#ICT4SDG SUSTAINABLE DEVELOPMENT GOALS 2025 World Summit on the Information Society Turning targets into action

THE REPORT ON THE IMPLEMENTATION OF REGIONAL INITIATIVES BY ITU FROM 2019 TO 2020

Implementation of the ITU Regional Initiatives in Asia and the Pacific (2019-2020)

Understand issues and challenges

Promote and strengthen international cooperation

Partnerships towards achieving SDGs, Regional and National goals

ITU REGIONAL OFFICE FOR ASIA-PACIFIC

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Implementation of the ITU Regional Initiatives in Asia and the Pacific (2019-2020)

1. Introduction

1.1 Diversity, Demography and Digital Divide in Asia-Pacific

The Asia and the Pacific region is home to around 60 per cent of the world's population[1] – i.e., some 4.3 billion people – and includes some of the world's most populous countries, such as China, India, Indonesia, Pakistan and Bangladesh. The region also covers some of the smallest countries on the planet, especially among the Small Island Developing States (SIDS) in the Pacific. Diversity in terms of geography, economy, demography and geography has significant impact on the speed and scope of ICT development among countries in the region.

Several features define the ICT development in the Asia-Pacific region[2]:

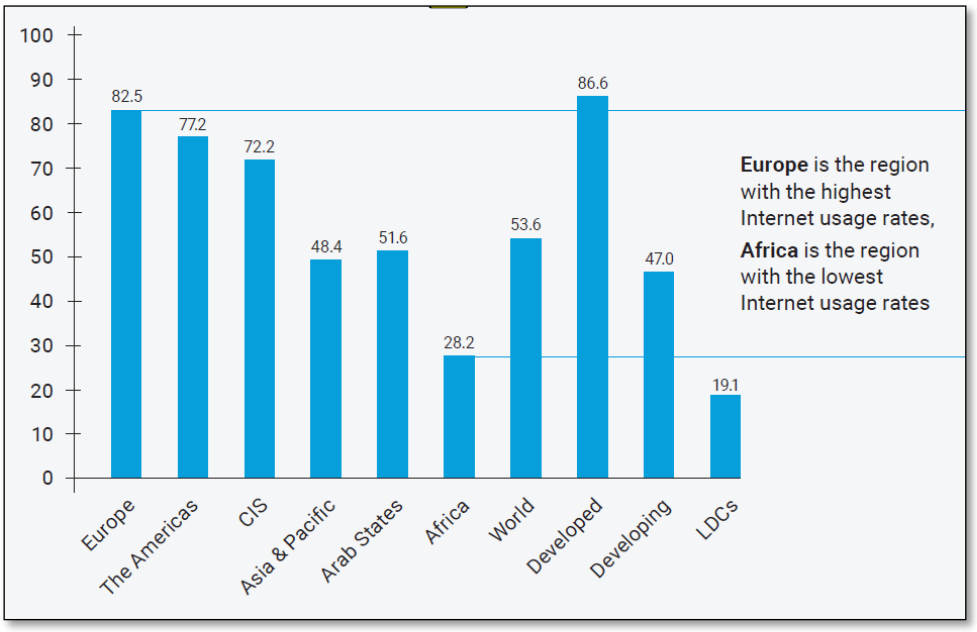
- the mobile cellular penetration reached 111.7% in 2019 (up from 67.1% in 2010) as compared to a worldwide[3] average of 108%;
- 95.4% of the population is covered by at least a 3G mobile network (2019), compared with 93% global average;
- the mobile broadband penetration reached 89% in 2019 (up from 7.3% in 2010), above the global average of 83.0%;
- 50.9% of the surveyed households have access to the Internet in 2019 (up from 24.0% in 2010) which is below the global average of 57.0%
- 48.4% of the population is using the Internet in 2019 (up from 22.6% in 2010) below the global level of 53.6%;
- the fixed broadband penetration rate reached 14.4% in 2019, compared with global average of 14.9%.
- the international bandwidth usage per Internet user is estimated at 102 Kbps in 2019 compared with 118 kbps globally.

Compared with other regions, Asia and the Pacific has benefited from mobile driven development, but when it comes to household level access, Internet usage, fixed broadband expansion and usage of international bandwidth per capita, there is scope for improvement. As Figure 1 illustrates, despite the fast ICT development in some countries, Asia and the Pacific as a whole is still catching up with the rest of the regions, except Africa. Among groups of countries, least developed countries (LDC) have

[1] Source: UNFPA
[2] Source: ITU
[3] The aggregated data was released December 2019. The penetration refers to the total mobile subscriptions of the region divided by the total population of the region. Source https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx

less people with Internet access (19.1%) than developing countries (47%) and developed countries (86.6%) globally.

Figure 1: Proportion of individuals using the Internet by the region and development stage 2019[4]



Note: Secretary-General Roadmap for Digital Cooperation JUNE 2020 [5]

**ITU estimate Source: ITU*

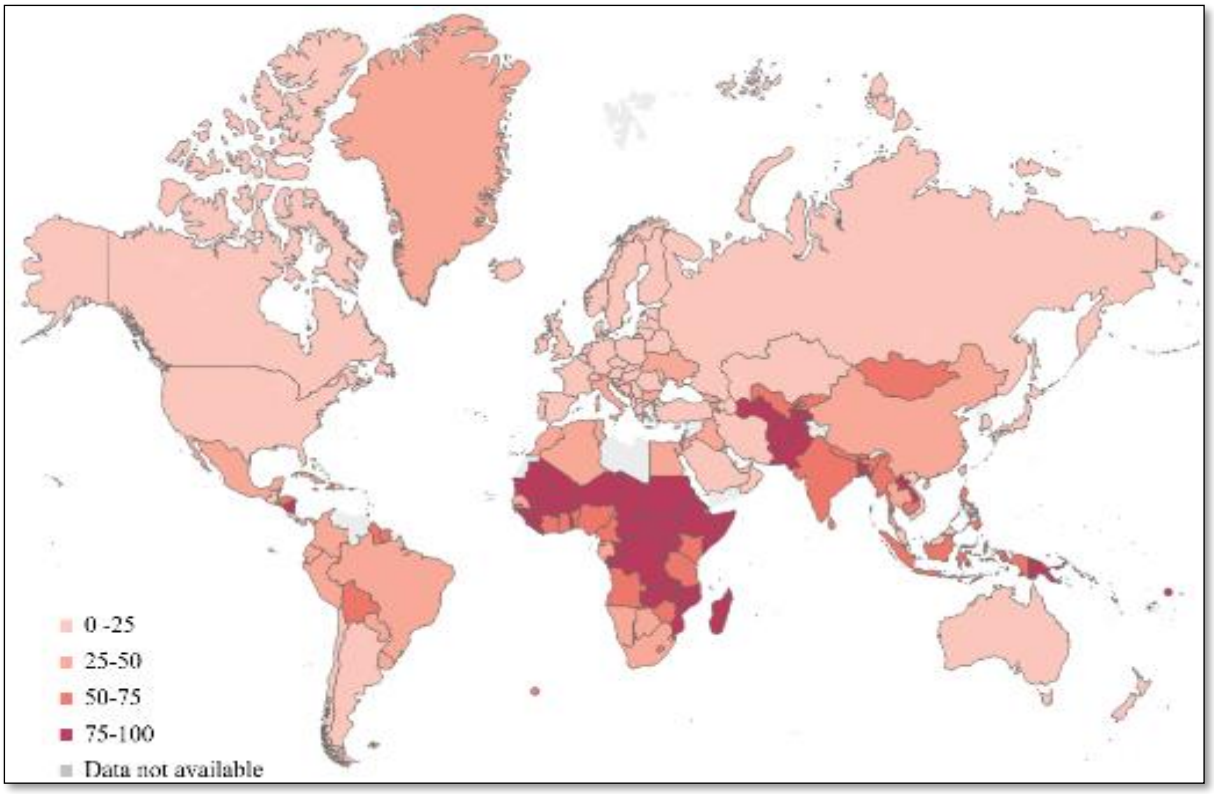
The digital divide in Asia and the Pacific manifests in numerous ways. As per the latest ITU report[6], only 48.8 % individuals are using the Internet in Asia and the Pacific as compared with the world average of 53.6%. As Figure 2 illustrates, the percentage of population not using the Internet is higher in South Asia than in other subregions in Asia and the Pacific. The digital gender gap is also widening in developing countries in Asia-Pacific where 41.3% women access the Internet, while 54.6% of men do.

[4] Report of the Secretary-General Roadmap for Digital Cooperation, June 2020

[5] Different reports may define Asia and the Pacific differently.

