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| **fLogo, company name  Description automatically generated** | A close up of a sign  Description automatically generated**World Telecommunication Development Conference (WTDC-22)**  **Kigali, Rwanda, 6-16 June 2022** | |
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| PLENARY MEETING | | **Document WTDC-22/2-E** |
|  | | **5 March 2022** |
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| Director, Telecommunication Development Bureau | | |
| Reporting on the implementation of the WTDC-17 Buenos Aires Action Plan (including regional initiatives), and contribution to the implementation of the  WSIS Plan of Action and the Sustainable Development Goals (SDGs) | | |
|  | | |
| **Priority area: -** Thematic Priorities, Action Plan, Regional Initiatives and SG Questions  **Summary:**  The 2017 ITU World Telecommunication Development Conference (WTDC-17) convened in Buenos Aires, Argentina, from 9 to 20 October 2017 and adopted the Buenos Aires Action Plan (BAAP). The plan, which includes the ITU-D programmes, a set of regional initiatives, and new and revised resolutions, recommendations and Study Group Questions, defines the mandate, objectives and priorities of the ITU Development Sector (ITU-D) for the period 2018-2021. It also aligns the Development Sector work with the strategic objectives of ITU to allow countries to harness the full benefits of ICTs.  This document reports on the implementation of the BAAP from 2018 until December 2021, and its contribution to the implementation of the WSIS Plan of Action and the Sustainable Development Goals (SDGs). It also highlights the change that the Telecommunication Development Bureau (BDT), the executing arm of ITU-D, has undergone to ensure that it is able to keep pace with the fast-changing environment in which it serves.  **Expected results:**  WTDC-22 is invited to examine this report and provide guidance as deemed appropriate.  **References:**  WTDC-17 Buenos Aires Action Plan | | |

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# Implementation of the Buenos Aires Action Plan (BAAP): 2018-2021

# Introduction

The 2017 ITU World Telecommunication Development Conference (WTDC-17) convened in Buenos Aires, Argentina, from 9 to 20 October 2017 and adopted the [Buenos Aires Action Plan](https://www.itu.int/en/ITU-D/Conferences/WTDC/WTDC17/Documents/WTDC17_final_report_en.pdf) (BAAP). The plan, which includes the ITU-D programmes, a set of regional initiatives, and new and revised resolutions, recommendations and Study Group Questions, defines the mandate, objectives and priorities of the ITU Telecommunication Development Sector (ITU-D) for the period 2018-2021. It also aligns the Development Sector work with the strategic objectives of ITU to allow countries to harness the full benefits of information and communication technologies (ICTs).

This document reports on the implementation of the BAAP, and its contribution to the implementation of the WSIS Plan of Action and the Sustainable Development Goals (SDGs). It also highlights the change that the Telecommunication Development Bureau (BDT), the executing arm of ITU-D, has undergone to ensure that it is able to keep pace with the fast-changing environment in which it serves. The fundamental importance of ICTs and their role of promoting social and economic development and facilitating the path to economic recovery have been highlighted by the COVID-19 pandemic, which largely dominated the global public debate in 2020 and 2021 and which continues to affect countries in the world. This has also underscored the need for a more agile and responsive BDT that can lead efforts to ensure that all people in all countries are connected.

In 2019, BDT began an important journey of change to create a Bureau that can respond effectively to the needs of Member States and Sector Members, and that is more relevant and demonstrates impact and results: a Fit4Purpose BDT. Following extensive internal and membership consultations, BDT has adopted new innovative ways of working, laying foundations that will ensure timely and efficient implementation of the BAAP and future plans. The BDT journey for change has been a participatory and open consultative process, which relies heavily on feedback from and discussion with Member States and Sector Members. It has helped to streamline priorities and goals, and enhanced BDT responsiveness while strengthening its impact.

An important building block of the BDT journey of change has been the adoption of a cluster-based approach. The programmes of the Buenos Aires Action Plan have been clustered into thematic priorities that facilitate coordination and synergy across all programmes, projects, initiatives and Study Group Questions. The thematic priority (TP) structure - in combination with the adopted results-based management (RBM) approach – also help to strengthen the impact of BDT work on ICT development by identifying links to and improving the delivery of the WTDC-17 goals and objectives, the Connect 2030 agenda, and the 2030 UN Sustainable Development Agenda (see Annex 1, Mapping linkages between thematic priorities, study groups, regional initiatives, SDGs and WSIS). In this context, BDT has also initiated several strategic initiatives, all of which cut across thematic priorities, are global in nature, and have the potential to scale across multiple regions. These projects are described in Section 11 of this report.

To ensure an efficient and effective implementation of the BDT work programme, the Bureau has expanded its results-based management (RBM) approach beyond the initial efforts introduced in 2006. It continues to refine the implementation through more effective planning, monitoring and evaluation practices. Theories of change have been developed for each thematic priority of ITU-D, as well as for the BDT overall; these will guide the work programme planning and implementation phases and serve as tools for monitoring progress towards meaningful connectivity.

This document features key results from 2018-2021 for each thematic priority and special initiative, as progress is made towards the implementation of the Buenos Aires Action Plan. This includes reporting on work that has been done towards the achievement of the regional initiatives, with a more detailed overview of the progress on the regional initiatives for [Africa](https://www.itu.int/md/D18-RPMAFR-C-0004/en), [Americas](https://www.itu.int/md/D18-RPMAMS-C-0004/en), [Arab States](https://www.itu.int/md/D18-RPMARB-C-0004/en), [Asia and the Pacific](https://www.itu.int/md/D18-RPMASP-C-0004/en), [Commonwealth of Independent States](https://www.itu.int/md/D18-RPMCIS-C-0004/en), and [Europe](https://www.itu.int/md/D18-RPMEUR-C-0004/en) (see Detailed information on work towards the achievement of the regional initiatives for each one of the regions).

This document will highlight how BDT has focused on the thematic priorities of the Buenos Aires Action Plan, and delivered sustainable impact, to advance digital connectivity and digital transformation for all. It has created new opportunities to build on the adoption of new technologies and developed and expanded existing methodologies. Through its work it has also inspired others and advanced digital transformation through the sharing of best practices and the creation of new partnerships.

## 1. Capacity development: Building a digitally competent society

### ITU Academy platform

The [ITU Academy portal](https://academy.itu.int/) was redesigned to facilitate a more user-friendly and secure access to ITU capacity development activities, courses, and workshops in the field of information and communication technologies and digital development. The training portfolio ranges from general programmes for government policy-makers and regulators, professional business-focused curricula for senior ICT executives and managers, to specialized programmes for technical and operational staff and accredited academic programmes. The ITU Academy portal has become a tool for digital inclusion as the training offerings have been widened to include ICT accessibility and training courses targeted at indigenous and marginalized communities.

The ITU Academy registered 2 000 additional users in 2019 for a total of over 10 200 users. During 2020, the ITU Academy experienced steep user growth and an increasing number of online training courses. By the end of the fourth quarter 2021, over 25 300 people from all Member States had registered on the platform. Since 2018, 479 courses were delivered via the ITU Academy and 20 983 people were trained, of which 10 418 were certified.

### Centres of Excellence network

In January 2019, [a new cycle of the ITU Centres of Excellence (CoE)](https://academy.itu.int/index.php/centres-excellence/coe-cycles/coe-cycle-2019-2022) programme started. A total of 28 institutions across the globe were selected to operate as ITU Centres of Excellence during the new period, which will last until December 2022. Following the initial round of steering committee meetings, the CoEs delivered trainings in 15 priority areas, covering topics such as wireless and fixed broadband, cybersecurity, digital economy, Internet of Things (IoT), spectrum management, innovation and entrepreneurship, ICT applications and services, develop a new approach for developing future capacity building and policy and regulation. In 2019, during the first year of operation, more than 90 certified training courses were delivered to over 2 100 participants worldwide. In 2020, the number of certified CoE trainings stood at 66 courses, but the number of people who participated in the training more than doubled from the 2019 figures, to 5 466. In 2021, 77 CoE courses were implemented, and a total of 5 538 people participated (registered) in those learning activities.

In 2021, a major strategic review of the CoE programme was carried out, in line with WTDC Resolution 73 (Rev. Buenos Aires, 2017). The report on the strategic review was shared with the BDT Membership in February 2022 and subsequently presented and discussed in an information session. The report includes a number of recommendations on how to substantially revise and rebrand the programme, and to align and integrate it better with the work of BDT and the ITU Academy, with implementation of these recommendations starting in 2023.

### Quality assurance of training content

In 2020, a new quality assurance process on BDT training content was developed and introduced, in line with the new RBM/Theory of Change and Thematic Priority (TP) approach. It defines in detail the process for the development of BDT training content with the objective to strengthen its quality, including the training content offered under the CoE programme.

### Feasibility study on the establishment of an ITU training institute

In 2020, a feasibility study on the establishment of an ITU Training Institute was carried out, following an instruction by the ITU Council in 2019. The study, which was undertaken by an independent consultancy, included a comprehensive review of ITU’s capacity development and training activities. The final report on the study was presented to the Virtual Consultation of Councilors (VCC) in June 2021. The VCC concluded that the secretariat would review ITU’s capacity-development activities and develop a proposal on how they could be improved and strengthened, taking into consideration the findings and recommendations of the report. Proposals from the secretariat were submitted for consideration at Council-22. One of the core recommendations of the feasibility study report was to work towards greater harmonization of capacity development and training across the ITU, to develop a common framework for ITU’s activities, and to further enhance and strengthen the ITU Academy, to become the main entry point for ITU capacity development and training. Under the leadership of the BDT, work is ongoing jointly with the other Bureaux and the General Secretariat, to develop a harmonized capacity development framework in ITU, under the umbrella of the ITU Academy.

### ITU-Academia partnership

The 2nd ITU-Academia Partnership [meeting](https://www.itu.int/en/ITU-D/Capacity-Building/Pages/events/2019/academia2019.aspx) took place in Atlanta, Georgia, United States of America, in December 2019, under the theme of *Developing skills for the digital era*. It brought together representatives from universities and higher education institutions from all over the world with an interest in the topic of digital technologies.

Participants highlighted the need for universities to increase new course offerings to the market by speeding up decision-making processes and reducing bureaucracy, especially in public, state-funded academic institutions. The two-day meeting provided food for thought on the role of universities in the digital economy and how partnerships with organizations such as ITU can further strengthen the role of universities. The participants encouraged ITU to consider creating regional or global think tanks hosted by academic institutions and to provide more opportunities for universities to have advisory roles in specific activities of ITU.

### Digital Transformation Centres initiative

The first phase of the [Digital Transformation Centres (DTC) Initiative](https://academy.itu.int/index.php/main-activities/digital-transformation-centres-initiative) (*Empower communities, close the digital skills gap*) was launched in 2019, in partnership with Cisco. This new global network of centres will accelerate the uptake of digital technologies among citizens and boost the capacity of young entrepreneurs and SMEs to succeed. This people-centred project will help bridge the digital skills gap and speed up digital transformation, reaching into the heart of communities to empower people with the digital competencies that they need to thrive.

During the first phase, from March 2020 to September 2021, nine DTCs across the Africa, Americas, and Asia and the Pacific regions (Côte d’Ivoire, Ghana, Rwanda, Zambia, Brazil, Dominican Republic, Indonesia, Papua New Guinea, Philippines) delivered digital skills training at basic and intermediate level to citizens in remote areas and marginalized communities. During the first phase, more than 100 000 citizens were trained through the DTC Initiative. In November 2020, ITU signed a partnership agreement with the Government of Norway in support of the DTC initiative. The support from Norway will boost digital skills in the countries hosting a DTC, in particular Ghana, until the end of 2021, close to 4 200 citizens (including 3 265 female citizens) had been trained (and a total of 14 000 citizens will be trained under this new project).

Preparations for the second phase started in July 2021 with the opening of applications for new institutions wishing to join the network. Phase 2 will start operations in 2022 and include 13 DTCs (8 DTCs from phase 1 and 5 additional DTCs joining in phase 2).

### Digital Skills Insights

The third edition of the Digital Skills *Insights* [publication](https://academy.itu.int/index.php/main-activities/research-publications/digital-skills-insights) (previously called *Capacity Building in a Changing ICT Environment*) was released in August 2019. It featured eight articles from international experts, taking a critical and analytical approach towards the subject of capacity and digital skills development. Topics included digital literacy frameworks, new methods of teaching and learning in view of digital developments as well as new capacity building concepts and initiatives in the digital age. The publication also showcased concrete examples of the impact of new technologies on skills gaps and skills development in selected developing countries. The [fourth edition](https://academy.itu.int/digital-skills-insights-2020) of the publication was released in September 2020 and featured different aspects of capacity development and skills requirements in the digital era. These included the types of skills needed in the digital economy and future labour market, new jobs and associated skills requirements, specific digital technologies and their impact on skills development, new skills required to manage data and information generated online, as well as a set of articles that explore the topic of gender and digital skills. The fifth edition of the [Digital Skills Insights](https://academy.itu.int/itu-d/projects-activities/research-publications/digital-skills-insights/digital-skills-insights-2021) was published at the end of October 2021.

### Digital skills assessment

The ITU [Digital Skills Assessment Guidebook](https://academy.itu.int/main-activities/research-publications/digital-skills-insights/digital-skills-assessment-guidebook) was released in June 2020 and is available in six languages. It serves as a comprehensive, practical step-by-step tool for national digital skills assessments. The Guidebook can be used to determine the existing supply of a digitally skilled cohort at a national level, to assess skills demand from industry and other sectors, to identify skills gaps, and to develop policies to address future digital skills requirements. It is designed for use by policy-makers and other stakeholders, such as partners in the private sector, non-governmental organizations, and academia. The Guidebook has been presented to Member States in Europe, Africa, Asia and the Pacific and the Americas region in 2021. Several countries have started to use the Guidebook for their national digital skills assessments.

### ITU-ILO digital skills campaign and programme activities

ITU continued to lead the [digital skills campaign](https://academy.itu.int/index.php/main-activities/ilo-itu-digital-skills-campaign), which was launched in 2016 as one of eight thematic priorities under the ILO Global Initiative on Decent Jobs for Youth. The campaign seeks to equip young women and men with the skills needed for the digital jobs of today and tomorrow. By 2020, the campaign had received commitments to train more than 16 million young people with job-ready, transferable digital skills by 2030 – more than triple the initial target of 5 million people. Related to the digital skills campaign, but managed as a standalone programme, in early 2020 ITU and ILO, with support from the African Union, launched a [continental programme](https://www.itu.int/en/ITU-D/Regional-Presence/Africa/Pages/projects/2020/jobs-skills.aspx) on boosting decent jobs and enhancing digital skills for youth in Africa’s digital economy. Six African countries (Côte d’Ivoire, Kenya, Nigeria, Rwanda, Senegal, South Africa) have since joined the initiative and others, like Ethiopia, are also exploring the programme. The programme implementation in countries have in 2021 included activities to lay the foundation for scaling-up interventions, developing and deploying analytical tools to generate evidence on youth employment opportunities in the digital economy. The new 2021 joint ITU-ILO digital skills assessment framework is an integral part of this work, with Nigeria and South Africa having undertaken in depth digital skills supply and demand assessment to guide digital skills interventions.

### ITU-UNDP collaboration on digital capacity building

In 2020, the UN Secretary-General launched the [*Roadmap for Digital Cooperation*](https://www.un.org/en/content/digital-cooperation-roadmap/) containing key actions for implementation[[1]](#footnote-2). ITU and UNDP were selected co-champions of a multi-stakeholder roundtable on digital capacity building and have been working closely since then to create a multi-stakeholder network, to develop a global database on existing capacity development efforts in the digital space, and to deepen the two agencies’ collaboration with a view to launch a new [joint facility for digital capacity development](https://digital-capacity.org/joint-facility/). In May 2021, the Joint Facility was launched by ITU and UNDP. It serves as the point of contact and exchange between the two agencies – bringing together expertise in areas such as digital skills training, digital needs assessment, and programmatic support – in order to improve the accessibility of digital opportunities. ITU and UNDP, together with the UN Office of the SG’s Envoy on Technology, also supported the launch at the Internet Governance Forum in December 2021 of a Multi-stakeholder Network (MSN) for Digital Capacity Building. The MSN brings together participants from the UN system and the wider international community, to raise the level of digital capacity in particular in developing countries, by increasing awareness of and access to available training as well as promoting more coherent, scaled up and coordinated efforts to develop digital capacity.

### Regional capacity development on spectrum management and related issues

Countries from the Arab States region were trained on satellite communications (co-organized with ITSO), 5G (co-organized with GSMA), and Internet governance (co-organized with ICANN, ISOC, RIPE NCC, and the Diplo foundation). Countries from the CIS region benefited from training on satellite communications (co-organized with ITSO) and in the Africa region, countries were trained on satellite communications (co-organized with ITSO), Business Planning for ICT Infrastructure Development, and spectrum management (through a partnership with AFRALTI, ITU centre of excellence in Kenya). Training in the Asia and the Pacific region took place on [human exposure to radio frequency electromagnetic fields](https://academy.itu.int/training-courses/full-catalogue/human-exposure-radio-frequency-electromagnetic-fields-malaysia). This e-learning course was offered under the CoE partnership with UTM Malaysia and took place in 2019, 2020 and 2021.

As part of the Asia and the Pacific region CoE node partnership with the State Radio Monitoring Centre (SRMC) of the Ministry of Industry and Information Technology (MIIT)-China, from 2019-2021, a total of 1 169 people from more than 85 countries participated in face-to-face and e-learning courses. Between 2018 and 2021, trainings were carried out in the area of technology application, such as IoT, human exposure to 5th generation electromagnetic fields and sp[ectrum management and radio frequency (RF) monitoring](https://academy.itu.int/index.php/training-courses/full-catalogue/spectrum-management-and-radio-frequency-rf-monitoring-0). In the Caribbean, the digital policies programme to re-sensitize government officials to the use of ICTs provided public servants with guidance on making policy, legislative, and regulatory decisions. The ITU Regional Office for Asia and the Pacific carried out a regional survey-based study to understand the training demands on spectrum related issues from the region. The results of this study will be used to develop a new approach for developing future capacity building programmes in the region.

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| **Regional Initiatives**  [Africa region](https://www.itu.int/en/ITU-D/Regional-Presence/Africa/Pages/ActivitiesandProjects.aspx)   * To contribute to close the gender digital divide by getting more girls interested in ICT and coding, over 530 girls learnt coding and soft skills in a series of workshops of the African Girls Can Code Initiative (AGCCI) in 2018 and 2019; * Under the African Girls Can Code Initiative (AGCCI) and to jointly celebrate UN@75 and work on women and young girls in ICT, a hybrid face-to-face and virtual boot camp was organized by ITU and UNECA in Addis Ababa (Ethiopia) in December 2020 for 17- to 20-year-olds from across the continent. Over 125 girls participated in person while over 2 000 girls took part in the virtual sessions over two weeks. On the occasion, an e-Learning sub site of the AGCCI online platform was launched. Based on this initiative a template for national approaches was developed and countries are supported through customized national programmes; * The ITU-ILO programme on [boosting decent jobs and enhancing digital skills for youth in Africa’s digital economy](https://www.itu.int/en/ITU-D/Regional-Presence/Africa/Pages/projects/2020/jobs-skills.aspx) was developed by youth, for youth, in Africa. Launched in 2020, with support of the African Union, the aim of the continental programme is to empower Africa’s youth and ensure that they benefit from the new opportunities in the digital economy, and that their energy and creativity is directed to the advantage of expanding digitally-enabled industries. The six initial countries included Côte d’Ivoire, Kenya, Nigeria, Rwanda, Senegal, and South Africa. The development of national project documents and validation workshops in the countries took place in 2020, following a virtual roundtable featuring multi-stakeholder dialogues to build sustainable partnerships and explore funding mechanisms. Under the programme, and with the collaboration of ITU, ILO and UNDP, a national digitals skills implementation program was developed with South Africa, through consultative workshops in November and December 2020 and a nation-wide consultation in February 2021. In 2021, all countries had developed their national programmes and some had also implemented pilots for proof of concept, which serve to further scale activities in a particular country and across the continent. Several national programmes had also held additional stakeholder engagement workshops in 2021 (Nigeria, Senegal, Ethiopia) to validate findings of pilots and ensure that planned interventions meet the evolving needs. Mobilization of resources and partners remains a key priority to implement the activities; * In December 2019, the Democratic Republic of the Congo received direct assistance through a national universal service obligation (USO) and numbering workshop that was delivered in Kinshasa; * To engage members in a discussion on steps needed to bridge the digital divide using universal service funds, universal service obligations (USO) and innovative financing mechanism, a webinar on USO 2.0 was organized in December 2020. Work continued in 2021 on developing a Universal Service Financing Efficiency Toolkit with checklists, decision trees and case studies to support countries in their universal service efforts and serve as a practical guide for policy makers, regulators and fund administrators; * Following the regional digital health workshops that were conducted in Lesotho in October 2018 and in Benin in December 2019, a digital health curriculum was developed. A case study on digital health system requirements and architecture was prepared for Lesotho in 2020. Digital health training material and related online courses were also developed in December 2020; * Between 2018 to 2020 assistance was extended to Lesotho, Sierra Leone, South Sudan, and Malawi in the form of trainings and the design of ICT statistics and household survey tools and instruments; * In addition to the outcomes of Study Group Question 4/2, a conformity and interoperability (C&I) training was delivered to the Africa Group 2018-2021 to enhance capacity in Specific Absorption Rate (SAR), Radio Frequency (RF), Electromagnetic Field (EMF), and Digital Terrestrial Television (DTTV). It also covered the legal aspect of C&I,guidelines of C&I regimes, including type approval regulation, policy and regulation of C&I establishment/development , focusing on English-speaking and French-speaking participants from the Africa region; * In 2019, a certified training was provided to the Government of Eritrea on advanced technologies, roaming, and mobile money; * Concentrated assistance was provided to Burundi, with two nationals trained on broadband technologies in the ITU centre of excellence in Yaoundé, Cameroun, and on cyber-drills in Kampala, Uganda * In 2021, two certified trainings were organized for the National Communications Authority of Somalia on cost modelling and telecom/ICT regulatory frameworks, regulatory management & compliance   Americas region   * Several online training courses were delivered within the ITU network of the Centres of Excellence within the Americas Region, covering communication protocols for IoTs and satellite communications, optical networks, LTE and 5G, spectrum management, cybersecurity, and climate change; * Training in technologies was provided to specialists from the public operator *Instituto Costarricense de Electricidad* (ICE), where ICE staff received trainings on different topics related to telecommunication management; * In 2021, in the framework of the *Girls in ICT* campaign, more than 100 events were organized in the Americas to celebrate the initiative; over 40 000 girls participated on capacity building activities and workshops related to coding and developing soft skills. * In 2020 and 2021, a number of professionals from the region were trained through an advanced course in ICT regulation in Latin America, to understand how the expansion of connectivity and the regulation of Information and Communication Technologies (ICTs) can contribute to the development of different sectors. The course highlighted the importance of promoting the democratization of access to ICTs through digital public policies, including in the area of data governance and cybersecurity.   Asia-Pacific region   * ITU improved digital skills amongst membership through training in mobile planning, security, blockchain, computer incident response teams (CIRTs), and cybersecurity targeted at SIDS, LDCs and LLDCs. Papua New Guinea, one of the pilot countries for the ITU [Digital Transformation Centre](https://academy.itu.int/main-activities/digital-transformation-centres-initiative)s Initiative, started online trainings in the areas of basic connectivity (in partnership with Cisco, National ICT Authority of Papua New Guinea (NICTA), and the Royal Melbourne Institute of Technology) and empowering women through ICTs and e-commerce. This was done in partnership with the Asia and Pacific Training Centre for Information and Communication Technology for Development (APCICT) /United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). * As part of the *Girls in ICT Day* celebrations and governments’ efforts to encourage women in technology in 2020 and 2021, ITU implemented training sessions on mobile apps development, coding, child online protection and online safety with partners, such as APCICT/UNESCAP, UNESCO, UNICEF, ILO, EQUALS, GSMA, CISCO, Telenor, Code.org, and Microsoft, among others. These took place in Thailand, Indonesia, Malaysia, Bangladesh and Pakistan, and over 1 300 girls participated on capacity building activities. * In 2021, 18 CoE courses were organized and a total of 2 548 registrations were received from 144 countries. Since their inception in 2019, the 3 DTCs in the region trained 38 897 people, out of which 70 per cent were female.   CIS region   * ITU is implementing a project to set up a digital skills centre for women and youth in Uzbekistan (in partnership with ZTE and IT Park of Uzbekistan). Alongside the project implementation, in March-April 2021, ITU supported national partners in organizing trainings aimed at the development and improvement of digital skills for women and girls from Khorazm Region of the Republic of Uzbekistan. Over 1 300 women signed up for the training and 350 successfully completed it after a rigorous selection and testing process; * In 2021, ITU in partnership with the Kostanay Engineering and Economics University (KINEU), Kazakhstan, started a project on the creation of a smart educational ecosystem. The project is supplemented by a series of online events and trainings, organized by KINEU, with the support of ITU. The project promoted science, technology, engineering, and mathematics (STEM) education through a hackathon for school students, and deliver trainings on online hygiene and digital skills for school students so as to equip them with the necessary skills to safely use ICTs in a post COVID-19 online environment; * Targeted assistance was delivered to Azerbaijan to develop digital skills courses for women, and to Belarus on the creation of an IP telephony training centre; * In 2020, ITU updated the *onlinesafety.info* course. In 2021, jointly with the Union of Operators of Armenia, the course was adapted and launched in Armenian (Onlinesafety.am). A dedicated promotion campaign of the course included a training workshop for 60 representatives of schools and educational institutions of Yerevan. * ITU continued to provide assistance to Kyrgyzstan on capacity development of informatics teaches from rural and remote areas. In total, over the period of 2012 to 2021, ITU, jointly with the Institute of Electronics and Telecommunications (IET) of Kyrgyzstan, organized 63 training courses, including 15 courses on site in IET premises, 33 on-site courses in different regions of the country, and 15 online courses. In total, 938 teachers attended, 78 per cent of whom were women. Considering the number of trained informatics teachers and the number of the rural schools covered, ITU estimates that 95 000 school children enjoy more advanced ICT knowledge and skills; * ITU continued to provide assistance to Kyrgyzstan on capacity development of informatics teaches from rural and remote areas. In total, over the period of 2018 to 2021, ITU jointly with Institute of Electronics and Telecommunications (IET) of Kyrgyzstan organized 21 training courses, including 6 courses on site in different regions of the country, and 15 online courses. In total, 361 teaches attended the course, 83 per cent of whom were women. Overall, considering the number of trained informatics teachers and the number of the covered rural schools, more than 50,000 school children enjoyed more advanced ICT knowledge and skills. * In 2021, a digital skills assessment for the telecom sector of Armenia was performed to assess the current level of skills of telecommunication industry workers, and their digital skills development needs. * In the course of 2021, ITU developed a specialized multimedia training course in Russian on e-health for doctors and ICT staff working with medical equipment; in 2021 a series of country training sessions were delivered in Belarus, Kazakhstan, Kyrgyzstan, Ukraine, and Uzbekistan, followed by the development of technical recommendations on the application of modern technological solutions in the design of e-health systems, including telemedicine networks.   Europe region   * A regional review of national approaches for digital skills development was carried out and helped identify several countries that will receive technical assistance; * Albania, North Macedonia and Ukraine are receiving assistance with the aim of strengthening their institutional capacities in the field of digital skills, including through the development of their national strategy; * A regional webinar (2020) and a forum (2021) provided an opportunity to exchange regional experiences in the field of digital skills development and helped build new partnerships; * A regional training for Europe on ICT Business Planning provided the opportunity for over 30 officials from 15 countries to receive training and certification on the basis of relevant ITU training material. |

## 2. Cybersecurity: Creating a trusted cyberspace for all

### ITU Global Cybersecurity Index (GCI)

In 2015 ITU kicked-off the [Global Cybersecurity Index](https://www.itu.int/en/ITU-D/Cybersecurity/Pages/global-cybersecurity-index.aspx) (GCI), which has become a trusted reference that measures the commitment of countries to cybersecurity at a global level – to raise awareness of the importance and different dimensions of the issue. Each country’s level of development or engagement is assessed along the five pillars of the GCA, which provide the general foundation and framework for the index. Based on a multi-stakeholder approach and initiative, the GCI leverages the capacity and expertise of different organizations, with the objectives of improving the quality of the survey, fostering international cooperation, and promoting knowledge exchange on the topic.

Following the publication of the third edition of the GCI findings and its inclusion in Resolution 130 (Rev. Dubai 2018), the fourth edition of the GCI (GCIv4) was initiated during the Study Group 2 Question 3 meeting in October 2019.

In October 2020, the GCI Weightage Expert Group meeting was held to discuss the approach to recommend weights of the GCIv4 indicators, sub –indicators, and micro-indicators based on the relative importance of cybersecurity measures within the GCI model.

In June 2021, ITU launched its fourth edition of the [Global Cybersecurity Index](https://www.itu.int/pub/D-STR-GCI.01) (GCI) report that mapped 82 questions across five key pillars: legal, technical, organizational, capacity development, and cooperative measures. The edition showed considerable improvement in commitment to cybersecurity worldwide. Key findings can be found in the [GCI 2020 report](https://www.itu.int/dms_pub/itu-d/opb/str/D-STR-GCI.01-2021-PDF-E.pdf).

New work to start the next cycle of GCI started in 2021, and an updated questionnaire containing the inputs from several ITU Member States was presented during the October 2021 meeting of the ITU-D Study Group 2 Question 3/2. The Study Group meeting in October 2021 established a virtual Correspondence Group to provide inputs to the revised questionnaire, and several meetings took place until December 2021 to conclude the work on the update of the GCI questionnaire.

### Child online protection (COP)

In 2019, substantive regional efforts were undertaken to address child online safety issues. In the Africa region, discussions started with Chad, Kenya, Malawi, and Rwanda on the implementation of national strategy frameworks. In particular, the COP Regional Forum held in Ghana discussed several issues related to child online protection in the Africa region. In the Asia and the Pacific region, assistance was provided for the development of the ASEAN Regional Framework on Child Online Protection in coordination with other partners, such as TELSOM/TELMIN. During the 2021 *Girls in ICT Day*, BDT promoted the COP guidelines and online safety with children training programs in Pakistan, Bangladesh, Indonesia, Thailand, and Malaysia. COP case studies were presented in a number of regional meetings, including to the 2021 Pacific Islands Telecommunications Association (PITA) Strategy Forum and the International Symposium on Open, Distance, and E- learning (ISODEL). COP national consultation meetings were organized in coordination with ICT ministries and UN agencies in Pakistan, Bhutan, Thailand, Indonesia, Mongolia, Cambodia and the Philippines and a number of regional collaboration efforts to strengthen the response to cybercrimes against children were explored. In the Arab region, support on COP was provided to several countries and ITU participated in different national task forces to integrate the COP guidelines into national activities. The main beneficiary countries were Sudan, Bahrain, Lebanon, Iraq, and Egypt.

The Broadband Commission for Sustainable Development, for which ITU serves as the Secretariat, includes a Working Group on Child Online Safety, led by the World Childhood Foundation and Zain. The group released a comprehensive [report](https://www.broadbandcommission.org/publication/child-online-safety/) in 2019.

ITU and partners coordinated action to contribute to the [technical note on COVID-19 and its impact on child online protection](https://www.itu.int/en/ITU-D/Cybersecurity/Documents/COP/COVID19%20Online%20Technical%20note%20resource%20pack_PUBLISHED.pdf). The main purpose of this note is to offer technical guidance on how to mitigate key risks posed by COVID-19 and the increased exposure of children to online harms.

During 2019, a multi-stakeholder expert working group, consisting of more than 50 organizations and experts, started the review of the ITU [child online protection guidelines](https://www.itu.int/en/cop/Pages/guidelines.aspx), which were first issued in 2009. The revised guidelines were launched in June 2020, followed by a [global virtual event](https://www.itu.int/en/ITU-D/Cybersecurity/Pages/2020-COP-Guidelines-launch-webinar.aspx), organized by ITU and partners, and [regional launches](https://www.itu.int/en/ITU-D/Cybersecurity/Pages/COP/2020/Regional-Launches-COP-2020-Guidelines.aspx). The new guidelines were re-designed from the ground up to reflect the significant shifts in the digital landscape in which children find themselves, including in the area of Internet of Things, connected toys, online gaming, robotics, machine learning and artificial intelligence.

Child online protection has been included as one of the key elements of the empowerment pillar of the ITU UNICEF joint project [Giga](https://gigaconnect.org/).

ITU has also signed a collaboration agreement with the [SCORT Foundation on COP i](https://www.itu.int/en/myitu/News/2021/04/06/07/20/Empowering-women-girls-sport-technology)n, and through, Sport. ITU has contributed to many discussions such as Safer Internet Day 2021 and the [15th European Football for Development Conference](https://www.efdn.org/blog/news/15th-efdn-conference-kicked-off-with-more-than-150-clubs-leagues-and-fas/).

In 2020, ITU and the Kingdom of Saudi Arabia signed an [agreemen](https://www.itu.int/en/mediacentre/Pages/cm11-2020-ITU-SaudiArabia-partnership-COP-guidelines.aspx)t to implement a global program on ‘*Creating a safe and prosperous cyberspace for children’.* The [program](https://www.itu-cop-guidelines.com/implementation) kicked-off in August 2021 and will strengthen global efforts to implement the ITU Child Online Protection guidelines*.* The new collaboration aims to develop and implement child online safety policies among governments, industry, and civil society to increase capacity development and knowledge sharing with all relevant stakeholders. The focus of this project – fostering a culture of child online safety – will contribute to the ITU mission of ensuring cybersecurity at the international level. As a result, ITU Member States will benefit from child online protection policies based on the new 2020 resources developed by ITU and COP Partners.

[BDT has also contributed to the adoption of the General Comment 25 on children’s rights in relation to the digital environment](https://www.end-violence.org/articles/celebrating-adoption-general-comment-25#:~:text=General%20Comment%2025%20not%20only%20raises%20awareness%20of,and%20other%20forms%20of%20violence%20on%20the%20internet.), by the UN Committee on the Rights of the Child: A UN inter-agency working group on child online protection was composed by the Committee on the Rights of the Child and the vibrant community of child online protection experts, both within the UN system and from civil society.

BDT is working on the dissemination of Sango’s messages (The [COP Mascot launched in 2020) in several countries and through several partners in order to develop relevant content to raise awareness on Child Online Protection.](https://www.itu-cop-guidelines.com/children) The COP mascot announced the [Online Safety course with Sango](https://www.itu-cop-guidelines.com/children) for young children under 13 years on *Safer Internet Day 2021* to raise awareness and build capacity on online safety with children. The series was launched with a trailer at the [Online Safety moment](https://www.itu.int/women-and-girls/girls-in-ict/girlsinict-online-safety-moment/) of the *Girls in ICT*s’ 10th anniversary celebration series of events.

In November 2021, a first Training on Child Online Protection was delivered through the ITU Academy to regulators in the Arab Region.

All the above activities are undertaken as joint efforts between the Cybersecurity and Digital Inclusion thematic priorities.

### National Computer Incident Response Teams (CIRTs) and Incident response

To date, more than 82 countries have received assistance to assess their national cybersecurity preparedness and incident response capabilities. By the end of 2021, ITU had engaged in 22 CIRT-related projects, including the establishment and/or enhancement of 17 National CIRTs that were completed by 2021, and three projects that were completed in 2021. The national CIRT design was reviewed for Eswatini, and CIRT implementation projects, with National CIRT enhancement projects, were initiated for Kenya and Barbados.

ITU undertook a technical assessment to evaluate the preparedness for the establishment of a Computer Incident Response Team (CIRT) for Malawi (2018), Congo (2018), Niger (2018), Liberia (2019), Chad (2019), Gambia (2019), Bosnia and Herzegovina (2019), Mauritania (2019), Albania (2019), Guyana (2020), Bermuda (2020), Bahamas (2021), Guinea Bissau (2021) and Mongolia (2021). In 2018, through the implementation of CIRT services and related capabilities project, the State of Palestine was assisted in building and deploying the technical capabilities and related training for CIRT operations. Specialized country assistances on CIRT assessments and skill building were provided to Papua New Guinea, Samoa, Tonga, and Vanuatu through an Australian Government Department of Infrastructure, Transport, Regional Development and Communications supported project. Capacity development on CIRT was provided to Papua New Guinea and Vanuatu through the [ITU-DoCA project](https://www.itu.int/net4/ITU-D/CDS/projects/display.asp?ProjectNo=9RAS18061).

ITU engaged with FIRST (the Forum for Incident Response and Security Teams) and contributed to the work required to improve the CIRT Service Framework. Support was also provided to the revision of existing training materials that are part of a capacity-building program to establish and manage national CIRT’s operations.

In addition, and to support the CIRT Programme the "[[ITU cybersecurity programme: CIRT framewor](https://www.itu.int/pub/D-STR-CYBERSEC-2021-01)](https://www.itu.int/pub/D-STR-CYBERSEC-2021-01)k" was published in 2021.

### CyberDrills and capacity development

To ensure that the national CIRTs apply good practices to respond to cybersecurity incidents and foster technical cooperation among national CIRTs, a number of CyberDrills were organized between 2018 and 2021, at a regional and intra-regional level.

