



**REPORT ON THE IMPLEMENTATION OF THE
STRATEGIC PLAN AND THE ACTIVITIES OF
THE UNION,
APRIL 2019 – APRIL 2021**

Foreword to the report on the implementation of the strategic plan and activities of the Union

April 2019 – April 2021

Dear members of the ITU family,

One year into a pandemic that continues to disrupt lives and economies worldwide, people and businesses everywhere are relying more than ever on information and communication technologies to look beyond COVID-19 towards building back better with ICTs.

As the world is undergoing a digital transformation on a scale unseen in our time, let us remember the instrumental role played by the two phases of the World Summit on the Information Society, organized by ITU in 2003 and 2005, in laying the foundations of the vast and resilient ICT ecosystem that has made all this possible. Let us also remember that after witnessing two decades of exceptional growth, improvement in connectivity is slowing down and nearly half of the world's population is still unconnected, deprived of the digital technologies and services that have proved so essential since the start of the pandemic.

The crucial task before ITU, as the United Nations specialized agency for ICTs, is twofold: to connect the unconnected and to facilitate the development of the related technologies. This report takes stock of the considerable progress that has been made towards this goal in the last two years, through landmark ITU conferences, processes and initiatives. It also shows how, in concert with our members and partners, ITU has responded to the current crisis, setting in motion and building on projects and activities in areas as diverse and critical as network resilience, digital health, remote learning, digital finance, e-government and teleworking. It is part of ITU's ongoing efforts to facilitate the mobilization of new and emerging technologies, ranging from artificial intelligence to 5G, which will be central to tomorrow's digital economy and to supporting the urgently needed transformational changes for society and the environment.

We as an organization have lived through challenging moments in the past year, but we also have learned a lot. Both virtual consultations of councillors exuded a strong family spirit and ensured that ITU's activities, policies and strategies continue to fully respond to today's accelerated digital transformation. As described in the pages of this report, ITU has led by example in the UN system by rapidly adapting its working methods and bringing our events and meetings fully online. It has resulted in more inclusive participation, and we will continue to further our own digital transformation to deliver maximum value to ITU's membership. We stand at the beginning of a decisive decade in a year that will see major ITU events, including the World Telecommunication Development Conference 2021 (WTDC-21) under the theme of "Connecting the unconnected to achieve sustainable development". It is my hope that we, as the ITU family, will help create the conditions necessary for investments in ICTs to flourish and be used more efficiently at a time when COVID-19 has stalled or reversed many of the development gains achieved before the pandemic.

Never has ITU's mission to connect the world been so important to so many. Let us use this moment to build a stronger and more sustainable digital economy, and a fairer and more connected society.

Houlin Zhao
Secretary-General, International Telecommunication Union

About ITU

The International Telecommunication Union (ITU) is the specialized United Nations agency for information and communication technologies (ICTs), driving innovation in ICTs together with 193 Member States and a membership of over 900 companies, universities, and international and regional organizations. Established 156 years ago in 1865, ITU is the intergovernmental body responsible for coordinating the shared global use of the radio spectrum, promoting international cooperation in assigning satellite orbits, improving communication infrastructure in the developing world, and establishing the worldwide standards that foster seamless interconnection of a vast range of communications systems. From broadband networks to cutting-edge wireless technologies, aeronautical and maritime navigation, radio astronomy, oceanographic and satellite-based earth monitoring as well as converging fixed-mobile phone, Internet and broadcasting technologies, ITU is committed to connecting the world. For more information, visit: www.itu.int.

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1. Key themes of work

1.1 WRC-19 and RA-19

World Radiocommunication Conference 2019 (WRC-19)

Further to Resolution 809 (WRC-15), and following Council Resolution 1380 (C16, amended C17), the World Radiocommunication Conference 2019 (WRC-19) was held in Sharm el-Sheikh, Egypt, from 28 October to 22 November 2019. A total of 3 420 participants representing 163 Member States and 129 observer organizations attended the event.

WRC-19 was a fully paperless conference. To facilitate the handling of the 970 documents containing 5 811 proposals issued for the conference, ITU enhanced the use of the Proposals Management System, and further developed the Conference Proposals Interface, both already used in previous ITU conferences. Other electronic tools used during the conference were: the WRC-19 SharePoint, the WRC-19 Smartphone Applications, the Radio Regulations Navigation Tool, and the Sync Application.

As per ITU Information/document access policy, all input documents were freely accessible by the public in advance of the conference. The [Final Acts of WRC-19](#) are also available for public access as they are considered the main output of the conference. Full information on WRC-19 can be found at www.itu.int/go/WRC-19.

Main outcomes of WRC-19

WRC-19 addressed over 36 topics related to frequency allocation and frequency sharing for the efficient use of spectrum and orbital resources. The following are the key WRC-19 outcomes.

Mobile and fixed broadband communications

Satisfying IMT-2020/5G requirements for millimetre-wave spectrum, WRC-19 identified a total of 17.25 GHz of additional spectrum for IMT in frequencies between 24 GHz and 71 GHz, 86 per cent of which was harmonized on a global basis. The additional frequency bands identified for IMT globally are the 24.25-27.5 GHz, 37-43.5 GHz and 66-71 GHz bands, with regional and country identifications made in the 45.5-47 GHz and 47.2-48.2 GHz bands.

To protect systems in the Earth exploration-satellite service (passive) in 23.6 – 24 GHz, WRC-19 updated Resolution 750 to specify limits of unwanted emission power levels from IMT systems in the 24.25-27.5 GHz band. A two-step approach was established whereby the limit on unwanted emission power levels become even more stringent for IMT systems deployed after 1 September 2027, after which a greater number of IMT systems are anticipated to be in service in that frequency range.

WRC-19 changed the regulatory conditions for wireless access systems, including radio local area networks (WAS/RLANs) in the band 5 150 -5 250 MHz. This decision allows for the use of Wi-Fi devices in trains and cars, highly sought by the automotive and railway industries. It also permits a limited deployment of outdoor WAS/RLANs, with due protection of space services.

Various frequency bands for high altitude platform stations (HAPS) were identified globally, along with other bands in Region 2, for a total of 5.25 GHz spectrum. This will facilitate the development and implementation of HAPS and will enable affordable broadband connectivity and telecommunication services in underserved communities and in rural and remote areas, including mountainous and desert zones, thus connecting the unconnected. HAPS can also be used for disaster recovery communications.

Various bands between 275 and 450 GHz were identified for the land mobile and fixed services, with conditions necessary to protect the Earth-exploration satellite service (EESS) (passive) applications in some of these bands. The identification enables future fixed and mobile systems with data rates of more than 100 Gbit/s. The protection of passive services will require further studies.

Amateur radio service

WRC-19 made allocations to the amateur service on a secondary basis in the frequency band 50-52 MHz in Region 1 (R1), with the conditions to protect the incumbent services. In some R1 countries, the allocation to the amateur service is on a primary basis in the entire band 50-54 MHz or its parts. Through this action, WRC-19 completed harmonization of spectrum throughout the three Regions, since in Regions 2 and 3 the allocation existed before WRC-19. This will enhance radio amateur's capacity to communicate in this frequency band.

Radiocommunications for transportation systems

WRC-19 adopted a new Resolution on Railway radiocommunication systems between train and trackside (RSTT). It invites continued development of the ITU-R Recommendations/Report for spectrum harmonization of RSTT. Countries are encouraged, when planning for their RSTT, to consider these study results. This resolution contributes to global and regional harmonization of RSTT applications, enabling economies of scale and interoperability.

WRC-19 also adopted a new Recommendation on Intelligent Transport Systems (ITS) to recommend administrations to consider the harmonized frequency bands, as described in the relevant Recommendations (e.g. ITU-R M.2121), when planning and deploying evolving ITS applications. This recommendation contributes to global and regional harmonization of ITS applications, enabling economies of scale and interoperability.

Enhanced maritime communication systems and services

NAVDAT (Navigation Data) is a digital system to broadcast maritime safety information, including navigation and meteorological warnings. WRC-19 authorized the usage of NAVDAT in certain medium- and high-frequency bands in the maritime mobile service, which will provide a variety of safety-related information to ships using digital technologies.

WRC-19 adopted the regulatory provisions necessary for adding Iridium as a second satellite provider to the Global Maritime Distress and Safety System (GMDSS). Specifically, allocation to the maritime-mobile satellite service was upgraded in the downlink and entered this band in the Radio regulations (RR) Appendix 15 for GMDSS. Additionally, regulatory provisions were reinforced to protect radio astronomy in the lower adjacent band and the mobile-satellite service in the same band and adjacent upper band. The introduction of this second GMDSS satellite provider, which is a non-geostationary orbit (non-GSO) system, is very beneficial for the maritime community as it allows GMDSS globe coverage, including polar areas, and reinforces competition in the area of maritime communications.

Usage of maritime frequency channels for autonomous maritime radio devices (AMRDs) was regulated by segregating these channels into safety-related and non-safety related groups and limiting access to them accordingly. Safety of navigation at sea is enhanced with this AMRD regulation.

To enable the satellite component of the VHF Data Exchange System (VDES), secondary allocations to the maritime mobile-satellite service were secured. Enabling satellite VDES extended VDES service beyond the coastal areas reached by the terrestrial component (previously approved by WRC-15) to global coverage, allowing for the implementation of a complete VDES concept. This decision enhances VHF communications and improves maritime safety on a global basis.

Global Aeronautical Distress and Safety System

WRC-19 considered spectrum needs and regulatory provisions for the introduction and use of the Global Aeronautical Distress and Safety System (GADSS). Based on the results of relevant ITU-R studies, WRC-19 did not make any regulatory changes in the Radio Regulations to accommodate GADSS, since it represents an evolving performance-based system that is difficult to describe in specific regulatory terms.

Satellite services

WRC-19 adopted a new regulatory framework, including a milestone-based approach for the deployment of non-GSO satellite constellations in specific frequency bands and services. The new milestone-based regulatory framework will enable mega-constellations of satellites - hundreds to thousands of spacecrafts in low-earth orbit - to rapidly come to fruition ensuring the operation of as many systems as possible. The approach will help ensure that the Master International Frequency Register is aligned with the actual deployment of non-GSO satellite systems. In making this decision, WRC-19 struck a balance among the prevention of spectrum warehousing, the proper functioning of coordination, notification and registration mechanisms, and the operational requirements related to the deployment of non-GSO systems.

New orbital slots for broadcasting satellites were opened, providing developing countries with the opportunity to regain access to spectrum orbit resources through a specially designed priority mechanism.

WRC-19 defined the regulatory, operational and technical conditions under which frequency bands in the 30/20 GHz frequency range can be used by earth stations in motion (ESIM) communicating with geostationary-satellite orbit (GSO) space stations in the fixed-satellite service in all Regions. This decision will enable the connection of people on ships (maritime ESIM), aircraft (aeronautical ESIM) and land vehicles (land ESIM) and ensure their safety, security and comfort while in motion. It will also increase the use and further develop ESIMs while protecting other GSO networks and non-GSO systems as well as terrestrial services.

Support for science services

WRC-19 established in-band and adjacent band protections for Earth-Exploration Satellite Services (EESS) and Space Radiocommunications Stations (SRS) to ensure that space-based monitoring of the Earth and its atmosphere remain unhindered.

Regulatory and technical measures were approved to protect the long-term development of Data Collection Platforms. Frequency bands in the Space Operation Service and regulatory procedures were defined for introducing satellites with short duration missions, while affording due protection to terrestrial service.

WRC-19 adopted measures to ensure that satellite services supporting meteorology and climatology, which aim to safeguard human life and assess the state of natural resources, will be protected from harmful radio-frequency interference, as will systems used by radio astronomers for deep space exploration. Additional measures were adopted to ensure that radio astronomy stations will be protected from harmful radio interference from other space stations or satellite systems in orbit.

Measures were also adopted to ensure the continuous assistance and support for the timely implementation of new technologies, including 4G and 5G networks and services in Palestine.

Publications

The 2020 edition of the Radio Regulations has been published and is available for download from the ITU website. The Manual for Use by the Maritime Mobile and Maritime Mobile-Satellite Services has been updated based on the new edition of the Radio Regulations and has also been published.

Gender declaration

WRC-19 adopted the “Declaration on Promoting Gender Equality, Equity and Parity in the ITU Radiocommunication Sector”, which stated the commitment of the Radiocommunication Sector to gender equality and balance. Further, it declared that ITU Member States and Sector Members should encourage the adoption of proven measures to increase globally the number of women pursuing academic degrees at all levels in STEM fields, particularly those related to the ICT. Member States should also consider the adoption of a Resolution at the 2023 Radiocommunication Assembly on gender equality, equity and parity in the ITU-R.

Agenda for WRC-23 and preliminary agenda for WRC-27

WRC-19 adopted new Resolutions containing the agenda for WRC-23 and the preliminary agenda for WRC-27. The WRC-23 agenda contains 19 specific agenda items on technology development and new spectrum requirements for users in the terrestrial, aeronautical, maritime, satellite or science services. The WRC-23 agenda contains also the usual standing agenda items and will further consider the preliminary agenda for WRC-27. The WRC-23 agenda will be presented in a separate document to Council 2020.

Radiocommunications Assembly (RA-19)

As per Council Resolution 1343, the Radiocommunication Assembly 2019 (RA-19) was held in Sharm el-Sheikh, Egypt, from 21 to 25 October 2019 with 521 participants representing 91 administrations and 31 Sector Members and 1 specialized agency of the United Nations.

RA-19 was a fully paperless assembly, with all of the detailed drafting activities being conducted using the RA-19 SharePoint web site. A Sync Application was also provided and used. As decided during the opening plenary and in line with the decisions of PP-14, all input documents were freely accessible by the public in advance of the assembly since no Member State considered that their disclosure would cause potential harm to a legitimate private or public interest that outweighs the benefits of accessibility.

Resolution ITU-R [1](#) "Working methods for the Radiocommunication Assembly, the Radiocommunication Study Groups, the Radiocommunication Advisory Group and other groups of the Radiocommunication Sector" and Resolution ITU-R [2](#) "Conference Preparatory Meeting" were both revised. Since Resolution ITU-R 1 was restructured and significantly updated in RA-15, only minor refinements and clarifications were made during RA-19. Regarding Resolution ITU-R 2, substantial revisions were made to improve the study and reporting process of technical preparations towards the World Radiocommunication Conference (WRC).

The existing six ITU-R Study Groups continue into the new study period (2019-2023) with the same scopes of activity. The structure of Radiocommunication Study Groups, including their scopes, chairperson and vice-chairperson, can be found in Resolution ITU-R [4](#).

RA-19 approved the work programme and Questions of the Radiocommunication Study Groups (see Resolution ITU-R [5](#)) as well as five ITU-R Recommendations.

Additionally, two new ITU-R Resolutions were approved, both related to broadcasting issues:

Resolution ITU-R [70](#) – Principles for the future development of broadcasting

Resolution ITU-R [71](#) – Role of the Radiocommunication Sector in the ongoing development of television, sound and multimedia broadcasting.

The Assembly suppressed three ITU-R Resolutions:

Resolution ITU-R [34](#) – Guidelines for the preparation of terms and definitions

Resolution ITU-R [35](#) – The organization of vocabulary work covering terms and definitions

Resolution ITU-R [43](#) – Rights of associates.

1.2 Spectrum/orbit regulation and management

The ITU Radiocommunication Sector (ITU-R) plays a vital role in the global management of the radio-frequency spectrum and satellite orbits, limited natural resources which are increasingly in demand from a large and growing number of services such as fixed, mobile, broadcasting, amateur, space research, emergency telecommunications, meteorology, global positioning systems, environmental monitoring and communication services. In implementing this mission, ITU-R creates the conditions for harmonized development and efficient operation of existing and new radiocommunication systems, taking due account of all parties concerned.

ITU also supports developing countries with capacity building related to the management of spectrum. Key outcomes of WRC-19 and RA-19 including frequency allocation and frequency sharing for the efficient use of spectrum and orbital resources are addressed in [section 1.1](#). Further information on ITU-R is available [online](#).

Results of the processing of space notices and other related activities

	2016	2017	2018	2019	2020	Total 2016-2020
Coordination and notification requests	1 267	1 186	957	1 174	886	5 470
Requests for broadcasting-satellite and associated feeder links Plans	100	79	135	73	186*	573
Requests for fixed-satellite service Plan	84	55	89	51	27**	306

* including 90 requests pursuant to Resolution **559 (WRC-19)**

** Following the receipt of several submissions under Article 7 of Appendix **30B**, the processing of other submissions has been postponed in application of § 7.3 of this Article.

Results of the processing of terrestrial notices and other related activities in 2020

	2017	2018	2019	2020	Total 2017 – 2020
Notices recorded in the MIFR/Plans	100 971 / 3 378	79 134/ 2 798	81 602/ 3 690	252 555 /5 355	514 262/ 15 221
Review of findings for terrestrial stations recorded in the MIFR	2 578	244	164	5 221	8 207
Notifications of coast and ship stations for recording in the ITU maritime database	2 865	2 367	2 414	1 982	9 628
High-frequency broadcasting requirements	32 523	31 215	34 344	31 738	129 820

Monitoring observations concerning the monitoring programme at 2 850-28 000 kHz/ and 406-406.1 MHz	22 496/ 202	27 908/ 222	30 825/ 253	25 642/ 174	106 871/851
Reports of harmful interference	1 187	1 096	1 088	1 165	4 536

Improvement of ITU-R software

In 2019, the Radiocommunication Bureau (BR) continued to develop software applications and databases to enable efficient and timely processing of notices and to facilitate the use of ITU-R outputs by ITU membership.

In 2020 BR updated the stand-alone software application that provides users with a mechanism to electronically use, query and analyse the Table of Frequency Allocations (TFA) in Article 5 of the Radio Regulation, as well as other related texts including WRC resolutions, referenced ITU-R Recommendations and associated rules of procedure. This software application can be used to extract regional and country-specific regulations for the presentation of regional or national tables of frequency allocations, respectively.

In addition, the relevant databases and software were updated to implement WRC-19 decisions that entered into force on 1 January 2021.

Progress in terrestrial services

- Implementation of the changes in the examination of filings under Radio Regulations (RR) No. **9.19**.
- Considerable progress in the Integration of the processing of coordination requests under RR No. **9.21**.
- Integration of GE06 software into TerRaSys.
- Development of the eTerrestrial web platform, integrating eMIFR, eValidation and eBroadcasting tools (eQuery, ePub, eTools and MyAdmin).
- Development of the online tool “GE84 Optimization”, to be used for the optimization of the GE84 Plan in African countries. This tool can also be used by the administrations of all States Parties to the GE84 Agreement.
- Continuation of the migration from Ingres platform to SQL Server.
- Changing platform (to SQL Server) and improvements of the interface for the Maritime mobile Access and Retrieval System (MARS) and International Monitoring Stations.
- Modifications in TerRaSys to implement new Rule of Procedure on No 5.441B of the RR and modified RoP on No. 9.19 of the RR.

Progress in fulfilling the BR Space Information Systems roadmap (RAG-19, 2012)

- Business continuity and disaster recovery (both space and terrestrial services).
- Rewrite legacy software for technical examination.
- Design and develop the BR Space Information System (BR SIS).

Achievements resulting from activities for space applications

- Implementation of Resolution 907 (Rev. WRC-15): Use of modern electronic means of communication for satellite network-related administrative correspondence.
- Implementation of the new non-GSO PFD examination software.

In 2019 the ITU Development Sector (ITU-D), in coordination with ITU-R, conducted the following additional work to support developing countries with capacity building on issues related with spectrum management:

- *Policy and Regulation Initiative for Digital Africa (PRIDA);*
- *ITU Seminar on Radiocommunication Matters for Europe (SRME-19);*
- *A regional spectrum management training seminar for the Caribbean.*

In addition to the previous activities, ITU-D provided specialized assistance to Regions and ITU administrations, as follows:

- Mongolia, to review the national radio frequency spectrum charging regime and amending its national laws on frequencies;
- Solomon Islands and Vanuatu, to develop a national type approval regime for short-range wireless devices;
- more than 15 workshops and trainings to raise awareness and build skills on spectrum management and trainings in Asia-Pacific;
- assistance to the Ministry of Science, Energy and Technology and the Spectrum Management Authority of Jamaica for the development of a national spectrum licence framework;
- the third annual CIS region and CEE spectrum management conference and ITU workshop on interference-free communication (Minsk, Belarus);
- a series of workshops and seminars in CIS to discuss the future of television, the mapping of terrestrial broadband infrastructure and services and radiocommunication matters;
- assistance within Korean projects related to spectrum management basics and Spectrum Management System for Developing Countries (SMS4DC);
- SMS4DC Technical training in Vientiane, Lao PDR.

1.3 Standardization

ITU's standardization work comprises telecommunications standards (ITU-T Recommendations) and radiocommunications standards (ITU-R Recommendations).

ITU-T Recommendations

[ITU-T Recommendations](#) define how ICT networks operate and interwork. Although these Recommendations have non-mandatory status unless adopted in national law, the level of compliance is high due to their international applicability and level of quality. Currently, there are over 4 000 Recommendations in force on a broad range of topics including service definition to network architecture and security, broadband DSL to Gbit/s optical transmission systems, Network-2030, quantum information technology, blockchain, and IP-related issues. All of these topics constitute the fundamental components of today's ICTs.

ITU approved more than 675 new and revised ITU-T Recommendations from April 2019 to December 2020. A selection of recent standardization achievements is provided below and executive summaries of ITU-T study group meetings can be found on the [homepages of ITU-T study groups](#).

Multimedia and health

- *JPEG wins an Emmy*: The engineering team responsible for the first edition of the JPEG image compression standard ([T.80-series](#)) was [honoured with an Emmy Award](#) for its outstanding contribution to image coding.
- *Versatile Video Coding*: The new “Versatile Video Coding” (VVC) H.266) standard advances the state of the art of video compression and has unprecedented application versatility. Developed by the Joint Video Experts Team with MPEG, VVC will reduce the bitrate needed to stream videos, for the same quality level, by one half relative to “High Efficiency Video Coding” (H.265), or by one quarter relative to “Advanced Video Coding” (H.264). A new twin text with ISO/IEC provides guidance on alternative text for images (T.701.11).
- *Digital health*: Updated ITU standards developed in cooperation with the Personal Connected Health Alliance provide for medical-grade e-health devices such as blood pressure cuffs, glucose monitors and a wide range of activity trackers (H.810-series). New ITU standards provide characteristics of personal sound amplifiers in support of ITU-WHO collaboration for safe listening (H.871); and evaluate the performance of e-health systems in the Internet of Things (IoT) (Y.4908).
- *Content delivery and edge computing*: New ITU standards provide requirements for content delivery networks enabled by mobile edge computing (F.743.10) and mobile edge computing enabled by civilian unmanned aerial vehicles (F.749.11).
- *Accessibility*: A revised ITU standard provides accessibility profiles for Internet Protocol television (IPTV) systems (H.702 (V2)). New ITU standards address annotation methods for biosignal data (H.862.2), voice management interfaces for human-care services (H.862.3), and information service systems for visually impaired persons (F.922). Other new standards provide an enhanced user interface framework for IPTV terminal devices in the form of a gesture control interface (H.704) and accessibility requirements for smart public transportation services (Y.4211). New technical papers provide a guideline on web-based remote sign language interpretation (FSTP.ACC-WebVRI) and an overview of assistive listening systems (FSTP-ACC-ALD).

Transport, access and home

- *5G transport*: ITU-standardized backbone technologies expected to support 5G systems including Passive Optical Network (PON), Carrier Ethernet and Optical Transport Network (OTN). New ITU standards provide the characteristics of transport networks to support 5G ([G.8300](#)), architecture of the metro transport network ([G.8310](#)), and interfaces for the metro transport network ([G.8312](#)). New supplements describe the requirements of 5G fronthaul in a PON context ([G. Suppl. 66](#)) and the application of OTN to 5G transport ([G. Suppl. 67](#)).
- *OTN interfaces*: A revised ITU standard addresses flexible OTN long-reach interfaces (G.709.3) and an amendment updates the ITU standard for flexible OTN short-reach interfaces (G.709.1).
- *Fibre to the home*: A new ITU standard serves as a guide to the development of higher speed PON systems, identifying sets of applications that can be addressed by a particular system and defining the requirements for each of those systems (G.9804.1).

- *Fibre for rural broadband*: New ITU standards aim to bring high-speed broadband services to rural communities with lightweight, terabit-capable optical cable that can be deployed on the ground surface with minimal expense and environmental impact (L.163, L.1700, and L.110).
- *Visible light communication*: A new ITU standard (G.9991) for high-speed indoor ‘visible light communication’ (VLC), also known as ‘LiFi’, establishes the foundations for the growth of the VLC market.

Future networks and cloud

- *5G networking*: New ITU standards address network slice orchestration and management ([Y.3153](#) and [Y.3154](#)) and the software-defined networking (SDN) data plane ([Y.3155](#)); fixed-mobile convergence ([Y.3132](#), [Y.3133](#), [Y.3134](#) and [Y.3136](#)); energy-efficient device-to-device communication for 5G ([Q.5022](#)); information-centric networking for routing, forwarding and edge networking ([Y.3075](#) and [Y.3076](#)). Three new ITU standards on managed and hybrid peer-to-peer communications were approved ([X.609.9](#), [X.609.10](#) and [Q.4100](#)). A new Supplement aims to build awareness on use cases and migration aspects of 5G ([Y.Suppl.34](#)).
- *Cloud computing*: New ITU standards address requirements for cloud service development and operation management ([Y.3525](#)), functional requirements for blockchain as a service ([Y.3530](#)), and functional requirements for machine learning as a service (Y.3551).
- *Big data*: New ITU standards provide the requirements of big data driven networking ([Y.3652](#)) and data preservation ([Y.3604](#)), and a big data reference architecture ([Y.3605](#)). A new Supplement assesses the status of big data adoption in developing countries following a survey of the ITU-T membership ([Y.Suppl.65](#)).
- *Network 2030*: New supplements describe capabilities, performance and design of new communications services for Network 2030 applications ([Y.Suppl.66](#)), along with representative use cases and key network requirements ([Y.Suppl.67](#)). A related technical report describes the driving forces and vision towards Network 2030.

Machine learning for 5G

- *Machine learning toolkit*: New ITU standards describe an architectural framework for the integration of machine learning into 5G and future networks ([Y.3172](#)), a framework to evaluate intelligence levels across different parts of the network ([Y.3173](#)), and a framework for data handling in support of machine learning ([Y.3174](#)). Other new standards provide a functional architecture for machine learning-based quality of service (QoS) assurance for 5G ([Y.3175](#)), a framework for evaluating intelligence levels across 5G and future networks ([Y.3173](#)), and a framework for data handling to enable machine learning in 5G and future networks ([Y.3174](#)). Still others deal with network slicing with AI-assisted analysis (Y.3156) and with machine learning marketplace integration ([Y.3176](#)). These standards will guide contributions to a new [ITU Global Challenge on AI and Machine Learning in 5G](#).

Cable networks

- *Broadband cable and TV*: New ITU standards address IP cable modems with the fourth and fifth generations of transmission systems for interactive cable television services ([J.225](#) and [J.224](#)), an embedded common interface for exchangeable conditional access/digital rights management solutions ([J.112](#), [J.113](#), [J.114](#), [J.115](#) and J.115.1), a downloadable conditional access system for bidirectional networks ([J.1031](#), [J.1032](#) and [J.1033](#)), smart TV operating systems ([J.1203](#) and [J.1204](#)), the remote management of cable set-top boxes by auto configuration server ([J.299](#)), and IP video broadcast for CATV networks ([J.1211](#)).
- *Premium cable networks*: A new ITU standard provides the framework for a premium cable network platform to support industry in offering advanced multimedia services ([J.1600](#)). It is the first of a new series of ITU standards on AI-assisted cable networks.

Quantum information technology

- *Quantum key distribution*: New ITU standards describe the networking concepts to underpin quantum key distribution (QKD), a means of enabling secure encryption and authentication ([Y.3800](#)), and the architecture of a quantum noise random number generator ([X.1702](#)), and continue to refine aspects of QKD networks, such as functional requirements for QKD networks ([Y.3801](#)), a functional architecture ([Y.3802](#)), key management ([Y.3803](#)), and control and management ([Y.3804](#)). A new Technical Report highlights security considerations for QKD networks (TR.sec-qkd). New standards set out a security framework for quantum key distribution networks ([X.1710](#)) and key combination methods ([X.1714](#)); requirements for distributed ledger systems ([F.751.0](#)); assessment criteria for distributed ledger technology (DLT) platforms ([F.751.1](#)); a reference framework for DLT ([F.751.2](#)); DLT terms and definitions ([X.1400](#)); a security framework for DLT ([X.1402](#)); security guidelines for using DLT for decentralized identity management ([X.1403](#)); DLT security assurance ([X.1404](#)); and the requirements of blockchain as a service in the cloud computing context ([Y.3530](#)).

Distributed ledger technology and blockchain

- *Distributed ledger technologies (DLT)*: New ITU standards address the requirements of blockchain in next-generation network evolution ([Y.2342](#)); the security requirements of blockchain, both in terms of blockchain's security capabilities and security threats to blockchain ([X.1401](#)).
- *Blockchain for cities*: New ITU standards address the blockchain of things as a decentralized service platform ([Y.4464](#)), blockchain-based data exchange and sharing ([Y.4560](#)) and blockchain-based data management ([Y.4561](#)), and blockchain-based unified key performance indicator data management ([Y.4907](#)). A new Supplement deals with data processing and management aspects of blockchain for IoT and smart cities ([Y.Suppl.62](#)).

Security

- *Security*: New ITU standards address public key infrastructure ([X.510 | ISO/IEC 9594-11](#)) and abstract syntax notation ([X.680-690 series](#) on ASN.1); software-defined networking/network function virtualization (SDN/NFV) security (X.1046); security management (X.1052rev and X.1054rev); de-identification and Fintech security (X.1148 and [X.1149](#)); cyber defence ([X.1216](#), [X.1217](#) and [X.1218](#)); authentication (X.1254rev, [X.1279](#), [X.1451](#) and [X.1452](#)); IoT security ([X.1363](#), [X.1364](#), [X.1365](#), [X.1366](#), [X.1367](#) and [X.1368](#)); intelligent transport system security ([X.1371](#), [X.1374](#), [X.1375](#) and [X.1376](#)); DLT and blockchain security ([X.1400](#), [X.1401](#), [X.1402](#), [X.1403](#) and [X.1404](#)); cloud security ([X.1606](#)); quantum key distribution ([X.1710](#) and [X.1714](#)); and big data ([X.1750](#) and [X.1751](#)) and 5G security (X.1811 under approval).
- *Strong authentication*: Two new ITU standards ([X.1277](#) and [X.1278](#)) aim to overcome the security limitations of passwords, addressing biometric authentication on mobile devices and the use of external authenticators, such as mobile devices, to authenticate Web users. The specifications were submitted to ITU by the FIDO Alliance ('Fast Identity Online').
- *Personal data and trust*: A new ITU standard provides a framework for trust-based personal data management ([Y.3055](#)).

Environment and climate change

- *Environment and the circular economy*: New ITU standards provide criteria for the evaluation of the environmental impact of mobile phones ([L.1015](#)), guidelines and certification schemes for e-waste recyclers ([L.1032](#)), definitions and concepts relevant to material efficiency in the ICT sector ([L.1022](#)), a methodology to assess the positive impacts of ICTs on the environmental efficiency of other industry sectors ([L.1451](#)); an assessment method for circular scoring

([L.1023](#)), the assessment and scoring of the sustainability performance of office buildings ([L.1371](#)) including its tool ([L.Suppl.40](#)); procurement criteria for sustainable data centres ([L.1304](#)), and a guideline for achieving the e-waste targets of the Connect 2030 Agenda ([L.1031](#)).

- *Climate change*: A new ITU standard ([L.1470](#)) highlights that compliance with the UNFCCC Paris Agreement. More details are provided in [section 1.5](#); two new Supplements (ITU-T [L.Suppl.37](#)) provides guidance to operators of mobile networks, fixed networks and datacentres, and ICT manufacturers on setting 1.5°C-aligned targets compliant with L.1470. which highlights that compliance with the UNFCCC Paris Agreement will require the ICT industry to reduce GHG emissions by 45 per cent from 2020 to 2030.
- *Electromagnetic fields*: New ITU standards provide a multiservice surge protective device application guide ([K.148](#)), passive intermodulation test methods of array antenna systems in mobile communication systems ([K.149](#)), and information on semiconductor devices required for the design of telecommunication equipment applying soft error mitigation measures ([K.150](#)).

Internet of Things and smart cities

- *Internet of Things (IoT)*: New ITU standards address IoT-based smart residential communities ([Y.4556](#)) and the accessibility of Internet of Things applications and services to persons with disabilities ([Y.4204](#)); address IoT requirements for the support of edge computing ([Y.4208](#)), universal communication modules of mobile IoT devices ([Y.4210](#)), digital entity architecture for IoT interoperability ([Y.4459](#)) and combatting counterfeiting in IoT ([Y.4808](#)), open IoT identity correlation service ([Y.4462](#)), delegation services for IoT devices ([Y.4463](#)), IoT services based on Visible Light Communications ([Y.4465](#) and [Y.4474](#)), spare computational capability exposure of IoT devices for smart homes ([Y.4469](#)), SensorThings API – Sensing ([Y.4473](#)), lightweight intelligent software for IoT devices ([Y.4475](#)), agility by design for ICT systems security used in IoT ([Y.4807](#)), and base station inspection services using unmanned aerial vehicles ([Y.4559](#)).
- *Smart sustainable cities and communities*: A new ITU standard puts forward a maturity model for smart sustainable cities, enabling the examination of a city’s progress towards smart city objectives ([Y.4904](#)). More details are provided in [section 1.5](#); New ITU standards address the interoperation of smart ports with smart cities ([Y.4209](#)), open data in smart cities ([Y.4461](#)), smart greenhouse services ([Y.4466](#)), data structure and data transfer protocol for automotive emergency response systems ([Y.4467](#) and [Y.4468](#)), AI service exposure for smart cities ([Y.4470](#)), and smart fire smoke detection services ([Y.4558](#)).

Performance, QoS and QoE

- *Voice quality*: New ITU standards address the relationship between voice QoS and 4G circuit-switched fallback ([G.1028.2](#)) and best practices for the measurement of QoS in mobile networks ([E.806](#)). A revised ITU standard details the factors influencing end-to-end QoS for 4G voice ([G.1028](#)). The E-Model ([G.107](#)), supporting high-quality voice, now addresses both wideband (50-7 000 Hz: [G.107.1](#)) and fullband (20-20 000 Hz: [G.107.2](#)).
- *Quality of service strategies*: New ITU standards address intelligent network analytics and diagnostics ([E.475](#)) and the creation and performance testing of machine learning-based models to assess the impact of the transmission network on speech quality for 4G voice services ([P.565](#)); details the crowdsourcing approach to the assessment of end-to-end QoS in fixed and mobile broadband networks ([E.812](#)); provide an application guide for Recommendation ITU-T E.804 ([E.804.1](#)) and a QoS operational strategy for improved regulatory supervision on providers of mobile telecommunication services ([E.805.1](#)).

- *Virtual Reality*: New ITU standards introduce the factors influencing quality of experience (QoE) for virtual reality services ([G.1035](#)), an opinion model predicting QoE for cloud gaming services ([G.1072](#)), and dimension-based subjective quality evaluation for video content considering five perceptual dimensions ([P.918](#)); classify virtual reality services and identify the key QoE factors of VR ([G.1035](#)); and a subjective test methodologies for 360° video on head-mounted displays ([P.919](#)).
- *Regulatory frameworks for quality of service/experience (QoS/QoE)*: A new ITU standard provides guidance to regulators aiming to establish national or regional regulatory frameworks to monitor and measure QoS and QoE ([E.805](#)).
- *Digital financial services*: New ITU standards introduce QoS and QoE aspects of digital financial services ([G.1033](#)) and a methodology to test the QoE of digital financial services ([P.1502](#)); introduce QoS and QoE aspects of digital financial services ([G.1033](#)), a methodology to test the QoE of digital financial services ([P.1502](#)).
- *IP performance measurement*: A revision of the ITU standard on IP service performance ([Y.1540](#)) reflects changes in the design of IP services and the protocols employed by end-users. The latest edition of the standard defines IP-layer capacity parameters in ways that cater to performance assessment, and provides requirements for methods of measurement of IP-layer capacity; A new Supplement ([Y.Suppl.60](#)) provides guidance the interpretation of measurements taken with the ITU standard for IP service performance assessment ([Y.1540](#)).
- *Intelligent transport systems*: New ITU standards describe, QoE metrics for mobile telephony communication during rail travel ([G.1034](#)), an in-car communication audio specification for travellers' safety ([P.1150](#)), use cases and requirements for vehicular multimedia networks ([F.749.3](#)); and accessibility requirements for smart public transportation services ([Y.4211](#)).

Operational aspects of service provision and telecoms management

- *Telecoms management*: New ITU standards provide requirements for telecommunication anti-fraud management in the TMN ([M.3362](#)), data management in the TMN ([M.3363](#)) and on-site telecommunication smart maintenance management function ([M.3364](#)). They provide a generic information model for on-site telecommunication smart maintenance ([M.3164](#)) and a framework of smart operation, management and maintenance ([M.3041](#)). And they outline the requirements and benefits of synergy management for cloud and SDN-based networks, detailing its structure and the composition of the function set ([M.3373](#)).
- *Numbering misuse*: Revised guidelines for ITU-T action on reported misuse of E.164 number resources ([E.156](#)) describe new cases of misuse and more efficient means of combating misuse.
- *Codes for M2M/IoT and emergency services*: A new Supplement defines criteria for assigning E.164 identification codes and E.212 Mobile Network Codes under shared MCCs for M2M/IoT services ([E.Suppl.11](#)). A new Technical report provides an overview of a technical solution for identifying the call location in support of emergency services (TR.CLE).

Economic and policy issues

- *OTTs, mobile financial services, digital ID* New ITU standards address in particular the relationship between network operators and providers of over-the-top applications ([D.262](#)), competition in mobile financial services ([D.263](#)), and principles for a unified format of price/tariffs/rates-lists used for exchanging telephone traffic ([D.198](#)); describe shared uses of telecommunication infrastructure as possible methods for enhancing the efficiency of telecommunications ([D.264](#)), optimizing terrestrial cable utilization across multiple countries to boost regional and international connectivity ([D.265](#)), an enabling environment for voluntary commercial arrangements between telecommunications network operators and over-the-top application providers ([D.266](#)), and a policy framework including principles for

digital identity infrastructure ([D.267/X.1261](#)). A new Supplement describes principles for increased adoption and use of mobile financial services through effective consumer protection mechanisms ([D.Suppl.4](#)).

Protocols and test specs

Emergency telecommunications: A new ITU standard defines a signalling architecture of the fast deployment emergency telecommunication network to be used in a natural disaster ([Q.3060](#)). *Combatting counterfeiting and mobile device theft*: New ITU standards describe a framework for solutions to combat counterfeit ICT devices, providing the reference framework and requirements to be considered when deploying solutions to combat the circulation and use of counterfeit ICT devices ([Q.5050](#)); provide a framework for combating the use of stolen mobile devices ([Q.5051](#)) addresses mobile devices with duplicate unique identifier ([Q.5052](#)) describes mobile device access list audit interface ([Q.5053](#)). Two new technical reports study the reliability of IMEI (QTR-RLB-IMEI), and a survey on counterfeit ICT devices in Africa region (QTR-CICT).

- *Protocols*: New ITU standards address a signalling architecture of orchestration in NGNe ([Q.3058](#)), a protocol at the interface between two distributed ENUM servers for IMS ([Q.3645](#)), a signalling architecture of the fast deployment emergency telecommunication network to be used in a natural disaster ([Q.3060](#)), signalling requirements for service function discovery ([Q.3059](#)), and procedures for vBNG acceleration with programmable acceleration card ([Q.3720](#)), signalling for distributed infrastructure ENUM networking for IMS ([Q.3643](#)); signalling for IMS emergency telecommunications ([Q.Suppl.72](#)). New ITU standards also address interconnection between trustable network entities ([Q.3057](#)), energy-efficient device-to-device communication for 5G ([Q.5022](#)), time constraint IoT-based applications over SDN ([Q.3745](#)), managed P2P communications (Q.609.5, Q.609.9, Q.609.10) and hybrid P2P communications ([Q.4100](#)).
- *Test specifications*: New ITU standards address the compatibility testing of SDN-based equipment using OpenFlow protocol ([Q.3963](#)); provide testing procedures for augmented reality applications ([Q.4066](#)), a framework for IoT testing ([Q.4062](#)), a framework for the testing of identification systems used in IoT ([Q.4063](#)), interoperability testing requirements of virtual Broadband Network Gateway ([Q.4064](#)), parameters of virtual broadband network gateway (vBNG) for monitoring ([Q.3915](#)), parameters for evaluating bottlenecks in web-browsing service ([Q.3961](#)), and vBNG interoperability testing requirements ([Q.4064](#)).