[6] Measuring digital development Facts and figures 2019

Figure 2: Percentage of the population not using the Internet, 2019



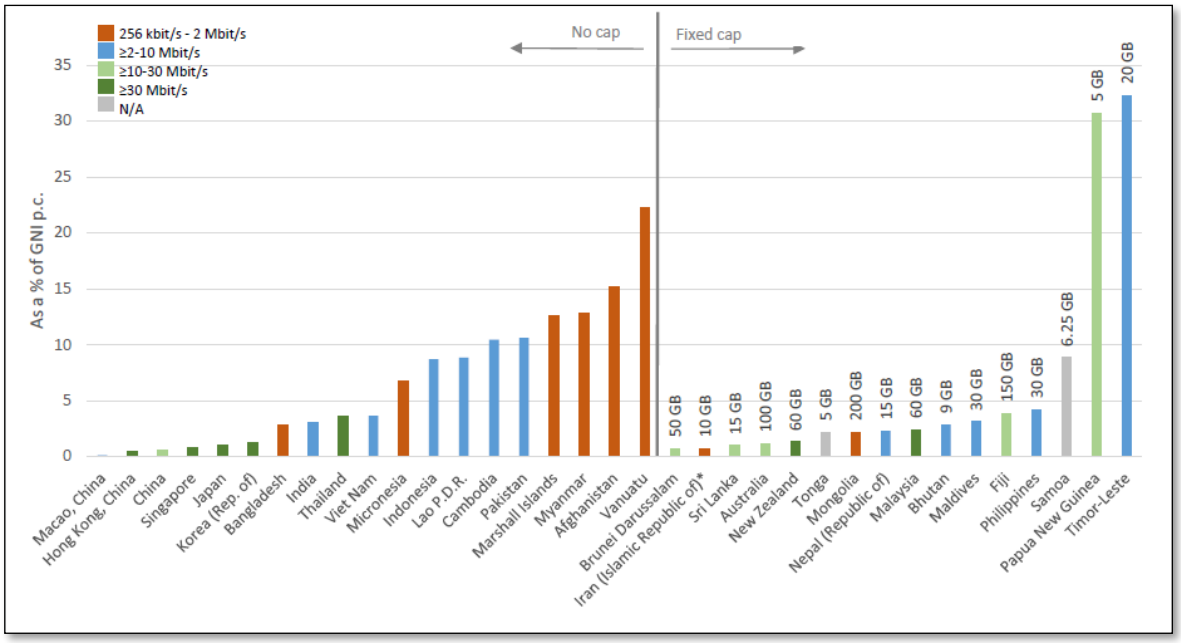
Source: ITU

One of the significant factors affecting the digital divide is affordability. The Broadband Commission has set an affordability target for broadband services to be 2% of monthly Gross National Income (GNI) per capita by 2025. For instance, in Myanmar, the creation of a competitive market slashed the cost of SIM cards from $150 in 2013 to $1.50 in 2015, which resulted in 2 million new subscribers within the first month.[7]

The diversity in Asia-Pacific is also reflected in the prices of fixed and mobile broadband services. The ITU report "Measuring Digital Development: ICT Price Trends 2019" notes that in eleven economies, the fixed-broadband basket cost less than 2 per cent of GNI p.c., while the advertised download speeds of those plans were 10 Mbit/s or above. At the same time, in the four countries offering unlimited access with prices above 10 per cent of GNI p.c., the Marshall Islands, Myanmar, Afghanistan and Vanuatu, advertised download speeds were below 2 Mbit/s. (Figure 3)

[7] Elizabeth Stuart and others, Leaving No One Behind: A Critical Path for the First 1,000 Days of the Sustainable Development Goals (London, Overseas Development Institute, 2016).

Figure 3: Fixed-broadband prices[8] as a percentage of GNI[9] p.c., speeds and caps, Asia- Pacific, 2019



Source: ITU

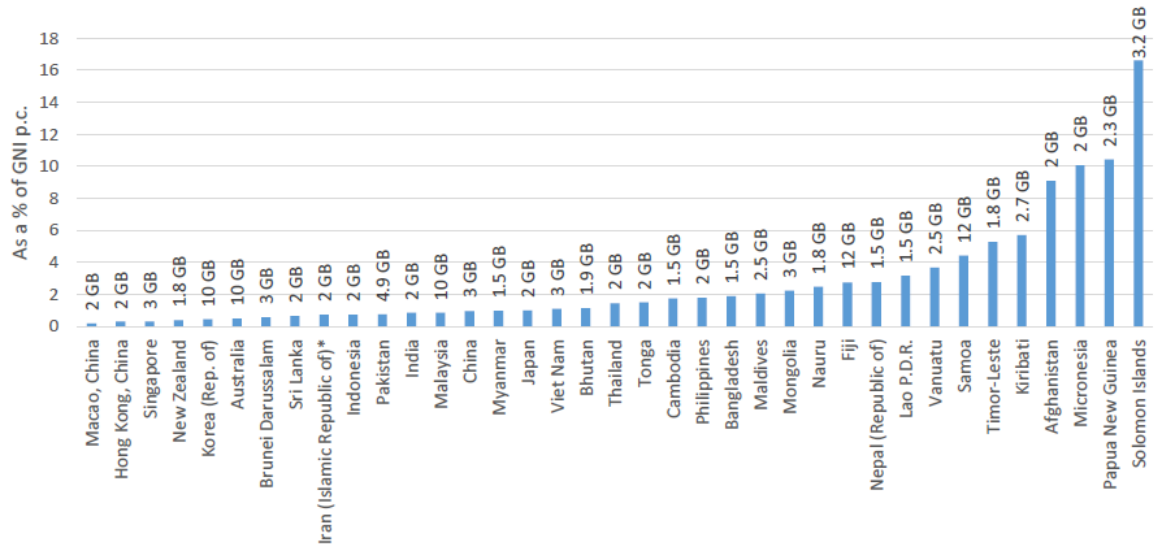
The report further notes that in 16 economies, led by Macao (China) and Hong Kong (China), the price of a mobile-data basket was below 1 per cent of GNI p.c. In three countries, it was above 10 per cent. In the Republic of Korea, Australia and Malaysia, the prices below 1 per cent of GNI p.c. also come with a monthly data allowance of 10 GB, which is five times the 2 GB median data allowance in the region. (Figure 4)

[8] *Measuring Digital Development: ICT Price Trends 2019*

- https://www.scoop.co.nz/stories/WO1906/S00104/opening-of-the-pacific-satellite-connectivity-project.htm
- https://www.telecompaper.com/news/kacific-powers-samoas-pacific-satellite-connectivity-project--1297007
- https://news.itu.int/itu-and-kacific-join-forces-to-boost-emergency-telecoms-and-ict-development-in-vanuatu/
- https://www.satelliteevolutiongroup.com/magazines/A
- mericas-August2020/content/Digital%20Issue%20download.pdf

[9] Measuring Digital Development : ICT Price Trends 2019 (ITU)

Figure 4: Mobile-data prices as a percentage of GNI p.c. and monthly data allowance, Asia- Pacific, 2019



Source: ITU

1.2 COVID-19: Impact, Response and Recovery

The challenges in addressing the digital divide in Asia and the Pacific are compounded by the COVID-19 pandemic and its negative impacts in society and economy. The COVID-19 crisis has not only highlighted the critical role of ICT for continued functioning of society and economy but also has demonstrated clear digital inequalities between and within countries. As per TeleGeography Network Impact[i] report after COVID-19, there is a general trend of significant data traffic growth globally which underpins the importance of digital infrastructure and IP Traffic under the COVID lockdowns.

For instance, supercomputers analyse thousands of drug compounds to identify candidates for treatments and vaccines and e-commerce platforms prioritize household staples and medical supplies, while we use several videoconferencing platforms which enable education, remote working and economic activity to continue. This transition to digital platforms and services is mainly enjoyed by people with good connectivity. The others have lost jobs or do not have access to the Internet especially among the vulnerable groups. This highlights state of inequalities in terms of digital[10].

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

The role played by digital technologies in mitigating the impact of COVID-19 crisis has re-emphasized the importance of digital infrastructure not only in terms of universal access and digital inclusion but

[10] Report of the Secretary-General Roadmap for Digital Cooperation JUNE 2020

also on other attributes such as quality, resilience, security, and affordability. The increased reliance on digital infrastructure and services under the COVID lockdown has been unprecedented and so has been the response of the ICT Sector. ICT sector policy makers, regulators, industry and academia have together contributed to meet the expectations.

The State of Broadband Report 2020 underlines an urgent need for creating enabling policy and regulatory frameworks that can play a facilitator role for instance government policies need to prioritize broadband as basic infrastructure, as essential for development in the digital age as transport, energy and water networks. However, in order to make broadband ubiquitous, it will require bringing over three billion people online in the next ten years, at an estimated cost of USD 428 billion.

ITU Members have since stepped up and engaged in activities that have proven essential in saving lives and sustaining economic growth. ITU is helping countries to fully utilize digital technologies to respond to and recover from the COVID-19 pandemic (please see responses from around the world on the ITU platform on COVID-19) and to build preparedness for future global emergencies. Now more than ever, the world needs to promote universal, secure, reliable and affordable connectivity and access.

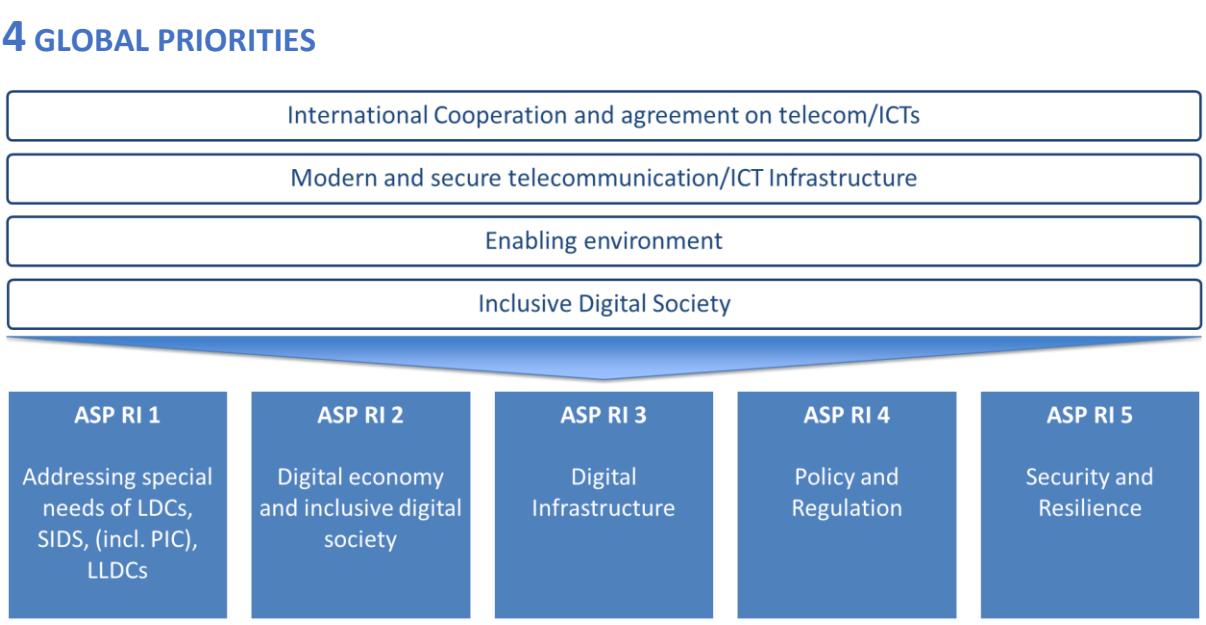
The below Chapter summarizes the activities of ITU Regional Office for Asia and the Pacific to implement the Regional Initiatives from January 2019 to the end of October 2020, which also includes the period which was affected by the COVID pandemic. The pandemic and associated lockdowns as well as restrictions in movement have affected the ability of ITU to deliver as planned. However, alternative means, such as online webinars and training sessions were organized in lieu of the physical activities.