In 2018, a high-level exercise simulating a national cyber-related crisis was organized in Mauritius.

Five ITU regional CyberDrills were organized in 2018 in the Ivory Coast (Africa) Cyprus (Europe), Azerbaijan (CIS), Kuwait (Arab States) and Argentina (Americas).

In 2019, an inter-regional CyberDrill (CIS and Asia-Pacific regions) was held in Malaysia and a CyberDrill for the Africa region was organized in Uganda. In the Arab States region, a CyberDrill was organized in Oman, in collaboration with the Arab Regional Cybersecurity Centre ([ARCC](https://arcc.om/?GetLang=en)) to ensure continued collective efforts in mitigating cyberthreats among the national computer incident response teams. The Europe region organized a CyberDrill in Romania to coincide with the 2019 presidency of Romania of the Council of the European Union. Following an invitation from the G20 Presidency, ITU agreed to act as knowledge partner for security in the digital economy priority of the G20 Digital Economy Task Force.

In 2020, the[*ITU 2020 Global CyberDrill*](https://www.itu.int/en/ITU-D/Cybersecurity/Pages/Cybedrills-2020.aspx) was delivered virtually and covered several cybersecurity relevant areas: six regional dialogues on cybersecurity challenges took place during the COVID-19 pandemic. In addition, a webinar on [empowering women in cybersecurity](https://www.itu.int/en/ITU-D/Cybersecurity/Pages/CyberDrill-2020-Empowering-Women-in-Cybersecurity.aspx) and cyber crisis management planning highlighted the importance of inclusiveness and resilience. Hands-on training was also part of this global event focusing on [effective online open source investigations](https://www.itu.int/en/ITU-D/Cybersecurity/Pages/CyberDrill-2020/How-to-conduct-effective-Open-Source-Investigations-Online.aspx) followed by trainings on tools used in [Incident Response – TheHive and Cortex](https://www.itu.int/en/ITU-D/Cybersecurity/Pages/CyberDrill-2020/Incident-Response-with-TheHive-and-Cortex.aspx). Several experts discussed the importance of the [implementation and monitoring](https://www.itu.int/en/ITU-D/Cybersecurity/Pages/2020-NCS-IM-webinar.aspx) of national cybersecurity strategies. In Asia and the Pacific, the Pacific CyberDrill was organized in December 2020. It specifically focused on how small island developing states (SIDS) can enhance their cybersecurity capabilities. A national CyberDrill was held for the Kingdom of Eswatini in December 2020.

The [2021 Global CyberDrill](https://www.itu.int/en/ITU-D/Cybersecurity/Pages/Cyberdrills-2021.aspx) took place between September-November 2021. This set of events included 3 interregional meetings that covered all 6 ITU regions, 2 webinars, 6 training sessions and 6 scenario-based exercises. Two sub-regional CyberDrills for ECOWAS (Economic Community of West African States) and SADC (Southern African Development Community) countries and one national CyberDrill for India took place between September-December 2021. These efforts were complemented by the publication on [“Operational framework and guidelines for the planning and execution of ITU regional CyberDrills”](https://www.itu.int/pub/D-STR-CYBERDRILL-2021) .

### Women in Cyber Mentorship Programme

In 2020, ITU and the Forum of Incident Response and Security Teams ([FIRST](https://www.first.org/)), with the support from the [EQUALS Global Partnership](https://www.equalsintech.org/) launched a joint mentorship programme for empowering women in the cybersecurity sector. The [first edition](https://www.itu.int/en/ITU-D/Cybersecurity/Pages/Women-in-Cyber/Women-in-Cyber-Mentorship-Programme-2021.aspx) of the programme focused on the Arab and Africa regions. It engaged role models and leaders in this field and connected them with talented women worldwide. The Programme has empowered women in cybersecurity by engaging role models and leaders in cybersecurity, encouraged community building, guidance, and senior-junior solidarity among women in the sector. This effort has helped address the global workforce and gender gap in the field of cybersecurity, through the creation of a global mentorship programme that builds the capacity of women wishing to pursue a career and evolve within the cybersecurity sector. The Women in Cyber Mentorship Programme is three-fold, and incorporates a series of inspirational webinars (INSPIRE), technical and soft skills training courses (TRAIN), and a six-month mentorship module (EMPOWER). All activities for the first edition of the programme were delivered virtually online over the course of six months, from March 2021 to August 2021. The second edition is planned for 2022.

### National cybersecurity strategies

ITU assists Member States in developing and improving effective national cybersecurity strategies. In 2018, the first edition of the [Guide to Developing a National Cybersecurity Strategy](https://www.itu.int/dms_pub/itu-d/opb/str/D-STR-CYB_GUIDE.01-2018-PDF-E.pdf) (NCS), developed through a multi-stakeholder collaborative process, constituted a good practice guide and functional toolkit that has been used by countries in all regions to develop and improve their cybersecurity strategies. Since its launch in September 2018, national and regional workshops have been organized to support several countries, with four receiving direct assistance to develop and revise national cybersecurity strategies using the Guide. ITU facilitated the process of updating [The Guide to Developing a National Cybersecurity Strategy](https://www.ncsguide.org/), and more than 20 organizations contributed to the [2nd edition of the Guide](https://ncsguide.org/), which was launched in November 2021. The launch took place with a global community and through a webinar, which discussed the lifecycle development, implementation and challenges and opportunities of developing an NCS.

In 2021, ITU developed a self-paced online training “[Lifecycle, principles and good-practices on national cybersecurity strategy development and implementation](https://academy.itu.int/training-courses/full-catalogue/lifecycle-principles-and-good-practices-national-cybersecurity-strategy-development-and)”, which is available on the ITU Academy platform. ITU worked together with the World Bank Group to organize regional webinars to provide operational insights on how to develop an NCS action plan. In 2021, ITU initiated the development of an NCS Benchmarking tool to support Member States and cybersecurity practitioners in their NCS development and implementation efforts.

The [Guide to Developing a National Cybersecurity Strategy](https://www.itu.int/dms_pub/itu-d/opb/str/D-STR-CYB_GUIDE.01-2018-PDF-E.pdf) (NCS), on national cybersecurity strategies has been used by countries in different ITU regions. In particular:

* A regional workshop, hosted by the Ministry of Informatics and Cyber Security Agency of Indonesia in Jakarta, was dedicated to cybersecurity strategies and general data protection regulations;
* A regional workshop, hosted by Macedonia, was dedicated to improving national strategies for five countries in the region;
* A regional workshop, hosted by Tunisia, focused on improving national strategies of countries from the Africa region and the Arab States region. Twenty countries actively participated;
* In the Africa region, Benin was assisted in drafting its national cybersecurity strategy;
* In the Asia and the Pacific region, Kiribati and the Solomon Islands were assisted in strengthening their cybersecurity strategy frameworks and to develop their national cybersecurity strategies. Following this assistance, Kiribati adopted a [national strategy](https://www.mict.gov.ki/publications/kiribati-national-cybersecurity-strategy-2020).
* In 2021, technical assistance activities on National Cybersecurity Strategies (NCS) commenced to support Bahamas, Rwanda, Morocco and the Southern African Development Community (SADC) region.
* In 2021, BDT assisted Mali and Malawi in designing National Public Key Infrastructure (PKI) frameworks and delivered related capacity workshops.

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| **Regional Initiatives**  [Africa region](https://www.itu.int/en/ITU-D/Regional-Presence/Africa/Pages/ActivitiesandProjects.aspx)   * Regional CyberDrills were organized in Côte d’Ivoire (2018), Uganda (2019), and national Cyberdrills took place in Mauritius (2018), and the Kingdom of Eswatini (2020). In 2021, an online Africa-Europe interregional CyberDrill meeting was organized, in addition to the 2020 online global CyberDrill; * ITU and partners delivered capacity building in Burkina Faso (2018), Eswatini (2019) and delivered an inter-regional workshop on a national cybersecurity strategy in Tunisia. The Regional Forum on Child Online Protection was held in Accra, Ghana in October 2019. ITU undertook a technical assessment to evaluate the preparedness for the establishment of a Computer Incident Response Team (CIRT) for Malawi (2018), Congo (2018), Niger (2018), Liberia (2019), Chad (2019), Gambia (2019) and Guinea Bissau (2020); * ITU assisted in the development of a national cybersecurity strategy for Benin in 2019, a national cybersecurity strategy for Liberia in December 2020 and a national cybersecurity strategy of Guinea in December 2021; * A Public Key Infrastructure framework was developed, and training delivered for Malawi in December 2020 and a Public Key Infrastructure framework and digital signature platform benchmark developed for Mali in December 2021; * In 2021, the national CIRT stakeholders of Gambia were trained on CIRT operations; * In 2019, in partnership with Deloitte Risk Advisory, a cybersecurity landscape review was conducted for Côte d’Ivoire, including the ITU Global Cybersecurity Index findings. The review helped the country to identify cybersecurity priority initiatives to improve its cybersecurity situation; * Guidance was extended to South Africa towards developing a national data policy, including a review of the cloud, privacy, and cyber-security draft policy. A workshop for key policy bodies was held in January 2020.   Americas region   * As of 2021, ITU has been implementing a cybersecurity and disaster reduction programme for Barbados; * An online training course on Advanced ICT Policy and Regulations was delivered in 2019 and in 2020 to support ITU members covering topics related to internet governance, connectivity, and cybersecurity; * From 4 to 8 June 2018, ITU organized the Regional Cybersecurity Workshop and CyberDrill, following an invitation from the government of Argentina and hosted by the Universidad de La Plata. The event included participants from Argentina, Bahamas, Brazil, Chile, Cuba, Ecuador, El Salvador, Guyana, Paraguay, and Uruguay; * In September 2020, ITU organized the online cybersecurity Americas Regional Dialogue: CIRTs and Lessons Learned from the COVD19 crisis. The event was attended by 100 people from Argentina, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Guyana, Mexico, Paraguay, Peru, Suriname, Trinidad and Tobago, United States, and Uruguay; * In 2021, ITU started implementing a cybersecurity project for Barbados that includes a CIRT assessment, reinforcing the national CIRT, as well as several onsite trainings; * In 2020 a cybersecurity CIRT readiness assessment was carried out in the Bermuda and Guyana; * An online training course on Advanced ICT Policy and Regulations was delivered in 2019, 2020, and 2021 to support ITU members on topics related to Internet governance, connectivity, and cybersecurity; * In June 2018, ITU organized the Regional Cybersecurity Workshop and CyberDrill at the invitation of the government of Argentina and hosted by the Universidad de La Plata. The event was attended by 117 people. Of these, 15 people attended the session on child online protection and 50 people participated in the hands-on exercises on the CyberDrill. The event included participants from Argentina, Bahamas, Brazil, Chile, Cuba, Ecuador, El Salvador, Guyana, Paraguay, and Uruguay; * In September 2020, ITU organized the online Cybersecurity Americas Regional Dialogue: CIRTs and Lessons Learned from COVD19 crisis. The event was attended by 100 people from Argentina, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Guyana, Mexico, Paraguay, Peru, Suriname, Trinidad and Tobago, the United States, and Uruguay. * In September 2021, ITU organized the online Cybersecurity Inter Regional Dialogue America and Arab Regions. The event attracted participants representing 22 countries from the Americas Region and many from other parts of the world; * During the last quarter of 2021 BDT carried out a cybersecurity study to reinforce the national cybersecurity of Ecuador; * During the last quarter of 2021, ITU carried out a study focusing on the analysis and benchmarking of national policies and digital initiatives focused on Child Online Protection. Colombia, Costa Rica, Mexico, Ecuador, Paraguay, and Peru participated;   Arab States region   * Regional Cyberdrills were organized in Kuwait (2018) and Oman (2019); * In 2018, ITU organized a High-Level Regional Meeting for Building Partnerships with Academia in the Field of Cybersecurity. The objective was to establish a partnership between academia and other ITU members in order to build confidence and security in the use of ICTs, and to highlight the importance of creating academic professionals in the Arab region; * ITU organized the Regional Workshop on Securing the Critical Infrastructure for the Financial Industry in Cairo-Egypt, in October 2018; * A training course for the Saudi public prosecutors commission on cybersecurity and data privacy took place in Cairo, Egypt, in December 2018; * A workshop on the technical assessment for Computer Incident Response Teams (CIRTs) Establishment Readiness took place in Mauritania, in December 2018; * A CIRTs training was organized for Palestine, in Cairo, Egypt, in March 2019; * In 2018, ITU assisted Mauritania in the development of a national cybersecurity strategy for the period 2019-2022; * During the annual Regional Cyber Security Week for the Arab States region (held in 2018 and 2019), the ITU Arab Regional Cyber Security Centre (ITU-ARCC) fostered information sharing and capacity building in the field of cybersecurity. The week provided a platform for senior ICT and cybersecurity officials from the region to meet with relevant stakeholders and discuss threats, evolution, opportunities and cybersecurity challenges. * An Arab States Broadcasting Union (ASBU)-ITU Training Course on Cyber Security took place in Tunisia in June 2019 and was organized in cooperation with the ASBU Training Center in Tunis; * ITU organized the Interregional Workshop for Africa and the Arab region on “National Cybersecurity Strategies”, and the Global Cybersecurity Index (GCI) Report- Iteration 2018, in Tunis, in December 2019. * The 2019 “Implementation of CIRT services and related capabilities” project in Palestine helped build and deploy the technical capabilities and related trainings necessary to the implementation of Palestine’s CIRT. * In December 2019, capacity development and technical assistance were provided to Sudan to improve its strategy on critical information infrastructure protection and a “Critical Infrastructure ICS/OT Cyber Security Roadmap” report was issued in 2020. * Acknowledging the impact that COVID-19 has on nations’ ICT systems, the Arab States regional dialogue was held in September 2020, and attended by delegates from over 16 countries. * In 2020, and building on the partnership with Meem Ain and the MALI project on digital financial inclusion for children, BDT developed a project called AMANI, aimed at providing interactive digital solutions to protect Arab children against Internet threats and to raise their awareness about risks and harms of the digital world. The program addressed the basic and fundamental knowledge and skills needed for children to navigate safely and responsibly online, pursuing many topics such as digital security and privacy, online footprint, and online communication. * To support the active implementation of the COP Guidelines across the Arab region, a joint consultation with the SAMENA Council took place in November 2020. It addressed some of the key challenges and opportunities around implementing the 2020 COP Guidelines for the Industry. * The 2020 ITU COP Guidelines and Opportunities for Implementation workshop took place in the Arab Region in November 2020.   Europe Region   * In 2021, ITU supported the organization of the annual Moldova Cybersecurity Week in Chisinau, Moldova. The conference offered networking opportunities and a platform to exchange ideas, discuss and collaborate to drive, through innovation, global cybersecurity strategies and solutions. In 2020, an additional special training on the protection of critical infrastructure was provided; * In 2020, the Ukraine Online Safety Contemporary Challenges was held in Ukraine and co-organized by ITU. The conference provided an opportunity to build Ukraine’s human capacities in the field of COP * The Cyber Shield 2019 event was held in Ankara, Turkey. Supported by ITU, the event offered a unique opportunity to participate in different technical activities in cybersecurity. The main objectives were to increase incident response capabilities and readiness levels, to increase mutual understanding of cyber risks and associated impacts, and to ensure a continued collaborative effort among international cybersecurity stakeholders, especially national computer emergency response teams (CERTs) in order to mitigate cyberthreats; * Progress was made in the field of child online protection: an international conference for Europe on keeping children and young people safe online was co-organized and held in Warsaw, Poland, in 2019 and online in 2020 and 2021. A Regional Forum for Europe on Child Online Protection was organized in 2020 (hosted by ONAT Academy, Ukraine) to facilitate cooperation and advance the roll-out of the COP Guidelines in Europe. A regional study on national approaches for keeping young people and children safe online was drafted for review and opened for consultations with the countries. Assistance was provided to Georgia and Ukraine in the development of a national strategy on child online protection. A strategic review of the national assessment for COP was carried out in Moldova. Albania was selected as a pilot country for the roll-out of the ITU COP Global project aiming at fostering a culture of child online protection with all relevant stakeholders through knowledge sharing and digital skills development. Assistance was also provided to North Macedonia on a National Child Online Protection Assessment and operational roadmap aiming at strengthening the safety of children and young people online. Over 16 countries have been proactively engaging in the roll out of the COP Guidelines, and COP Guidelines are available in over 10 European languages.   Asia-Pacific region   * Specialized country assistance on CIRT assessments and skills building was provided to Papua New Guinea, Samoa, Tonga, and Vanuatu through an Australian Government Department of Infrastructure, Transport, Regional Development and Communications supported project; * ITU supported Kiribati and Solomon Islands to strengthen their cybersecurity strategy frameworks, including conducting table-top exercises to build national capacity in developing or improving their national cybersecurity strategies. Following the assistance, Kiribati adopted a [national strategy](https://www.mict.gov.ki/publications/kiribati-national-cybersecurity-strategy-2020). During 2019-20, more than 550 participants raised their awareness and skills on Safeguarding Critical National Infrastructure (CNI), Critical information protection and CyberDrills, while more than 250 participants improved their skills on security related issues through the ITU Asia and the Pacific CoE * In December 2020, ITU organized a Pacific CyberDrill with a focus on SIDS. In 2021, RO-ASP, together with the regional office in CIS, organized an interregional meeting as part of the global CyberDrill. * The ITU assessed the cybersecurity education capacity of Viet Nam, including at undergraduate, postgraduate, and doctoral level courses. It provided recommendations for future cybersecurity education capacity initiatives as well as lists of useful sources of benchmark initiatives and resources, including similar education programmes in Australia, Singapore, and the United Kingdom; * In November/December 2021, India and ITU jointly organized the CyberDrill for Indian entities. Attended by over 400 participants, the CyberDrill emphasized the role of national Computer Incident and Response Teams (CIRTs) and Computer Security Incident Response Teams (CSIRTs) in building cyber resilience and protecting critical information infrastructure. Beyond the Day 1 webinar, parallel technical and management training tracks were held on Day 2, followed by a scenario-based exercises on Days 3 and 4. * In 2021, ITU, together with the USAID Regional Development Mission for Asia (RDMA), held a virtual policy meeting on cybersecurity for Micro, Small and Medium Enterprises (MSME) The event was part of the Asia and the Pacific Regional Dialogue on Digital Transformation: Gearing up for Inclusive and Sustainable Development. The webinar, attended by representatives from academia, government, the private sector, and the MSME sector, highlighted the digital policy options and solutions that may mitigate the risks for newly-connected MSME. It was attended by 66 participants.   CIS region   * In 2019, ITU completed a CIRT assessment in Kyrgyzstan and in 2021 started the joint ITU/ Kyrgyzstan/World Bank project on the establishment of a CIRT. * ITU organized several regional and interregional CyberDrills attended by 200-300 participants each. This included the 2017 interregional CIS and Europe CyberDrill in Moldova, the 2018 (first) standalone CIS regional CyberDrill in Azerbaijan, and the 2019 CIS/ASP CyberDrill in Malaysia. In 2020 and 2021 Member States from the CIS region were actively engaged in the global CyberDrills, with most of the countries nominating CIRT teams to participate in the scenarios. * A regional dialogue for CIS and an interregional meeting on cybersecurity for CIS and Asia and the Pacific were organized as part of the 2020 Global CyberDrill to facilitate the sharing of best practices and experiences. * Several major partnerships emerged around the cybersecurity subject, including with OSCE and the World Bank. In 2021, ITU, jointly with OSCE, organized the first national CyberDrill in Kyrgyzstan, attracting over 150 participants. * Russia, Azerbaijan, Kazakhstan, Kyrgyzstan, and Uzbekistan all use the GCI as one of the key metrics for national cybersecurity policy planning and implementation. From 2018-2021, ITU provided support and training upon requests from these Member-States. * Building on the global launch of the Child Online Protection Guidelines in June 2020, a regional forum on Child Online Protection was held in October 2020 by ITU, in partnership with the UNESCO Institute of Information Technologies in Education. It was attended by representatives of ministries, regulators, telecommunications operators, universities and general education institutions, research and development institutes, organizations of the UN System, and other stakeholders from ITU Member States. The online dialogue within the framework of the forum focused on the actual usage and implementation of [the COP Guidelines​](https://www.itu.int/en/ITU-D/Cybersecurity/Pages/COP-2020-Guidelines.aspx) at the national and regional level and provided the opportunity for deep dive analysis and discussions on approaches and policies on child online protection. |

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| STUDY GROUPS  A [workshop on cybersecurity emerging issues](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/session-Q3-2-oct18.aspx) was held in October 2018, in conjunction with ITU-D Study Group 2 Question 3/2 (*Securing information and communication networks: Best practices for developing a culture of cybersecurity*). The workshop shared updates on cybersecurity trends, explored new elements to be reflected in related strategies and policies, and discussed how stakeholders can collaborate to contribute effectively to their implementation. |

## 3. Digital inclusion: Building inclusive policies for equal ICT access and use

### Ensuring inclusive, equal access and use of ICTs for all

#### ICT Accessibility awareness raising and resources to foster digital Inclusion:

Between 2018 and December 2021, ITU-D raised awareness on the topic of [ICT accessibility](https://www.itu.int/en/ITU-D/Digital-Inclusion/Persons-with-Disabilities/Pages/Persons-with-Disabilities.aspx). It shared relevant strategies, tools and resources designed and developed with over 20 000 ITU members, stakeholders, and decision-makers to support global efforts and commitments to build digitally accessible societies, environments and achieve inclusive ICTs for all people – regardless of their gender, age, ability, or location. The COVID-19 pandemic accelerated the need to mainstream and increase the implementation of ICT/accessibility policies and strategies to guarantee that all people, including those with disabilities, can understand and use digital information and services, in particular in situation of emergency and crisis situations.

A wareness-raising and promotion of ITU-D tools and [resources](https://www.itu.int/en/ITU-D/Digital-Inclusion/Pages/resources-on-ICT-accessibility/default.aspx) supported regional and global digital inclusion efforts for ICT accessibility through face to face and online events, thematic meetings, workshops, conferences, and forums. These included: Numerous [WSIS](https://www.itu.int/net4/wsis/forum/2021/Agenda/SpecialTrack/3) tracks in ICT accessibility (2018, 2019, 2020, 2021), the UN Conference of States Parties to the Convention on the Rights of Persons with Disabilities (CRPD) implementation (2018, 2019, 2020, 2021), Mobile Learning Weeks (UNESCO 2018, 2019, 2020 and 2021), M-Enabling Summits (2018, 2019), International Congress of Technology for Diversity (2018), Zero Project Conference (2018, 2019, 2020, 2021), the Digital Inclusion Summit – Leaving no one behind (2021), the first Universal Design Day (2021), Inclusive Conference in Africa (2020), ARB QITCOM (2019), ITU-UNESCO Digital Inclusion Week for the Arab States (2018,2019, 2020 and 2021), an Asia and Pacific event with UNITAR (2020), the ITU Accessible Americas- ICT for ALL events held in Jamaica in 2018, Ecuador in 2019, on-line in 2020 and in Cuba in 2021, ITU Accessible Europe – ICT for ALL events held in Austria in 2018, in Malta in 2019, on-line in 2020 and hosted by Portugal on-line in 2021. BDT also organized five regional online knowledge development workshops in *Fundamentals of ICT Accessibility*, held in English and French for African countries, introduced the toolkit and self-assessment for ICT accessibility implementation in April 2021, and participated in the ITC-ILO Digital Inclusion Summit held in 2021.

BDT produced a number of [ICT Accessibility Resources](https://www.itu.int/en/ITU-D/Digital-Inclusion/Pages/resources-on-ICT-accessibility/default.aspx)**:** Between 2018 and 2021, ITU-D designed, developed and made available sixty tools and resources to ITU members, including policy and decision-makers and related stakeholders to support their efforts in implementing ITU target 2.9 that is, *to enable accessible environments for persons with disabilities in all countries by 2023*. These [resources](https://www.itu.int/en/ITU-D/Digital-Inclusion/Pages/resources-on-ICT-accessibility/default.aspx) and tools include: policy guidelines, toolkits, trainings (on-line self-paced and/or face to face) in-country educational programmes, video tutorials, and in-country and regional assessments. Specific guidelines and trainings on COVID-19 response and recovery were also developed. These resources were made available in several UN languages to support all ITU members in their implementation process of ICT accessibility. The online trainings are delivered through the ITU Academy, free of charge, self-paced, with localized content and with the possibility of certification. All ITU-D resources on ICT accessibility are delivered in digitally accessible formats to ensure that persons with disabilities can also benefit from these resources Specific resources were produced to allow ITU members and stakeholders to monitor and evaluate ICT accessibility implementation levels in their respective countries and regions. These include:

* Towards building inclusive digital communities, ITU toolkit and interactive self-assessment for ICT accessibility implementation and monitoring (Arabic, Chinese, English, French, Spanish and Russian), 2021;
* ITU video-tutorial on the development of an in-country self-assessment (ITU toolkit, 2021);
* A video-tutorial “ICT Accessibility: the key to achieving a digitally inclusive world” (2021) also available with captions in [Arabic](https://youtu.be/OyJq9uNbXL0), [Chinese](https://youtu.be/1JWDvng_7zY), [French](https://youtu.be/mEZ1YWs_5tc), [Russian](https://youtu.be/DJUhIfa9tYM) and [Spanish](https://youtu.be/dA3zeHoBsCk);
* A video tutorial “Online self-paced training Beyond smart cities – Towards building inclusive and digitally accessible environments and communities to meet the needs of present and future generations, 2021;
* ITU Report on the Information and Communication Technology (ICT) Accessibility Policy Review of the Republic of Serbia, 2021;
* ITU regional assessment and report on ICT accessibility for the Africa region, with related capacity building workshops, 2021;
* [ICT accessibility assessment report for the Europe region, 2021;](https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Documents/Events/2020/AE20/event/ICT%20accessibility%20assessment%20for%20Europe%20region.pdf)
* In-country and regional assessments in ICT accessibility implementation in Africa, Asia Pacific, CIS, Serbia;
* ITU regional baseline assessment on ICT Accessibility in the CIS Region, 2021;
* [ITU guidelines on how to ensure that digital information, services and products are accessible by all people, including persons with disabilities during COVID-19](https://www.itu.int/en/ITU-D/Digital-Inclusion/Persons-with-Disabilities/Pages/COVID-19-Guidelines.aspx) (Arabic, Chinese, English, French, Spanish, Russian), 2020. These guidelines were selected and translated by the UN COVID-19 emergency group into the 22 most spoken languages in the world;
* ITU regional assessment on ICT Accessibility for the Asia and the Pacific region, 2020;
* Online self-paced training on: [How to ensure inclusive digital communication during crises and emergency situations](https://academy.itu.int/index.php/training-courses/full-catalogue/how-ensure-inclusive-digital-communication-during-crises-and-emergency-situations), available in English, French, Spanish, 2020;
* Video- tutorial on How to ensure inclusive digital communication during crisis and emergency situations, available in English, French and Spanish, 2020;
* Online self-paced training on ICT Accessibility: The key to inclusive communication, available in Arabic, English, French, Russian and Spanish, 2020;
* Online self-paced training on Web Accessibility: The Cornerstone of an Inclusive Digital Society, available in Arabic, English, French, Russian and Spanish, 2020;
* ITU-WHO [Toolkit and Global Standard for safe listening devices and systems](https://www.itu.int/en/ITU-D/Digital-Inclusion/Pages/Digital_Inclusion_Resources/Strategies,%20policies,%20toolkits/Toolkit_safe_listening_devices/safe_listening.aspx), available in Arabic, Chinese, English, French, Spanish, Russian, 2019;
* Video tutorials on ITU-WHO [Toolkit and Global Standard for safe listening devices and systems](https://www.itu.int/en/ITU-D/Digital-Inclusion/Pages/Digital_Inclusion_Resources/Strategies,%20policies,%20toolkits/Toolkit_safe_listening_devices/safe_listening.aspx), 2019, available in Arabic, Chinese, English, French, Spanish, Russian;
* [Artificial Intelligence and Information Communication Technology Accessibility](https://www.itu.int/en/ITU-D/Digital-Inclusion/Documents/AI%20and%20ICT%20Accessibility_webEA3_Final.pdf), 2019;
* [Standards in the Procurement of Accessible Products and Services](https://www.itu.int/en/ITU-D/Digital-Inclusion/Documents/ICT%20Accessibility%20standards%20procurement%20FINAL.pdf), 2019;
* [Future of Accessible Audiovisual Media Services, TV and Video Programming](https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Documents/Events/2019/Accessible%20Europe/191107_AVMS%20Accessibility%20in%20Europe%20(Final%20edition).pdf), 2019;
* In-country Web Accessibility Educational Programme “Internet for @all”, with web curriculum available in Arabic, English, French and Spanish, 2018;
* Video tutorial on Web Accessibility Educational Programme “Internet for @ll”, 2018;
* Video tutorials on: [Creation and Remediation of accessible digital content (five](https://www.itu.int/en/ITU-D/Digital-Inclusion/Persons-with-Disabilities/Pages/Video-Tutorials-on-Accessible-Digital-Content.aspx) video tutorials, available in English, French and Spanish, 2018.

Capacity was built on the topic of ICT accessibility to over 1 800 people from amongst ITU members, stakeholders and decision-makers, with some obtaining ITU certification. This was achieved through face-to-face knowledge development sessions during ITU events and meetings such as: Rapporteurs Group of Question 7/1 (2018); Accessible Europe - ICT for all in Austria (2018) and Malta (2019); Accessible Americas - ICT for all in Jamaica (2018), Ecuador (2019) and Cuba (2021); Five workshops held in English and French for 43 African countries in 2020; as well as through blended and on-line sessions during COVID-19 such as those held during Accessible Europe ICT for all in 2020 and in 2021 and Accessible Americas – ICT for all in 2020.

Additionally, ITU-D expertise and knowledge on the topic contributed to the implementation of the UN Disability Inclusion Strategy (UNDIS) and the development of UN-related resources, including:

* UN Disability Inclusion Practice for the Business Operations Strategy (DCO) (2021);
* ITU shared knowledge and expertise on the topic of ICT accessibility with the United Nations Country Teams representatives during two webinars on ICT & Digital Accessibility in 2021;
* WIPO technology Trends and Assistive Technology, 2020;
* Terms of Reference for the ICT/Accessibility Guidelines for Telehealth and e-Health Applications, developed by the UN joint COVID-19 response and recovery - emergency working group on health work stream, 2020;
* A joint ITU ILO project on the [Accessibility of Online Job Applications and Recruitment Systems](https://www.itu.int/en/ITU-D/Digital-Inclusion/Pages/itu-ilo/default.aspx) to provide guidance on the topic and enabling governments and UN agencies to guarantee inclusive access to work. This project is an ITU-ILO contribution to the UN Disability Inclusion Strategy, as called for by the UN Secretary General.

### Women and girls

Since 2018, ITU and its partners have celebrated *Girls in ICTs* celebrations by organizing different activities, programs and workshops.

The global official celebration of the *Girls in ICT* Day 2019 took place in Addis Ababa, Ethiopia, on 24 and 25 April, and in collaboration with the African Union Commission and UN sister agencies, such as UN Women, UNDP, UNECA, as well as Huawei Ethiopia and Ethio Telecom. The celebrations in Addis Ababa included 250 high school girls at the AU Commission headquarters on the day itself. This was preceded by visits to two schools in Bishoftu outside Addis Ababa.

In 2020, due to the COVID-19 pandemic, most of the events were organized virtually. In Asia and the Pacific, the *Girls in ICT* Day Celebration in Thailand was organized in partnership with the government, UN agencies and private sector companies. Attended by nearly 300 girls and young women from remote provinces, the event provided them with opportunities to gain foundational knowledge on AI, cybersafety, e-agriculture, and e-commerce and the role of women in leadership positions. The ITU Arab Regional office, in collaboration with the Communication and Media Commission of Iraq, organized a workshop on Empowering and Supporting Digital Skills for Women in Iraq. The workshop was held as part of the ITU-UNESCO Digital Inclusion Week in October 2020. It raised awareness among relevant stakeholders in Iraq on the importance of equipping girls and women with digital skills as key towards their digital inclusion. In the Africa region, ITU teamed up with African countries and partners to organize a number of events and workshops.

In 2021, ITU celebrated the [10th Anniversary of Girls in ICTs](https://www.itu.int/en/ITU-D/Digital-Inclusion/Women-and-Girls/Girls-in-ICT-Portal/Pages/GirlsInICTDay/2021/GICT-2021.aspx) with an extensive programme and under the theme ‘Connecting girls, creating brighter futures’. It included 10 Moments of Girls in ICTs, a series of virtual events hosted by ITU and its partners. The 10 Moments series was designed with some key goals in mind: to build momentum and awareness about the importance of encouraging girls in STEM, including through an inclusive platform to identify ways of encouraging girls to pursue STEM careers, and to engage key stakeholders and communities.

The ITU [European celebration](https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Pages/Events/2021/GInICT/Default.aspx) was organized by ITU and EQUALS-EU, with the support of UN Women and the European Conference of Postal and Telecommunications Administrations (CEPT). It included high level messages from the European Commission (EC), the Regional Cooperation Council (RCC) and the Generation Connect Europe Youth Group. This virtual [event](https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Pages/Events/2021/GInICT/Default.aspx) was followed and viewed by over 1 500 individuals globally.

A special session dedicated to International *Girls in ICT* Day and the launch of the Network of Women (NoW) for the CIS Region were held in April 2021, with participation of delegates of Regional Preparatory Meetings for WTDC and the Generation Connect Youth Group for CIS. Participants discussed the opportunities of professional fulfilment of girls/women in the ICT sector and through ICTs, and shared their experience in pursuing an ICT/Telecom related education and career.

In September 2021, Airtel Networks Zambia Plc partnered with the Smart Zambia Institute to provide digital skills training to schoolgirls in the country and to encourage them to pursue careers in STEM. Under the program, hosted by Smart Zambia Institute, 150 girls selected from three provinces in Zambia benefitted from digital skills training that ran throughout 2021.The partnership is part of the Digital Transformation Centres (DTC) initiative launched by ITU and CISCO.

In 2021, *Girls in ICT* Day in Asia Pacific was celebrated in Indonesia, Malaysia, Thailand, Bangladesh and Pakistan. The sessions included trainings on coding, child online protection and online safety in coordination with partners, such as APCICT/UNESCAP, UNESCO, UNICEF, GSMA, CISCO, Telenor, Microsoft[[2]](#footnote-3).

Within the framework of the Girls can code initiative, in 2018 and 2019, over five hundred girls participated in coding workshops as part of the [African Girls Can Code](https://www.itu.int/en/ITU-D/Regional-Presence/Africa/Pages/African-Girls-Can-Code.aspx) Initiative, initiated by ITU, the African Union and UN Women, and with financial support from ITU and the Royal Danish Embassy in Ethiopia. In 2020 the initiative scaled and went hybrid and held an event with UNECA in Addis Ababa, Ethiopia, with 125 girls participating in person and over 2 000 girls from across the continent participating remotely. The second phase of the initiative brought the regional initiative to the national level, with the development of customized national programs with partners*.*

The [Americas Girls Can Code Initiative](https://www.youtube.com/watch?v=gkYUlpgasoo) has taught over 7 000 girls how to code through a series of workshops organized with the support of many different partners. In 2021, following the launch of a new project with Facebook, Americas Girls Can Code initiative started promoting the development of digital skills activities amongst girls and young women from the region. It also provided support to beneficiary countries to review/adopt digital inclusion policies and strategies.

As a co-founder of the EQUALS initiative in 2016, ITU has been leading the efforts along with other members to ensure that women can access ICTs, are equipped with digital skills, and build leadership. EQUALS is a cooperation among more than 100 partners across 115 countries. Thanks to this partnership, over 52 000 women and girls have received digital skills training and mentoring. Some 146 research projects have been explored to tackle the gender digital divide and identify solutions for areas that lack access to the Internet and digital technologies. The initiatives ITU leads through EQUALS and the regional offices are made possible thanks to the expertise and collaboration of partner governments and the private sector. Several efforts have been undertaken at the global, regional, and national level, including:

* ITU and CISCO launched the CISCO EQUALS Learning Space, which aims at providing online courses to build tech skills and create a space where girls and young women can access free training on specific topics such as cybersecurity, entrepreneurship and Internet of Things. The courses are self-paced with the integration of live sessions delivered by experts of the EQUALS network. More information can be found [here](https://www.equals.org/cisco-equals-learning-space).
* In March 2021, in coordination with CITEL, countries from Latin America benefited from three editions of the online training course on Women Leadership in the Telecommunication and ICT sector. The EQUALS in Tech Awards, hosted by the [EQUALS Global Partnership,](https://www.equalsintech.org/) recognized innovative solutions aimed at closing the digital gender gap. Over 120 nominations have been received from 34 countries representing the private sector, civil society, governments, and academia. The ceremony was held virtually as part of the Internet Governance Forum in December 2021.
* In Asia and the Pacific, ITU was invited by the government of Afghanistan to support the activities for the preparations of the EQUALS Afghanistan programme. An information session was organized in January 2021, with the support of the First Lady of Afghanistan, ATRA, the Ministry of Communications and IT, UNRC Afghanistan, UNU and UN Women.
* In 2020, within the context of the Special Session on Digitally Empowered Generation Equality, the ITU Europe Office launched the ITU/UN Women report on [Key challenges and opportunities in empowering women and girls through ICTs](https://eca.unwomen.org/sites/default/files/Field%20Office%20ECA/Attachments/Publications/2021/5/Digitally%20empowered%20Generation%20Equality-min.pdf).
* As a contribution of EQUALS, in partnership with the Enhanced Integrated Framework (EIF) and UNOPS, ITU launched a cooperative project to enhance the digital ecosystem and build digital skills for women in least developed countries (LDCs). The project is benefiting women in Burundi, Ethiopia and Haiti. A total of 32 policies, strategies and regulations related to the digital economy have been assessed on their gender responsiveness. The regulations include the following categories: international development instruments, national digital policies, and national laws and regulations. In addition, 98 per cent of women who participated in capacity building activities agreed that attending the workshops improved their understanding and knowledge on how digital skills and technologies can increase the competitiveness of their business/professional horizon. Ninety-eight per cent also found the learning sessions useful for their work.
* In 2021, the Generation Equality Forum was convened by UN Women and co-hosted by the governments of Mexico and France. It brought together partners from all over the world, each committing to specific actions designed to make immediate progress toward gender equality. ITU co-lead the Action Coalition on Technology and Innovation together with other partners such as UNICEF. As part of this process, EQUALS has made a commitment to increase digital skills for young women and to increase networking opportunities for women leaders and entrepreneurs in the technology sector.

