global International Girls in ICT Day campaign to encourage more young women and girls to study and take up ICT careers, by sharing best practices on the recruitment, retention and promotion of women in the ICT sector and by publishing profiles of successful women role models on the Girls in ICT Portal;
- ITU contributes to the monitoring of Target 5.b by collecting and disseminating a number of gender-disaggregated ICT indicators, including on mobile phone ownership and usage, Internet usage and ICT skills;
- The annual GEM-TECH Awards, jointly organized by ITU and UN Women, celebrate personal or organizational achievements and innovative strategies to advance Gender Equality and Mainstreaming in the area of ICTs. The GEM-TECH Awards provide a platform for advancing women's meaningful engagement with ICTs and their role as decision-makers and producers in the technology sector;
- ITU/UN Women EQUALS: The Global Partnership for Gender Equality in the Digital Age, a coalition of programmes dedicated to women and girls in technology with a vision of harnessing the power of modern information and communication technologies (ICTs) to accelerate global progress to bridge the gender digital divide, focusing on three areas of action: access, skills and leadership;
- ITU is promoting the implementation of the WRC-19's "Declaration on Promoting Gender Equality, Equity and Parity in the ITU Radiocommunication Sector" that, inter alia, declares that a call for governments and the private sector should:

- encourage the adoption of proven measures to increase globally the number of women pursuing academic degrees at all levels in STEM fields, particularly those related to the ICT;
- urgently undertake active measures to increase the number of girls receiving primary and secondary education in mathematics and science that is sufficient to prepare them for undergraduate degrees in STEM fields, particularly in electrical engineering and computer science, which are critical for the development of ICT;
- substantially increase the number of scholarships and fellowships provided to women pursuing academic degrees at all levels in STEM fields, particularly in electrical engineering and computer science;
- by 2023, substantially increase the number of internships, training opportunities and summer jobs available for women pursuing academic degrees in fields related to the development of ICT;
- encourage and actively support ICT education for girls and women, and support all measures that will help prepare them for a professional career in ICT.

#### **Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development**

*ICTs can play a significant role in the conservation and sustainable use of the oceans – notably through improved monitoring and reporting which leads to increased accountability. Satellite-based monitoring delivers timely and accurate data on a global basis, while local sensors deliver on the spot updates in real-time.*

*Big data can be used to analyse short- and long-term trends in terms of biodiversity, pollution, weather patterns and ecosystem evolution, and to plan mitigation activities.*

*Mobile devices – and especially mobile broadband enabled devices – help individuals to access information concerning the oceans, and to take an active role in discussing environmental issues and monitoring adherence to conservation targets.*

#### **ITU contributes to SDG14 Targets 14.1, 14.2, 14.a:**

- Target 14.1 and 14.2 - Spectrum and standards provided by ITU for Earth observation systems are a key enabler to monitor, conserve and use the oceans, seas and marine resources for sustainable development. In particular, understanding the forces behind changing weather patterns which requires mapping variations in ocean surface conditions worldwide and the use of collected data to develop and run powerful models of ocean behaviour;

Target 14.a - Spectrum and standards provided by ITU for GNSS, sea drones and satellite oceanic observations, are an essential enabler to Increase scientific knowledge on the state of oceans and marine resources;

ITU, the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (UNESCO/IOC), and the World Meteorological Organization (WMO) established a Joint Task Force (JTF) in late 2012 after Workshops in Rome (2011) and

Paris (2012). The JTF is tasked with developing a strategy and roadmap that could lead to enabling the availability of submarine repeaters equipped with scientific sensors for ocean and climate monitoring and disaster risk reduction (tsunamis). It will also analyse the potential renovation and relocation of retired out-of-service cables in this realm. With the installation of new trans-ocean and regional telecommunication cable systems equipped with sensors, a global network could be established providing decadal real-time data for ocean climate monitoring and disaster mitigation (particularly from tsunamis).