The inclusivity of the ITU standardization platform is supported by ITU's Bridging the Standardization Gap programme. Open platforms – such as ITU-T focus groups and collaboration initiatives like the AI for Good Global Summit (see [description](#) in [section 1.1](#)), the Financial Inclusion Global Initiative (see [Annex 1, Resolution 204](#)), the Digital Currency Global Initiative (see [Annex 1, Resolution 204](#)) or the United for Smart Sustainable Cities Initiative (see [section 1.9](#)) – support the development of new partnerships in emerging fields of ICT innovation and assist in clarifying the contributions expected of ITU standardization.

The World Telecommunication and Information Society Day (WTIDS) took place in 2019 under the theme "[Bridging the Standardization Gap](#)". More details can be found in [section 1.11](#).

ITU-R Recommendations

The ITU Radiocommunication Sector (ITU-R) plays a vital role in the global management of the radio-frequency spectrum and satellite orbits, limited natural resources which are increasingly in demand from a large and growing number of services such as fixed, mobile, broadcasting, amateur, space

research, emergency telecommunications, meteorology, global positioning systems, environmental monitoring and communication services.

The main activities related to spectrum and orbit regulation and management are can be found throughout this document as follows. [section 1.1](#) above contains key outcomes of WRC-19 and RA-19. This section encompasses the results of the processing of space and terrestrial notices, the software developments and capacity building events to support developing countries. Additional capacity building events can be found under [section 1.10](#). The output of the standardization work that takes place within ITU-R Study Groups and the ITU-R Recommendations approved in 2019 and 2020 are listed under [section 1.3](#). [section 1.4](#) contains AI activities related to radiocommunications; [section 1.9](#) lists some of partner organizations of the ITU-R and finally [section 2.1](#) lists the results of the Radio Regulations Board (RRB) and of the Technical Assistances provided by BR.

Working Parties (WP)	New or revised ITU-R Recommendations
WP 1A - Spectrum engineering techniques	SM.1138-3, SM.1448-1, SM.2110-1, SM.2129-0
WP 1C - Spectrum monitoring	SM.1054-1, SM.1268-5, SM.1392-2, SM.1875-3, SM.[FS-ACC] ¹
WP 3J - Propagation fundamentals	P.310-10, P.341-7, P.453-14, P.525-4, P.526-15, P.527-5, P.676-12, P.840-8, P.841-6, P.1057-6, P.1407-7, P.1511-2, P.1853-2
WP 3K - Point-to-area propagation	P.528-4, P.1238-10, P.1411-10, P.1546-6, P.1812-5, P.1816-4, P.2109-1
WP 3L - Ionospheric propagation and radio noise	P.372-14, P.531-14, P.533-14
WP 3M - Point-to-point and Earth-space propagation	P.617-5, P.619-4, P.681-11, P.1144-10, P.2001-3
WP 4A - Efficient orbit/spectrum utilization for FSS and BSS	S.1782-1
WP 4B - Systems, air interfaces, performance and availability objectives for FSS, BSS and MSS, including IP-based applications and satellite news gathering	S.2131-0
WP 4C - Efficient orbit/spectrum utilization for MSS and RDSS	M.1901-2, M.1902-1, M.1903-1, M.1904-1, M.1905-1
WP 5A - Land mobile service above 30 MHz* (excluding IMT); wireless access in the fixed service; amateur and amateur-satellite services	M.1746-1, M.1808-1, M.1826-1, M.2084-1, M.2134-0
WP 5B - Maritime mobile service including Global Maritime Distress and Safety System (GMDSS); aeronautical mobile service and radiodetermination service	M.585-8, M.1174-4, M.1798-2, M.2135-0
WP 5C - Fixed wireless systems; HF and other systems below 30 MHz in the fixed and land mobile services	F.383-10, F.387-13, F.636-5, F.758-7, F.1565-1

¹ This ITU-R Recommendation was approved (on 18 February 2021) and its final number will be indicated afterwards.

Working Parties (WP)	New or revised ITU-R Recommendations
WP 5D - IMT Systems	M.1036-6, M.1457-15, M.2012-4, M.2150-0
WP 6A - Terrestrial broadcasting delivery	BS.450-4, BS.1114-11, BS.1615-2, BS.1660-8, BT.1306-8, BT.1877-2, BT.1877-3, BT.2016-2, BT.2036-3, BT.2136-0
WP 6B - Broadcast service assembly and access	BS.1196-8, BS.1548-7, BS.2076-2, BS.2088-1, BS.2126-0, BS.2127-0, BT.1872-3, BT.2073-1, BT.2075-3, BT.2133-0, BT.2137-0
WP 6C - Programme production and quality assessment	BS.1283-2, BS.2132-0, BT.500-14, BT.1702-2, BT.2111-1, BT.2111-2
WP 7B - Space radiocommunication applications: Systems for transmission/reception of telecommand, tracking and telemetry data for space operation, space research, earth exploration-satellite, and meteorological satellite services	SA.1016-1, SA.1027-6, SA.1161-3, SA.1164-4
CCV – Coordination Committee for Vocabulary	V.2130-0

1.4 Emerging technologies

ITU monitors the progress of new/emerging technologies such as artificial intelligence (AI), Internet of Things (IoT), and quantum information technologies (QIT).

Artificial intelligence

In recent years, AI has been advancing at an exponential pace. Artificially intelligent machines are able to sift through and interpret massive amounts of data from various sources to carry out a wide range of tasks. For example, AI's ability to analyse high-resolution images from satellites, drones or medical scans can improve responses to humanitarian emergencies, increase agricultural productivity, and help doctors identify skin cancer and other illnesses. The transformative power of AI, however, also comes with challenges, ranging from issues of transparency, trust and security, to concerns about displacing jobs and exacerbating inequalities.

This section lists some of the ITU groups and activities working in the area of AI. More details are available on the recently published intersectoral website on ITU's activities in AI - [available here](#).

AI for Good Global Summit: See [section 1.11](#).

AI in standardization: see [section 1.3](#)

AI in radiocommunications: see [section 1.3](#)

The main questions currently under study in ITU-R study groups, as well as reports under elaboration on issues related with the use of AI in radiocommunications are:

- The scope of ITU-R Study Group 1 (SG 1) covers all aspects of Spectrum Management, including Spectrum Monitoring. With respect to artificial intelligence (AI) techniques such as machine learning (ML), Question ITU-R 241/1 "Methodologies for assessing or predicting spectrum availability" was approved in 2019 and is under study.

- The scope of ITU-R Study Group 6 (SG 6) covers all the aspects from production to reception for the broadcasting service. SG 6 deliverables and work items related to artificial intelligence and machine learning are as follows:
 - Question ITU-R 144/6 “Use of Artificial Intelligence (AI) for broadcasting” focuses on the impact of AI technology and how can it be deployed to increase efficiency in the areas of programme production, quality evaluation, programme assembly and for broadcast emission.
 - Report ITU-R BT.2447 “Artificial intelligence systems for programme production and exchange”, discusses current applications and efforts under way and evaluated those that are relevant to the near-term broadcast programme and production pathway.

A number of related ITU-R Reports and Recommendations are available [online](#).

In addition, BR participated in the following events to present its activities in relation to AI:

- *Foro sobre Inteligencia Artificial: Aplicaciones e Implicaciones*, 8 May 2020;
- Web Meeting “Inter-Regional Week on Emerging Technologies for Development in the Arab and African regions - ITU Initiatives on Emerging Technologies”, 17 December 2020, Web Meeting.

High-Level Committee on Programmes (HLCP): Interagency Working Group on AI

Following the UN Chief Executive Board’s endorsement of the ITU-coordinated UN system-wide strategic approach and road map for supporting capacity development on AI and HLCP’s UNESCO-coordinated work on UN system actions on the ethics of AI, and taking into consideration the Secretary-General’s Roadmap for Digital Cooperation, it was decided during the 40th HLCP session in October 2020 to establish an HLCP interagency working group on AI (IAWG-AI), co-led by UNESCO and ITU to focus on policy and programmatic coherence of AI activities within the UN. The group will leverage the stocktaking and gap analysis exercise by ITU regarding internal capacities within the UN and other stakeholders in relation to the UN system-wide strategy. The IAWG-AI is currently in the process of developing and adopting their Terms of Reference.

Internet of Things

See section 1.3

ITU enables the coordinated development of interoperable IoT technologies, which essentially encompass millions of connected devices and objects. ITU standards development for ‘IoT and smart cities’ is led by ITU-T SG 20 and supported by increasing collaboration with oneM2M.

For details, see [Annex 1, Resolution 197](#).

Quantum information technology

QIT is a class of emerging technology that improves information processing capability by harnessing principles of quantum mechanics. It has promoted the booming of the second quantum revolution and will have a profound impact on ICT networks.

In response to this new emerging technology ITU established the [ITU-T Focus Group on Quantum Information Technology for Networks](#) (FG-QIT4N) to provide a collaborative platform for pre-standardization aspects of QIT for networks. Its main objectives are: to study the evolution and applications of QIT for networks; to focus on terminology and use cases for QIT for networks; to provide necessary technical background information and collaborative conditions to effectively support QIN-related standardization work in ITU-T study groups; and to provide an open cooperation

platform with ITU-T study groups and other standards development organizations (SDOs). [Section 1.3](#) summarizes some of the first ITU recommendations related to QIT already adopted.

Details on **other specific emerging technologies** (e.g. distributed ledger technology and digital financial services) can be found in [section 1.3](#) and in [Annex 1, Resolution 204](#).

1.5 Environment and smart sustainable cities and communities

ICTs provide a growing number of opportunities for sustainable development and to address challenges related to climate change. ICTs are fundamental for monitoring, mitigating and adapting to the effects of climate change. ICTs also deliver smart applications and transform the way services are delivered - including in the area of energy, waste, and water management - to reduce the carbon footprint of human activities. At the same time, it is important to address the environmental challenges that the ICT industry presents. A growing information society increases the level of energy consumption and the emission of greenhouse gases (GHGs) for the growing spread and use of ICT services, networks and devices. The volume of e-waste is on the rise and it contains hazardous substances that, if treated inadequately, can cause severe environmental and human health impacts.

This section presents an overview of some of the activities conducted by ITU on areas related to environment and smart sustainable cities and communities. Further details on activities relating to the environment are available [online](#). See also [Annex 1, Resolution 197](#).

Climate change

ITU-R SG 7 (Science services) continued its work in the development of recommendations for [remote sensing systems](#) and [space applications](#). ITU-T SG 5 ([environment, climate change and circular economy](#)) continued to develop recommendations and leverage global expertise to solve urgent issues related to e-waste, circular economy and climate change. ITU developed a [new standard \(Recommendation ITU-T L.1470\)](#) “Greenhouse gas emissions trajectories for the information and communication technology sector compatible with the UNFCCC Paris Agreement”) and two Supplements ([L.Suppl.37](#) and [L.Suppl.38](#)) setting concrete guidelines for the ICT industry to reduce GHG emissions by 45 per cent from 2020 to 2030, aligned with science-based targets necessary to achieve the Paris Agreement.

ITU-D [Study Group Question 6/2](#) on ICTs and the Environment continued to undertake studies on ICTs and climate change and how ICTs can help to adapt to the effects of climate change.

ITU is actively engaged and contributes to the annual meetings of the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC), particularly in the UN side events and exhibits on synergies between Sustainable Development Goals (SDGs) 11 and 13, as well to the UN system Climate Change Library with updated ITU-related publications. The next meeting, COP 26, will be hosted by the United Kingdom in Glasgow 1-12 November 2021. Relevant publications include “[Turning digital technology innovation into climate action](#)”, launched by ITU in September 2019. This document outlines the potential of digital technologies for monitoring, mitigating and adapting to climate change. Another relevant publication is “[Frontier technologies to protect the environment and tackle climate change](#)”, launched in April 2020 and produced by ITU together with the United Nations Economic Commission for Europe (UNECE), UNESCO, UN Environment, UNFCCC, United Nations Global Compact, the United Nations Industrial Development Organization (UNIDO), UN-Habitat, and UN-Women. The document highlights the potential of eight key technologies to meet Sustainable Development Goal 13.

Energy efficiency and smart sustainable cities and communities

ITU is working to improve the reliability, security and interoperability of ICT infrastructure needed for smart sustainable cities and communities, while at the same time advocating for the use of ICTs to reduce the consumption of energy and enhance services and quality of life for city dwellers. ITU-T SG 5 (Environment, climate change and circular economy) has developed several standards (see section 1.3).

ITU-T SG 20 (IoT and smart cities) has developed a range of standards addressing the requirements of IoT technologies, with a focus on IoT applications and challenges in smart cities and communities (see section 1.3). The United for Smart Sustainable Cities (U4SSC) initiative continued to advocate public policy to encourage the use of digital technologies toward facilitating and easing the transition to smart sustainable cities and communities through its nine thematic groups and the U4SSC implementation programme. The 9th Green Standards week took place in Valencia, Spain. The 1st Digital African Week took place in Abuja, Nigeria. An Arab regional initiative on IoT and smart cities raised awareness on the wide-scale deployment of IoT to establish smart cities and societies in the Arab States region. The first meeting of the Joint IEC-ISO-ITU Smart Cities Task Force was held 7 October 2020.

E-waste

ITU has a broad portfolio of e-waste activities, tackling this issue at the global, regional and national level. ITU covers a number of priority areas relating to a circular economy for electronics and e-waste, from data collection and improvement to policy and technological development, standards and partnership building. ITU hosts the secretariat of the [UN E-waste Coalition](#) and is a founding partner of the Circular Electronics Partnership and the [Global E-waste Statistics Partnership](#) (GESP).

During 2019 and 2020, ITU's work continued towards meeting the e-waste targets established by the [Connect 2030](#) agenda. International E-waste Day took place in October 2019. Further new entities signed up to join the [UN E-waste Coalition](#), paving the way for greater collaboration on e-waste management. ITU and other partners worked together on a project in Latin America funded by the Global Environment Facility (GEF). As part of that project, ITU-T is working with Costa Rica and Argentina in the implementation of the ITU standards providing a guideline for achieving the e-waste targets of the Connect 2030 Agenda ([L.1031](#)) and guidelines and certification schemes for e-waste recyclers ([L.1032](#)). The [e-waste monitor in the Arab region](#) generated an e-waste data set for the 22 Arab States and enhanced skills on e-waste collection and statistics methods and tools. The [Massive Open Online Course \(MOOC\) on e-waste management](#) developed together with the secretariat of the Basel Convention, WHO and other partners was launched in February 2019. As part of the e-waste MOOC, two webinars were hosted in April 2020: "Explore a circular vision for the ICT sector" and "Using international standards to tackle the e-waste challenge".

Additionally, ITU-T SG 5 is helping countries and the ICT sector to achieve a circular economy. See section 1.3.

A [policy awareness workshop on e-waste](#) held in Hyderabad, India 27-29 November 2019 helped create inter-ministerial and departmental linkages for programmatic collaboration on e-waste, including roles and responsibilities and the identification of funding gaps and budget sources.

In 2020, ITU has published [The Global E-waste Monitor 2020](#), which made the headlines of many major news outlets. A thought paper on [Internet Waste](#) was also released as part of its joint organization of [International E-waste Day 2020](#). Under GESP, ITU and partners have delivered several capacity-building activities to improve e-waste statistics in the CIS region, the Arab States, East Africa and Latin America. National e-waste monitors are being prepared in Malawi, Namibia and Botswana and a regional e-waste monitor in the Arab States and in Latin America, also under the GESP.

A project with the World Economic Forum was signed in 2020, which will see a report prepared in the form of a toolkit for fair and economically viable approaches to extended producer responsibility for e-waste management, with a focus on the Africa region. From the policy perspective, consultations took place on the development of a national e-waste management policy in Malawi and in Namibia. An e-learning course on an introduction to e-waste management has also been prepared, to support the policy development cycle. Also, a [regional event was held online jointly by ITU, UNU and UNEP](#), in December 2020. The workshop focused on waste electrical and electronic equipment (WEEE) and a move towards regional harmonization of national WEEE policies, regulation and standards in the Arab States.

Emergency telecommunications

In 2019, ITU launched the report “[Disruptive technologies and their use in disaster risk reduction and management](#)”, which discusses the use and opportunities of ICTs and disruptive technologies for disaster risk reduction and management. The document finds that technological advancement and innovation are creating new opportunities for enhancing disaster resiliency and risk reduction. Developments in disruptive technologies – such as AI, IoT and big data – and innovations in such areas as robotics and drone technology are transforming many fields, including disaster risk reduction and management.

ITU also assisted Mozambique, Solomon Islands, Fiji, Zimbabwe and Bahamas, deploying satellite phones and network equipment in disaster-struck countries.

In 2020, to help countries better manage disaster response activities at a time when the frequency and intensity of disasters is on the rise worldwide, as is their human and economic impact, ITU launched new guidelines for the development and implementation of [national emergency telecommunication plans \(NETPs\)](#), as well as for the development of [table-top simulation exercises](#). Based on these guidelines and to bolster preparedness, reduce vulnerability of countries and increase knowledge on the topic of emergency telecommunications, ITU launched three [new online training courses](#). These courses also include one on the Tampere Convention, to raise awareness of the importance of the Convention and to highlight its benefits (courses available in the ITU Academy Platform).

To respond to the increasing demand for support in delivering emergency telecommunication equipment and services when disasters strike, ITU established an internal emergency telecommunication [roster](#). Suitable ITU staff have been selected and are being trained on the deployment process and use of the current (and future) ITU telecommunication equipment. This team is also being trained to support the work of the Emergency Telecommunications Cluster on the ground, by liaising with national authorities and stakeholders on importation and licensing requirements for telecommunication equipment.

As part of its response efforts, in 2020 ITU also supported the government of Vanuatu by providing broadband connectivity after the devastation caused by the category 5 hurricane Harold. Together with the Emergency Telecommunications Cluster, ITU has continued working on the development of the [Disaster Connectivity Map](#).

1.6 Cybersecurity: building confidence and security in ICTs

The main objectives related to ITU's activities in the area of cybersecurity is to deliver products and services to help ITU membership build confidence and security in the use of telecommunications/ICTs, as well as to contribute to the implementation of national and global initiatives. These activities are built on [Resolution 130](#) (Rev. Dubai, 2018), [Resolution 174](#) (Rev. Busan, 2014) and [Resolution 179](#) (Rev. Dubai, 2018), and related resolutions from the WTDC and the WTSa, as well as from ITU's role as sole facilitator for WSIS Action Line C5. The [ITU Cybersecurity Programme](#) and its priorities, shows the complementary nature and facilitates the implementation of ITU-R, ITU-T and ITU-D activities in this domain.

Legal measures

Legal measures are needed to assure an appropriate cybersecurity legislation and harmonization of the legal and policy framework. During this period, ITU-D has continued to assist Member States in understanding the legal aspects of cybersecurity, through the [Guide to Develop a National Cybersecurity Strategy \(NCS\)](#) and the [Cybercrime Legislation Resources](#), where ITU collaborates closely with partners such as United Nations Office on Drugs and Crime (UNODC) and other experts.

Technical and procedural measures

Regarding the standardization process, ITU-T SG 17 ([Security](#)) is the lead study group on building confidence and security in the use of ICTs. ITU-T SG 17 continues to facilitate more secure network infrastructure, services and applications, and coordinates security-related work across all ITU-T Study Groups. SG 17 has established 25 new [work items](#) in 2019 and 15 new work items in 2020, and issued more than 30 new or revised ITU-T Recommendations in 2019 and more than 40 in 2020, under the [X Series](#). SG 17 was also the first study group to hold a fully virtual meeting on 17-26 March 2020.

Other ITU-T Study Groups, such as ITU-T SG 9 ([Broadband cable and TV](#)) and ITU-T SG 13 ([Future networks, with focus on IMT-2020, cloud computing and trusted network infrastructures](#)), contributed during this period to achieving ITU mandate on cybersecurity. See further details in [section 1.3](#).

Also ITU-R worked in establishing clear security principles for IMT (3G, 4G and 5G) networks. See [ITU-R Recommendations](#) and [section 1.3](#).

Organizational structures

ITU-D works on technical assessments to evaluate the preparedness of and to equip ITU Member States with fully functioning/operational [National Computer Incident Response Teams \(CIRTs\)](#). Direct engagement in 14 such activities has been completed in a number of countries, including Kiribati, Solomon Islands, Papua New Guinea, Vanuatu and the State of Palestine, and 6 projects are currently ongoing. ITU has also partnered with the Global Cyber Security Capacity Centre at the Oxford Martin School, and jointly performed cybersecurity capacity reviews in Thailand, Sierra Leone, and Madagascar. Following a project funded by the Australian Government (DOCA), in 2019 ITU performed CIRT assessments in Samoa, Tonga, Vanuatu and Papua New Guinea, which were followed by cybersecurity capacity reviews.

Capacity building

ITU works to enhance national cybersecurity and reduce the knowledge gap. Some activities during this period included:

- [Regional cybersecurity forums](#) were organized for all ITU regions in order to build capacity for different ITU-D programmes/activities and provide an operational platform for regional and international cooperation.

- Workshops took place in Indonesia, Macedonia (for Balkan States) and Tunisia (for countries from the Africa and Arab States regions).
- The ITU Academy organized the following workshops for the Americas region: online training on cybersecurity basics (March 2020) and online training on digital forensics (October 2020).
- The ITU Guide to Developing a National Cybersecurity Strategy (NCS) constitutes a good practice that was used and promoted. The process to update the NCS is also under way and several coordination meetings took place in October-November 2020 for this purpose. ITU conducted a webinar on 19 October 2020 entitled [“National Cybersecurity Strategies – Implementation and Monitoring”](#) to discuss the lifecycle development and implementation of national cybersecurity strategies. A special event on the subject “National cybersecurity strategy for Fiji” was held in November-December 2020.
- Capacity development and technical assistance were provided to Sudan to improve its strategy on critical information infrastructure protection.
- Regional cybersecurity weeks were held in the Arab States, organized by the ITU Arab Regional Cybersecurity Centre (ITU-ARCC). The Moldova cybersecurity week was held in Chisinau.
- A Cyber Shield 2019 exercise was held in Turkey, to increase incident response capabilities and readiness levels, as well as the mutual understanding of cyber risks and associated impacts, and to ensure a continued collaborative effort among international cybersecurity stakeholders especially national CERTs in order to mitigate cyber threats.
- A training session was held for Kyrgyzstan on how to set up a cybersecurity operations centre.
- [Cyberdrills](#) – which had already involved more than 100 countries – were organized in Uganda (Africa region, November 2019), Oman (Arab region, October 2019), Malaysia (Asia and the Pacific region, September 2019) and Romania (Europe and CIS region, May 2019). Five additional cyberdrills were conducted in 2020.
- ITU-T SG 17 organized a one-day [ITU Workshop on Fintech Security](#) (Aug 2019) which resulted in the follow-up of activities in collaboration with ITU focus groups (FG-DLT, FG-DFC) and other identified fintech security-related SDOs, i.e. ISO TC 307 and W3C on DLT. This event took place together with a [Mini Workshop on Cybersecurity Challenges in Automated Driving](#) in cooperation with ITU CITS and UNECE WP29.
- To address cybersecurity challenges during the COVID-19 pandemic, [ITU, together with BitSight, provided access](#) to the BitSight security platform for ITU Member States. The platform enables ITU Member States to identify ongoing malicious activities against health services and other COVID-19 responding sectors.

As a result of these efforts, the third [ITU Global Cybersecurity Index](#) (GCI) shows considerable improvement in commitment to cybersecurity worldwide. The fourth version of the Global Cybersecurity Index survey is in progress, with an improved questionnaire and methodology ([Method for GCI v4](#)). The deadline for country submissions for GCI was 30 September 2020. In addition to experts from academia and the private sector, all Member States were invited to appoint experts to join and contribute to the GCI Weightage Expert Group meeting held on 15 October 2020.

International cooperation

To strengthen collaboration, ITU is developing [partnerships](#) on cybersecurity-related matters with various regional/international organizations and initiatives. [Section 1.9](#) provides details on ITU Strategic partnerships.

Following the instructions of the 2019 session of Council, the Secretary-General will submit for the next session of Council (1) a report explaining how the ITU is currently utilizing the Global

Cybersecurity Agenda (GCA) framework and (2) with the involvement of Member States, appropriate guidelines developed for utilization of the GCA by ITU for Council's consideration and approval. As per the process set out by Council 2019 for developing the draft guidelines, the first virtual open consultation was held on 23 April 2020 for all WSIS stakeholders to provide comments on the draft Guidelines.

As the lead facilitator for WSIS Action Line C5, ITU organized several sessions at the [WSIS Forum 2019](#), including a high-level session on AI and trust, as well as a session on the importance of measurement in cybersecurity. At the [WSIS Forum 2020](#), ITU organized a number of sessions including an Action Line C5 facilitator session on "Cybersecurity in the era of Quantum Information Technology (QIT): challenges and considerations for ICT networks" and a high-level dialogue on "Ensuring Trustworthy Healthcare in an AI World".

Child online protection (COP)

In 2019, a COP Regional Forum was held in Ghana. In the Asia-Pacific region, assistance was provided for the development of the ASEAN Regional Framework, build upon the COP Guidelines, and in coordination with other partners, including TELSOM/TELMIN. Other activities took place in Europe, as part of the regional initiative on enhancing trust and confidence in the use of ICTs.

In October 2019, the Broadband Commission for Sustainable Development, co-chaired by ITU, released a comprehensive [report](#) on "Child Online Safety: Minimizing the Risk of Violence, Abuse and Exploitation Online" issued by the Working Group on Child Online Safety in October 2019. The COP Guidelines were included as a reference and taken as the basis to implement the recommendations of the report.

In June 2020 ITU released several sets of Child Online Protection (COP) Guidelines intended for policy-makers, industry, parents and educators and children of different age groups. The release was accompanied by regional launches. The Guidelines are the outcome of a comprehensive revision process involving more than 50 organizations from different sectors having expertise in the field of ICTs and children's rights (e.g. the Global Partnership to End Violence Against Children, UNESCO, UNICEF, UNODC, the WePROTECT Global Alliance, WHO, the World Childhood Foundation USA, and the ITU). They include advice not only on online safety but also on how to empower and engage with children and young people in this domain. From 2021 onwards, the COP Guidelines will be implemented at the national level.

During the COVID-19 pandemic, the need to ensure children's online safety has become more pressing than ever before. ITU has issued [Guidelines for Parents, Carers, Guardians, and Educators for Child Online Protection](#) to help minimize online risks. Together with a range of partners including the Global Partnership to End Violence Against Children, UNESCO, UNICEF, UNODC, the WePROTECT Global Alliance, WHO and the World Childhood Foundation USA, ITU has released a [technical note](#) to help governments, ICT companies, educators and parents protect children during lockdown. ITU has also supported the eSafety Commissioner of Australia to promote the international booklet ["COVID-19 Global Online Safety Advice for Parents and Carers"](#).

Further details on ITU's activities related to cybersecurity are available in documents [C20/18](#) and [C21/18](#).

1.7 Digital inclusion

As accelerators and amplifiers of change, ICTs have the potential to quickly and radically improve people's lives. They facilitate access to information and knowledge, simplify the delivery of essential services and enable social and economic participation. ICTs, however, are not always equally accessible to everyone. Digital inclusion means ensuring all people have an equal opportunity to become empowered through ICTs and be part of digital society. To achieve this, ICTs need to be accessible to all, regardless of their gender, age, ability and location.

ITU has launched several targeted efforts to bridge the digital divide and advance the Connect 2030 Agenda. See actual measurement of progress towards those targets in [section 3.1.2](#), for example target 2.8 on gender equality on line to be achieved by 2023.

Gender

ITU is custodian of three gender-related SDG Indicators: the proportion of individuals who (1) own a mobile phone, (2) use the Internet, and (2) have ICT skills. The latest figures as published in [ITU's Measuring digital development: Facts and figures 2020](#) show the digital gender gap is growing, and the report calls for more effective action to address cultural, financial and skills-related barriers that impede Internet uptake, especially among women.

ITU's work in addressing the digital gender divide includes [International Girls in ICT Day](#), an advocacy campaign that started in 2011 to encourage more girls and young women to take up ICT careers and studies. Celebrated annually on the 4th Thursday of April, the day is now a UN observance. In 2019, ITU-led activities were taken "on the road" to Addis Ababa, Ethiopia (see [highlights video](#)). On 23 April 2020 ITU hosted an online dialogue on the subject, "Girls in ICT: Inspiring the Next Generation", which highlighted the importance of governments' engagement in empowering women through technology and drew attention to role models and mentors and how they can inspire girls and young women to take up careers in the tech field (see [highlights video](#)). For the first time, Girls in ICT Day was a 24-hour virtual tour with events taking place all around the world. By December 2020, over 377 000 girls and young women had part in more than 11 400 celebrations of International Girls in ICT Day in 171 countries worldwide.

The [African Girls Can Code](#) initiative (AGCCI) trains and empowers girls and young women across Africa to become computer programmers, creators and designers. Stemming from its success, an [Americas Girls Can Code](#) initiative started in 2019 and engaged 300 girls in coding through a series of workshops.

[EQUALS: The Global Partnership to Bridge the Gender Digital Divide](#) also works to address the digital gender divide, focusing on access, skills, leadership and research. In 2019 there was a special focus on EQUALS entrepreneurs at ITU Telecom World in Budapest Hungary. Further information on the partnership in [section 1.9](#).

Encouraging and tracking gender-balanced representation and nominations of women for key roles strengthens women's participation in ITU meetings and conferences. The [Network of Women \(NoW\) for WRC-19](#) (#NOW4WRC19) efforts culminated in a [Declaration on Promoting Gender Equality, Equity and Parity in the ITU Radiocommunication Sector](#), adopted at WRC-19 in Sharm El-Sheikh. See [section 1.1](#). In November 2020 at the World Radiocommunication Seminar Online 2020, ITU-R launched the [Network of Women for WRC-23](#), aiming at promoting gender equality, equity and parity.

NoW also encourages gender balance in the activities leading up to WTDC-21. The aim is to build, in the medium and long term, a community where female delegates can network and support each other; advocate and share experience and knowledge; promote the active participation of women;

give them visibility and empower them for larger responsibilities in their respective delegations; and encourage experienced female delegates to mentor ICT professionals in order to create a stronger base for women in the digital space.

ITU's gender equality and mainstreaming efforts are reported annually to the United Nations system-wide action plan for gender equality and mainstreaming (UN-SWAP) based on 17 performance indicators. In 2018, ITU "met" or "exceeded" requirements for 5 out of 17 UN-SWAP2.0 indicators, with 2019 improvements including gender-responsive performance management.

Further detail is available in document [C21/06](#) on resolution 70, and [online](#).

Youth

ITU's work on empowering youth through ICTs include the [International Girls in ICT Day](#) as well as the [Digital Skills for Jobs for Campaign](#) and the [ITU Digital Skills Toolkit](#). Consultations with youth on how to enhance their digital skills were held during the AfriLab gathering in Addis Ababa, Ethiopia, in November 2019, an ITU-ILO event aimed at boosting decent jobs and enhancing digital skills for youth in Africa's digital economy.

In 2020, ITU's efforts to ensure meaningful participation of youth in all its activities crystallized with the development of the new [ITU Youth Strategy](#), which aims to focus the work on youth in a strategic, coordinated, and systematic way, to be fit for purpose, to reduce the youth digital divide and to improve the lives of young people around the world. The activities and efforts proposed of this strategy are grouped around three areas of action, symbolized in the slogan: Empower, Engage and Participate. To advance in the implementation of the strategy, an ITU Youth Task Force was created and youth focal points were designated for each regional office.

As a next step, ITU also launched [Generation Connect](#), an overarching initiative on the journey to WTDC-21, and its Generation Connect Global Youth Summit.

In 2020, ITU also commissioned a [Youth Engagement Survey](#), led by the Youth and Media unit of the Berkman Klein Center for Internet & Society at Harvard University, with the objective of consulting with youth on how the ITU can best engage with them. The survey was distributed across 58 countries from all regions of the world, and more than 1 000 young people (ages 10-25) participated. The results of this survey served to inform the development of the ITU Youth Strategy and will further guide its implementation.

The [Futurecasters: Global Young Visionaries Summit 2020](#) was successfully hosted by ITU and the Model UN programme of Ferney Voltaire, France in January 2020. The three-day summit was attended by approximately 700 students from 25 countries, who engaged in discussions on how technologies can be used to advance progress towards the 17 SDGs.

Other efforts to expand expertise on youth development and engagement of youth in ITU activities were the [I-CoDI Youth Challenge](#) organized by the [ITU International Centre of Digital Innovation](#) (I-CoDI), on "How can ITU communicate effectively with and for youth?".

Other initiatives aimed at engaging and empowering youth to participate in the areas of action and work that ITU leads include a call for applications to the [Generation Connect Visionaries Board](#) and the creation of regional youth groups that will serve as communication platforms for young people in their respective regions, to share interests, concerns and perspectives on digital transformation, particularly in the context of the regional preparatory meetings organized ahead of WTDC-21.

Related to youth, ITU is also strengthening its work with academic institutions. The membership of the Academia category at ITU counts some 160 entities. The scholarly [ITU Journal on Future and Evolving Technologies](#) (ITU JFET) and the [ITU Kaleidoscope Academic Conferences](#) foster dialogue with academia on ICT standardization. Young authors (up to 30 years) whose papers are accepted for a Kaleidoscope presentation receive Young Author Recognition certificates. See [section 1.11](#) for more details.

[Section 1.9](#) gives details on Giga, a joint UNICEF and ITU global initiative to connect every school to the Internet and every young person to information, opportunity and choice.

ITU's Focus Group on Machine Learning for Future Networks including 5G (FG ML5G) ran a pilot project to engage university students in FG ML5G's work and expose students to standardization work. ITU experts mentored students and those with completed projects submitted their contributions to FG ML5G.

ITU was among the members of the United Nations Inter-Agency Network on Youth Development who issued a joint [statement](#) with respect to COVID-19 and youth. The statement calls on agencies in their efforts to mitigate and address the impact of the pandemic to include provisions that are responsive to the needs of young people and uphold their rights, or to include youth-specific provisions when needed.

Further detail is available [online](#).

Accessibility

ITU has advanced in the implementation of Resolution 175 (Rev. Dubai, 2018) focusing on two areas of work: (a) promoting ICT accessibility for persons with disabilities, and (b) making ITU a more accessible organization for persons with disabilities.

In the first area, ITU has continued conducting technical work in ITU-R, ITU-T and ITU-D study groups, all of which contain relevant questions advancing the use of telecommunications and ICTs for persons with disabilities. This work has been conducted with the participation of persons with disabilities. In addition to this work, ITU has continued to develop toolkits and resources to support ITU Member States to advance in the establishment of enabling environments ensuring accessible telecommunications/ICT for persons with disabilities, in line with the Connect 2030 agenda.

ITU-D has also advanced the implementation of regional initiatives linked to ICT accessibility in the Arab ARB, EUR and CIS regions, each with a range of projects, trainings and events, as well as support to ITU administrations in almost every region, including the organization of the series of Accessible Americas events, continued in 2019, and the second edition of the Accessible Europe series of events.

Within the second area, ITU has continued to advance in the implementation of its ITU Accessibility Policy, endorsed by ITU Council 2013. During 2019 ITU has continued to provide captioning in a broad selection of ITU events and major conferences, sign language interpretation in selected ITU-T accessibility meetings and making ITU websites accessible. ITU has also modified its internal production system to generate accessible publications in the six official languages.

An important development that took place in 2019 was the adoption of the new UN Disability Inclusion Strategy (UN DIS), which incorporated significant inputs from ITU. In 2020 ITU prepared its report on the implementation of this strategy and reviewed accordingly its Accessibility Policy to adjust to the new framework provided at UN system level.

In March 2020, ITU issued [COVID Guidelines on how to develop inclusive digital information products and services](#) through different digital platforms, in all 6 UN official languages. These guidelines contain key messages and concrete actions to support policy makers and communicators in ensuring that the messages and vital digital information delivered are accessible to all people, including persons with disabilities, during this challenging global crisis.

In the framework of the **UN joint COVID-19 response and recovery emergency working group on health workstream**, the ITU Guidelines were also globally disseminated and translated into 22 other languages.

During the COVID-19 pandemic, the lack of an interoperable video remote interpretation (VRI) system for deaf and hard of hearing persons excludes them from important information and social services (e.g. medical consultation). ITU has therefore produced a technical paper entitled "[Guideline on web-based remote sign language interpretation or video remote interpretation](#)" which describes a web-based VRI based on real-time communication (RTC). The paper also describes how VRI can be used and how to harmonize the ways in which other remote services, such as online medical treatment and distance education, interact with it.

ITU also published an update of the report on "Accessibility to broadcasting services for persons with disabilities", covering topics such as personalization using object-based sound technology and haptic information presentation technology to improve accessibility for visually or hearing-impaired persons.

Additionally, a series of **online, self-paced, certified-based trainings in digital accessibility were developed. All trainings are provided through the ITU Academy in several UN languages, free of charge, and are delivered in accessible formats**, to ensure that persons with disabilities can also benefit from these trainings. Among the topics addressed are:

"[How to ensure inclusive digital communication during crises and emergency situations](#)", which provides holistic guidance on digital accessibility and identify the five digital modalities to ensure that everyone can understand information and communicate in time of emergency and crisis. The training is available in English, French and Spanish, along with a video tutorial on the topic.

A new version of "[ICT Accessibility – The key to inclusive communication](#)", which includes the latest developments in accessibility and digital communication during crisis situations, is now available in English, French and Spanish.

The **"[Web Accessibility -The Cornerstone on an inclusive digital society](#)"** training was also redesigned to include evolutions of WCAG standards and the European Accessibility laws, which can serve as role model in advancing globally digital accessibility implementation. The training is available in English, French and Spanish.

ITU also developed **an interactive toolkit and self-assessment for ICT accessibility implementation** with localized content in English, French and Spanish. The ITU toolkit **"Towards building inclusive digital communities"** assists policy makers and stakeholders in understanding and integrating principles of digital accessibility in their decision-making process to ensure inclusiveness. The resource will also facilitate development of self-assessments, provide valuable guidelines and good practices, and finally will also help to monitor implementation.

Aligned with the commitments made in the framework of the United Nations Disability Inclusion Strategy (UNDIS) to achieve sustainable and transformative progress on disability inclusion, **ITU has also been working with ILO on a project** planned to be implemented next year on **"Accessibility of Online Job Application and Recruitment Systems"** to provide guidance and develop the capacity of governments and UN agencies.

Finally, in response to the UN Secretary-General's Policy Brief on Disability Inclusion, ITU organized and/or actively participated in multiple virtual global and regional thematic webinars, meetings and events **raising awareness** of the need for inclusive digital communication. These included: within UNDIS, the [WSIS Forum 2020](#), the regional Inclusive Conference in Africa, in ASP with UNITAR, within [Accessible Americas 2020](#), in [Towards Digitally Accessible Europe](#). They were also ITU Study Group meetings on ICT accessibility, to mention only few.

Examples of ITU's work on accessibility-related standards can be found in section 1.3.

Further information is available [online](#).

Indigenous people

To empower indigenous people and communities through technology, [capacity-building trainings for indigenous communities](#), tailored to their specific needs and topics of interest, were organized. These trainings take into account self-sustainability aspects and cultural legacy.

1.8 COVID-19 related activities/responses

Coronavirus disease (COVID-19) has plunged the world into an unprecedented crisis, with billions confined to their homes worldwide, now relying on ICTs for continued access to education, healthcare, work and essential goods and services. From teleworking and e-commerce to telemedicine and remote learning, COVID-19 is the first pandemic in human history where ICT and social media are being used on a massive scale, driving the global collective response to the disease and digital transformation across the world.

The COVID-19 crisis we are in today highlights the fundamental importance of ICT to economies and societies everywhere. In response, ITU has called on the global ICT community and others to rise to the challenge and strengthen the multilateral, collective digital response to COVID-19.

Throughout 2020 ITU has helped countries and industries to cope with the challenges posed by the COVID pandemic to connectivity and the increased pressure placed on global networks. We have achieved this through several programmes, initiatives, platforms, partnerships, and collaborations, some of which we want to highlight in the [dedicated website](#) as well as below.