In January 2021, BDT launched the [Network of Women @WTDC](https://www.itu.int/en/ITU-D/Conferences/WTDC/WTDC21/NoW/Pages/default.aspx) (NoW4WTDC): the overarching aim of the NoW4WTDC initiative is to increase the number of women participating in ITU-D meetings. More women should have leadership roles, such as committee chairs, working group chairs and other management roles related to processes in preparation of the WTDC itself, and beyond. In May 2021, ITU launched the global [mentorship programme](https://www.itu.int/en/ITU-D/Conferences/WTDC/WTDC21/NoW/Documents/Mentorship/NOW4WTDC-Brochure.pdf) at the NoW4WTDC side event during the Telecommunication Development Advisory Group (TDAG) meeting and called for mentees at the Global Symposium of Regulators (GSR) 2021 - NoW4WTDC session. In September 2021, a [fireside chat discussions programme](https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Pages/Projects/Gender/About.aspx) was announced. The six fireside discussions gave participants the opportunity to get inspiration from ITU’s work, know the processes and learn from other delegates as well as role models. Each fireside discussion was organized in coordination with the ITU Regional Offices to ensure members were engaged in shaping the discussion and programme. The network has also established an [Advisory Board](https://www.itu.int/en/ITU-D/Conferences/WTDC/WTDC21/NoW/Pages/AdvisoryBoard/2021/default.aspx) composed by one representative per region, through the consultations under the umbrella of the respective Regional Telecommunications Organizations (RTOs).

### Indigenous people

BDT has continued its efforts to respond to the special needs of indigenous peoples and contributed to the digital inclusion of indigenous communities.

In collaboration with *El Fondo para el Desarrollo de los Pueblos Indígenas de América Latina y El Caribe* (FILAC), BDT developed a [capacity building programme for indigenous communities](https://www.itu.int/en/ITU-D/Digital-Inclusion/Indigenous-Peoples/Pages/default.aspx). The objective is to empower indigenous people and communities through technology and thus support their educational, social, and economic development. This will further contribute to the self-sustainability of indigenous communities and their cultural legacy. From January 2018 to December 2021, over 600 indigenous men and women benefited from training on innovative communication tools for strengthening ICT knowledge of indigenous communities. This had a special focus on how to develop, manage and operate an indigenous community radio network, and included the [Training Programme for Technical Promoters in Indigenous Communities for the Generation, Development and Maintenance of Communication and Broadcasting Network Technologies](https://youtu.be/iPgLFQQAdhU).

In 2018 and 2019, side events were co-organized during the Permanent Forum at the UN in New York to raise awareness of the challenges and opportunities of indigenous communities and the enabling role of ICTs. In 2020 and 2021, in response to the COVID-19 pandemic, the online training course on innovative communication tools, was expanded to include a dedicated module on emergency communications, tailored for indigenous community communicators. The module included an interactive session to exchange relevant challenges and experiences during the pandemic.

Other trainings and activities delivered between 2018 and 2021 include:

* Training on the supply of electrical energy and electronic systems, and radio frequency, telecommunications and community networks;
* Training on radio frequency, telecommunications and community networks;
* Training on innovative communication tools to strengthen indigenous communities, with a focus on how to develop, manage and operate a network
* Indigenous Virtual Training Campus to validate achievements of knowledge and obtain certification
* Revision of the of the training on Community Wi-Fi networks used by Indigenous Communities.

### Youth

In 2020, the [Generation Connect](https://www.itu.int/generationconnect/) global initiative was launched, which seeks to include the voice of youth and promote their meaningful engagement in digital transformation. Generation Connect is the overarching initiative of the ITU Youth Strategy on the journey to WTDC and beyond. The three pillars of the ITU Youth Strategy are: Empower, Engage and Participate.

The implementation of the ITU Youth Strategy was supported by the establishment of a new ITU youth task force and a Generation Connect Global Youth Summit, to take place prior to WTDC-22. ITU appointed 37 youth focal points from the three ITU Bureaux and the General Secretariat in ITU headquarters, as well as ITU regional and area offices, to effectively coordinate and mainstream efforts across ITU. The task force was divided in three working groups, based on the ITU Youth Strategy pillars and they have met on a regular basis since October 2020. In line with the ITU Youth Strategy, youth from each region were competitively selected to contribute to the preparatory process for WTDC-22 and the Regional Preparatory Meetings (RPMs). Six Generation Connect Regional Youth Groups were established and presented during the different RPMs, with each developing a document providing their views on regional priorities, as well as challenges and opportunities.

The Generation Connect Visionaries Board was convened to offer strategic high-level guidance to ITU youth-related work as ITU implements the Youth Strategy and advocates for meaningful youth engagement. The Generation Connect Visionaries Board consists of one ITU representative, eight young leaders and eight high-level appointees, working together towards the board’s strategic objectives. The first meeting of the Generation Connect Visionaries Board was held on 14 April 2021, and the second meeting was held on 8 September 2021.

In March 2021, ITU became the new co-chair of the United Nations Inter-Agency Network on Youth Development (IANYD) for a one-year mandate. IANYD is a network of UN entities, whose work is relevant to youth. The Network aims to increase the effectiveness of UN work in youth development by strengthening collaboration and exchange among all relevant UN entities. In April 2021, ITU conducted a side event at the ECOSOC Youth Forum called ‘Generation Connect: Young People Shaping the Digital Agenda’, which was co-organized with the UN Major Group for Children and Youth. The event was also supported by the Youth Science-Policy Interface (SPI) Platform, United Nations Inter-Agency Network on Youth Development (UN IANYD) Youth Caucus and the Netherlands with their Youth at Heart Strategy. In April 2021, ITU also co-led in the thematic session: Peace & Inclusion - SDG 10 & SDG 16, organized by UNODC, Global Youth Caucus, ITU, UNESCO, UNICEF and OSGEY.

In June 2021, the ITU’s Global Symposium for Regulators (GSR) included a side event on youth. ‘Generation Connect @GSR: Building a Digital Future’ was the first event in GSR’s history to host a conversation between young people and the international regulatory community. On 6 July 2021, during ITU’s Emerging Technology week, a session themed ‘Generation Connect: Developing Technology to Connect and to Deliver Quality Education for Youth’ was co-designed and co-delivered by Generation Connect Regional Digital Youth Envoys and the GC team.

In February 2021, Generation Connect Virtual communities were launched on Facebook and LinkedIn to regularly share information on different ITU youth engagement activities. [Generation Connect’s Instagram Account](https://www.instagram.com/_generationconnect/) and the [Generation Connect Podcast](https://www.itu.int/generationconnect/generation-connect-podcast) were launched in November 2021, coinciding with the one-year anniversary of the Generation Connect Initiative, and also presented to the Telecommunication Development Advisory Group (TDAG).

Youth were visible throughout the ITU’s Road to Addis series. On 12 August 2021 (International Youth Day), during ‘Youth2Connect: Empowered Youth Shaping the Digital Agenda’, young leaders alongside high-level experts discussed how to further empower and engage youth in the universal connectivity agenda. Generation Connect also partnered with the Office of the Secretary-General’s Envoy on Youth and Twitter to host a session on youth digital innovation during the #YouthLead Innovation Festival in August 2021. In preparation for the [Generation Connect Global Youth Summit](https://www.itu.int/generationconnect/generation-connect-youth-summit-2022/) (2-4 June 2022), a Youth Summit Co-Design Team was assembled, with the team of 41 members composed of: Generation Connect Regional Youth Envoys, Generation Connect Visionaries Board Members, ITU Regional Focal Points, ITU Youth Task Force Members and Generation Connect Video Pitch Competition Winners. Three co-design workshops were held towards this effort during August and September 2021 and further youth consultations took place in January 2022. As a result of consultations with Generation Connect Regional Digital Youth Envoys, Generation Connect Visionaries Board Members and the Regional Youth Focal Points, the Generation Connect team developed a ‘July 2021 – July 2022’ plan outlining the next phase of ITU’s youth engagement on the road to WTDC and the preceding Generation Connect Global Youth Summit.

### Older persons

To prepare ITU members in facing two key global trends, which are the spread of technology and the increase of ageing population (UN Report 2019 predicts over 2 billion people aged 60 and above in the next 30 years) [BDT included older persons as a specific group within the work of the digital inclusion thematic priority, from the perspective of Ageing in the digital world](https://www.itu.int/en/ITU-D/Digital-Inclusion/Pages/ageing-in-a-digital-world/default.aspx). It designed and developed a guideline report on *Aging in a digital world –* *from vulnerable to valuable*. The report provides a holistic vision on the global ageing of the population and related socio-economic impact, while presenting the challenges and opportunities that can result from addressing and implementing appropriate policies and strategies on digital inclusion for older persons. A video tutorial on the topic of *Ageing in the digital world* was also developed and made available with captions in all UN languages ([Arabic](https://www.youtube.com/watch?v=eWjCQKBIuwE&list=PLpoIPNlF8P2Pnmu-cTQbhvGjeDnkY_bX9&index=5), [Chinese](https://www.youtube.com/watch?v=yHDbZqMkHYA&list=PLpoIPNlF8P2Pnmu-cTQbhvGjeDnkY_bX9&index=6), [English](https://www.youtube.com/watch?v=41HiCZwPN5E&list=PLpoIPNlF8P2Pnmu-cTQbhvGjeDnkY_bX9&index=2), [French](https://www.youtube.com/watch?v=oa93ig1grjo&list=PLpoIPNlF8P2Pnmu-cTQbhvGjeDnkY_bX9&index=3), [Russian](https://www.youtube.com/watch?v=Bl37CeWMi9w&list=PLpoIPNlF8P2Pnmu-cTQbhvGjeDnkY_bX9&index=7) and [Spanish](https://www.youtube.com/watch?v=M4nD2r3r-7M&list=PLpoIPNlF8P2Pnmu-cTQbhvGjeDnkY_bX9&index=4)). An free training on the topic, available through the ITU Academy and in a digitally accessible format, was developed in [English](https://academy.itu.int/training-courses/full-catalogue/icts-better-ageing-and-livelihood-digital-landscape), [French](https://academy.itu.int/training-courses/full-catalogue/les-tic-pour-mieux-vieillir-et-garantir-de-meilleures-conditions-dexistence-dans-le-paysage) and [Spanish](https://academy.itu.int/training-courses/full-catalogue/las-tics-para-tener-un-mejor-envejecimiento-en-el-entorno-digital), in 2021.

The ITU contributed to the UN Decade of Healthy Aging work, and jointly with WHO, UNDES and UN Women developed a policy brief on the social isolation and loneliness faced by older persons, and highlighting the role that technology can play to address this challenge.

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| **Regional Initiatives**  Africa region   * Awareness was raised to leverage regional capacity on ICT accessibility in several regional meetings, including the Inclusive Conference in Africa (2020, online) and a number of on-line trainings in ICT Accessibility and Web Accessibility were delivered in French 2020; * In 2021, five regional workshops were delivered in English and French to ITU members and stakeholders to strengthen policy makers’ regional capacity in ICT accessibility and to teach them how to develop in-country self-assessments to further monitor implementation; * In 2021, an ITU regional assessment and a report on ICT accessibility for the Africa region were delivered, with related capacity building workshops;   Americas region   * Accessible Americas – ICT for All knowledge development platforms were held in 2018, 2019 and 2020, raising the awareness of over 700 regional policy makers, including ITU members and stakeholders; * The 8th edition 2021 of the “Accessible Americas – ICT for ALL”, hosted by Cuba’s Ministry of Communication, was attended by over 250 participants. It included 14 interactive sessions on different topics related to ICT accessibility. A major focus was on the impact of COVID-19 and the need to ensure that ICTs are accessible and available to all, in line with the objective of the 2030 Agenda, the UN Convention of the Rights of Persons with Disabilities and the ITU strategic goal that calls for a digitally accessible environment for persons with disabilities in all countries by 2023. * In 2021, a capacity building training on the topic of “ICT Accessibility: the key towards digital inclusion for ALL” was developed to address the needs of the Americas region. The training strengthened participants’ knowledge on ICT accessibility topics and built regional capacity in the area of ICT accessibility, including by training policy and decision makers on developing inclusive digital environments and societies in their countries. The key objective of the event was to identify appropriate ICT accessibility policies, strategies and good practices to achieve sustainable solutions and leverage national and regional knowledge in building accessible environments and communities. * The Web Accessibility “Internet for @ll” educational programme was implemented in Guyana in 2020, allowing the Guyana Government to ensure that all its public websites are accessible, and to acquire capabilities in web accessibility; * ICT accessibility trainings were delivered face to face or on-line to about 400 persons, of which over 300 validated their knowledge and obtained ITU certification on the topic; * In 2020, ITU delivered equipment to assist visually impaired persons in Dominica; * Between 2018 and 2021, over one thousand Indigenous representatives benefited from ITU’s indigenous knowledge development programme, composed of tutor led on-line and blended trainings aiming at leveraging indigenous people’s digital skills through which ITU is able to support the social and economic development and self-sustainability of indigenous communities.   Arab States region   * Assistance was provided to Egypt, Sudan and Iraq, to formulate their national ICT accessibility policy; * Over 90 partners contributed to the annual Digital Inclusion Week, organized in partnership with UNESCO in 2018, 2019, 2020, and 2021. The week included capacity building and awareness raising activities in addition to challenges on a variety of themes pertaining to ICT accessibility for persons with disabilities, digital financial inclusion, gender and youth; * A face to face “Train the trainers” was developed and customized for the Arab Region on “Accessible Digital Content and Remediation for the stakeholders delivering digital financial services” and delivered to policy makers in Cairo, Egypt, in 2018;   Asia-Pacific region   * An ICT Accessibility Assessment for Asia and Pacific Region was developed in 2020, including on-line trainings in ICT accessibility, web accessibility and in inclusive digital communication; * Awareness on ICT accessibility was raised during regional events on the topic of accessibility, including the event on *Digital Resilience for Guaranteeing an Inclusive Society* organized by UNITAR CIFAL in 2020; * More than 80 events were held in the region to celebrate *Girls in ICT* Day. In Thailand, for example, girls and young women were trained on Agritech and Entrepreneurship in partnership with the government, UN agencies, academia, and industry; * In 2021, nearly 1400 girls and young women participated in the *Girls in ICT* Day celebrations and benefitted from the skills training programmes in Bangladesh, Indonesia, Malaysia, Pakistan and Thailand. The celebrations and programmes were organized in close collaboration with the governments, UNCTs, private sector and academia. * As part of promoting school connectivity an ITU-FCDO project is being implemented in Indonesia focusing on the fundamentals of school connectivity, namely policy and regulatory landscape assessment, framework building, school connectivity interactive maps and sustainable business process and financing. Findings from the project will be shared with national stakeholders.   CIS region   * Targeted assistance was delivered to Kyrgyzstan to build capacity of informatics teachers in rural and remote areas of the country; Armenia received assistance to support their virtual reality/augmented reality lab in Echmiadzin; * The ICT accessibility overview and regional baseline assessment for the CIS region was developedand finalized in 2021. This assessment provided ITU members from the CIS region with an overview of the existing regional and national laws, policies and strategies, and to understand implementation and impact levels; * Two online courses on Web Accessibility and ICT Accessibility were developed in the Russian language and are available on the ITU Academy platform. * In 2021, ITU, jointly with IT Park Uzbekistan and the support of the Ministry for Development of Information Technologies and Communications of Uzbekistan, finalized the implementation a project on the creation of an IT training centre for young people with deafness and hearing loss in Uzbekistan. Partners developed technical requirements for government information portals in order to create web-accessibility for people with special needs and piloted them with two government portals. * Between 2018 and 2021, ITU continued to support the enhancement of specialized centres for children with disabilities in Belarus (two centres in Minsk and Vitebsk under the Belarus State Academy of Communication) and in Kyrgyzstan (one centre in Bishkek under the Institute of Electronics and Telecommunications). * In September 2021, experts from the Specialized Training Centre for persons with disabilities in Bishkek and teachers from the Institute of Electronics and Telecommunications held an advanced training course for secondary IT schools teachers in Bishkek. The course focused on a methodology to teach people with disabilities how to use telecommunication/ICT and adaptive technologies. These courses are contributing to developing inclusive education in the country. * In November 2021, over 70 representatives from Azerbaijan, Armenia, Kyrgyzstan, Russia, Turkmenistan, and Uzbekistan met in a two-day regional workshop on "Experiences from teaching information and communication technologies to persons with hearing impairments", organized by the Belarusian State Academy of Communications. Organized by the BDT, and with the support of the Ministry of Communications and Informatization of the Republic of Belarus, the workshop discussed issues related to ensuring the rights to education, employment and social adaptation for people with disabilities and especially children, and provided recommendations on future actions.   Europe region   * Together with UN Women, a 2021 regional study on *Digitally Empowered Generation Equality: Women, Girls and ICT in the context of COVID-19* was carried out in selected countries, leading towards targeting specific gaps in the region through projects and technical assistance; * **Funded by the EU Horizon 2020 Framework Programme, the EQUALS-EU initiative was launched in 2021, with the aim of building capacity in gender-inclusive innovation in Europe and partner countries worldwide with an ambitious and value-driven agenda;** * The joint ITU and European Commission *Accessible Europe* initiative has attracted all relevant stakeholders from the EU and non-EU countries, providing a unique platform for sharing experiences, fostering innovation, and facilitating technical assistance to countries in need; * The Accessible Europe – ICT for all knowledge development platforms were held in 2018, 2019, 2020, and 2021, raising awareness and leveraging capacity in implementing ICT accessibility as a key enabler to build accessible environments and communities to over 2 000 regional policy makers and stakeholders; * A number of resources were developed and/or provided to support ITU members in the implementation of ICT accessibility, and a self-paced online training on ICT accessibility was promoted across the region with the engagement of over 200 stakeholders; * A regional competition on digital innovative solutions for accessible Europe was organized in 2019, 2020, and 2021. During the last edition, ITU received 97 submissions from 29 different countries and the winners received a special recognition of Accessible Europe by ITU for their achievements. They will be included in the ITU Smart Incubator's capacity building program, becoming active participants in the policy discourse, standardization, and programming processes of ITU. A number of papers on ICT accessibility were presented to advance the implementation of the work in the field of artificial intelligence, broadcasting, standards and procurement; * An ICT Accessibility Assessment for the Europe Region was developed to show the progress made and to identifying the gaps to be addressed by the stakeholders to achieve ITU's Target 2.9, on accessibility; * Assistance was delivered to Serbia to develop their national assessment on ICT accessibility. |

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| STUDY GROUPS  ITU-D Study Group Question 7/1 “Access to telecommunication/ICT services by persons with disabilities and other persons with specific needs” is a key platform where ITU-D Member States and Sector Members work together towards implementing the ITU Target 2.9 that calls on enabling accessible environments for all people, including persons with disabilities in all countries by 2023. Through the collaborative efforts of all ITU members and stakeholders, the Question 7/1 work for the 2018-2022 study period plan was fully achieved as reflected in [its final report](https://www.itu.int/hub/publication/d-stg-sg01-07-5-2021/) which analysed 102 contributions submitted by ITU-D members. This report was launched in July 2021, during the [ITU Emerging Technologies week](https://www.itu.int/en/ITU-D/Conferences/ET/2021/Pages/About.aspx) and is available for free public download in all official UN languages. It is complemented by an [insightful video clip](https://youtu.be/g9_YnkTfPyI) on inclusive connectivity.  A dedicated knowledge development session for ITU-D SG1 Rapporteur Group participants was held by ITU in October 2019 to leverage understanding of key definitions and trends related to ICT accessibility policies and strategies.  In response to COVID-19 the I[TU-D study groups – Reflections on COVID-19](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/covid19/webinars/1stSeries.aspx) webinars were held in 2020, followed by a webinar on *Digital accessibility during COVID-19 and recovery period: An imperative to ensure inclusive societies in the digital world*. Speakers analysed the importance of ICT accessibility implementation and the related impact of COVID-19 on the lives of people with disabilities. Based on discussions held during the webinar, an [*ITU News* article](https://www.itu.int/hub/2020/06/the-need-for-increased-digital-accessibility-during-covid-19-and-beyond/) on the need for increased digital accessibility during COVID-19 and beyond was issued in June 2020. |

## 4. Digital innovation ecosystems: Accelerating digital transformation by nurturing entrepreneurship-driven innovation and competitive digital ecosystems

### Innovation challenges

The [innovation challenges](https://www.itu.int/en/ITU-D/Innovation/Pages/ITU-Innovation-Challenges.aspx) served as an open platform for people to present their ideas and projects, which can contribute to the digital transformation of individuals, communities and society through innovation, a life-[changing experience](https://news.itu.int/itu-innovations-challenges-a-life-changing-experience/) for many of the participants. Through [cocreate.itu.int](https://cocreate.itu.int/), the [2019 edition](https://www.itu.int/en/ITU-D/Innovation/Documents/YILF%202019%20Outcome%20Report%20.pdf) attracted over 140 projects and co-creations from 1 200 people from 400 cities. One of the 2019 winners from South Africa, a Durban-based entrepreneurial technology company, was recognized for excellence at ITU Telecom World 2019, Budapest, Hungary. The company received USD 1.5 million to replicate its work in other towns in the Durban area and received commitments of almost USD 10 million for “Wholesale Financing” to commercialize its innovations.

The 2020 ITU Innovation Challenges was the second edition of this competition and was organized in partnership with [EQUALS](https://www.equalsintech.org/) and [INPUT Hungary](http://foreign.inputprogram.com/?lang=en). Over 60 selected winners from both editions went through boot camps [to refine and support their projects](https://news.itu.int/itu-innovation-challenges-ugandan-tech-solution-helps-deliver-clean-water-for-all/).

In 2021, three challenges were conducted: the Global South COVID-19 digital innovation challenge with UNOSSC, the generation connect video pitch challenge with Generation Connect and the Youth Africa innovation challenge in partnership with the African Telecommunication Union (ATU). Up to 25 winners of the Global South challenges were provided up to $25,000 seed funds and mentorship to scale-up their innovation. Similarly, in support of SDG3 and SG5, UNFPA in partnership with ITU and WIPO launched the Innovation to Empower Women and Girls Challenge, where 10 winners were provided grants up to 60 000 UDS to scale their solutions through an ecosystem approach. These concrete examples of challenges inspired innovators and support them in their journey to support achievement of the SDGs. In addition, BDT launched a mentorship network for digital innovation ecosystem development in partnership with UNOSSC, to support the scale-up of digital innovation using South-South and Triangular cooperation. The first cohorts are supported the various challenges in 2021.

### Innovation forums and knowledge sharing

The ITU [Innovation Forums](https://www.itu.int/en/ITU-D/Innovation/Pages/Global-Innovation-Forum.aspx) empowered participants by sharing insights, relevant case studies and providing networking opportunities with a community of practice to understand how to mainstream sustainable ecosystems that accelerate digital transformation.​ Young ICT Leaders Forums were held in [2018](https://www.itu.int/en/ITU-D/Innovation/Documents/Young%20ICT%20LEdaers%27%20Forum%202018%20%20Busan%20-Report.pdf) and [2019](https://www.itu.int/en/ITU-D/Innovation/Documents/YILF%202019%20Outcome%20Report%20.pdf) in Busan, Republic of Korea, offering a space for youth change-makers in ICTs to network, connect, and enhance their innovative ideas to create smart communities. In 2019, through the regional innovation forums for the Africa region and the Arab States region (held in Brazzaville and Cairo, respectively), policy-makers, academics, innovators, and ecosystem builders from 16 countries discussed how to develop agile and collaborative ecosystems conducive to digital innovation.

The first edition of the Global Innovation Forum (GIF) was held in 2019 as the [Global Ecosystem programme](https://www.itu.int/itu-d/sites/innovation/) during ITU Telecom Budapest, Hungary. The second edition, held virtually in 2020, included regional perspectives for five regions (Africa, Americas, Arab States, Asia and the Pacific and Europe). [GIF2020](https://www.itu.int/en/ITU-D/Innovation/Pages/2020-ITU-Global-Innovation-Forum.aspx) highlighted the importance of entrepreneurship-driven innovation and digital ecosystems in the context of a global pandemic. It brought together 175 experts and 700 participants to mainstream sustainable digital innovation.

ITU also organized innovation sessions at the WSIS Forums in 2018, 2019, and 2020 to discuss technology trends accelerating digital transformation, national experience sharing, and an innovation culture to accelerate achievement of the SDGs. The [third edition of the Global Innovation Forum](https://www.itu.int/en/ITU-D/Innovation/Pages/2021-ITU-Global-Innovation-Forum.aspx) was held in October 2021 , virtually, with participation from over 800 attendees. The session explored the role of entrepreneurship-driven innovation in future proofing communities against current and future pandemics.

### Innovation and ecosystem capacity development

Innovation and ecosystem capacity development builds stakeholders' capabilities in innovation and entrepreneurship, enabling them to assess the systemic issues of digital ecosystems and help them develop targeted intervention to make them sustainable and competitive. In 2018 and 2019, over 100 policy-makers and ecosystem champions were trained with knowledge, skills and tools on strengthening their own digital innovation environment. This was done through capacity building efforts at key events and through a [curriculum on the ITU academy](https://www.itu.int/en/ITU-D/Innovation/Pages/Digital-Innovation-Ecosystem-Courses.aspx), over 100 policy-makers and ecosystem champions were trained with knowledge, skills and tools on strengthening their own digital innovation environment. In 2020, building on the ITU innovation toolkit series, a new [toolkit for developing sustainable ICT-centric innovation ecosystem projects](https://www.itu.int/dms_pub/itu-d/opb/inno/D-INNO-TOOLKIT.2-2020-PDF-E.pdf) was launched. This toolkit included additional features and insights to allow stakeholders to diagnose and develop flagship projects that effectively nurture ICT-centric innovation within digital ecosystems. In 2020, an [online curriculum](https://www.itu.int/en/ITU-D/Innovation/Pages/Digital-Innovation-Ecosystem-Courses.aspx), with an initial set of four courses, was developed and piloted through the ITU Academy. Over 90 people from 60 countries were trained with these new online instructor-led courses. Additional online content development was developed through partnerships with other organizations and synergies with other ongoing projects within ITU. In 2021, BDT expanded its basic content on ecosystem development to six languages. BDT partnered with SMART Africa and other organizations to extend the curriculum available with new contents and targeting specific stakeholders at the regional and national level. These courses resulted in over 100 people trained from over 50 countries in 2021. Six regional good practices “accelerating innovation, entrepreneurship and digital transformation” were generated and published. Each report showcased how digital transformation can be accelerated by innovative practices nurturing entrepreneurship-driven innovation that creates economic development.

### Ecosystem development strategies, roadmaps and projects

ITU helped countries obtain an accurate diagnosis of their digital innovation ecosystems' status and develop strategies to inform national policies through technical assistance. Technical assistance was provided to Mali, Montenegro, Niger, Trinidad and Tobago, Georgia, Serbia, and the Philippines to draft digital innovation profiles, which offer an ecosystem blueprint to accelerate digital transformation to leverage entrepreneurship and innovation. ITU also worked with countries to develop proven blueprints or mechanisms enabling digital innovation acceleration at the national level​. In 2021, ITU started working with South Africa in the development of African Digital Transformation Centre to help accelerate digital transformation across key sectors of the economy. Testing for the blueprint for the centre also started in 2021 and will offer additional technical assistance in the future. Finally, in 2021, a mentorship program for building innovation capacity was developed and launched.

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| **Regional Initiatives**  Africa region   * Funding was secured to establish the first [digital transformation ecosystem accelerator](https://www.itu.int/en/ITU-D/Innovation/Pages/Digital-Transformation-Accelerators.aspx), also known as the African Digital Transformation Centre for South Africa; its blueprint was piloted and tested to be shared with other countries. The blueprint provides a framework, tools and standard operating procedures (SOPs) to improve a country’s innovation capacity at the national level and uses an ecosystem approach to build a sustainable innovation environment to address national ambition. * In 2020, funding was secured for a project to nurture digital innovation ecosystem that accelerate youth resilience and empowerment in Benin; * Through extensive consultative processes with multi-stakeholders from academia, entrepreneurs, entrepreneurial support networks, financiers, public and private sectors, ITU provided technical assistance for the development of digital innovation profiles for Mali and Niger; * A report on *Accelerating innovation, entrepreneurship and digital transformation in Africa* region was delivered in 2021; * The [ICT-centric innovation ecosystem country review for Kenya](https://www.itu.int/en/ITU-D/Innovation/Documents/Publications/Kenya%20Country%20Review%20-%20ICT%20centric%20Innovation%202019.pdf), published in 2019, offered a comprehensive analysis and recommendations on how to include innovation and digital entrepreneurship policies and programmes in future ICT policies; * In October 2019, several public and private organizations, universities, and research institutions in the Republic of the Congo received trainings on building innovation and entrepreneurship ecosystems; * In 2021, digital innovation ecosystem trainings started, in partnership with the Smart Africa Secretariat. This six-session curriculum was designed to empower policy makers, academics, innovators and ecosystem-builders who wish to build thriving entrepreneurial communities that can navigate technological revolutions and create competitive ICT industries. Over 80 participants were accepted in the program and started in2021.   Americas region   * The [Americas ICT Innovation Week](https://www.itu.int/en/ITU-D/Regional-Presence/Americas/Documents/EVENTS/2019/24013/Practical%20Information%20Innovacion%20Uy2019_En.pdf), under the theme of *smart rural communities* was organized in Uruguay in 2019. It discussed the adoption and use of new technologies to create a sound and responsible agriculture sector to enable future smart rural communities; * An online training course on the role of ICT for smart sustainable cities was provided to the Bahamas, Barbados, Guyana, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago. This initiative was implemented in partnership with CITEL/OAS; * A 2018 workshop was held in the Caribbean on 5G, IoT, m-Payment, emerging technologies, eco-systems, and regulation. * In 2021, ITU assisted Trinidad and Tobago in the development of a country innovation review to inform national policies.   Arab States region   * In direct response to the expected results of the ITU Regional Initiatives, a series of actions were undertaken during the period of 2018-2021 with the aim of strengthening capacities of the Membership in field of direct assistance supporting development of ICT-centric innovation ecosystems and capacity development and community building; * Incubator managers and other ecosystem stakeholders in Djibouti and Mauritania were equipped with the methodology and tools to support growth and entrepreneurship. The main principles and good practices of business incubation were shared and discussed; * Capacity building sessions on building innovation and entrepreneurship ecosystems were provided to a number of public and private organizations, universities, and research institutions in Egypt; * Regional challenges were organized with an array of partners, including UNESCO, UNDP, UNICEF, UNTIL, WHO, Etisalat Egypt, and GSMA. The first challenge in 2019 called *decoding health challenge* focused on promoting innovation in the use of big data for health. The second challenge in 2020 called *AI for Development* focused on promoting AI to achieve the SDGs. In both challenges 4 winners were selected; * The Arab Innovation & Entrepreneurship network (AIEN), previously ARTECNET, was launched to establish a network for incubators and technology parks in the Arab region: The network involving 35 incubators, technoparcs, universities and other innovation ecosystem stakeholders, was established to promote partnerships and collaboration between them; * An online training on incubators management was offered to incubators staff in the region in 2021, in English, French and Arabic; * The online platform *aien.co* was created to foster collaboration among ecosystem stakeholders in the region; * The 5th and 6th AIEN annual meetings took place in Tunis, Tunisia, in April 2018, and December 2019, respectively; * Study-days on innovation ecosystems were organized to support entrepreneurship in Tunisia, in November 2018; * The ITU Regional Workshop on Bridging the Digital Innovation Divide took place in Cairo, Egypt, in October 2019; * The ITU Regional Innovation Forum for the Arab Region took place in October 2020 with the theme focusing on *mainstreaming competitive digital innovation ecosystems in the age of COVID-19*; in October 2021 the same Forum was organized with the theme on *building partnership to mainstream entrepreneurship*; * In 2021, technical assistance on the topic of digital innovation profiles and ecosystem assessment was provided to Oman; * In December 2021, BDT published the report on “Regional good practices - Accelerating innovation entrepreneurship and digital transformation in the Arab States region”.   Asia-Pacific region   * A regional report on the status of [digital innovation and good practices in the Asia-Pacific region](https://www.itu.int/hub/publication/D-INNO-GOOD_PRACT.01-2021/) was published in 2021; * ITU is assisting the Philippines in drafting a digital innovation profile to inform national policies. Interviews were conducted during 2021, and the first draft was provided to the Philippines in December 2021; * In collaboration with the Government of India, ITU started a new series of information sessions on digital innovation. Launched at the RPM-ASP in March 2021, the first sessions on India Stack and on revolutionising digital financial services, organized in collaboration with TSB, ITU members and with focus on ITU’s initiative, FiGi, took place in September 2021. A third session was held on in December 2021, on Fintech advancements and 5G. * The Regional Innovation Forum for Asia and the Pacific was held in December 2021, with 100 participants attending. Panellists shared stories of good practices and countries’ readiness in nurturing digital innovation in national development agendas, especially in the e-commerce and digital trade innovation ecosystem. It also mainstreamed the voices of innovators in this discussion, including noting the stories of innovation from the frontlines.   Europe region   * The Digital Innovation Profile for Montenegro was finalized in preparation for a national project; * The Digital Innovation Profiles for Georgia and Serbia were finalized, building solid foundations for the national strategy fostering digital innovation in specific sectors; * The 2019, 2020 and 2021 Regional Innovation Forums and 2021 Publication on [Regional Good Practices on Digital Innovation Ecosystems in Europ](https://www.itu.int/hub/publication/d-inno-good_pract-03-2021/)e built human capacities and facilitated the exchange of practices, while fostering partnerships in the field of ICT centric innovation ecosystems. |

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| STUDY GROUPS  The *ICT Innovation Week* report contributed to the work of the ITU-D Study Group 2 ([Question 1/2](https://www.itu.int/net4/ITU-D/CDS/sg/rgqlist.asp?lg=1&sp=2018&rgq=D18-SG02-RGQ01.2&stg=2) on *Creating smart cities and society: Employing information and communication technologies for sustainable social and economic development*) rapporteur group meeting. |

## 5. Digital services and applications: Creating transformative digital strategies and application services

### Digital Government

ITU in collaboration with Estonia, GIZ/Germany and the Digital Impact Alliance (DIAL) have jointly launched the [GovStack initiative](http://www.govstack.global), which is an effort to accelerate governments’ digitalization and transformation towards the attainment of the SDGs. The initiative is an expert community-driven multi-stakeholder effort aimed at assisting countries to build a shared “Digital Government Services Infrastructure” or a “Government Technology Stack” that is constituted of a set of reusable common foundational digital capabilities and services, also called building blocks. These include digital ID, information exchange, payments gateway, registrations, security, etc. that can be used by the whole-of-government through any government agency or department to build new government digital services without having to design, test and operate the underlying systems and infrastructure themselves. This will reduce the time and effort needed to introduce new green and sustainable digital services that could be scaled up and upgraded in a more agile, accelerated and cost-effective manner. The initiative is developing minimum requirements and technical specifications for a set of building blocks and will create a sandbox environment to demonstrate an example or model of a digital government platform as a mean for capacity development and knowledge transfer.

Additionally, the initiative will be working with the Horn of Africa (HoA) initiative to support selected HoA countries to design and develop a whole-of-government digital government services platform (GovStack), which will support the delivery of high-priority digital services to all citizens in an effort to bridge the digital gap.

### Scaling up digital health

The impact of the ITU-WHO *Be He@lthy, Be Mobile* Initiative continues to grow, now covering 11 countries to tackle issues as diverse as cervical cancer, diabetes, and tobacco use. More than 3.5 million people have benefited from this*Be He@lthy, Be Mobile* initiative and deliverables. An additional USD 1.8 million were raised from three new partners (Roche, Discovery/Vitality, Santen) and continued support was provided to Egypt, India, Philippines, Senegal, Tunisia, Burkina Faso and Sudan.