2. Implementation of the Five Regional Initiatives in Asia and the Pacific

The work of the ITU-D Sector is governed by the work program decided by the respective World Telecommunication Development Conferences. The current action plan Buenos Aires Action Plan, which was agreed upon by the WTDC-17 in 2017, comprises of global priorities, regional initiatives, resolutions and recommendations, and study group questions. RESOLUTION 17 (REV. BUENOS AIRES, 2017 "Implementation of and cooperation on regionally approved regional initiatives at the national, regional, interregional and global levels") stipulates that all necessary measures be taken for promoting and implementing these regionally approved initiatives at the national, regional, interregional and global levels.

The Asia-Pacific Regional Initiative (2018-2021) [11] specifies the objectives and key deliverables requested by the Members specific to the region. (Figure 5)

Figure 5: WTDC 2017 - Global Priorities and Asia-Pacific Regional Initiatives



This section of the report provides a summary of progress and achievements towards the objectives of the five ITU Asia-Pacific Regional Initiatives for the period January 2019 – October 2020.

2.1 Asia-Pacific Regional Initiative 1: Addressing special needs of least developed countries, small island developing states, including Pacific island countries, and landlocked developing countries

[11] https://www.itu.int/en/ITU-D/Documents/RI_Asia-Pacific.pdf

Objective: *To provide special assistance to least developed countries (LDCs), small island developing states (SIDS), including Pacific island countries, and landlocked developing countries (LLDCs) in order to meet their priority telecommunication/information and communication technology (ICT) requirements*

Expected results:

1. Development of policy and regulatory frameworks for broadband infrastructure, ICT applications and cybersecurity, taking into account the special needs of LDCs, SIDS and LLDCs, and strengthening of human capacity to address future policy and regulatory challenges.
2. Promotion of universal access to telecommunications/ICTs in LDCs, SIDS, and LLDCs.
3. Assistance to LDCs, SIDS and LLDCs in adopting telecommunication/ICT applications in disaster management, relating to disaster prediction, preparedness, adaptation, monitoring, mitigation, response, rehabilitation and recovery of telecommunication/ICT networks based on their priority needs.
4. Assistance to LDCs, SIDS and LLDCs in their efforts to achieve internationally agreed goals, such as the 2030 Agenda for Sustainable Development, the Sendai Framework for Disaster Risk Reduction, the Istanbul Programme of Action for LDCs, the Samoa Pathway for SIDS and the Vienna Programme of Action for LLDCs.

Progress and achievements

ITU continued to assist LDCs, LLDCS and SIDSs in the Asia-Pacific region to better harness ICTs to achieve the agreed international goals such as the 2030 Agenda for Sustainable Development, the Sendai Framework for Disaster Risk Reduction, the Istanbul Programme of Action for LDCs, the Samoa Pathway for SIDS and the Vienna Programme of Action for LLDCs. While ITU continued to support its Members at regional and national level, a lot remains to be achieved. The COVID-19 has further impacted the capacity of these countries to achieve this goal as well as changes it required to deliver technical assistance and capacity development activities.

ITU has continued implement the activities under this Regional Initiative through dedicated programs and projects as detailed below.

1. *Development of policy and regulatory frameworks for broadband infrastructure, ICT applications and cybersecurity, taking into account the special needs of LDCs, SIDS and LLDCs, and strengthening of human capacity to address future policy and regulatory challenges.*

To achieve this expected result, ITU assisted Members in the areas of **digital services strategy development, applications, awareness raising and the digital skills**. Assistances to Bhutan (government application), Cambodia (e-agriculture), Maldives (digital government), Mongolia (e-agriculture), Papua New Guinea (e-agriculture and e-government) and Vanuatu (e-government) are aimed at facilitating cross-sectoral strategy and action plan development. While some of these assistances are currently ongoing, the e-agriculture strategy for Mongolia was adopted by the government. ITU also leveraged on partnerships with other UN agencies (FAO in e-agriculture), respective national governments, Department of Infrastructure, Transport, Regional Development and Communications (DITRDC Australia) and the National Information Society Agency (Republic of Korea). Following up on previous work in Papua New Guinea on e-agriculture, pilot implementations were undertaken by PNG in Jiwaka. Based on the successful assistance by ITU in digital services, a

project (2020-2024) titled *"Support to Rural Entrepreneurship, Investment and Trade in Papua New Guinea (STREIT PNG)"*, funded by the European Commission, was developed and has been implemented jointly with UN agencies (FAO, ILO, UNCDF and UNDP) with support from national and provincial government.

ITU improved digital skills amongst its Members through training in mobile planning, security, blockchain, Computer Incident Response Teams (CIRTs), cybersecurity targeted at SIDSs, LDCs and LLDCs. Papua New Guinea, one of the pilot countries for ITU Digital Transformation Center initiative, started online training in the areas of basic connectivity (in partnership with CISCO, National ICT Authority of Papua New Guinea (NICTA) and Royal Melbourne Institute of Technology) and empowering women through ICTs and e-commerce in partnership with Asian and Pacific Training Centre for Information and Communication Technology for Development (APCICT) / United Nations Economic and Social Commission for Asia and the Pacific UNESCAP.

Additionally, ITU has assisted member countries to address **cybersecurity** through ITU expert assistances on national cybersecurity strategy (Solomon Islands) and CIRT assessments (Samoa, Vanuatu, Papua New Guinea and Tonga). CIRT assessments were undertaken as part of ITU-DITRDC (Australia) project.

There is an increased awareness amongst countries in the region on the need to develop appropriate frameworks to build resilient and secure national and international broadband infrastructure that can support digital services in an inclusive and holistic manner. However, such comprehensive digital transformation effort is still evolving and remains a growing area of interest for assistance, especially in view of the COVID-19 lockdowns.

2. Promotion of universal access to telecommunications/ICTs in LDCs, SIDS, and LLDCs

Universal access remains a major challenge in the Asia-Pacific region (Reference: Section 1). ITU supported digital infrastructure development in LDCs, LLDCs and SIDSs through improved digital connectivity, knowledge reports, customized advisories, and digital skills programs.

Nine Pacific Islands countries improved connectivity through a satellite connectivity project in partnership with International Telecommunications Satellite Organization (ITSO) and KACIFIC. 18 C band equipment was provided (2014-15), followed by 35 Ku band equipment (2018-19) and 40 Ka band equipment (2020) as part of the project. A number of participating countries from the Pacific have developed plans to continue with these services and some of these connectivity capacity was utilised to provide multiple services (health, education, finance, disaster). An assessment of the project has been undertaken, which has re-emphasized the importance of digital connectivity.

Furthermore, a **study on maximizing international connectivity** in the Pacific (2018) supported by ITU-DITRDC project is being updated while ITU terrestrial maps continue to provide visual representation of digital connectivity in the Asia-Pacific region. These studies and tools were found effective for decision and policy making in the area of connectivity and infrastructure development by ITU members.

Expertise assistance was provided to respond to a request on **digital infrastructure planning** by Afghanistan (broadband connectivity options and spectrum management), Fiji (spectrum management), Tonga (spectrum management), Mongolia (spectrum management), Vanuatu (broadcasting master plan) and Samoa (Internet Exchange Point). The tailored technical support helped improve the national capacities to address the priority concerns.

Universal Access and Service Fund is an effective means to achieve universal access. The USO 2.0 approach, developed in cooperation with ITU, was **endorsed by ASEAN Ministers** and is expected to accelerate the development of the digital economy particularly for LDCs within this region through better connectivity and access.

While significant progress has been made on connectivity, the availability, affordability and national capacity remain a challenge for a large number of countries (especially Pacific Islands countries) and more targeted efforts would be required to fully materialize the expected result.

3. *Assistance to LDCs, SIDS and LLDCs in adopting telecommunication/ICT applications in disaster management, relating to disaster prediction, preparedness, adaptation, monitoring, mitigation, response, rehabilitation and recovery of telecommunication/ICT networks based on their priority needs.*

Emergency Telecommunications remain a key priority for the region, as Asia and the Pacific is the region disproportionately affected by natural disasters. The development and operationalizaiton of emergency telecommunications is an important area for LDCs, LLDCs and SIDSs in particular.

In this regard, ITU supported Afghanistan, Papua New Guinea, Solomon Islands and Vanuatu and supported their **emergency telecommunication planning** capability and awareness on responding to natural disasters. A project on Emergency Telecommunication (funded by Government of Australia) supported four Pacific Islands countries [12] between 2018-2020. Solomon Islands and Vanuatu improved their emergency telecommunication response capacity which was found effective in response to oil spillage (Rennel Islands) and Category 5 cyclone (Harold) respectively.