The [Global Network Resiliency Platform \(#REG4COVID\)](#) assists national policy-makers, regulators and industry stakeholders in ensuring that networks are kept resilient and telecommunication services are safe and available to all. During the first months of the pandemic (April to September 2020), exceptional temporary regulatory measures taken by ICT stakeholders around the world were shared to ensure immediate response to alleviate network congestion and ensure continuity of vital services and access to online solutions for health, education, financial, governmental and social business continuity while protecting users' rights. A call to all ICT stakeholders was launched in November 2020 to share the impact of immediate measures taken to keep communities connected and identify the new policies put in place for the COVID-19 recovery.

[Connect2Recover](#), launched in collaboration with the Government of Japan and the Kingdom of Saudi Arabia, aims to provide country-specific support to reinforce digital infrastructures and ecosystems against COVID-19. The goal is to deliver a means of utilizing digital technologies such as telework, e-commerce, remote learning and telemedicine to prevent the spread of COVID-19 infections while maintaining socio-economic activities to the maximum extent possible, as well as support the recovery efforts and preparedness for the "new normal", and potential future pandemics.

[Launch of the Child Online Protection Guidelines](#), see section 1.7.

[Guidelines for national emergency telecommunication plans](#), see section 1.5.

A Digital Development Joint Action Plan and Call for Action; Under the on-going collaboration between ITU, the World Bank Group, GSMA and the World Economic Forum, discussions were held on how they can bring together their communities and leverage on each other's activities to individually or jointly support membership in their response to COVID-19. Under the "Speedboat Initiative", the four institutions issued a ["COVID-19 Crisis Response: Digital Development Joint Action Plan and Call for Action"](#).

["Digital Cooperation in the Crisis of COVID-19" webinar series](#)

This series, organized by ITU, in partnership with relevant UN agencies – including the Assistant Secretary-General for Strategic Coordination from the Executive Office of the Secretary-General of the United Nations. The office of the Assistant Secretary-General and Special Advisor, Fabrizio Hochschild-Drummond, assessed the connectivity situation in different regions, and directed focus to actions required particularly in response to the COVID-19 emergency to enhance stable and affordable access for people who remain unconnected. Topics discussed included:

- i. Connectivity – situation assessment
- ii. Connectivity – best practice "COVID-19 Initiatives"
- iii. The "Infodemic" – misinformation and disinformation during COVID-19
- iv. Online safety and security during COVID-19
- v. Public health, digital responses and human rights.

See section 1.9 for more details.

[Study group webinars to share analysis of global COVID-19 response](#), see section 1.10.

[Economic Experts Roundtable to discuss "Economic Impact of COVID-19 and Digital Infrastructure"](#)

An Economic Experts Roundtable brought together a wide cross-section of economic experts to exchange views on the latest research and analysis on the COVID-19 economic impact on the digital infrastructure as a crucial enabler for the changing economy and society, as well as on the contribution of digital infrastructure to social and economic resilience facing the pandemic.

[UN Inter-Agency Network on Youth Development](#), see section 1.7

[Use of ICTs to help persons with disabilities cope with COVID-19](#), see section 1.7.

[Leveraging the joint ITU/WHO initiative "Be Healthy, Be Mobile" \(BHBM\)](#)

As part of the [Be Healthy, Be Mobile](#) initiative, ITU in collaboration with the World Health Organization and with support from UNICEF worked with telecommunication companies to text people directly on their mobile phones with vital health messaging to help protect them from COVID-19. These text messages reached millions of people that are not able to connect to the Internet for information.

- In Tunisia, the mHealth platforms developed for mDiabetes and mTobaccoCessation were used to send COVID-19 messages to around 10 million citizens, as well as hundreds of inbound travellers to help promote compliance with safety and preventive measures.
- In Senegal, ITU supported the seventh consecutive national mRamadan campaign that reached close to 230 000 people with diabetes-related advice combined with basic information on COVID-19.

- Similarly, in Sudan, where the first national mDiabetes campaign launched this year, the BHBM solution helped deliver COVID-19-related messages to over 71 000 people.
- In Niger, ITU helped to establish an automated hotline to offer basic information about the virus and risk prevention, which is operational and has already received more than 40 000 calls from people inquiring about COVID in local languages.

Igniting global action

ITU was instrumental in the adoption of the **Broadband Commission Agenda for Action**, which outlines immediate measures that governments, industry, the international community, and civil society can take to shore up digital networks, strengthen capacity at critical connectivity points like hospitals and transport hubs, and boost digital access and inclusivity. The Agenda serves as a framework for the Commission's 50+ Commissioners and their organizations to share their own initiatives, make new commitments, and foster collaboration and partnership to help accelerate the collective response to COVID-19 and lay the groundwork for a better and faster recovery.

Supporting health solutions

The [ITU Smart Villages platform](#) has been used to establish interactive voice services on COVID-19 for everyone in Niger.

The ITU-T Focus Group on AI for health (FG-AI4H), which is managed in partnership with WHO, created the ad hoc group on digital technologies for COVID health emergency (AHG-DT4HE) to capitalize on the expertise and actions from FG-AI4H participants and collect effective ways and cases on AI and other digital technologies to combat COVID-19 covering the entire cycle of an epidemic emergency, encompassing the following: prevention and preparedness, outbreak early detection, surveillance and response, recovery, rehabilitation, mitigation, etc. The outputs are expected to evolve towards a more generalizable mechanism on the health emergency continuum, eventually applicable to other pandemics.

Harnessing artificial intelligence

ITU is drawing upon expertise from the AI for Good Global Summit (see sections 1.4 and 1.11) community and has launched an [AI for Good Webinar Series](#) delving into promising use cases of artificial intelligence in healthcare and other global challenges. The first few episodes in this series focus on global pandemic response and how AI and ICT can be used to combat COVID-19.

Exploring responses by smart cities

Cities house over half of the world's population and risk amplifying the COVID-19 pandemic. The [United for Smart Sustainable Cities \(U4SSC\)](#) – a UN initiative coordinated by ITU, UNECE and UN-Habitat, and supported by 14 other UN bodies – has created a new workstream exploring the solutions and best practices used by cities to address COVID-19. In addition, U4SSC is also currently working on the thematic group on "Economic recovery in cities and urban resilience building in the time of COVID-19", which aims to facilitate an exchange of experiences and information on approaches to support the economic recovery in cities and urban resilience building in the time of COVID-19 and post-COVID-19. In 2020, ITU launched a new Global Portal on Environment and Smart Sustainable Cities, which highlights the latest external resources related to six distinct topics, including the action of cities to tackle COVID-19.

Enabling learning and education

ITU has joined the [COVID-19 Global Education Coalition](#) led by UNESCO to ensure that learning continues for the more than 1.5 billion students and youth across the planet affected by school and university closures. And because children must have equal access to learning, ITU is offering a free-of-charge [programme](#) through its Digital Transformation Centres Initiative that provides trainers with tools and skills on how to conduct remote teaching.

Enabling networks to cope with increased demand

The COVID-19 pandemic has turned video conferencing and OTT video services into the fastest growing sectors in ICTs, enabling people to cope with remote working requirements, lockdowns and isolation. Video traditionally drives the growth and dominates the volume of network traffic; accordingly, efficient, quality media compression is essential to enable sustainability of broadband networks. Coincidentally, the effort to bring a new video coding algorithm completed in August 2020 with the approval of [H.266](#) Versatile Video Coding, which is the result of a joint collaboration between ITU-T SG 16 and ISO/IEC MPEG (see section 1.3)

WSIS Stocktaking COVID-19 Response – ICT Case Repository

As a part of the WSIS Stocktaking efforts to promote the innovative use of ICTs in making social impact, and in order to provide useful, deployable and actionable information to all WSIS community and beyond, the ICT Case Repository was launched in April 2020 and is still available for collecting projects and activities on how ICTs are assisting stakeholders in their everyday life, work, and in combating challenges caused by this extraordinary situation.

All COVID-19-related activities of ITU are available [here](#).

1.9 Strategic partnerships for SDGs

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. ITU has been putting strong emphasis on forging and reinforcing this type of strategic partnerships that through collaboration ensure better outcomes, more tangible results and stronger impact, with the aim of accelerating the achievement of the SDGs through the use of ICTs.

This section summarizes some of the key partnerships that continued through 2020.

Broadband Commission

ITU and UNESCO set up the *Broadband Commission for Digital Development* in 2010 with the aim of boosting the importance of broadband on the international policy agenda and expanding broadband access in every country as the key to accelerating progress towards national and international development targets. Renamed in 2015 as the [Broadband Commission for Sustainable Development](#), the Commission continues to deliver strong high-level advocacy messages to ensure that the benefits of broadband are realized in all countries.

In 2019 the Broadband Commission continued this work. One of the most impactful outcomes was the work conducted within the Working Group on Broadband for All, which formed the initiative named "A Digital Moonshot Infrastructure for Africa", a multistakeholder consultation group to engage key ICT industry partners, estimate the investment needs, and prepare a roadmap to help countries and development actors coordinate, accelerate and prioritize their efforts to improve digital infrastructure in Africa. The outcome of the group, presented in the 2019 Broadband Commission's

meeting, proposed a roadmap and action plan for universal, affordable and good quality broadband connectivity in Africa, combining investment needs, sector reforms, and demand stimulation required to advance to a single digital market on the continent. The roadmap included the launch of an action plan for the establishment a global coalition to achieve Africa’s digital transformation so that by 2030 every individual, business, and government in Africa is digitally enabled and ready to thrive in the digital economy. With the publication of the [Universal Connectivity Manifesto](#) in 2020, the Broadband Commission for Sustainable Development celebrated [10 years](#) of building global multistakeholder partnerships and pushing broadband access to the top of the international policy agenda. The Manifesto calls for digital cooperation and for recognizing digital connectivity as the foundational element of the United Nations 2030 Agenda for Sustainable Development.

In September 2020, the Commission also published the [Special Edition State of Broadband Report](#) highlighting stark disparities in access to high-speed connectivity that have prevented billions of adults and children from benefiting from remote working, learning and communication. The report calls on world leaders and heads of industry to place universal broadband connectivity at the very forefront of global recovery and sustainable development efforts. To date, the Commission's outcomes have included an annual “State of Broadband” report, working groups on thematic areas from health to education, and two meetings every year. The Commission also leverages its high-profile [Commissioners](#) to spread the message of broadband for sustainable development at key events, conferences and functions.

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

More information about the work of the Broadband Commission can be found [here](#).

EQUALS

[EQUALS](#), the Global Partnership for Gender Equality in the Digital Age, promotes that women and girls are given access, equipped with skills, and develop the leadership potential to work and succeed in the ICT sector. The partnership was founded in 2017 by ITU, UN Women, GSMA, ITC, and UNU and it is governed by a Steering Committee that provides strategic guidance on the development of the partnership.

Today, more than 90 partners from every region of the world have joined EQUALS in a collective call to action that sets out a collaborative and coordinated framework for stakeholders to make specific, measurable pledges across four focus area coalitions (Access, Skills, Leadership and Research) that contribute to address the multiple facets of the gender divide in technology.

Some of the key achievements of the [EQUALS](#) partnership in 2019-2020 include:

- USD 3.5 million mobilized in 2020 for implementation of in-country projects.
- Two EQUALS publications contributed by partners:
 - o “Towards an Equal Future: Reimagining girls' education through STEM” (UNICEF and ITU)
 - o “Perceptions of Power: Championing Female Leadership in Tech” (GSMA).
- 1 500 organizations mobilized through Access and Leadership coalition webinars and the 2020 EQUALS in Tech Awards.

- More than 90 countries represented in EQUALS partnership activities.
- EQUALS in Tech Awards winners represented five regions of the world with recipients from Nigeria, Cambodia, Brazil, Russia and Saudi Arabia. Winners were chosen from among more than 350 nominees.
- The EIF-ITU project "Tech as a driver of women's economic opportunity" kicked off with blended workshops with stakeholders and beneficiaries in Burundi and Ethiopia.

Giga

Launched in 2019, Giga is a joint UNICEF and ITU global initiative to connect every school to the Internet and every young person to information, opportunity and choice. Some 3.6 billion people in the world do not have access to the Internet. The lack of access to the Internet means exclusion, marked by the lack of access to the wealth of information available online, fewer resources to learn and to grow, and limited opportunities for the most vulnerable children and youth to fulfil their potential. Closing the digital divide requires global cooperation, leadership, and innovation in finance and technology.

Giga will bring the power of meaningful connectivity to fast-track young people's access to educational resources and opportunities. Giga will make sure every child is equipped with the digital public goods they need, and empowered to shape the future they want.

The initiative is supported by a broad multistakeholder group, consisting of senior industry experts who advise the programme. The initiative has also caught the interest of several large donors who plan to invest in specific Giga projects and priority regions. Since its launch in September 2019 the initiative has focused on three regions, Central Asia, Eastern Caribbean and Africa, and has:

- mapped more than 800 000 schools in 15 countries, with these maps viewable at www.projectconnect.world. Mapping is currently under way in the Eastern Caribbean region and in Kazakhstan;
- advised participating countries on the best possible technical solutions available to provide schools with required connectivity. In support of this ITU will be publishing in May a Last Mile Connectivity Toolkit which will be used to provide guidelines and identify solutions to support Giga countries achieve affordable school connectivity;
- developed specific models for finance and delivery, aimed at subsidizing market creation costs and incentivizing the private sector to invest in school connectivity;
- built on investments by UNICEF's Venture Fund in open source solutions to identify Digital Public Goods that can be delivered and scaled by governments and local industry to make digital content, information and skills available to children, teachers, and administrators;
- on the 31st January 2020 the Vice-Minister of Digital Development of Kazakhstan signed a partnership to support the development of financing models and tools to connect schools and empower young people in the Central Asian region;
- in March 2020 the Organization of Eastern Caribbean States (OECS) agreed to be the regional lead and support the implementation of Giga in the Eastern Caribbean region.

By the end of 2020 Giga aims to have launched the first school connectivity bid, as well extend technical assistance and programme support to priority country's school connectivity initiatives.

In 2020 Giga was active in over **15 countries** (including OECS²) in **3 priority regions** (sub-Saharan Africa, eastern Caribbean and Central America, and central Asia). Giga has already mapped **over**

² OECS includes 9 countries.

800 000 schools in **30 countries**, and it has been highlighted in the UN Secretary-General's Roadmap for Digital Cooperation Action Plan as a **Key Way Forward to achieve Universal Connectivity**. The Roadmap for Digital Cooperation reinforces the need for ambitious regional infrastructure development initiatives such as Giga, to advance the issue of universal connectivity and deliver on the promise of the United Nations Agenda 2030 to leave no one behind.

In addition, in 2020, the Permanent Mission of Niger invited Giga to join the discussions at the **Arria Formula Meeting** in order to share lessons learned and best practices in relation to expanding connectivity to children in conflict, post-conflict and post-disaster situations. Giga also participated in the discussion on how the Security Council and the UN System can support the implementation of resolutions aimed at expanding access to education to children in conflict and post-conflict situations and affected by other major shocks.

Giga is a great example of multistakeholder collaboration from multiple angles. Working with partners such as Ericsson, Softbank, NIC.br, and Dubai Cares, among others, Giga seeks to leverage not only financial, but also human resources, technical knowledge and assets towards the development of strategies, models and technical assistance for mapping, scaling and financing school connectivity, as well as the production, collection and delivery of high-quality educational content and digital public goods.

The work of Giga was also highlighted in the report of the Broadband Commission's Working Group on School Connectivity, "[The Digital Transformation of Education: Connecting Schools, Empowering Learners](#)" (2020), which examined the issues that many governments face when developing and deploying school connectivity initiatives and introduced a methodology and framework for connecting schools to the Internet.

ITU's participation in the UN Secretary-General's activities on digital cooperation

The High-level Panel on Digital Cooperation was convened in 2019 by the UN Secretary-General to advance global multistakeholder dialogue on how the global community can work better together to realize the potential of digital technologies for advancing human well-being while mitigating the risks. In June 2019, the Panel submitted their report, "[The Age of Digital Interdependence](#)", which included a set of recommendations to improve digital cooperation.

In support of the follow up to the recommendations of this panel, the office of the UN Secretary-General has convened eight virtual Roundtable groups to discuss if and how each of the recommendations presented in the report can be advanced. The invited "Champions" and "Key Constituents" work to coordinate activities so that duplication of efforts is avoided, and progress can be amplified. ITU was selected as "Champion" for Recommendation 1A (global connectivity) – together with UNICEF and Uganda - and for Recommendation 2 (digital help desks) – together with UNDP - based on experience and engagement with the High-level Panel in 2019. ITU was also the "Key Constituent" for five other Roundtables, including Recommendation 1B (digital public goods), Recommendation 1C/D (digital inclusion), Recommendation 3C (artificial intelligence), Recommendation 4 (digital trust and security), and Recommendation 5A/B (digital cooperation architecture).

Together with other Roundtable groups, the two Roundtables ITU is co-championing provided inputs to the office of the UN Secretary-General and contributed to the preparation of the UN Secretary-General's Roadmap for Digital Cooperation (A/74/821), which was launched at the High-Level thematic Debate on the Impact of Rapid Technological Change on the SDGs and Targets, organized by

the President of the UN General Assembly, on 10 June 2020. The newly released report lays out the Secretary-General's vision on how to engage on key digital issues, such as global connectivity, capacity building, digital public goods, digital human rights, trust and security, and artificial intelligence.

Alongside this, from 15 April to 13 May 2020 a series of weekly webinars on digital cooperation were organized by ITU, in partnership with relevant UN entities, including UNICEF, UNDP, UNESCO, OHCHR, UNODC and WHO. Under the theme of "Digital cooperation during COVID-19 and beyond", the webinar series focused on how to secure safe, stable, affordable and inclusive connectivity in the challenging time of the COVID-19 pandemic and helped identify possible solutions and common approaches and strategies from different nations and stakeholders. In addition, ITU co-led the organization of the high-level virtual events elaborating on the Roadmap for Digital Cooperation in June, a youth media campaign called "Connect, Respect, and Protect" in August, and a high-level meeting on digital cooperation attended by heads of State and political leaders, technology industry CEOs, eminent persons, and civil society leaders, during the UN General Assembly in September 2020. As part of its contribution to the Roundtable on AI, ITU also hosted a consultation on Recommendation 3 (artificial intelligence) at its "AI Safety and Ethics for Self-Driving" meeting in October 2020 to discuss the safe and ethical development of AI on our roads with a diverse set of key stakeholders from the AI for Good community.

ITU continues to work closely with the office of the UN Secretary-General, sister UN agencies and key constituents of the Roundtable groups, composed of representatives of governments, private sector and civil society, this year more focusing on the implementation of key actions outlined in the Roadmap for Digital Cooperation.

G20 – ITU as knowledge partners

G20 leaders recognize the vast potential of ICTs for advancing the work towards the SDGs through promoting digitalization for all. In 2020 ITU provided support to the G20 presidency at the request of the incumbent, the Kingdom of Saudi Arabia, as a knowledge partner on various tracks, including the G20's Digital Health Taskforce and the "Security in the Digital Economy" priority, as part of the multistakeholder effort undertaken by the G20 secretariat in engaging relevant international organizations.

Along with other international organizations, ITU also supported the G20 to move the agenda on the digital economy forward and provided expertise on accelerating ICT growth, development and innovation. In line with this, a study on "Connecting Humanity" was developed, with the support of the Kingdom of Saudi Arabia, that estimates the investment needed to achieve universal, affordable broadband connectivity for all of humanity by the end of this decade. The report was presented at the G20 Digital Economy Task Force meeting in July 2020.

ITU, a trusted partner

In addition to the above-mentioned initiatives, ITU has continued to contribute to a large number of partnerships and to work in close collaboration with relevant organizations as part of the daily work on the Union. This section presents a selection of these partnerships.

- *Radiocommunications.* The ITU's Bureau of Radiocommunication (BR) continues its close cooperation with relevant international and regional organizations dealing with the use of spectrum, including the Regional Telecommunication Organizations (APT, ASMG, ATU, CEPT, CITELE and RCC); broadcasting organizations (ABU, ASBU, EBU and HFCC); and those focused on the use of specific radiocommunication systems and services (*e.g.* ITSO, ESOA, GVF, GSMA). Examples of joint work with these organizations include the organization, promotion and participation in events to build capacity on the use of the Radio Regulations, including World

Radiocommunication Seminars and Regional Radiocommunication Seminars. BR has also continued to liaise and cooperate with organizations such as the UN Committee on the Peaceful Uses of Outer Space (UN-COPUOS), the International Maritime Organization (IMO), the International Maritime Satellite Organization (IMSO), the Bureau International des Poids et Mesures (BIPM), the International Telecommunications Satellite Organization (ITSO), COSPAS-SARSAT, the International Committee of the Red Cross (CICR) or the International Civil Aviation Organization (ICAO);

- *Cybersecurity*. ITU continues to develop relationships and partnerships with various regional/international organizations and initiatives on cybersecurity, including Commonwealth Cybercrime Initiative, ENISA, INTERPOL, ECOWAS, the World Bank, FIRST, and regional CSIRT/CERT associations, such as AP CERT, AFRICA CERT, and OIC CERT;
- *E-waste*. ITU has consolidated the Global E- waste Statistic Partnership founded in 2017 by ITU, United Nations University (UNU) and International Solid Waste Association (ISWA);
- *Smart cities*. ITU established the United for Smart Sustainable Cities (U4SSC) Initiative in 2016, together with UNECE and UN-Habitat. The initiative is now supported by 14 other UN bodies, namely, CBD, ECLAC, FAO, UNDP, UNECA, UNESCO, UNEP, UNEP-FI, UNFCCC, UNIDO, UNOP, UNU-EGOV, UN-Women and WMO.

1.10 Seminars and workshops

ITU-R

During 2019, five Regional Radiocommunication Seminars were conducted involving experts and participants from around the world; the ITU Regional Radiocommunication Seminar 2019 for Africa (RRS-19-Africa), the ITU Regional Radiocommunication Seminar 2019 for the CIS countries (RRS-19-CIS), the ITU Seminar on Radiocommunication Matters 2019 for Europe (SRME-19), the 3rd ITU Inter-regional Workshop on WRC-19 Preparation and the ITU Satellite Communications Symposium 2019.

As part of the capacity-building partnership between ITU and ITSO for the delivery of satellite communications related training, five ITU/ITSO Capacity Building Workshops on Satellite Communications were organized in Minsk, Belarus (CIS region, 1-5 April 2019), Asuncion, Paraguay, (Americas region 22-26 April 2019), Maputo, Mozambique, (Africa region in English, 24-28 June 2019), Abidjan, Ivory Coast, (Africa region in French, 8-12 July 2019) and Alger, Algeria, (Arab Countries 13-17 October 2019).

ITU-R, jointly with ITU-D are participating in the Action from the Policy and Regulatory Initiative for Digital Africa (PRIDA) project "Increasing wireless broadband penetration through improved and harmonized spectrum utilization and regulations".

ITU-R, jointly with the African Telecommunication Union (ATU), launched a process for the optimization of the GE84 Plan for African countries. The main purpose of this optimization is to achieve efficient use of the 87.5-108 MHz (FM) band for analogue sound broadcasting and to allocate new frequencies to FM broadcasting to meet the increasing need for additional frequencies in African countries. In 2020, four workshops on GE84 optimization for Africa having as their purpose capacity building and preparation of African countries in advance of the first frequency coordination meeting.

In the course of 2020, one world and two regional radiocommunication seminars were held virtually, the [Regional Radiocommunication Seminar 2020 for the Americas Region](#) in collaboration with the Caribbean Telecommunications Union (CTU); the [Regional Radiocommunication Seminar 2020 for the Asia-Pacific Region](#) (RRS-20-Asia-Pacific); and the World Radiocommunication Seminar (WRS-20).

World radiocommunication seminars (WRS) are held on a biennial basis, as a complement to the cycle of regional radiocommunication seminars (RRSs). WRSs deal with the use of the radio-frequency spectrum and satellite orbits, and, in particular, with the application of the provisions of the ITU Radio Regulations.

Since WRS-20 was a fully virtual event, participation in the plenary sessions was open to all. The sessions, provided with simultaneous interpretation, covered general radiocommunication-related matters, application of ITU Radio Regulations provisions and trends in various radiocommunication services. Presentations were scheduled twice each day to accommodate participants located in different time zones.

Participation in the workshops was restricted to ITU Member States and Academia, as well as ITU-R Sector Members and Associates. The seminar's workshops included space and terrestrial services, lectures and practical sessions. They allowed participants to get hands-on experience with ITU notification procedures and with the software and electronic publications made available by the Radiocommunication Bureau to the ITU membership.

In addition, three [satellite webinars](#) were held in 2020, covering non-geostationary satellite systems for the provision of broadband service; innovations in geostationary satellite systems; as well as the role of ITU in preventing and mitigating interference.

ITU-T

[ITU-T workshops, forums and symposia](#) discuss emerging trends in standardization, increase the visibility of ITU-T work, enhance ITU-T collaboration with other bodies, attract potential candidates for ITU-T membership, and encourage peer learning relevant to the development and implementation of international standards. With all ITU-T workshops forums and symposia being held virtually, they are welcoming a greater number and diversity of participants. More than 39 workshops, forums and symposia were held during the reporting period, all of which were virtual events covering a variety of topics from 5G to the environment, smart cities, intelligent transport systems, artificial intelligence, disaster risk reduction and more.

ITU-D

In 2019, over 100 workshops and seminars were conducted on various topics. In capacity development, several regional capacity development workshops were held to assist countries address the knowledge and skills gaps in the ICT sector with a view to empowering people to acquire the necessary digital skills they need to participate and flourish in the digital economy.

Together with partners, Regional Cyber drills were conducted in 2019 to assist countries increase their cybersecurity capabilities and build trust and confidence in the use of ICTs. See section 1.6.

The role of emerging technologies such as artificial intelligence and the design of innovative digital solutions to improve the quality of life of persons with disabilities, were among the top takeaways from two major ICT accessibility events in the Americas and Europe regions. See section 1.5.

To help countries develop policies and regulatory frameworks to tackle the issue of e-waste, several country and regional-focused training sessions were organized on e-waste data collection.

Four regional training sessions on ICT data collection and measurement were held in 2019 with a view to improve ICT data collection so that policy makers and regulators can make better evidence-based policy-making and to identify gaps in access to ICTs. In 2020, workshops and seminars were conducted

on various topics. This was a very productive year indeed, and significant progress was achieved across all of our thematic priorities: innovation, digital inclusion, capacity development, digital services and applications, cybersecurity, emergency telecommunications, environment, network and digital infrastructure, policy and regulations and statistics. Despite global lockdowns, our work continued, leaving a mark in the different countries of the world, with a focus on least developed countries (LDCs), small island developing States (SIDS) and landlocked developing countries (LLDCs).

In capacity development, several regional capacity development workshops were held to help countries address the knowledge and skills gaps in the ICT sector with a view to empowering people to acquire the digital skills they need to participate and flourish in the digital economy.

To help countries develop policies and regulatory frameworks to tackle the issue of e-waste, several country and regional-focused training sessions were organized on e-waste data collection.

Member States and other stakeholders benefited from workshops and training sessions on emergency telecommunications and the development of national emergency telecommunication plans.

Over a three-month period from September to November online cybersecurity simulation events involving 3 000 participants were held as part of the [2020 Global Cyberdrill](#); it included six regional dialogues, three webinar sessions, six training sessions and six scenario-based exercises to help build capacity within Member States to manage cyber risks and enhance the communication and incident response capabilities of CIRTs and CSIRTs.

PRIDA, a joint initiative of the African Union, the European Union and ITU run eight capacity building workshops training 573 engineers from regulatory authorities belonging to 48 African countries.

ITU-D Study Groups organized a series of web dialogues to share an analysis of the response to the global COVID-19 pandemic from the perspective of specific ITU-D Study Group questions. The [dialogues](#) focused on ways to leverage specific ICT aspects in the current COVID-19 crisis to ensure business continuity contributes towards social goals and enable fair innovation opportunities.

1.11 Key events

World Telecommunication and Information Society Day (WTISD)

The World Telecommunication and Information Society Day, held annually on 17 May, had its 50th edition in 2019. The theme approved by Member States for 2019 was "[Bridging the Standardization Gap](#)", to promote the increased participation of developing countries in ITU's standardization process with a view to bridging the standardization gap. Therefore the focus was on the opportunities for participation of developing countries in ITU's standards-making process, by empowering local experts in the standardization process at the national, regional and international levels as well as promoting the implementation of international standards in developing countries. Six prizes in five categories were awarded for work done to bridge the standardization gap. An archive of the celebrations is available [online](#).

The theme for WTISD 2020 was "[Connect 2030: ICTs for the Sustainable Development Goals \(SDGs\)](#)". WTISD 20 reinforced ITU's commitment to connect everyone, everywhere, while showing how ICTs can contribute to accelerating the achievement of the UN 2030 Agenda for Sustainable Development and promote the Connect 2030 Agenda for Global Telecommunication/ICT Development (Resolution 200 (Rev. Dubai, 2018) of the Plenipotentiary Conference). WTISD 2020 was an opportunity to affirm

a shared global vision where telecommunications/ICTs enable and accelerate social, economic, and environmentally sustainable growth and development for everyone, everywhere. Due to the COVID-19 pandemic, the event took place in a fully virtual format for the first time, bringing together ITU partners to showcase how ICTs can accelerate the achievement of the SDGs, as well as to share how ICTs are used to respond to the COVID-19 pandemic. By presenting how they use the technology on the ground, different stakeholders showed how they help ensure business continuity during this period, while highlighting the potential of ICTs as enablers of development, as well as the importance of enhancing collaboration and cooperation across countries and sectors.

WSIS Forum

2019

Held from 8-12 April 2019 in Geneva (Switzerland) the World Summit on the Information Society (WSIS) Forum 2019 was co-organized by ITU, UNESCO, UNCTAD and UNDP, in close collaboration with all UN agencies. More than 3 000 individuals representing a large variety of ICT stakeholders participated to foster partnerships, showcase innovation, exchange best practices, and announce new tools and initiatives. It featured over 300 content-rich sessions from over 150 countries and over 500 high-level representatives of the wider WSIS stakeholder community. This year's programme focused on highlighting the linkages between SDG priority areas such as health, hunger, ICT accessibility, education, youth inclusion, employment, gender empowerment, the environment, infrastructure and innovation and the WSIS Action Lines. The forum also included the announcement of the winners and champions for the WSIS Prizes 2019.

The concrete outcomes of WSIS Forum 2019 include the recognition by the Ministerial Round Table participants of the importance of the WSIS Action Lines as a key UN framework for work on the information and knowledge societies, and the UN Group on the Information Society's (UNGIS) Joint Statement at High-Level Political Forum 2019 reiterating the commitment to the WSIS Action Lines implementation and alignment of the WSIS and SDG processes. Highlights and outcomes of the WSIS Forum 2019 are available on the [dedicated website](#).

2020

WSIS Forum 2020 was convened in a virtual format for twelve weeks (June-September 2020), in light of the global health crisis and extensive travel restrictions due to the COVID-19 pandemic. The theme was "*Fostering digital transformation and global partnerships: WSIS Action Lines for achieving the Sustainable Development Goals (SDGs)*". The Forum garnered a lot of interest and excitement worldwide, with a cumulative attendance of over 15 000 attendees from around 150 countries who took part in about 160 virtual sessions with 850 different speakers. All the outcomes and publications of WSIS Forum 2020 are available at: <http://www.itu.int/go/wsis2020outcomes>.

2021

WSIS Forum 2021 has started virtually from January onwards with a series of activities, including workshops, live interviews, and others to highlight this year's Forum theme: "ICTs for inclusive, resilient and sustainable societies and economies (WSIS Action Lines for achieving the Sustainable Development Goals)". The final week of the WSIS Forum 2021 will be held from 17 to 21 May 2021. For additional information please visit www.wsis.org/forum.

Photo contest

Another successful edition of [WSIS Photo Contest 2020](#) took place. The WSIS community was invited to picture how ICTs are advancing SDGs on the ground, thus contributing to WSIS stocktaking overall. The contest was launched on 22 July 2019 and has collected more than 200 photos. The new call for the WSIS Photo Contest 2021 is open and the submissions are currently being accepted. The deadline

for submission is 8 March 2021. The finalists will be announced soon after, while the winners of the contest will be announced during the final week of the WSIS Forum 2021 (17-21 May).

WSIS Prizes 2020 and 2021

In 2020, the prestigious [WSIS Prizes](#) continued to recognize outstanding initiatives from governments, the private sector, civil society and academia that support the implementation of WSIS Action Lines for accelerating the SDGs. Eight hundred and six projects were submitted by the WSIS stakeholders around the world, and 90 champions were selected based on over two million votes cast by the stakeholders. During the final week of WSIS Forum 2020, 18 winners of WSIS Prize 2020 were announced and celebrated in the specially designed virtual WSIS Prizes 2020 ceremony. Numerous virtual sessions were organized for global promotion of their innovative projects, including those during the virtual WSIS TalkX from April till June, and the series of five virtual sessions during the virtual WSIS Forum 2020, which started on 22 June, with more than 1 000 participants. As part of the promotion of awardees, a special virtual exhibition dedicated to the WSIS Prizes 2020 has been inaugurated in June. To explore it in more details, visit the WSIS Forum 2020 online networking platform [lmeetyouatWSIS](#).

The new call for [WSIS Prizes 2021](#) was launched on 1 November with the deadline for submission set for 1 February 2021. A total of 1 286 projects was submitted, the highest number in the history of the WSIS Prizes contest since it was launched in 2012. All stakeholders were encouraged to continue sharing best practices and innovative ICT-related initiatives and projects to accelerate SDGs, and promote the WSIS Prizes contest within their communities and networks. The eighteen winners and champions will be recognized at [WSIS Forum 2021](#). The winning projects will be included in the publication “WSIS Stocktaking: Success Stories 2021”, while all submitted descriptions of projects and activities will be reflected in the WSIS Stocktaking Report 2021.

WSIS Stocktaking 2020 – 2021

In 2020, WSIS Stocktaking launched the annual WSIS Stocktaking Global Report. This eleventh edition reflects 776 activities relating to ICTs for development, submitted to the WSIS Stocktaking Platform from 2 July to 29 November 2019. Six biennial WSIS Stocktaking Regional Reports were prepared, and the special report on the ICT Case Repository on the Coronavirus (COVID-19) Response was published.

ITU Kaleidoscope

Hosted by the Georgia Institute of Technology in Atlanta, Georgia in the United States of America, the [2019 edition of Kaleidoscope](#) met under the theme: “ICT for Health: Networks, standards and innovation”. Nearly 70 delegates from 16 countries participated at the conference and over 30 joined remotely. Participants included specialists in the fields of ICT, digital health and socio-economic development: researchers, academics, students, engineers, computer scientists, policy-makers, regulators, innovators, futurists, clinicians and health practitioners.

Selected papers have been submitted to ITU study groups for consideration in their activities. All papers are available via the [dedicated website](#), including the three award-winning papers.

[Kaleidoscope 2020: Industry-driven transformation](#) was held 7-11 December 2020 and looked at new opportunities for industry introduced by innovation in fields such as artificial intelligence and machine learning, cyber-physical systems, virtual simulation, digital twins, augmented reality, and 5G and future networks. ITU Kaleidoscope is technically co-sponsored by IEEE and the IEEE Communications Society and, in 2020, Kaleidoscope welcomed a new supporter, the IEEE Technology and Engineering Management Society. Learn more about the [winning and runner-up papers at Kaleidoscope 2020](#).

AI for Good

The third [AI for Good Global Summit](#) took place from 28-31 May 2019 in partnership with 37 UN sister agencies, XPRIZE and ACM. The goal of the Summit is to connect AI innovators with problem owners to identify practical applications of AI to accelerate progress towards the SDGs. The Summit attracted

over 2 300 participants, from over 90 countries, of which over 270 delegates were from developing countries and close to 40 per cent women. It also attracted international and multilingual media coverage from outlets such as BBC, CNN and Forbes.

The 2019 Summit was organized into five “Breakthrough Tracks”: AI and Health; AI and Education; AI and Human Dignity and Equality; Scaling AI and AI for Space and delivered on its action-oriented promise, generating AI for Good projects in numerous fields. There were also sessions on the future of Smart Mobility, AI and agriculture, AI’s role in arts and culture, AI and robotics, and the unintended consequences of AI. In addition, the Summit showcased the latest in AI technologies — from exoskeletons, to autonomous cars, and AI-powered health solutions. The Summit gave rise to ‘AI Commons’, a framework for collaboration to achieve AI for Good problem solving at scale. This led to the subsequent launch of the Global Initiative on AI and Data Commons in early 2020.

In 2020, the AI for Good Global Summit was transformed into an always online, all-year digital platform, with weekly and even daily programming. The Summit offers a “digital bouquet of flowers”, a range of services that is available for use by anyone to demonstrate how AI can help achieve the Sustainable Development Goals. The Summit is co-convened by Switzerland.

In mid-March 2021, AI for Good launched the AI for Good channel on YouTube, the destination to explore ideas, insights and active discussions around AI to achieve the SDGs. The AI for Good channel hosts hundreds of videos highlighting AI leaders and innovators throughout the four years of the Summit. With a wealth of interviews, conversation, innovations and demos showcasing AI solutions to accelerate the SDGs, the channel is a one-stop shop to catch up on emerging trends in AI for Good. The channel features:

- AI for Good Keynotes: The stage is given to AI luminaries to share their expertise, research and visions on AI for Good.
- AI for Good Webinars: Solution-oriented panel discussions.
- AI for Good Perspectives: Produced news-programme format, presented by a professional journalist.
- AI for Good Innovation Factory: Pitching sessions to identify the best start-ups that use AI to advance the SDGs. The best solutions are featured at the Grand Pitching Finale.
- AI for Good Artificial Intelligence: Showcases artists using AI to push the limits of creativity with a positive message on sustainability.
- AI for Good On the Go: Short-form, high frequency content; informal, straight to social media, live or on-demand.
- ITU AI/ML in 5G Challenge: The 2020 competition had over 1300 students and professionals from 62 countries participate to solve real-world network problems. The best solutions were presented at the Grand Challenge Finale in December 2020.
- AI for Good in 60 seconds.
- 2019 AI for Good Global Summit.
- 2018 AI for Good Global Summit.
- 2017 AI for Good Global Summit.

The 2021 edition of AI for Good continues as an all-year, always online programme, with a new batch of activities, experiences and benefits for everyone involved. Subscribe to our channel and join us online for new updates and exclusive content as they go live on AI for Good YouTube.

Since the second AI for Good Global Summit in 2018, ITU has issued the “Compendium of UN Activities on Artificial Intelligence”, aiming to introduce activities being carried out by the UN system. A joint effort between ITU and 37 UN agencies and bodies, all partners of the 2020 AI for Good Global Summit, resulted in an updated version of the compendium at the sixth AI for Good UN Partners Meeting, held virtually on 21 September. The 2020 Compendium covers around 260 cases and projects run by 36 UN

agencies and bodies, an increase of almost 75 per cent since the 2019 compendium, in areas ranging from smart agriculture and food systems to transportation, financial services, and healthcare, including AI solutions to combat COVID-19.

ITU AI/Machine Learning in 5G Challenge

The ITU AI/Machine Learning in 5G Challenge brought together like-minded students and professionals from around the globe to study the practical application of AI/ML in emerging and future networks. The Challenge was a first for ITU, but with many valuable lessons learnt. The Challenge welcomed over 1 300 competitors from 62 countries forming 911 teams, culminating in the Grand Challenge Finale online, 15-17 December, where outstanding teams competed for a share in a prize fund totalling CHF 33 000 and a range of other prizes offering global recognition.

The ITU Challenge enabled competitors to connect with new partners in industry and academia – and new tools and data resources – to solve real-world problems with AI/ML, showcase their talent and develop new experience. Twenty-three problem statements were contributed by industry and academia hosts from Brazil, China, India, Ireland, Japan, Spain, Turkey, the United States and Russia, and the hosts offered resources and expert guidance to support competitors in addressing their challenges.

We would like to thank the community that gave life to the Challenge, our competitors and regional hosts; our promotion partners, the Linux Foundation, NGMN and SGInnovate; and our Gold sponsor, the Telecommunication Regulatory authority of the United Arab Emirates, and Bronze sponsors, Cisco and ZTE.

Mapping solutions to ITU standards

New ITU standards for AI/ML provide toolsets that, when integrated, form an end-to-end pipeline for AI/ML integration in networks. The ITU Challenge aimed to demonstrate and validate these ITU standards. In mapping solutions to ITU standards, the ITU Challenge contributes to the growth of the community that is able to support the iterative evolution of these ITU standards.