In 2018, ITU, together with WHO Africa Office and Smart Africa, co-organized a Digital Health Hub on the occasion of the Transform Africa Summit. The Hub featured a number of policy dialogues and best practice for digital health implementation in the Africa region. BDT published a series of Handbook on [mTB-Tobacco](https://www.itu.int/en/ITU-D/ICT-Applications/Documents/Handbooks-BeHealthy-BeMobile/BHBM-mTB-Tobacco.pdf). Additionally, ITU and WHO contributed to the successful organization of CIMSA (International Conference of Ministers of Health and Ministers of Digital Economy for Healthcare Security in Africa) in Cotonou, Benin, in June 2018. The conference created synergy between ICTs and health sectors to promote e-health for better healthcare coverage in Africa.

In 2018, in collaboration with the Pan American Health Organization (PAHO), BDT provided assistance to Guyana through the development of an e-health national framework. This included the development of a national e-health vision document, a national e-health action plan, a national monitoring framework proposal, and an assessment on the application of the e-health toolkit in Guyana.

In 2020, following the ITU’s m-Diabetes project launch in Senegal, ITU and WHO set up a second project, focusing on the automatic detection of diabetic retinopathy in Senegal. This was done in partnership with WHO, and in the framework of the "Be Healthy, Be Mobile" global programme. The Government of Senegal, through the Ministry of Health, was provided with two digital retinographs to help support the national healthcare system in the early diagnosis of diabetic retinopathy.

In December 2021, an Infodemic management campaign was launched in the Caribbean to reach around 150 000 people with information and guidance developed by PAHO to help mitigate the risks arising from misinformation and stress related to COVID-19. Additionally, a report entitled: *Digital tools and strategies in COVID-19 infodemic response: Case studies and discussion* was launched to provide insights into the use of digital technology in the context of Infodemic management. Mis- and dis-information related to the COVID-19 pandemic have been adversely impacting public health response to the new virus, often resulting in health-harming behaviors. The joint ITU-WHO report highlights the important role that ICTs can play in managing infodemics and identifies key factors that need to be taken into account when designing and implementing digital interventions for infodemic response.

In 2021, the mDementia Handbook that provides guidance on reducing the risk of dementia using mobile technology was launched. The handbook features updated material and supported countries in implementing dementia mHealth programmes, covering both mDementiaPrevention and DementiaSupport. To address the important issue of oral diseases, which affects almost half of the world’s population, an mOralHealth implementation guide was developed. Built on many years of WHO-ITU joint experience in developing and implementing mHealth programmes in developing countries it provides a comprehensive framework for designing and rolling out mOralHealth campaigns. The guide offers practically applicable information on all key steps of a programme – from setting goals, to establishing effective governance, to selecting and adapting content, to building partnerships, to launching, promoting, and evaluating the programme.

In 2019, in collaboration with WHO, EU and the Andalusia Public Health Services SSPA, ITU established a European mHealth Knowledge Hub to collect and share national experiences on mHealth and to support countries and regions in setting up large-scale mHealth programmes to be replicated in other regions.

The mHealth Hub has:

* Operationalized the integration of mHealth innovations into the national EU health systems;
* Served as a focal point for expertise on mHealth in the European Region;
* Assisted countries in implementing mHealth strategies;
* Acted as facilitator of innovation in mHealth;
* Acted as an accelerator for the EU Digital Single Market;
* Produced Knowledge Tools for health systems and services on NCDs;
* Provided a code of ethics for mHealth data.

In 2020-2021, The mHealth Knowledge and Innovation Hub implemented the following activities:

It released the Assessment Frameworks (AFs) for mHealth apps, to:

* Explore commonalities or mutual recognition across different AFs, with regard to what they evaluate (assessment criteria)
* Guide when setting up a health apps assessment framework and evaluation process.

Twelve assessment domains were taken into account for the AF development: privacy, transparency, safety, reliability, validity, interoperability, technical stability, effectiveness, accessibility, scalability, usability and security.

The mHealth Hub was used to develop an intervention-specific mHealth programme (on type 2 diabetes) to define how the affected person could interact with the mHealth and hub services, and to match needs to services. This included matching specific needs of an mHealth Hub “client” and available mHealth solutions, balancing the value of their innovative features with the pressure for extensive validation in public health settings. Some mHealth innovations were integrated into health systems.

A compilation of different mHealth solutions that could be considered for health care systems covered around 30 topics. This included a compilation of 27 real experiences of mHealth implementations around Europe, posted on the [mHealth Hub web site](https://mhealth-hub.org/experiences-of-integration-of-mhealth-into-health-systems).

In the area of ethical backgrounds from the European mHealth Hub BDT developed:

* A quick guide of ethical issues to be considered when commissioning, providing or using a mobile health service
* An orientation tool for the provider or procurer to help make an ethical assessment of any particular mHealth tool, app or solution in terms of its capacity to adhere to the basic ethical tenets of transparency, equitable access, accountability, active and supported user engagement and respect for vulnerability.

A policy framework was developed to support countries in creating an enabling environment for mHealth solutions and to allow the cross-border flow of innovations in mHealth/digital health, covering areas such as mHealth governance models, interoperability, business models, human centred design and patient safety, infrastructure and impact assessments.

In 2020, BDT also published the [Digital Health Platform Handbook](https://www.itu.int/dms_pub/itu-d/opb/str/D-STR-E_HEALTH.10-2020-PDF-E.pdf) to assist countries with the advancement of their national digital health system, specifically through the use of a digital health platform (DHP). This digital platform provides the underlying foundation for the various digital health applications and systems used to support health and care services. It enables individual applications and systems to interoperate and work together in an integrated manner and provides a central hub, linking together disparate and unconnected systems and applications. This enables faster, more efficient and more reliable information exchange, and promotes increased access to health data across a range of applications and devices.

In 2021, the ITU Arab Regional Office contributed to a regional report produced by the WHO Eastern Mediterranean Regional Office, entitled “Regional survey for health innovations in response to the COVID-19 pandemic”. The report highlighted some of the good practice innovations in the health sector in response to the COVID-19 pandemic.

### Building smart villages and smart islands

Launched in 2019, the [Smart Village project](https://news.itu.int/leaving-no-one-behind-nigers-smart-villages-project/) to connect remote areas of Niger to the Internet was created through a collaboration between ITU and the [National Agency for Information Society (ANSI)](https://www.youtube.com/watch?v=0uYKKJg00eo) and several other organizations. The Smart Villages project is a holistic, multi-sector, and inclusive approach to improving access to essential digital services for SDGs in rural settings. It is a "gateway to rural development" through the pooling and coordination of development programs, in order to create the necessary synergy to sustain investments. It is also a whole-of-government, whole-of-society approach for SDG digital investments and rural digital transformation. Following Niger, a Smart village programme was launched in Pakistan in 2021. A pilot project in cooperation with ITU, Huawei and the Universal Service Fund (USF) of Pakistan was launched in 2021.

Building on the ITU-led Smart Villages initiative (piloted in Niger and under development in Pakistan), in 2021, ITU launched the Smart Islands programme focused on small island developing states, with a focus on Asia and the Pacific.

In addition, an assessment study was complete in Sudan in 2021, to provide a complete overview of the ICT sector and economy as a step towards formulating a smart villages project in Sudan.

In 2021, BDT, in collaboration with the Ministry of Communication and Information Technology of Egypt, successfully completed a project on smart groundwater management that focused on showcasing the use of IoTs to manage scarce water resources.

### Building capacity on digital services

BDT, in collaboration with the WHO Africa regional office, developed a curriculum and provided training on digital health, in particular to scale up digital health services in countries in the region. This initiative brought together representatives from ministries of health and ICT and allowed them to share experiences and lessons learned from their country implementation of digital health services.

In 2019, the ITU Regional Office for Africa participated in a workshop on digital health leadership capacity building. The workshop established a framework for an integrated digital health training programme to help developing countries identify needs, bring together providers and donors, create consistency around the digital health terminology and to prevent fragmentation of digital health initiatives.

In June 2021, the ITU Regional Office for Africa, in collaboration with the WHO Africa Regional Office and support from USAID, co-organised a technical workshop on *data revolution, health status transformation and the role of artificial intelligence (AI) for health and pandemic preparedness in the African context*. The workshop brought together policy makers, technical experts, academia, private sector, and others. Participants discussed different policy dimensions to strengthen digital health ecosystems and laid the foundation for developing and adopting innovations such as AI in the African health systems.

In 2020, BDT in collaboration with WHO, developed an online Digital Health Leadership Training course that is available on the ITU Academy. This self-paced course is designed to build capacities of a new generation of digital health leaders capable of sustaining and scaling up digital health efforts in countries. The course includes 12 modules covering a wide range of topics that digital health coordinators and leaders need to be aware of, such as the introduction to digital health, governance, strategies, policies and regulations, requirements gathering, system and architecture design, interoperability, data use, health emergencies, and innovations.

In 2019, BDT facilitated a workshop on Smart Society for Southern Africa, held in Dar es Salaam, Tanzania, to broaden the understanding of concepts, requirements and opportunities to leverage new technologies such as IoTs, AI, big data, for countries in the Southern African Development Community (SADC).

Based on the ITU/ WHO toolkit for the development of national eHealth (digital health) strategies, the ITU Arab Regional Office, together with the WHO Eastern Mediterranean Regional Office, conducted two capacity building workshops to train national and country office focal points on the toolkit (Cairo, 2017 and Beirut, 2018). Representatives from almost all countries in the region received this training and a number of countries used the toolkit to develop their own strategies or to validate existing ones.

### Collaboration with the Food and Agriculture Organization (FAO) on Digital Agriculture

ITU scaled up its collaboration with FAO, following the signature of a cooperation agreement in 2019. ITU and FAO worked together to assist several countries in developing and implementing digital agriculture strategies and roadmaps to create capacities and identify priorities for digital investments to achieve agriculture sector objectives. ITU collaborated with FAO to support rural entrepreneurship, investment and trade in Papua New Guinea and a Smart Villages initiative in Niger. Several reports under the e-agriculture in action series were co-published on digital agriculture with FAO, including on the use of digital and frontier technologies (blockchain, artificial intelligence and big data) for agriculture. In addition, ITU was invited to be a member of the advisory committee of the Digital Council for Food and Agriculture that will help governments identify and maximize the potential of digitalization and establish, expand and protect farmers’ access to digital technologies. In this context, Guyana hosted the ITU/FAO e-Agriculture Strategy Development Regional Workshop for the Caribbean in 2018, in collaboration with the Caribbean Telecommunications Union (CTU). ITU and FAO also organized an E-agriculture Solutions Forums in Asia and the Pacific in 2018 and 2020.

In February 2018, an ITU-FAO Caribbean Hackathon *#HackAgainstHunger* was organized in collaboration with the Food and Agriculture Organization (FAO) to identify and support the use of ICT innovative solutions for key challenges in the area of food and agriculture. This included two local hackathon events, in Jamaica and in Trinidad and Tobago. Jamaica won the regional event and afterwards competed in and won the WSIS Forum 2018 Special Track Global Hackathon in Geneva.

In 2020, ITU and FAO carried out a study for the development of an e-agriculture strategy in Chile. The same year, ITU and FAO developed a joint report “Status of Digital Agriculture in 18 Countries of Europe and Central Asia”. In 2021, ITU and FAO organized a contest on Digital Excellence in Digital Agriculture in Europe and Central Asia, to strengthen the culture of digital innovation in agriculture. Over 500 stakeholders were identified, and 200 stakeholders engaged through the contest. A stocktaking report listing the 171 eligible practices, as well as “Digital Excellence in Agriculture Report” focusing on the technological trends, challenges and opportunities of digital agriculture in Europe and CIS, were developed. In 2021, ITU, in collaboration with FAO applied the "[e-Agriculture Strategy Guide](https://www.itu.int/en/ITU-D/ICT-Applications/Pages/e-agriculture-strategies.aspx)" to develop National e-agriculture strategies for Costa Rica and Honduras. In addition, in the Arab region, the ITU and FAO collaborated to develop a capacity building programme to assist countries in developing their national e-Agriculture strategies based on this toolkit. A baseline study on digital agriculture in 47 countries was undertaken in collaboration with FAO, to provide the current landscape of digital agriculture in Africa and to identify possible methods to enhance digital agriculture.

### Digital Public Goods

ITU is providing guidance on adopting whole-of-government approaches for investing in shared digital infrastructure that can lead to a more rapid scale-up of digital services at less cost and greater return on investment. This includes support on how to coordinate investments to ensure that digital public goods are available to enable digital transformation for SDGs. A whole-of-government approach was outlined in the 2019 [*SDG Digital Investment Framework*](https://www.itu.int/pub/D-STR-DIGITAL.02-2019) published together with the Digital Impact Alliance (DIAL).

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| **Regional Initiatives**  Africa region   * The ITU-WHO joint project *Using digital health services to accelerate SDGs in the Africa region* was launched to support countries in making full and sustainable use of ICTs in health service delivery. This improves people’s health and increases healthy lives and well-being in the Africa region; * An e-applications development workshop was held in November 2019 to identify challenges experienced during e-application development and propose ways to bridge the gap between ideation of e-applications and advancement to market entry in the Africa region; * In 2020, a baseline assessment was prepared to facilitate digital financial inclusion and digital government services for Ethiopia. The assessment highlights the need for enhanced digital connectivity, capacity development and policy strengthening as a fundamental element to digital transformation; * Within the framework of the African Continental Free Trade Area (AfCFTA), a baseline assessment to support cross border digital payments was done; * In collaboration with FAO, a Study on Digital Agriculture was undertaken to assess the digital agriculture environment in Africa and suggest possible areas of improvement; * Building on the BDT, Estonia, GIZ (Germany), and Digital Impact Alliance collaboration to accelerate national digital transformation and the digitalization of government services for the achievement of SDGs by 2030, the EU’s Directorate-General for International Partnerships (DG INTPA) and the Digital for Development (D4D) Hub teamed up with the Horn of Africa initiative to develop a digital government strategy and an integrated digital government services platform with the concerned countries.   Americas region   * In 2018, ITU collaborated with WHO to produce the “Guyana National eHealth Strategy”, using the WHO-ITU toolkit for that purpose; * In 2019, the Americas ICT Innovation Week, under the theme *smart rural communities* was organized in Uruguay. It discussed the adoption and use of new technologies to create a responsible agriculture sector to enable future smart rural communities; * In 2019, a proposal for a National e-Agriculture Plan for Chile was developed; * In 2021, in cooperation with FAO, BDT started to develop a proposal for a National e-Agriculture Strategy for Costa Rica and Honduras.   Asia-Pacific region   * In partnership with FAO, BDT supported the development of the e-agriculture strategy in Cambodia, Mongolia, and East and West Sepik provinces of Papua New Guinea. This included the development of e-agriculture mobile applications in Papua New Guinea, an assessment of e-agriculture in Bangladesh; and human capacity building in Papua New Guinea and Mongolia. It further resulted in a joint UN project, led by FAO, on supporting agriculture in areas of Papua New Guinea, and the implementation of the project to “Support to Rural Entrepreneurship, Investment and Trade in Papua New Guinea (STREIT PNG)”; * In the area of digital government, ITU assisted Papua New Guinea and Vanuatu in strengthening their digital government frameworks to adopt a whole-of-government approach. BDT assisted Bhutan in developing a digital government dashboard for Prime Minister's Office and in Tonga assessed the government’s data centre in 2021; * In 2021, BDT, in partnership with FAO, continued to raise awareness on the application of digital technology in agriculture through the E-agriculture in Action case study [series](http://series) (e.g. [Big Data For Agriculture](https://www.itu.int/en/ITU-D/ICT-Applications/Documents/Publications/Big%20Data%20for%20Agriculture.pdf), *Artificial Intelligence for Agriculture, Blockchain for Agriculture etc.);* * During the bi-annual E-agriculture Solutions Forum 2018 and Digital Agriculture Solutions Forum 2020 BDT shared experiences on the use of innovative technologies to meet agricultural goals; * In June 2021, the Smart Village initiative was launched with the Ministry of Information Technology and Telecommunication, Pakistan’s Universal Service Fund and Huawei in Pakistan in June 2021. The Internet Society, private sector and UN agencies supported the initiative to ensure community engagement and gender mainstreaming, while linking to various sectoral digital services; * In 2021, BDT and Government of Vanuatu launched the Smart Islands Programme in Vanuatu, which was adopted by the Government and attracted partners such as the Australian Department of Infrastructure, Transport, Regional Development and Communications and UNCDF. More than ten ITU Members from Asia and the Pacific (Fiji, Kiribati, Maldives, Federated States of Micronesia, Republic of Marshall Islands, Nauru, Papua New Guinea, Samoa, Tonga, Tuvalu and Vanuatu) expressed interest in the programme. BDT organized a briefing to the Pacific Ambassadors “Smart Islands: Bringing Digital Experiences to Pacific Communities Supporting the COVID-19 Socio Economic Recovery” in New York in September 2021, together with UNOPS and UNOHRLLS; * In 2021, ITU also worked with Pacific UN Country Teams to develop two joint UN SDG fund programmes, covering digital policies and smart islands for 10 countries in the Pacific; * In Thailand, ITU, in coordination with the UN Resident Coordinator’s Office, UNESCO and UNICEF, undertook a study to examine the state of the digital divide in Thailand and to identify key infrastructural factors affecting access to and adoption of e-learning and other digital technologies in school in 2020. The study provided insights for policy makers in bridging the digital divide in schools in Thailand.   CIS region   * ITU developed a specialized multimedia training course in Russian on e-health for doctors and ICT staff working with medical equipment; in addition, it provided a series of online country training sessions for Belarus, Kazakhstan, Kyrgyzstan, Ukraine, and Uzbekistan with 128 specialists trained in total; * ITU developed technical recommendations on the application of modern technical solutions in the design of e-health systems, including telemedicine networks; * Between 2018 and 2021, ITU worked on a regional Startup Central Eurasia platform, which started as a soft coordination mechanism between ICT parks and ecosystems in the CIS and neighbouring countries. By 2021, this emerged into a full-scale online platform designed to foster the development of startups and SMEs working on digital health, agriculture and smart cities. The 2021 annual Startup Central Eurasia event attracted 350 participants, representing startups, IT parks, venture investors, and government agencies from 16 countries from the CIS region and neighbouring countries; * In 2020/2021 ITU published a Startup Ecosystem Guide and delivered a series of online trainings focused on facilitating the entrance of startups to the markets of neighbouring countries; over 70 startups from Armenia, Kyrgyzstan, Tajikistan, and Uzbekistan benefited from this training. In June 2021, ITU organized a “Venture Day” event to help start-ups raise funds, with 73 startups from 8 countries participating; * Smart sustainable cities emerged as one of the priority areas for ITU Member States in the CIS region, with Belarus hosting an annual flagship event, the Regional Forum on Smart and Sustainable Cities, a joint ITU-D and ITU-T event. In 2018, ITU, together with the Government of Moscow carried out a case study on “Implementing ITU-T International Standards to Shape Smart Sustainable Cities: The case of Moscow” and started working towards a joint project on smart cities benchmarking; * ITU, jointly with the Ministry of Communication and Informatization of Belarus, developed a pilot project to create a smart school in Polotsk, a historic city in Belarus. The aim of the pilot was to showcase how smart city technologies could be deployed in a small town and contribute to bridging the digital divide.   Europe region   * A workshop on enhancing human life using e-services was held in Geneva. It discussed emerging technologies and services, including AI and ICT accessibility; * Cooperation between ITU and FAO was strengthened through a special session on digital agriculture strategies that was organized at ITU Telecom World 2019, in Hungary; * A knowledge exchange event on fostering start-up ecosystems in the field of e-services was held in Prague, Czech Republic; * A regional report on the status of digital agriculture in 18 countries of Europe and Central Asia reviewed the progress made and identified countries in need of technical support; * BDT supported FAO in assisting Albania, Turkey, and Bosnia and Herzegovina in the development of the national strategy for digital agriculture; * In 2021, ITU and FAO developed the guidebook on digital agriculture for accession countries; * BDT and FAO organized the contest on Digital Excellence in Digital Agriculture in Europe and Central Asia, to strengthened the culture of digital innovation in agriculture. Over 500 stakeholders were identified, and 200 stakeholders engaged through the contest. A stocktaking report listing the 171 eligible practices, as well as a report on “Digital Excellence in Agriculture” focusing on the technological trends, challenges and opportunities of digital agriculture in Europe and CIS was developed; * The ITU/WHO/EU mHealth Innovation and Knowledge project served as the key platform to collect and share national experiences on mHealth and to support countries and regions in setting up large-scale mHealth programmes; * Since 2020 the GOVSTACK initiative of ITU, Estonia, Germany and Dial provided the main vehicle to assist countries in accelerating national digital transformation and the digitalization of government services for the achievement of Sustainable Development Goals by 2030. |

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| STUDY GROUPS  In 2019, an [annual deliverable on a holistic approach to creating smart societies](https://www.itu.int/oth/D0717000002/) ([Question 1/2](https://www.itu.int/net4/ITU-D/CDS/sg/rgqlist.asp?lg=1&sp=2018&rgq=D18-SG02-RGQ01.2&stg=2): *Creating smart cities and society: Employing information and communication technologies for sustainable social and economic development*) was released. An example of the architecture of a smart city was proposed based on the core design concepts, and a summary of selected country case studies on smart cities was presented. Another deliverable on “Vertical applications in smart cities” was released, presenting vertical applications and services that are based on a common horizontal layer to allow integrity and effective interplay among different sectors of smart cities.  Several events were organized in conjunction with ITU-D Study Group 2 (Question 2/2 *Telecommunications/ICTs for eHealth*). This included a [workshop on new communication technologies for e-health and socio-economic issues](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/session-Q2-2-oct19.aspx) held in October 2019, which explored examples of new technologies for e-health and discussed challenges for large-scale adoption. A [webinar on new e-health solutions to combat pandemics with ICT](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/Webinars/2020/Q2-2-july06.aspx), held in July 2020, explored use cases for new digital health solutions and made specific recommendations. The content exchanged and lessons learned during these events was used as input to [the final report of Question 2/2](https://www.itu.int/en/myitu/Publications/2021/10/01/08/03/Telecommunications-and-ICTs-for-eHealth). |

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## 6. Emergency telecommunications: Disaster-resilient ICT infrastructure for reduced loss of lives and damages

### ITU guidelines, publications and reports

In March 2020, BDT organized an online workshop to launch the [global guidelines for national emergency telecommunication plans](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Documents/2020/NETP-guidelines.pdf). The guidelines assist policy-makers and national regulatory authorities in developing a clear, flexible and user-friendly national emergency telecommunication plan with a multi-stakeholder approach. It includes the development of national policies and procedures as well as a governance framework to support and enable the continued use of reliable and resilient ICT networks, services and platforms for disaster management.

In March 2020, BDT launched the [“Emergency Telecommunications Tabletop Simulation Guide”](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Documents/Publications/2020/TTX_Guide.pdf), which was co-developed with the World Food Programme’s Emergency Telecommunications Cluster (ETC). The guide assists Member States and national stakeholders working on disaster management to plan, design and conduct tabletop simulation exercises, which allow stakeholders to test and refine emergency telecommunication plans, policies and procedures. It helps countries to verify whether networks, redundant communications capacity, personnel, and other telecommunication systems are in place for an emergency response.

In the face of the global COVID-19 crisis, ITU published the 2020 “[Guide to develop a telecommunications/ ICT contingency plan for a pandemic response”](https://www.itu.int/dms_pub/itu-d/opb/hdb/D-HDB-GUIDELINES.03-2020-PDF-E.pdf). This guide focuses on telecommunications/ICT service delivery and business continuity in the specific context of a pandemic, such as COVID-19. It outlines a set of actions that countries can take to prepare for, anticipate, and be ready to respond promptly to this type of emergencies by ensuring network continuity and delivery of services. Telecommunication/ICT infrastructure include fixed, mobile, satellite, terrestrial, Wi-Fi and any other technology enabling broadband and broadcasting services.

BDT published the 2020 publication on [“Women, ICT and Emergency Telecommunications: Opportunities and Constraints”](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Documents/events/2020/Women-ICT-ET/Full-report.pdf), which was developed jointly with the World Food Programme’s ETC. The report outlines a range of factors that underscore the digital gender divide and the increased vulnerability of women and girls before, during and after disasters. It showcases good practices and examples for utilizing ICTs to advance gender equality in disaster risk management, including through the use of new and emerging technologies, and identifies priority areas for the way forward. This report was launched on in August 2020, at the WSIS High Level Dialogue on “[Women and emergency telecommunications: ensuring gender equality in building disaster resilience](https://www.itu.int/en/ITU-D/bdt-director/Pages/News.aspx?ItemID=228)”. To follow up on the improvements made on advancing gender equality in disaster management, ITU organized an online webinar on [“Promoting gender equality for the use of ICTs in disaster management"](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/Promoting-gender-equality-for-the-use-of-ICTs-in-Disaster-Management-.aspx), which took place on 8 March 2021. This event presented real experiences on how women had used technologies to fight COVID-19 and on how they have been able to contribute to disaster resilience in their communities. It discussed ways of enabling more women to have inclusive access to, and use of ICTs for saving lives. It highlighted how governments, international and national humanitarian organizations, and ICT private sector entities had incorporated a larger focus on gender and women in policy frameworks and the allocation of resources in the context of ICTs for disaster management.

A report on “[***Disruptive technologies and their use in disaster risk reduction and management***](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Documents/2019/GET_2019/Disruptive-Technologies.pdf)*"* was published during the Global Forum on Emergency Telecommunications (GET 2019), which took place in March 2019 in Balaclava, Mauritius. Developments in disruptive technologies – such as artificial intelligence (AI), the Internet of Things (IoT) and big data – and innovations in such areas as robotics and drone technology are transforming many fields and are enhancing disaster resilience and management as well as risk reduction. The report responded to requests from ITU Member States to identify relevant technologies and facilitate the sharing of best practice.

### Multi-hazard early warning systems and platforms

A multi-hazard early warning system (MHEWS) has the ability to address several hazards and/or impacts of similar or different type in situations where hazardous events may occur alone, simultaneously, cascading or cumulatively over time, and taking into account the potential interrelated effects. ITU promotes the use and development of MHEWS through awareness raising, country projects, and trainings and promotes the use of specific technologies and platforms, such as the Common Alerting Protocol (CAP), and ITU Recommendation.

In 2018, ITU built disaster preparedness by implementing a number of early warning systems in [Zambia](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/EWS_ZAMBIA.aspx), where ITU and the Zambia Information and Communications Technology Authority (ZICTA) entered into a Cooperation Agreement to co-finance a Project to allow the establishment of two Early Warning Systems (EWS) in two communities, Mbeta Island and Kasaya Village. These EWS disseminate alerts on flooding and impending disasters to these communities living close to the main river. The systems are used for public safety and facilitate exchange of information between local communities and government agencies.

As part of it work on MHEWS, ITU continues to promote the use of the Common Alerting Protocol (CAP), which has been adopted as [ITU-T Recommendation X.1303](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Documents/2020/T-REC-X.1303bis-201403-.pdf). It is a simple but general format for exchanging all-hazard emergency alerts and public warnings over all kinds of ICT networks, allowing a consistent warning message to be disseminated simultaneously over many different warning systems, thus increasing warning effectiveness while simplifying the warning task. Thus, CAP enables authorities to deliver early warnings and alerts to all people and communities at risk, and up to global scale through the use of different technologies. Between 2018 and 2021, ITU provided training on CAP to several countries and regions including the Arab States, during regional workshops that took place in [2019](https://www.itu.int/en/ITU-D/Regional-Presence/ArabStates/Pages/Events/2019/ICT4DRR/DRR.aspx) and [2020](https://www.itu.int/en/ITU-D/Regional-Presence/ArabStates/Pages/Events/2020/CAP/CAP.aspx). ITU also hosted the online [2020 Common Alerting Protocol (CAP) Implementation Workshop](https://www.preparecenter.org/activities/common-alerting-protocol-workshop-2020), which took place in September 2020.

The ITU Arab Regional Office, in collaboration with the Telecommunications Regulatory Authority (TRA) of the Sultanate of Oman organized a training workshop on the Common Alerting Protocol (CAP) that took place in July 2021. The workshop highlighted the benefits of using the Common Alerting Protocol (CAP) to enable national authorities to deliver early warnings and alerts to all people and communities at risk in a timely manner. The workshop was attended by over 110 participants from Oman’s ICTs sectors, the national disaster committee, national NGOs, meteorological organizations, the public and private sector involved in disaster management in Oman, and academia.

To further strengthen the Multi-Hazard Early Warning Systems, BDT, in 2020, partnered with the UN Office for Disaster Risk Reduction (UNDRR), the World Meteorological Organization (WMO), the Intergovernmental Oceanographic Commission (IOC) of UNESCO and the World Broadcasting Unions, to develop a project called “Media Saves Lives”. This reinforced the role and capacity of broadcast media organizations in the early warning chain by allowing them to deliver accurate and timely early warning messages before and during disasters. This included trainings to broadcasters from TV and radio stations. Bu 2021, 675 media professionals in 30 countries across 4 continents (Africa, Asia, Caribbean, Pacific) and 46 TV and radio organizations were trained on how to deliver trustful information and early warnings to people who are at risk.

In April 2021, BDT, in partnership with the International Federation of Red Cross and Red Crescent Societies and the World Meteorological Organization, launched a Call to Action on Emergency Alerting. The Call to Action was launched during an event that took place in April 2021, during the Humanitarian Partnership Weeks 2021. This call to action invites all partners to support countries in implementing and benefitting from the Common Alerting Protocol (CAP). As a follow up activity to the Call to Action on Emergency Alerting, ITU along with the International Federation of Red Cross and Red Crescent Societies (IFCR), supported the World Meteorological Organization (WMO) in establishing a CAP HelpDesk, which supports country level implementation of CAP through information, methods, and tools to promote coordination and build a community of support to scale CAP implementation worldwide. The CAP HelpDesk serves as an important contribution to WMO's Global Multi-hazard Alert System (GMAS) development, which ITU is also part of. The first workshop on the HelpDesk took place in September 2021.

### National Emergency Telecommunication Plans (NETPs)

Since 2018, and based on the [global guidelines for national emergency telecommunication plans](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Documents/2020/NETP-guidelines.pdf) (NETPs), NETPs have been delivered for the Dominican Republic, Guatemala, Bolivia, Vanuatu, Samoa, Papua New Guinea, Saint Lucia, Somalia, Sudan, Dominica, Grenada, and Ecuador. In 2021, BDT continued to provide assistance to the following countries to develop their NETPs: Afghanistan, Solomon Islands, Perú and Fiji. Several national online meetings took place to ensure that the plans were developed following the ITU guidelines and through a multi-stakeholder approach involving different organizations working on disaster management. This included the national disaster management authorities, meteorological and hydrological organizations, humanitarian entities, ICT government and private sector, academia, media, civil society, and customs authorities.

To track ITU’s Strategic Goals Target 3.5 (“By 2023, all countries should have a National Emergency Telecommunication Plan as part of their national and local disaster risk reduction strategies”) and to support countries in developing NETPs, ITU undertook several regional baseline assessments to identify the availability of national laws, regulations and policies governing emergency telecommunications. These assessments helped assess the levels of maturity and preparedness for each country in terms its resilience of the telecommunication sector and the way ITU can support the countries’ disaster risk reduction and management efforts. In 2021, three regional assessments were conducted in the Arab States, Pacific Islands and the Americas, including the Caribbean Islands.

**ITU disaster response support**

Between 2018 and 2021, ITU provided support to [several countries](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/Response.aspx) affected by natural hazards, including, the Bahamas, Mozambique, Papua New Guinea, the Solomon Islands, Tonga, Vanuatu, Zimbabwe, Fiji, Haiti and the Philippines. ITU support included the deployment of satellite telecommunication equipment and staff, to provide connectivity to help countries restore vital telecommunication links, and to support the importance of emergency telecommunication equipment. During the disasters in Fiji (2020) , Haiti (2021) and the Philippines (2021) ITU and the Emergency Telecommunications Cluster (ETC) were able to use and benefit from the [Disaster Connectivity Map](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/Disaster-Connectivity-Maps.aspx#:~:text=%E2%80%8BDisaster%20Connectivity%20Maps%20is,before%20and%20after%20a%20disaster.) (DCM) to assist planning for the response efforts and determine connectivity gaps in the impacted areas. The DCM, which is supported by GSMA, helped first responders determine the status of telecommunications network infrastructure, coverage, and performance before and after the disaster, to provide guidance on connectivity needs.

To expand ITU’s work in the area of emergency telecommunications and to support and improve coordination with the satellite and the humanitarian community, ITU joined the [Crisis Connectivity Charter (CCC)](https://news.itu.int/why-itu-is-joining-the-crisis-connectivity-charter-doreen-bogdan-martin/) in 2019 as a principal member. The CCC is a mechanism created between the satellite industry and the wider humanitarian community, to make satellite-based communications more readily available for humanitarian efforts and communities impacted in times of disaster. The Charter was developed by the EMEA Satellite Operators Association (ESOA) and the Global VSAT Forum (GVF) and their members, in coordination with the UN Office for the Coordination of Humanitarian Affairs (OCHA) and the World Food Programme’s (WFP) Emergency Telecommunications Cluster (ETC).

Responding to the increasing demand for support in delivering emergency telecommunication equipment and services when disasters strike, ITU established an internal emergency telecommunication roster of dedicated and qualified ITU staff. Thirteen ITU staff were selected and trained on the deployment and use of the BDT telecommunication equipment to allow them to support ITU’s and partners’ work on the ground, by liaising with national authorities and stakeholders on importation and licensing requirements of telecommunication equipment. Due to COVID-19, none of the roster staff were deployed in 2020 or 2021 but trainings continued.

### Capacity building

ITU continued to build capacity and raise awareness on the importance of disaster management and available ICT tools for disaster risk reduction. Several [events](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/Events.aspx) for the use of ICTs for disaster management took place between 2018 and 2021. At a global level, ITU organized the 3rd Global Forum on Emergency Telecommunications ([GET-19](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/Events/2019/GET-2019/default.aspx)), which was hosted by the Information and Communication Technologies Authority (ICTA) of Mauritius in March 2019. The theme of GET-19 was *Innovating together to save lives: using technologies in disaster management*. The Forum attracted around 180 participants from 36 Member States, representing public and private organizations including ministries, regulators, universities and research institutions, humanitarian organizations, development banks, regional disaster management organizations, telecommunication operators, ICT companies, and regional and international organizations.

Key points discussed included the importance of considering potential disaster impacts when planning new ICT infrastructure; the opportunities of technology and ICTs for disaster management; and the need to build resilient networks and interoperable systems for coordination of response efforts. GET-19 reaffirmed the need to strengthen coordination and cooperation at all levels, as well as the importance of data, trust and the need for a collective understanding of all phases of disaster management. It reinforced the principle that all actions and programmes must be people-centered. It also highlighted opportunities of investing in the preparedness phase for saving lives.

GET-19 was preceded by the one -day [Common Alerting Protocol Workshop](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/Events/2019/GET-2019/CAP-2019-Agenda.aspx), in March 2019.

Regional forums and workshops on the use of ICTs took place in the Americas region (Caribbean) in [2018](https://www.itu.int/en/ITU-D/Regional-Presence/Americas/Pages/EVENTS/2018/20584.aspx) and 2021, in [Europe and CIS in 2019,](https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Pages/Events/2019/WO/Using-ICT-to-save-lives.aspx) and in the Arab States Region in [2019](https://www.itu.int/en/ITU-D/Regional-Presence/ArabStates/Pages/Events/2019/ICT4DRR/DRR.aspx) and in [2020](https://www.itu.int/en/ITU-D/Regional-Presence/ArabStates/Pages/Events/2020/CAP/CAP.aspx). Several included a table-top simulation exercise. At the national level, Tanzania benefited from a national workshop on the use of ICTs for disaster management in [2019](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/Events/2019/Tanzania/Workshop-Role-ICTs-DRR.aspx). In collaboration with the United States Telecommunication Training Institute (USTTI) a joint public webinar on [“Building Disaster Resilience through Emergency Telecommunications”](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/Building-Disaster-Resilience-through-Emergency-Telecommunications-in-2020.aspx) was organized and took place in December 2020. ITU continued to work closely with its partner UN organizations, in particular the World Meteorological Organization (WMO) and the UN Office for Disaster Risk Reduction (UNDRR) and participated in a number of events on the use of ICTs for disaster preparedness and risk reduction.

To continue building capacity on emergency telecommunications, [three new online training modules](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/Information-session-and-virtual-launch-online-training-modules.aspx) were launched in January 2021 and are available on the ITU Academy. These modules cover the development of NETPs (based on the ITU Guidelines on NETPs), guidelines on organizing tabletop simulation exercises (based on the guide jointly developed with ETC) and information on the Tampere Convention and its benefits.

During the Emerging Technology for Connectivity week, on 6 July 2021, BDT, along with ITU-TSB’s Focus Group on [AI for Natural Disaster Management (FG-AI4NDM)](https://www.itu.int/en/ITU-T/focusgroups/ai4ndm/Pages/default.aspx) hosted a session on [Emerging Technology for telecommunications in disaster management](https://www.itu.int/en/ITU-D/Conferences/ET/2021/Pages/Programme.aspx), which discussed new applications of emerging technology, or novel use of existing technology, in the context of ICTs for disaster management. The session also introduced the concept of a new repository of case studies and subject matter experts that ITU could build to connect relevant stakeholders from industry, the public sector, and academia.