Although, ITU's targeted assistance was found effective in response to various natural disasters, emergency telecommunications remains an area where concerted efforts are needed to meet the needs in terms of development of National Emergency Telecommunication Plan, development of standard operating procedures and skills development. When Cyclone Harold hit the Pacific Islands countries, the challenges were exacerbated as COVID-19 restrictions and requirements impacted relief capacity. There is a need to continue the support in this important area.

2.2 Asia-Pacific Regional Initiative 2: Harnessing information and communication technologies to support the digital economy and an inclusive digital society

Objective: *To assist Member States in utilizing information and communication technologies (ICTs) to reap the benefits of the digital economy and in addressing the human and technical capacity challenges for bridging the digital divide*

Expected results

1. Planning and elaboration of national strategic frameworks on the digital economy as well as associated toolkits for selected ICT applications and services.
2. Establishment and annual updating of a repository of all work done within ITU relating to the digital economy since the World Telecommunication Development Conference (Dubai, 2014).

[12] Papua New Guinea, Samoa, Vanuatu, Solomon Islands

3. Development of policies, strategies and guidelines for practical implementation, including for the Internet of Things (IoT) and smart cities.
4. Deployment of ICT/mobile applications to improve the delivery of value added services in sectors such as health, education, agriculture, governance, energy, financial services and e-commerce.
5. Identification, collation and sharing of knowledge, best practices and case studies on various telecommunication/ICT applications.
6. Development of cross-sectoral national digital skills programmes for inclusiveness, especially for women, youth, the elderly and persons with specific needs.

1. Planning and elaboration of national strategic frameworks on the digital economy as well as associated toolkits for selected ICT applications and services

In the Asia-Pacific region, ITU continued to assist Members in **developing their national strategic frameworks** in areas of whole of government approach (Maldives, Pakistan, Papua New Guinea, Vanuatu) and digital agriculture (e-agriculture strategy in Cambodia and Mongolia). These sectoral assistance aim to accelerate digital transformation across sectors. The e-agriculture strategy for Mongolia was approved by the government. Cross-sectoral approaches were facilitated through partnerships (e.g. FAO, DITRDC, national government entities). Papua New Guinea launched activities to improve connectivity for farmers, built digital skills and is implementing projects following the development of national e-agriculture strategy. Support of ICT application to improve government decision-making is planned for Bhutan.

ITU enhanced the awareness of more than 100 participants on the important issue of connecting every school by 2030 (ITU-UNICEF partnership on GIGA). A **regional feasibility study on GIGA implementation** is also being undertaken in Bhutan, Bangladesh, Mongolia, Pakistan, Papua New Guinea and Vanuatu. A study is being undertaken by ITU in coordination with UN Resident Coordinators Office, UNESCO and UNICEF to examine the state of the digital divide which frames school education in Thailand and identify key infrastructural factors affecting access to and adoption of e-learning and other digital technologies in school. The COVID-19 has had very high impact on the education sector as a result of school closures. Concerted efforts are needed to better prepare countries to enhance distance learning capability using ICTs.

Additionally, ITU's Smart village blueprint, launched in 2020, is being customized for implementation through smart village / smart islands assistances to Vanuatu. Based on requests for assistances from interested Members (Indonesia, Papua New Guinea), a program is being developed in the region.

The whole of government approach, cross-sectoral digital strategies, sectoral digital strategy implementation and smart cities, villages and islands are evolving area of growth, especially for developing countries in the Asia-Pacific region. While there is progress on digital strategy development in Asia-Pacific region, there is a growing need to provide guidance to countries on means to implement these strategies in an efficient manner in cities, towns, villages and islands.

2. Establishment and annual updating of a repository of all work done within ITU relating to the digital economy since the World Telecommunication Development Conference

The ITU-D Digital Economy related work is currently available under various thematic websites such as Policy and Regulation and Digital services and applications. A comprehensive repository on digital

economy remains a way forward. More on ITU's work in policy and regulation as well as innovation are detailed in the below section under specific Thematic Priorities.

3 . Development of policies, strategies and guidelines for practical implementation, including for the Internet of Things (IoT) and smart cities

More than 650 participants **raised awareness and developed capacity** on IoT and Smart Sustainable Cities through Forums (Brunei) and training (ITU Asia-Pacific Centres of Excellence). Raising awareness and skills on smart sustainable cities remains a continued area of focus for awareness raising and skills development, as ITU members request continued support.

4. Deployment of ICT/mobile applications to improve the delivery of value added services in sectors such as health, education, agriculture, governance, energy, financial services and e-commerce

This expected result is linked to the above expected results and initiatives undertaken by ITU as described in the above section. The ITU is currently assisting Bhutan in developing a decision making application for the government in response to the COVID-19 pandemic. Additionally, the EU STREIT project in PNG and DITRDC regional project aims to build new mobile / ICT applications for priority needs of Members.

Additionally, ITU is enhancing cooperation, coordination and collaboration with UN Country Teams through the UN Resident Coordinators. In response to COVID-19, more requests for digital services in education, health, agriculture, governance and financial services are expected to be channelled through the UN Country Teams and UN Resident Coordinators.

5.Identification, collation and sharing of knowledge, best practices and case studies on various telecommunication/ICT applications

ITU, in partnership with FAO, continued to raise awareness on application of digital technology in agriculture through E-agriculture in Action **case study** series (Big Data For Agriculture). The next edition on Artificial Intelligence for Agriculture is planned for release in Q4, 2020. The bi-annual Digital Agriculture Solutions Forum 2020 (Q4, 2020) aims to share experiences on use of innovative technologies to meet agricultural goals.

In addition, various regional and national webinars and information sessions were organized during this reporting period. One of the main regional platforms to this effect is the Regional Development Forum, which is planned from 2 to 5 November 2020 online.

6.Development of cross-sectoral national digital skills programmes for inclusiveness, especially for women, youth, the elderly and persons with specific needs

Digital skills development continues to be the main thrust of ITU's work in the region. More than 1000 participants were **trained** in areas of digital transformation, cross-sectoral skills and application of technologies under national assistances, international girls in ICT day programs and centres of excellence., as detailed in the below section.

Following the release of ITU Guidelines on Child Online Protection, ITU partnered with MCMC and UNICEF to raise awareness of the guidelines amongst stakeholders in Malaysia. In 2020, the revised ITU Guidelines on Child Online Protection was launched and was incorporated in the Girls in ICT Day Thailand cybersecurity training program, in collaboration with Cisco Thailand where more than 100 participants took part in the awareness training program.

All the three **Digital Transformation Centers** in Asia-Pacific (BPPTIK- Indonesia, UNITECH - Papua New Guinea, and DICT- The Philippines). These centres have trained more than 200,000 participants by mid-October 2020.

Cross-sectoral digital skills gap remains a big challenge in the region as countries adopt digital transformation agenda. It requires development of new skills and also new framework for collaboration across sectors. COVID-19 has further increased the need for upskilling and reskilling as traditional businesses are adversely impacted and digital is fast becoming new way of business. On the citizen side, accelerated endeavours are needed to improve their capacity to use these technologies meaningfully.

2.3 Asia-Pacific Regional Initiative 3: Fostering development of infrastructure to enhance digital connectivity

Objective: *To assist Member States in the development of telecommunication/information and communication technology (ICT) infrastructure in order to facilitate provision of services and applications on that infrastructure.*

Expected results

1. Migration/transition of analogue networks to digital networks, application of affordable wired and wireless technologies (including interoperability of ICT infrastructure), and optimized use of the digital dividend
2. Maximized use of new and emerging technologies for the development of telecommunication/ICT networks, infrastructure and services including 5G and smart grid
3. Strengthening of capacity to develop and implement national broadband plans in order to provide broadband access to unserved and underserved areas (including support for study of the status of national broadband networks and international connectivity), to promote affordable access, especially for youth, women, indigenous peoples and children, to select appropriate technologies, to develop and use universal service funds effectively, and to develop financially and operationally sustainable business models
4. Promotion of Internet exchange points (IXPs) as a long-term solution to advance connectivity, deployment of IPv6-based networks and applications, and progress in the transition from IPv4 to IPv6
5. Strengthening of the capacity to implement conformance and
6. interoperability (C&I) procedures and testing and to plan resources for C&I programmes, and facilitation of the establishment of common regional and subregional C&I regimes (including the adoption and implementation of mutual recognition arrangements)
7. Attention to spectrum-management issues, including radio-frequency planning, new spectrum-sharing approaches, harmonized spectrum allocation and spectrum monitoring systems, and support for preparations for world radiocommunication conferences (WRCs) and implementation of their outcomes
8. Building of skills for the development and telecommunications use of satellite

9. Strengthening of cooperation with international/regional organizations to enhance regional ICT connectivity, such as the Asia-Pacific Information Superhighway (AP-IS).

1. *Migration/transition of analogue networks to digital networks, application of affordable wired and wireless technologies (including interoperability of ICT infrastructure), and optimized use of the digital dividend*

ITU is currently assisting the regulator in Vanuatu in developing their **broadcasting master plan** aimed at strengthening the institution and the sector. An assessment of ICT network connectivity is also being undertaken in Pakistan (with UN Resident Coordinator Office).

2. Maximized use of new and emerging technologies for the development of telecommunication/ICT networks, infrastructure and services including 5G and smart grid

ITU continues to update the **ITU interactive terrestrial transmission maps** for Asia-Pacific region (over 1 million kilometres of network data in place) with the latest information on national and international backbones, mobile connectivity, Internet Exchange Points and other infrastructure details. The study on Maximizing availability of international connectivity in the Pacific (2018), was developed in partnership with Pacific Islands Telecommunications Association (PITA) and with support from DITRDC, is also being updated.

5G remains a key area which requires skills development. More than 530 participants were trained in the area of 5G under the ITU Asia-Pacific CoE. In addition, 5G was also part of other capacity building events such as mobile planning and security amongst others. ITU also continued trainings on new technologies such as artificial intelligence and blockchain. ITU will continue the support to member countries to maximise the use of new and emerging technologies in the region.