The [ITU-T Y.3172](#) architecture – derived from the study of use cases published in [ITU-T Y.Supplement55](#) – introduced the basic toolsets in relation with the underlying network: ML Pipeline for model optimization and serving; ML Sandbox to trial models before deployment; and ML Function Orchestrator (MLFO) to control AI/ML integration. [ITU-T Y.3173](#) (intelligence evaluation), [ITU-T Y.3174](#) (data handling) and [ITU-T Y.3176](#) (marketplace integration) all build on the ITU-T Y.3172 architecture. The problem statements of this first ITU Challenge offered a variety of opportunities to apply ITU-T Y.317x techniques, and one problem statement demonstrated MLFO capabilities via reference implementations.

The 2021 edition of the ITU Challenge aims to provide a reference implementation of an end-to-end ML pipeline as defined by ITU Y.3172. This pipeline could include notebooks for ML coding and integration; tools for data processing and management; and tools for ML model selection, training, optimization and verification.

A learning experience for all

Data availability is a key challenge to be navigated when bringing together a global community to innovate with AI/ML. Fifteen problem statements were open to all competitors; the rest was limited to participation under conditions set by their hosts. The data sharing guidelines of the ITU Challenge incorporate a wide range of perspectives from industry and academia on access to real network data, synthetic data and open data. The guidelines describe measures to enable data sharing in view of regulation, business interests and the different characteristics of different datasets. ITU engaged competitors in technical roundtables and webinars to provide expert guidance in addressing problem

statements and the value of new ITU standards in support. Close to 30 webinars received over 10 000 views.

The best peer-reviewed papers resulting from the Challenge will feature in a special issue of the ITU Journal with the theme “Future and evolving technologies”.

In December 2020 ITU NEWS Magazine featured a 91-page dedicated edition of the Challenge.

Up the challenge in 2021?

Preparations for the ITU Challenge 2.0 are in motion, driven by a core team of challenge management board members, judges, promotion partners and sponsors.

Global Symposium for Regulators (GSR-19)

The GSR-19, held in Port Vila, Vanuatu, from 9 to 12 July, attracted over 325 participants including government ministers, heads of regulatory authorities and C-level industry executives from 64 countries.

Throughout the four-day GSR programme, participants acknowledged the importance of more actionable, collaborative and innovative outcome-based approaches to regulation to unlock the full potential of digital technologies and accelerate progress towards the SDGs. Regulators from around the world identified and endorsed a set of regulatory best practice guidelines to fast forward digital connectivity for all and allow people across geographies, economic and social status to benefit from the digital transformation and participate in today's digital economy.

Global Symposium for Regulators (GSR-20)

GSR celebrated its 20th edition of evolving regulatory frameworks. The anniversary event focused on providing concrete guidance towards achieving meaningful connectivity in the digital transformation.

In addition to the high-level panels on topical, cutting edge policy and regulatory issues, GSR-20 featured interactive sessions and trainings, brought together regulators and policy makers from around the world and provided a global platform for discussions. GSR-20 provided the ITU membership with the opportunity to share experiences and knowledge, collaborate and identify evolving regulatory tools and approaches to bring affordable, safe, secure and trusted connectivity and online access and use to people everywhere. GSR-20 attracted 609 participants from 120 countries in the core sessions.

ITU Telecom World 2019 and 2020

[ITU Telecom World 2019](#) took place from 9 to 12 September in Budapest, Hungary, bringing together governments, corporates and tech SMEs to exhibit innovative solutions, network, share knowledge and debate with experts under the theme “Innovating together; connectivity that matters”. Over 4'000 participants from 135 countries attended the event including Heads of State, Ministers, key industry players from major corporates and tech small- and medium-sized enterprises (SMEs) met to accelerate ICT innovation to improve lives faster.

The event included high-level debate, dialogue between business, a raft of innovative SMEs in technology and governments, showcasing, networking and a high-profile Awards Programme and ceremony. The event closed with the ITU Telecom World Awards where a host of life-changing innovations were highlighted. Winning innovations from SMEs and major corporates showcased areas

as diverse as online education, 5G airships and drones, green 5G, digital addressing, transforming digital heat from data-centres, nanosatellites and enabling barrier free emergency calls. Event highlights can be found in the [post-event report](#) as well as [online](#).

ITU Virtual Digital World 2020 took place from 20-22 October. It featured ministerial roundtables focusing on "The role of digital technologies during and after the COVID-19 pandemic" and exploring the importance of digital connectivity in national strategies for economic recovery. Alongside these, forum webinar sessions explored the policies, technologies and trends driving the digital economy, and a virtual exhibition enabled online showcasing. In total, the virtual event comprised three forum sessions and three ministerial roundtables, with 83 speakers including 27 ministers and 13 regulatory authority representatives. In the virtual exhibition were more than 150 exhibitors from Viet Nam and global companies, and 10 national pavilions from around the world.

Following the virtual event, the ITU Digital World 2020 Virtual SME Awards and masterclasses took place online in November and December 2020, offering SMEs worldwide the opportunity to apply with their innovative solutions, and take part in the programme of SME masterclasses and pitching sessions.

[WTPF-21](#)

Preparations for WTPF-21 are under way. By Decision 611 (C19, last amended C20), the ITU Council decided on the following theme for WTPF-21: *"Policies for mobilizing new and emerging telecommunications/ICTs for sustainable development: The WTPF-21 would discuss how new and emerging digital technologies and trends are enablers of the global transition to the digital economy. Themes for consideration include AI, IoT, 5G, Big Data, OTTs etc. In this regard, the WTPF-21 will focus on opportunities, challenges and policies to foster sustainable development."*

2. Other key activities by the secretariat to support ITU membership

The ITU secretariat (through its three Bureaux and the General Secretariat) continues to refine and improve the services that it provides to ITU membership as a whole. This chapter summarizes some of the new initiatives undertaken in the period covered by this report on four key aspects of ITU's services to its membership: ensuring the operation of its governing bodies, introducing state of the art collaborative tools, refining the structure of functional units to adjust better to the challenges and opportunities that arise from an increasingly digital society and strengthening the overall support services to ITU membership.

Leading by example

Green ITU

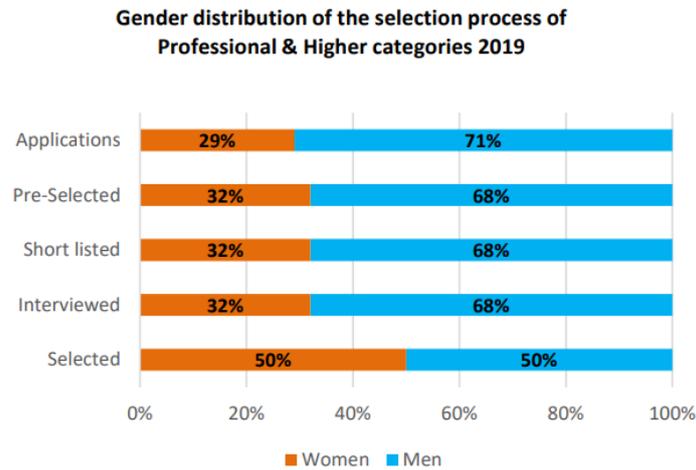
In 2020 ITU maintained its climate neutrality and has taken measures to step up environmental sustainability efforts. As such, the ITU Environmental Sustainability Statement (C20/INF/5-E) outlines a series of guiding principles to strengthen ITU's environmental performance, and marks the establishment of an Environmental Management System that will help to systematically reduce greenhouse gas emissions (for more information, see [C21/68](#)).

Accessible ITU (new building)

Accessibility requirements for ITU’s new building project are based on Swiss standard SIA 500, a requirement in order to obtain the host country’s authorization for construction. However, since this standard is relatively limited in its scope, ITU has expanded the programme requirements to encompass a more inclusive accessibility. The series of additional measures will ensure that the new building is accessible to people with a wide range of disabilities and needs.

Gender balanced ITU

ITU continues striving to ensure that the objectives in Annex 2 to Resolution 48 (Rev. Dubai, 2018) of the Plenipotentiary Conference is achieved. The Union has renewed its commitment by investing in gender representation in the recruitment interview panels. A pool of female panel members has been identified that can be called upon to participate in panels across ITU and has been provided with competency based interviewing training. Gender is being also embedded in additional HR policies, including recruitment as well as in job descriptions, where gender represents a critical component in the long term. A persistent issue comes from the fact that more than 70 per cent of applicants to Professional and higher categories are men, despite the efforts to reach out to more women. The chart below reflects the efforts to overcome this issue, having reached gender balance among the selected applicants in 2019.



2.1 ITU-R

Radio Regulations Board (RRB)

The RRB continued to conduct its work throughout 2019 (three physical meetings) and 2020 (three virtual meetings). During these meetings the Board reviewed the Rules of Procedures in response to WRC-19 decisions and to reflect cases of general practice by the Bureau. The Board also made decisions on:

- Thirteen submissions from administrations requesting the extension of the regulatory deadline to bring into use or bring back into use frequency assignments to satellite networks;
- Nine cases to maintain satellite networks in the MIFR or suppress them, based on examinations under RR No. 13.6 by the Bureau;
- Situations of harmful interference reported to the Board that could not be resolved between the affected administrations.

2.2 ITU-T

TSB has developed modern tools and introduced significant improvements to the working methods of the Bureau, contributing to enhancing the services provided to its membership. Indeed, 2020 has highlighted the value of ITU-T's electronic working environment, which had received an important upgrade during the year. Virtual meetings and electronic working methods have come to form the principal platform for ITU standardization work as part of the global response to COVID-19 (see section 1.8).

The ITU membership engaged in standards development and preparations for the ITU World Telecommunication Standardization Assembly (WTSA-20) are making optimal use of the personalized [MyWorkspace](#) platform and its associated services and tools, such as MyMeetings, developed by TSB. The ITU membership and TSB staff are working in close collaboration to facilitate the behavioural change necessary to achieve ITU-T's targets for 2020.

Highlights of the main improvements introduced in 2019-2020:

- **MyWorkspace.** [MyWorkspace](#) is a set of mobile-friendly tools and services introduced in 2017 in response to WTSA Resolution 32 to facilitate the work of ITU-T experts. Version 3.2 of the platform, released in November 2020, enhances the user interface with a simple and modern design, and improved performance. MyWorkspace is accessible through a responsive web application (PWA) allowing users to use the platform on their various devices with the best possible experience without any additional installation. Secure access to MyWorkspace is enabled through ITU User Account (TIES) credentials. The following services are available from the platform:
 - [MyMeetings](#): Remote participation service based on an open-source solution customized in-house to support the requirements of both statutory and non-statutory ITU-T meetings.
 - [MyEvents](#): Events management platform, which provides a real time ITU-T events agenda, lists of registered participants, speakers, and exhibitors, and a 'matchmaking' function to facilitate networking among participants.
 - [ITU Translate](#): Machine translation tool based on neural network technology trained on official translations of ITU documents and supporting the six official languages.
 - [ITU-T Cloud](#): ITU premises storage service allowing users to share and exchange files up to 10 GB per user.
 - [Calendar](#): Monthly calendar view of all ITU events with filters on ITU sectors and ITU-T working groups.
 - [Documents](#): Quick access to SG meeting documents with full-text search, extensive filtering and sorting capabilities, and the ability to get machine translation of documents that are not covered by human translation (e.g. [SG 2 E-Meeting, 18 December 2020](#)).
 - [Mailing](#): Subscription management with search function.
 - [Community](#): MyWorkspace user's directory.
 - [Profile and preferences](#): User personal information and interests.
- **ITU-T SharePoint collaboration sites.** The ITU-T SharePoint collaboration sites enable participants in ITU-T working groups to conduct online discussions, work on projects, schedule meetings and manage and store documents in a secure shared environment. Most of the collaboration sites are restricted to ITU-T Sector Members and may be accessed using an ITU user (TIES) account. Some

collaboration sites are open to non-members and may be accessed using non-member ITU user accounts.

- **Document Management System for Rapporteur Groups.** The Microsoft SharePoint-based Document Management System for ITU-T Rapporteur Group Meetings (RGMs) is one of several services available in the ITU-T SharePoint collaboration sites that has been used extensively by the majority of ITU-T SGs, as well as TSAG. Feedback from Rapporteurs drives the continuous improvement of the RGM system.
- **Meeting Documents Sync Application.** This application enables meeting participants to synchronize documents of ongoing ITU-T SG meetings from the ITU server to their local drive. The application is constantly enhanced and updated following feedback and suggestions from users.

2.3 ITU-D

A journey of change towards impact and results: a BDT Fit4Purpose

In 2019, BDT began a journey of change to create a Bureau that is able to keep pace with the fast-changing environment in which it serves, that responds 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 consultations, BDT has adopted new innovative ways of working, laying foundations that will ensure timely and efficient implementation of the [Buenos Aires Action Plan](#).

The BDT journey of change is a participatory and open consultative process, relying heavily on feedback and discussion with Member States and Sector Members. BDT's efforts towards digital transformation through meaningful connectivity are people-centric, where the focus is on listening to the people who BDT is trying to reach, allowing for a better assessment of their needs to improve their lives.

The COVID pandemic has turned our world upside down. Over the course of 2020, BDT has embraced digital solutions, gradually developing new ways to deliver its services. This new way of delivering services has become a new normal: not only has it allowed BDT to continue its work despite the circumstances, but it has also helped us come closer together, to be more available to our membership and to adjust to the times in which we are living.

This is the "**fit4purpose BDT**" that we want to build: a Bureau that is agile, that embraces new tools and approaches, and that delivers the services the ITU membership needs, in partnership with a growing range of partner organizations. In 2020 BDT has shown its ability to rapidly adapt to changed circumstances. It is an excellent illustration of what a "fit4purpose BDT" is all about: working to achieve the right impact to deliver on the BDT vision to connect the unconnected.

2020 highlights for a fit for purpose BDT

- New Project Management Manual to strengthen the impact of projects by aligning the language, tools and processes across all phases of project management.
- Leadership culture assessment to lead by example.
- BDT process reviews to streamline processes and achieve efficiency.
- The "Web We Want initiative" to build a new, revamped ITU-D website.
- The Regional Presence Review to strengthen BDT's work and coordination on the ground.

- Onboarding and welcoming of new staff.
- New approaches to the operational plan and resource-based management to plan wisely, efficiently and with impact.
- Town-hall meetings to keep BDT staff informed and engaged.
- BDT senior management retreat to align on common goals and strengthen engagement.
- A resource mobilization strategy to bring in resources for greater impact.
- Second cohort on project management.
- Third cohort of change agents.

C4C (Champions for Change) News

BDT's initial change process has been "turbo-charged" by the pandemic and everyone found themselves in an entirely new working arrangement, learning about what it takes to adapt (and survive the added pressures of the change) while advancing towards a "fit4purpose" BDT in a new global context. There is increased urgency to deliver to serve Member States whose populations, institutions and economies are highly challenged and need the assistance of BDT. This has meant rapidly reconfiguring existing plans and programmes while responding to new demands and the opportunity to advance connectivity. Over the past 12 months, 34 staff members have undertaken change management training. While the staff members who benefited from the "deeper dive" in change management have been able to bring new change approaches to their work assignments and their team projects, they have also contributed to a number of key BDT initiatives.

2.4 General Secretariat

Enhancing efficiency and effectiveness of the organization

In order to develop long-term managerial strategy for the organization, sustain performance and relevance of expertise, enable informed decision-making and demonstrate the impact of ITU's work, several projects/initiatives have taken place during the reporting period, in coordination between the General Secretariat (GS) and the Bureaux, including:

- Results-based management/development of delegation of authority framework
- Implementation of the Risk Management Action Plan (i.e. the COSO framework and the three lines model)
- Strengthening the ITU Accountability Framework
- Development of the ITU Compliance Dashboard
- "Leadership Cultural Assessment" and the "Cultural Diagnosis and Skills Gap".

ITU Sector Members, Associates and Academia: key stakeholder groups in ITU's activities

ITU Sector Members, Associates, and Academia play a fundamental role in the activities on the Union. ITU's global membership includes companies, universities, research institutes, and international and regional organizations that represent a cross-section of the global ICT sector, from the world's largest manufacturers and carriers to small, innovative players working with new and emerging technologies.

During the last two years, the ITU secretariat continued implementation of a coordinated strategy launched several years ago to reach out to new audiences to grow and diversify ITU's membership, while applying a customer-centred approach to improve the services provided to its members, so that they are engaged, involved and empowered by ITU activities.

An important element of this coordinated outreach and customer-centric focus has been the implementation of initiatives such as digital marketing campaigns to reach new audiences, including leading companies as well as SMEs and Academia, an annual survey intended to gather feedback from the ITU membership in industry and Academia, ITU News articles and ITU News Magazines highlighting ITU and membership activities, and the “My ITU” platform, which was launched in beta format in June 2020. A first step towards the new OneITU website, MyITU provides thematic content tailored to the interests of members as well as new audiences who are less familiar with ITU, including SMEs, Academia and players from other industries.

Building on initiatives led by the three Bureaux to meet the specific expectations of their Sector audiences, these ITU-wide initiatives, which rely on new digital platforms, skills and techniques, including digital marketing and data analytics, are helping the secretariat better understand and adjust to the needs and areas of interest of its membership as well as prospective new members and the broader ICT community.

Box 1. ITU Membership Survey 2020

High response rate: 23% of ITU membership from 59 countries. Good representation between Sectors, categories and regions.

- Very high level of satisfaction:
 - **98% of respondents are satisfied/very satisfied with ITU**
 - **99% are satisfied/very satisfied with the value they get from their membership.**
- Main areas of interest:
 - **5G (71%), standards (57%), Internet of Things (54%), artificial intelligence (50%), smart cities (37%), digital transformation (37%), infrastructure (35%), cybersecurity (34%), and satellite (32%).**
- 79% of respondents would be interested to receive ITU content on the areas they selected.
- Much of the membership plans to increase participation, especially in study groups, followed by webinars, workshops and seminars, and to increase use of remote participation.

ITU membership was stable in 2020 despite COVID and global slowdown. In addition, ITU has continued its proactive approach to attract new members from the telecom/ICT field, as well as across a wide range of new industries and sectors. Despite the challenges of COVID and the global economic slowdown, and some resulting consolidation in the industry, ITU membership remained stable, and even grew slightly, reaching a new high of 925 entities (98 new) (see figure below). The strongest growth in industry membership came through ITU-T. Leading academic bodies specializing in emerging topics also joined ITU, attracted by new activities. In short, new areas of work at ITU are attracting new players to join ITU, thus helping ITU membership evolve to be more inclusive and reflect the changing ICT ecosystem.

Net membership by Sector/type (2010-2020)

Net Membership by Sector/Type

Sector	Membership type	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
ITU-R	Sector member	248	255	255	258	259	270	267	265	263	272	276
	Associate	17	18	16	16	15	18	19	21	20	21	23
ITU-T	Sector member	259	261	265	272	270	264	252	257	256	265	273
	Associate	110	118	127	129	131	131	128	136	156	182	200
ITU-D	Sector member	307	318	327	342	334	336	322	313	305	305	297
	Associate	5	6	7	9	10	11	11	12	14	17	21
Academia	Academia		23	40	58	72	94	105	121	148	158	162

Explanation

- Blank cells represent a year with no movement at all
- Beige cells represent a net movement of zero (ie. New = (Denounced + Excluded)
- Green cells represent positive net movement within the year (ie. New Members > Denounced + Excluded)
- Red cells represent negative net movement within the year (ie. New Members < Denounced + Excluded)
- Darker colours represent greater numbers

Facilitating the participation of SMEs in ITU's work

An estimated 10 per cent of ITU's current membership, mainly Associates, could be considered as SMEs, depending on the definition. As per Resolution 209 (Dubai, 2018) of the Plenipotentiary Conference, with the support of Member States, ITU has encouraged qualified SMEs to join as Associates in ITU-R and ITU-T study groups, through reduced fees. In 2020, following significant digital marketing and outreach efforts, ITU welcomed 23 SMEs, with 21 in ITU-T and 2 in ITU-R. Around two-thirds of new Associates joining in ITU-T in 2020 qualified for the reduced fees for SMEs.

Qualifying SMEs from developed countries now pay CHF 3 975 a year, and those from developing countries pay CHF 1 987.50 a year to participate in one Study Group, compared to the standard fee of CHF 10 600 for ITU-R and ITU-T. Associates in ITU-D Study Groups already pay these fee amounts. Member States qualify SMEs according to their national definitions, but the Plenipotentiary Conference (Dubai, 2018) set an upper limit of a maximum of 250 employees and Council at its 2019 session set the maximum revenue at CHF 15 million a year.

ITU also has a number of specific activities and platforms tailored to the needs of SMEs, including the ITU Digital World programme for SMEs, with its online master classes and its SME Awards, as well as the ITU Smart Incubator programme, ITU Innovation challenges, AI for Good Innovation Factory and ITU training, among others.

More information about ITU's services in support of its membership is available [here](#).

3. ITU strategic plan implementation: progress towards strategic goals and objectives

The Connect 2030 Agenda was adopted by the 2018 Plenipotentiary Conference as part of ITU's strategic plan for the 2020-2023 quadrennium. At the heart of the Agenda and the ITU strategic plan are five goals which include 24 strategic targets designed to track the progress towards each goal up to 2023 and to help ITU and other stakeholders focus their priorities during that period. These goals/targets aim to demonstrate ITU's impact on people's lives. ITU's contribution to the achievement of the goals/targets is materialized by means of the sector and inter-sectoral objectives, which mainly represent the outcomes of ITU's work. ITU's activities result on the outputs (products and services) which support the achievement of these outcomes.

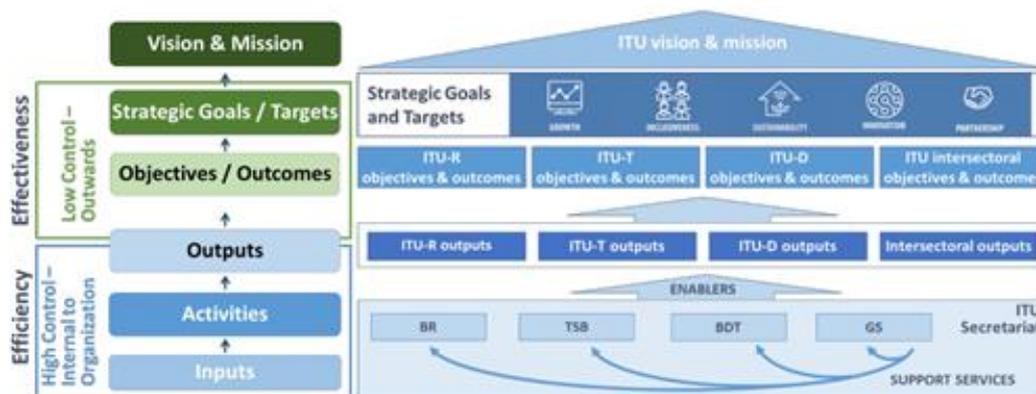
The essential contribution made by the ITU secretariat (GS and Bureaux) is assessed by the Enabler indicators showing the efficiency of the support services and its contribution to the achievement of the overall outputs. This layer of the results framework is fully under control of ITU.

Progress towards the strategic goals and objectives

The progress in the implementation of the strategic plan for the Union is assessed through a set of indicators at different levels in the ITU results framework (see figure below). The assessment of progress towards Goals and Objectives is done by measuring:

- **24 targets** at the impact level;
- **64 outcome indicators**. This layer of the results framework is composed by: ITU-R: 3 objectives and 15 outcomes; ITU-T: 5 objectives and 14 outcomes; ITU-D: 4 objectives and 16 outcomes; inter-sectoral: 6 objectives and 19 outcomes;
- **40 enabler indicators**.

The sections below present a summary of the dashboards showing the assessment of ITU performance.



The analysis of the results in the charts below, showing progress towards the strategic targets, highlights the following conclusions:

- **Internet usage continues to grow:** An estimated 4.1 billion people were using the Internet regularly in 2019, reflecting a 5.3 per cent increase in 2018. The global penetration rate increased from nearly 17 per cent in 2005 to over 53 per cent in 2019. Between 2005 and 2019, the number of Internet users grew on average by 10 per cent every year. In recent years, though, global growth rates are stabilizing, as some parts of the world are reaching saturation levels. Early indications are that COVID has boosted the Internet usage growth rate significantly in unconnected regions.
- **Most of the offline population live in least developed countries (LDCs):** In developed countries, most people are online, with close to 87 per cent of individuals using the Internet. In LDCs, on the other hand, only 19 per cent of individuals were online in 2019. In terms of user penetration rates, Europe is the region with the highest Internet usage rates while Africa is the region with the lowest usage rates.
- **The digital gender gap is growing fast in developing countries:** In all regions of the world, more men than women are using the Internet. The gap is small in developed countries and large in developing countries, especially LDCs. Between 2013 and 2019, the gender gap hovered around zero in the Americas and shrank in the CIS countries and Europe. However, in Africa, the gender gap has been growing steadily while in the Arab States and Asia Pacific it has decreased from 2019-2020 (after having significantly increased from 2017 to 2019). The global gender gap has increased owing to the rapid growth in the number of male Internet users in LDCs.
- **Mobile broadband subscriptions continue to grow strongly:** The number of active mobile broadband subscriptions per 100 inhabitants continues to grow strongly, with an 18.4 per cent year-on-year growth. The correlation between level of development and uptake of mobile subscriptions is much weaker, reflecting the better affordability and availability of mobile compared with fixed network connections. The relatively small difference between developed and developing countries also shows that connectivity is a priority among people in countries at all levels of development.
- **Bandwidth is growing fast, but with strong regional differences:** International bandwidth usage grew by 33.4 per cent on average annually between 2015 and 2019. In terms of kbit/s

per Internet user, Europe has by far the highest bandwidth usage (211 kbit/s), followed by four regions with similar bandwidth usage (between 100 and 130 kbit/s). Africa is lagging behind, with 31 kbit/s per Internet user.

- **Broadband connectivity is still expensive in LDCs:** In 2019, in 61 countries, a fixed-broadband subscription including 5 GB of data costs less than 2 per cent of gross national income (GNI) per capita. A mobile broadband subscription with a 1.5 GB data package costs less than 2 per cent of GNI per capita in 89 countries, including four LDCs. Although considerable progress has been made in recent years, affordability remains a challenge in many countries, especially LDCs.
- **Challenges in the ICT sector are increasing:** the level of energy consumption and the emission of greenhouse gases (GHGs) are increasing for the growing spread and use of ICT services, networks and devices. The volume of e-waste is on the rise, from 44.7 Megatons generated in 2016 to 53.6 Megatons in 2019, while the percentage of this e-waste which is documented to be collected and properly re-cycled decreased from 20 per cent to 17.4 per cent in the same period. The cyberthreats are also on the rise. However, the percentage of countries having established a CIRT, CERT or CSIRT increased from 56% in 2019 to 60.82 in 2020.
- **More countries are introducing policies/strategies fostering telecommunication/ICT-centric innovation:** in 2019 66 countries are documented to have policies/strategies fostering telecommunication/ICT-centric innovation. This figure has increased in 2020 up to 74, confirming progress but not at the pace to achieve the 100 countries target by 2023.
- **Partnerships in the telecommunication/ICT sector are perceived as showing a positive trend:** Only 4 per cent of the ITU membership surveyed in 2020 disagree or strongly disagree with the sentence “Your organization is collaborating with other stakeholders more than in previous years”; and only 2 per cent disagree with the sentence “Your organization is benefiting with increased synergies by working with others”, in the same ITU membership survey 2020.

How many indicators towards the strategic targets are showing positive progress?

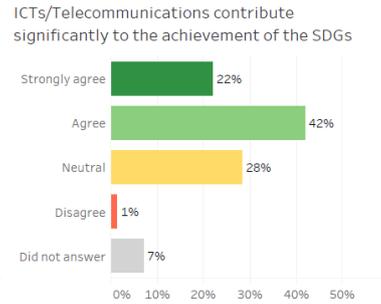
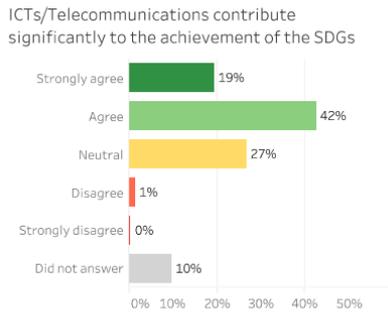
As detailed in [section 3.1](#) below, 50.0 per cent of the 24 ITU strategic targets are either already achieved (20.8 per cent) or well on track for achievement by 2023 (29.2 per cent). On the other hand, attention should be drawn to the fact that 8 targets (33.3 per cent) are off track for achievement by 2023, for example the targets related to Internet penetration in LDCs, coverage by broadband services of world population, enabling environments ensuring accessible telecommunications/ICTs for persons with disabilities, Gender equality online, and the volume of re-cycled e-Waste. A number of targets (8.3 per cent) have just been benchmarked (i.e. a baseline has been set up or a measurement agreed on) or have not yet been measured (8.3 per cent). For the targets already achieved in 2019, proposals could be introduced to update them with more ambitious values.

How much do ICTs/telecommunications contribute to the SDGs?

To assess the ITU membership’s perceptions about ICTs/telecommunications contributing to the SDGs, a new question has been added to the ITU membership survey 2020. The results are encouraging: in 2019 only 1 per cent disagree and more than 60 per cent agree or strongly agree with the sentence “ICTs/telecommunications contribute **significantly** to the achievement of the SDGs”, see chart below. In 2020 these figures are similar, but it should be noticed that the percentage of respondents strongly agreeing with the sentence has increased from 19 to 22 per cent.

2019

2020



Source: ITU

3.1 Results per strategic goal

3.1.1 Goal 1 - Growth

Enable and foster access to and increased use of telecommunications/ICT in support of the digital economy and society.

Strategic targets

By 2023:

Target 1.1: 65% of households worldwide with access to the Internet

Target 1.2: 70% of individuals worldwide will be using the Internet

Target 1.3: Internet access should be 25% more affordable (baseline year 2017)

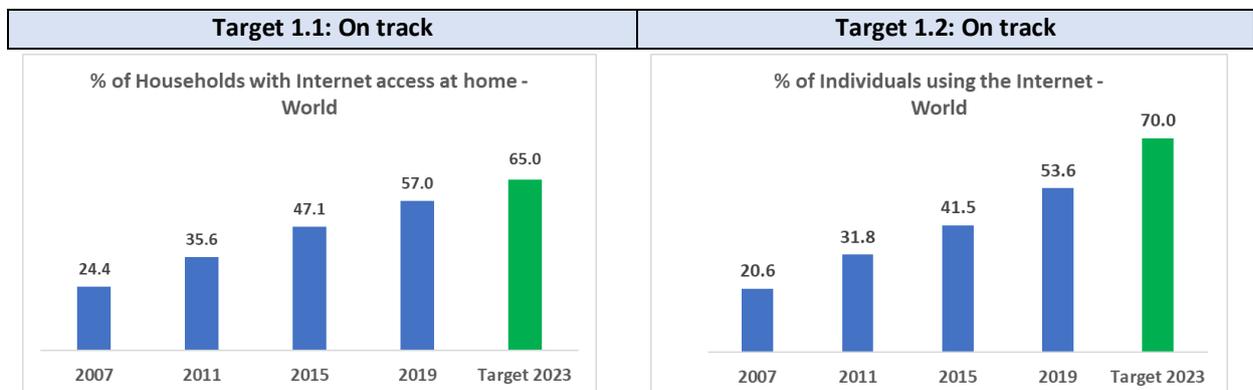
Target 1.4: all countries adopt a digital agenda/strategy

Target 1.5: increase the number of broadband subscriptions by 50%

Target 1.6: 40% of countries to have more than half of broadband subscriptions more than 10 Mbit/s

Target 1.7: 40% of the population should be interacting with government services online

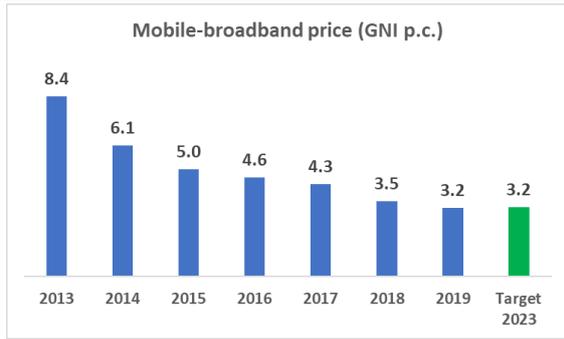
Progress achieved



Source: ITU

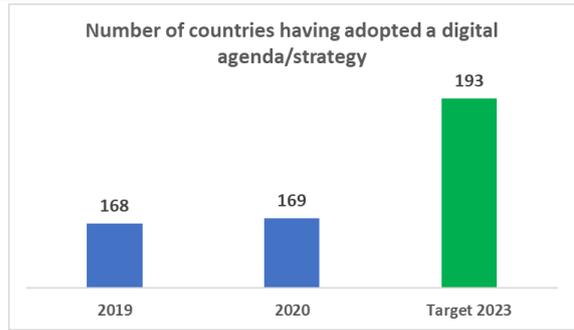
Source: ITU

Target 1.3: Achieved



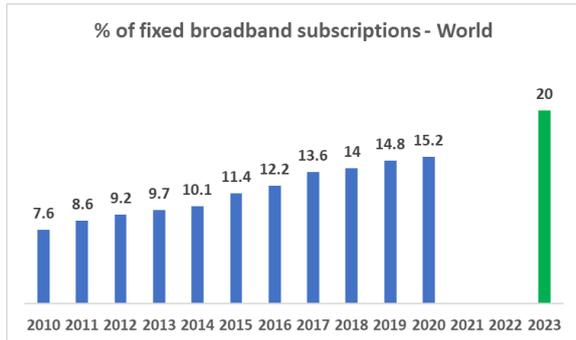
Source: ITU

Target 1.4: On track



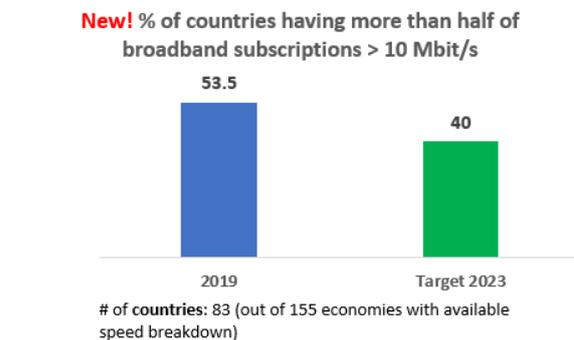
Source: ITU

Target 1.5: On track

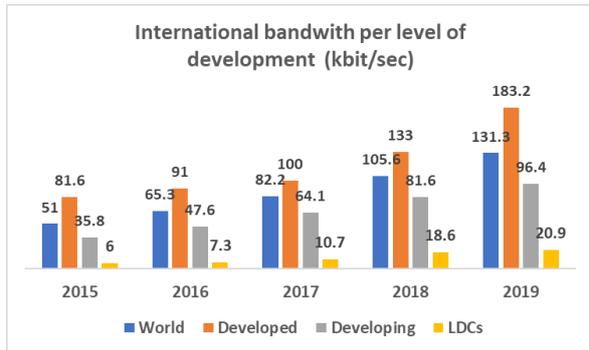


Source: ITU

Target 1.6: Achieved

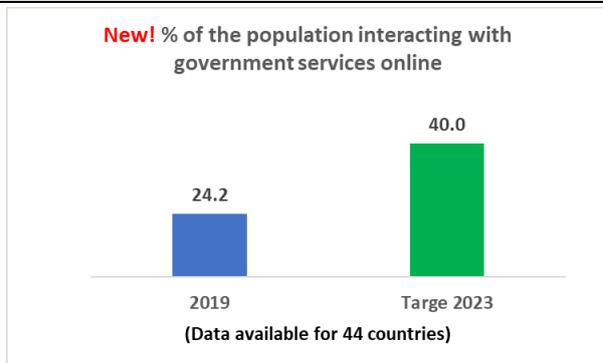


Source: ITU



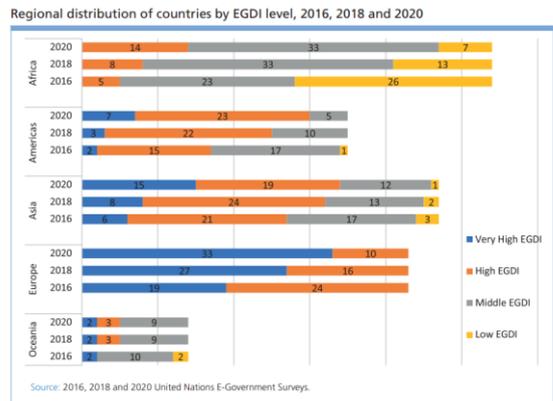
Source: ITU

Target 1.7: New, benchmarked



Source: ITU

E-Government Development Index (source: ECOSOC)



3.1.2 Goal 2 - Inclusiveness

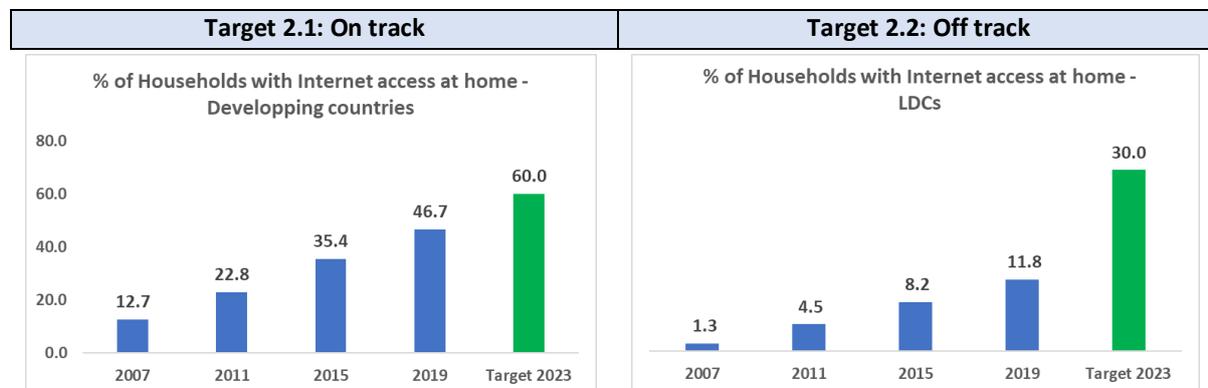
Bridge the digital divide and provide broadband access for all

Strategic targets

By 2023:

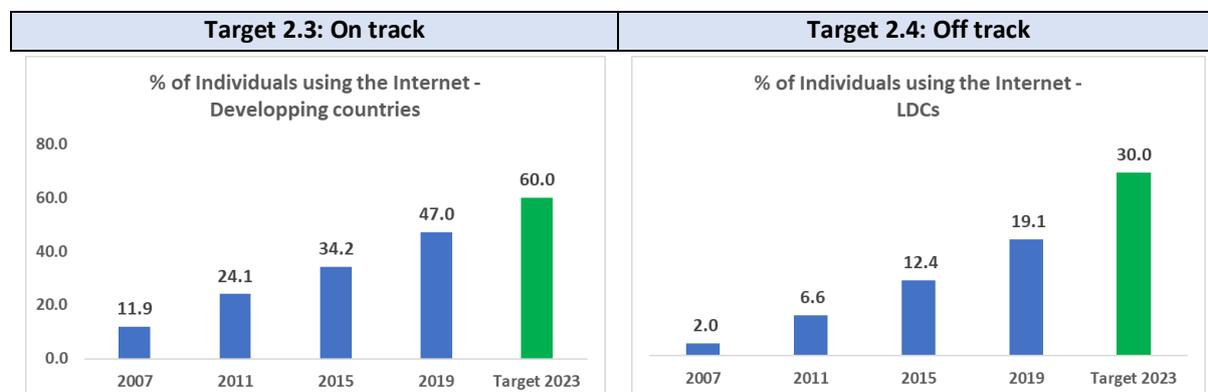
- Target 2.1:** in the developing world, 60% of households should have access to the Internet
- Target 2.2:** in the least developed countries, 30% of households should have access to the Internet
- Target 2.3:** in the developing world, 60% of individuals will be using the Internet
- Target 2.4:** in the least developed countries, 30% of individuals will be using the Internet
- Target 2.5:** the affordability gap between developed and developing countries should be reduced by 25% (baseline year 2017)
- Target 2.6:** broadband services should cost no more than 3% of average monthly income in developing countries
- Target 2.7:** 96% of the world population covered by broadband services
- Target 2.8:** gender equality in Internet usage and mobile phone ownership should be achieved
- Target 2.9:** enabling environments ensuring accessible telecommunications/ICTs for persons with disabilities should be established in all countries
- Target 2.10:** improve by 40% the proportion of youth/adults with telecommunication/ICT skills