During the World Summit on the Information Society 2021, BDT, along with WMO, organized a session on the [C7 action line on e-environment](https://www.itu.int/net4/wsis/forum/2021/en/Agenda/Session/398), and developed a [High Level Dialogue](https://www.itu.int/net4/wsis/forum/2021/en/Agenda/Session/417) in partnership with UNDRR, WMO and WBU, focusing on a toolkit for news media professionals reporting on disasters and resilience.

BDT participated in the seventh session of the [Committee on Disaster Risk Reduction organized by ESCAP](https://www.unescap.org/events/2021/committee-disaster-risk-reduction-seventh-session). The ITU SG delivered remarks during the opening session. The session discussed issues related to: (a) emergence of cascading risks and extension of the disaster riskscape; (b) scaling-up multi-sectoral cooperation frameworks to manage cascading risks; and (c) status of regional co-operation efforts.

On the occasion of the International Day for Disaster Risk Reduction, 13 October 2021, ITU, along with UNDRR and International Federation for Information Processing (IFIP), organized a session on [“How ICTs Enhance Resilience and Awareness in Countries at Risk: Lessons Learned from International Collaboration](https://www.itu.int/net4/wsis/forum/2022/Agenda/Session/106)”. It discussed the importance of global collaboration and partnerships for addressing environmental issues and to reinforce commitment towards ensuring a safer and sustainable future. The event was developed as part of the WSIS TalkX track.

**Disaster Connectivity Map (DCM)**

Following a [proposal](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Documents/2019/GET_2019/Partnerships-for-Saving-Lives-Disaster-Connectivity-Map-Concept-Note.pdf) presented during the 2019 GET, ITU, together with the WFP’s Emergency Telecommunications Cluster (ETC), started the development of the [Disaster Connectivity Map](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/Disaster-Connectivity-Maps.aspx#:~:text=%E2%80%8BDisaster%20Connectivity%20Maps%20is,before%20and%20after%20a%20disaster.) (DCM) initiative. DCM is a mapping platform to help first responders determine the status of telecommunications network infrastructure, coverage, and performance after a disaster. The information contained in the DCM can be used to support decision-making by first responders from governments and humanitarian organizations about where telecommunication network services need to be restored. The platform is hosted by ITU and supported by GSMA. A first prototype of the map was presented during a [joint ITU/ETC webinar](https://itu.zoom.us/rec/share/flOV1MYUfGGXq6SiDeFXDfuAvPV5gnXjsStpbe4U_vkooKx7J9y6UtVS9uiCobkU.Ic8cp4a7NGcdKMHy).

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| **Regional Initiatives**  Americas region   * A project for the use of ICTs in emergency and disaster situations in the Caribbean, known as [WINLINK 2000](https://www.itu.int/en/ITU-D/Regional-Presence/Americas/Pages/ACTVTS/PRJ/AMS-PRJ.aspx), was developed to help Antigua and Barbuda, Barbados, Dominica, Grenada, Guyana, Jamaica, and Saint Kitts and Nevis to enhance their emergency telecommunication capabilities and improve emergency and disaster response to help save lives. The project builds on the coordination between emergency response agencies, telecommunication authorities, and amateur radio associations to install Winlink servers in the beneficiary countries. The project started in 2018 and its first phase was finalized in 2019, when pilots were implemented in the Dominican Republic, Costa Rica, Guatemala, El Salvador, Honduras, Nicaragua, and Panama. By 2021, the Winlink network had been used during every emergency since its implementation; * Linked to the deployment of emergency telecommunication equipment to the Bahamas after hurricane Dorian struck the country in September 2019, ITU collaborated with the Utilities Regulation and Competition Authority (URCA) and other stakeholders to provide Internet and other connectivity services to residents in the affected areas; * In September 2017, ITU deployed emergency telecommunication equipment to Dominica as a response effort after the massive devastation caused by Category 5 Hurricane Maria. The deployment continued through to February 2018. * During 2020, ITU, in collaboration with the Telecommunications Authority of Trinidad and Tobago (TATT) and the Caribbean Telecommunications Union (CTU) developed a Project Proposal and Cooperation Agreement for Caribbean SMART Seas Toolkit (SST) for Disaster Resilience. The documents were finalized in the first quarter of 2021. The project sets out to preserve the lives of highly vulnerable small-scale fishers in the Caribbean through improved emergency communications at sea. * Since 2018, BDT has worked to develop the Virtual Vision App, a real time communications platform for disaster management. The App facilitates direct and real-time communication before, during and after an emergency or disaster. The app was tested in the Bahamas in early December 2019; * A Multi-stakeholder Forum on the Role of Telecommunication/ICTs for Disaster Management and Risk Reduction for the Caribbean Islands was hosted by Dominica in December 2018. The Forum was aimed at paving the way for enhancing the use of ICTs for disaster management in the region and for addressing key questions related to the best use of ICTs for disaster risk reduction and management. Five countries (Antigua and Barbuda, Barbados, Guyana, and Jamaica) benefited from WFP fellowships negotiated by BDT to attend, participate and present country profiles at the forum. * An online multi-stakeholder consultation on the development of a National Emergency Telecommunications Plan (NETP) for Saint Lucia, was organized in June 2020, in cooperation with the Ministry of Housing, Urban Renewal and Telecommunications of Saint Lucia. The NETP for Saint Lucia was developed in 2020. Additionally, NETPs were prepared for Bolivia, Peru and Ecuador. * ITU Americas held an online workshop on the Role of Telecommunications/ICTs for Disaster Risk Reduction and Management for the Americas, which took place in September 2021. The meeting involved presentations and discussions on how ICT solutions and digital technologies can be used for disaster management and risk reduction. Around 60 participants attended the event. * ITU deployed emergency telecommunication equipment to Haiti as a response effort after the devastation caused by the August 2021 earthquake and Tropical Depression (TD) Grace. * With the support of Indotel and Marena, a consultation workshop with the private sector and civil society on the comprehensive management of waste electrical and electronic equipment (WEEE) was held in the Dominican Republic in November 2021; * Alongside the workshop, a database was prepared covering the main producers of electrical and electronic equipment selling on the market in Dominican Republic. A comprehensive report was also prepared providing more detail about these producers.   .  Arab States region   * A series of training courses and workshops were held on disaster risk reduction and management and in the use of modern technologies for monitoring and early warning in the Arab States region. * In March 2019, a model policy and regulatory framework on the use of ICTs for Disaster Risk Reduction in the Arab region was developed. The report summarizes data gathered from the Arab Region and sets out a guideline for developing such a policy and regulatory framework for the use of telecom/ICTs for emergency and disaster management in Arab region; * In November 2019, a regional multi-stakeholder workshop on the Role of Telecommunication/ICTs for Disaster Risk Reduction and Management for the Arab Region was organized and paved the way for enhancing the use of Information and Communications Technologies (ICTs) for disaster management in the region and address key questions related to the best use of ICTs for disaster risk reduction; * In October 2020, BDT organized an online workshop on ICT Tabletop Exercises, the Common Alerting Protocol (CAP) and the Tampere Convention for Disaster Management in the Arab Region. The 2-day online workshop highlighted the benefits of using the [Common Alerting Protocol (CAP),](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Documents/2020/T-REC-X.1303bis-201403-.pdf) which is a standard for exchanging all-hazard emergency alerts and public warnings over all kinds of ICT networks, provided an opportunity to learn about the advantages of developing [Table-Top exercises](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/Publications/2020/Guidelines-for-TTX.aspx), and raised awareness on the importance of the [Tampere Convention](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/TampereConvention.aspx); * In 2020, National Emergency Telecommunications Plans were developed for Somalia and Sudan * In July 2021, ITU, in collaboration with the Telecommunications Regulatory Authority of the Sultanate of Oman organized a Common Alerting Protocol (CAP) implementation workshop. * In March 2021, ITU and the Arab Red Crescent and Red Cross Organization (ARCO), signed a Framework Cooperation Agreement to join efforts to mobilize resources to enhance connectivity and interconnect the emergency centres of national societies and authorities in all Arab countries. A report was produced by end 2021. * By end 2021, BDT delivered an ICT technical assessment report on how to Interconnect the Arab Red Crescent and Red Cross Organization (ARCO)'s Arab Disaster Preparedness Center (ADPC) and to assess the telecom/ICTs capability of the ADPCs.   Asia-Pacific region   * A joint project with Australia’s Department of Communications and the Arts (DoCA) supported Papua New Guinea, Samoa, Solomon Islands, Vanuatu, and Fiji to strengthen national emergency telecommunication planning and build capacity. National emergency telecommunication plans were developed for these Pacific Islands in consultation with the Emergency Telecommunications Cluster (ETC); * Broadband Global Area Network (BGAN) terminals were dispatched to the Solomon Islands in response to the Rennell Island oil spillage; * Following support from BDT, Solomon Islands and Vanuatu improved their emergency telecommunication response capacity, which was found effective in response to oil spillage ([Rennell Islands](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/Response.aspx)) and Category 5 cyclone ([Harold](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/Response.aspx)) respectively; * The Pacific Satellite Connectivity and Development of Emergency Telecom project (2014-2020) supported nine countries in the Asia and the Pacific region (Federated States of Micronesia, Fiji, Kiribati, Nauru, Papua New Guinea, Samoa, Tonga, Tuvalu and Vanuatu) with satellite connectivity. The project, signed in 2014, was delivered with partners ITSO, Intelsat, Inmarsat and Kacific. New connectivity capacities delivered as part of this project enabled e-applications in schools, communities and health care, while serving as the key point of contact when Cyclone Harold struck Vanuatu in April 2020. BDT undertook an impact assessment study on the project, which validated the demand for such services and the importance of satellite connectivity in remote areas and of digital infrastructure for resilience, disaster risk reduction, and delivering e-applications in the Pacific. An OP-ED on “[Pacific satellite connectivity and Emergency telecom capacity development”](https://www.satelliteevolutiongroup.com/magazines/Americas-August2020/index-h5.html?page=1#page=20) and a blog on [“ITU and Kacific join forces to boost emergency telecoms and ICT development in Vanuatu”](https://news.itu.int/itu-and-kacific-join-forces-to-boost-emergency-telecoms-and-ict-development-in-vanuatu/) were produced in 2020, highlighting the support of ITU for emergency telecommunication in the Pacific. |

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| STUDY GROUPS  Between 2018 and 2020, three events were organized jointly with the Study Group 2 Question 5/2: Utilizing telecommunications/information and communication technologies for disaster risk reduction and management. The first event, held in 2018, focused on [*Technological evolution, ICT exercises and disaster management drills*](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/session-Q5-2-oct18.aspx)and sharedexperiences and knowledge on effective disaster drills, use of emergency telecommunication systems, and other means to improve preparedness and resiliency, including the availability and usage of emerging technologies. The second event held in 2019, on [*Conducting National Level Emergency Communications Drills and Exercises: Guidelines for Small Island Developing States (SIDS) and least developed countries (LDCs)*](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/session-Q5-2-oct19.aspx), highlighted the importance of undertaking emergency telecommunication drills at a national level to test and refine readiness to respond in a timely manner when disasters strike. The third workshop on [*The Enabling Policy Environment for Effective Disaster Management including for COVID-19 Response*](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/Webinars/2020/Q5-2-july14.aspx)*,* held virtually, focused on the importance of preparing and implementing National Emergency Telecommunication Plans (NETPs), as well as contingency plans to address specific hazards, such as pandemics. It also provided examples of policies that enable flexibility when deploying emergency telecommunication equipment for a successful disaster response. An annual deliverable on “[Draft guidelines for conducting national level emergency communications drills and exercises](https://www.itu.int/oth/D0723000005/en)” was released. |

## 7. Environment: Creating a Circular Economy for Electronics and Climate Change

### Better Data and Policies Covering Waste from Electrical and Electronic Equipment

The Global E-waste Statistics Partnership (GESP), founded in 2017 by ITU, the United Nations University (UNU) and the International Solid Waste Association (ISWA) released [The Global E-waste Monitor 2020](https://www.itu.int/en/ITU-D/Environment/Documents/Toolbox/GEM_2020_def.pdf) in July 2020. A [StoryMap](https://www.itu.int/en/ITU-D/Environment/Pages/Toolbox/Country-Story-Maps.aspx) about the Global E-waste Monitor 2020 was produced in September 2020. All global and regional E-waste Monitors are available on the GESP website, a free and publicly available online portal at [globalewaste.org](https://globalewaste.org/), which contains WEEE (or e-waste) data and statistics for almost all countries and regions. Over 150 publications relating to WEEE, published by United Nations partners, are also readily available via the portal.

In 2020, a regional e-waste data training for the CIS region (and Georgia, Turkmenistan, and Ukraine) was delivered in the Russian Federation. In 2019, regional trainings were delivered in Tunisia to the Arab States region and in Uganda to the Africa region. National trainings were delivered in 2018 in Tanzania, Jordan and Brazil, and 2021 in [Botswana](https://www.itu.int/en/ITU-D/Environment/Pages/Spotlight/Improving-Data-Collection-in-Botswana.aspx), [Malawi](https://www.itu.int/en/ITU-D/Environment/Pages/Spotlight/E-waste-data-in-Malawi.aspx) and [Namibia](https://www.itu.int/en/ITU-D/Environment/Pages/Spotlight/E-waste-data-in-Namibia.aspx). The GESP is supporting Botswana, Malawi and Namibia to prepare National E-waste Monitors and in 2020 and 2021, Regional E-waste Monitors were launched by the GESP for the Arab States, Latin America and the Commonwealth of Independent States. In September 2021, BDT signed with the UN Environment Programme (UNEP), for the preparation of a Regional E-waste Monitor for the Western Balkans.

In 2021, BDT launched a new project with the UN Institute for Training and Research (UNITAR), in collaboration with and to support the East African Communications Organisation ([EACO](https://www.itu.int/en/ITU-D/Environment/Pages/Harmonizing-regional-data-collection-in-East-Africa.aspx)) in the harmonization of the collection of e-waste data. Between September 2021 and December 2021, ITU and the UN Institute of Training and Research provided e-waste statistics training session to the six countries of the [East Africa region](https://www.itu.int/en/ITU-D/Environment/Pages/Spotlight/E-waste-EACO.aspx).

**E-waste policies and regulation for managing e-waste**

Since 2019, ITU has been providing [technical assistance](https://www.youtube.com/watch?v=bienIHFkock) in the area of e-waste policies. This includes the mapping of and consultation with stakeholders, and the drafting of the national policy on the management of e-waste in [Namibia](https://www.itu.int/en/ITU-D/Environment/Pages/Spotlight/WEEE-Policy-Support-Namibia.aspx). In collaboration with the Ministry of ICT, several stakeholder consultations took place in-person and online. Over 15 ministries and over 10 regional councils, recyclers, importers and regional producers were consulted in the policy development process, as part of a public participatory approach that supported the [development of the policy](https://www.youtube.com/watch?v=3Oj-jthAPAU) in Namibia.

In early 2020, ITU started assisting [Malawi](https://www.itu.int/en/ITU-D/Environment/Pages/Spotlight/WEEE-Policy-Support-Malawi.aspx), through the Malawi Communications Regulatory Authority and the Environmental Affairs Department, in the development of a national policy on the management of e-waste. In October 2020, 17 ministries and departments and 4 local authorities were consulted online. In 2021, ITU provided technical assistance in the development of a national e-waste management policy in Burundi. At the same time, ITU provided technical assistance to [Dominican Republic](https://www.itu.int/en/ITU-D/Environment/Pages/Spotlight/WEEE-Policy-Support-Dominican-Republic.aspx) in the preparation of a national e-waste management regulation, where both a public and private sector stakeholder consultation took place.

In 2020, ITU launched a project with the World Economic Forum (WEF) to prepare a toolkit for developing countries and emerging markets – with a focus on the Africa region – covering the building blocks required for the establishment of a fair and equitable, well-communicated and sustainably financed system of extended producer responsibility (EPR) for the management of e-waste. The toolkit report, titled [*Policy Practices for E-waste Management*](https://www.itu.int/en/ITU-D/Environment/Documents/Publications/2021/Toolkit_Africa_final.pdf?csf=1&e=OHEtlM)*,* was launched in April 2021 and an [information session](https://www.itu.int/en/ITU-D/Environment/Pages/Events/2021/Information-Session-on-Fostering-E-waste-Management-across-Africa.aspx) followed the launch in early June 2021.

A [tailored e-learning module](https://academy.itu.int/training-courses/full-catalogue/introduction-e-waste-policy-0) was developed to allow ITU to provide technical assistance in the development of e-waste policy. Launched in March 2021, the e-learning module provides key concepts of e-waste management, EPR policy development, information about stakeholder roles and responsibilities, and definitions. The e-learning is available in French and Spanish, and the Arabic translation has started.

A new global project was signed in mid-September 2021 between UNEP and BDT on implementing the EPR concept in policies and regulations for the sound management of e-waste. The project covers Botswana, The Gambia, Uzbekistan, Rwanda, Namibia and the Dominican Republic.

Through financial support from GIZ, and the Gov Stack project, ITU has started to prepare a number of technical assistance initiative, including to Mauritania, for the development of a national e-waste management policy and for new EPR implementation guidelines in Rwanda.

In 2019 and 2020, ITU collaborated with the WEEE Forum in the preparation of [International E-waste Day](https://weee-forum.org/iewd-about/) (IEWD), which takes place annually on 14 October. The [2020 addition](https://www.youtube.com/watch?v=AFqP6IEhf5Y) focused on the role of youth in the management of e-waste. As part of the IEWD 2020 celebrations, ITU collaborated with the WEEE Forum in the publication of a thought paper on [Internet Waste](https://www.itu.int/en/ITU-D/Environment/Documents/Publications/2020/Internet-Waste%202020.pdf?csf=1&e=iQq5Zi). Following the publication, a [webinar](https://weee-forum.org/ws_news/internet-waste-dialogue/) was held with several IT and electronics companies, service providers and recyclers. The thought paper on Internet Waste focused on e-waste derived from wireless infrastructure for mobile Internet connectivity, connected devices and data storage with examples from mobile networks, IoT and data centres. The paper raised awareness about waste from ICT infrastructure and the need for sustainable e-waste management practices within data centres and telecommunication industries. For the 2021 edition of International E-waste Day (October 14th), ITU, together with the WEEE Forum, GSMA and Sofies Group, prepared and launched a thought paper titled *Digitalization for a Circular Electronics Value Chain*. In October 2021, BDT organized a [webinar](https://www.itu.int/en/ITU-D/Environment/Pages/Events/2021/-Digital-Solutions-for-a-Circular-Electronics-Value-Chain.aspx) to present the paper and discuss its key findings.

Launched in 2018, the [E-waste Coalition](https://www.itu.int/en/ITU-D/Environment/Pages/Priority-Areas/UN-E-waste-Coalition.aspx) is a UN system-wide group of agencies and programmes with a common vision to tackle the global e-waste challenge. ITU was fundamental in the bringing together of these entities, eventually to form the Coalition. Several events were organized by the UN E-waste Coalition, including two WSIS Forum high-level dialogues, [one event in 2018](https://www.itu.int/en/ITU-D/Climate-Change/Pages/Building-an-E-waste-Coalition.aspx) where UN agencies signed a Letter of Intent, and [one in 2019, which saw three new UN agencies join the Coalition](https://www.itu.int/en/ITU-D/Climate-Change/Pages/Events/2019/Building-the-E-waste-Coalition.aspx). Both events focused on building the UN E-waste Coalition. In 2019, the Coalition organized a side event at the fourteenth meeting of the conference of the parties to the Basel, Rotterdam, and Stockholm Conventions. The side event focused on shifting [towards sustainable and responsible reverse supply chains in a circular economy for electronics](https://www.itu.int/en/ITU-D/Climate-Change/Pages/Events/2019/Sustainable-and-Responsible-Reverse-Supply-Chains.aspx). ITU temporarily hosted the Coalition secretariat between November 2020 and May 2021.

**Circular Electronics Partnership**

ITU contributed to the [Roadmap and Vision for the Circular Electronics Partnership](http://cep2030.org/). (CEP), which includes the World Business Council for Sustainable Development (WBCSD), WEF, the Responsible Business Alliance, the Green Electronics Council, the Platform for Accelerating the Circular Economy, and the Global Enabling Sustainability Initiative. The CEP aims to shift the playing field of the electronics industry towards contributing to the SDGs through circular economy principles.

Based on the Roadmap, ITU also co-published the report on A [New Circular Vision for Electronics](https://www.itu.int/en/ITU-D/Climate-Change/Pages/ewaste/A-New-Circular-Vision-for-Electronics-Time-for-a-Global-Reboot.aspx), launched during the annual meeting of the 2019 World Economic Forum, Davos, Switzerland.

**Generation Connect Global E-waste Iconathon**

The [E-waste Iconathon](https://www.itu.int/en/ITU-D/Environment/Pages/Events/2021/Global-E-waste-Iconathon.aspx), launched in 2021, is an icon design contest that aims to raise awareness about the global e-waste issue and leverage the participation of youth globally. Young people of ages 18-29 were invited to participate and design a universal icon that signifies the take-back and collection of e-waste for recycling purposes.The contest is in line with the ITU’s Generation Connect mission to engage youth and encourage their participation as equal partners alongside the leaders of today's digital change, empowering young people with the skills and opportunities to advance their vision of a connected future.

**Climate Change**

From March 2021 to December 2021, ITU worked with a group of Master’s students from the Graduate Institute of International and Development Studies, Geneva on a capstone research project on ‘ICTs for Climate Change Action’. The project researched how emerging digital technologies can be leveraged to mitigate the negative impact of climate change in the agricultural and energy sectors in Sub Saharan Africa, with a specific focus on the Internet of Things (IoT).

In February 2021, the Environment thematic priority started working with the ITU Academy to review and update an existing ICT and Climate Change Training Programme, which includes six foundational online modules and 15 elective modules related to climate change and the circular economy.

BDT was invited to host a session at the LKDF Forum in September 2021 under the theme of ‘Digital Skills for an Inclusive Future’. The session involved collaboration with Generation Connect and ITC/ILO and focused on how digital technologies can increase youth’s interest in green skills and equip them with the skills and education they need for a sustainable future, thereby supporting green technology development and the transition to a green and circular economy. Outputs from the session included a [Background Paper](https://lkdfacility.org/resources/sessions-background-papers-lkdf-forum-2021/) and an [Outcome Book](https://lkdfacility.org/resources/lkdforum-2021-outcome-book/).

In November 2021, ITU began collaborating with the World Benchmarking Alliance on a publication ‘Greening the ICT industry by 2050: Monitoring climate progress and commitments’, to monitor how the ICT industry is doing in terms of its environmental footprint.

In addition, BDT has partnered with and contributed to a number of UN climate change related initiatives:

* In 2021, ITU actively participated in the [Coalition for Digital Environmental Sustainability (CODES)](https://www.sparkblue.org/CODES) initiative as part of the follow-up to the SG’s Roadmap on Digital Cooperation. ITU contributed to and reviewed the ‘Action Plan for a Sustainable Planet in the Digital Age’.
* As of August 2021, ITU became a partner in the UN-wide partnership initiative, [UN4NAPs](https://unfccc.int/UN4NAPs), to scale up technical support to least developed countries and small island developing states to formulate and implement National Adaptation Plans (NAPs). This includes BDT support to Members States, especially related to using frontier technologies for adaptation assessments, planning & implementation; and accessing information/experience of other countries in applying adaptation technologies.
* In 2021, BDT participated in the Climate Change Adaption Communities of Practice (CoPs) as part of the [Digital Public Goods Alliance](https://digitalpublicgoods.net/what-we-do/) (DPGA). The CoP is focusing on open data for climate and weather services for food security, agriculture and disaster risk reduction and is led by UNICEF and the Norwegian Ministry of Foreign Affairs. A joint BDT, WMO and DPGA Secretariat paper was published on the [Call for weather, climate & hydrological information datasets to be made open and freely available as digital public goods.](https://www.itu.int/en/ITU-D/Environment/Pages/Climate-Change/Climate-Change-Adaptation-CoP-Report.aspx)
* In 2019, BDT contributed substantially to the ITU publication on ‘[Turning Digital Technology Innovation into Climate Action](https://www.itu.int/en/ITU-D/Environment/Documents/Publications/2021/19-00405e-turning-digital-technology-innovation.pdf)’.

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| **Regional Initiatives**  Africa region   * Namibia, Burundi, Botswana, The Gambia and Malawi received policy support in the development of national e-waste management policies, whilst Namibia, Malawi and Botswana received assistance in the collection and improvement of e-waste data and statistics.   Americas region   * As part of the *Girls in ICT* Day 2019 celebrations in the Caribbean, BDT, in collaboration with local regulators, ministries of education, and non-governmental Organisations (NGOs) raised awareness on the negative impact of climate change through the planting of trees in many schools; * BDT implemented the e-waste Pilot Plant Project that was jointly developed with the University of La Plata in Argentina. The [project](https://www.itu.int/en/ITU-D/Climate-Change/Pages/ewaste/E-waste-pilot-plant.aspx) was successfully implemented in 2018; * During 2021, ITU worked with the Dominican Republic to strengthen its regulatory framework for e-waste.   Arab States region   * More than 1 000 stakeholders from over 22 countries benefitted from capacity building exercises on the topic of EMF and e-waste; * In April, 2018, a regional [ITU Forum & Training on “With ICT's everywhere - How safe is EMF?” and a training on e-waste statistics](https://www.itu.int/en/ITU-D/Regional-Presence/ArabStates/Pages/Events/2018/EMF-EW/EMF-EW.aspx) was organized; * In December 2019, a model policy and regulatory framework on EMF in the Arab region was developed, contributing to the process of harmonization of national EMF approaches at the regional level; * In December 2019, a regional training workshop on e-waste statistics in the Arab Region was organized and hosted by Tunisia; * Mauritania received support in the development of a national e-waste management policy and detailed e-waste reports were developed for Mauritania and Sudan; * In December 2021, the Arab States region released the [Regional E-waste Monitor](https://www.itu.int/en/ITU-D/Environment/Pages/Toolbox/REM-Arab-States-2021.aspx), which collected and improved e-waste statistics in the region. The Monitor improved data availability and quality, the availability of policies and regulations and raised awareness through capacity building workshops. It also communicated the data on WEEE to policy-makers, the media, and other relevant stakeholders; * A [regional event was organized online jointly by ITU, UNU and UNEP](https://www.itu.int/en/ITU-D/Regional-Presence/ArabStates/Pages/Events/2020/WEEE/WEEE.aspx), in December 2020, focusing on e-waste and the move towards regional harmonization of national e-waste policies, regulation and standards in the Arab States region.   Asia-Pacific region   * BDT organized a [policy awareness workshop on e-waste](https://www.itu.int/en/ITU-D/Climate-Change/Pages/Events/2019/Workshop-on-E-waste-India.aspx), which took place in 2019 in Hyderabad, India. The event was co-organized with key agencies of the Indian Government and the UNU, ILO, WHO, and UNEP. The workshop raised awareness, built capacity, and provided recommendations for future work on e-waste in India, including the preparation of a Pan-India E-waste Monitor. In January 2021, ITU, UNEP and UNU organized a follow-up information session.   CIS region   * In 2021, ITU supported the “Regional E-waste Monitor CIS plus Georgia, Turkmenistan and Ukraine" project, implemented by the Sustainable Cycles (SCYCLE) Programme jointly with the United Nations University (UNU) and the United Nations Institute for Training and Research (UNITAR), in partnership with the United Nations Environment Programme (UNEP). * In January 2020, a regional meeting was held in Russia and an online webinar on e-waste legislation, management and statistics took place in November 2020, to track progress on the project activities; * ITU provided support to Kyrgyzstan to develop a spatial data infrastructure (SDI), a common platform to store data related to the monitoring and mapping of climate and water resources, to support policy and regulatory decision-making across Central Asia. The SDI hosts data through a combination of remote sensing, geospatial analysis, in-site measurement and regional reporting. The SDI enhances sharing of spatial data among government departments and organizations and facilitates better access to information across the region for discovery, viewing and download. In 2020 ITU completed the first phase of the SDI development, when the SDI was deployed, populated with initial data and used by the State Water Resources Agency of the Kyrgyz Republic. In 2021 ITU continued to work with Kyrgyzstan to further digitize and populate the SDI with data from the Issyk-Kul region. * In collaboration with the UN Environment Programme, ITU provided technical assistance to Uzbekistan to review e-waste management practices in the formal and informal sectors and with the development of comprehensive recommendations for sustainable e-waste management in the country.   Europe region   * ITU, UNEP and UNITAR launched a project on e-waste monitoring for the Western Balkans, which under the framework of the Global E-waste Statistics Partnership, includes an assessment of e-waste statistics, e-waste management practices and a review of the e-waste legislation landscape in the beneficiary countries, including Albania, Bosnia and Herzegovina, North Macedonia, Montenegro, Serbia. |

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| STUDY GROUPS  Three events were held in conjunction with ITU-D Study Group 2 Question 6/2 (*ICTs and the environment*). A session on [e-waste policies, strategies and frameworks](https://www.itu.int/en/ITU-D/Climate-Change/Pages/Events/2018/session-Q6-2-oct18.aspx) was held in October 2018. A workshop on frontier ICTs for climate [action](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/session-Q6-2-oct19.aspx) held in October 2019 brought together actors from the sectors involved in the development of frontier ICTs such as big data and earth observation in the context of climate action. A [webinar on ICTs for climate action and rebuilding greener economies after COVID-19](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/Webinars/2020/Q6-2-july15.aspx) was held in July 2020 and explored the lessons learned from COVID-19 and how ICTs help rebuild economies in an environmentally responsible manner after COVID-19. The content exchanged and lessons learned during the workshops were used as input to the [final report of Question 6/2.](https://www.itu.int/en/myitu/Publications/2021/10/01/08/28/Information-and-communication-technologies-and-the-environment) |

## 8. Networks and digital infrastructure: Making reliable connectivity available to everyone

### ITU broadband maps: Identifying ICT infrastructure availability and gaps to connect people

BDT continued to develop the ITU [broadband maps](https://www.itu.int/en/ITU-D/Technology/Pages/InteractiveTransmissionMaps.aspx) **and** data research and validation were enhanced to promote understanding and investment opportunities of network infrastructure to take stock of worldwide connectivity. The ITU data managed on global transmission networks provides unique information from more than 540 operators and 16 million high-speed information highways (backbones). Through the overlaying of multiple ICT infrastructure data and specific industry data (e.g. schools, FinTech, health centres, etc.) the broadband map of ICT infrastructure is providing continued support to key ITU activities and projects focusing on the reliable connectivity to all BDT impact pathways. Examples are the [Giga](https://www.itu.int/en/ITU-D/Initiatives/GIGA/Pages/default.aspx) school mapping exercise, which uses both school location data and infrastructure data, and the [Financial Inclusion](https://www.itu.int/en/myitu/News/2020/10/06/07/37/Mapping-financial-inclusion-Mexico-FIGI) mapping for the FIGI initiative.

With the publication of the 2019 [ICT infrastructure business planning toolkit](https://www.itu.int/en/publications/ITU-D/Pages/publications.aspx?parent=D-PREF-EF.ICT_STRUCT_KIT-2019&media=paper) BDT offered regulators and policy-makers a clear and practical methodology to deliver accurate economic evaluation of proposed broadband infrastructure installation and deployment plans. This helps policy makers to evaluate the financial sustainability of new network deployments to achieve universal access and once infrastructure and gaps have been identified. The toolkit serves as a practical manual for regulators and policy-makers working towards extending broadband network deployment and access. It addresses key elements for a successful business planning implementation for ICT infrastructure development, and presents and explains best practices on infrastructure installation and deployment plans as well as its economic feasibility assessment to support decision making. The toolkit provides quantitative examples of the most searched projects, such as the construction of fibre-optic backbones, wireless broadband networks (including 4G), and fibre-to-the-home (FTTH) access network projects. In November 2020, the first “ITU Training on Business Planning for ICT Infrastructure development” was held virtually through the ITU Academy Portal, with real life business plans being developed by participants. In 2021, two training events for Africa and Europe were organized, with further information [available here](https://itu.int/go/maps).

In November 2019, and to mitigate the impact of the COVID-19 pandemic and ease the adverse impacts on economies and societies, ITU and the Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) of Australia launched a new [Project](https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Pages/v2/Project%20Pages/Connect2Recover---Digital-Infrastructure-and-Ecosystem-Reinforcement-Against-COVID-19-in-Asia-Pacific.aspx) with concrete deliverables to address the three pillars identified by the Broadband Commission for Sustainable Development in its COVID-19 Crisis Agenda for Action: (1) development of resilient connectivity, (2) affordable access to ICTs, and (3) safe use of online services.

### Last mile connectivity project

The last mile connectivity [project](https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Documents/Events/2019/Workshop%20Kyiv/Aminata%20Garba%203%20Last%20Mile%20Connectivity%20Kiev.pdf) was launched in 2019/2020 to drive new collaborative strategies to ensure that all people achieve meaningful universal connectivity. It consists of guidelines and additional resources to help Member States address last-mile connectivity challenges, including a database of case studies on last-mile connectivity and interactive last-mile connectivity diagnostic and decision-making tools. It offer capacity-building services and assistance on implementation, helping Member States to plan, design and implement last-mile connectivity solutions, including identifying unconnected areas and providing expert guidance on the selection of sustainable technical, financial and regulatory solutions. This project is expected to enable partners to share resources and take a more holistic approach that treats broadband as a basic public utility and tool for socio-economic development. The [Last Mile Connectivity Solutions Guide](https://www.itu.int/en/publications/ITU-D/Pages/publications.aspx?parent=D-TND-01-2020&media=paper) was launched in 2020. In 2021, [a capacity-development courses](https://academy.itu.int/training-courses/full-catalogue/emerging-technology-last-mile-connectivity) on last mile connectivity was offered online and two series of face to face events entitled “Broadband access week” were organized in Armenia (June 2021) and Kyrgyzstan (October 2021), with the Last Mile Connectivity Toolkit used. Both events included a presentation of the ITU tools for mapping broadband infrastructure and identifying promising connectivity options. The events focused on training employees of selected telecommunication companies and educational institutions.

### Emerging Technology Trends

The BDT Emerging Technology Trends includes a yearly thematic publication on emerging technology, a forum on emerging technology, an innovation challenge on emerging technology and capacity building activities. The objective of the Emerging Technology Trends is to promote the wide scale deployment of emerging technologies, including Artificial Intelligence, IoT, Big Data, low orbiting satellites, and 5G to contribute to the achievement of the Sustainable Development Goals. Moreover, through sharing of experiences and solutions and by engaging a diverse range of international, regional and national stakeholders, it aims to build partnerships, enhance the engagement stakeholders, and expand the impact of ongoing regional initiatives that promote emerging technologies for development. In 2020, the [first edition of the Emerging Technology Trends](https://www.itu.int/en/myitu/Publications/2021/05/04/12/23/Emerging-technology-trends-Artificial-intelligence-big-data-for-development-4) was created and focused on Artificial Intelligence and Big Data for Development. In the framework of that first edition, a feasibility study on broadband technologies trends in Africa was conducted and presented to the participants. [ITU's Emerging Technology for Connectivity 2021](https://www.itu.int/en/ITU-D/Conferences/ET/2021/Pages/default.aspx) was held in July, with about 25 sessions and 595 participants. It featured about 154 speakers. In addition, capacity development activities were conducted with 5 training courses. The presentations, recordings and reports are available on the event [website](https://www.itu.int/en/ITU-D/Conferences/ET/2021/Pages/Programme.aspx).

### ITU-MUST project on IPv6 and IoT Expertise Centre

Since 2019 the ITU-MUST (Malaysia University of Science and Technology) project has assisted Member States on the smooth transition from IPv4 (Internet Protocol version 4) to IPv6 (Internet Protocol version 6) for Internet of Things (IoT) infrastructure, IPv6 over 5G networks, IPv6 for Industry 4.0, and deployments of services and applications. It has raised awareness through technical assistance, trainings and workshops. Several training courses and workshops were organized in 2019 to this effect, and continued in 2020 online, in English and in Arabic. More than 150 young professionals were certified in the above- mentioned IT domains.

### Broadband for rural connectivity

In order to address the power supply challenges for rural communication, ITU started developing a guide on sustainable and innovative power solutions for broadband connectivity that will be also used for the Giga project to connect schools. In addition, this guide will be used for smart green communities as part of the key solutions to connect rural areas to broadband networks.

The ITU/McCaw Foundation project for the Africa region has been implemented and is under closure process. The key achievements are:

* In Burundi, 437 institutions were connected to broadband Internet including universities, schools, hospitals, government agencies, and cooperatives;
* In Burkina Faso, schools and public administration services in ten cities were covered by broadband networks. Fourteen schools were equipped with computer networks, equipment, and Internet connection to allow the introduction of e-education in the education system;
* In Djibouti, 116 Institutions were connected to broadband Internet using 4G broadband network infrastructure. This included 48 schools, 45 hospitals/clinics and 23 government institutions/ministries;
* In Rwanda, more than 50 public schools and 40 health centres were connected to broadband Internet;
* In Eswatini, project implementation to install a 4G LTE broadband wireless network to cover 20 rural areas was finalized in 2021.