3. Strengthening of capacity to develop and implement national broadband plans in order to provide broadband access to unserved and underserved areas (including support for study of the status of national broadband networks and international connectivity), to promote affordable access, especially for youth, women, indigenous peoples and children, to select appropriate technologies, to develop and use universal service funds effectively, and to develop financially and operationally sustainable business models

Affordable and ubiquitous access to broadband is an important focus area as new submarine cables connect the unconnected Pacific Islands and inter-island cables are deployed. Supporting members and partners on developing USO framework and upskilling.

The USO 2.0 approach, developed in cooperation with ITU, was **endorsed by ASEAN Ministers** and is expected to accelerate the development of the digital economy particularly for LDCs within this region through better connectivity. A **study on maximizing international connectivity** in the Pacific (2018) supported by ITU-DITRDC project and in partnership with PITA is being updated while ITU terrestrial maps continue to provide visual representation of digital connectivity in the Asia-Pacific region. More than 600 participants were trained in the area of broadband (including 5G).

4. *Promotion of Internet exchange points (IXPs) as a long-term solution to advance connectivity, deployment of IPv6-based networks and applications, and progress in the transition from IPv4 to IPv6*

In partnership with APNIC and with support from DITRDC, ITU is supporting Samoa in developing the **Internet Exchange Point** framework and building capacity inter-alia. Efficient management of traffic in the Pacific nationally and regionally continues to be an important area of focus.

5. *Strengthening of the capacity to implement conformance and interoperability (C&I) procedures and testing and to plan resources for C&I programmes, and facilitation of the establishment of common regional and subregional C&I regimes (including the adoption and implementation of mutual recognition arrangements)*

ITU built skills of more than 120 participants in the area of conformity and interoperability through ITU Asia-Pacific CoE in 2019-2020 (October).

6. *Attention to spectrum-management issues, including radio-frequency planning, new spectrum-sharing approaches, harmonized spectrum allocation and spectrum monitoring systems, and support for preparations for world radiocommunication conferences (WRCs) and implementation of their outcomes*

ITU provided dedicated support on **improving Spectrum management framework** to Brunei Darussalam (IMT 2020), Solomon Islands (type approval for short range device), Fiji (National Frequency Allocation Strategy), Tonga (National Frequency Allocation Table), Mongolia (spectrum pricing), Vanuatu (Radio licensing regime) and Vietnam (Amendment of national law on frequencies). In addition, **dedicated training** was conducted to Lao PDR (automation of national spectrum management.

Regional Forums on spectrum management (ASMC-2019, ASMC-2020) has raised awareness amongst more than 1600 participants on WRC-19, spectrum management practices and emerging issues. Regional Radio Seminar is planned in 2020. These activities were carried out in cooperation with the Radiocommunication Bureau, Regional Organization (APT) and other partners (Forum Global).

Additionally, more than 1100 participants were **trained** in areas including SMS4DC, spectrum monitoring, IMT 2020 (5G), human exposure to RF, spectrum management, traffic engineering and artificial intelligence issues. A training needs assessment is being planned to identify key areas of skill buildings in spectrum management.

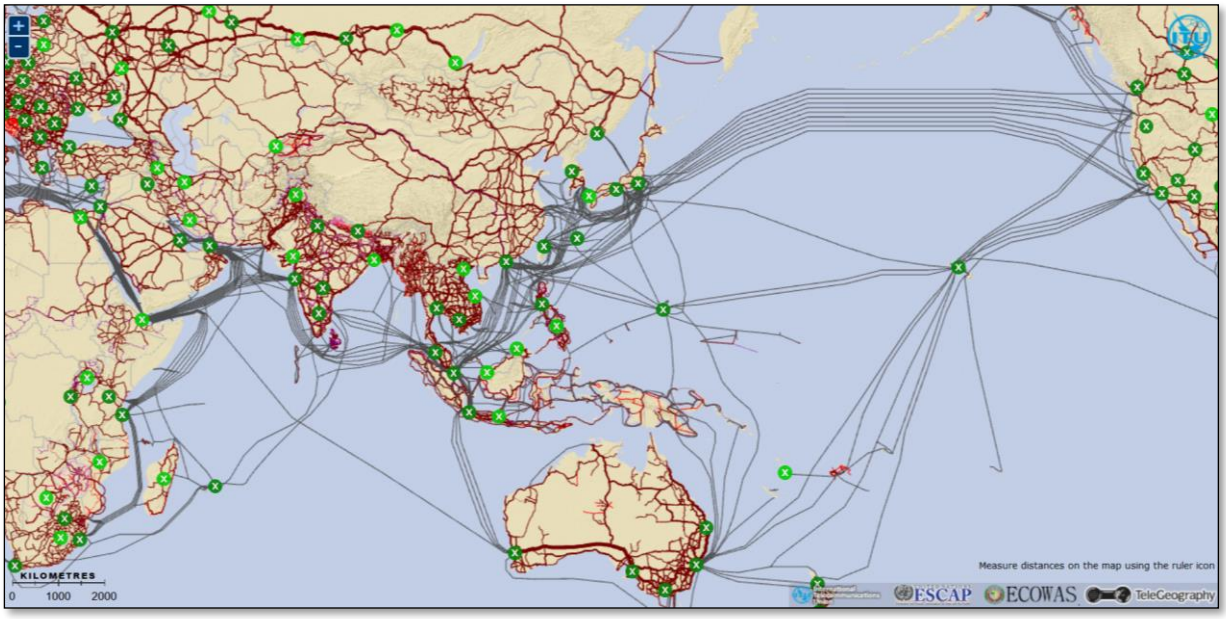
Spectrum management remains one of the areas of high demand from ITU Members. ITU continues its efforts to s Members demands in this important area.

7. *Building of skills for the development and telecommunications use of satellite*

The **Pacific Satellite Connectivity and Development of Emergency Telecom'** project (2014-2020) supported nine countries in the Pacific region (Federated States of Micronesia, Fiji, Kiribati, Nauru, Papua New Guinea, Samoa, Tonga, Tuvalu and Vanuatu) with satellite connectivity. The project was signed in 2014 with partners included ITSO, Intelsat, Inmarsat and Kacific. These connectivity capacities have enabled e-applications in schools, communities and healthcare while serving as the

key point of contact when Cyclone Harold struck Vanuatu. An impact assessment study has been undertaken on the project impact, which has validated the demand for such services and importance of satellite connectivity in remote areas and the importance of digital infrastructure for resilience and for delivering e-applications in the Pacific.

Figure 6: Terrestrial connectivity in Asia-Pacific



Source: ITU Broadband Map

8. Strengthening of cooperation with international/regional organizations to enhance regional ICT connectivity, such as the Asia-Pacific Information Superhighway (AP-IS).

To realize this expected result, ITU has been expanding and strengthening partnerships and collaboration with international and regional organizations during this reporting period. Most recently, the ITU-ADB Joint **Webinar** on 'Advances in Closing the Connectivity Gap in Asia-Pacific: Better Analysis, Understanding and Solutions' was organized in September 2020 and raised awareness on the digital divide in the region and emerging solutions on the horizon.

An **information session** on Distributed Ledger Technology (including Blockchain), was organized in partnership with IBM, raised the awareness of countries ion blockchain governance, applying this emerging technology and learning about the work done by the ITU. Study Groups

APT and ITU continued their collaboration in **building skills** of international affairs staff of Asia-Pacific Members in the area of international conferences. This year's training, which focused on the WTSA, trained 32 participants. ITU continues to participate in meetings and seminars organized to support AP-IS.

A number of these activities were conducted in close cooperation with the Radiocommunication Bureau and the Telecommunication Standardization Bureau.

2.4 Asia-Pacific Regional Initiative 4: Enabling policy and regulatory environments

Objective: *To assist Member States in developing appropriate policy and regulatory frameworks, fostering innovation, enhancing skills, increasing information sharing and strengthening regulatory cooperation, thereby contributing to a supportive regulatory environment for all stakeholders.*

Expected results

1. Sharing of information on developments in policy, legal and regulatory frameworks as well as market developments in the information and communication technology (ICT) sector and the digital economies it enables
2. Development, implementation and review of strategies, policies and legal and regulatory frameworks, including for next-generation universal service obligation (USO), consumer protection, transformation of small and medium-sized enterprises (SMEs) to digital enterprises, and innovation and entrepreneurship.
3. Encouraging inclusive dialogues and strengthening cooperation among national and regional regulators, policy-makers and other telecommunication/ICT stakeholders, as well as with other sectors of the economy, on topical policy, legal, regulatory and market issues
4. Strengthening institutional, human and technical capacity on topical policy, legal and regulatory issues, as well as on economic and financial issues and market developments
5. Improved awareness of policy and regulatory frameworks relating to data privacy and cross-border data
6. Development of strategic frameworks to support research and development activities in ICT in developing countries.

1. *Sharing of information on developments in policy, legal and regulatory frameworks as well as market developments in the information and communication technology (ICT) sector and the digital economies it enables*

Enabling policy and regulatory environment are key for resilient and secure digital infrastructure and delivery of service delivery. ITU facilitated high level exchange of policy and regulatory experiences and dialogue through ITU-NBTC (Thailand) Regulators Roundtable (71 participants) and ITU-MIIT (China) Seminar on Universal Service and ICT for Poverty Alleviation (150 participants).

2. *Development, implementation and review of strategies, policies and legal and regulatory frameworks, including for next-generation universal service obligation (USO), consumer protection, transformation of small and medium-sized enterprises (SMEs) to digital enterprises, and innovation and entrepreneurship.*

One of the most prominent examples under this expected result as the USO 2.0 Framework which was developed in cooperation with ITU and was endorsed by ASEAN Ministers This is expected to accelerate the development of the digital economy particularly for LDCs within this region.