Progress achieved



Source: ITU

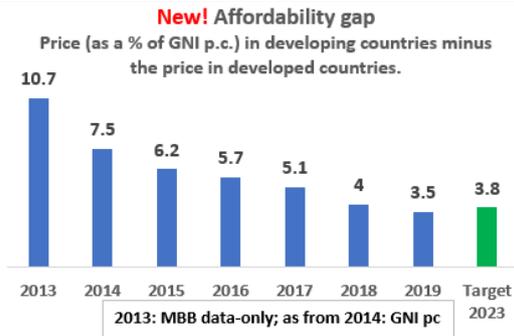
Source: ITU



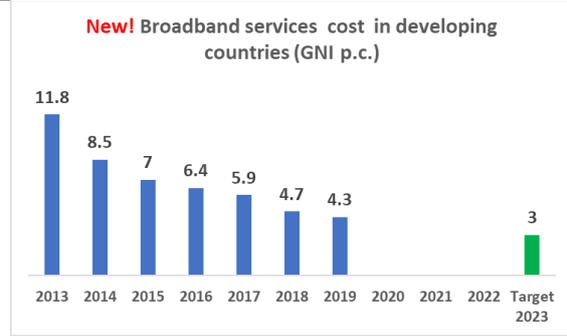
Source: ITU

Source: ITU

Target 2.5: Achieved **Target 2.6: On track**

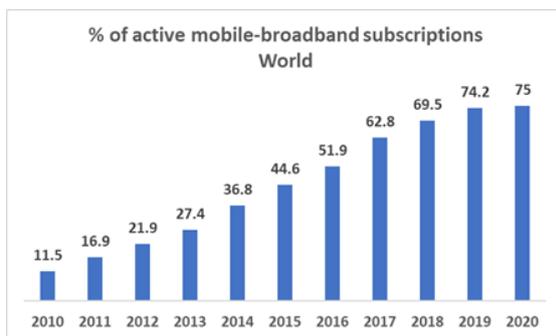


Source: ITU

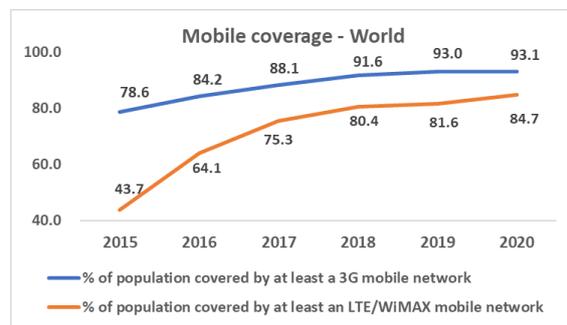


Source: ITU

Target 2.7: Off track

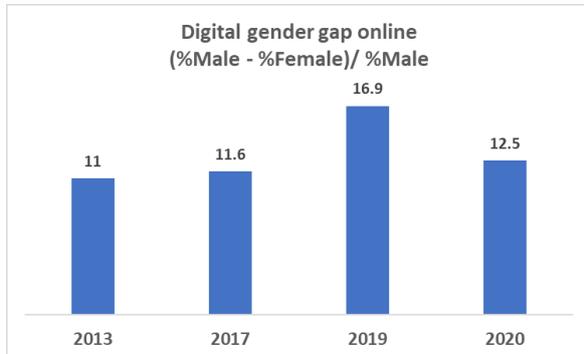


Source: ITU



Source: ITU

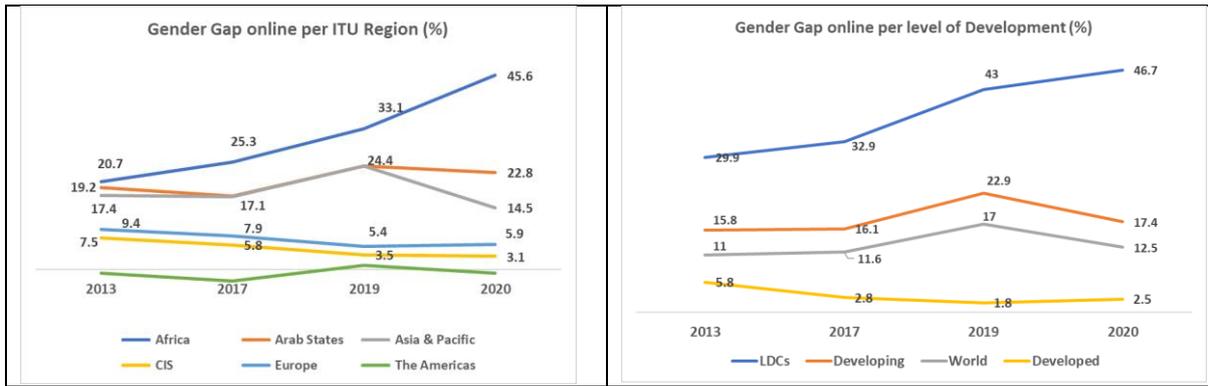
Target 2.8: Off track



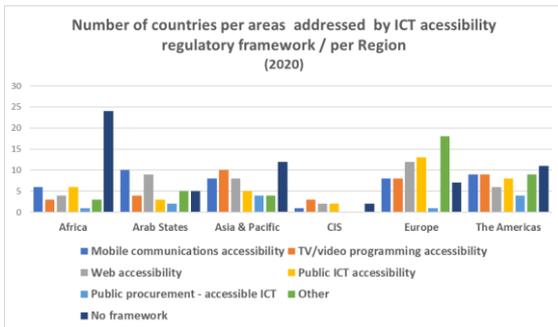
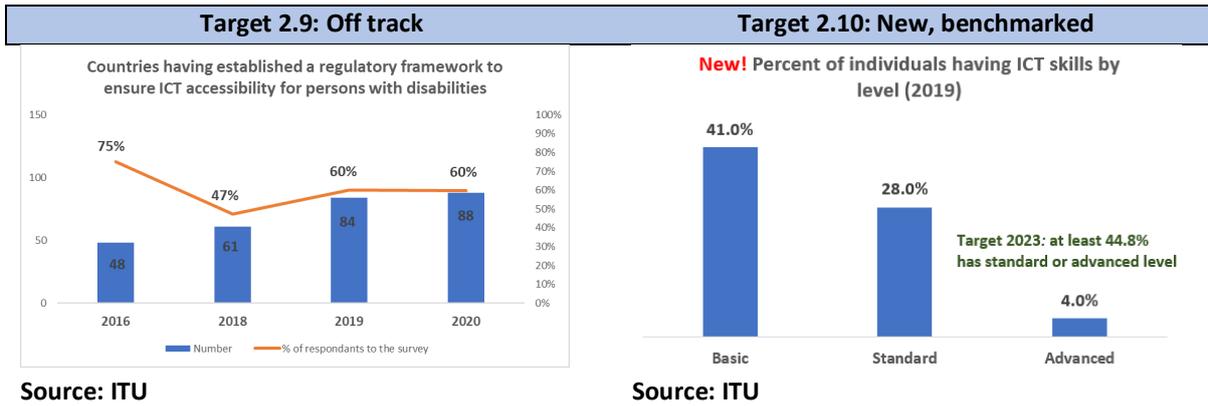
New! - Mobile ownership per gender World – 2019
For the 59 countries for which data are available, there is a **6.6 percentage** point difference between man and women owning a mobile phone.

Source: ITU

Report on the implementation of the strategic plan and activities of the Union



Source: ITU



3.1.3 Goal 3 – Sustainability

Manage emerging risks, challenges and opportunities resulting from the rapid growth of telecommunications/ICT

Strategic targets

By 2023:

Target 3.1: improve cybersecurity preparedness of countries, with key capabilities: presence of strategy, national computer incident/emergency response teams and legislation

Target 3.2: increase the global e-waste recycling rate to 30%

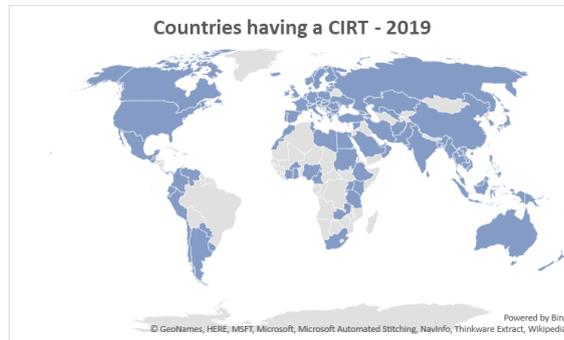
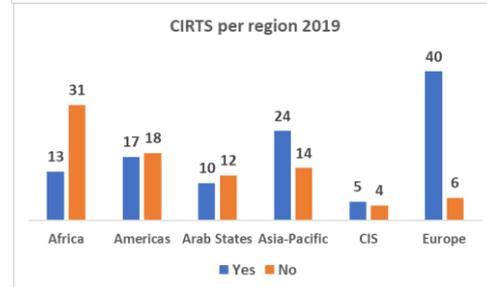
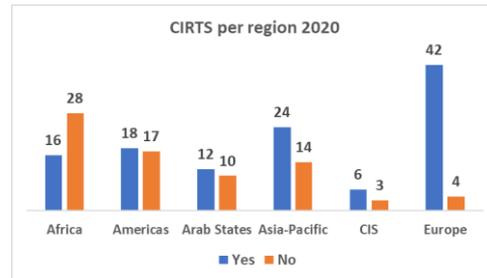
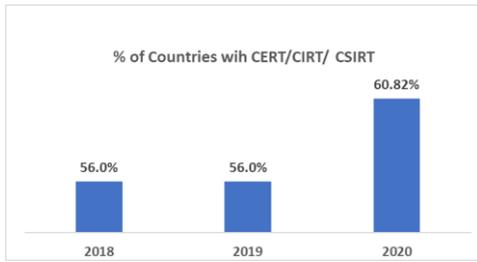
Target 3.3: raise the percentage of countries with an e-waste legislation to 50% [Note: should read “policy, legislation or regulation”]

Target 3.4: net telecommunication/ICT-enabled Greenhouse Gas abatement should have increased by 30% compared to the 2015 baseline

Target 3.5: all countries should have a National Emergency Telecommunication Plan as part of their national and local disaster risk reduction strategies

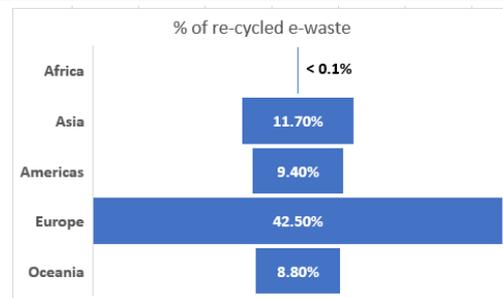
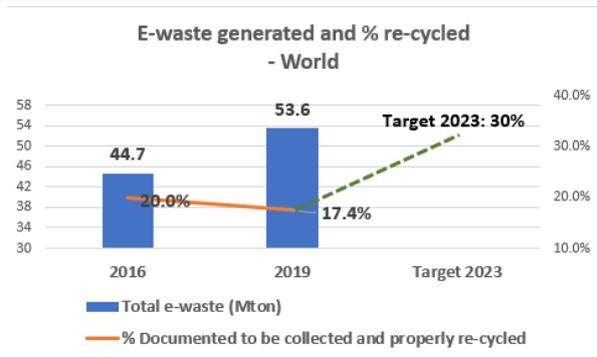
Progress achieved





Source: ITU

Target 3.2: New, Off track

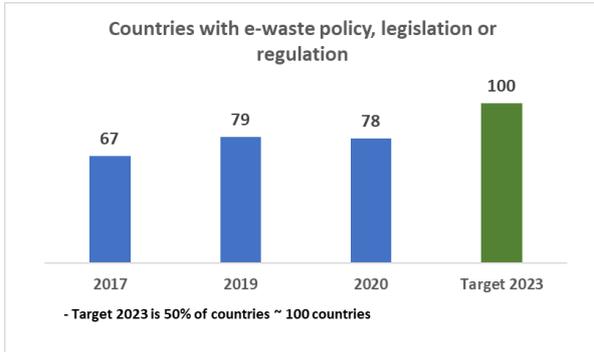


Source: Global E-waste Monitor 2020

[Note: these results should not be made available outside ITU before the report is published by June 2020]

Target 3.3 Off track	Target 3.4: Not yet measured, benchmarked
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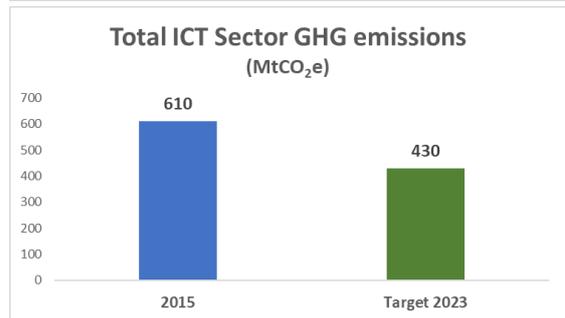
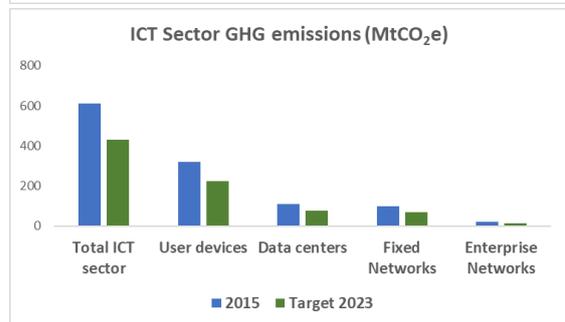
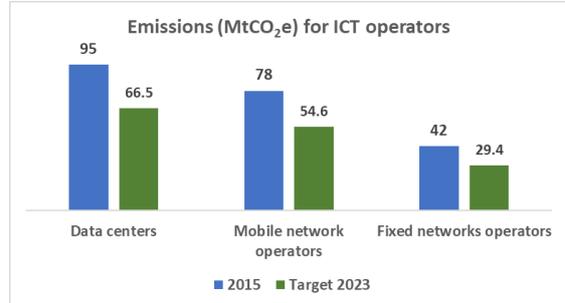
New Target! Included in the BDT regulatory survey 2020. Initial data should be available by October 2020



Source: ITU

New Target!

Not yet measured. A baseline has been found for ICTs footprint (see below) but not for ICTs enabled (in other sectors/fields) gas abatement.



Target 3.5: Not yet measured

New Target! Included in the BDT regulatory survey 2020. Initial data should be available by October 2020

Source: ITU

3.1.4 Goal 4 – Innovation

Enable innovation in telecommunications/ICT in support of the digital transformation of society

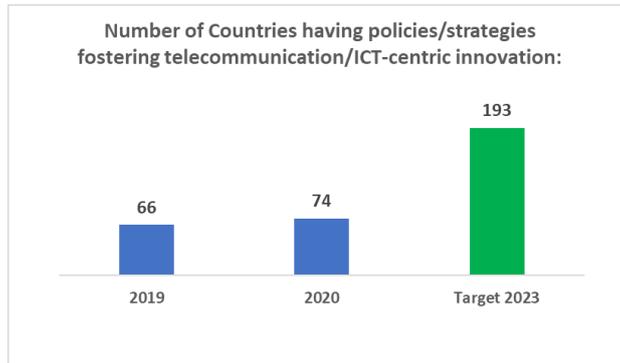
Strategic target

By 2023:

Target 4.1: all countries should have policies/strategies fostering telecommunication/ICT-centric innovation

Progress achieved

Target 4.1: Off track



Source: ITU

3.1.5 Goal 5 – Partnerships

Strategic target

By 2023:

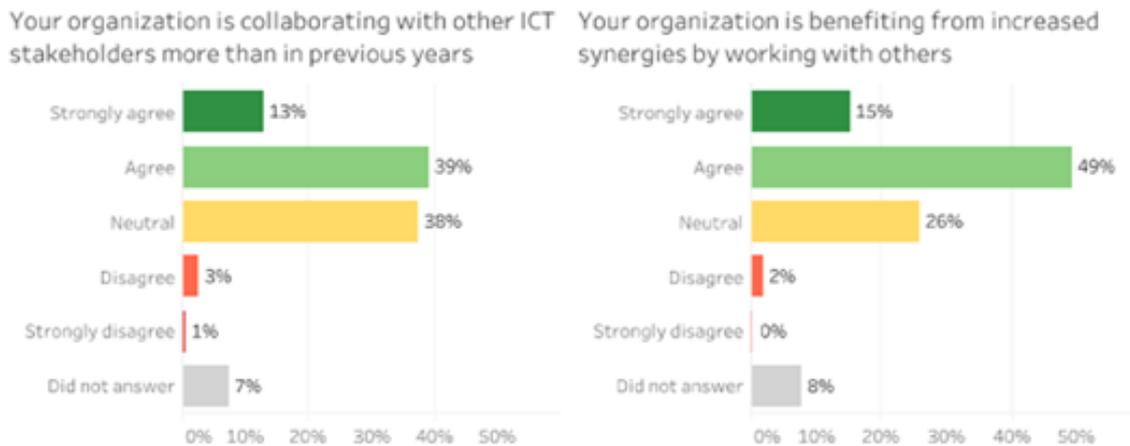
Target 5.1: increased effective partnerships with stakeholders and cooperation with other organization and entities in the telecommunication/ICT environment

Progress achieved

Target 5.1: On track

New Target! Two new questions were included in the ITU Membership Survey:

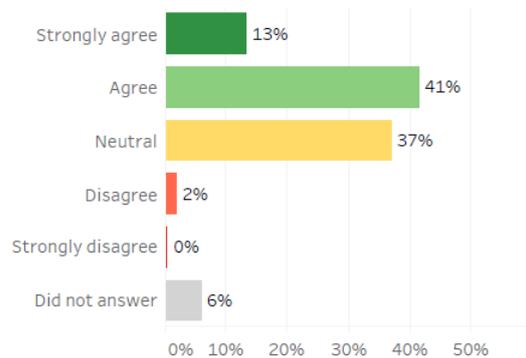
2019



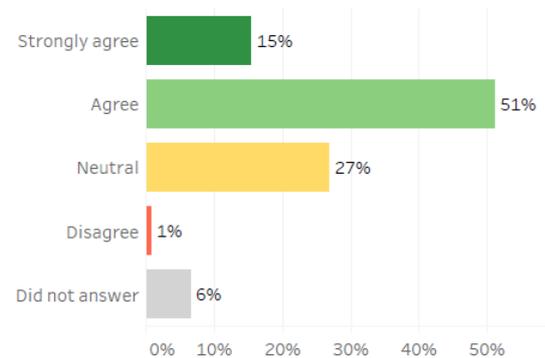
Source: ITU

2020

Your organization is collaborating with other ICT stakeholders more than in previous years



Your organization is benefiting from increased synergies by working with others



3.2 Outcomes of the work of the Union – ITU sector and inter-sectoral objectives

See Annex 2.

3.3 Results of the enablers

See Annex 2.

3.4 Priorities for 2020-2022

- Organization of the World Telecommunication Standardization Assembly (WTSA-20);
- Preparatory processes for the World Telecommunication Development Conference (WTDC-21) and the World Telecommunication/ICT Policy Forum (WTPF);
- Implementing the Connect 2030 agenda, ensuring alignment with the SDGs (as per the theme of the 2020 World Telecommunication and Information Society Day – WTISD);
- Working as One ITU, being an agile, responsive and innovative organization;
- Enhancing efficiency and effectiveness of the organization, by developing long-term managerial strategy for the organization to sustain performance and relevance of expertise, by strengthening the risk management and accountability frameworks, in order to enable informed decision-making and demonstrate the impact of ITU’s work.

Annex 1 Implementation of Resolutions of the Plenipotentiary Conference

Status of implementation
<p>21 (Rev. Dubai, 2018) Measures concerning alternative calling procedures on international telecommunication networks</p> <p>ITU-T SG 2 continued work on draft new Recommendation ITU-T E.ACP on alternative calling procedures.</p> <p>ITU-T SG 3 continued work on alternative calling procedures through its ongoing Question 8/3. ITU-T SG3 liaises with SG 2 on the topic of alternative calling procedures.</p> <p>ITU-T SG 12 continued to work on assessing the impact of alternative calling procedures on quality of service (QoS) and quality of experience (QoE).</p>
<p>30 (Rev. Dubai, 2018) Special measures for the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition</p> <p>Assistance to the least developed countries, small island developing states, landlocked developing countries, and countries with economies in transition is ongoing through operational plan activities, projects, and ad hoc assistance. The work is guided by the ITU strategic plan and ITU-D Action Plan adopted at WTDC-17.</p>
<p>34 (Rev. Dubai, 2018) Assistance and support to countries in special need for rebuilding their telecommunication sector</p> <p>Support to countries during natural disasters and emerging out of major disasters is ongoing and has been under implementation in support of affected countries.</p>
<p>66 (Rev. Dubai, 2018) Documents and publications of the Union</p> <p>All dispositions of this resolution are implemented. There has been no change or development on the issue of cost recovery and its basic principles. The provisions and principles laid down in Resolution 66 are still valid and pertinent.</p>
<p>91 (Rev. Guadalajara, 2010) Cost recovery for some ITU products and services</p> <p>See report to the Council on Cost Recovery for the processing of Satellite network Filings, document C20/16 and report to the Council by Chair of CWG-FHR, document C20/50.</p>
<p>99 (Rev. Dubai, 2018) Status of Palestine in ITU</p> <p>This Resolution was fully implemented and allowed the observer from the State of Palestine to continue to participate in all conferences, assemblies, and meetings organized under the aegis of ITU, in particular WRC-19, taking advantage of all of the rights enumerated in Resolution 99 (Rev. Dubai, 2018). The observer from the State of Palestine attended the 2019 ordinary session of the Council.</p>
<p>101 (Rev. Dubai, 2018) Internet Protocol-based networks</p> <p>See report to the Council document C20/33 and report to the Council by Chair of CWG-Internet, document C20/51.</p>
<p>119 (Rev. Antalya, 2006) Methods to improve the efficiency and effectiveness of the RRB</p> <p>The Board pursued its periodical review of the working methods and internal processes contained in Part C of the Rules of Procedure and decided not to modify them in 2019 or 2020. The 80th, 81st and 82nd RRB meetings were held in 2019 and the 83rd, 84th and 85th were held in 2020 as virtual meetings. The summary of decisions and the minutes of each of the Board's meetings have been duly published on the RRB website within statutory time limits.</p>

Status of implementation

125 (Rev. Dubai, 2018) Assistance and support to Palestine for rebuilding its telecommunication networks

- ITU had developed costing model [BU-LRIC] for fixed and mobile networks services [voice and data] for Palestine as well as price regulation framework. The cost model report is reviewed by ITU and Palestine and accepted. Next steps were agreed with Palestine which include the following:
 - Organized a virtual workshop for the project team from Palestine, 9 April.
 - Plan A (original plan):
 - A mission to Ramallah to conduct a meeting with Palestine ICTs stakeholder to explain the construction and use of the cost models;
 - Training for MTIT on how best to use the model.
 - Plan B (Possible alternative accounting for COVID-19):
 - An online stakeholder workshop;
 - An online training session for MTIT.
- Project on "implementation of CIRT services and related capabilities" that reached its closure end of 2019, Palestine was assisted in building and deploying the technical capabilities and related trainings necessary to the implementation of the Palestine's CIRT.
- In the framework of the connect school project 15 additional schools were equipped and connected to the Internet during 2018-2019.
- The following assistance to Palestine was stalled due to the inability to issue a visa for scoping visits by experts and ITU staff:
 - establish a national electronic authentication unit;
 - developing smart learning policy review.
- Started assistance to do a feasibility study for a satellite earth station. The draft job description for the required assistance was sent to Palestine in June and pending their feedback.

131 (Rev. Dubai, 2018) Measuring information and communication technologies to build an integrating and inclusive information society

Implementation of this resolution is ongoing. Official statistics have been collected from Member States and published in the World Telecommunication Indicators Database biannually, and on ITU's website for a selected number of indicators. Collected statistics are also featured and analysed in Measuring Digital Development publications, including Facts and Figures 2020 and ICT Price Trends 2019. For capacity building, no in-person training took place in 2020. The production of two online courses for ITU on the collection of data for administrative indicators and household indicators is ongoing and the courses will be available from the ITU Academy by June 2021. The Expert Group on Telecommunication Indicators (EGTI) and the Expert Group on Household indicators (EGHI) held their annual meetings in September 2020, while the 2020 edition of the World Telecommunication Indicators Symposium took place online in December. See [section 3](#) for the actual measurement of Connect 2030 targets which come mainly from the work of BDT on this subject.

135 (Rev. Dubai, 2018) ITU's role in the durable and sustainable development of telecommunications/information and communication technologies, in providing technical assistance and advice to developing countries and in implementing relevant national, regional and interregional projects

BDT Implemented updated the ITU Broadband Maps with information obtained from administrations, regulators, operators and public sources (viewable [online](#)). In 2019, the Map presents infrastructure information from 520 operators' networks and 21 806 nodes worldwide.

The research on and representation of the transmission links has reached 3 720 687. Additionally, the following actions have been taken:

- The ITU Broadband Business Planning Toolkit has been published;
- Assessment studies for ECOWAS on Conformance and Interoperability and EMF were prepared.

139 (Rev. Dubai, 2018) Use of telecommunications/information and communication technologies to bridge the digital divide and build an inclusive information society

The ITU Broadband Maps have been enhanced in taking stock of worldwide connectivity and promote understanding and investment opportunities of network infrastructure. The public version of the interactive

Status of implementation
<p>map is available online. In 2019, the broadband maps supported other global initiatives such as Giga (see section 1.9), FIGI-Mexico, and the emergency communication map.</p> <p>Further developments includes network deployment estimation based on an ITU Regional Initiative model as well as an improved graphical interface and partnership on Investment opportunities mapping for the Eastern Europe.</p> <p>Broadband WiMax Network installed and operational in Burundi: 437 schools, hospitals and individuals are connected and benefiting from the Broadband operations as of December 2019.</p> <p>Broadband 4G Mobile WiMax Network installed and operational in Djibouti: 116 Schools (48), Hospitals (45) and/or Government Ministries/ Institutions (23) are connected and benefiting from the Broadband operations as of December 2019. Broadband 4G LTE Mobile Network installed and operational in 20 localities in rural areas of the Kingdom of Eswatini.</p>
<p>151 (Rev. Dubai, 2018) Implementation of results-based management in ITU</p> <p>See the 4-year rolling Operational Plan for the Union 2021-2024 here, and section 3 . It should be noted that the 2020-2021 Budget adopted by Council 2019 follows the RBB principles.</p>
<p>154 (Rev. Dubai, 2018) Use of the six official languages of the Union on an equal footing</p> <p>See report to Council by Chair of CWG-LANG document C20/12.</p>
<p>157 (Rev. Dubai, 2018) Strengthening the project execution and project monitoring functions in ITU</p> <p>Through its project portfolio, ITU is making an impact in advancing digital development and promoting the deployment of innovative ICT solutions to support sustainable development. ITU Member States are increasingly engaging with ITU to support their efforts to advance digital inclusion, modernize their digital infrastructure and regulation, as well as to adapt to international best practices in the use of digital services and applications.</p> <p>In 2020 ITU signed 23 new projects for over CHF 13 million in funds, bringing its overall portfolio to 75 ongoing projects. These will be implemented in collaboration with a broad range of partners, including government entities, UN agencies, non-profit organizations, as well as with the private sector.</p> <p>Furthermore, ITU has continued to improve its project management practices by undertaking further investments in tools, methodologies, guidelines, templates, standards and database development. The efforts initiated in 2019 to improve project management skills across ITU have been reinforced, in particular with the organization of an online certification programme for 50 ITU staff members. This culminated in July 2020 with the introduction of a new project management manual, the result of an in-depth review of the practices across ITU. The introduction of the manual has been supported with the establishment of a community of practice of project managers, the strengthening of the project monitoring function in BDT, and the introduction of data visualization tools to provide ITU management with more relevant information on the status of implementation of the portfolio.</p> <p>Moreover, the ITU projects website has been enhanced to dynamically display the overall status of BDT projects at any given time. It is now possible to find project case studies, post-implementation assessment reports and videos. All this was further developed as a way of improving the sharing of experiences and lessons learned.</p> <p>These measures are expected to assist ITU in moving towards the adoption of a portfolio approach in the management of projects. This will lead to better accountability for the achievement of project results and their impact.</p>

Status of implementation
<p>160 (Rev. Dubai, 2018) Assistance to Somalia</p> <p>ITU and Somalia had signed a FCA and the related Programme Action Plan (PAP) was developed. Implementation started according to the top priorities identified by Somalia.</p> <ul style="list-style-type: none"> • Assisted Somalia and developed a national ICTs Policy and Strategy (2019-2024). The report sets out the 5-year 2019-2024 National ICT Policy and Strategy which provides the framework needed to leverage the benefits of ICTs to support the social and economic development of Somali society; • SMS4DC to enhance utilization and management of spectrum (5 keys provided).
<p>161 (Antalya, 2006) Assistance and support for the Democratic Republic of Congo for rebuilding its telecommunication network</p> <p>Following the successful completion of the Broadband Access Masterplan Project by ITU and supported by the Ministry of Science, ICT and Future Planning (MSIP), Republic of Korea, a project to implement a Broadband Wireless Network in Kinshasa which is the most densely populated city in DRC. The proposal is still pending approval of the Government of DRC.</p>
<p>162 (Rev. Busan, 2014) Independent Management Advisory Committee</p> <p>The Independent Management Advisory Committee (IMAC) submitted its eighth annual report to the Council in June 2019 (Doc. C19/22), followed by an interim report and the ninth annual report (Doc. C20/22) for the first and second virtual consultation of councillors that took place in 2020. All IMAC meeting reports and related documents are available at the IMAC public website here.</p> <p>The new members of IMAC appointed at the 2019 Session of Council initiated their term on 1st of January 2020 (the new composition of the Committee is also available at the IMAC website).</p>
<p>165 (Rev. Dubai, 2018) Deadlines for the submission of proposals and procedure for the registration of participants to conferences and assemblies of the Union</p> <p>The revision of this resolution was put into practice during WRC-19 meeting, where the deadline of submission for contributions was set for 30 September 2019. This has not only ensured the timely translation of all contributions submitted but has also significantly reduced overtime worked during the conference. This had positive implications on the conference's budget as well as C&P's budget.</p>
<p>167 (Rev. Dubai, 2018) Strengthening and developing ITU capabilities for electronic meetings and means to advance the work of the Union</p> <p>The secretariat's Remote Participation Task Force (RPTF) was established in April 2020 to identify best practices for preparing and conducting electronic meetings. All ITU meetings have become fully virtual since 16 March 2020, including statutory meetings that required interpretation in six languages, accreditation, authentication and access control. ITU then led the Virtual Meeting with Interpretation Workgroup of the Chief Executives Board for Coordination (CEB) of the UN. In May 2020 the document "Virtual Events and Remote Participation Guidelines and Best Practices" was published and shared with all participating organizations and other international agencies. As none of the web-conference platforms supports all functional requirements of ITU meetings, ITU currently works with five platforms, selecting the most appropriate one depending on the requirements of each meeting.</p> <p>See report to Council (Doc. C20/53); see also section 1.8 on COVID-19 related activities/responses.</p>
<p>173 (Rev. Guadalajara, 2010) Piracy and attacks against fixed and cellular telephone networks in Lebanon</p> <p>After the assistance provided to Lebanon to assess the readiness in view of establishing a National Computer Incident Response Team (CIRT), a project to assist Lebanon in the establishment of its national CIRT has been signed in 2014 in which Lebanon was committed to fund part of this project and ITU/ARO secured the remaining funds for the project. The implementation has been held and the project concluded upon the request of Lebanon.</p> <p>Assistance on spectrum-related aspects, including frequency notification and coordination, technical examinations, transition to digital broadcasting, the digital dividend and the allocation of spectrum and licensing has been provided.</p>

Status of implementation

175 (Rev. Dubai, 2018) Telecommunication/information and communication technology accessibility for persons with disabilities and persons with specific needs

See [section 1.7](#) – Digital Inclusion

176 (Rev. Dubai, 2018) Measurement and assessment concerns related to human exposure to electromagnetic fields

ITU-T Study Group 5 on “Environment, climate change and circular economy” is the lead ITU-T Study Group on studies on electromagnetic compatibility, lightning protection and electromagnetic effects. ITU-T SG 5 within Working Party 1 on “EMC, lightning protection, EMF” has revised Recommendations ITU-T K.91 “Guidance for assessment, evaluation and monitoring of human exposure to radio frequency electromagnetic fields” and ITU-T K.100 “Measurement of radio frequency electromagnetic fields to determine compliance with human exposure limits when a base station is put into service”. ITU-T SG 5 has approved Recommendation ITU-T K.145 “Assessment and management of compliance with RF EMF exposure limits for workers at radiocommunication sites and facilities”. This Recommendation includes guidance on the protection of workers against radio frequency electromagnetic fields (RF-EMFs) exposure in their working environments and provides minimum general safety guidance for telecommunication RF workers around the world. The development of this Recommendation was led by SME that was participating in the SME pilot project. Additionally, ITU-T SG 5 revised ITU-T K.Suppl.14 to ITU-T K-series on The impact of RF-EMF exposure limits stricter than the ICNIRP or IEEE guidelines on 4G and 5G mobile network deployment, in order to include a new chapter that compares the results of measurements between countries with different exposure limits. SG 5 also revised ITU-T K.Suppl.9 on 5G technology and human exposure to RF EMF and ITU-T K.Suppl.16 on Electromagnetic field compliance assessments for 5G wireless networks. Two new Supplements on ITU-T K.Suppl.19 on EMF strength inside subway trains and ITU-T K.Suppl.20 on radio-frequency exposure evaluation in the vicinity of underground base stations were developed. Furthermore, ITU-T SG 5 revised Supplement 1 to ITU-T K.91 “Guide on electromagnetic fields and health” to include the updates on the ICNIRP and WHO guidelines and to cover also aspects related to 5G.

ITU-T SG 5 organized a [Forum on Human Exposure to Electromagnetic Fields in Africa](#) on 29 August 2019 in Abuja, Nigeria, coinciding with the [First Digital African Week 2019](#).

ITU is regularly represented in WHO meetings relating to EMF. Similarly, WHO representatives regularly participate in meetings and workshops dealing with EMF, which are organized by ITU.

177 (Rev. Dubai, 2018) Conformance and interoperability [also WTSA Res. 76 and WTDC Res. 47]

ITU made progress implementing the ITU Conformance and Interoperability Programme (C&I) including:

- TSB maintains the [“ICT product conformity database”](#) which enables industry to publicize the conformance of ICT products and services to ITU-T Recommendations, assisting users in their efforts to select standards-compliant products. As of January 2020, the database contains five categories of ICT products accumulating more than 500 entries.
- ITU-T updates the list of ITU-T Recommendations suitable for C&I testing based on inputs provided by all ITU-T SGs.
- The TSB secretariat facilitates the implementation of ITU Testing Laboratory recognition procedure on ITU-T Recommendations. TSB participated in IECEE Task Force meeting which aim was to finalize the new Operational Document of IECEE (OD) “ICT Laboratory Recognition Service on ITU-T Recommendations”. This service is based on IECEE peer assessment processes by using ITU-T Recommendations, based on the IECEE peer assessment programme involving ITU-T technical experts nominated by ITU-T Conformity Assessment Steering Committee (CASC). Following the approval of this OD by IECEE, any Testing Laboratory (TL) (including non-ITU members) may apply for such recognition.
- In October 2019, ITU-T CASC appointed 11 Technical experts who have competence on different ITU-T Recommendations. Those experts might be involved by IECEE for TL assessment.
- Following the request received from IECEE and SG 11 decision, in October 2019, TSB disseminated a questionnaire on evaluation of market needs for joint ITU/IEC TL recognition procedure and certification schemes on ITU-T Recommendations (TSB Circular 208). The aim of the questionnaire was to evaluate the market needs of the in-progress joint ITU/IEC work to establish a peer assessment laboratory service (testing laboratory recognition procedure) and the joint conformity assessment programme (joint ITU/IEC certification schemes) on ITU-T Recommendations. There were 21 respondents who provided

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feedback. According to the results of the survey, most of the replies are positive and the outcomes show interest of different stakeholders to the new joint ITU/IEC services. In this regard, CASC was committed to continuing collaboration with IECEE on TL recognition procedure and joint certification schemes. Financial implications for TMs and ITU itself were not anticipated.

- In July 2020, IEC specified the roles and requirements for the testing laboratories and certification bodies using the IECEE CB Scheme. It was also indicated that as a non-for-profit organization, there was a need to cover IECEE cost of operations and so the Operational Document (OD 2026) which specifies the requirements for the TL recognition process will be implemented for ITU. This means that the IECEE programme with ITU will have financial implications (TL is to pay CHF 14 000, while ITU also pays CHF 45 000 annually to IEC to maintain the new scheme).
- Following discussions, in July 2020 CASC decided that the standalone ITU/IECEE TL recognition procedure, which comes with extra costs for TMs, is not needed, as there is no financial benefit in return for TMs who might wish to populate the ITU product conformity database only.
- With regards to the joint certification scheme, CASC decided to put it on hold in order to give ITU-T SGs a possibility to consider all provided financial details and provide CASC feedback whether the scheme is of interest of their membership, taking into consideration financial implications.
- ILAC presented the ILAC survey results to identify testing laboratories accredited to perform testing in accordance with ITU-T Recommendations. The response rate was reasonable at 68 per cent. CASC encouraged ILAC to propose procedures on further collaboration at the next CASC meeting (March 2021). It is assumed that these procedures should allow CASC to recognize TMs kindly provided by ILAC, without any additional assessment.
- The third ITU-T Study Group 11 Regional Workshop for Africa on “Counterfeit ICT Devices, Conformance and Interoperability Testing Challenges in Africa” took place in Tunis (Tunisia) on 30 September 2019, followed by the ITU-T SG 11 Regional group meeting for Africa (SG11RG-AFR).
- On the ITU C&I Programme Pillar 3 - Capacity Building:
 - On-the-job [Capacity Building](#) activities conducted for AFR and ARB regions on C&I frameworks and different Testing Domains (e.g. IoT, 5G,C&I and SAR) provided in collaboration with laboratory partners and Centres of Excellence (CERT, CAICT, and NCA/Ghana). More details available here https://itu.int/go/ci_training.
 - A Conformance and Interoperability Training Programme (CITP) development has started. CITP is based on training materials produced by previous C&I training events, such as Regional Trainings on C&I Programmes and test domains, It also takes into consideration the learnings from ITU Publications on C&I, e.g. Q4/2 Report (2017); and published ITU Guidelines and Recommendations (https://itu.int/go/ci_guidelines). CITP development is following ITU Academy quality assurance mechanism, which includes: a full set of high-level; materials prepared by subject-matter experts; and per-reviewing process.
- Related to the ITU C&I Programme Pillar 4-assistance to developing countries: in 2019, C&I [Assessment Studies](#) aiming to promote collaboration in regional organizations for establishing a harmonic C&I Programmes were conducted in the ECOWAS region.
- ITU-D Study Group 2 [Question 4](#) – “Assistance to developing countries for implementing conformance and interoperability (C&I) programmes and combating counterfeit ICT equipment and theft of mobile devices” presented its partial report during the Rapporteur Group held on 26 February 2020. 77 input documents are under consideration. For more information: <http://itu.int/go/Q4/2>.

179 (Rev. Dubai, 2018) ITU's role in child online protection

See report to Council by Chair of CWG-COP [here](#), and [section 1.6](#).

182 (Rev. Busan, 2014) The role of telecommunications/information and communication technologies in regard to climate change and the protection of the environment

ITU-T SG 5 on “Environment, climate change and circular economy” is the lead Study Group on ICTs related to the environment, climate change, energy efficiency, clean energy, and circular economy, including e-waste. Sections [1.3](#) and [1.5](#) provide details on specific climate-related recommendations approved during this period.