### Policy and Regulation Initiative for Digital Africa (PRIDA)

The policy and regulation initiative for Digital Africa region (PRIDA) was launched in 2018 to foster universally accessible and affordable wireless broadband across the Africa region in order to unlock future benefits of Internet-based services. The 3.5-year initiative is a [multi-partner project](https://www.youtube.com/watch?v=6NYLHZqeEvo) by the European Union, the African Union, and ITU. Key achievements until end of 2021 include:

* 573 engineers were trained from 48 regulatory authorities during eight capacity building workshops;
* The technical report: “Analysis of the current legislative and regulatory framework and the usage of spectrum as of today as well as in the foreseeable future” was published;
* The following technical reports were published: “Guidelines on radio-frequency regulation based on ITU Radio Regulations, ITU-R Recommendations, Reports and Handbooks, regional harmonization frameworks, case studies, country experiences and regional consultations” and “Spectrum Management Guidelines for the Introduction of IMT in Africa”, “Report on the assessment of the current cross-border coordination agreements in Africa”, “Report on the current version of the harmonized calculation method for Africa (HCMA)” and “A Gender Sensitivity Review of the PRIDA Project.”

### Conformity and interoperability of ICT products and networks

ICT products are the proxies to the digital economy. Under the conformance and interoperability (C&I) programme umbrella, BDT has lead the implementation of the pillar 3 (capacity building) and 4 (assistance to membership) by providing guidance on frameworks for market entry of ICT devices.

Every year since 2018, English- and French- speaking and participants from the Africa region enhanced their skills through trainings on conformity and interoperability (C&I). This included the topics of specific absorption rate (SAR), radio frequency (RF), electromagnetic field (EMF), and digital terrestrial television (DTTV). DTTV trainings covered legal aspects of conformity and interoperability,guidelines of C&I regimes including type approval regulation, and policy and regulation of conformity and interoperability establishment/development.

Between 2018 and 2021, ITU technically assisted Malawi, Kenya and South Sudan with the establishment of C&I frameworks through their regulatory authorities. ITU assisted Mauritania and Djibouti in their process of setting up their C&I regimes and considering the establishment of a regional mutual recognition agreement. In addition, capacity was built in areas related to type approval and electromagnetic frequency through conformity and interoperability (C&I) training for the Arab region.

In 2021, ITU started the development of a conformance and interoperability training programme (CITP), built upon the successful implementation of the spectrum management training programme (SMTP). CITP modules includes: C&I frameworks; establishment of mutual recognition agreements; and guidance to IoT product developer, targeting national and global markets. This latest module was delivered through the ITU academy in 2021, with further modules planned.

Between 2019 and 2021, a total of 474 participants from more than 55 countries participated in face-to-face and e-learning courses, as part of the Asia and the Pacific region’s Centre of Excellence (CoE) node partnership with the China Academy of Information and Communications (CAICT) of the Ministry of Industry and Information Technology (MIIT, China).

**Spectrum Management: WTDC Resolution 9 (Rev. Buenos Aires, 2017)**

A summary of the ITU activities for the implementation of Resolution 9 on spectrum management are listed in the table below and further details are provided in the TDAG [document INF/3](https://www.itu.int/md/D18-TDAG28-INF-0003/en), which contains a summary of assistance provided to Member States on spectrum management issued by region. The table is sorted by the thematic overview of assistance provided and the number of activities carried out.

| **Topic** | **Number of activities** |
| --- | --- |
| Assistance in raising the awareness of national policy-makers as to the importance of effective spectrum management for a country's economic and social development | 26 |
| Training and dissemination of available ITU documentation | 19 |
| Assistance in developing methodologies for establishing national tables of frequency allocations and spectrum redeployment | 13 |
| Assistance in setting up computerized frequency management and monitoring systems | 7 |
| Economic and financial aspects of spectrum management | 10 |
| Assistance with the preparations for world radiocommunication conferences (WRCs) and with follow-up and implementation of WRC decisions | 16 |
| Assistance with participation in the work of the relevant ITU-R study groups and their working parties | 8 |
| Transition to digital terrestrial television broadcasting | 1 |
| Assistance in identifying the most efficient ways to utilize the digital dividend | 9 |
| Emerging technologies and approaches in using spectrum | 22 |
| Innovative ways of spectrum licensing | 12 |
| Assistance with interference caused by devices in derogation of national spectrum allocations | 5 |
| Assistance in resolving seasonal interference caused by anomalous propagation of radio waves | 1 |
| SMS4DC development and training | 11 |
| Total | 160 |

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| **Regional Initiatives**  Africa region   * Training in 5G and IoT, including radio frequency, electromagnetic field, and digital terrestrial television as part of C&I for the Africa Region. Every year participants from at least 15 countries were trained. * A feasibility study on broadband technology trends in Africa was published and presented during the first edition of the Emerging Technologies week (2020). * Cybersecurity readiness assessment workshops were organized for African countries in Chad, The Gambia and Liberia in 2019 and in Guinea Bissau in 2020; * Institutional and human skills were enhanced every year since 2018, through English- and French- trainings in the Africa region on conformity and interoperability (C&I). This included the topics of specific absorption rate (SAR), radio frequency (RF), electromagnetic field (EMF), and digital terrestrial television (DTTV). DTTV trainings covered legal aspects of conformity and interoperability,guidelines of C&I regimes including type approval regulation, policy and regulation of conformity and interoperability establishment/development; * Trainings in the Quality of Service (QoS) drive test, efficient spectrum management, including radio frequency, electromagnetic field, and digital terrestrial television were carried out and every year between 2018-2021 participants from at least 15 countries received training in C&I; * A training on spectrum management system for developing countries (SMS4DC) were delivered in the Gambia and Liberia in 2019. * The first [Global Refugee Forum](https://www.itu.int/en/ITU-D/bdt-director/Pages/News.aspx?ItemID=205) was held in Geneva in December 2019. ITU, UNHCR and GSMA co-sponsored a session that explored the challenges of delivering connectivity for refugees, displaced persons, and the communities that host them. The event was the culmination of close collaboration for future programmes and national projects on meaningful connectivity for refugees and their host communities in Africa.   Asia-Pacific region   * ITU continued to update the [ITU interactive terrestrial transmission maps](https://www.itu.int/itu-d/tnd-map-public/) for the Asia and the Pacific region, with over 1 million kilometres of network data in place by end 2021. A number of initiatives were used to produce high-quality data to update the map, including the study on [Maximizing availability of international connectivity in the Pacific](https://www.itu.int/pub/D-PREF-BB.GDI_AP-2018) (2018), developed in partnership with the Pacific Islands Telecommunications Association (PITA) and with support from the Australian Department of Infrastructure, Transport, Regional Development and Communications, and assessment and mapping of ICT network connectivity in Pakistan and Afghanistan; * As IMT 2020 (5G) networks were rolled out in Asia and the Pacific region, capacity was built and until end of 2021, more than 530 participants were trained in the area of 5G under the ITU Asia and the Pacific CoE; * In 2018, ITU worked with Brunei to undertake a market readiness assessment for IMT 2020 (5G) network roll-out. Following the assistance, Brunei set up a high-level national task force for a wholistic approach to the introduction of the 5G ecosystem. In 2021, a similar gap analysis was carried out in Mongolia to support the achievement of digital national goals by 2025; * As spectrum management remained one of the areas of high demand from ITU Members, BDT assisted members through dedicated activities on Spectrum Management System for Developing Countries (SMS4DC), including the automation of respective national spectrum management in Lao PDR, Afghanistan, Mongolia, Samoa and all Pacific Islands. BDT developed and updated national tables for frequency allocations (NTFA) in Cambodia, Fiji, Timor-Leste, and Vanuatu to align national spectrum allocation policies with the outcomes of the latest World Radio Conference (WRC). Following BDT’s assistance NTFA were adopted in Tonga, and Samoa adopted the IXP policy; * Between 2018-21, BDT continued its partnership with Forum Global and APT on the annual Asia and the Pacific spectrum conferences, which provided strategic access to experts and industry partners on spectrum management; * BDT carried out a regional study on wireless spectrum in Asia and the Pacific for the 5G era: IMT Spectrum Assignment Study. Key insights were presented during Asia and the Pacific Regional Dialogue 2021. * BDT carried out studies on radio frequency assignments of IMT identified bands in Asia and the Pacific, on co-deployment between ICT and energy infrastructure, and an impact assessment of a satellite connectivity project in the Pacific. It also partnered with the Asian Development Bank (ADB) on digital connectivity and LEO satellite constellations to identify opportunities for Asia and the Pacific. * In 2021, ITU assistance led to the formulation of a new regional project for Connect2Recover, funded by Australia and another project on resilient infrastructure, funded by the Government of Japan, with a view to accelerating the COVID-19 recovery efforts.   Americas region   * In 2019, a regional spectrum management training seminar for the Caribbean was organized to improve the level and speed of ICT connectivity in countries within the Caribbean; * In 2019, technical and special assistance was provided to the Ministry of Science, Energy and Technology and the Spectrum Management Authority of Jamaica for the development of a national spectrum licence framework for Jamaica to improve ICT connectivity in the country; * In 2020, ITU implemented a project to value the 700 MHz and 2.5 GHz frequency bands in Ecuador; * The ITU Policy and Economics Colloquium (IPEC) was organized annually between 2018 to 2021, focusing on supporting countries in financial and regulatory matters; * Assistance was provided in Spectrum Management to Guyana, through its National Frequency Management Unit (NFMU); * A Spectrum Management Seminar for the Caribbean Islands was held in December 2019; * ITU implemented a project with the Ministry of Information and Communication Technologies (MinTIC) of Colombia in the development of a number of studies, analysis and proposals related to (i) the diagnosis and updating of National Technical Plans of Radio Broadcasting - PTNRS; (ii) the definition of technological strategy for the new AM and FM broadcasting; (iii) new technologies for broadcasting; (iv) the proposal of a manual of good practices for assembly of radio stations; (v) the technical specification of a web tool for management and control of the PTNRS and the radio broadcasting concessionaires; as well as (vi) training and sharing activities result with the sector; * ITU implemented a project with MinTIC of Colombia, in the development of a diagnosis and audit of spectrum allocation through an objective selection process; * ITU implemented a project with MinTIC of Colombia for a strategy design for the implementation of international best practices in the allocation of spectrum attributed to International Mobile telecommunication (IMT) services; ITU also implemented a project to advise and support MinTIC in the development of general activities for the best use of ICT for Digital Transformation; * In 2021, a project was launched to provided technical assistance to validate, plan and execute the allocation of permits for the use of IMT spectrum, and for the use of best practices to increase Internet penetration in Colombia; * A Cooperation Agreement was signed between ITU and the National Spectrum Agency (ANE) of Colombia, to join efforts to promote research, knowledge and dissemination of the radioelectric spectrum, as well as to collaborate in the identification, analysis and implementation of trends and best practices for management, planning, administration, surveillance and control of the radioelectric spectrum; * In 2021, ITU and Colombia’s National Spectrum Agency (ANE) signed a project for the development of economic and technical studies that allow ANE to make recommendations to the MINICT for the definition and adoption of the national policy on the digital sound broadcasting services; * In September 2018, the 5th Annual Latin America Spectrum Management Conference and a Workshop on Spectrum and Community Networks were co-organized with the Global Forum. The Forum was attended by 167 registered participants, coming from 16 different countries, including 12 from Latin America; * In September 2018, an ITU-ITSO training on satellite communications was held in Quito, Ecuador. The event was attended by 44 delegates from Brazil, Ecuador, and Paraguay. All 44 participants received the corresponding certificate after they successfully passed the exam; * In April 2019, a second version of the ITU-ITSO training on satellite communications was offered in Asuncion, Paraguay. The event was attended by 48 delegates from Argentina, Paraguay, and Uruguay. All 48 participants received the corresponding certificate after they successfully passed the exam; * In November 2020, a third version of the ITU-ITSO training on satellite communications was offered online and the event was attended by 48 delegates from Argentina, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Guatemala, Honduras, Mexico, Nicaragua, United States, Uruguay, and Venezuela. Forty-two out of 48 participants received the corresponding certificate after they successfully passed the exam; * In 2019, 2020 and 2021 ITU provided a free trainings in Spanish of the basic modules of the Spectrum Management Training Program (SMTP), certifying 348 professionals in the region, mainly from governments; * In 2020 and 2021 the ITU-ITSO training on satellite communications was delivered and offered through the ITU Academy; * Linked to ITU’s Global event on Emerging Technology for Connectivity: Accelerating Digital Transformation in LDCs, LLDCs and SIDS, a number of regional and multi-regional dialogues on emerging technologies took place. From the Americas region, the following countries participated: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Panama, Paraguay, Peru, Suriname, Trinidad y Tobago, United States, Uruguay. * In 2020, ITU published a study on the deployment of 5G, national 5G plans and the applications to the industry for Chile, Ecuador, and Peru. * In 2019 and 2020, BDT delivered free a Spectrum Management Training Program (SMTP) in Spanish, and more than 340 professionals, mainly from governments, received their certification. * In April 2019, ITU organized the regional training on Satellite Communications in Asuncion, Paraguay and total of 49 people attended the training, and 48 people took the exam and passed. * In 2020, ITU delivered studies on the impact of 5G in the productive sectors in Chile and Peru to the respective governments. * In 2020, ITU updated the interactive transmission maps, with a special focus on Guatemala, Honduras and Suriname;   CIS region   * In October 2021, ITU, together with Rostelecom and other partners, launched the International Research, Development and Testing Centre for new equipment, technologies, and services (IRDTC), hosted by the Bonch-Bruevich Saint Petersburg State University of Telecommunications. In 2020-2021 IRDTC experts developed technical reports on Network 2030, C&I labs, network performance, AR/VR testing, AI and QoS * Since 2018, a series of dedicated regional training courses and events were organized following high demand from membership, including on spectrum management, VoLTE, 5G, and Future Networks. All events were done in cooperation with ITU-T and ITU-R. In 2021, a regional workshop on 5G (IMT-2020) networks launch and operational experiences focused, among other topics, on human exposure to electromagnetic fields (EMF); * In 2019 the third annual CIS region and CEE spectrum management conference and ITU workshop on how to achieve interference-free communication at the current technological stage was held in Minsk, Belarus. In December 2020 and September 2021, the regional spectrum management seminars were held virtually; * In June 2021, ITU provided targeted assistance to Armenia as part of the Connect2Recover global initiative, conducting a series of trainings on the use of various ITU tools (broadband infrastructure mapping, last mile connectivity) to telecom operators. In 2021, ITU finalized an infrastructure resilience assessment and presented this to the national stakeholders in a dedicated workshop, held in Armenia in October 2021, with implementation of recommendations starting just after. * In 2021 trainings on the ITU LMC toolkit (interactive last-mile connectivity diagnostic and decision-making tools) were completed in Armenia and Kyrgyzstan. The LMC toolkit supports policy makers, regulators and communication operators to take a more holistic approach to planning, design and implementation of last-mile connectivity solutions, including in underserved areas.   Arab States region   * In 2018, a regional ITU Regional Workshop on Emerging Technologies was organized. * In 2018, a series of annual forums on IoT and smart cities were organized for sustainable development and digital transformation in the Arab Region, with a focus on the 5th Generation of Mobile Technologies (5G) and how it will transform the landscape for the wide scale deployment of the Internet of Things, artificial intelligence, big data and smart cities, particularly in the Arab Region. * An Emerging Technologies Week was organized for the Arab States in 2019 and for the Arab States and Africa in 2020. The events discussed and promoted the deployment of IoT, artificial intelligence and big data to establish Smart Cities and Societies in the Arab Region, with the aim of contributing to the achievement of the Sustainable Development Goals and Digital Transformation as well as the New Urban Agenda in the Arab Region. In addition, a challenge was organized in 2020 on the topic of AI for Development where four outstanding winners from the Arab and African regions were selected. * A regional ITU IPv6 and IoT Expertise Centre for the Arab Region was established in November 2021, in collaboration with and support from the Sudan Telecommunications and Post Regulatory Authority (TPRA). The main objective of the centre has been to assist Member States by supporting a smooth and well managed transition from Internet Protocol version 4 (IPv4) to Internet Protocol version 6 (IPv6) for Internet of Things (IoT) infrastructure, IPv6 for 5G, IPv6 for Industry 4.0, services and applications deployments, raising awareness through theoretical and practical sessions. * A training course on 5G was organized in collaboration with, and support from GSMA in 2018 and 2019, and an interregional 5G course for the Arab and Africa region was organized in 2020, followed by a global training course in 2021.   Europe region   * Between 2018 and 2021, a series of workshops and seminars were organized to discuss the future of television, the mapping of terrestrial broadband infrastructure and services, digital economy, and radiocommunication matters. The Annual Regional Regulatory Forums and GSR regional regulatory roundtables provided additional platforms for European regulators to discuss emerging trends; * A series of background papers and studies were elaborated focusing on 5G, connectivity, EMF, mapping of broadband infrastructure, investment; * Regional assessments on the implementation of 5G in non-EU countries as well as EMF were carried out; * The annual 5G Techritory conferences for the Baltic States were held in Riga, Latvia, and supported by ITU, and continued to serve as the sub-regional platform for cooperation; * Technical assistance in the field of spectrum was provided to Albania and Moldova. In addition, a broadband policy was developed for Albania. Montenegro received assistance in the field of IPv6, and BDT supported through a review of their IPv6 preparedness, which lead to the establishment of the IPv6 laboratory; an ICT infrastructure resilience assessment was initiated for Moldova. * A special regional engagement initiative based on formalizing cooperation between ITU and country authorities was launched to enhance the dataset of the ITU interactive transmission maps; * A regional initiative project on supporting the investment opportunity mapping systems in broadband infrastructure for South Eastern Europe was developed. This included a series of meetings to build the capacities of countries, the development of background documents on mapping systems, and the publication of global guidelines on establishing national mapping systems with the aim of scaling up assistance to the countries in Europe and beyond. In 2021, assistance was provided to Bosnia and Herzegovina and Moldova in the field of national broadband mapping systems. |

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| STUDY GROUPS  Three annual deliverables (papers) from ITU-D study groups were developed and published as follows:  [Trends in new broadcasting technologies, services and applications](https://www.itu.int/oth/D0717000001/en) (Question 2/1, released in July 2019): This paper covers the latest trends in broadcasting, including new service scenarios based on the latest technologies, the work being carried out in ITU-T and the economic and regulatory impacts for end users, stakeholders and regulatory bodies.  [Considerations about the cost structure of the digital transition, including new services and applications](https://www.itu.int/oth/D0723000001/en) (Question 2/1, released in May 2020): This paper provides an insight into the evolution of broadcasting services and the significant financial impact of digital transition, with details on cost elements to consider carefully when planning and implementing the steps towards a successful migration to digital broadcasting, and the analogue switch-off.  Findings from both papers are further reflected in the [final report of Question 2/1](https://www.itu.int/en/myitu/Publications/2021/07/27/08/38/Strategies---policies---regulations-and-methods-of-migration-and-adoption-of-digital-broadcasting).  [Broadband development and connectivity solutions for rural and remote areas](https://www.itu.int/oth/D0723000002/en)(Question 5/1, released in May 2020): This paper highlights the major challenges for rural and remote area connectivity, which includes inadequate supporting infrastructure, difficult terrain, illiteracy, high cost of installing information and communication technology (ICT) infrastructure and policy issues. It recommends ways in which regulators, policy-makers and operators can address these challenges.  Two workshops were held in conjunction with the ITU-D Study Group 1 Rapporteur Group meetings in September 2019. The [workshop on rural connectivity](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/session-Q5-1-sept19.aspx) discussed key challenges, in particular the costs of connecting people in rural areas. The [workshop on the implementation of broadband projects](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/session-Q1-1-sept19.aspx) shared success stories and challenges encountered from projects in all geographical regions. The outcomes of these workshops enriched the [final report of Question 5/1.](https://www.itu.int/en/myitu/Publications/2021/07/22/13/20/Telecommunications-ICTs--for-rural-and-remote-area)  A workshop on ICT conformance and interoperability: challenges for developing countries, was organized in conjunction with ITU-D Study Group 2 Question 4/2 on assistance to developing countries for implementing conformance and interoperability (C&I) programmes and combating counterfeit ICT equipment and theft of mobile devices. This event explored and proposed solutions for: ICT products as SDGs enablers, innovative collaboration, and new technologies (especially IoT). The content exchanged and lessons learned during the workshop were used as input to the final report of Question 4/2. The workshop programme and presentations can be accessed at the following study group [link](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/session-Q4-2-oct19.aspx).  Question 4/2 features 4 illustrations on Conformity and Interoperability in the ICT environment: Why C&I?; C&I frameworks; Hyperconnected societies through ICT devices; and combating counterfeit ICT devices. These are available for download [here](https://itu.int/go/ci_development).  A [tutorial on AI and emerging technologies](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/tutorial_AI_oct19.aspx) was held at ITU in conjunction with ITU-D study group rapporteur group meetings in 2019 and enabled ITU Member States, Sector Members, and ITU staff to learn more about AI and its opportunities and challenges. Trainers and speakers from academia, the private sector and government agencies shared their insights, while the discussions highlighted some of the questions regarding intellectual property rights, ethics and accountability.  A webinar was held in July 2020, on [broadcasting services for COVID-19 response](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/Webinars/2020/Q2-1-july03.aspx). It focused on ways broadcasters are helping to respond to the COVID-19 global health crisis, contributing social awareness and information as well as addressing new communication needs. The speakers highlighted case studies the role of broadcaster in mitigating the crisis, and new services and applications that can be leveraged to help populations, including e-learning and emergency response.  The last mile connectivity solutions guide was presented at the fourth ITU-D Study Group 1 plenary meeting held in March 2021. The Question 1/1 Co-Rapporteur was one of the contributors to the guide.  In April 2021, an ITU workshop on the Future of Television for Asia and Pacific kickstarted the dissemination of findings from the ITU-D Study Group final reports – here specifically for [Question 2/1.](https://www.itu.int/en/myitu/Publications/2021/07/27/08/38/Strategies---policies---regulations-and-methods-of-migration-and-adoption-of-digital-broadcasting) |

## 9. Policy and regulation: Supporting collaborative policy and regulatory frameworks for digital market development and user well-being

### The Global Symposium for Regulators

The Global Symposium for Regulators 2018 (held in Geneva), 2019 (held in Vanuatu), and 2020 2021 (both virtual) , continued to provide a global platform for discussions between government ministers, heads of regulatory authorities, and industry executives from around the world. They featured interactive sessions and trainings, and adopted Best Practice Guidelines on themes such as [new regulatory frontiers to achieve digital transformation](https://www.itu.int/net4/ITU-D/CDS/GSR/2018/documents/Guidelines/GSR-18_BPG_Final-E.PDF) (GSR-18), [fast-forwarding digital connectivity for all](https://www.itu.int/en/ITU-D/Conferences/GSR/2019/Documents/GSR19BestPracticeGuidelines_E.pdf) (GSR-19), [the gold standard for digital regulation](https://www.itu.int/en/ITU-D/Conferences/GSR/2020/Documents/GSR-20_Best-Practice-Guidelines_Final_E.pdf) (GSR-20), and [Regulatory uplift for financing digital infrastructure, access and use](https://www.itu.int/en/ITU-D/Conferences/GSR/2021/Documents/GSR-21_Best-Practice-Guidelines_FINAL_E_V2.pdf) (GSR-21).

The [20th edition of GSR](https://www.itu.int/en/ITU-D/Conferences/GSR/2020/Pages/default.aspx) was a fully virtual event, held in September 2020. As GSR celebrated its 20th edition, the global community of ICT regulators celebrated 20 years of evolving regulatory frameworks. The anniversary event focused on providing concrete guidance towards achieving meaningful connectivity in the digital transformation. GSR-20 attracted over 2 448 participants and over 90 695 web hits. In addition, regional regulatory roundtable discussions, side events and a training event were held online over the summer of 2020 as part of the GSR+ series of events, working with membership, experts, regional regulatory associations and other partners.

The [GSR-21 Programme](https://www.itu.int/en/ITU-D/Conferences/GSR/2021/Pages/default.aspx) (GSR+), was held virtually as a series of interconnected regional and virtual events across all regions between April to June 2021. It discussed regional regulatory perspectives, challenges and innovative solutions in the lead up to core global sessions that took place in June 2021, held under the theme Regulation 4 digital transformation: Accelerating inclusive connectivity, access and use. The core sessions (GSR-21), held online from 21 to 25 June, attracted 637 participants, including 439 delegates representing 115 Member State countries, and was fully aligned and integrated into the lead up to WTDC-22, with its traditional Leadership Debate becoming a stop on the Road to Addis.

### The positive impact of broadband and ICT Regulation

A series of reports quantified the positive economic impact of broadband, digital transformation and the interplay of ICT regulation both at [regional and global levels](https://www.itu.int/pub/D-PREF-EF.BDR-2018). The main outcomes from the econometric modelling by region suggest that an increase of 10 per cent in mobile broadband penetration would yield an increase in 2.46 per cent in GDP per capita in the [Africa region](https://www.itu.int/pub/D-PREF-EF.BDT_AFR-2019), while the increase in GDP per capita would be of 1.73 per cent in the [Americas region](https://www.itu.int/pub/D-PREF-EF.BDT_AM), 1.82 per cent in the [Arab States region](https://www.itu.int/pub/D-PREF-EF.BDT_ARS-2019), 0.51 per cent in the [Asia-Pacific region](https://www.itu.int/pub/D-PREF-EF.BDT_AP-2019), and 1.25 per cent in [CIS region](https://www.itu.int/pub/D-PREF-EF.BDT_CIS-2020). In the Europe region, countries would enjoy an increase of 2.1 per cent. The [*2020 Report on How broadband, digitization and ICT regulation impact the global economy*](https://www.itu.int/en/ITU-D/Regulatory-Market/Pages/Economic-Contribution.aspx) sets out six powerful and concrete steps that will maximize the economic impact of strategic ICT investment decisions, as well as concrete recommendations designed to boost economic impact.

A 2021 Report on [The impact of policies, regulation, and institutions on ICT sector performance](http://handle.itu.int/11.1002/pub/817bc896-en)uses econometric modelling to pinpoint the impact of the regulatory and institutional frameworks on the performance of the ICT sector and its contribution to national economies. The modelling allowed to capture fresh insights backed by authoritative data on the evolution of ICT regulation since 2007, the ICT Regulatory Tracker, and a global dataset on ICT markets economics.

A 2021 ITU Report on [Financing Universal Access to Digital Technologies and Services](https://www.itu.int/en/ITU-D/Conferences/GSR/2021/Documents/Publications/GSR21_Financing%20Universal%20Access%20To%20Digital%20Technologies%20And%20Services.pdf)

provides guidance on the policy and regulatory frameworks needed to attract greater private sector participation in financing universal connectivity, access and uptake, and explores business models for deploying supply and demand side projects and initiatives in the digital era.

The report from the Working Group of the Broadband Commission on the Digital Infrastructure Moonshot for Africa entitled [*Connecting Africa Through Broadband: A strategy for doubling connectivity by 2021 and reaching universal access by 2030*](https://broadbandcommission.org/Documents/working-groups/DigitalMoonshotforAfrica_Report.pdf) benefited from substantive contributions from ITU. The report quantified the cost of bridging the broadband gap in Africa and provided a roadmap and action plan for reaching universal broadband connectivity in the region by 2030.

The 2020 I[TU report Connecting Humanity: Assessing investment needs of connecting humanity to the Internet by 2030](https://www.itu.int/en/publications/ITU-D/pages/publications.aspx?lang=en&media=electronic&parent=D-GEN-INVEST.CON-2020) estimates the investment needed to achieve universal, affordable broadband connectivity for all humanity by the end of this decade. This study was developed with the support of Saudi Arabia, as part of ITU’s role of the Knowledge Partner for the Digital Economy Task Force of the G20 Presidency.

### #REG4COVID – Global Network Resiliency Platform

In March 2020, in response to the global COVID-19 crisis, ITU launched the Global Network Resiliency Platform ([#REG4COVID](https://reg4covid.itu.int/)) to share information about initiatives that regulators and operators around the world introduced to help ensure communities remain connected. This included key areas such as broadband availability, accessibility and affordability, consumer protection, traffic management and emergency telecommunications. ITU first looked at the immediate responses, followed up by looking at the “recovery” phase to address questions such as: What next? Are these measures sustainable? How have regulatory frameworks evolved? What long-term policy and regulatory trends have been introduced for and by the different groups of stakeholders? What works and what does not work?

A series of high-level virtual events on digital cooperation was delivered under the #REG4COVID initiative. The events included [Webinar #1: Connectivity - Situation Assessment](https://www.itu.int/en/ITU-D/bdt-director/Pages/Speeches.aspx?ItemID=253) and [Webinar #2: Connectivity: Best Practices: What Works, What Doesn't](https://www.itu.int/en/ITU-D/bdt-director/Pages/Speeches.aspx?ItemID=255). While addressing the immediate needs during COVID-19, the [Joint Digital Development Action Plan by the ITU/GSMA/World Bank/WEF](https://www.itu.int/en/Pages/covid-19.aspx) and related high level events focused on immediate actions to promote network resilience as well as to ensure access and affordability of digital services.

In addition, the #REG4COVID platform features topical research and analysis such as the [REG4COVID Analytics](https://sway.office.com/4AcrlY9R4BMemONI), a First Overview of ICT Policy and Regulatory Key Initiatives in Response to COVID-19, a [2020 Report on Pandemic in the Internet Age: communications industry responses](https://reg4covid.itu.int/wp-content/uploads/2020/06/ITU_COVID-19_and_Telecom-ICT.pdf), a 2021 report on [Pandemic in the internet age: From second wave to new normal, recovery, adaptation and resilience](https://www.itu.int/en/myitu/Publications/2021/05/11/08/52/Pandemic-in-the-Internet-age), as well as discussion papers on [Last Mile Connectivity in the Context of COVID-19](https://reg4covid.wpengine.com/wp-content/uploads/2020/11/FINAL_Last-Mile-Connectivity_Covid.pdf), the [Economic Impact of COVID-19 on Digital Infrastructure - Report of an Economic Experts Roundtable](https://www.itu.int/pub/D-PREF-EF.COV_ECO_IMPACT-2020), and [Telecommunication industry in the post-COVID-19 world (Report of the 7th ITU Economic Experts Roundtable).](https://www.itu.int/en/myitu/Publications/2021/05/11/08/10/The-telecommunication-industry-in-the-post-COVID-19-world) As part of REG4COVID, a Joint-Statement: [UN75 GGF Partnership Dialogue for Connectivity - Accelerating Digital Connectivity in the Wake of COVID-19](https://reg4covid.itu.int/wp-content/uploads/2020/09/UN75_Partnership_Statement_PD_final.pdf), was also adopted.

### Economic Experts Roundtables

Since being launched at the ITU Telecom World in 2015, the[Economic Experts Roundtables](https://digital-world.itu.int/events/2019-budapest/session-videos/)have brought together a wide cross selection of ICT economic and industry experts, who exchange views on the latest trends and issues related to the development of telecommunication/ICTs, focusing on notable economic and financial aspects.

Building on the previous discussions, the [findings and conclusions](https://www.itu.int/en/ITU-D/Regulatory-Market/Pages/Economic-Contribution.aspx) of three Economic Experts Roundtables held in 2020 and 2021 were concise and actionable reports for policy makers, regulators and other industry decision makers.

### ITU ICT regulatory metrics and analysis

Published in 2018 and 2020, the [Global ICT Regulatory Outlook Report](https://www.itu.int/en/ITU-D/Regulatory-Market/Pages/giro20.aspx)s have become part of a landmark ITU series, focusing on policy and regulatory trends in the ICT sector and bringing together cutting-edge research on various topics as well as evidence and practical advice to support regulators embarked on their journey to fifth generation collaborative regulation. ​The reports provide organic analysis based on home-grown data, expertise and analytics. The Global ICT Regulatory Outlook Series is targeted at a wide audience of ICT professionals, including ICT regulators and ministries, Chief Regulatory Officers, policy advisers and academia.

Throughout 2020 and 2021, broad consultation with ITU Member States, regulatory practitioners and other stakeholders allowed ITU to crowd-source ideas and feed them into a design thinking process and an [expert review](https://www.itu.int/en/ITU-D/Conferences/GSR/2021/Documents/Publications/G5Benchmark_ReviewBoardReport_21062021.pdf) to enhance the framework of the [G5 Benchmark](https://app.gen5.digital/benchmark/about?_ga=2.241065987.1248911239.1644245263-233529912.1625821663&_gl=1*dqdap*_ga*MjMzNTI5OTEyLjE2MjU4MjE2NjM.*_ga_27GW57NRWK*MTY0NDI0NTI2Mi41OS4xLjE2NDQyNDUzNjQuMA..), with key components of a next-generation regulatory blueprint. It further built a series of country case studies on regulatory and institutional frameworks and collaborative governance in selected countries from different regions. The [case studies](https://gen5.digital/national-approaches/library-of-national-approaches-to-collaborative-governance/) focused on developing a better understanding of the role and impact of collaboration and collaborative governance, and the use of new tools for regulating ICT markets.

The [G5 Accelerator](https://gen5.digital/), launched in 2021, brings together high-value tools and resources offering practical, step-by-step support for countries already embarked or planning to embark on their digital transformation journey. A set of complementary metrics, including the [ICT Regulatory Tracker](https://app.gen5.digital/tracker/metrics?_ga=2.112709892.163813749.1631883040-233529912.1625821663&_gl=1*1hkdbqv*_ga*MjMzNTI5OTEyLjE2MjU4MjE2NjM.*_ga_27GW57NRWK*MTYzMTg4MzAzOS4xOC4xLjE2MzE4ODMwODIuMA..), an evidence-based tool for decision-makers and regulators in the journey from G1 through G4, and the [G5 Benchmark](https://gen5.digital/g5-benchmark/), was made available for regulators and stakeholders to better understand the interplay between regulatory policies, markets and economic growth in ICT and digital markets. The metrics enable countries to find their path through the digital transformation and craft custom roadmaps to accelerate progress and amplify impact.

Building on the framework of the Benchmark for Fifth generation collaborative digital regulation (G5 benchmark), a series of country reviews have been conducted to assess how far along countries are on the digital transformation journey and to identify priority areas to be tackled towards reaching advanced maturity in digital markets across the board. Such country reviews have been developed leveraging a collaborative process with national ICT regulators and a broad stakeholder outreach, in addition to the in-depth data analysis. Country reviews were developed in 2021 on Colombia, the Democratic Republic of Congo, Egypt, Kenya, Mexico, Moldova, Romania, Rwanda, Saudi Arabia, Senegal and Tanzania.

The [ICT Policy Impact Lab](https://app.gen5.digital/lab?_gl=1*jyvqug*_ga*MjMzNTI5OTEyLjE2MjU4MjE2NjM.*_ga_27GW57NRWK*MTYzMTg4MzAzOS4xOC4wLjE2MzE4ODMwMzkuMA..&_ga=2.116715526.163813749.1631883040-233529912.1625821663) , developed in 2021, pinpoints the impact of regulatory policies and institutional frameworks on the ICT sector performance and its contribution to national economies. It shows data on the impact of reforms on investment, with the simulation lab based on empirical evidence from 145 countries between 2008 and 2019 and developed to support ICT regulators and policy makers in reigniting digital markets and economies.

**Regulatory training**

Several training sessions were held for regulators to address digital policy, regulation and market developments and collaborative regulatory approaches for digital transformation.

Within the framework of the ITU Academy, GSMA offered a ‘taster’ training session for policy-makers and regulators on competition policy in the ICT/ mobile sector at GSR-19. The session provided a half-day introduction to the topic, based on content from the United Kingdom Telecoms Academy-accredited two-day course, *Competition Policy in the Digital Age*, which was offered as an online course to policy-makers and regulators through the ITU Academy in 2019.

ITU, USTTI, and World Bank Group (WBG) collaborated to conduct a regulatory best practice training in Nairobi, Kenya, for officials from Eswatini, Ethiopia, Kenya, Somalia, South Sudan, and Sierra Leone. With important support from the Communications Authority of Kenya and the African Telecommunications Union (ATU), the three-day programme addressed the role of an independent communications regulator, licensing frameworks and regulatory best practices that spur investment.

Ahead of the celebrations of the 20th edition of GSR (in 2021), USTTI and ITU teamed up to provide a *behind the scenes* look at the work taking place to prepare for the deployment and use of emerging technologies. Experts provided regulators with information on the technological underpinnings of emerging technologies and the spectrum planning that is taking place to enable these new services. The GSR-21 joint ITU-USTTI training provided regulatory officials with information and insights on how emerging technologies can accelerate the digital transformation process, and how such smart technologies and innovation have so far strengthened digital resilience. This training session saw experts further discuss how these emerging technologies interact with key policy and regulatory trends.

ITU developed training materials for regulators jointly with the World Bank as part of the Digital Regulation Handbook and [platform](https://digitalregulation.org/). An online training programme on digital regulation was developed with the support of CITC Saudi Arabia, for a delivery in two phases. Phase 1, focusing on regulatory governance and collaborative regulation, took place in March 2021, with phase 2 offered in December 2021 to cover all Arab states.

### Consumer protection

The Digital Consumer Forum for Africa 2019 focusing on data protection, consumer privacy, trust, and security was held in Eswatini and adopted a set of recommendations and best practice guidelines for policy and regulators in the Africa region. The forum preceded a workshop on collaborative approaches for consumer protection for digital financial inclusion with participation from a range of stakeholders representing finance, insurance, local government and academia, among others.