**Examples of recommendations include:**

1. [Recommendation ITU-R RS.515 – Frequency bands and bandwidths used for satellite passive remote sensing](#). This Recommendation provides information on the frequency bands and bandwidths used for satellite passive remote sensing of the Earth and its atmosphere for microwave passive sensors. Earth exploration and meteorological satellites provide increasingly important environmental data relating to the Earth.
2. [Recommendation ITU-R RS.577 – Frequency bands and required bandwidths used for spaceborne active sensors operating in the Earth exploration-satellite \(active\) and space research \(active\) services](#). In this Recommendation frequency bands and bandwidths for five basic types of spaceborne active sensors are given. Although the discussion mainly concentrates on Earth observation, it is generally believed that the measurement techniques are equally valid on other planets. Therefore, this Recommendation covers both Earth exploration-satellite (active) and space research (active) services. Spaceborne active microwave sensors can provide unique information on physical properties of the Earth and other planets.
3. [Recommendation ITU-R RS.1624 – Sharing between the Earth exploration-satellite \(passive\) and airborne altimeters in the aeronautical radionavigation service in the band 4 200-4 400 MHz](#). Global warming is one of the most serious environmental problems for the planet Earth. And the parameter known as the sea surface temperatures (SST) is a useful indicator of global warming. It is very important to be able to monitor the SST continuously to clarify and to better understand the mechanism of global warming. Only spaceborne passive microwave radiometers in orbit on Earth exploration satellites can monitor the whole Earth SST on a continuing basis.
4. [Recommendation ITU-R RS.1883 – Use of remote sensing systems in the study of climate change and the effects thereof](#). This Recommendation provides guidelines on the provision of satellite-borne remote sensing data for the purpose of studying climate change.
5. [Recommendation ITU-R RS.2017 – Performance and interference criteria for satellite passive remote sensing](#). This Recommendation provides information on the performance and interference criteria for satellite passive remote sensing of the Earth and its atmosphere for microwave passive sensors. Passive microwave remote sensing is performed in absorption bands to obtain important three-dimensional atmospheric data that are used in particular to initialize numerical weather prediction (NWP) models.
6. [Recommendation ITU-R SA.1627 – Telecommunication requirements and characteristics of EESS and MetSat service systems for data collection and platform location](#) A data collection system (DCS) has many fields of application, including meteorology, Earth resources, hydrography, seismic observation, vulcanology, geodesy

and geodynamics, anchored or drifting oceanographic buoys, oil prospecting, wild animal tracking, etc.

**Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss**

*ICTs can play a significant role in the conservation and sustainable use of terrestrial ecosystems and the prevention of the loss of biodiversity – notably through improved monitoring and reporting which leads to increased accountability. Satellite-based monitoring delivers timely and accurate data on a global basis, while local sensors can deliver on the spot updates in real-time. Big data can be used to analyse short- and long-term trends in terms of biodiversity, pollution, weather patterns and ecosystem evolution, and to plan mitigation activities.*

**ITU contributes to SDG15 Targets 15.1, 15.2, 15.3, 15.4:**

Spectrum and standards provided and promoted by ITU for Earth observation systems are a key to ensure monitoring, conservation, restoration and sustainable use of terrestrial ecosystems and biodiversity, including forests, mountains, land and soil.

**Examples of recommendations include:**

1. [Recommendation ITU-R M.2115 – Technical and operational characteristics of and protection criteria for aeronautical mobile systems operating in the 45.5-47 GHz frequency range](#)

Systems and networks operating in the aeronautical mobile service (AMS) are used to provide broadband and narrow-band airborne data links to support disaster relief, scientific research, remote sensing, wildfire firefighting, land and crop surveying, pipeline monitoring, and other emergency management applications.

2. [Recommendation ITU-R RS.1804 – Technical and operational characteristics of Earth exploration-satellite service \(EESS\) systems operating above 3 000 GHz](#). Observations at frequencies above 3 000 GHz provide data critical to the study of the characteristics of the Earth and its natural phenomena, including data relating to the state of the environment.

3. [Recommendation ITU-R RS.1883 – Use of remote sensing systems in the study of climate change and the effects thereof](#). This Recommendation provides guidelines on the provision of satellite-borne remote sensing data for the purpose of studying climate change. Environmental data serves two purposes: to provide a baseline for observing and measuring climate change and its effects upon the planet and to provide scientifically sound input to climate models. Improved understanding of the Earth system – its weather, climate, oceans, land, geology, natural resources, ecosystems, and natural and human-induced hazards – is essential to better predict, adapt and mitigate the expected global changes and their impacts on human civilisation.