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<p>World Standards Day 2020 was dedicated to Protecting the Planet with Standards.</p> <p>ITU-T SG 5 organized the following events:</p> <ul style="list-style-type: none"> • Virtual session on "Using international standards to build smart sustainable cities and tackle climate change, e-waste and nature loss", 15 October 2020; • 9th Green Standards Week, 1-4 October 2019, Valencia, Spain; • ITU Telecom World: Session on "Strategies to boost climate action in the ICT sector", 11 September 2019, Budapest, Hungary; • ITU Telecom World: Session on "Frontier technologies for climate change" 11 September 2019, Budapest, Hungary; • HLPF Side Event: "Harnessing Frontier Technologies for Accelerating Climate Actions and the SDGs", 9 July 2019, New York, UNHQ; • Smart Environment Panel on GHG emissions trajectories for the ICT sector, 15 May 2019, Geneva, Switzerland; • 13th Symposium on ICT, Environment and Climate Change, 13 May 2019, Geneva, Switzerland; • STI Forum Side Event: Frontier Technologies to Protect the Environment and Tackle Climate Change, 14 May 2019, New York, UNHQ.
<p>184 (Guadalajara, 2010) Facilitating digital inclusion initiatives for indigenous peoples</p> <p>See section 1.7.</p>
<p>186 (Rev. Dubai, 2018) Strengthening the role of ITU with regard to transparency and confidence-building measures in outer space activities</p> <p>See section 1.9.</p>
<p>188 (Rev. Dubai, 2018) Combating counterfeit telecommunication/information and communication technology devices</p> <p>In March 2019, following Member States consultation (Resolution 1 of WTSA-16), ITU-T SG 11 approved new Recommendation ITU-T Q.5050 "Framework for solution to combat counterfeit ICT devices" which contains the reference framework and requirements to be considered when deploying solutions to combat the circulation and use of counterfeit ICT devices.</p> <p>TSB is organizing Regional Workshops on combating counterfeiting ICT devices. The third ITU-T Study Group 11 Regional Workshop for Africa on "Counterfeit ICT Devices, Conformance and Interoperability Testing Challenges in Africa" took place in Tunis (Tunisia) on 30 September 2019, back-to-back with the ITU-T SG 11 Regional group meeting for Africa (SG11RG-AFR).</p> <p>SG11RG-AFR considered a necessity to begin extensive discussion within the region for implementation of strategies for combating counterfeiting mobile devices and fraud. This decision was based on the draft contribution "Framework on combating counterfeit and stolen ICT mobile devices in Africa region" which was discussed at the SG11RG-AFR meeting and further submitted to SG 11 meeting (October 2019).</p> <p>In this regard, there is call for African regulators associations to arrange a joint meeting in order to set up a common strategy based on the proposed technical report. This approach will help all Members States of the Africa region to protect innovations, brands and genuine products in the market and support products circulation to protect health, safety and security of consumers in the Africa region.</p> <p>Following the decision of Council-18 (C18/107, clause 2), ITU, in particular TSB, should be studying the questions raised by the membership on IMEI security in one of the ITU-T study groups. Council-18 report (C18/107) requested "ITU-T study groups, in particular Study Group 11, to continue to develop Recommendations, technical reports and guidelines to address the problems posed by counterfeits".</p> <p>ITU-T SG 11 agreed technical report TR-RLB-IMEI, "Reliability of IMEI identifier". The report contains a study on the reliability of IMEI, including information about key vulnerabilities to IMEI reprogramming on mobile devices, challenges to make the IMEI non-reprogrammable, and the effects of IMEI tampering on mobile users, brand owners, manufacturers, service providers, regulators, governments, law enforcement agencies</p>

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<p>and national security. It addresses key challenges faced by a range of stakeholders that arise from cloned/tampered IMEIs, including concerns about the misuse of IMEI numbers raised by Member States at Council-17 and 18. It also proposes ways to improve IMEI reliability and suggests preventive measures for solving the issues on a national and international level.</p> <ul style="list-style-type: none"> <p>In January 2021, SG 11 approved ITU-T Q.5053 “Mobile device access list audit interface”, which defines the methodologies and interfaces between a mobile device access list audit system (MDALAS) and mobile network operators’ Equipment Identity Registers (EIR) for the purpose of auditing and reconciling whether the MNOs are complying with the defined mobile device access list requirements.</p> <p>SG 11 created a new Question 17/11 which will focus on combating counterfeit or tampered telecommunication/ICT software.</p> <p>SG 11 is continuing to develop six work items on this subject matter.</p> <p>ITU-D Q4/2 and BDT related work: from the ITU World Telecommunication/ICT Regulatory Survey on regulatory practices there are five related questions related to the distribution and use of counterfeit ICTs. The data series featured are as follows: 1) Responsibilities of telecom/ICT regulators related to ICT counterfeiting, 2) Types of counterfeit ICTs overseen by the telecom/ICT regulator, 3) Policy/legislation/regulation related to ICT counterfeiting adopted, 4) Areas covered in ICT counterfeiting regulations, 5) Plans to adopt a regulatory framework for ICT counterfeiting.</p>																	
<p>190 (Busan, 2014) Countering misappropriation and misuse of international telecommunication numbering resources</p> <p>Recommendation ITU-T E.156 (revised), “Guidelines for ITU-T action on reported misuse of E.164 number resources”, was approved at the May/June 2020 meeting of ITU-T Study Group 2. SG 2 is progressing a technical report, TR.EENM “Guidelines for effective and efficient national numbering resources administration”.</p>																	
<p>193 (Busan, 2014) Support and assistance for Iraq to rebuild its telecommunication sector</p> <p>At the request of Iraq, emphasis has been put on assisting with the newly adopted Resolution 211. Assistance for the actual rebuilding of infrastructure was not possible in past years due to the security situation on the ground.</p>																	
<p>197 (Rev. Dubai, 2018) Facilitating the Internet of Things and smart sustainable cities and communities</p> <p>Since April 2019, ITU-T Study Group 20 developed a series of Recommendations and other deliverables including:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Work item</th> <th style="text-align: left;">Title</th> </tr> </thead> <tbody> <tr> <td>Y.4461</td> <td>Framework of open data in smart cities</td> </tr> <tr> <td>Y.Suppl.58</td> <td>Internet of Things and smart cities and communities standards roadmap</td> </tr> <tr> <td>Y.4206</td> <td>Requirements and capabilities of user-centric work space service</td> </tr> <tr> <td>Y.4207</td> <td>Requirements and capability framework of smart environmental monitoring</td> </tr> <tr> <td>Y.4208</td> <td>IoT requirements for support of edge computing</td> </tr> <tr> <td>Y.4209</td> <td>Requirements for interoperation of the smart port with the smart city</td> </tr> <tr> <td>Y.4210</td> <td>Requirements and use cases for universal communication module of mobile IoT devices</td> </tr> </tbody> </table>		Work item	Title	Y.4461	Framework of open data in smart cities	Y.Suppl.58	Internet of Things and smart cities and communities standards roadmap	Y.4206	Requirements and capabilities of user-centric work space service	Y.4207	Requirements and capability framework of smart environmental monitoring	Y.4208	IoT requirements for support of edge computing	Y.4209	Requirements for interoperation of the smart port with the smart city	Y.4210	Requirements and use cases for universal communication module of mobile IoT devices
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Y.4461	Framework of open data in smart cities																
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Y.4211	Accessibility requirements for smart public transportation services
Y.Suppl.56	Use cases of smart cities and communities
Y.4460	Architectural reference models of devices for IoT applications
Y.4462	Requirements and functional architecture of open IoT identity correlation service
Y.4467	Minimum set of data structure for automotive emergency response system
Y.4468	Minimum set of data transfer protocol for automotive emergency response system
Y.4469	Reference architecture of spare computational capability exposure of IoT devices for smart home
Y.4470	Reference architecture of artificial intelligence service exposure for smart sustainable cities
Y.4458	Requirements and functional architecture of smart street light service
Y.4463	Framework of delegation service for IoT devices
Y.4464	Framework of blockchain of things as decentralized service platform
Y.4465	Framework of IoT Services based on Visible Light Communications
Y.4466	Framework of smart greenhouse service
Y.4473	SensorThings API – Sensing
Y.4474	Functional architecture for IoT services based on Visible Light Communications
Y.4475	Lightweight intelligent software framework for IoT devices
Y.4556	Requirements and functional architecture of smart residential community
Y.Suppl.57 to ITU-T Y.4409	Implementation Guidelines to Recommendation ITU-T Y.4409
Y.Suppl.62 to ITU-T Y.4000 series	Overview of blockchain for supporting Internet of things and smart cities and communities in data processing and management aspects
Y.4051	Vocabulary for smart cities and communities
Y.Sup.54 to ITU-T Y.4000-series	Framework for home environment profiles and levels of IoT systems
Y.Suppl.63 to ITU-T Y.4000 series	Unlocking Internet of things with artificial intelligence
Y.4459	Digital entity architecture framework for IoT interoperability

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Y.4807	Agility by design for Telecommunications/ICT Systems Security used in the Internet of Things
Y.4808	Digital entity architecture framework to combat counterfeiting in IoT
Y.Suppl.61 to ITU-T Y.4400 series	Features of application programming interface (APIs) for IoT data in smart cities and communities
Y.4904	Smart sustainable cities maturity model
Y.4906	Assessment framework for digital transformation of sectors in smart cities
Y.4907	Reference architecture of blockchain-based unified KPI data management for smart sustainable cities
Y.4908	Performance evaluation frameworks of e-health systems in the IoT
Y.Suppl.32 to ITU-T Y.4000 series	Smart sustainable cities – A guide for city leaders
Y.Suppl.33 to ITU-T Y.4000 series	Smart sustainable cities – Master plan
Y.Suppl.34 to ITU-T Y.4000 series	Smart sustainable cities – Setting the stage for stakeholders' engagement
<p>In October 2019, Recommendations ITU-T Y.4200 "Requirements for the interoperability of smart city platforms" and ITU-T Y.4201 "High-level requirements and reference framework of smart city platforms" were named as 2019 Catalyst Awards finalists of the Green Electronics Council. A Joint IEC-ISO-ITU Smart Cities Task force (J-SCTF) was created with the objective to build synergies on ongoing work in ITU-T, IEC and ISO related to smart cities and communities; to maximize efforts in order to identify new areas of cooperation related to smart cities and communities; and to develop a holistic view on smart cities and communities taking into consideration the scope, areas of work and expertise of ITU-T, IEC and ISO to support smart cities and communities development. The first meeting of the Joint IEC-ISO-ITU Smart Cities Task force (J-SCTF) took place virtually on 7 October 2020. The next meeting was scheduled for 24 February 2021.</p> <p>ITU-T SG 20 continues to collaborate closely with oneM2M. During the SG 20 meeting that took place virtually from 6-16 July 2020, an ad-hoc session was held between SG 20 and oneM2M.</p> <p>The Joint Coordination Activity on Internet of Things and Smart Cities and Communities (JCA-IoT and SC&C) held three meetings, on 10 April 2019, 28 November 2019 and 26 June 2020. The next JCA-IoT and SC&C meeting will take place virtually on 23 April 2021. As a result of the inputs provided during JCA meetings, the new Supplement ITU-T Y.Suppl.58: Internet of Things and smart cities and communities standards roadmap was agreed by ITU-T SG 20 in December 2019.</p> <p>A series of events organized by TSB with UN bodies and other partners took place since April 2019. See here.</p> <p>A Year in Review and Upcoming Activities 2019-2020 Brochure was published in January 2020.</p> <p>The "United for Smart Sustainable Cities" (U4SSC) is a UN initiative coordinated by ITU, UNECE and UN-Habitat, and supported by CBD, ECLAC, FAO, ITU, UNDP, UNECA, UNECE, UNESCO, UN EP, UNEP-FI, UNFCCC, UNIDO, UNU-EGOV, UN-Women, UNOP and WMO to achieve Sustainable Development Goal 11: "Make cities and human settlements inclusive, safe, resilient and sustainable". Since April 2019, U4SSC held over 50 e-meetings to progress the work carried out in the U4SSC Thematic Groups.</p> <p>A Call for Experts to get involved in the United for Smart Sustainable Cities (U4SSC) initiative's key thematic groups to pinpoint the solutions, technologies and policy tools that will forge smart sustainable cities and communities was launched in March 2020.</p>	

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The U4SSC has published several deliverables.

In October 2019, the U4SSC "[City Science Application Framework](#)" was published together with [eight case studies](#). It provides a four-step methodology for cities to solve their pressing urban challenges. By using empirical evidence as the basis for evaluation, the city science application framework offers a reliable and consistent way for cities to assess, prioritize and boost their city applications.

In June 2020, U4SSC's "Guide to Circular Cities" was published together with 8 Case studies. It contains a circular city implementation framework that is designed to improve circularity in cities and support stakeholders in implementing circular actions. The framework consists of a four-step methodology that provides a consistent method for assessing, prioritizing and catalysing different circular actions. This deliverable is developed in response to the growing sustainability challenges that cities are facing and the emergence of the circular economy concept and its applicability and extension in the city setting.

In September 2020, the U4SSC document "Accelerating city transformation using frontier technologies" was published. It aims to shed light on the impact of frontier technologies in cities and on citizens. This report provides insights into the current urbanization trends and provide an overview of the importance of connecting cities with the sustainable development goals (SDGs).

In November 2020, the U4SSC Blockchain for smart sustainable cities was published. It contains insights into the multifaceted potential of blockchain technology in building trust in the SSC endeavours, by supporting the creation of an effective, secure and scalable distributed architecture to tackle challenges related to interoperability, security and privacy, data collection, data sharing and data analytics.

The [U4SSC initiative's Implementation Programme](#) was created in October 2019 with the objective to carry out projects and build partnerships, which aim to build smarter and more sustainable cities worldwide. Fourteen projects are currently in progress.

The U4SSC developed a [set of international key performance indicators \(KPIs\) for smart sustainable cities](#) (based on Recommendation ITU-T Y.4903) to establish the criteria to evaluate the contributions of ICTs to making cities smarter and more sustainable, and to provide cities with the means for self-assessments in order to achieve the sustainable development goals (SDGs). Over 100 cities worldwide are already implementing these KPIs. In September 2019, the [Verification Report: Pully under the microscope](#) was published. Since October 2019, a series of City Snapshots, Verification Reports and Factsheets were published. Find out more about ITU's implementation of the U4SSC KPIs [here](#).

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<p>198 (Rev. Dubai, 2018) Empowerment of youth through telecommunication/information and communication technology</p> <p>See section 1.7</p>
<p>200 (Rev. Dubai, 2018) Connect 2030 Agenda for global telecommunication/information and communication technology, including broadband, for sustainable development</p> <p>This report can be considered as a report on the implementation of the Connect 2030 Agenda (see section 3). ITU also developed the Connect 2030 Agenda microsite, launched during WTISD 2020.</p>
<p>204 (Rev. Dubai, 2018) Use of information and communication technologies to bridge the financial inclusion gap</p> <p>Pursuant to WTSA-16 Resolution 89, ITU has implemented a number of activities aimed at enhancing the use of ICTs in bridging the financial inclusion gap through the following:</p> <ul style="list-style-type: none"> • The Financial Inclusion Global Initiative (FIGI) • The ITU-T Study Groups and Focus Groups work programme • Insights on digital financial services during COVID-19 Webinars • ITU- D Policy and Regulation Programme. <p>Financial Inclusion Global Initiative (FIGI)</p> <p>FIGI was established in 2017 as a three-year programme of collective action to advance research in digital finance and accelerate digital financial inclusion in developing countries. FIGI is led jointly by ITU, the World Bank Group and the Committee on Payments and Market Infrastructures, with support from the Bill & Melinda Gates Foundation. FIGI funds national implementations in three countries, namely China, Egypt and Mexico, and has three Working Groups: (1) Electronic Payment Acceptance, (2) Digital ID Working Group led by the World Bank, and (3) Security, Infrastructure and Trust Working Group (SIT WG) led by ITU.</p> <p>ITU implemented the following activities under FIGI umbrella in 2019 and 2020:</p> <ul style="list-style-type: none"> • Organization of the second edition of FIGI Symposium, in Cairo, Egypt (21-24 January 2019) • FIGI Hackathon during the FIGI Symposium • The FIGI SIT WG produced 12 technical reports which were disseminated to the ITU-T Study Groups for incorporation in their standardization work • FIGI Security Clinics. <p>FIGI Security, Infrastructure and Trust Working Group</p> <p>The FIGI Security, Infrastructure, and Trust Working Group (FIGI SIT WG) held 2 face-to-face meetings and 28 e-meetings in 2019.</p> <p>SIT WG finalized eight technical reports in 2019 (which are available for download on the FIGI SIT Working Group webpage):</p> <ul style="list-style-type: none"> • Unlicensed digital investment schemes • Security aspects of distributed ledger technologies • Mitigating SS7 security vulnerabilities • Methodology for measurement of KPIs for QoS for DFS • Data privacy issues of emerging technologies for DFS • DFS security assurance framework • Strong authentication technologies for DFS • Developer resources for implementation of FIDO universal authentication framework (UAF) in DFS. <p>The methodology for measurement of KPIs for QoS for DFS was submitted to ITU-T Study Group 12 and was subsequently approved as an ITU-T Recommendation in December 2019. The report “Mitigating SS7 Security Vulnerabilities” was submitted to ITU-T Study Group 11 and led to the creation of a work item on this topic. Work is now under way to develop a technical standard on mitigating SS7 vulnerabilities for DFS in ITU-T Study</p>

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Group 11. The reports on DLT Security, DFS Security Assurance Framework and Strong Authentication Technologies have been transferred to ITU-T Study Group 17 where they will be incorporated as technical reports in the standards being developed by the Study Group.

The FIGI SIT WG held nine e-meetings in 2020. Following the eight technical reports developed in 2019, four additional technical reports were developed and finalized by the SIT Working Group in the reporting period:

- Best practices for mitigating vulnerabilities of DFS applications operating in USSD and STK environments
- Methodology for measurement of QoS parameters for interoperability and cross-border mobile money payment use cases
- DFS consumer competency framework
- Security audit of DFS applications under Android.

Three additional reports are expected to be completed in first quarter of 2021:

- Legal aspects of distributed ledger technologies
- Use of telecom data
- Application programming interfaces in digital finance.

In November 2020 the FIGI SIT Working Group completed the work of setting up the DFS Security Lab at ITU for conducting security audits on DFS applications based on USSD, STK and Android environments. The Lab is now fully operational.

FIGI Symposium and Hackathon

The [FIGI Symposium and Hackathon](#) were held on 21-24 January 2019, in Cairo, Egypt. The event attracted some 289 participants from Central Banks, telecom regulators, DFS providers, payment service providers and fintech companies. Most participants were from developing countries. The theme of the second edition of the FIGI Symposium, was **Enabling an Inclusive DFS Ecosystem: National and Thematic Insights**.

The third and final edition of the FIGI Symposium, initially planned for June 2020, has been rescheduled to 18 May – 24 June 2021 and will be held as a virtual event due to the COVID-19 pandemic

FIGI Security Clinic

A [FIGI Security Clinic](#) was held on 4-5 December 2019 at ITU Headquarters to present the outputs of the FIGI SIT WG and provide some deep dive sessions on the implementation of the findings from the working group reports. Over 80 participants, mainly IT Security professionals, attended the event.

The first day sessions focused on the presentations of the reports of the Security, Infrastructure and Trust Working Group. The second day of the event consisted of a series of security clinics targeting mainly those who are actively involved in technical security implementation in the area of digital financial services (DFS).

In November 2020 two regional Security Clinics were held as virtual events for Egypt and Mexico, with the support of the ITU Regional Offices in the region. In December 2020 a virtual Security Clinic was organized for banks and DFS providers in Indonesia, at the request of Bank Indonesia and the Indonesia Payment System Association. That clinic focused on security best practices on SS7 security vulnerability, addressing SIM swap and SIMjacker vulnerability in DFS and the security of the mobile payment system based on QR codes.

Country implementation

Country implementation focuses on the implementation of enabling policy and regulatory frameworks to leverage ICTs for Digital Financial Inclusion, integrating ITU-T FG DFS Recommendations, Payment Aspects of Financial Inclusion (PAFI) recommendations, and Level One Principles. Country implementation is currently taking place in Mexico, Egypt and China.

Standardization activities in ITU-T study groups and focus groups related to DFS

ITU-T Study Group 3

During the ITU-T SG 3 meeting in April-May 2019, [Recommendation ITU-T D.263](#), “Costs, charges and competition for mobile financial services (MFSs)” was approved.

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Additionally, a series of reports of the Focus Group on Digital Financial Services (FG-DFS) were approved to be published as SG 3 Technical Reports.

ITU-T Study Group 11

SG 11 agreed the Technical report ITU-T TR-SS7-DFS “SS7 vulnerabilities and mitigation measures for digital financial services transactions” which is based on the report approved by FIGI.

In October 2019, SG 11 organized a [Brainstorming session](#) on SS7 vulnerabilities and the impact on different industries including digital financial services. The objective of the event was to discuss the potential way forward to enhance the security mechanisms of existing protocols and its adoption rate among telecom operators in order to defend all stakeholders such as Telco operators, banks, operators of financial services, regulators and individual clients from related attacks.

In March 2020, SG 11 finalized and consented the baseline text of ITU-T Q.3057 (ex. Q.SR-Trust) “Signalling requirements and architecture for interconnection between trustable network entities”.

Following the approval of ITU-T Q.3057, SG 11 started a new work item, Q.Pro-Trust: “Signalling procedures and protocols for enabling interconnection between trustable network entities in support of existing and emerging networks”. It defines the signalling procedures and protocols involved in the application of the signalling requirements and architecture, Tsa, Sa and Sc defined in ITU-T Q.3057 for interconnection between trustable network entities in support of existing and emerging networks

Also, following SG 11 Brainstorming session on SS7 vulnerabilities, SG 11 started draft technical report on Low resource requirement, quantum resistant, encryption of USSD messages for use in financial services, which purpose is to examine new technologies for encryption of USSD in End-to-End manner and estimate its applicability to be integrated into existing USSD technology, suggesting new recommendation and signalling requirements for the integration of such technology into the existing reference architecture.

ITU-T Study Group 12

Two new ITU-T Recommendations were approved in 2020 on digital financial services:

- New [Recommendation ITU-T G.1033](#) highlights important aspects related to quality of service (QoS) and quality of experience (QoE) that require consideration in the context of digital financial services.
- New [Recommendation ITU-T P.1502](#) introduces a methodology for testing the quality of experience (QoE) of digital financial services.

The Recommendations are based on the results of the ITU-T Focus Group on Digital Financial Services and the FIGI Security, Infrastructure and Trust Working Group.

ITU-T Study Group 16

The new [Question 22/16](#) on distributed ledger technologies (DLT) and e-services continues part of the work of the now closed ITU-T Focus Group on distributed ledger technologies.

DLT are building blocks to many verticals, there included digital financial services, in particular when a trusted third party is not involved. Topics of interest for DFS that are being studied by Q22/16 include digital evidence services, digital invoices and smart contracts.

Three DLT Recommendations (originally developed at the now closed [FG-DLT](#)) were completed:

- ITU-T [F.751.0](#) “Requirements for distributed ledger systems”
- ITU-T [F.751.1](#) “Assessment criteria for distributed ledger technologies”
- ITU-T [F.751.2](#) “Reference framework for distributed ledger technologies.”

Updated information can be found [here](#).

ITU-T Study Group 17

FinTech revolution has disrupted the status quo, modernized old institutions, and changed the way for consumers to access financial products and services. Interfaces between FinTech start-ups and traditional providers are a common source of cyber vulnerabilities. ITU-T SG 17 is developing technical and procedural specifications to ensure risk-based security management are implemented in every lifecycle stage, component and interface of FinTech systems and services.

Status of implementation

SG 17 approved Recommendation ITU-T X.1149: Security framework of open platform for FinTech services and continues working on:

- [X.str-dlt](#): Security requirements for digital payment services using distributed ledger technology.
- [X.srcsm-dlt](#): Security requirements for smart contract management using DLT

Digital Currency Global Initiative

The [Digital Currency Global Initiative](#) is a collaboration between ITU and Stanford University which was established in July 2020. Its main objectives are to:

- Conduct further research on technical architecture, security, the technical implications and challenges in deployment caused by regulatory and policy requirements for central bank digital currency and other digital currencies, technology trends in digital currency and the use cases related to financial inclusion, operational efficiency and interoperability.
- Develop a set of metrics by which to evaluate the robustness of various digital currency technologies against the requirements set by various stakeholders.
- Identify areas for standardization to enable implementation of digital currency.
- Organize a conference on an annual basis to share information on best practices, technical standards and lessons learned on digital currency implementation.

The Digital Currency Global Initiative will continue the dialogue and research initiated by the ITU-T Focus Group on Digital Currency including Digital Fiat Currency on pilot implementations, use cases, applications and developing specifications for technical standards that will foster adoption, universal access, and ultimately financial inclusion.

Participation is open to all interested parties.

The activities of the Digital Currency Global Initiative are focused around three main pillars: engagement, innovative use and standardization. Three working groups were set up under the Standardization pillar during the first meeting:

- Architecture, Interoperability Requirements and Use Cases (AIRU)
- Policy and Governance (PG)
- Security and Assurance (SA).

The first e-meeting of the Digital Currency Global Initiative was held 22-23 July 2020 and some 157 participants from 40 countries participated in the event. The participants included central banks, digital currency platform providers, fintech companies, payment service providers, academia and international organizations. Its various working groups and work streams held some 20 virtual meetings in the period July–December 2020.

Insights on Digital Financial Services during COVID-19 Webinar Series

TSB organized the [Insights on DFS webinar series](#) focusing on digital financial services (DFS) with the objective of providing insights on the innovative applications of telecommunication services, digital payments and fintech in addressing the introduction of social distancing and lockdown in response to the COVID-19 pandemic and sharing lessons learned by governments and DFS stakeholders on the measures that they are implementing. Twelve webinars were held between May and December 2020 attracting over 1 000 unique participants from 105 countries. The webinars focused on topics such as digital identity, strong authentication technologies, security of digital financial transactions, handling fraud and scams, tracking digital financial crimes and fraud, digital credit technologies, mitigating telecom infrastructure vulnerabilities for digital finance and central bank digital currency.

ITU- D Policy and Regulation Programme

ITU-D provides country assistance to build capacity and guide countries through digital financial inclusion, focusing in particular on leveraging ICTs for digital financial inclusion..

In addition, the Global Dialogue on Digital Financial Inclusion (GDDFI) is part ITU's activities to foster and strengthen collaborative regulation between ICT regulators and regulators from other sectors, focusing on the financial sector. Launched during the Global Symposium for Regulators (GSR) in 2016, GDDFI brought together telecom/ICT and financial regulators from around the world to establish a constructive global dialogue on topical issues of relevance to stakeholders from both sectors. GDDFI identified the following

Status of implementation
<p>policy, regulatory, and business collaborative guiding measures to move forward the digital financial inclusion agenda by building synergies at the national, regional and global levels (available here and report available here).</p>
<p>206 (Dubai, 2018) OTTs</p> <p>ITU-T Study Group 3 approved Recommendation ITU-T D.1101, “Enabling environment for voluntary commercial arrangements between telecommunication network operators and OTT providers”. ITU-T D.1101 encourages relevant stakeholders to work towards an enabling regulatory environment that supports and encourages the development of innovative business models in line with the advancement of technology and innovations, which are changing faster than ever. Recommendation ITU-T D.262 “Collaborative Framework for OTTs” provides a collaborative framework in order to promote competition, consumer protection, consumer benefits, dynamic innovation, sustainable investment and infrastructure development, accessibility and affordability in relation to the global growth of over-the-top (OTT) applications. ITU-T SG 3 is studying OTT applications within several work items, and SG 2 is progressing two work items on OTTs. Quality assessment methods developed by ITU-T SG 12 are applicable to OTTs.</p> <p>ITU-T SG 3 collaborated with ITU-T SG 2 on the ITU Inter-regional Standardization Forum on “Operational issues on numbering, emergency service and OTTs”, Dubai, United Arab Emirates, 22 October 2019.</p>
<p>207 (Dubai, 2018) ITU Journal: <i>ICT Discoveries</i></p> <p>The most recent special issue of ITU Journal, <i>ICT Discoveries</i>, “The future of video and immersive media”, July 2020, followed a special issue of the ITU Journal on “Propagation modelling for advanced future radio systems – Challenges for a congested radio spectrum” in November 2019. The new ITU Journal on Future and Evolving Technologies (ITU J-FET) published its first issue in December 2020. It shared research in signal processing, communications in high-mobility scenarios, the Internet of Things, vehicular communications, pandemic mitigation, and AI and machine learning for 5G and beyond. It also discussed the evolution of infrastructure sharing and why sharing has become a commercial reality in the 5G context. Five special issues in 2021 will address Bio-NanoThings for health care, the Internet of Everything, terahertz communications, AI and machine learning for 5G, and wireless communication systems beyond 5G. The ITU Journal is led by its Editor-in-Chief, Ian F. Akyildiz from the Georgia Institute of Technology in the United States of America, an ITU Academia organization.</p> <p>Building on the co-publishing agreement signed in 2018, ITU Journal and Tsinghua University Press launched a new joint publication titled “Intelligent and Converged Networks” (ICN) in 2019. Its first special issue was published in June 2020. Series on data-driven intelligence, sustainability, and systems and a special Issue on AI-aided 6G communications are under preparation.</p>
<p>211 (Dubai, 2018) Support for the Iraqi Du3M 2025 initiative for advancement of the telecommunication and information technology sectors</p> <p>The ICT Accessibility Policy for Iraq was developed for Iraq in 2019. Furthermore, a series of four events were organized in Iraq as part of ITU-UNESCO Digital Inclusion Week that took place in Baghdad, Iraq from 22-25 September 2019. These events were as follows:</p> <ul style="list-style-type: none"> • Digital Inclusion Forum in collaboration with UNESCO (22/9): the forum shed light on interesting projects and activities by key stakeholders from the Arab region. Around 150 participants participated. • National workshop on ICT Accessibility for Persons with Disabilities (23/9): the workshop was organized to present ITU’s draft proposal for Iraq’s national ICT Accessibility Policy. Around 30 participants participated. • National workshop on Smart Learning Policies in collaboration with UNESCO (24/9): the workshop was organized to shed light on key issues pertaining to smart learning policies. Around 30 participants participated. • National workshop on cybersecurity for financial institutions (25/9): This capacity building workshop shed light on key issues that financial institutions should take care of in their mission to protect their critical ICT infrastructure. Around 50 participants participated. <p>In addition to the above, there are a number of ongoing areas of assistance that have been stalled due to the instability in the region and globally. These include, development of a national cybersecurity strategy, raising</p>

Status of implementation
<p>awareness on child online protection, digital broadcasting, and e-waste statistics. This was all in line with the agreed implementation plan for the implementation of Resolution 211 with Iraq.</p>
<p>213 (Dubai, 2018) Measures to improve, promote and strengthen ITU fellowships</p> <p>A Draft revised policy for awarding fellowships for events and activities funded through the ITU regular budget and revised list of eligible countries were presented to the CWG-FHR (see here). Service Order No. 07/05 had been revised as well as its related list of eligible countries which is adapted from the United Nations annual report, <i>World Economic Situation and Prospects 2019</i>. The United Nations report 2020 was released on 16 January 2020, way after this document was posted on the Council Working Group website. In view of this, the changes noted in the UN report 2020 will be reflected in the list to be presented to the Council in June</p> <p>From March 2019 to March 2020, TSB provided 199 fellowships for the following meetings:</p> <ul style="list-style-type: none"> • In Geneva: ITU-T Study Groups 2, 3, 5, 9, 11, 12, 13, 15, 16, 17, 20 and TSAG. • Outside Geneva: SG12RG-AFR (Kigali), SG 13 (Zimbabwe), SG2RG-AMR and SG3RG-LAC (Nicaragua), SG17RG-AFR and SG17RG-ARB (Tunis), SG3RG-EECAT and SG11RG-EECAT and SG13RG-EECAT (Russia), SG5RG-AFR and SG20RG-AFR (Nigeria), SG11RG-AFR (Tunis), SG3RG-AO (Sri Lanka), SG2RG-ARB and SG2RG-AFR and SG3RG-ARB (UAE), C&I Training for Africa Region (Ghana), SG13RG-AFR (Nigeria). <p>TSB received 377 requests. A total of 247 fellowships were awarded. Of that amount, 199 were used for a total of CHF 434'000.</p>
<p>Decision 5 (Rev. Dubai, 2018) Revenue and expenses for the Union for the period 2020-2023</p> <p>See report to Council (Doc. C20/9) and report from the Chair of CWG-FHR</p>

Annex 2 Outcomes of the work of the Union / efficiency of enablers

ITU-R Objectives

Objective R.1: Meet, in a rational, equitable, efficient, economical and timely way, the ITU membership’s requirements for radio-frequency spectrum and satellite-orbit resources, while avoiding harmful interference

Outcomes

R.1-a: Increased number of countries having satellite networks and earth stations recorded in the Master International Frequency Register (MIFR)

R.1-b: Increased number of countries having terrestrial frequency assignments recorded in the MIFR

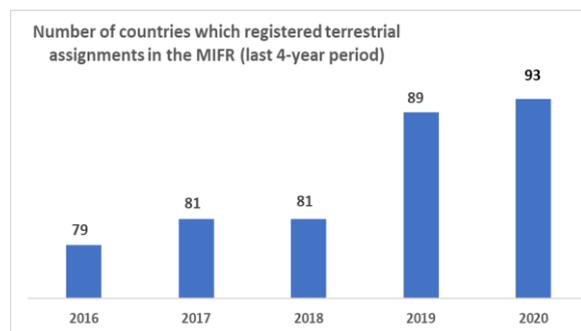
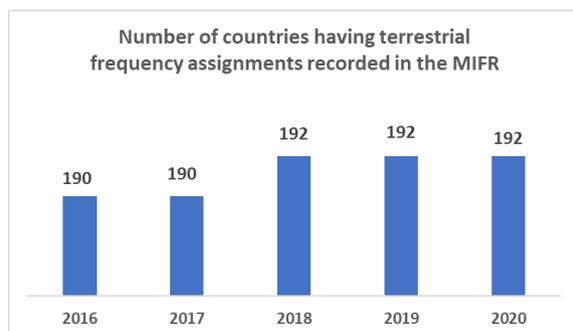
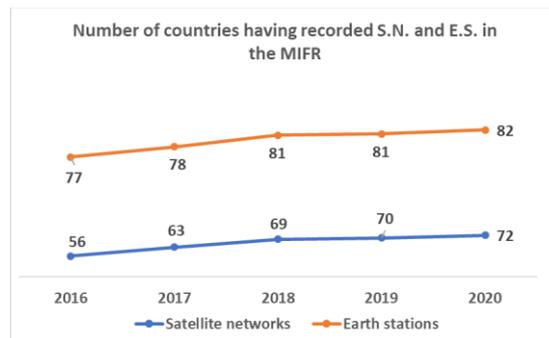
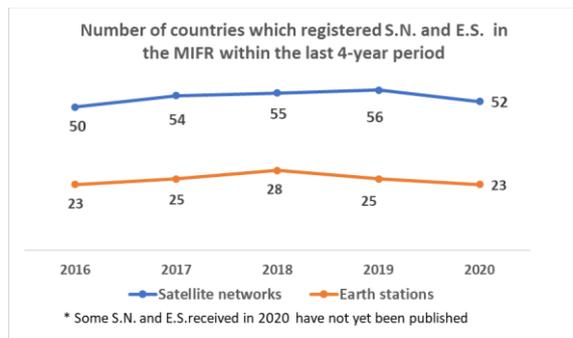
R.1-c: Increased percentage of assignments recorded in the MIFR with a favourable finding

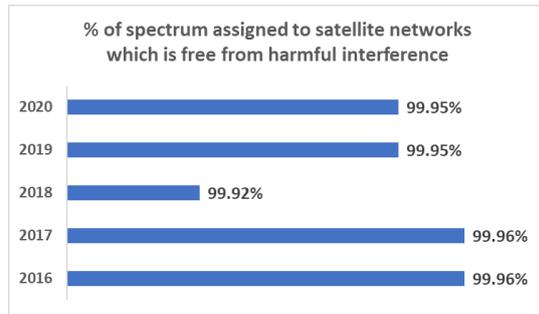
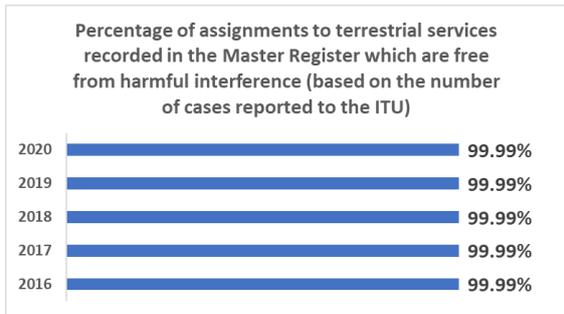
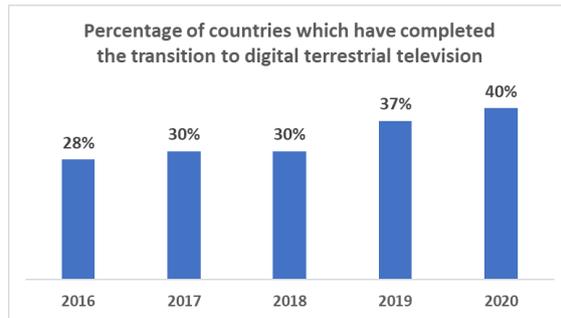
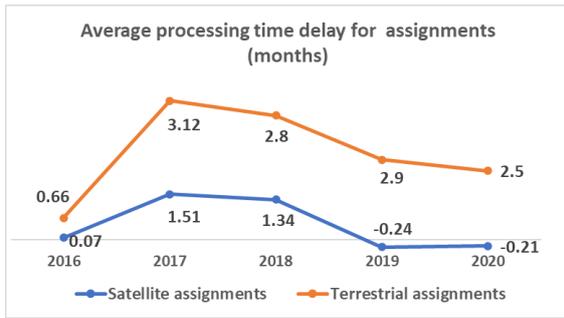
R.1-d: Increased percentage of countries which have completed the transition to digital terrestrial television broadcasting

R.1-e: Increased percentage of spectrum assigned to satellite networks which is free from harmful interference

R.1-f: Increased percentage of assignments to terrestrial services recorded in the MIFR which are free from harmful interference

Progress achieved





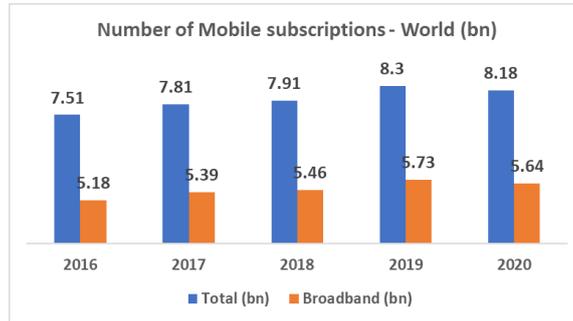
Objective R.2: (Radiocommunication standards) Provide for worldwide connectivity and interoperability, improved performance, quality, affordability and timeliness of service and overall system economy in radiocommunications, including through the development of international standards

Outcomes

- R.2-a: Increased mobile broadband access and use, including in frequency bands identified for international mobile telecommunications (IMT)
- R.2-b: Reduced mobile broadband price basket, as a percentage of gross national income (GNI) per capita
- R.2-c: Increased number of fixed links and increased amount of traffic handled by the fixed service (Tbit/s)
- R.2-d: Increased number of households with digital terrestrial television reception
- R.2-e: Increased number of satellite transponders (equivalent 36 MHz) on communication satellites in operation and corresponding capacity (Tbit/s); Number of VSAT terminals; Number of households with satellite television reception
- R.2-f: Increased number of devices with radionavigation-satellite reception
- R.2-g: Increased number of satellites having Earth exploration payloads in operation, corresponding quantity and resolution of transmitted images and data volume downloaded (Tbytes)