### Financial Inclusion Global Initiative (FIGI)

Assistance was provided on how to leverage ICTs for digital financial inclusion in China, Egypt, and Mexico, under the Financial Inclusion Global Initiative. The

initiative led by ITU, the World Bank Group, the Committee on Payments and Market Infrastructures (CPMI) was supported by the Bill and Melinda Gates Foundation. Between 2017 and 2021, activities focused on providing a gap analysis for Egypt on needs to foster a secure resilient infrastructure for ICTs, mapping of infrastructure in Mexico, defining pilot projects to leverage ICTs to foster digital financial services to eradicate poverty in China, defining and putting into place collaborative regulatory mechanisms to underpin a whole-of-government approach for digital financial inclusion in Mexico, providing capacity building activities on digital financial inclusion, collaborative regulation , Quality of Service (QoS, ), and a Security Clinic for Mexico . Training was also provided on basic digital financial skills for the poor in Mexico and China. Materials were also prepared leverage ICTs for DFI in rural areas in Mexico and China.

Cross-sectoral cooperation was strengthened through digital agriculture and digital financial initiatives and training in China.

### European Union/African Union Digital Economy Task Force recommendations

As an active member of the [European Union-African Union Digital Economy Task Force (EU-AU DETF)](https://ec.europa.eu/futurium/en/eu-au-digital-economy-task-force/towards-eu-africa-digital-partnership-0.html) , BDT participated in developing a shared vision, a set of common agreed principles and a list of policy recommendations and actions in a report aimed at addressing the principal barriers faced by the Africa region as it seeks to develop the digital economy and society. The main areas addressed include accelerating universal access to affordable broadband, guaranteeing essential skills for all to enable citizens to thrive in the digital age, improving the business environment and facilitating access to finance and business support services to boost digitally enabled entrepreneurship, and accelerating the adoption of e-services and the further development of the digital economy for achieving the Sustainable Development Goals. Recommendations were shared with the African Union Commission for the development of the African Union Digital Transformation Strategy.

### Economic regulation and costing

In the framework of ITU-D Study Group 1 Question 4/1 on Economic policies and methods of determining the costs of services related to national telecommunication/ICT networks, a new set of [Guidelines on Cost Modelling](https://www.itu.int/md/D18-SG01.RGQ-C-0324/) addressed to national regulatory associations (NRAs) were approved in 2021, focusing on the specific practical knowledge required for NRAs to implement cost-modelling solutions in their countries. They were released together with ITU-D Question 4/1 final report, ‘Economic policies and methods of determining the costs of services related to national telecommunication/ICT networks, including next-generation network. Since 2020, the [ITU Regional Economic Dialogues (RED)](https://www.itu.int/en/ITU-D/Regulatory-Market/Pages/Events.aspx) were organized in the Africa, Americas, Arab States, Asia and Pacific and CIS regions, addressing the advances in economic and financing strategies in the digital era as well as the policy and economic approaches for digital transformation. It was also the occasion to discuss about the recovery strategies to build back better and ensure connectivity and business continuity during and after the COVID-19 crisis. The outcomes and recommendations were shared with the ITU study groups and GSR-21.

In terms of capacity building, since 2020, a multi-stakeholder training on *Advances in Regulatory Costing and Pricing Strategies for Digital Services for the Arab States and the Caribbean Countries*, as well as on competition analysis in digital applications environment for the Asia and the Pacific region were organized. In addition, in the framework of ITU Academy, a series of trainings on Business Planning for Infrastructure Development was organized for Africa, Americas and Europe regions. Direct assistance on market analysis, tariff/pricing policies and cost modelling was provided to Sao Tome and Principe, Palestine, Sudan, and Comoros. A specific training was organized in each country in order to guarantee the transfer of essential national skills for the staff of the national regulatory authorities.

The ITU Report on Digital competition policy and regulation in the Africa and Arab States reviews the major competition policy and regulatory challenges that affect the development of a vibrant digital apps environment enabled by digital platforms. It addresses fundamental questions on how regulatory practices need to change in the context of evolving technologies, and on the rise of digital platforms and their socioeconomic impact on the countries in these regions.

### Digital Regulation Handbook and platform

In 2020, the World Bank and the International Telecommunication Union jointly developed the [Digital Regulation Handbook](https://www.itu.int/en/ITU-D/Regulatory-Market/Pages/DigiReg20.aspx) and a new [online digital regulation platform](https://digitalregulation.org/) to continuously update and revise the ICT Regulation Toolkit and Handbook. The Handbook provided a high-level snapshot of the current state of play in 2020, while the platform is dynamic and has been updated continually since 2020, to reflect the rapidly changing digital world by providing more detailed guidance and case studies of best practice in regulation of the digital economy. Thematic areas include regulatory governance and independence, competition and economics, access for all, consumer affairs, data protection and trust, spectrum management, emerging technologies, technical regulation, and emergency communications.

### Direct assistance

The following direct assistance was provided:

* In 2018, support was provided to Antigua and Barbuda in reviewing the draft National Telecommunications Bill and to identify recommendations to support regulations consistent with the Act. Recommendations for the regulatory regime and complementary regulations to the draft bill were put forward for consideration;
* Assistance was provided to Trinidad and Tobago in the further development of a national ICT plan (Fast Forward II) through workshop sessions in 2017/18. This took the form of technical advice to the government to ensure organizational, functional and governance structures that are consistent with the national agenda and goals for the ICT sector. In November 2019, presentations were delivered in pursuit of the review and reform of the Data Protection and Electronic Transitions Act of Trinidad and Tobago. These concentrated on international best practice, and the roadmap both on data protection and on electronic transactions, emphasizing challenges and opportunities for updating and improving local laws passed in 2011.

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| **Regional Initiatives**  Africa region   * In 2021, BDT provided assistance in the planning and design of Sao Tome and Principe’s 4G mobile network, as well as for the revision of the country’s related legislation; * In 2020, ITU supported Eswatini in building a business case for separating Eswatini Posts and Telecommunication Corporation into three separate entities (Eswatini Postal Operator for postal and courier operations, Eswatini Communications Infrastructure Corporation to operate the backbone infrastructure at wholesale level together with the broadcasting signal distribution network, and Eswatini Telecommunication Corporation as telecommunications retail operator. Consultations continued to take place in 2021. * Between 2017 and 2020, direct assistance in the transition to digital terrestrial television was provided to the Central African Republic, Equatorial Guinea, and Sao Tome and Principe, to review and update their national roadmaps; * Direct assistance was provided to Liberia and Gambia in 2019 through the organization of two workshops on cybersecurity readiness assessment and spectrum management; * In 2019, the ITU [Regional Economic Dialogue on Telecommunications/ICTs for Africa](https://www.itu.int/en/ITU-D/Regional-Presence/Africa/Pages/Regional-Economics-and-Finance-Dialogue-%28RED%29-for-Africa-.aspx) (RED-AFR) was held back-to-back with a Workshop on Economics, Finance and Business models for 5G and new Technologies for Digital Africa, in Lomé, Togo, from 9-11 September, 2019. The event was organized in close collaboration with Togo’s *Autorité de Réglementation des Secteurs de Postes et de Télécommunications* (ARTP).   Americas region   * For Antigua and Barbuda, the ITU drafted the country’s National Telecommunications Bill in 2018. Recommendations for the regulatory regime and complementary regulations to the draft bill/Act were also put forward for consideration; * In November2020, ITU, together with the Telecommunications Unit, Ministry of Innovation, Science and Smart Technology, Barbados, held an online workshop on Advances in regulatory costing and pricing strategies for digital services for the Caribbean Countries; * Since 2019 ITU developed two important projects with the Brazilian regulatory body ANATEL to provide the country with a regulatory environment conducive to digital transformation, and for methodological support for the development of studies for structuring the Agency as the regulatory body of the sector. This includes reviewing five Terms of References for the development of capacities of ANATEL officials. * The first project between ITU and ANATEL, with a budget of USD 7 million, assisted the agency with the review of the telecommunications regulatory framework. The project includes a number of recommendations (i) to modernize and update the Brazilian General Law of Telecommunications (LGT); (ii) to change the scope of the concession contracts with telecommunication service providers, aiming at increasing infrastructure investments and the expansion of broadband access networks; (iii) to create a Strategic Plan of digital transformation; (iv) to build confidence and improve the regulator’s relationship with consumers of telecommunication services; (v) to make the Brazilian regulator a reference in the use of data & analytics for decision making, and (vi) to provide training courses to improve the performance and management of the workforce necessary to fulfil the responsibilities and the mandate of the regulator; * The second project supported the Brazilian regulator ANATEL in the revision of its Strategic Plan. * A case study on the evolution of ICTs, the economic perspective and the policy and regulatory environment was prepared for Ecuador; * In 2018, the ITU Regional Economic Dialogue on Telecommunications/ICTs for Latin America and the Caribbean (RED-AMS) was organized by BDT, and in close collaboration with the Federal Telecommunications Institute - IFT of Mexico. A total of 176 delegates from 14 countries participated in the Dialogue. RED brought together representatives from Regulatory Associations, Regional Consumer Associations and Private Sector Associations, such as the Eastern Caribbean Telecommunications Authority (ECTEL), the Telecommunications Regional Technical Commission - Central America (COMTELCA), *la Procuraduría Federal del Consumidor de México* (PROFECO), GSMA, the *Asociación Interamericana de Empresas de Telecomunicaciones* (ASIET), and others; * ITU-D Study Group 1 Question 4/1 Experts’ Knowledge Exchange - Economic policies and methods of determining the costs of services related to national telecommunication/ICT networks was held in Mexico in September 2018, back-to-back with the Regional Economic Dialogue of Telecommunications/ICTs for Latin America and the Caribbean (RED); * The ITU Policy and Economic Colloquium 2020 - ITU Americas IPEC 2020, was held online, in October 2020. This activity was organized by the BDT, in close collaboration with the Supervisory Agency for Private Investment in Telecommunications (OSIPTEL) of Peru. It included a webinar on COVID-19 on Challenges and opportunities for Telecommunications/ICT in the Americas Region, the Regional Economic Dialogue (RED), and a meeting of the ITU-D Question 4/1. A total of 240 participants registered, from 39 countries around the world, with 24 out of the 39 countries from the Americas region; * The ITU Policy and Economic Colloquium 2021 - ITU Americas IPEC 2021, was held online, in May 2021. The event was organized by the BDT, in close collaboration with the Superintendency of Telecommunications (SIT) of Guatemala. It included a GSR Regional Regulatory Roundtable for the Americas Region, the Regional Economic Dialogue (RED), and a meeting of the ITU-D Question 4/1. IPEC-21 was attended by over 260 participants from 24 Member +States from the Americas region and 36 Member States from other regions. * The Forum on the Conformance and Interoperability (C&I) in Innovation for Youth and a workshop on Establishing a Mutual Recognition Agreement (MRA) for the Caribbean Countries were held in Port-of- Spain, Trinidad & Tobago, in June 2018; * The Americas region designed a Conformance & Interoperability Training Program (CITP) in close coordination with the Capacity and Digital Skills Development (CDS) Division and Telecommunication Networks and Spectrum Management Division. This program was delivered online, through the ITU Academy and in close coordination with the Capacity and Digital Skills Development (CDS) Division and taking advantage of lessons learned from the Spectrum Management Training Program (SMTP). As of September 2021, the CITP included 10 modules. Of these, 5 had been developed, 3 had been peer reviewed and 2 were still pending; * In 2021, ITU offered the module "Start-ups readiness for IoT deployment training: Pre-compliance testing" as an alternative to a face to face training. More than 40 participants were certified; * From May to November 2018, ITU, in coordination with the Association of Telecommunication Enterprises of the Andean Community (ASETA), and beneficiary countries, the Andean countries Colombia, Ecuador, Peru and Bolivia, produced a study on "Interconnectivity & Reduction of telecommunication service prices and Internet access cost"; * From April to August 2018, ITU supported Surinam to define its National IXP model; * In July 2018, ITU, in collaboration with the Food and Agriculture Organization (FAO) and CTU (the Caribbean Telecommunications Union), organized an e-Agriculture Strategy Development Regional Workshop for the Caribbean, in Georgetown, Guyana. As an outcome of this Forum ITU, FAO and Compete Caribbean agreed to collaborate on a project to develop a Regional e-Agriculture Strategy for the Caribbean and a national e-Agriculture Strategies for four countries; * In the area of m- and e-health initiatives, ITU and the Pan American Health Organization (PAHO) agreed on using the [National eHealth Strategy toolkit](https://www.itu.int/pub/D-STR-E_HEALTH.05-2012) to develop an e-health national framework for Guyana. The complete draft strategy was finalized and submitted as an ITU contribution, with PAHO and Guyana continuing this initiative; * BDT enhanced capacity and expertise in Bolivia and Paraguay, two landlocked developing countries, by sharing connectivity guidelines and best practices, and providing policy guidance, through two separate 2018 country case study, one on [Bolivia](https://www.itu.int/pub/D-LDC-LLDC_AM.01) and one on [Paraguay](https://www.itu.int/pub/D-LDC-LLDC_AM.02): “Landlocked developing countries (LLDCs) in the Americas: Connectivity challenges and opportunities”; * The annual event in Americas on Policy and Economics - ITU Policy and Economics Colloquium (IPEC), took place in Santo Domingo, Dominican Republic from 26 to 30 August 2019. The event was divided into two parts: A two-day Dialogue Workshop on 5G and New Technologies, followed by a Regional Economic Dialogue for Latin America and the Caribbean (RED); * ITU-D Study Group 1 Question 4/1 Experts’ Knowledge Exchange - Economic policies and methods of determining the costs of services related to national telecommunication/ICT networks was held in August 2019 in the Dominican Republic, back-to-back with the Regional Economic Dialogue of Telecommunications/ICTs for Latin America and the Caribbean (RED); * BDT implemented a project from 2017-2021 to harness the potential of Information and Communication Technologies (ICTs) to strengthen Digital Financial Services (DFS) and Digital Financial Inclusion (DFI) in China, Egypt and Mexico. Within this context, ITU-D raised awareness on the enabling environment for Financial Inclusion in Mexico through the preparation of 4 country reports on Digital Financial Inclusion in Mexico; * ITU has implemented two FIT (Fund in Trust) projects “Reforma a la Ley General de Telecomunicaciones de República Dominicana” and “Soporte institucional al Instituto Dominicano de las Telecomunicaciones (INDOTEL)”. The projects provided technical assistance to the Dominican Institute of Telecommunications (INDOTEL) in the formulation of policies and standards to meet the challenges presented by new technologies and changes in the ICT sector; * In August 2019, ITU, together with FAO, co-organized the event “ICT innovation Week” in Montevideo, Uruguay at the kind invitation of Antel. The event was attended by over 100 people from Argentina, Bolivia, Brasil, Chile, Colombia, Costa Rica, El Salvador, France, Guyana, Honduras, Italy, Japan, Mexico, Nicaragua, Panama, Peru, and Uruguay; * In August 2019 ITU provided collaborative assistance to St. Kitts and Nevis in its development of a National Broadband Plan with a Broadband Strategy component in order to take full advantage of the digital economy in the 21st century; * Starting in July 2019 and over a period of 6 months, the International Telecommunication Union (ITU) developed and delivered the Digital Policies Programme (EPD) – Re-Sensitizing Government Officials to the Use of ICTs in the Caribbean. The programme targeted senior public servants as well as other public servants involved in any form of public service delivery; * In November 2019, the ITU delivered presentations to the public sector and the private sector to support the reform of the Data Protection and Electronic Transitions Act of Trinidad and Tobago; * In 2020 ITU provided technical assistance to Trinidad and Tobago in the development of its:   + Draft National Electronic Identity Framework.   + Draft National Electronic Identity Roadmap.   + Draft National Electronic Identity Policy   Arab States region   * Over 90 partners contributed to the annual Digital Inclusion Week organized in partnership with UNESCO in 2018, 2019 and 2020 (it is still ongoing in 2021). The week included capacity building and awareness raising activities in addition to discussing challenges on a variety of themes pertaining to ICT accessibility for persons with disabilities, digital financial inclusion, gender and youth; * A face to face “Train the trainers” was developed and customized for the Arab Region on “Accessible Digital Content and Remediation for the stakeholders delivering digital financial services” and delivered to policy makers in 2018 in Cairo, Egypt. * Awareness was raised on issues pertaining to cybersecurity for financial services through a regional workshop in 2018 in Cairo, Egypt and a national workshop in Iraq in 2019. * ITU contributed to the establishment of an enabling environment for digital financial inclusion in Egypt through the country implementation of the Financial Inclusion Global Initiative (FIGI). This included organizing the global FIGI symposium in Egypt, delivering an assessment report on the enabling environment for digital financial inclusion in Egypt from the ICT sector perspective, in addition to building capacities on security of digital financial services via a national security clinic workshop in collaboration with the TSB in 2020. * ITU contributed to tackling the digital financial literacy of children through a regional project titled Malee in partnership with Meem Ain from Saudi Arabia. * ITU raised awareness on the gaps and recommendations needed to establish an enabling environment for digital financial inclusion in Sudan through an assessment report developed for that purpose in 2018.   Asia-Pacific region   * In 2018. ITU assisted the Philippines in the development of criteria for the selection of a new major player in the telecom sector. Based on the criteria, Philippines selected the third operator who has since launched its services. * ITU assisted ASEAN on two frameworks: i) Next Generation Universal Service Obligation (USO 2.0) and ii) child online protection that was endorsed by the ASEAN telecommunication senior officials and ministers; * ITU and NBTC (Thailand) cooperated in building the skills of 50 researchers in Thailand in the area of blockchain. ITU also established collaboration between the United Nations University and ITU Academia members; * ITU conducted several studies on policies related to co-deployment of fibre optic cables with the energy infrastructure and also on innovative business models in the telecommunication sector. These studies were presented in the GSR+ASP event in June 2021, which was held in preparation for the Global Symposium for Regulators. * In 2021, a trilateral cooperation effort between India, ITU and Papua New Guinea (PNG) lead to the development of the Consumer Protection Rules for PNG. The Telecommunication Regulatory Authority (TRA) of India provided experts with input from ITU along with two relevant entities from PNG, namely, the National Information and Communications Technology Authority (NICTA) and the Independent Consumer & Competition Commission (ICCC). * In 2021, ITU assisted Pakistan in making progress to fully adopt a G5 regulatory environment * In 2021, ITU provided direct assistance Sri Lanka on the licensing framework in the telecommunication sector, for a simplified licensing and eventually unified licensing regime. * In November 2021, ITU organized an online workshop on consumer protection in the digital age, data privacy and protection for Pacific island countries. The event was attended by 32 participants, including 16 participants from eight Pacific member countries   CIS region   * In 2020, ITU published a study on broadband regulation in CIS and neighbouring countries; * A base-line assessment on the level of use of various tools and platforms and the level of demand in the CIS countries was carried out in 2021; * Direct expert assistance was provided to Kyrgyzstan on technical regulation of the quality of service, and on collaborative regulation for Armenia.   Europe region   * Two countries were provided with technical assistance: a national plan for broadband development 2020-2025 was developed for Albania and a special 2020 policy paper on ICT infrastructure development and investment was developed for North Macedonia; * Between 2018 and 2021, the annual Regional Regulatory Forums, Regional Economic Dialogue and GSR regional regulatory roundtables provided an additional platform for European regulators to discuss emerging trends; * The Regional Econometric Study for Europe on the Economic Impact of Broadband, Digitization and ICT Regulation was developed and launched * Two collaborative regulation case studies for Moldova and Romania were developed in close cooperation with key stakeholders at the country level. * Technical assistance in the field of broadband mapping regulation and enabling environment was provided to Bosnia and Herzegovina. |

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| STUDY GROUPS  ITU Member States, Sector Members and experts shared their perspectives on *OTT regulation and economic impact*during the ITU-D Study Group 1 rapporteur group meetings. Discussion took place on [Question 3/1](https://www.itu.int/net4/ITU-D/CDS/sg/rgqlist.asp?lg=1&sp=2018&rgq=D18-SG01-RGQ03.1&stg=1) (*Emerging technologies, including cloud computing: m-services, and OTTs: Challenges and opportunities, economic and policy impact for developing countries*) and [Question 4/1](https://www.itu.int/net4/ITU-D/CDS/sg/rgqlist.asp?lg=1&sp=2018&rgq=D18-SG01-RGQ04.1&stg=1) (*Economic policies and methods of determining the costs of services related to national telecommunication/ICT networks*). The presentations and discussion papers were published on the workshop [website](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/joint-session-Q3-1-Q4-1_oct19.aspx). A joint annual deliverable was elaborated accordingly on “[Economic impact of OTTs on national telecommunication/ICT markets](https://www.itu.int/oth/D0723000003/en)” (released in June 2020). The paper reflects the growing importance of over-the-top (OTT) applications and their increasing ubiquity and influence in a digital world and helps ICT stakeholders address complex questions, such as how OTTs are impacting demand, revenue and cost of mobile network operators. It also reflected on the questions of how ICT stakeholders can build partnerships between Mobile Network Operators and Over-The-Top (OTTs) for maximum potential, and how the transition from ICT regulation from past models can keep pace with the new and rapidly changing landscape of OTTs.  A [Cloud for COVID-19 Response web dialogue](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/webinar-Q3-1-may20.aspx) **was held** in 2020 as part of the work of Question 3/1. It focused on ways of leveraging cloud computing amid the current COVID-19 crisis to ensure business continuity, contribute towards social goals and enable fair innovation opportunities. Speakers highlighted cloud use cases designed by public institutions and private players in response to connectivity challenges and needs of all kinds that have emerged amid the crisis. An open discussion with all participants explored the related challenges, opportunities and lessons learned. The outcomes are included in the [final report of Question 3/](https://www.itu.int/en/myitu/Publications/2021/07/22/12/07/Emerging-technologies)1.  **Question 4/1 included two webinars were held, one on the** [Economic implications of COVID-19 on national telecommunication/ICT infrastructure](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/webinar-Q4-1-june29.aspx), in June 2020, and the other on the [impact of unequal access to ICT infrastructure on the geography of COVID-19 diffusion](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/Webinars/2020/Q4-1-july29.aspx) in July 2020. A debate took place on [how more inclusive ICT policy and infrastructure influence could stem the spread of COVID](https://www.itu.int/en/myitu/News/2020/10/05/11/54/How-more-inclusive-ICT-policy-and-infrastructure-influence-could-stem-the-spread-of-COVID-19). The outcomes are included in the [final report of Question 4/1](https://www.itu.int/en/myitu/Publications/2021/07/06/09/42/Economic-policies-and-methods-of-determining-the-costs-of-services) and in the [Cost modelling Guidelines](https://www.itu.int/en/myitu/Publications/2021/07/06/10/00/Guidelines-on-Cost-Modelling).  A webinar on [Unsolicited Commercial Communications/ Nuisance calls: Are consumers more vulnerable in the era of COVID-19](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/Webinars/2020/Q6-1-july02.aspx)was held in July 2020 as part of the work of [Study Group Question 6/1](https://www.itu.int/net4/ITU-D/CDS/sg/rgqlist.asp?lg=1&sp=2018&rgq=D18-SG01-RGQ06.1&stg=1) on consumer information, protection and rights: Laws, regulation, economic bases, consumer networks. The outcomes of the webinar were captured to enrich the annual deliverable “Unsolicited commercial communication challenges and strategies”, released in February 2021. This paper provides an overview of challenges linked to nuisance and fraudulent calls and text messages, and the strategies adopted by different countries to tackle the problem. The outcomes are included in the final report of Question 6/1.  Work of the ITU-D Study Group 1 ([Question 1/1](https://www.itu.int/net4/ITU-D/CDS/sg/rgqlist.asp?lg=1&sp=2018&rgq=D18-SG01-RGQ01.1&stg=1), Question 3/1, Question 4/1) fed into other ITU related activities, including the Regional Economic Dialogues, GSR+ events and the Digital Regulation Handbook and platform. |

## 10. Statistics: Helping countries with evidence-based ICT policy adoption for digitally inclusive societies

### Measuring Digital Development series

The [2018 edition](https://www.itu.int/en/ITU-D/Statistics/Pages/publications/misr2018.aspx) of the *Measuring Information Society Report* (MISR) reported on the state of digital development and featured deep dives on ICT skills; revenue and investment in the telecommunication sector; and ICT affordability. It was the 10th and final edition of the series. In 2019, the series was replaced by the *Measuring Digital Development* (MDD) series, a series of statistical and analytical publications. The first publication in the MDD series was [Facts and Figures](https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2019_r1.pdf) 2019. ITU’s *Facts and Figures* provides a timely assessment of the state of digital development globally and in all regions, through a set of key ICT indicators with estimates for the current year. The [2021 edition](https://www.itu.int/itu-d/reports/statistics/facts-figures-2021/) was launched in November 2021. The 2020 edition of the [*ICT Price Trend*](https://www.itu.int/en/ITU-D/Statistics/Pages/ICTprices/2020default.aspx)*s* report, the second annual publication in the MDD series was released in June 2021. This publication provides a unique insight into the affordability of ICT services, by analysing and comparing data from mobile voice services, mobile data, and fixed broadband for 196 economies. The launch was preceded, in March 2021, by a [policy brief](https://www.itu.int/en/ITU-D/Statistics/Documents/publications/prices2020/ITU_A4AI_Price_Briefing_2020.pdf), jointly published with the Alliance for Affordable Internet, with whom ITU partners to collect the price data, and the release of an [app to explore and visualize](https://www.itu.int/en/ITU-D/Statistics/Dashboards/Pages/IPB.aspx) the richness of ITU’s ICT price dataset.

In September 2021, ITU in partnership with the United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States (UN-OHRLLS), released a report on [*Connectivity in the Least Developed Countries: Status report 2021*](https://www.itu.int/itu-d/reports/statistics/connectivity-in-the-least-developed-countries-status-report-2021/). The report assesses the current level of digital connectivity in the 46 UN-designated least developed countries (LDCs) and provides practical solutions to improve digital access, as well as concrete policy recommendations to help accelerate progress towards universal and meaningful connectivity.

Launched in June 2021, the new [Digital Development Dashboard](https://www.itu.int/en/ITU-D/Statistics/Dashboards/Pages/Digital-Development.aspx) provides a user-friendly overview of digital development for 196 economies. The Dashboard features 37 indicators related to infrastructure and access, Internet use, and enablers and barriers. It presents 10-year trends and comparisons with regional peers. A ‘light’ version is available for mobile and low-resolution devices, while two-page country profiles can be downloaded as PDFs. The underlying data can also be downloaded in Excel format.

Between 2018 and 2021, ITU continued to release its World Telecommunication/ICT Indicators Database (WTID) twice a year in winter (December/January) and in summer (July/August).

Between January to April 2021, and in conjunction with the six Regional Preparatory meetings (RPMs), BDT published the [Digital Trends reports series](https://www.itu.int/en/ITU-D/Conferences/WTDC/WTDC21/Pages/RPM/Digital-Trends-Reports-2021.aspx). This new ITU publication series provides regional overviews of trends and developments in ICT infrastructure, access and use within each ITU region. The reports highlight changes in ICT adoption and during the COVID-19 pandemic, track the evolution of regulation, and review progress and challenges in the area of the ITU Regional Initiatives for each region. The reports highlight progress and identify ICT development priorities in each region.

Since 2018, BDT has made several attempts to resume the publication of an index measuring the level of ICT developments, following the discontinuation of the ICT Development Index (IDI) in 2017. In March 2020, the Secretariat proposed to develop a [new index](https://www.itu.int/en/ITU-D/Conferences/TDAG/Documents/2020%20TDAG/TDAG-20%20Web%20Dialogue%20Index%20Framework.pdf) that would link digital development to the SDGs and in September 2020, the Secretariat made [another proposal](https://www.itu.int/en/ITU-D/Statistics/Documents/events/egti2020/IDI2020_BackgroundDocument_E.pdf) for an index that built on the original IDI. In both cases, Member States did not reach consensus. Since 2018, attempts either to publish the ICT Development Index (IDI) in line with Plenipotentiary Conference (PP) Resolution 131 (Rev. Dubai, 2018) or to develop an entirely new index have been unsuccessful, as no consensus could be reached within the Expert Group on Telecommunication/ICT Indicators (EGTI) and the Expert Group on ICT Household Indicators (EGH). At a virtual consultation in June 2021, ITU’s Administrative Council agreed that further discussion and any decision regarding the future of the IDI should be deferred to the next Plenipotentiary Conference. Consequently, no index was produced between 2018 and 2021.

### Capacity development in statistics

In 2019, an ICT statistics workshop, held in Tashkent, Uzbekistan, was delivered to officials from national statistics offices and focal points for ICT statistics in ministries of communications and regulators in countries across the Arab States region and CIS region. The same year, a similar workshop took place in the Africa region. The objective of the workshop was to strengthen the capacity of countries in the regions to produce national statistics and indicators on telecommunications and ICTs according to international standards, with a focus on the key statistics included in the ITU World Telecommunication/ICT Indicators (WTI) database.

A sub-regional workshop on ICT indicators on the collection of ICT data and statistics, improving data availability, quality and reporting was held in Trinidad and Tobago in April 2019. The two-day, 12-session workshop encompassed an overview of the work on ICT measurement undertaken globally by the ICT Data and Statistics Division, including the ITU Manual and Handbook, ICT Development Index (IDI) and the ICT Price Basket (IPB).

Between 2018 and 2021, the capacity of administrations to carry out data collection, produce and analyse international comparable ICT indicators was improved through several activities. This included a regional workshop on ICT statistics for the CIS region in Almaty, Kazakhstan, for the Asia and the Pacific region in Manila, Philippines, for the Africa region in Lilongwe, Malawi and for the Arab States region in Manama, Bahrain. Sub-regional workshops on ICT statistics for countries in the Asia and the Pacific region took place in Nadi, Fiji; and a Southern African Development Community (SADC) regional workshop on ICT statistics in Botswana. The ITU Workshop on ICT Statistics for Portuguese speaking Countries in Africa, organized in collaboration with the *Instituto Nacional das Communicações de Angola* (INACOM) was held in Luanda, Angola, from 26-29 March, 2019. Member States from Madagascar, Sao Tome and Principe, Angola, Cape Verde, Equatorial Guinea and Guinea Bissau shared experiences and strengthened their capacities to produce national statistics and indicators on telecommunications/ICTs.

The 2020 edition of the ITU [Handbook for the Collection of Administrative Data on Telecommunications/ICT](https://www.itu.int/en/ITU-D/Statistics/Pages/publications/handbook.aspx) was released in June 2020. The Handbook regroups over 90 internationally agreed indicators to help track global ICT developments, focusing on indicators from the telecommunication services sector mainly collected by national regulators. Released at the same time, the 2020 edition of the ITU [Manual for Measuring ICT Access and Use by Households and Individuals](https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual.aspx) focuses on demand-side indicators, mainly collected by national statistical offices. The Manual is designed as a practical tool to guide countries in their ICT data production, serving as a basic reference when preparing, designing and implementing ICT household surveys.

To reach a broader audience and reduce reliance on in-person workshops for capacity development, ITU launched its first online training on ICT statistics in June 2021. Available for free on the ITU Academy platform, “[Measuring digital development: Telecommunication/ICT indicators](https://academy.itu.int/training-courses/full-catalogue/measuring-digital-development-telecommunicationict-indicators)” is the first in a three-part series of online courses that was released in 2021.

### Expert groups

The Expert Group on Telecommunication/ICT Indicators (EGTI) was created in May 2009, with the mandate to revise the list of ITU supply-side indicators (i.e. data collected from operators), as well as to discuss outstanding methodological issues and new indicators. The Expert Group on ICT Household Indicators (EGH) was established in May 2012 to review the statistical indicators for measuring ICT access and use by households and individuals. Both expert groups are open to ITU membership, and to ICT experts and statisticians familiar with data collection on these indicators.

EGTI and EGH meet annually in September or October. During their meetings, the expert groups review the work of the thematic working groups for the current year and propose the themes for the following calendar year. More information is available for the work of these groups in [2018](https://www.itu.int/en/ITU-D/Statistics/Pages/events/egti2018/default.aspx), [2019](https://www.itu.int/en/ITU-D/Statistics/Pages/events/egti2019/default.aspx), [2020](https://www.itu.int/en/ITU-D/Statistics/Pages/events/egti2020/default.aspx) and [2021](https://www.itu.int/en/ITU-D/Statistics/Pages/events/egti2021/default.aspx).

### Partnerships

ITU actively contributes to advancing the statistics agenda within the UN system. Since 2020, ITU has been playing a central role in the implementation of the UN Secretary General’s [Digital Cooperation Roadmap.](https://www.un.org/en/content/digital-cooperation-roadmap/) Between January and August 2021, ITU led the Sub-working group on Key Action 1A of the Roundtable on Global Connectivity, one of the eight roundtables of the Roadmap. The group was tasked with 1) developing a baseline for universal and meaningful connectivity, that informs on where countries currently stand in terms of availability and quality of digital connectivity; and 2) formulating connectivity targets for 2030, that will indicate where countries ought to be by then. Following two rounds of feedback, the outcome document of the Sub-working group’s work was finalized in December 2021.

ITU continues to be an active member of the [**Partnership on Measuring ICT for Development**](https://www.itu.int/en/ITU-D/Statistics/Pages/intlcoop/partnership/default.aspx), and together with UNCTAD and UIS, is one of the three members of its Steering Committee. In 2019, the partnership continued to engage actively in monitoring the Sustainable Development Goals (SDGs) through its Task Group on ICT for the SDGs, co-led by ITU and UNDESA. During the 2019 WSIS Forum, the partnership organized a session on *measurement of progress towards the SDGs through ICT indicators*. This session discussed the progress made by the Task Group and the thematic list of ICT indicators to measure ICT availability and use in sectors relevant to the SDGs that are not covered in the global SDG indicators framework. The list includes 26 ICT indicators, related to 27 SDG targets belonging to 11 goals, which were discussed and agreed upon through a consultation process involving governments and international organizations. The final list was submitted and endorsed by the 51st session of the United Nations Statistical Commission (UNSC), which took place in March 2020.

ITU also chairs the [Committee of Experts on Big Data and Data Science](https://unstats.un.org/bigdata/)’s task team on mobile phone data and is a member of UNSD’s [Committee for the Coordination of Statistical Activities](https://unstats.un.org/unsd/ccsa/).

### World Telecommunication/ICT Indicators Symposium

The [16th edition](https://www.itu.int/en/ITU-D/Statistics/Pages/events/wtis2018/default.aspx) of the World Telecommunication/ICT Indicators Symposium (WTIS) was held in December 2018 with the main focus on the impact of telecommunications/ICTs and emerging technologies on social and economic development. The [17th edition](https://www.itu.int/en/ITU-D/Statistics/Pages/events/wtis2020/default.aspx), initially planned for April 2020, was postponed due to the COVID-19 pandemic and held on 1-3 December 2020, under the theme “Towards an inclusive digital society”. It gathered over 400 experts and practitioners.

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| STUDY GROUPS  Guided by the ITU Member States and Sector Members, concrete steps were taken in the coordination of statistics-related activities between ITU-D study groups and the Expert Group on Telecommunication/ICT Indicators (EGTI) and the Expert Group on ICT Household Indicators (EGH). Experts and management team members participated in meetings of the other groups and reported on areas of common interest. Liaison statements were exchanged between the groups. This collaboration contributed towards implementing Resolution 131 (Rev. Dubai, 2018) of the Plenipotentiary Conference and Resolution 8 (Rev. Buenos Aires, 2017) of WTDC and to sharing information. |

## 11. Strategic Initiatives: Giga, Connect2Recover and I-CoDI

In addition to the results described in each thematic priority above, the 2018 – 2021 period also saw the launch of Giga, Connect2Recover and I-CoDI, significant strategic initiatives that cut across multiple thematic priorities. These were designed to be global in nature and have the potential to scale across multiple countries and regions.

### Giga

Giga, a joint ITU-UNICEF project, was launched at the 2019 UN General Assembly, with the objective to connect every school to the Internet and every young person to information, opportunity, and choice by 2030. Some 2.9 billion people in the world do not use the Internet, of whom 360 million are young people. A lack of access to the Internet means children and young people are excluded from the wealth of information available online, limiting their resources to learn and to grow, and to fulfil their potential. Closing the digital divide requires global cooperation, leadership, and innovation in finance and technology. Giga in particular works closely with the BDT Networks & Infrastructure and Policy & Regulation Thematic Priority teams. The Giga approach consists of four pillars:

* **map** the connectivity of every school and use this information to identify connectivity gaps, taking advantage of new technologies to create a real-time map of school locations and their connectivity levels;
* determine the best possible **technical solutions to connect schools** and provide countries with safe, secure, reliable, fit for purpose infrastructure to support future digital development needs; and
* work with governments and advise them on building affordable and sustainable country specific models for **finance** and delivery;
* partner with governments, UNICEF’s Reimagine Education, Generation Unlimited, the Digital Public Goods Alliance, and ITU’s other relevant Thematic Priority teams to **empower** every young person with access to information, opportunity, and choice.

By the end of 2021, Giga had mobilized over 20M USD in direct resources, with active programs in 19 countries in Africa, Central Asia, the Eastern Caribbean and Central America. Results include over 1 million schools in 41 countries mapped and more than 3 000 pilot schools connected by Giga partners in Kazakhstan, Kenya, and Rwanda, with similar pilots underway in Kyrgyzstan, Palestine, Sierra Leone, and Uzbekistan. Partners include Ericsson, Dubai Cares, Softbank, Musk Foundation, Boston Consulting Group (BCG), Nic.br and Actual.