## **Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development**

*ICTs are specifically mentioned as a means of implementation under SDG17, highlighting the cross-cutting transformative potential of ICTs. Indeed, ICTs are crucial in achieving all of the SDGs, since ICTs are catalysts that accelerate all three pillars of sustainable development – economic growth, social inclusion and environmental sustainability – as well as providing an innovative and effective means of implementation in today’s inter-connected world. Paragraph 15 of the 2030 Agenda for Sustainable Development highlights that “the spread of information and communication technology and global interconnectedness has great potential to accelerate human progress, to bridge the digital divide and to develop knowledge societies...”*

### **ITU contributes to targets 17.3, 17.6, 17.7, 17.8, 17.9, 17.11, 17.16 and 17.19 through:**

- The ITU World Telecommunication Development Conference in June 2022 will provide a unique opportunity to develop innovative approaches and new models of collaboration for connectivity and digital solutions in this final Decade of Action to achieve the SDGs. WTDC will mobilize the global community around the power of digital transformation and reshape the connectivity agenda to achieve the SDGs;
- The implementation of ITU Strategic Plan, linked to the ITU Connect 2030 Agenda, and WTDC Action Plan will contribute in achieving the SDGs. Based on key policy and regulatory developments which impact innovation and investment, including and in particular through implementation of the Regional Initiatives and to implement the SDGs where ICTs can play a decisive role, including health, education, gender equality, agriculture, governance, e-waste and emergency telecommunications. Mapping of activities between other Sectors is conducted and calendar of events which facilitates collaboration and coordination between Sectors is developed;
- The “World Telecommunication and Information Society Day” celebrated annually on 17 May, to raise awareness of the possibilities that the use of the Internet and other ICTs can bring to societies and economies, as well as ways to bridge the digital divide. Since 2020, aligned with the Decade of Action, themes are focused on promoting the Connect 2030 Agenda to follow the progress of ITU membership to deliver on its goals and targets (in line with the SDGs), and to share the guidance of ITU and the contribution of the membership towards connecting the world;
- ITU Study groups that provide an opportunity for all Member States and Sector Members, Associates and Academia, to share experiences, present ideas, exchange views and achieve consensus on appropriate strategies to address ICT priorities;
- Mobilizing in-cash and in-kind resources through partnership with various stakeholders from the ICT ecosystem for the implementation of ICT activities, projects and initiatives in developing countries at national and regional levels, including by developing strategies and related tools and services (databases sponsorship packages, dedicated websites, concept notes, promotional vehicles, etc.);
- Strengthening the global ICT innovation ecosystem through activities such as know-how sharing (e.g. Global Innovation Forum, WSIS, Digital World, Broadband Commission for Sustainable Development), and co-creating grassroots projects based

on new global and local partnerships. In addition newly established International Centre of Digital Innovation (I-CoDI), will provide assistance to the Member States facilitation integration of telecommunication/ICT innovation into their national development agendas;

- Promoting and scaling up actions at the global level aiming at adopting whole-of-government approaches for investing in shared digital infrastructure that can lead to more rapid scale-up of digital services at less cost and greater return on investment, and how to coordinate investment to make digital public goods available that can enable digital transformation for SDGs;
- Organizing global and regional forums and seminars to discuss global trends in ICT regulation for Sector Members and other national and international ICT and intersectoral stakeholders, through events such as the Global Symposium for Regulators (GSR) as well as strategic dialogues on topical policy, legal, regulatory, as well as on economic and financial issues and market developments;
- Proposing guidelines and recommendations addressed to the regulatory community and industry stakeholders (policy-makers, national regulatory authorities (NRAs), network operators/service providers, equipment manufacturers, digital players, governments, academics, international and regional agencies, civil society) to promote and encourage cooperation and collaboration at regional and global level on policy, regulatory and economic issues notably through ITU Research publications, the Global Symposium for Regulators (GSR) Best Practices Guidelines, REG4COVID platform, etc;
- Strengthening the means of implementation and enhancing access to science, technology and innovation by strengthening international cooperation and knowledge sharing on key ICT topics through its dedicated study groups;
- Providing a neutral platform for international cooperation towards building a harmonized and coordinated approach to fast-forward the evolution of the information society;
- Monitoring of Target 17.6 by collecting and disseminating data on Internet access and usage, in particular fixed broadband access, which is a key requirement for enhanced access to science, technology and innovation networks;
- The establishment of Mutual Recognition Agreements for a common and harmonized Conformance and Interoperability (C&I) programme at international and regional levels. Through the share and efficient use of C&I infrastructures – as laboratories, accreditation bodies and regulatory practices – technical requirements can be harmonized and the transit of ICT goods and services can be facilitated, increasing trade and regional development;
- The deployment of broadband technology and network infrastructures for multiple telecommunication services and applications, and to the evolution to all IP-based wireless and wired next-generation networks (NGNs), introducing digital broadcasting, which is opening up opportunities for the dissemination of environmentally sound solutions;