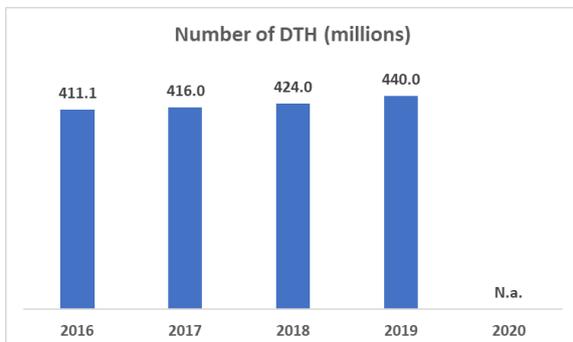
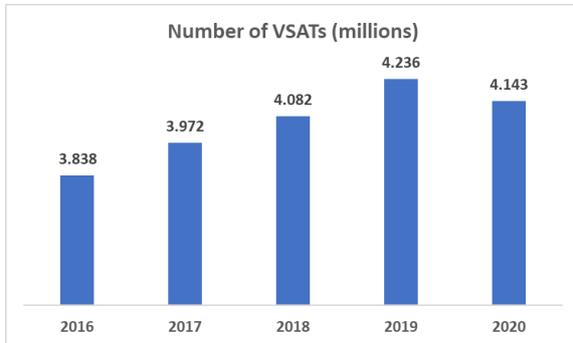
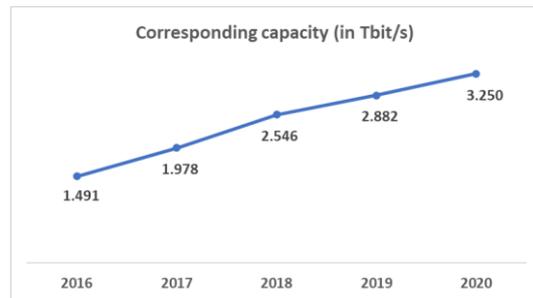
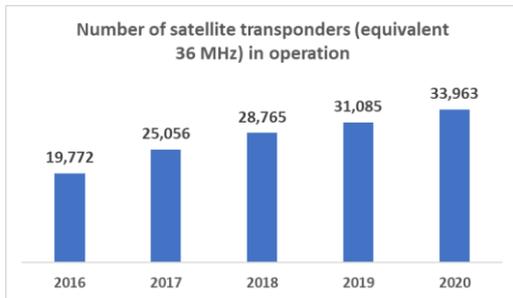
Progress achieved

R.2a



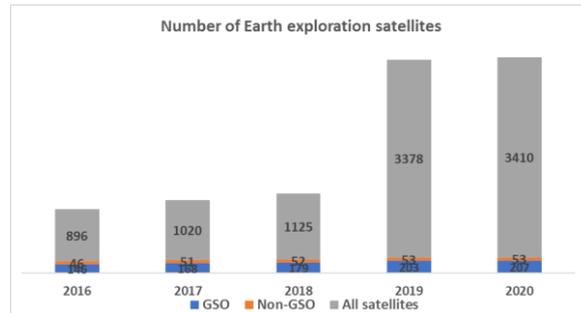
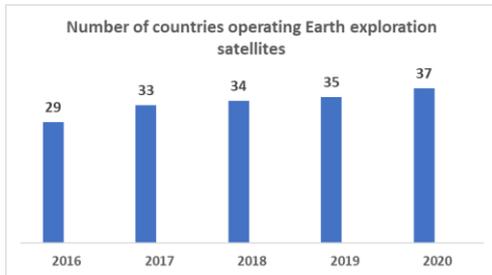
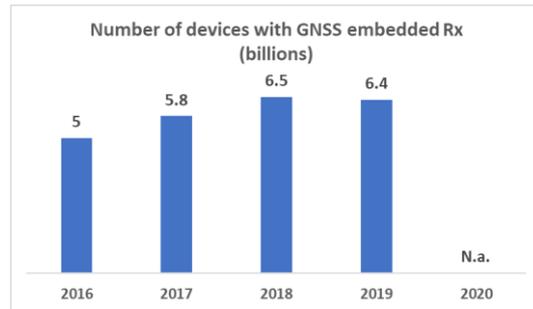
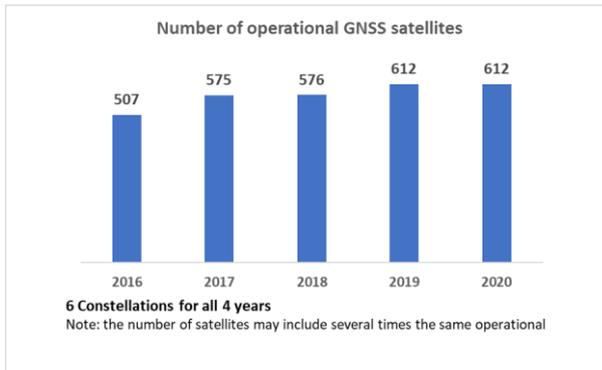
R.2b: See results for strategic targets 1.3, 2.5 and 2.6 in section 3.1

R.2e



R.2f:

Report on the implementation of the strategic plan and activities of the Union



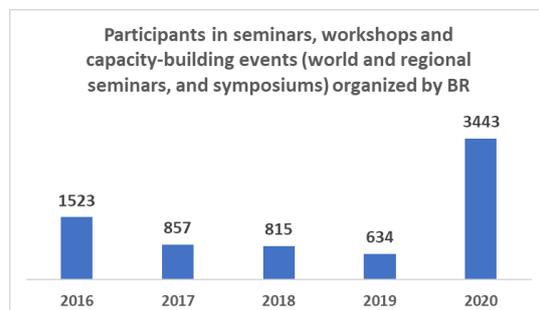
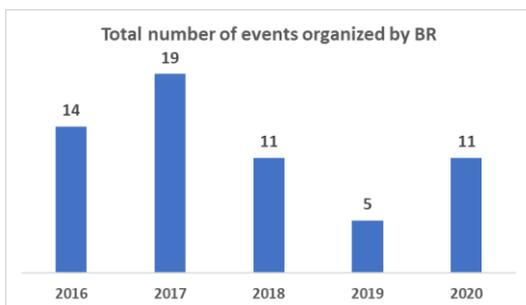
Objective R.3: (Knowledge sharing) Foster the acquisition and sharing of knowledge and know-how on radiocommunications

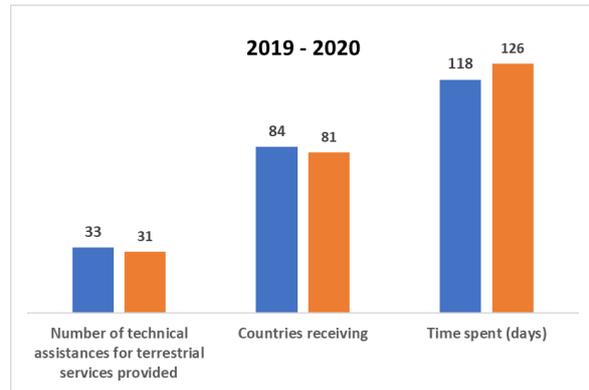
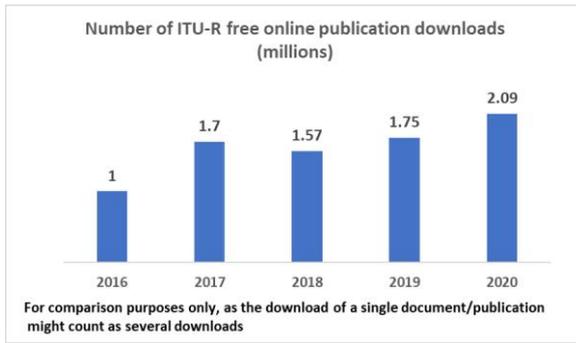
Outcomes

R.3-a: Increased knowledge and know-how on the Radio Regulations, Rules of Procedure, regional agreements, recommendations and best practices on spectrum use

R.3-b: Increased participation in ITU-R activities (including through remote participation), in particular by developing countries

Progress achieved





ITU-T Objectives

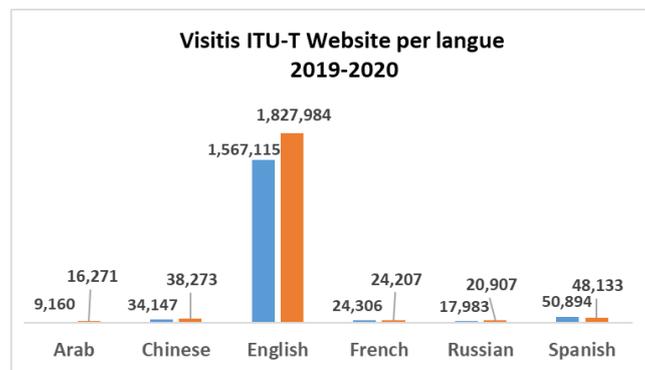
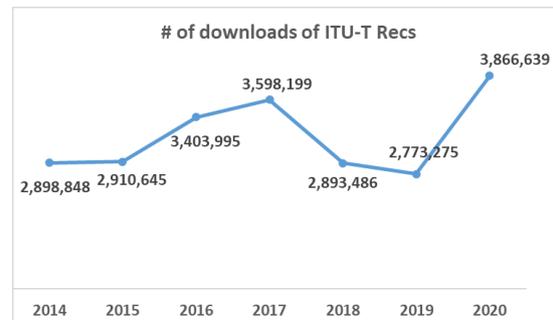
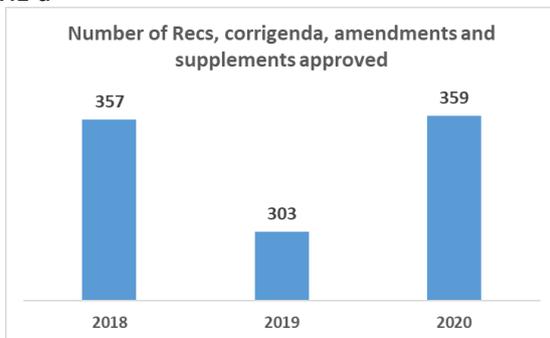
Objective T.1: (Development of standards) Develop non-discriminatory international telecommunication/ICT standards (ITU-T Recommendations), in a timely manner, and foster interoperability and improved performance of equipment, networks, services and applications

Outcomes

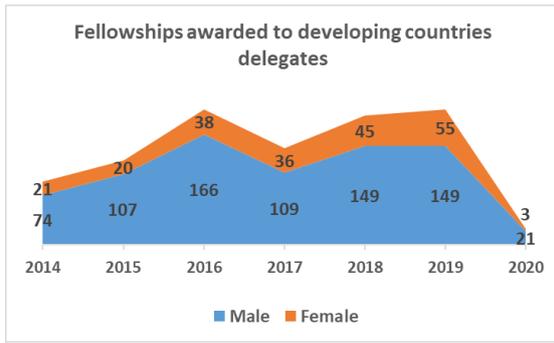
- T.1-a: Increased utilization of ITU-T Recommendations
- T.1-b: Improved conformance to ITU-T Recommendations
- T.1-c: Enhanced standards in new technologies and services

Progress achieved

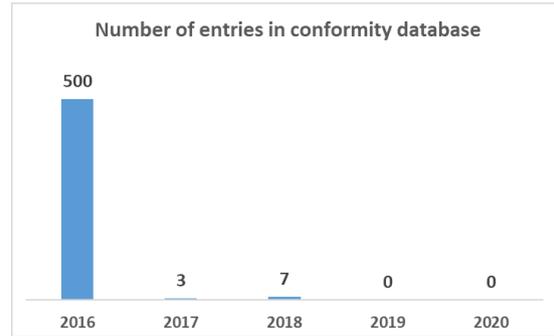
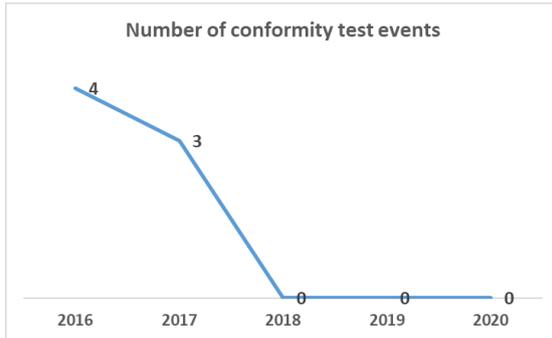
T.1-a



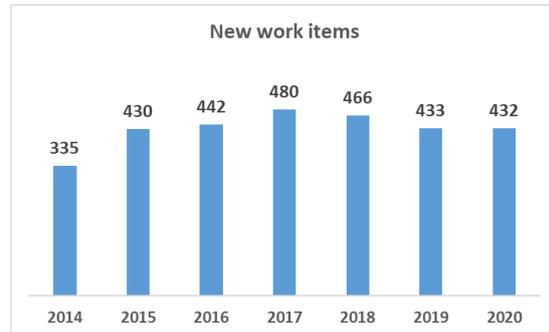
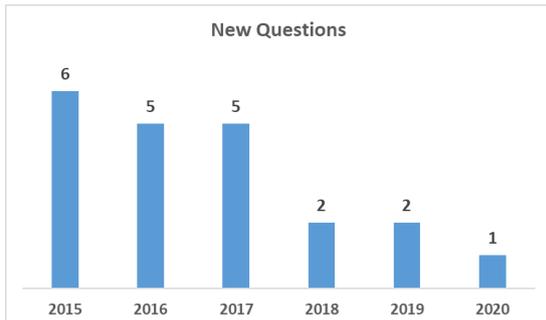
Report on the implementation of the strategic plan and activities of the Union



T.1-b



T.1-c



Objective T.2 (Bridging the standards gap): Promote the active participation of the membership, in particular developing countries, in the definition and adoption of non-discriminatory international telecommunication/ICT standards (ITU-T Recommendations) with a view to bridging the standardization gap

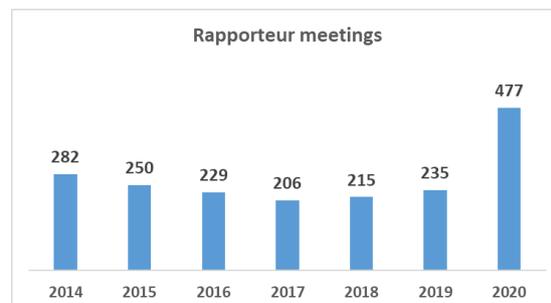
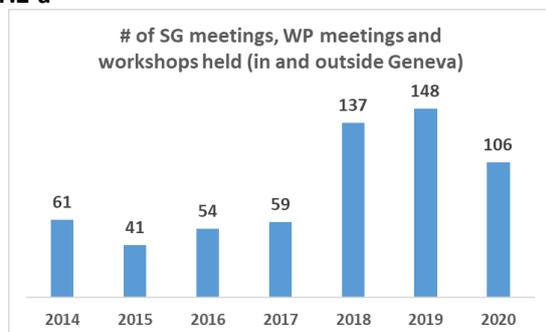
Outcomes

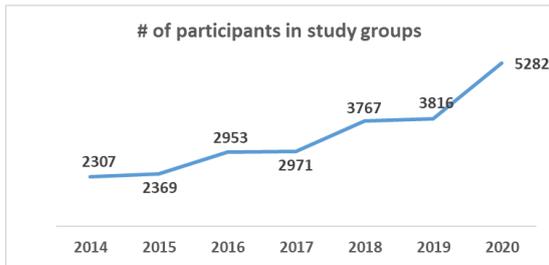
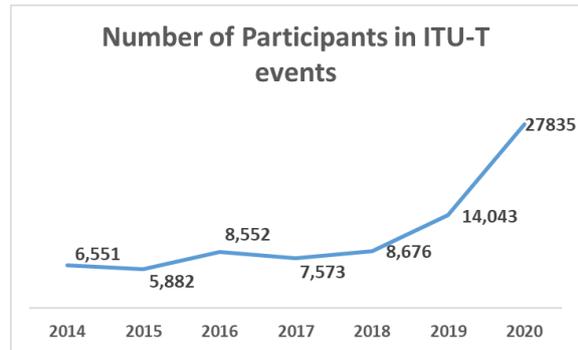
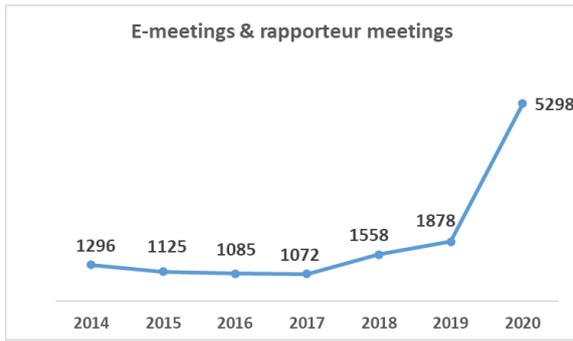
T.2-a: Increased participation in the ITU-T standardization process, including attendance of meetings, submission of contributions, taking leadership positions and hosting of meetings/workshops, especially from developing countries

T.2-b: Increase of the ITU-T membership, including Sector Members, Associates and Academia

Progress achieved

T.2-a





T.2-b

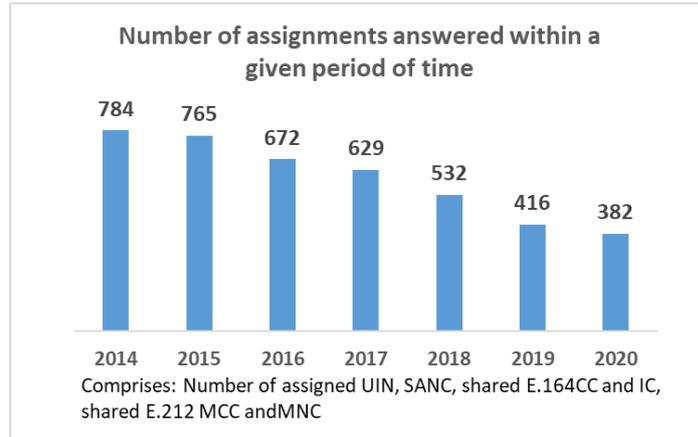


Objective T.3: (Telecommunication resources) Ensure effective allocation and management of international telecommunication numbering, naming, addressing and identification resources in accordance with ITU-T Recommendations and procedures

Outcomes

T.3-a: Timely and accurate allocation of international telecommunication numbering, naming, addressing and identification resources, as specified in the relevant recommendations

Progress achieved



Objective T.4: (Knowledge sharing) Foster the acquisition, awareness, sharing of knowledge and know how on the standardization activities of ITU-T

Outcomes

- T.4-a: Increased knowledge on ITU-T standards and on best practices in their implementation of ITU-T standards
- T.4-b: Increased participation in ITU-T’s standardization activities and increased awareness of the relevance of ITU-T standards
- T.4-c: Increased Sector visibility

Progress achieved

Relevant indicators are already covered under T.1 and T.2 above

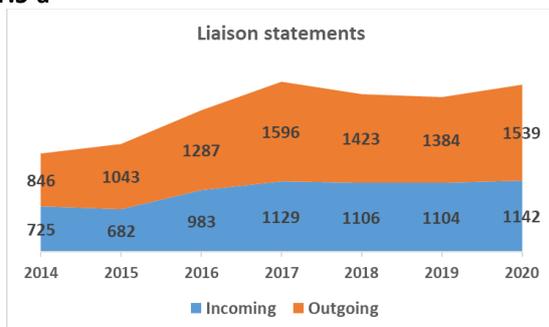
Objective T.5: (Cooperation with standardization bodies) Extend and facilitate cooperation with international, regional and national standardization bodies

Outcomes

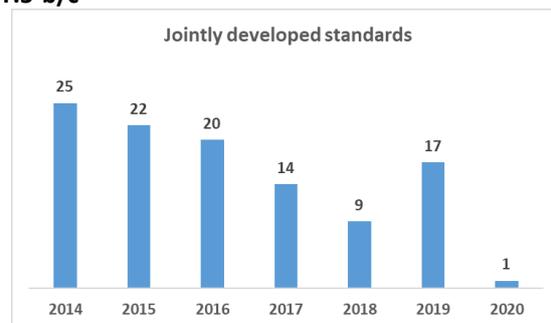
- T.5-a: Increased communications with other standards organizations
- T.5-b: Decreased number of conflicting standards
- T.5-c: Increased number of memoranda of understanding/collaboration agreements with other organizations
- T.5-d: Increased number of ITU-T A.4, A.5 and A.6 qualified organizations
- T.5-e: Increased number of workshops/events organized jointly with other organizations

Progress achieved

T.5-a



T.5-b/c



T1.5-d



ITU-D Objectives

Objective D.1: (Coordination) Foster international cooperation and agreement on telecommunication/ICT development issues

Outcomes

D.1-a: Enhanced review and increased level of agreement on the draft ITU-D contribution to the draft ITU strategic plan, the World Telecommunication Development Conference (WTDC) Declaration, and the WTDC Action Plan

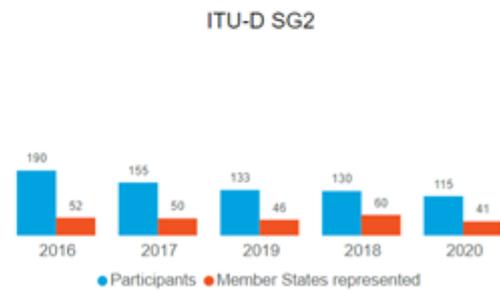
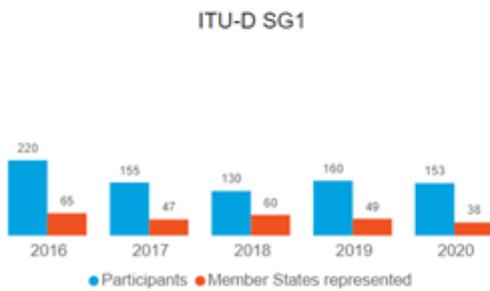
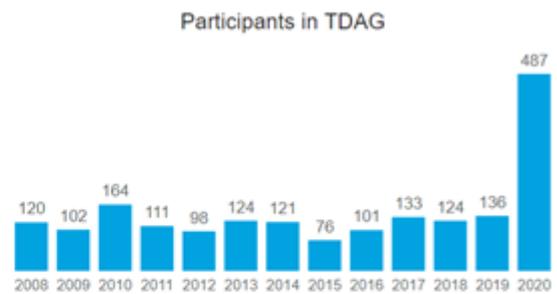
D.1-b: Assessment of the implementation of the Action Plan and of the WSIS Plan of Action

D.1-c: Enhanced knowledge-sharing, dialogue and partnership among the ITU membership on telecommunication/ICT issues

D.1-d: Enhanced process and implementation of telecommunication/ICT development projects and regional initiatives

D.1.e: Facilitation of agreement to cooperate on telecommunication/ICT development programmes between Member States, and between Member States and other stakeholders in the ICT ecosystem, based on requests from ITU Member States involved

Progress achieved



Objective D.2: (Modern and secure telecommunication/ICT Infrastructure) Foster the development of infrastructure and services, including building confidence and security in the use of telecommunications/ICTs

Outcomes

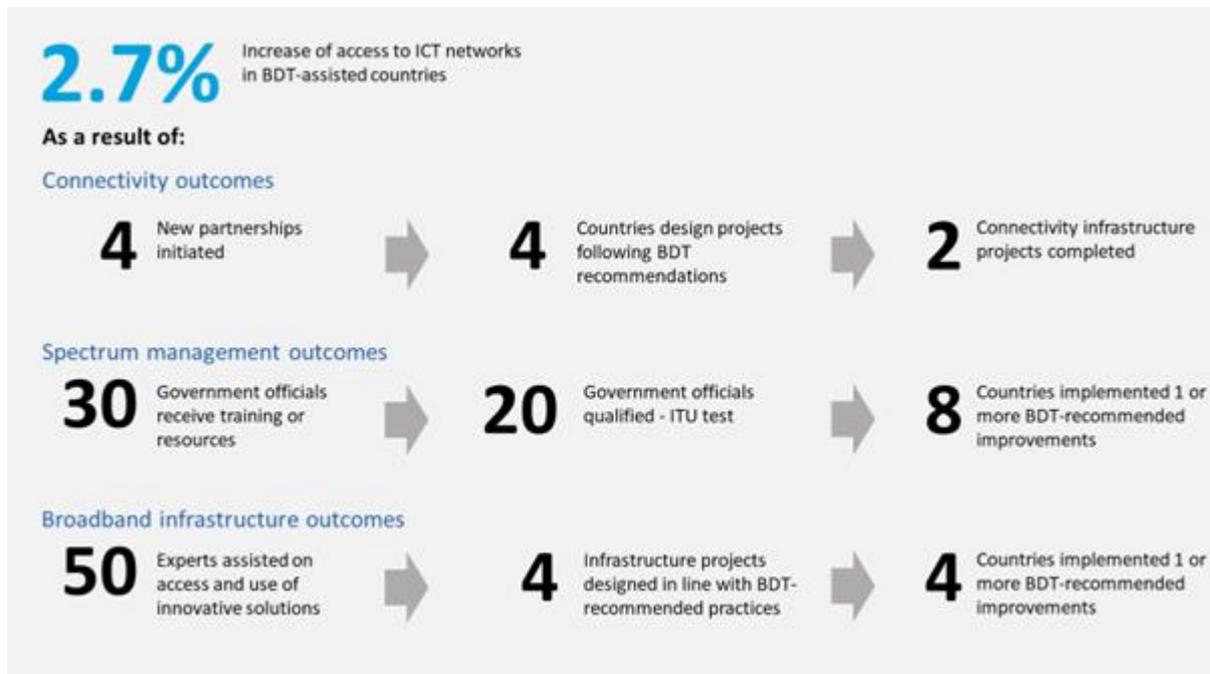
D.2-a: Enhanced capacity of the ITU membership to make available resilient telecommunication/ICT infrastructure and services.

D.2-b: Strengthened capacity of Member States to effectively share information, find solutions, and respond to threats to cybersecurity, and to develop and implement national strategies and capabilities, including capacity building, encourage national, regional and international cooperation towards enhanced engagement among Member States and relevant players.

D.2-c: Strengthened capacity of Member States to use telecommunications/ICTs for disaster risk reduction and management, to ensure availability of emergency telecommunications, and support cooperation in this area.

Progress achieved

Network and digital infrastructure thematic priority



Cybersecurity thematic priority



Note: Cybersecurity results above will be updated in the second quarter of 2021.

Emergency telecommunications thematic priority



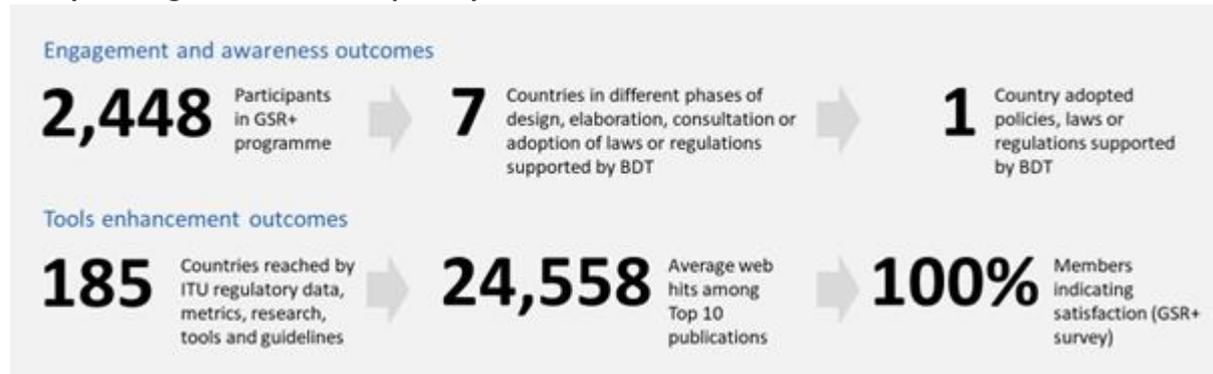
Objective D.3: (Enabling Environment) Foster an enabling policy and regulatory environment conducive to sustainable telecommunication/ICT development

Outcomes

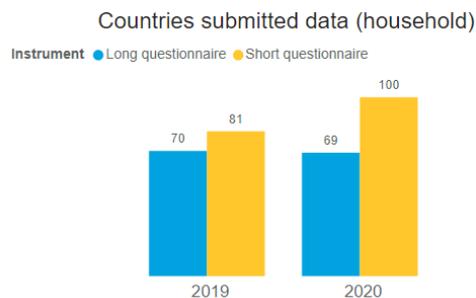
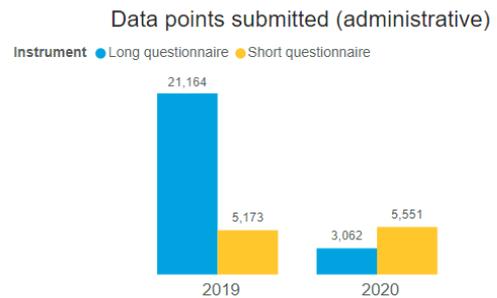
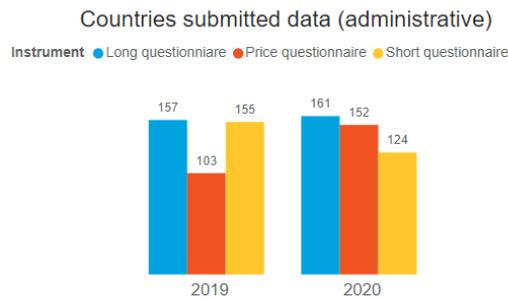
- D.3-a: Strengthened capacity of Member States to enhance their policy, legal and regulatory frameworks conducive to development of telecommunications/ICTs.
- D.3-b: Strengthened capacity of Member States to produce high-quality, internationally comparable telecommunication/ICT statistics which reflect developments and trends in telecommunications/ICTs, based on agreed standards and methodologies.
- D.3-c: Improved human and institutional capacity of the ITU membership to tap into the full potential of telecommunications/ICTs.
- D.3-d: Strengthened capacity of the ITU membership to integrate telecommunication/ICT innovation and digitalization in national development agendas and to develop strategies to promote innovation initiatives, including through public, private, and public-private partnerships.

Progress achieved

Policy and regulation thematic priority



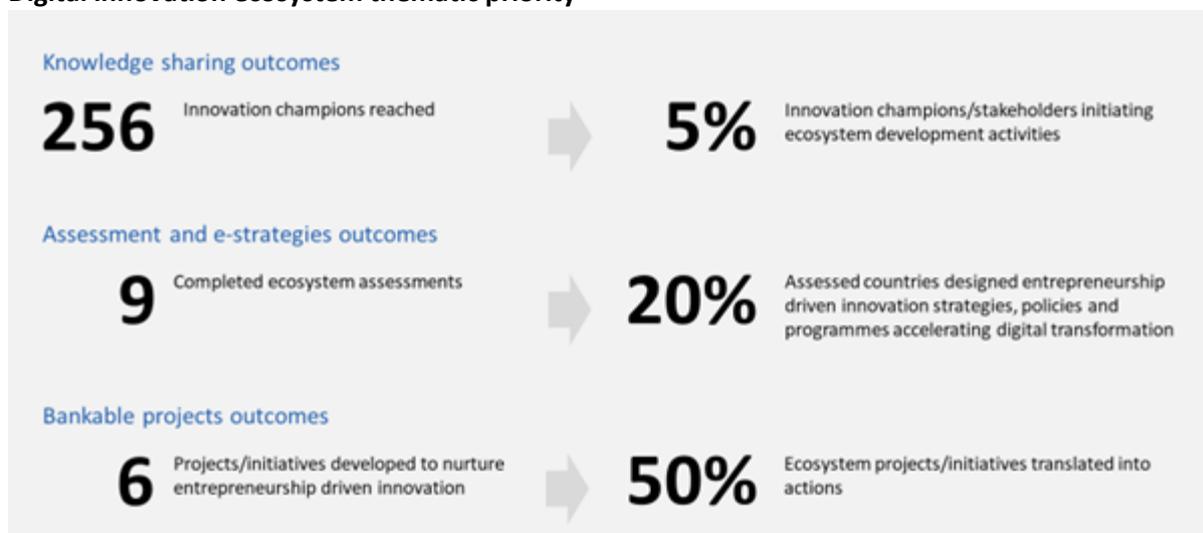
Statistics thematic priority



Capacity development thematic priority



Digital innovation ecosystem thematic priority



Objective D.4: (Inclusive Information Society) Foster the development and use of telecommunications/ICTs and applications to empower people and societies for sustainable development

Outcomes

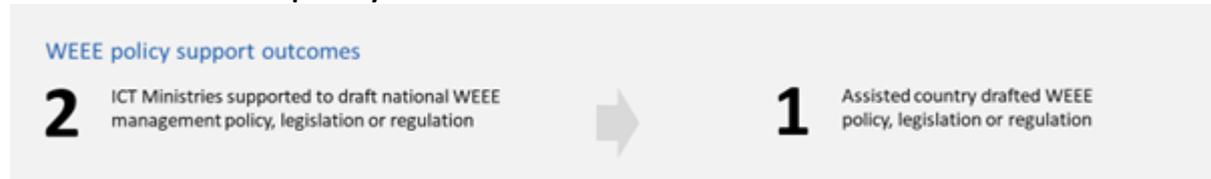
- D-4-a: Improved access to and use of telecommunication/ICT in (LDCs, small island developing states (SIDS) and landlocked developing countries (LLDCs), and countries with economies in transition.
- D.4-b: Improved capacity of the ITU membership to accelerate economic and social development by leveraging and using new technologies and telecommunication/ICT services and applications.
- D.4-c: Strengthened capacity of the ITU membership to develop strategies, policies and practices for digital inclusion, in particular for the empowerment of women and girls, persons with disabilities and other persons with specific needs.
- D.4-d: Enhanced capacity of the ITU membership to develop telecommunication/ICT strategies and solutions on climate-change adaptation and mitigation and the use of green/renewable energy.

Progress achieved

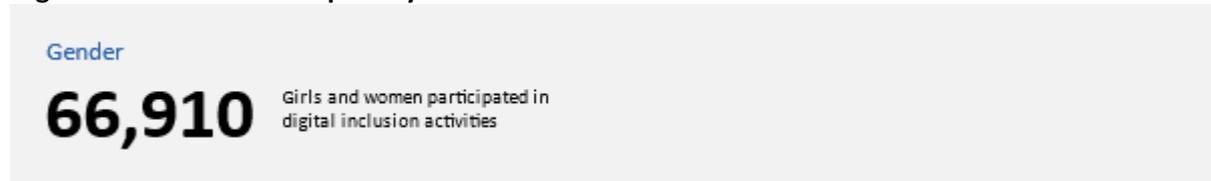
Digital services and applications thematic priority



Environment thematic priority



Digital inclusion thematic priority



Inter-sectoral objectives

Objective I.1: (Collaboration) Foster closer collaboration among all stakeholders in the telecommunication/ICT ecosystem

Outcomes

I.1-a: Increased collaboration among relevant stakeholders

I.1-b: Increased synergies from partnerships on telecommunication/ICTs

I.1-c: Increased recognition of telecommunications/ICTs as a cross-cutting enabler for implementing the WSIS Action Lines and the 2030 Agenda for Sustainable Development

I.1-d: Enhanced support to ITU membership in developing and delivering ICT products and services

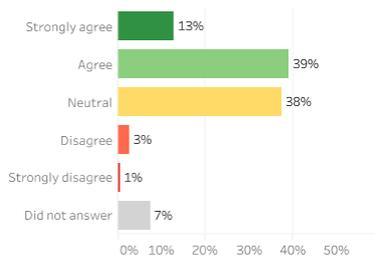
Progress achieved

Three new Questions have been added at the ITU Membership Survey 2020 to assess progress towards targets I.1-a, I.1-b and I.1-c.

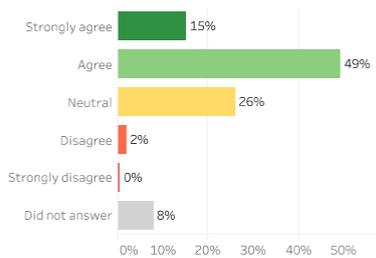
2019:

19 - What is your perception of the following statements?