Giga has also represented ITU as co-chair in two Broadband Commission Working Groups on School Connectivity (2020) and Digital Learning (2021) to advocate the importance of school connectivity. The Reports developed from these Working Groups examined the issues that many governments face when developing and deploying school connectivity initiatives and produced a report introducing a methodology and framework for connecting schools to the internet; and also examined the range of factors that need to be in place for hybrid learning to be considered by focusing on Infrastructure, Hybrid Learning, Digital Skills and the impact of Frontier Technologies.

As part of Giga, ITU has also partnered with the UK Foreign, Commonwealth & Development Office (FCDO) under the FCDO Digital Access Programme. The project is aimed at promoting effective regulation, greater investment and innovative models for school connectivity in underserved communities and for broader digital inclusion in five Digital Access Programme (DAP) countries (Brazil, Indonesia, Kenya, Nigeria, and South Africa). By the end of 2021, regulatory assessments, and infrastructure mapping and analysis were underway in Indonesia, Kenya and Nigeria.

As a result of this early success and impact, Giga is highlighted in the UN Secretary General’s Common Agenda and the Roadmap for Digital Cooperation as a Key Way Forward to achieve Universal Connectivity.

Both the Giga and FCDO projects are expected to continue and scale up in 2022 and beyond.

Additional details on Giga can be found at <https://gigaconnect.org/>.

### Connect2Recover

In September 2020, with the support of the Ministry of Internal Affairs and Communications of Japan and the King Salman Humanitarian Aid and Relief Centre of the Kingdom of Saudi Arabia, ITU launched the Connect2Recover initiative. This initiative aims to help countries reinforce their digital infrastructure and ecosystems, to enhance means of utilizing digital technologies such as telework, e-commerce, remote learning, and telemedicine in the wake of COVID-19.

The Connect2Recover initiative consists of three key elements. First, Connect2Recover developed a methodology for identifying gaps and bottlenecks in the use of digital networks and technologies at country level to respond to and mitigate the consequences of the COVID-19 pandemic, support preparedness for any similar emergencies in the future, and enable recovery and readiness for the “new normal". Second, Connect2Recover assists countries in assessing their needs, gaps and bottlenecks, to develop strategies to ensure that the digital infrastructure and ecosystems adequately support recovery efforts and the “new normal". Finally, Connect2Recover will conceptualize and implement pilot projects to test specific technological solutions in line with national country strategies and policies and will support deep-dive studies in specific areas of digital policy as prioritized by the selected countries, such as digital finance, e-education, e-health, e-government, or teleworking. Specific accomplishments included:

* the development of an internet resilience global methodology, launched in October 2021, to identify gaps and bottlenecks in the use of digital networks and technologies.
* the completion of a Task Force Report to assist in the implementation of the methodology, particularly in data collection by providing detailed processes, templates and questionnaires.
* the completion of a national Internet resiliency assessment in Armenia.
* the initiation of a national Internet resiliency assessment in Kazakhstan.
* In the aftermath of the earthquake in Haiti, an immediate Internet resiliency assessment and assessment on impact of disaster has been commissioned to ensure resilient digital infrastructure under phase 2 of Connect2Recover.
* a study to examine the feasibility of establishing a Single Caribbean Regional Telecommunications Regulator for the Caribbean Community (CARICOM) in the Americas region.
* In the Arab region, Connect2Recover has commissioned the updating of the broadband transmission map for the region through a robust data collection and mapping exercise. The exercise involved 33 operators in 17 countries (807 links, 68,777 km of transmission network data) and increased the total route in Arab region by 55 per cent from 417,034 km in 2017 to 646,729 km.
* Focusing on the education pillar, two pilot projects providing infrastructure and connectivity to schools and communities were implemented. The first pilot, under the Giga project, connected five out of 63 schools in Rwanda to the Internet. The provider to implement the pilot was selected through competitive bidding, deployment work has started, and connectivity was implemented in five schools, including one school hosting refugees, two nine years-based education schools, one twelve years basic education schools and one teacher training college. The second pilot provides connectivity to a community centre and a school while enhancing digital literacy in Haiti.
* In order to ensure affordability and address the device usage gap, ITU, represented by the Connect2Recover team, along with Vodafone Group, and the UN-OHRLLS are co-chairs of the Broadband Commission Working Group on Smartphone Access. The Working Group kick-started its work in November 2021 and is expected to complete its work in September 2022.
* Supporting the call to bridge the digital divide focusing on least developed countries (LDCs), landlocked developing countries (LLDCs) and small island developing states (SIDS) and to build back better with broadband for more resilience, a webinar was organised by the Connect2Recover Initiative in May 2021. This webinar aimed at reinforcing the digital infrastructure and ecosystems of beneficiary countries.
* Showcasing the role of new technologies during the Emerging Technologies week (9 July 2021) Connect2Recover and Giga jointly hosted [a session](https://www.itu.int/en/ITU-D/Conferences/ET/2021/Pages/Programme.aspx) to highlight how emerging technologies and strong national digital infrastructure ecosystems can help countries remain operational and resilient in times of a major global crisis, and, in particular, to contribute to the achievement of SDG 4 on Quality Education.

Finally, in order to accelerate digital inclusion during the COVID-19 recovery globally and to encourage participation from academia, the Connect2Recover launched an [international research competition](https://www.itu.int/en/ITU-D/Pages/connect2recover/research-competition/default.aspx#register) to identify promising research proposals that would entail authoritative research work to develop digital infrastructure for better education, healthcare and job creation. The competition received 307 research proposals by the close of the competition in September 2021. The independent jury, made up of internal and external experts, selected fifteen proposals based on the published evaluation criteria and in December 2021, [fifteen selected research proposals](https://www.itu.int/en/ITU-D/Pages/connect2recover/research-competition/winners/default.aspx) were awarded grants of USD 42 000 each.

### ITU International Centre of Digital Innovation (I-CoDI)

Goal 4 of the Connect 2030 Agenda mandates ITU to facilitate development of an enabling environment for ICT innovation and during WTDC-17, creating a culture of innovation within BDT was identified as a priority by Member States. This was further emphasized in WTDC-17 Objective 3 on Enabling Environment, through which Member States mandated BDT to strengthen the capacity of ITU membership to integrate telecommunication/ICT innovation in national development agendas, and to develop strategies to promote innovation initiatives including through public, private, and public-private partnerships. Member States also identified innovation as a priority at the regional level, with WTDC-17 mandating regional initiatives related to innovation for the Africa, Americas, Arab States, CIS, and Europe regions.

I-CoDI, the International Centre of Digital Innovation (I-CoDI), is an important effort to address these mandates. Its design phase was completed in December 2020, with the support of the Telecommunication Regulatory Authority of the United Arab Emirates. In the context of “enabling innovation to connect the world” and utilizing a one-ITU approach, I-CoDI has the following objectives:

* To help Member States integrate telecommunication/ICT innovation into their national development agendas;
* To develop the capacity within ITU/BDT to integrate innovation in their day-to-day activities.

The piloting phase for I-CoDI began in January 2021, with the aim to further validate the hypotheses established in the design phase. Within ITU, an Internal Impact Challenge Bootcamp involving all three Bureaux of the ITU and the General Secretariat, was launched to explore innovative ways for ITU to better deliver its capacity development programmes. I-CoDI design thinking workshops were also conducted in the Arab States and the Americas regions to help in the prioritization of Regional Initiatives as part of the Regional Preparatory Meetings process for WTDC. Throughout 2021, work continued to allow I-CoDI to support innovation programs for the Member States in the ITU Regions. This included the planned establishment of I-CoDI Regional Hubs in Africa, the Arab Region, and in the Asia and the Pacific.

### Other partnerships

In 2021 ITU and UNHCR further strengthen the global partnership around *meaningful connectivity for refugees* in pursuit of enhanced digital cooperation in support of forcibly displaced, stateless people and their hosting communities, with impactful projects and initiatives in mind. In September 2021 ITU and UNHCR teams met to exchange, explore and set out the partnership roadmap around four areas under which specific joint opportunities have been identified: joint programmes/operations; research, advocacy and communication; data learning and capacity building, and coordination and partnerships.

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| Box 1: Assistance to LDCs, LLDCs and SIDS The Telecommunication Development Bureau’s (BDT) work on the least developed countries (LDCs), landlocked developing countries (LLDCs), and small island developing states (SIDS) cuts across all thematic priorities and strategic initiatives described in this document. BDT’s efforts take into account the specific challenges and needs that these groups of countries face in terms of digitalization and information and communication technology (ICT) uptake and use and are detailed on a [dedicated BDT website](https://www.itu.int/en/ITU-D/LDCs/Pages/default.aspx). Assistance was provided to LDCs, LLDCs and SIDS in all ITU regions and across all thematic priorities, including in the specific areas of regulation and policy, emergency telecommunications and disaster response, digital inclusion, cybersecurity, ICT infrastructure and spectrum management and also in the cross-cutting area of capacity building.  BDT continued to track ICT developments of LDC, LLDCs and SIDS and collected and published statistics for these groups of countries, including through the ITU Facts and Figures. The [2021 Facts and Figures](https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2021.pdf), for example, showed that while globally 63 per cent of the world’s population was using the Internet, Internet penetration in the LDCs had reached only 27 per cent. A number of reports specifically focusing on LDCs, LLDCs and /or SIDS were prepared, and various events highlighted the particular needs of these groups of countries. This included the 2021 week on [Emerging Technologies](https://www.itu.int/en/ITU-D/Conferences/ET/2021/Pages/About.aspx#:~:text=Welcome%20to%20ITU's%20Global%20Event,Island%20Developing%20States%20(SIDS).) involving all ITU regions, which had a focus on LDCs, LLDCs, and SIDS.  Between 2018 and 2021, ITU provided specific country support to most LDCs, LLDCS and SIDS to ensure that they are able to benefit from the opportunities of ICTs. A number of specific reports were produced to track ICT uptake in LDCs, LLDCs and SIDS, and address their challenges and needs.  In September 2021, ITU, together with the United Nations Office of the High Representative for the least developed countries, Landlocked Developing Countries and Small Island Developing States (UN-OHRLLS), published the report on [*Connectivity in least developed countries: Status report 2021*](https://www.itu.int/connectivity-for-ldcs). The report highlights low Internet penetration rates in the LDCs and points to major differences between LDCs. The persisting usage gap reveals that coverage and affordability are not the only barriers to Internet use in LDCs. A lack of awareness of what the Internet is and lacking digital skills remain a major challenge. ITU also published the study [*Economic impact of broadband in LDCs, LLDCs and SIDS*](https://www.itu.int/en/ITU-D/LDCs/Pages/Economic-impact-of-broadband-in-LDCs,-LLDCs-and-SIDS.aspx#:~:text=Mobile%20broadband%20appears%20to%20exert,cent%20increase%20for%20fixed%20broadband.), produced in cooperation with the UN Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States (UN-OHRLLS). The study confirms that both fixed and mobile broadband have a positive impact in the most vulnerable countries. Another report, [*Small Island Developing States and ICTs - a midterm review of the Samoa pathway*](https://www.itu.int/en/ITU-D/LDCs/Pages/Publications/SIDS/ICTs.aspx), shows that SIDS have made progress in terms of the universality and affordability of their ICT networks since the Samoa conference. However, progress has been uneven and there is a major gap between best performing SIDS and the others. Another study, [*ICTs, LDCs and the SDGs: Achieving universal and affordable Internet in the least developed countries*](https://www.itu.int/en/ITU-D/LDCs/Pages/ICTs-for-SDGs-in-LDCs-Report.aspx)*,* highlights the opportunities that ICTs deliver to tackle development challenges in the most vulnerable countries in the world. It analyses ICT developments in the LDCs and tracks progress towards achievement of Sustainable Development Goal (SDG) Target 9.c, to "significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020". Its analysis is based on a new, three-dimensional framework, which classifies LDCs into three categories based on their overall performance across the areas of access, affordability and skills. This will help countries identify areas that are most pressing and where to direct policy and scarce financial and human resources.  In addition to the compilation of ITU assistance to specific countries that has been captured throughout this document, the following section provides some selected examples of the type of support that BDT has provided to the LDCs, LLDCS and SIDS over the last four years. The section lists selected examples, and is not exhaustive.  In the Africa region, BDT:   * established computer incident response teams (CIRTS) and set up national security operation centres in Botswana, Zimbabwe and Malawi to support their national cybersecurity efforts; * supported the establishment of the ICT Regulatory Authority in South Sudan and trained its first group of staff; * built the capacity of participants from Lesotho, South Sudan, and Malawi on the design of national ICT statistics and household survey tools and instruments; * built capacity of participants from Botswana, Burkina Faso, South Sudan, Eswatini, Ethiopia, Lesotho, Mali, Malawi, Niger, Rwanda, Zambia and Zimbabwe on conformance and interoperability of ICT networks and connectivity of equipment and devices; * provided technical assistance to Uganda to finalize the Uganda Digital Vision document; * supported South Sudan, Ethiopia, Uganda, Tanzania and Rwanda in the sharing of experiences and best practices on e-application development and lessons learnt to identify gaps from ideation to successful market entry. * helped to launch the successful pilot of two smart villages and the development of the blueprint for the Smart Villages Initiative in Niger; * under the Horn of Africa Initiative, supported Ethiopia and Eritrea to exchange information on existing digital initiatives and identify approaches to the development of a whole-of-government digital government services platform (Govstack).   In the Americas region, BDT:   * deployed emergency telecommunication equipment to Haiti as a response effort after the devastation caused by the August 2021 earthquake; * developed National Emergency Telecommunication Plans (NETPs) for Bolivia and Saint Lucia; * enhanced capacity and expertise in Bolivia and Paraguay, the region’s two landlocked developing countries, by sharing connectivity guidelines and best practices, and providing policy guidance, through two separate 2018 country case studies on “Landlocked developing countries (LLDCs) in the Americas: Connectivity challenges and opportunities”; * strengthened the regulatory framework for electronic waste in the Dominican Republic; * held the *Accessible Americas: ICT for ALL* event in Cuba in 2021; * assisted Surinam to define its national IXP Model;   In the Arab States region, BDT:   * in 2018, assisted Mauritania and developed a national cybersecurity strategy; * in 2018, assisted Mauritania and developed national guidelines on ICT competition; * in December 2019, conducted a training programme on entrepreneurship and ICT skills for Djibouti and Mauritania and as part of its work on innovation, equipped incubator managers and other ecosystem stakeholders in Djibouti and Mauritania with the methodology and tools to support their growth and entrepreneurship; * in September 2019, developed a spectrum pricing policy and framework for Sudan; * in December 2019, developed Mauritania’s national guidelines of ICT dispute resolution; * in 2020 and 2021 developed an ICT market review and analysis report for Palestine, which, amongst other things, reviewed the existing market structure and determined the level of competition in relevant markets and reviewed the existing legislative and regulatory frameworks to propose remedies suitable to solve market failures in markets were dominance was found to exist; * in 2020, assisted Comoros and Palestine to develop a cost model and price regulation framework; * in 2021, assisted Sudan through the development of a spectrum utilization roadmap for the regulator of Sudan; * in 2021, developed a National Telecommunications Emergency Plans (NETP) for Somalia and Sudan, * in 2021, in collaboration with the World Bank Group, assisted Somalia and developed a comprehensive Human Capital Development Framework (HDCF) for the National Communications Authority of Somalia (NCA). The framework consisted of deep Training Needs Analysis (TNA) of NCA staff, a 3 years Training Plan (TP) and Training Evaluation Framework. In parallel to this, ITU delivered 2 training courses on ICT regulatory frameworks and cost modelling.   In the Asia-Pacific region, BDT:   * in 2018-2019, supported both Bhutan and Papua New Guinea in the development of specific mobile / ICT applications for the delivery of digital services and applications * launched a programme focused on small island developing states to facilitate digital transformation at community level. The programme started in the South Malekula Islands of Vanuatu (2020) in partnership with Office of the Government Chief Information Officer (OGCIO), which was adopted by the Government and attracted partnerships. Other Members from Asia and the Pacific (Fiji, Kiribati, Maldives, Federated States of Micronesia, Republic of Marshall Islands, Nauru, Papua New Guinea, Samoa, Tonga, Tuvalu and Vanuatu) expressed interest in the programme. * in 2021, started working with several Pacific UN Country Teams towards the development of two joint UN SDG fund programmes, covering digital policies and Smart Islands; * in partnership with FAO, BDT supported the development of the e-agriculture strategy in Cambodia, Mongolia, and East and West Sepik provinces of Papua New Guinea. This included the development of e-agriculture mobile applications in Papua New Guinea, an assessment of e-agriculture in Bangladesh; and human capacity building in Papua New Guinea and Mongolia; * built capacity and raised awareness on consumer protection in the digital age, and data privacy and protection through a webinar for Pacific Island countries * conducted a review of Bangladesh’s international long distance telecom policy in 2018 * built capacity of ICT stakeholders in Mongolia in addressing policy and regulatory issues for digital applications * trained nearly 600 girls and young women during the *Girls in ICT* Day digital skills trainings Bangladesh in 2021   carried out a market readiness assessment for IMT2020 (5G) network roll-out and gap analysis in Mongolia (2021) to support achievement of Digital Nation Goals by 2025;   * provided digital infrastructure and network related planning assistance to Afghanistan (broadband connectivity options and spectrum management), Fiji (spectrum management), Tonga (spectrum management, data centre assessment), Solomon Islands (spectrum management), Mongolia (spectrum management, IPv6), Vanuatu (broadcasting master plan, spectrum management) and Samoa (Internet Exchange Point) for improving digital infrastructure planning. * provided emergency telecommunication support to Solomon Islands and Vanuatu in time of disaster; * developed national emergency telecommunication plans (NETPs) for Afghanistan, Papua New Guinea, Samoa, Solomon Islands, Vanuatu and Fiji for better disaster preparedness * supported Kiribati and Solomon Islands in the development of their National Cybersecurity Strategy; * enhanced the cybersecurity capacity of Samoa, Tonga, and Vanuatu through CIRT assessments and skill building;   In the CIS region, BDT:   * assisted Kyrgyzstan in the establishment of a CIRT and conducted a CyberDrill in Azerbaijan; * carried out a digital skills assessment for the telecom sector of Armenia to assess the current level of skills of telecommunication industry workers, and their digital skills development needs; * in supporting digital inclusion and development of digital innovation ecosystems, developed an online course for teachers from rural schools in the Kyrgyz Republic.   In the Europe region, BDT:   * provided technical assistance to Moldova to review its spectrum policy; * provided assistance to North Macedonia for carrying out a National Child Online Protection assessment and operational roadmap aiming at strengthening the safety of children and young people online. |

## 12. Study group work

A total of over 800 documents were received from BDT membership for the study cycle 2018 -2021. These documents were analysed in the context of the 14 Study Group Questions, culminating in [14 final output reports, and the Cost Modelling Guidelines](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/Publications.aspx), and the Cost Modelling Guidelines, all available for free to the public in all official UN languages. The reports were approved in the study group meetings, held from 15 to 26 March 2021. These meetings also focused on future Questions for the 2022 - 2025 study cycle. The conclusions from the study group meetings were reported to TDAG (Documents [TDAG-21/2/5](https://www.itu.int/md/D18-TDAG29-C-0005) and [TDAG-21/2/6](https://www.itu.int/md/D18-TDAG29-C-0006)) and a new set of study Questions will be approved at WTDC-22. The findings and guidelines from these reports were already available for use by BDT and ITU in relevant events, trainings and projects. To complement the final reports, [14 short videos](https://www.youtube.com/playlist?list=PLpoIPNlF8P2PTdyZ2pMP18ylsq6Kr-kfb) were released for free use by all. In addition, nine [annual deliverables](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/OngoingWork.aspx) were approved during the annual meetings of ITU-D study groups and were further discussed through author interviews and promoted through *ITU News* blogs.

### Workshops/tutorials/webinars associated with ITU-D study groups

A list of events organized during the 2018-2021 study period and referred to in this report under their respective thematic priorities is available on the following [webpage](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/events_workshops.aspx). Outputs of these events not only served as a basis for the development of new annual deliverables and draft guidelines, but also contributed to the development of the final output reports on study Questions.

### Work towards WTDC-22

As part of the preparatory process, ITU-D study groups started discussions on topics for WTDC-22, namely on the rules of procedure of the ITU Telecommunication Development Sector (WTDC Resolution 1), future study Questions (WTDC Resolution 2), streamlining of WTDC resolutions and the WTDC Declaration. Preliminary views on these topics were shared in the liaison statement sent to the TDAG Working Group on Resolutions, Declaration and Thematic Priorities (TDAG-WG-RDTP), in Document [TDAG-WG-RDTP/8](https://www.itu.int/md/D18-TDAG27.RDTP-C-0008). Discussions on these four topics were completed at ITU-D Study Groups level with a joint meeting organised specifically to consolidate discussions on working methods for study groups, future study Questions and Resolution 2. The outcomes were shared in another liaison statement sent to TDAG-WG-RDTP in Document [TDAG-WG-RDTP/38](https://www.itu.int/md/D18-TDAG27.RDTP-C-0038).

The postponement of WTDC-22 provided more time for the study groups including an additional set of meetings (in September-October 2021) which was used to start consultations ahead of WTDC on revision of terms of references (ToRs) for the study Questions. This revised set of ToRs based on the current structure of the study groups was submitted by the TDAG Chairman to WTDC-22 (Annexes 1 and 2 to Document [WTDC-22/5](https://www.itu.int/md/D18-WTDC21-C-0005/en)) for Member States and RTOs to consider as base texts instead of WTDC-17 ToRs.

Candidatures for ITU-D study group chairmen and vice-chairmen will be processed in line with Resolution 208 (Dubai, 2018) of the ITU Plenipotentiary Conference (PP) and Resolution 61 (Rev. Dubai, 2014) of WTDC, no later than two weeks before the opening of WTDC-22. ITU-D membership is requested to carry out consultations at country and regional levels, with the goal of reaching consensus on the candidates to put forward.

The [Network of Women](https://www.itu.int/en/ITU-D/Conferences/WTDC/WTDC21/NoW/Pages/default.aspx) (NoW) encourages gender balance in the activities leading up to the WTDC and beyond. ITU-D study groups have contributed to NoW information sessions (by the study group management team and the secretariat) and is present on the NoW advisory board. The [14 final output reports, and the Cost Modelling Guidelines](https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/Publications.aspx) provide all stakeholders with case studies and guidelines to consider as they develop pledges for the [Partner2Connect](https://www.itu.int/itu-d/sites/partner2connect/) initiative.

### Collaboration in regional work and thematic priorities

Between 2018 to 2021, a number of ITU-D study group management team members were active as experts working as resource persons (speakers) for ITU-D events (e.g., REDs, Accessible Europe, RPMs and RDFs), as trainers for ITU projects (e.g. PRIDA), as peer reviewers for ITU-D toolkits (e.g. Digital Regulation Handbook), and as authors of ITU-D publications (e.g. Last Mile Solution Guide). Collaboration with thematic priority teams to develop guidelines and hold webinars/workshops was frequent, as were the alignment with thematic priorities and regional activities through the implementation of results-based management, and with membership, through the TDAG-WG-RDTP. At the last ITU-D study group meeting in 2021, ITU’s Generation Connect team put forward proposals for collaboration including a call for participation in [the Global Youth Summit 2022](https://www.itu.int/generationconnect/generation-connect-youth-summit-2022/).

### Collaboration with other Sectors

There was active collaboration in the form of participation in study group sessions and events to exchange information and seek specific inputs between study groups. An Inter-Sectoral mapping tables, which mapped common areas of work between the ITU-D, ITU-T and ITU-R study groups were maintained and updated by the secretariat of the [Inter-Sectoral Coordination Group](https://www.itu.int/en/general-secretariat/Pages/ISCG/default.aspx) (ISCG). This activity included issues of mutual interest and was coordinated in collaboration with the secretariats of study groups of all three ITU Sectors. More related information on the work of ITU-D Study Groups 1 and 2 is available in Documents [TDAG-21/2/5](https://www.itu.int/md/D18-TDAG29-C-0005) and [TDAG-21/2/6](https://www.itu.int/md/D18-TDAG29-C-0006).

## 13. Regional Development Forums

Regional Development Forums (RDFs) provided a unique opportunity for dialogue between regional offices and decision-makers of ITU Member States and Sector Members, regional and international organizations and other stakeholders in each one of the six ITU-D regions. These events involved stocktaking and discussions on where each region stands in terms of implementation of the Buenos Aires Action Plan, in general, and of the regional initiatives in particular. RDFs provided an opportunity to discuss the progress that was made, ongoing work and plans for implementation, as well as cooperation and partnerships that could contribute to the implementation of the regional initiatives. RDFs encouraged a participatory and inclusive process to meet the agreed development goals and allowed for necessary adjustments in the approaches to meet them. More information on the RDFs is available on the [RDF website link](https://www.itu.int/en/ITU-D/Pages/regional-development-forums.aspx).

## 14. Partnering for digital transformation

This document has highlighted that today's digital era needs strong collaboration based around cooperation, resource-sharing and win-win arrangements that benefit governments, industry and users. A more holistic whole-of-government approach, in which technology is viewed as a basic enabling service that benefits all, is fundamental.

BDT is increasing its efforts to receive more voluntary contributions and to forge win-win strategic partnerships that open doors for collaboration essential to improved outcomes, tangible results and impact, and to advance digital transformation for all. BDT continues to cultivate relationships with existing partners, identify and engage new partners, retain exiting and attract new ITU-D Sector Members with the aim of attracting resources to finance large-scale projects, including regional initiatives, to support an impactful implementation of Buenos Aires Action Plan at global, regional, and national levels. As a result, during 2021, 72 new partnership agreements were signed for a total value of USD 19.5 million. This compares to 43 new partnership agreements valued at USD 15.2 million in 2020, and 30 new partnership agreements for a value of USD 15.2 million in 2019. In 2018, 43 new partnership agreements were signed with an estimated value of USD 10.9 million. Information on these partnerships is reflected on the ITU-D webpage “[Join ITU-D](https://www.itu.int/en/ITU-D/MembersPartners/Pages/default.aspx)”.

## 15. UN Collaboration

ITU has significantly enhanced its engagement with the UN Resident Coordinator (RC) network through the UN Development Coordination Office (UNDCO), coordinated by the BDT as part of the regional presence. ITU developed a phased approach to engagement with Resident Coordinators globally in collaboration with UNDCO. Under this approach, ITU developed and agreed with UNDCO the ITU offerings focused by region; agreed and shared with all RCs a joint commitment (between ITU and UNDCO) for enhanced cooperation; and agreed on a list of focal countries for targeted engagement by ITU. Awareness within the RC system of ITU’s mandate and work was raised through webinars with RCs in each region, and greater engagement through Common Country Analysis (CCAs) and Country Frameworks in many of the focal countries.

BDT increasingly engaged in the various UN level assessments, including the Quadrennial review, but perhaps more importantly BDT used this as criteria for improved performance of the regional presence through internal monitoring and evaluation.

An internal Task Group coordinated this work to ensure that all of the various work streams and inputs were appropriately addressed. The work was coordinated by the BDT Liaison Officer to the ITU’s office in New York, which ensured robust coordination and engagement between BDT and the UN System. This approach strengthened and helped enhance ITU’s ability to participate fully as a member of the UN Development System, and in its continuing efforts to fully connect the web of the regional offices, with the UN system.

A number of specific engagements and collaboration activities within the UN System over the period 2018-2021 include:

### Collaboration with the UN Secretary General’s Special Envoy on Technology

In June 2020, the UN Secretary-General released the new Roadmap for Digital Cooperation ([A/74/821](https://undocs.org/A/74/821)), which includes a set of recommended actions for the international community to help ensure all people are connected, respected, and protected in the digital era. It builds on recommendations made by the Secretary-General’s High-level Panel on Digital Cooperation[[3]](#footnote-4), and input, received through the eight Roundtable groups convened by the office of the UN Secretary-General, from Member States, the private sector, civil society, the technical communities and other stakeholder groups.

ITU is collaborating with the office of the UN Secretary General, specifically the office of the UN Secretary-General’s Special Envoy on Technology in the implementation of the Roadmap on Digital Cooperation. ITU is co-leading two Roundtable groups, namely on Global Connectivity and Capacity Building, with UNICEF and UNDP, respectively, and participating in other Roundtable groups, including the ones on Digital Public Goods, Digital Inclusion, Artificial Intelligence, Digital Trust and Security, and Digital Cooperation Architecture.

As the co-Champion, ITU has organized a series of virtual events and initiated activities in partnership with relevant UN agencies and bodies, to harness the potential of digital technologies while mitigating the harm that they may cause – such as webinar series on “Digital Cooperation during COVID-19 and beyond”, Youth media campaign on “Connect, Respect, and Protect”, in April/May, and a High-Level Meeting on Digital Cooperation, during the General Assembly in September 2020.

In 2021, ITU continued to work closely with the constituents of the roundtables, including but not limited to the governments of Kazakhstan, Niger, Rwanda, Netherlands, UAE, Saudi Arabia, Mexico, Canada, Singapore, and the European Union and European Commission. It also worked with the industry members, including Microsoft, Vodafone, Viasat and other members, such as GSMA, ISOC, the World Economic Forum, the Web Foundation, as well as sister UN agencies such as UNICEF, UNDP, UN Habitat, UN-OHRLLS, UNCTAD, UNHCR, UNITAR, and the World Bank - just to name of a few. The key focus was on actions directly responding to the Roadmap’s call to ensure universal, affordable and meaningful connectivity, including in the area of emergency telecommunications, as well as to provide coordinated and coherent support for digital capacity building and skills development.

Other global cooperation activities where BDT plays an instrumental role include:

* The [Broadband Commission for Sustainable Development](https://www.broadbandcommission.org/), led by ITU and UNESCO, with membership of six other UN entities established in 2010 with the aim of boosting the importance of broadband on the international policy agenda, and expanding broadband access in every country as key to accelerating progress towards national and international development targets;
* Innovation for digital transformation by ITU and UNIDO particularly on SDG 9: ITU collaborates on the Third Industrial Development Decade for Africa (IDDA III) led by UNIDO in partnership with ITU and other UN organizations and partners;
* Mobile Learning Week (MLW), organized by UNESCO, in partnership with ITU and supported by other partners;
* ITU/World Bank: Joint Declaration to enhance cooperation for the advancement of the 2030 Agenda for Sustainable Development as well as concrete areas of collaboration such as digital financial service (e.g., FIGI), Regulatory Handbooks, the Regulatory Watch Initiative, the 2020 Digital Regulation Handbook, the Digital Regulation Online Platform and the ICT Regulation Toolkit;
* BDT was successful in enhancing its collaboration with other UN agencies resulting in joint resource mobilization and partnerships efforts, including a partnership forged with FAO, ILO, UNCDF, and UNDP, which resulted in an agreement with the European Commission (EC) for the financing of the project “Support to Rural Entrepreneurship, Investment and Trade in Papua New Guinea”;
* BDT continued to be a steering committee member in collaboration with other UN Agencies on the Partnership on Measuring ICT for Development, which is an international, multi-stakeholder initiative. Launched in 2004, it helped improve the availability and quality of ICT data and indicators, particularly in developing countries.

### Regional Cooperation with the UN

BDT worked closely with many different regional and international organizations, across all of its regions, and in particular through the regional presence in the [ITU Regional Offices](https://www.itu.int/en/ITU-D/Pages/Regional-Presence.aspx).

Implementation activities of the [ITU Regional Office for Africa](https://www.itu.int/itu-d/sites/africa/) were part of the regional coordination and reporting at the UN level. The ITU Regional Office contributed to periodical meetings of the UN Regional coordination mechanisms and UN Regional Forums on Sustainable Development, highlighting the actions carried out under the Regional Initiatives for Africa. The ITU Regional Office for Africa made advances in joining the UN Sustainable Development System, integrating ITU as a non-resident agency in many countries in the work of UN country teams in addition to physical presence in UNCTs in Ethiopia, Senegal, Cameroon and Zimbabwe. Collaboration with the regional representation of the United Nations Development Coordination Office (UNDCO) and through the seven African Opportunity and Issue-Based Coalitions (O/IBCs) increased and gained momentum. Together with WHO, UN-HABITAT and UNESCO O/IBC4, ITU co-lead work dedicated to ‘Leveraging new technologies and enabling digital transitions for inclusive growth and development‘. The initiative is expected to develop an exemplary platform on the continent to support UNCT country teams in understanding how digital technologies can be leveraged in the programming and ultimately support countries’ digital transformation journeys.

In the Americas, ITU worked closely with other UN agencies in supporting Honduras and Paraguay. In response to COVID-19, the UN Country Team (UNCT) Honduras, in cooperation with ITU, worked on digital transformation to build back better and included digital transformation as a strategic priority using the [Roadmap for Digital Cooperation](https://www.un.org/en/content/digital-cooperation-roadmap/) , [and the knowledge gathered by ITU, for example through the WSIS-SDG matrix](https://www.itu.int/net4/wsis/sdg/). In 2020, ITU started to contribute to building the new UN Sustainable Development Cooperation Framework (UNSDCF) and the Common Country Assessment (CCA) was concluded in January 2021. In August 2021, the UNCT signed the new

UNSCDF with Honduras for the 2022-2026 period and identified digital transformation as a key element of the framework. In El Salvador, with the collaboration of the local UNICEF office, BDT contributed to the development of the UN Sustainable Development Cooperation Framework (UNSCDF). The new framework, which highlights the importance of digital transformation, was signed in September 2021. In Paraguay, BDT worked with the UNCT and UN Resident Coordinator to incorporate ICT into the 2020-2024 UNSCDF, in particular to provide meaningful connectivity and bridge the digital divide in the Chaco region. ITU has also been invited to integrate the board of [Generación Única](https://www.unicef.org/argentina/generacion-unica) by UNICEF in Argentina and in the UNPRPD-DIS projects by UNCT Guatemala.

In the Arab States, ITU is an integral part of UNCTs in the region, closely supporting the drafting and elaboration processes of the CCAs and the UNSDCFs. ITU is a signatory of the UNSDCF in Bahrain and part of the Cooperation Framework consultations and result working groups in Egypt, Mauritania, Jordan and Algeria. In Egypt, ITU is leading the UN joint team on digital transformation and Innovation and with the support of I-CoDI initiated the organization of an intergovernmental workshop to develop multi-stakeholder projects supporting the UNSDCF outcomes. At a sub-regional level, ITU is collaborating with FAO to launch a smart villages project in Morocco and Tunisia. It is collaborating with the WHO to establish a digital health strategy in Jordan and has a long-standing partnership with UNESCO to promote digital inclusion in the Arab region. Moreover, ITU is collaborating closely with UNESCWA to promote the WSIS outcomes in the Arab region in addition to collaborating on developing a regional strategy for ICTs within the framework of the League of Arab States. ITU is also closely following the COP 27 and 28 working groups in Egypt and UAE.

In Asia and the Pacific, ITU worked closely with UNRCs as well as UN agencies. In Thailand, under the leadership of UNRC Thailand and in collaboration with UNICEF and UNESCO, ITU conducted a study to map unconnected schools as a response to the negative consequences of COVID-19. The report was an important starting point for the Ministry of Education to begin connecting the unconnected schools. In the Pacific, ITU worked closely with UNRCs and UN agencies to develop two UN SDG fund projects on Smart Islands. At the regional level, BDT was co-leading with UNICEF and the UN coordination working group on digitization in the education sector. In Papua New Guinea (PNG), BDT contributed to the implementation of an EU project on e-agriculture with FAO, UNDP and UNCDF, among others.

In the CIS Region, ITU joined the UN Country Teams (UNCTs) in Belarus, Kazakhstan and Uzbekistan. Regular contact was maintained with other UNCTs in the countries of the region to raise awareness about ITU’s global and regional activities and explore potential areas of partnership. In Belarus, BDT engaged in the development of the CCA and UNSDCF for 2021-2025, joined the UNSDCF 2021-2025 of Kazakhstan and finalized the process of officially joining the UNSDCF of Uzbekistan. A positive working communication was established with the UNCT Turkmenistan. In Russia, ITU cooperated with the UN Information Center and contributed to the UN Bulletin. In 2020, collaboration continued with the UNESCO Institute for Information Technology in Education. The Regional Office for CIS was also part of the UN Digital Transformation Group for Europe and Central Asia, co-lead by ITU and UNECE.

In Europe, BDT established and co-lead two coordination mechanisms, i.e. the Digital Transformation Group for Europe and Central Asia and the UN Brussels Task Force on Digitalization for SDGs. Additionally, a series of strategic collaborations with UN agencies were strengthened, including with FAO, UNICEF, UN Women, and UNDP. The ITU Europe Regional Office also engaged with all UNCTs of the Europe region and worked closely with eight country teams (Albania, Bosnia and Herzegovina, Georgia, Montenegro, Moldova, North Macedonia, Serbia, Ukraine). A series of digital development country profiles, developed by the Europe Office with the inputs from UNCT members, served as an effective measure for reinforcing digital cooperation. In addition, ITU contributed to the CCA and UNSDCF and strengthened implementation of digital transformation related projects and initiatives.

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1. More information on the Roadmap is available in section 15 of this report. [↑](#footnote-ref-2)
2. For more information on COP related activities, please refer to Section 2 of this document. [↑](#footnote-ref-3)
3. [Secretary-General’s High-level Panel on Digital Cooperation](https://www.un.org/en/digital-cooperation-panel/) [↑](#footnote-ref-4)