Additionally, Asia-Pacific regional studies on the impact of competition, liberalization, and taxation in the ICTs; and Innovative Business Models in the Telecom Sector are currently being undertaken in response to the emerging issues emanating from the COVID-19 pandemics and demand for accelerated development infrastructure and networks.

A regional assessment on ICT accessibility for the Asia-Pacific region was undertaken to promote action and implementation of ICT accessibility and digital inclusion policies for vulnerable populations, including persons with disabilities for countries in Asia and the Pacific.

Furthermore, a regional study on status of digital innovation in Asia-Pacific is being undertaken. ITU assisted Philippines on digital innovation profile while the work is being undertaken for Indonesia and Vietnam.

These are some of the examples of ITU work which contribute to the materialization of this expected result. It is expected that the findings and policy recommendations will be shared widely with member countries and partners on regional, subregional and national workshops and meetings in the coming months.

3. *Encouraging inclusive dialogues and strengthening cooperation among national and regional regulators, policy-makers and other telecommunication/ICT stakeholders, as well as with other sectors of the economy, on topical policy, legal, regulatory and market issue*

For this expected result, ITU made targeted interventions, as summarized in the below. ITU facilitated high level exchange of policy and regulatory experiences and dialogue through ITU-NBTC (Thailand) Regulators Roundtable (71 participants) and ITU-MIIT (China) Seminar on Universal Service and ICT for Poverty Alleviation (150 participants).

Cross-sectoral cooperation was strengthened through digital government (Refer ASP RI 2), digital agriculture (Refer ASP RI 2) and digital financial initiatives. ITU is currently implementing a digital finance project (FIGI) in China funded by Bill &Melinda Gates foundation in co-operation with CAICT and in coordination with the World Bank.

4. *Strengthening institutional, human and technical capacity on topical policy, legal and regulatory issues, as well as on economic and financial issues and market development*

ITU strengthened institutional and individual capacity of more than 330 participants in policy and regulatory areas including data protection, broadcasting, blockchain, regulatory enablers for digital transformation amongst others. Furthermore, the above-referenced studies and initiatives are expected to serve as a basis for strengthening institutional, human and technical capacity. In the coming months.

5. *Improved awareness of policy and regulatory frameworks relating to data privacy and cross-border data*

Data protection and privacy is an area of emerging concern among member countries in Asia and the Pacific. ITU received requests from countries to support in this area. In its endeavour, it looks forward to working with partners and stakeholders.

6. *Development of strategic frameworks to support research and development activities in ICT in developing countries.*

ITU and NBTC (Thailand) cooperated in building the skills of 50 researchers in Thailand in the area of blockchain (November 2019). ITU endeavours to continue with its Members in supporting research in the region. One recent example towards this expected result is the collaboration being established with the United Nations University and ITU Academia members for the organization of a dedicated session during the RDF 2020. The collaboration is intended to strengthen the linkage between research and policy making and inviting ITU Academia members to conduct research for policy impact and address challenges and opportunities regulators and ICT ministries are facing in the region.

2.5 Asia-Pacific Regional Initiative 5: Contributing to a secure and resilient environment

***Objective**: To assist Member States to develop and maintain secure, trusted and resilient networks and services, and to address challenges related to climate change and disaster management.*

Expected results

1. Compilation of national and/or regional cybersecurity strategies,
2. establishment of national cybersecurity capabilities such as computer incident response teams (CIRTs), and sharing of good practices, through the Global Cybersecurity Index (GCI), to nurture a culture of cybersecurity
3. Strengthening of institutional cooperation and coordination among the key actors and stakeholders at the national, regional and global level (including through organizing cyberdrills) and of the capacity to address issues related to cybersecurity
4. Development of national emergency telecommunication plans and ICT-based initiatives for providing medical (e-health) and humanitarian assistance in disasters and emergencies
5. Incorporation of disaster-resilient features in telecommunication networks and infrastructure, and development of ICT-based solutions (including wireless and satellite-based technologies) to enhance network resilience
6. Development of standards-based monitoring and early-warning systems linked to national and regional networks, and enhanced use of active and passive space-based sensing systems for disaster prediction, detection and mitigation
7. Formulation of comprehensive strategies and measures to help mitigate and respond to the devastating effects of climate change, including e-waste policy.

1. Compilation of national and/or regional cybersecurity strategies

A repository of national cybersecurity strategies was compiled and is currently available on ITU website.

2. Establishment of national cybersecurity capabilities such as computer incident response teams (CIRTs), and sharing of good practices, through the Global Cybersecurity Index (GCI), to nurture a culture of cybersecurity

Specialized country assistances on CIRT assessments and skill building inter-alia was provided to Samoa, Vanuatu, PNG, and Tonga through a DITRDC supported project;

3. *Strengthening of institutional cooperation and coordination among the key actors and stakeholders at the national, regional and global level (including through organizing cyberdrills) and of the capacity to address issues related to cybersecurity*

Under this expected result, ITU supported Kiribati and Solomon Islands to strengthen their cybersecurity strategy frameworks while a table-top exercise was conducted to build national capacity in developing or improving their national cybersecurity strategies. During 2019-20, more than 550 participants raised their awareness and skills on Safeguarding Critical National Infrastructure (CNI), Critical information protection and Cyberdrills while more than 250 participants improved their skills on security related issues through ITU Asia-Pacific CoE.

4. *Development of national emergency telecommunication plans and ICT-based initiatives for providing medical (e-health) and humanitarian assistance in disasters and emergencies*

The region remains vulnerable to natural disasters and an emergency telecommunication plan is critical. ITU provided assistance to Samoa, Vanuatu, Papua New Guinea and Solomon Islands in the area of National Emergency Telecommunication Plan development through a project supported by DITRDC. In response to national disasters, Solomon Islands and Vanuatu received emergency telecommunication support in responding to their respective emergency.

5. *Incorporation of disaster-resilient features in telecommunication networks and infrastructure, and development of ICT-based solutions (including wireless and satellite-based technologies) to enhance network resilience*
6. *Development of standards-based monitoring and early-warning systems linked to national and regional networks, and enhanced use of active and passive space-based sensing systems for disaster prediction, detection and mitigation*

In order to realise these two expected results, a GIS-based assistance for multi-disaster decision making is currently being carried out in India. It is expected that this study, which takes into account the additional challenges of COVID-19 lockdown, will identify how local administrations are addressing multiple crisis, natural and health emergencies, at the same time, using a decision-support tools, such as GIS. ITU also advocated use of standard based emergency telecom systems during its advisory on National Emergency Telecommunication Plan support to the Pacific Islands countries

7. *Formulation of comprehensive strategies and measures to help mitigate and respond to the devastating effects of climate change, including e-waste policy*
8. *Formulation of comprehensive strategies and measures to help mitigate and respond to the devastating effects of climate change, including e-waste policy*

E-Waste is another important area of focus for the region. ITU built awareness of around 60 participants from India to enhance their understanding on E-Waste policies and management. This is an area of increasing importance to the region. ITU will step up the efforts to address the challenges associated with climate change, including E-Waste.

3. How thematic priorities support the implementation

This section details the major achievements under thematic priorities along the impact pathways. The narrative will focus on the outcomes and achievements which supplement the progess and achievements described in the above Chapter on Regional Initiatives.

3.1 Network and Digital Infrastructure

Broadband internet access is no longer a luxury; it is a basic necessity for economic and human development. A critical barrier to leveraging broadband technology to close the digital divide and improve many lives is the development of complex network and digital infrastructure.

Figure 7: ICT Connectivity statistics

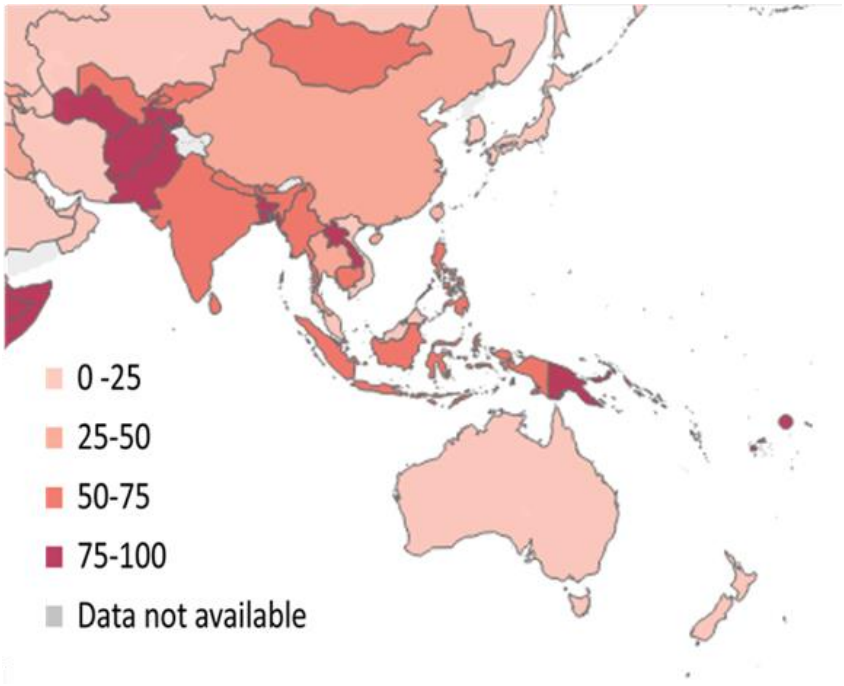
81% **of people in least developed countries lack internet access. In ASP this figure is 51.6%[13].**	**140 million** **jobs could be added by raising internet penetration in developing countries to 75%[14].**	**1.7 billion** **adults are excluded from the formal financial system[15]**

Sources: ITU and World bank

The situation in Asia-pacific is mixed, while we have countries on high end of broadband connectivity which have licensed commecial 5G spectrum, such as Japan, China, Australia Newzeland and the Republic of Korea[16], there is a large segment of population that remains unconnected in the region as can be observed in the figure below.