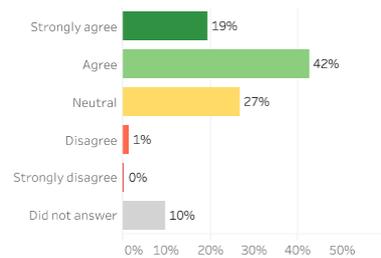
Your organization is collaborating with other ICT stakeholders more than in previous years



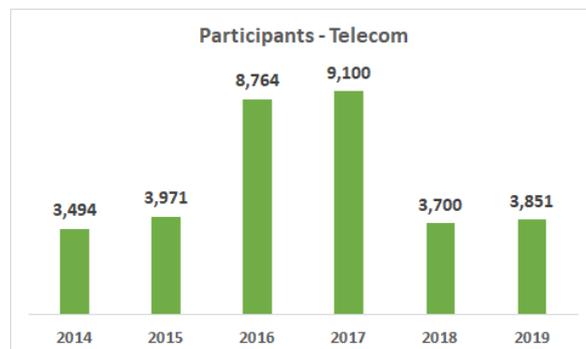
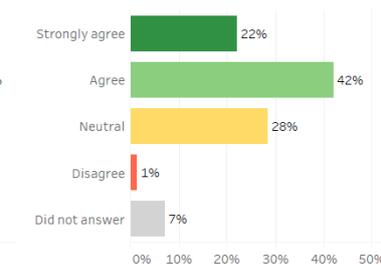
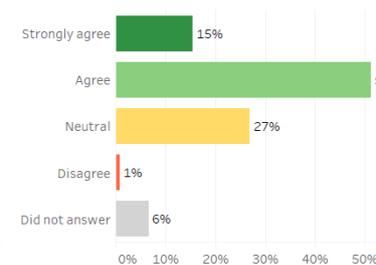
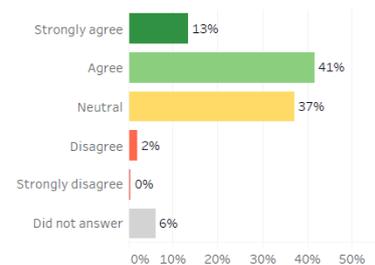
Your organization is benefiting from increased synergies by working with others

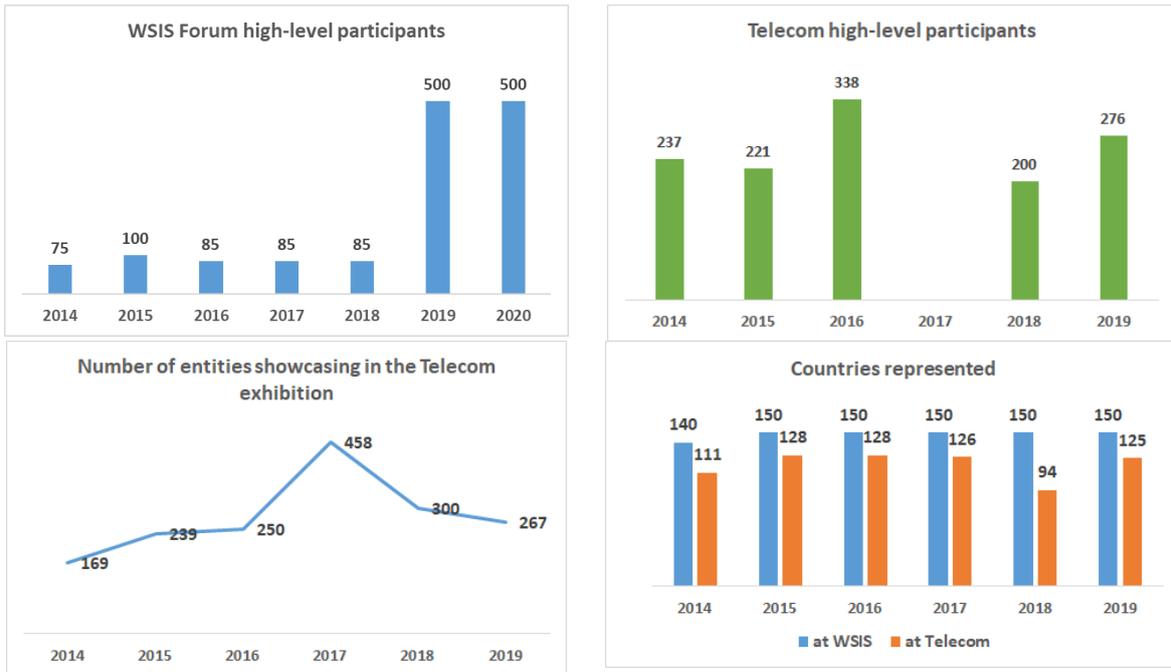


ICTs/Telecommunications contribute significantly to the achievement of the SDGs



2020:



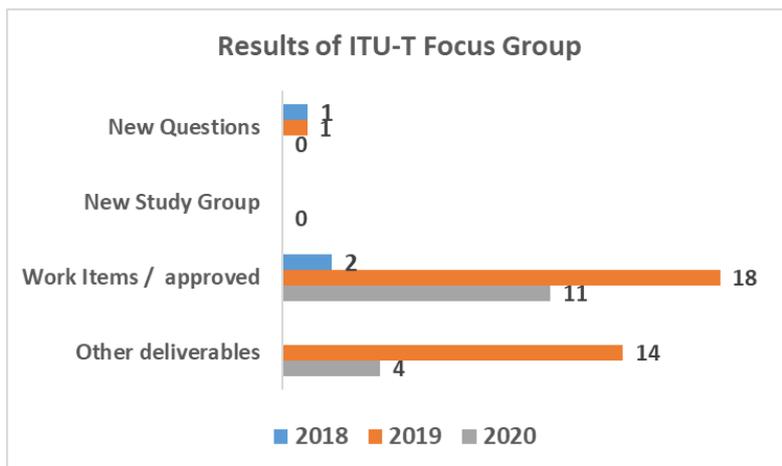


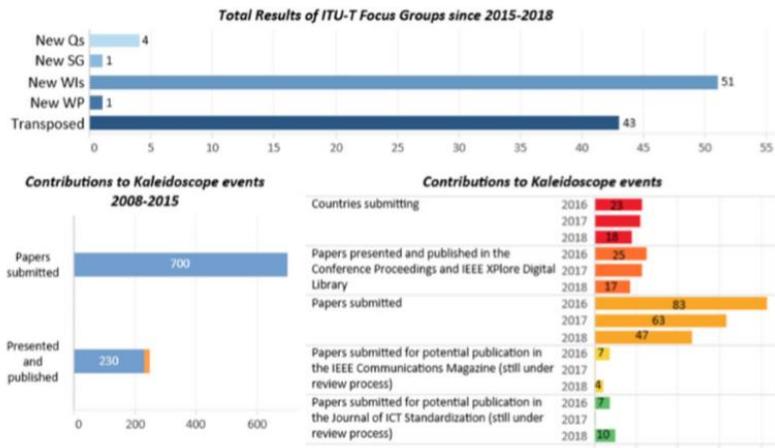
Objective I.2: (Emerging telecommunication/ICT trends) Enhance identification, awareness and analysis of digital transformation and emerging trends in the telecommunication/ICT environment

Outcomes

I.2-a: Identification, awareness and analysis of digital transformation and emerging trends in telecommunications/ICTs

Progress achieved



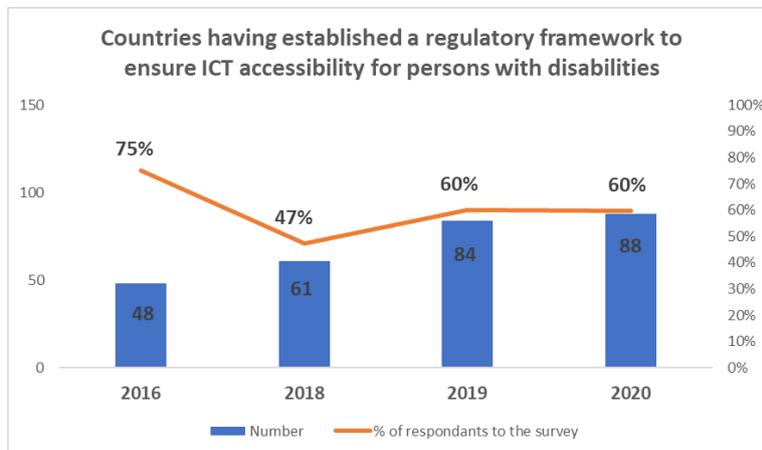
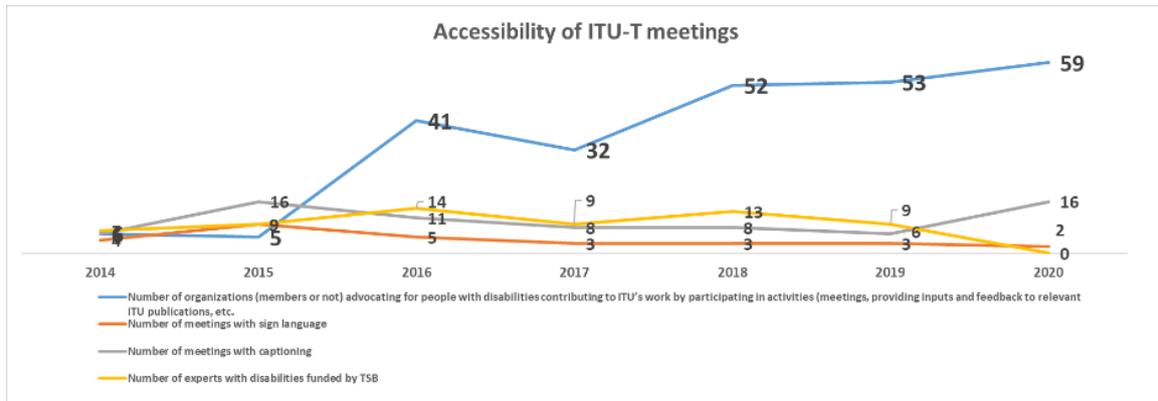
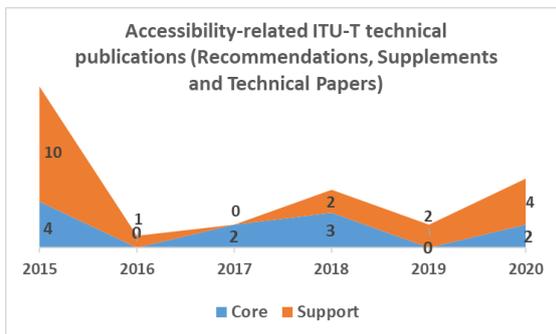


Objective I.3: (Telecommunication/ICT accessibility) Enhance telecommunications/ICTs accessibility for persons with disabilities and specific needs

Outcomes

- I.3-a: Increased availability and compliance of telecommunication/ICT equipment, services and applications with universal design principles
- I.3-b: Increased engagement of organizations of persons with disabilities and specific needs in the work of the Union
- I.3-c: Increased awareness, including multilateral and intergovernmental recognition, of the need to enhance access to telecommunications/ICTs for persons with disabilities and specific needs

Progress achieved

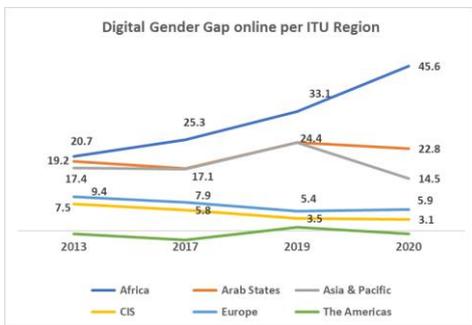
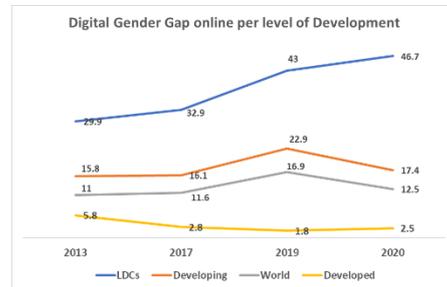
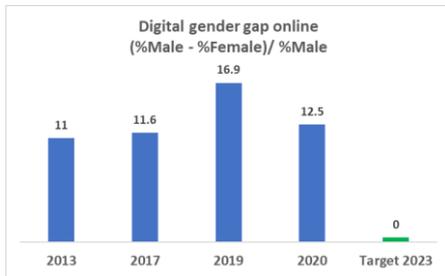


Objective I.4: (Gender equality and inclusion) Enhance the use of telecommunication/ICTs for gender equality and inclusion, and empowerment of women and girls

Outcomes

- I.4-a: Enhanced access to and use of telecommunication/ICTs to promote the empowerment of women
- I.4-b: Enhanced participation of women at all level of decision-making in the work of the Union and the telecommunication/ICT sector
- I.4-c: Increased engagement with other UN organizations and stakeholders involved in using telecommunication/ICTs to promote the empowerment of women
- I.4-d: Full implementation of UN system-wide strategy on gender parity within ITU’s remit

Progress achieved

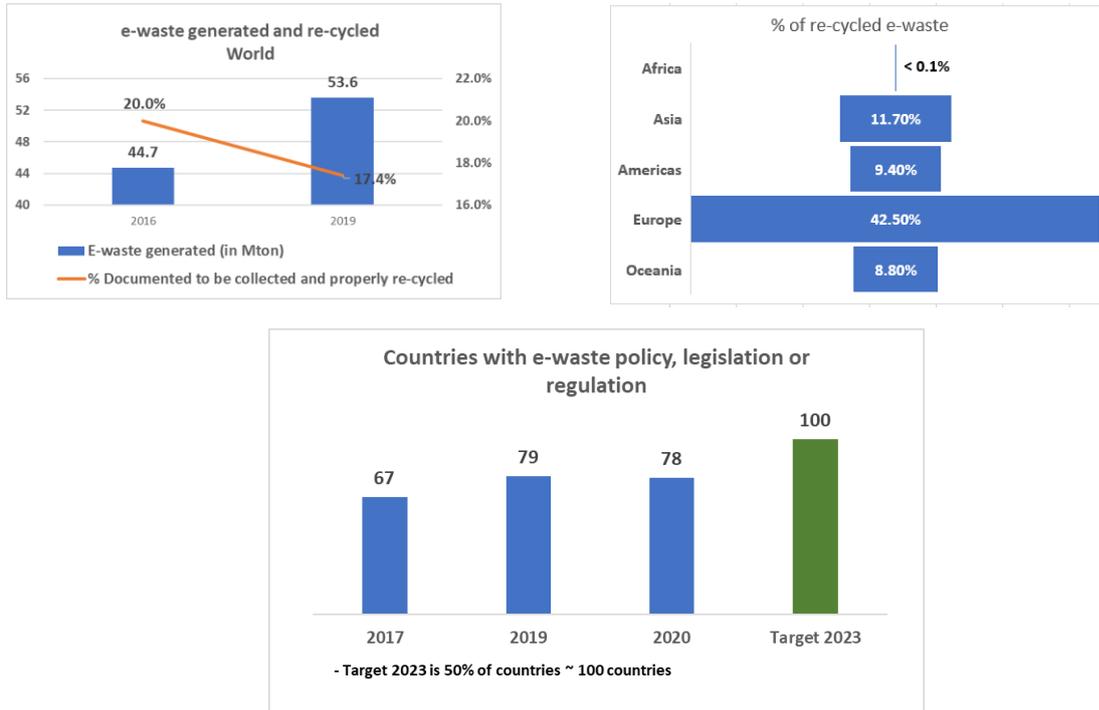


Objective I.5: (Environmental sustainability) Leverage telecommunication/ICTs to reduce environmental footprint

Outcomes

- I.5-a: Improved efficiency of environmental policies and standards
- I.5-b: Reduced energy consumption from telecommunication/ICT applications
- I.5-c: Increasing number of recycled e-waste
- I.5-d: Improved solutions for Smart Sustainable Cities

Progress achieved



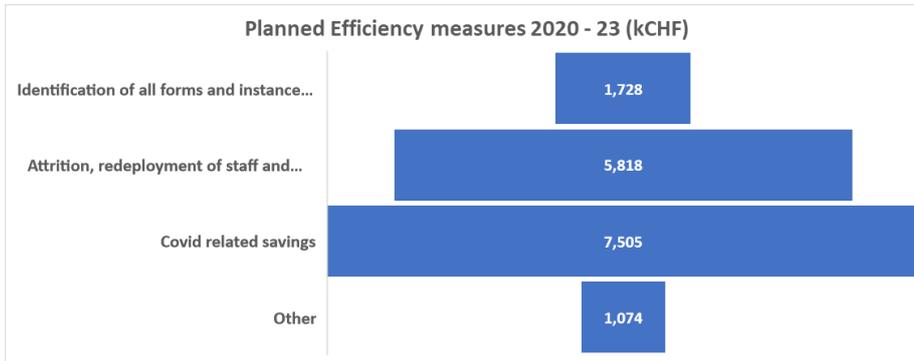
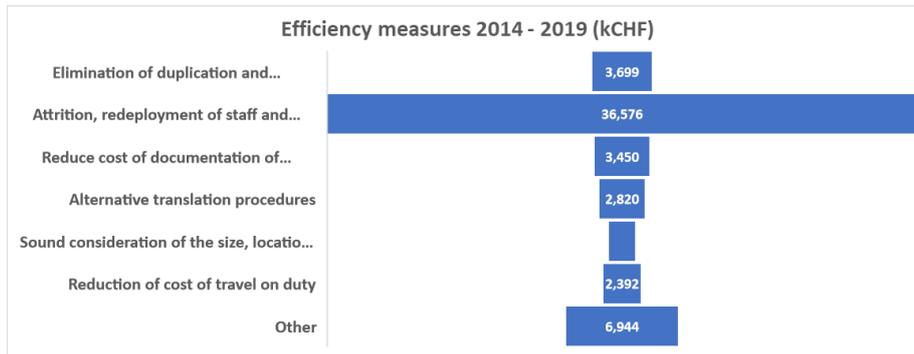
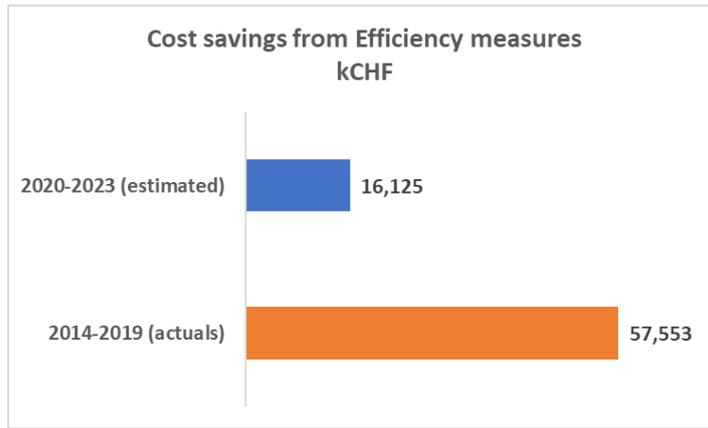
Objective I.6: (Reducing overlap and duplication) Reduce the areas of overlap and duplication and foster closer and more transparent coordination among the General Secretariat and ITU Sectors, taking into account the Union’s budgetary provisions and the expertise and mandate of each Sector

Outcomes

- I.6-a: Closer and more transparent collaboration among the ITU Sectors, the General Secretariat and the 3 Bureaux
- I.6-b: Reducing the areas of overlap and duplication among the ITU Sectors and the work of the General Secretariat and the 3 Bureaux
- I.6-c: Realize savings through avoidance of areas of overlap

Progress achieved

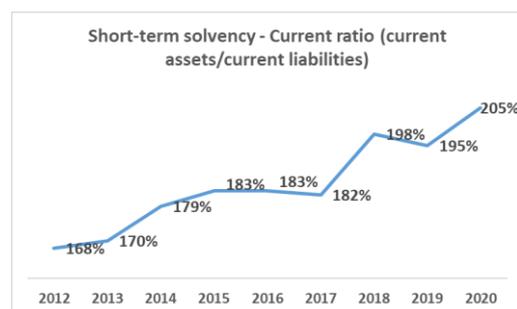
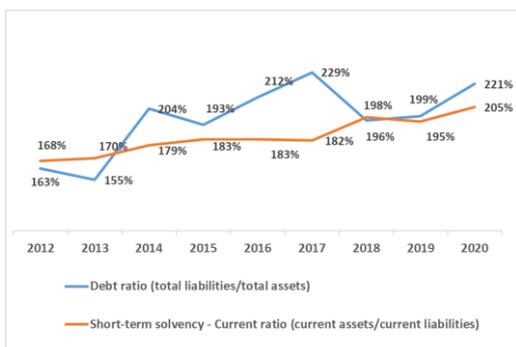
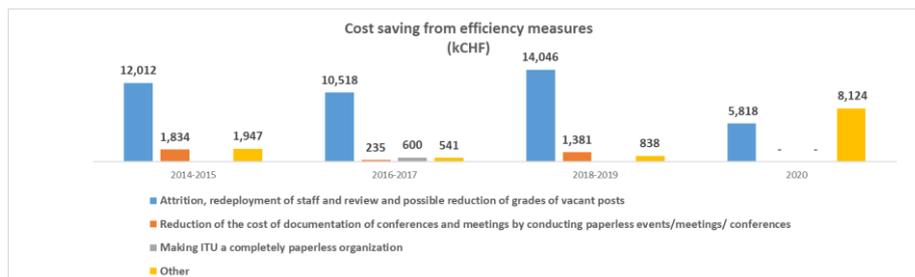
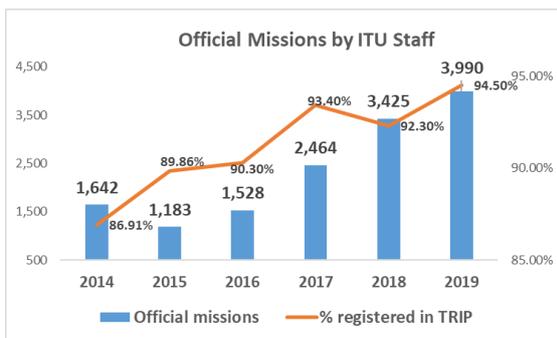
[Note: This is a new objective. Indicators are under development. Proxy data can be taken from section 3.3.1 below (savings from efficiency measures).



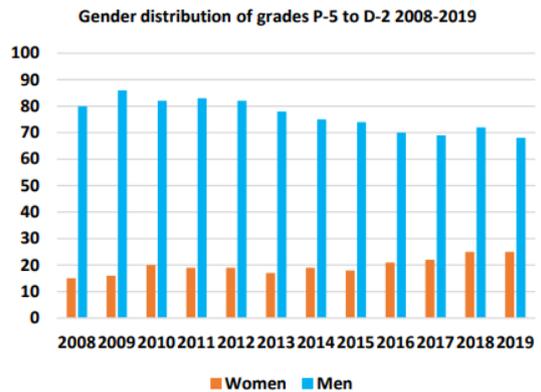
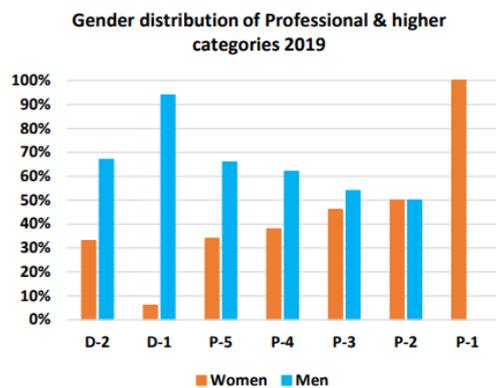
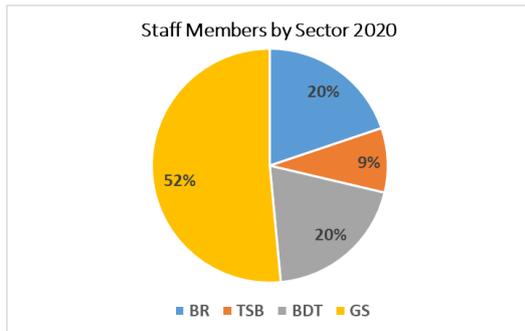
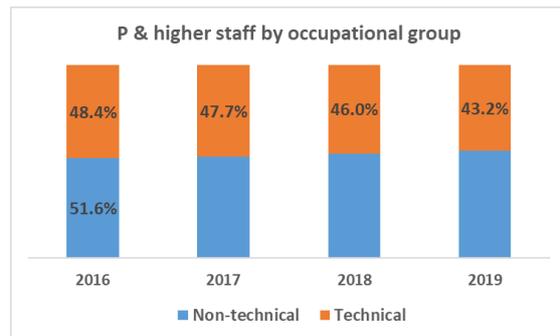
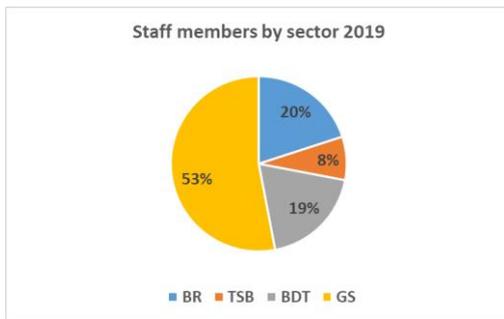
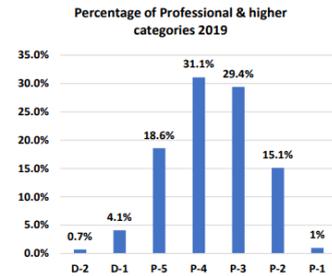
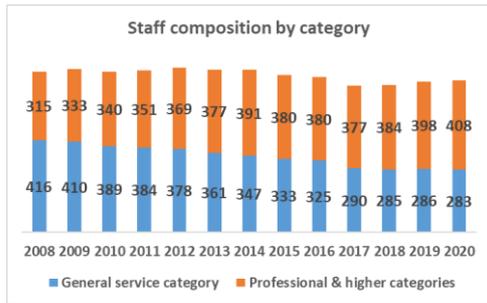
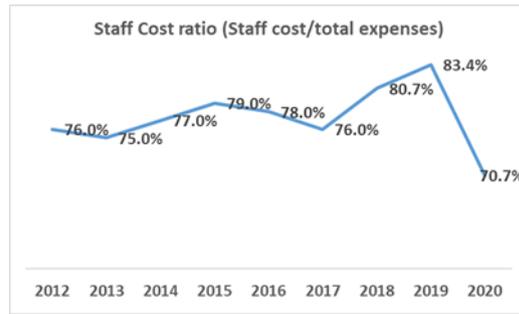
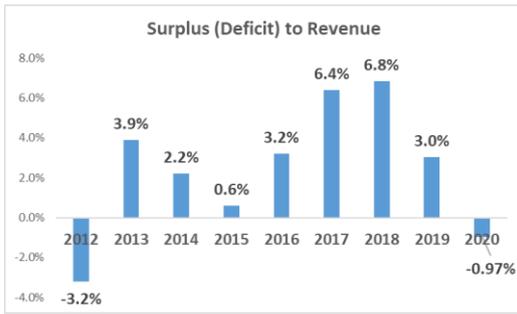
Enablers

E.1 Ensure efficient and effective use of human, financial and capital resources, as well as a work-conducive, safe and secure working environment

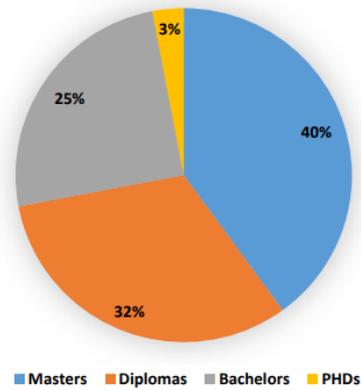
	2014	2015	2016	2017	2018	2019	2020
IPSAS Compliance (or Annual Audit of accounts is unqualified)	✓	✓	✓	✓	✓	✗	✗
Procurement and Travel Services guidelines (ITU guidelines and UN good practices in place)	✓	✓	✓	✓	✓	✓	✓
Budget implementation (not overspent)	✓	✓	✓	✓	✓	✓	✓
Work related injuries or incidents < 2%	✓	✓	✓	✓	✓	✓	✓



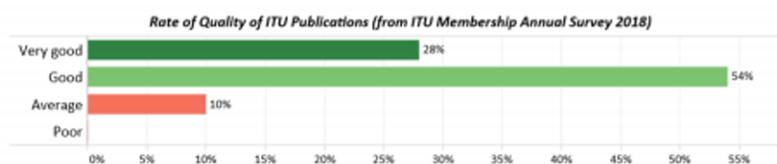
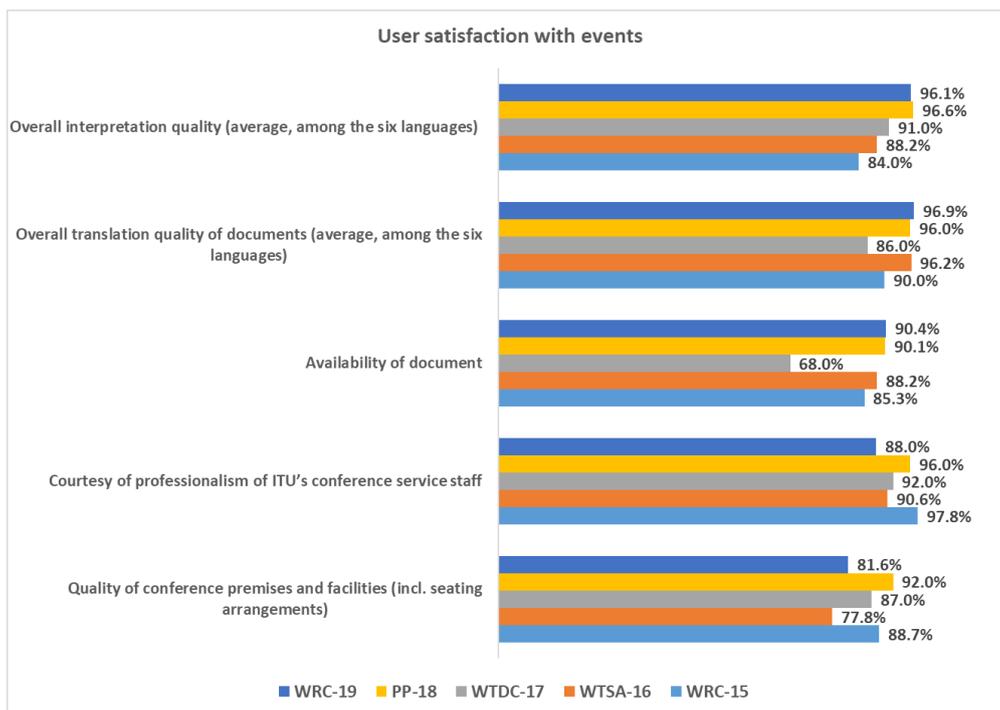
Report on the implementation of the strategic plan and activities of the Union



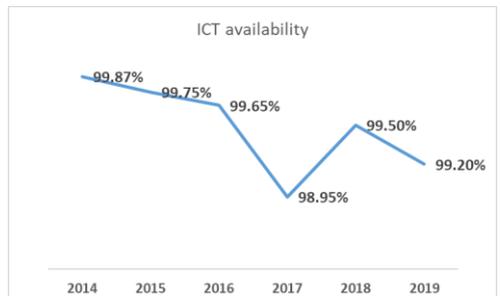
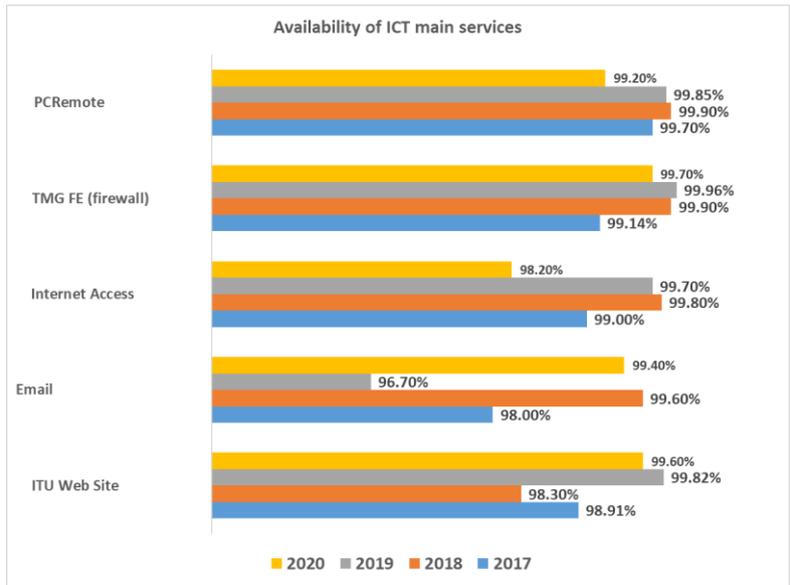
**EDUCATIONAL SUPPORT BY DEGREE
2010 - 2019**



E.2 Ensure efficient and accessible conferences, meetings, documentation, publications and information infrastructures



Report on the implementation of the strategic plan and activities of the Union



E.3 Ensure efficient membership-related, protocol, communication and resource mobilization services

Membership Annual Report 2019
 Membership data as of 31st December 2019

	ITU-R	ITU-T	ITU-D	Academia*	Grand Total
Sector Members	272	268	307		
Associates	22	184	17		
Academia*				163	
Contribution Amount	CHF 6,716,425	CHF 8,449,525	CHF 1,558,200	CHF 423,338	CHF 17,147,488

* Note: Academia are automatically members of all 3 sectors

Key Membership Performance Indicators (vs. 2018)

Member Entities	↑	Members of 3 Sectors	↑
Overall Memberships	↑	Overall Estimated Contributions	↑
Sector Members	↑	ITU-R Members	↑
Associates	↑	ITU-T Members	↑
Academia	↑	ITU-D Members	↑

Report on the implementation of the strategic plan and activities of the Union



924 Member Entities
1,253 Memberships

Membership Annual Report 2020

111 Members of all 3 Sectors
23 Associates with SME fees

Membership data as of 31st December 2020

	ITU-R	ITU-T	ITU-D	Academia*	Grand Total
Sector Members	276	273	298		
Associates	23	200	21		
Academia*				162	
Contribution Amount	CHF 6,713,775	CHF 8,409,113	CHF 1,480,688	CHF 429,300	CHF 17,032,875

* Note: Academia are automatically members of all 3 sectors

Key Membership Performance Indicators (vs. 2019)

Member Entities	↑	Members of 3 Sectors	→
Overall Memberships	↑	Overall Estimated Contributions	→
Sector Members	↑	ITU-R Members	↑
Associates	↑	ITU-T Members	↑
Academia	↑	ITU-D Members	→

Net Membership by Sector/Type

Sector	Membership type	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
ITU-R	Sector member	248	255	255	258	259	270	267	265	263	272	276
	Associate	17	18	16	16	15	18	19	21	20	21	23
ITU-T	Sector member	259	261	265	272	270	264	252	257	256	265	273
	Associate	110	118	127	129	131	131	128	136	156	182	200
ITU-D	Sector member	307	318	327	342	334	336	322	313	305	305	298
	Associate	5	6	7	9	10	11	11	12	14	17	21
Academia	Academia		23	40	58	72	94	105	121	148	158	162

Explanation

- Blank cells represent a year with no movement at all
 - Beige cells represent a net movement of zero (ie. New = (Denounced + Excluded)
 - Green cells represent positive net movement within the year (ie. New Members > Denounced + Excluded)
 - Red cells represent negative net movement within the year (ie. New Members < Denounced + Excluded)
 - Darker colours represent greater numbers



Membership Yearly Performance 2019

	New	Denounced	Excluded	Net Change 2019
Number of Memberships	112	37	13	62
Contribution Amount	CHF 1,469,425	CHF 622,750	CHF 119,250	CHF 727,425

Yearly Membership growth

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Memberships	1,014	1,006	985	951	1,004	1,042	1,089	1,097	1,129	1,108	1,130	1,171	1,233
% change	-3.61%	-0.79%	-2.09%	-3.45%	5.57%	3.78%	4.51%	0.73%	2.92%	-1.86%	1.99%	3.63%	5.29%
Contribution amount	18,512,900	18,033,250	17,088,525	16,306,775	15,964,263	16,301,475	16,571,113	16,575,088	16,779,138	16,101,400	16,257,750	16,420,063	17,147,488
% change in contribution	-5.98%	-2.59%	-5.24%	-4.57%	-2.10%	2.11%	1.65%	0.02%	1.23%	-4.04%	0.97%	1.00%	4.43%

Report on the implementation of the strategic plan and activities of the Union



Membership Yearly Performance
2020

Number of Records	Membership Changes 2020			Net Change 2020
	New	Denounced	Excluded	
	98	48	17	33
Contribution Amount	CHF 815,538	CHF 487,600	CHF 186,825	CHF 141,113

Yearly Membership growth

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Memberships	1,001	980	946	999	1,037	1,084	1,091	1,124	1,104	1,125	1,162	1,220	1,253
% change	-0.79%	-2.10%	-3.47%	5.60%	3.80%	4.53%	0.65%	3.02%	-1.78%	1.90%	3.29%	4.99%	2.70%
Contribution amount	17,853,050	16,908,325	16,126,575	15,784,063	16,119,289	16,386,938	16,386,938	16,594,963	15,957,638	16,112,000	16,223,300	16,891,763	17,032,875
% change in contribution	-2.62%	-5.29%	-4.62%	-2.12%	2.12%	1.66%	0.00%	1.27%	-3.84%	0.97%	0.69%	4.12%	0.84%

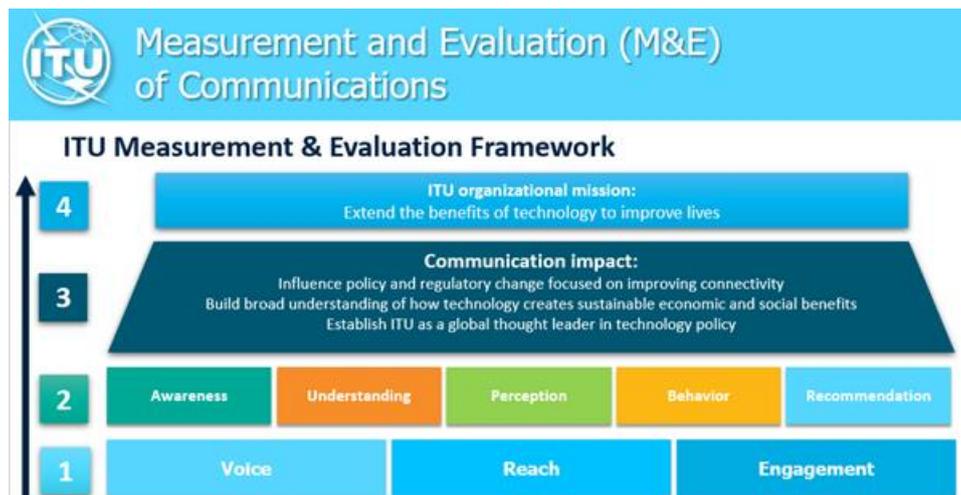
Net Membership by Sector/Type

Sector	Membership type	December 2019	January 2020	February 2020	March 2020	April 2020	May 2020	June 2020	July 2020	August 2020	September 2020	October 2020	November 2020	December 2020
		ITU-R	Sector member	272	271	272		274		272	273		274	275
	Associate					22						23		
ITU-T	Sector member	265	264	264	265	266	265	265	267	268	269	268	267	273
	Associate	182	182	184	187	191	195	190	192	193	192	192	199	200
ITU-D	Sector member	305	302	302	301	300	298	294	295	294		295	296	298
	Associate	17		19		20				21				
Academia	Academia	158	156		148	151	152	148	156		157	161	162	162

Explanation
 - Blank cells represent a year with no movement at all
 - Beige cells represent a net movement of zero (ie. New = (Denounced + Excluded)
 - Green cells represent positive net movement within the year (ie. New Members > Denounced + Excluded)
 - Red cells represent negative net movement within the year (ie. New Members < Denounced + Excluded)
 - The dark red in June represents the Exclusions as per Resolution 152.

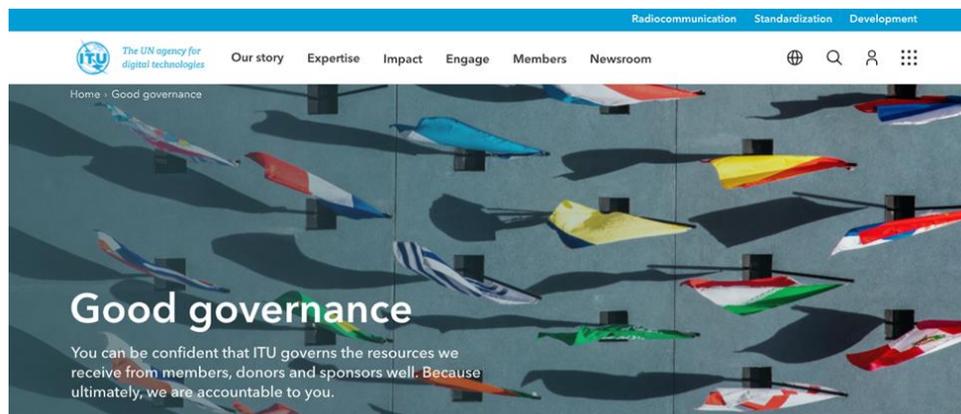


Monitoring and evaluation of communication framework developed in 2020. Measurement informs decision-making for most impactful communications and most effective use of limited resources.



Internal communications. The secretariat has strengthened internal communications in support of the new ITU Headquarters building and to build a OneITU from the inside out through a digital newsletter by staff for staff, *ITUConnections*.

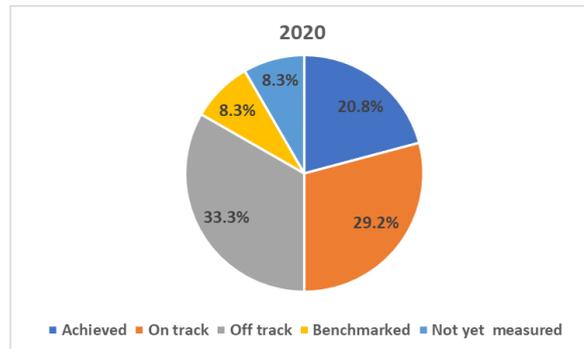
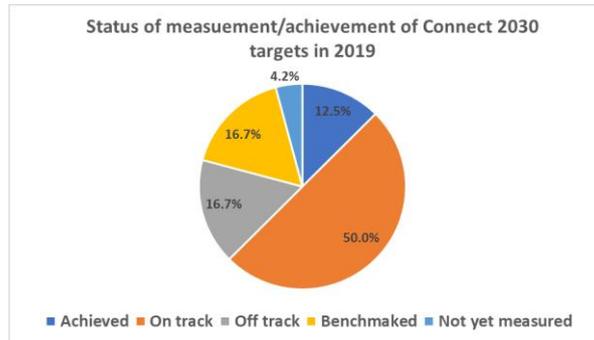
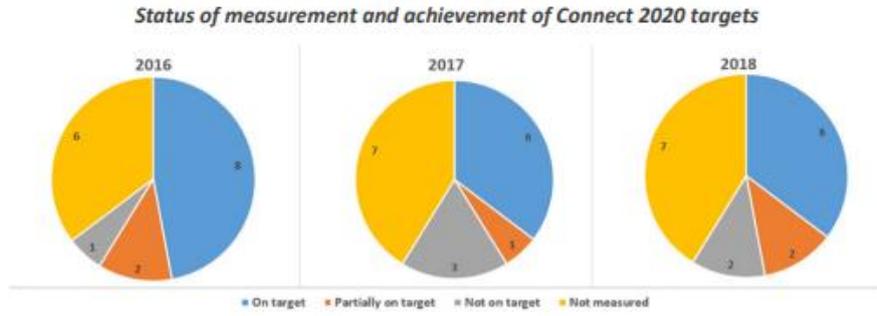
ITU’s website is built on a platform (MS SharePoint version) that is more than 10 years old and which is nearing its end of life. To mitigate the ensuing risks to business continuity and security, as a first step towards replacing/modernizing the overall ITU website, a beta version of “MyITU” was launched in 2020, combining ITU News articles and the ITU News Magazine, publications and events as well as a members’ zone, providing information in a simplified and personalized way according to the interest of the user. Furthermore, in 2020 ITU has produced a prototype for a new OneITU website: user-centred, multilingual, mobile-friendly, branded, engaging and impact-oriented, with smarter navigation and fresh content. MyITU and OneITU will be a seamless experience for users once both are live. Both will improve the experience for the ITU membership, as well as new audiences less familiar with ITU, including SMEs, academia and newcomers among the membership.



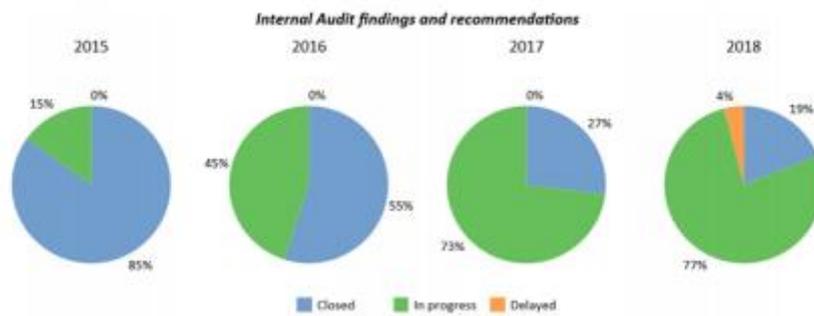
ITU has initiated a [new podcast series](#), *Technology for Good*, on key ITU themes to increase return on investment for ITU webinars and delegate interviews.

ITU and its membership have a common strategy – the Connect 2030 Agenda. A [new site](#) provides a dashboard for both these goals and targets and provides relevant links to publications, data as well as other resources, so that ITU and its membership can progress together towards connecting the world.

E.4 Ensure efficient planning, coordination and execution of the strategic plan and operational plans of the Union



E.5 Ensure effective and efficient governance of the organization (internal and external)



Report on the implementation of the strategic plan and activities of the Union