- The monitoring of Target 17.8 by collecting and disseminating a number of relevant ICT indicators that enable STI capacity building in least developed countries, including on Internet access and usage, international bandwidth and ICT prices. Activities are carried out in close collaboration with the Partnership on Measuring ICT for Development;
- Bringing together key stakeholders to discuss international cooperation on ICT through its annual Global Symposium for Regulators, regional economic forums and dialogues and the World Telecommunication/ICT Indicators Symposium (WTIS), organised by ITU;
- Promoting ICT regulatory policies enhancing policy coherence, notably by making knowledge exchange tools and platforms available, raising awareness about the importance of an enabling environment;
- Building harmonized regulatory frameworks within and across regions, and establishing a broader and inclusive dialogue and enhanced cooperation among all stakeholders;
- Enhancing the global partnership for sustainable development by working with governments, through their policy making and development of institutional frameworks for the ICT sector as well as with the private sector, to lay the foundation of modern digital economies;
- Further scaling up a series of strategic initiatives aiming at acceleration of achievement of diverse SDGs thanks to ICTs, such as Connecting Every School to the Internet (GIGA), International Center of Digital Innovation (I-CoDI), Connect2Recover, Digital Transformation Centres, EQUALS, Girls can Code, Be He@lthy Be Mobile, Big Data for Measuring the Information Society, Financial Inclusion Global Initiative (FIGI);
- Encouraging and promoting effective public, public-private and civil society partnerships by partnering with a range of stakeholders to empower women, girls, youth, children, indigenous peoples and persons with disabilities(e.g. for example by leading the Thematic Area on Digital Skills of the Global Initiative for Decent Jobs for Youth, and through the ITU-ILO Digital Skills Campaign for Decent Jobs for Youth; by leading the International Girls in ICT Campaign; by hosting EQUALS: the global partnership to bridge the gender digital divide or by contributing to the regional initiatives and events in ICT accessibility – ICT for all);
- An ongoing track record of inviting experts from developing countries to ITU meetings, workshops etc. Also the Focus Group on Innovation studied cases of ICT innovations for developing countries and developed proposals for new standardization activities for ITU study groups and the ICT Innovation Panel;
- Developing and disseminating best practices on the use of radiocommunications and organizing seminars and workshops, ITU contributes to enhance the use of enabling technologies, in particular information and communications technologies;  
Cooperation and coordination with other standards developing organizations, such as through ITU Focus Groups, workshops and seminars, liaison activities etc;
- The annual WSIS Forum continues to be a key platform for multistakeholder networking and collaboration to develop inclusive and development-oriented information and knowledge societies. The Forum brings together high-level officials, academics, practitioners, ICTs experts, youth, business, and civil society leaders to engage in

addressing issues on ICTs for development. The WSIS Forum 2021 began in January and culminated in the final week from 17 to 21 May 2021. The agenda and outcome of the Forum are strategically aligned to the WSIS Action Lines and the SDGs ([www.wsis.org/forum](http://www.wsis.org/forum));

- Creation of the WSIS Action Lines and SDG matrix, coordinated by ITU and developed by a number of United Nations agencies at the WSIS Forum 2015, and ever since used as a tool to map how ICTs may contribute to the implementation of SDGs. The Matrix serves as an easy reference for stakeholders engaged in shaping the future of both, the SDGs and the WSIS processes ([www.wsis.org/sdg](http://www.wsis.org/sdg));