Figure 8: Percentage of population not using the Internet, 2019*

[13] https://itu.foleon.com/itu/measuring-digital-development/offline-population/
[14] https://www.worldbank.org/en/topic/digitaldevelopment/brief/connecting-for-inclusion-broadband-access-for-all
[15] https://globalfindex.worldbank.org/sites/globalfindex/files/2018-04/2017%20Findex%20full%20report_0.pdf
[16] https://www.itu.int/en/ITU-R/seminars/rrs/2020-Asia-Pacific/Forum/Session%205_IMT%20and%20BB/GSMA_IMT%20bands%20APAC.pdf



Source: ITU *estimate

As the UN agency specialized in ICT, ITU is supporting countries and partners to capitalize on available technology, tools and approaches to expand connectivity and improve access In the Asia-Pacific region. More specifically, ITU has been specialized in the below areas under this thematic priority:

- Analyzing and supporting the development of connectivity in rural and remote areas;
- Creating tools, including ITU Interactive Transimission maps, to identify areas of need and develop roadmaps;
- Providing efficient RF spectrum management using advanced techniques and upgrading technical skills and organizational capacities in this complex and always evolving area
- Assisting in adoption of Next Generation Networks through strategies and policies assistance for example related to IPv6 and Internet Exchange Points (IXPs) amongst others.
- Working with stakeholders to deploy national policies and regulatory tools to encourage Conformance and Interoperability of ICT equipment and networks thereby bridging the standardization gaps.

Given the urgent need to close the digital divide and improve lives, ITU, with its established presence in the region, has worked significantly to increase broadband access for the least connected. We have and always will work with support of dedicated partners to make the vision of a brighter, more connected future a reality for billions of people. Following statistics provide the summary of ITU activities that had an impact on the advancing the objective of “Reliable connectivity to everyone” in the region. For efficient impact based implementation, the thematic areas activties are categorized into 8 sub-themes namely Spectrum Management, Broadcasting, Next Generation Networks (NGN), Broadband networks, Rural-Communications, Bridging the Standardization Gap, Conformance and Interoperatbility (C&I) and International Connectivity.

In **2019-20** the ITU RO-ASP implemented a total of **28** activties whose outcomes were related to the impact pathways of the Thematic area. Under these activites, **19** direct country assistances[17] were provided and **13** regional/sub-regional events were organized which were attended by **3253** participants in total.

In order to address the requests from ITU Member countries for technical support and capacity development in the area of infrastructure and network development, The regional Office intends to use the below tools and approach in its next operational plan.

1) **Operationalizing** toolkits and guidelines including amongst othersLast mile connectivity guidelines and toolkits, ITU transmission maps, ICT Infrastructure Business Planning Toolkit .
2) **Efficiency** and **harmonized** use of spectrum resource in particular through amongst others aligning National frameworks with ITU Radio Regulations, automation of National spectrum management through software tools e.g SMS4DC Programmatic approach to delivery of Spectrum Management Training Programme (SMTP) in the ASP region
3) Digital Infrastructure and **Ecosystem Reinforcement** against COVID-19 in Asia-Pacific under the umbrella of wider global initiatives including amongst others: CONNECT2RECOVER initiative, GIGA initiative, REGCOVID platform

3.2 Policy and Regulation

After the deregulation over the years the ICT sector and the digital space has undergone many changes. In the digital space the private sector plays a key role in the development process. However, the private sector cannot do it alone and none of the development is possible unless government policies are investment friendly, forward looking and conducive for the sector development. This requires partnership between the public and private sectors. The objective of the work in the Policy and Regulation program is to provide the tools for an effective policy, legal and regulatory and market environment for the telecommunication/ICT sector. Some of the activities that are conducted at the global level by ITU are:

- ITU convene **global and regional events and forums** to discuss global trends in regulation including by organizing the Global Symposium for Regulators (GSR) as well as other strategic dialogues on topical policy, legal, regulatory, as well as economic and financial issues and market developments.

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1. Spectrum Management: Mongolia, Lao, Fiji, Tonga
2. Broadcasting: Vanuatu
3. NGN: Samoa (Ongoing)
4. Rural-Communications: (Fiji, Kiribati, Micronesia, Nauru,Papua New Guinea, Samoa, Tonga, Tuvalu and Vanuatu) Under SATCOM project
5. C&I: Vanuatu, Solomon Islands
6. International Connectivity: Pakistan and Afghanistan (Ongoing)

- ITU provide data, research and analysis and tools to support our members in defining, elaborating, implementing and reviewing transparent, coherent and forward-looking strategies, policy, legal and regulatory frameworks as well as in moving towards evidence-based decision-making.
- ITU provide knowledge exchange tools and platforms to enable inclusive dialogue and enhanced cooperation to help countries achieve a more inclusive digital society and to raise national and regional awareness about the importance of an enabling environment.
- ITU provides direct assistance to countries and regions on an enabling environment for smart connected societies.

Priority areas for this thematic priority are:

- Policy and Regulatory Frameworks
- Digital Economy and Markets
- Infrastructure and Connectivity Development Frameworks

Some of the key initiatives worldwide have been:

- GSR20: The Regulatory Wheel of Change: Regulation for Digital Transformation
- REG4COVID Platform
- 2020 Global ICT Regulatory Outlook
- The Economic Contribution of Broadband, Digitization and ICT Regulation
- ITU-World Bank Digital Regulation Handbook and Platform

In addition, we also have the ITU regulatory tracker that provides information on regulatory best practices and the status of the regulatory environment in member countries.

In this background, ITU has implemented and is undertaking the below activities in Asia and the Pacific during the reporting period, using the tools, trackers and on the instruments made available on policy and regulation. In this regard,

- ITU facilitated high level exchange of policy and regulatory experiences and dialogue through ITU-NBTC (Thailand) Regulators Roundtable (71 participants) and ITU-MIIT (China) Seminar on Universal Service and ICT for Poverty Alleviation (150 participants) in 2019.
- In 2019, ITU supported the development of institutional and individual capacity of more than 330 participants in policy and regulatory areas including data protection, broadcasting, blockchain, regulatory enablers for digital transformation amongst others in many different events in 2019. These 330 participants were part of the International Training Program (80), ITU-TRAI training on broadcasting (100), Data protection framework on security and audit CoE (80) and ITU NBTC training on DLT (50).
- A regional assessment on ICT accessibility for the Asia-Pacific region was undertaken to promote action and implementation of ICT accessibility and digital inclusion policies for

vulnerable populations, including persons with disabilities for countries in Asia and the Pacific in 2020;

- USO 2.0 and Child Online Protection Frameworks were developed in through a collaboration between ASEAN and ITU. These frame works were endorsed by ASEAN Ministers.
- Some of the key finding of the ITU-ASEAN USO 2.0 framework are based on the fact that Broadband Internet has effectively replaced voice as the primary cause of digital divide and unless affordable broadband services are provided ubiquitously, the digital divide between the haves and the have-nots will continue to increase. USO, in its present form, is unsuited to make remaining billions adopt broadband, A mere supply of broadband does not fulfil anyone's purpose, USO 2.0 must turn its attention to the demand side too – i.e. the whole ecosystem must be addressed.
- This is expected to accelerate the development of the digital economy particularly for LDCs within this region through better connectivity while keeping children safe online.
- The ITU-ASEAN Child Online Protection frame advocates a multi-stakeholder approach. In particular it emphasize the role that industry can play by keeping children safe online. It also provide example of best practices.
- Asia-Pacific regional studies on the impact of competition, liberalization, and taxation in the ICTs; and Innovative Business Models in the Telecom Sector are currently being undertaken.

3.3 Statics and Big Data

ICT data and statistics programme[18] aims to support the ITU membership in taking informed policy and strategic decisions based on high quality, internationally comparable ICT statistics and data analysis.

The importance of data-led and evidence-based decision making is unprecedented. It is not only a tool for policy making but also a prime driver of choices made by nations, institutions and individuals. As its importance grows, visualization and application of statistics and data takes new heights using technologies such as Big Data, GIS, AI, mobile applications amongst other. Building statistical and data management capability is a critical pillar of digital economy and a prime mover of digital transformation. COVID-19 is an example where we are all witnessing its impact. The recent Committee for the Coordination of Statistical Activities (CCSA) publication on ***How COVID-19 is changing the world: a statistical perspective***?[19] is a clear example of the importance of statistics for measuring digital development and the importance of partnerships.

ITU has been the primary source for data collection on telecommunication and ICTs and feeds into various indexes and other sectoral decision-making tools. Monitoring digital development only continues to grow in its importance as countries, industry and agencies embark on digital development agenda. However, there are several challenges experienced by countries in collecting the required data to measure digital development in a timely manner including availability of resources and capacity. The ITU has recently released ITU Manual for Measuring ICT Access and Use by Households and Individuals, 2020 Edition, and ITU Handbook for the Collection of Administrative Data on Telecommunications/ICT, 2020 Edition. There has been increasing demand from countries to build institutional and individual capacity to improve the collection and use of statistics and data.

[18] WTDC-17, Output 3.2

[19] Source: https://www.itu.int/en/ITU-D/Statistics/Pages/publications/covid19.aspx

3.4 Capacity Development

ITU works to strengthen capacity in the field of ICT and digital technology development, as articulated through resolutions of its Plenipotentiary Conference and its World Telecommunication Development Conference (WTDC). Objective 3 (Output 3.3) adopted by WTDC (Buenos Aires, 2017) mandates ITU to elaborate human skills development policies and guidelines in telecommunications/ICTs for its members, especially developing countries, in order to assist them in enhancing their human and institutional capacity and setting up their national digital strategies.

In 2020, the Digital Skills Assessment Guideline was launched to support policy-makers to identify national skills gaps and requirements, which can then be addressed through targeted digital skills development policies and strategies. The guidebook draws on, and complements, the ITU Digital Skills Toolkit published in 2018, which was designed to help policy-makers develop national digital skills strategies and roadmaps.

Supporting cross-sectoral digital skills programmes will be an ongoing focus to promote inclusiveness, especially for women, youth, the elderly and persons with specific needs, through development of training programs, utilising internal experts as well as through partnership with international organisations and the private sector.

Centre of Excellence

The Centres of Excellence (CoE) programme[20] was launched by ITU at the turn of the millennium, key training delivery mechanisms in the Asia and the Pacific.

The six CoE that are currently in operation for the year cycle of January 2019 to December 2022 in the Asia and the Pacific are :

- Advanced Level Telecom Training Centre (ALTTC), India;
- China Academy of Information and Communications Technology (CAICT), China;
- IoT Academy, Iran;
- National Information Society Agency (NIA), Republic of Korea;
- State Radio Monitoring Center / State Radio Spectrum Management Center (SRMC), China; and
- Wireless Communication Centre, Universiti Teknologi Malaysia (UTM)

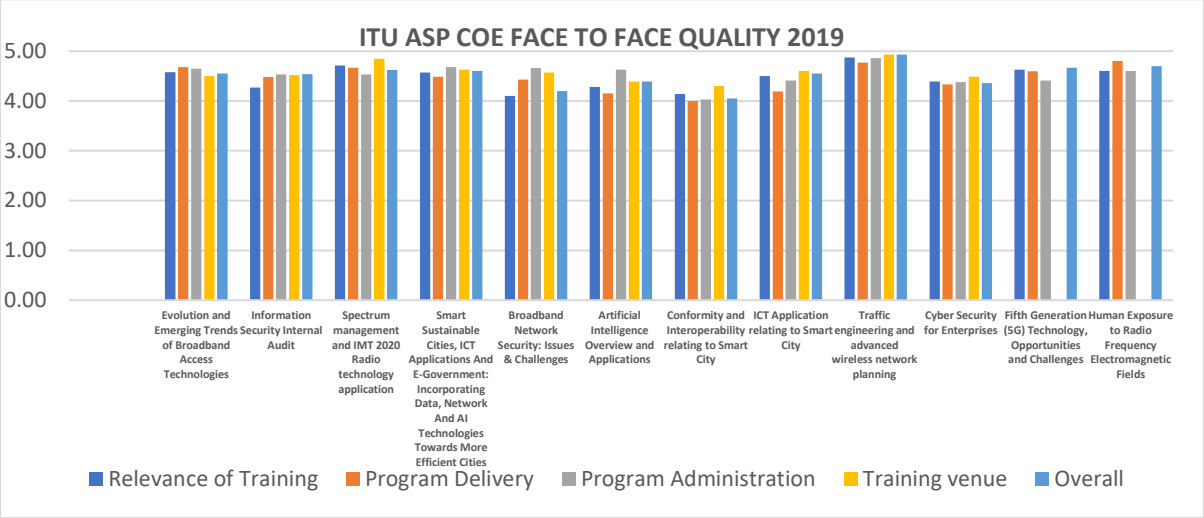
[20] The Centres of Excellence (CoE) programme was launched by ITU at the turn of the millennium, with the aim to support capacity development in the field of information and communication technologies (ICTs) by offering continuous education to ICT professionals and executives in the public and private spheres through face-to-face, online or blended learning.

The CoE initiative evolved over the years to become one of the ITU's key training delivery mechanisms. With the support from multilateral and regional organizations, CoE networks have been established in a number of regions including Africa, the Americas, Arab States, Asia-Pacific, Commonwealth of Independent States (CIS) and Europe. Under the umbrella of the ITU Academy, these regional networks are brought together into a single global network sharing expertise, resources and capacity-building know-how in telecommunications and ICT training/education.

The training conducted is based on the CoE priority areas such as Wireless and Fixed Broadband, Internet of Things, Cybersecurity, Conformance & Interoperability, ICT Applications, Spectrum Management and RF Monitoring (a video feedback of 2020 training under CoE node SRMC).

In 2019, a total of 19 training was conducted attended by 759 participants from across the region. The feedback from the training conducted through the CoE have been encouraging with positive remarks received from all training that was delivered.

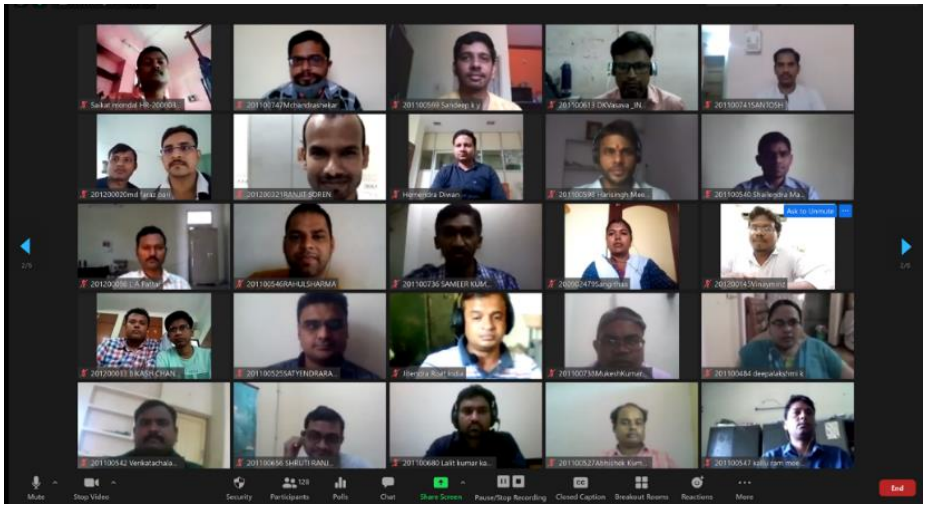
Figure 10 Training evaluation result for CoE training in 2019



Source: ITU

In 2020, a total of 18 training were planned to support the training needs of ICT professionals in the Asia and the Pacific region. Despite the disruption caused by COVID19, CoE continued its operation by converting all the face-to-face training to online led courses, conducted using the ITU Academy platform.

Figure 11 ITU CoE IoT sensors and network for disaster communication Training: Virtual chat session conducted through Zoom



Source: ITU

Country Based Training

Capacity development programme is also organised based on the request from ITU members. Training courses are developed in collaboration with internal and external experts based on the standards developed by the ITU. The training is tailored to specific digital skills needed to improve digital competency to support digital transformation and evolving digital landscape.

In 2019, a total of 15 training was conducted attended by 930 participants from across the region organised in 11 countries focusing on areas such as Digital transformation, Broadcasting, Spectrum Management, Policy and Regulation, Cybersecurity, ICT Statistics, ICT Applications and emerging and new technology such as Blockchain.

Digital Transformation Centre

The Digital Transformation Centres (DTC) Initiative was launched by ITU in partnership with Cisco in September 2019 during ITU Telecom World held in Budapest, Hungary. The Initiative seeks to create a global network of centres, whose main purpose is to develop digital skills mainly at basic and intermediate level for citizens. The Initiative contributes to the broader goal of building an inclusive digital society, and ensuring that lack of knowledge and skills is not a barrier to participation in the digital economy.

Nine DTCs have been selected for the first phase which will run for 21 months from January 2020 to end of September 2021. The Nine DTCs have been selected from Africa (4), Americas (2), and Asia Pacific (3) regions.

As of October 2020, more than 200,000 participants have been given digital skills training through the DTC in Indonesia, the Philippines and Papua New Guinea, in collaboration with Cisco and UNESCAP/APCICT. The trainings conducted by the DTC's focuses on basic to intermediate level digital skills, in areas such as train the trainers program on Basic ICT, introduction to cybersecurity, entrepreneurship and woman empowerment. The target audience for the modules that has been conducted consist of community champions, youths and woman entrepreneurs.

In response to the COVID-19 pandemic, to meet the digital skills challenges especially in the face of the pandemic, the DTC initiative, in collaboration with Cisco, a total of 237 participants were trained to take full advantage of web conferencing tools to delivering training virtually between April and July 2020. These trainings target teachers, learners, and workers through digital upskilling programmes.

3.5 Digital Innovation Ecosystem

Connectivity alone is not enough for a country to take real advantage of the whole ICT ecosystem. Equally important is use of the connectivity to achieve digital transformation through innovative applications. This require an enabling environment which is conducive for innovation and an environment where the Micro, Small and Medium Enterprizes (MSMEs) can grow. The development in the ICT sector is driven by the MSMEs. This not only requires the government support but requires all the stakeholders like the academia, funding agencies and young entrepreneurs to be fully on board and aware of the digital innovation ecosystem. In this regard ITU has been paying special attention to this area. SMEs play a vital role in economies of many Asia-Pacific countries. The recovery from COVID-19 requires innovative solutions and these solutions often come from upcoming innovators and SMEs.

Some of the key priority areas in this thematic priority area has been:

- Knowledge-Sharing Platform: ITU has developed a comprehensive platform dedicated to sharing knowledge, tools and best practices that enable stakeholders to engage and connect in a global dialogue on innovation. Furthermore, the physical and virtual knowledge-sharing platform provides networking opportunities to connect globally and empower local innovation ecosystems. The products and services that make up the platform include national workshops, a database of good practices, innovation advisory and technical assistance, ecosystem-building competitions, and toolkits. A national workshop was held in Philippines in 2019 to share knowledge with the national stakeholders.

- Innovation and Entrepreneurship Strategies and Policies: There are two sub categories of this priority areas:

  Innovation Country Reviews offer a multi-stakeholder and cross-sectoral approach, as well as a scalable and comparative framework, to developing comprehensive recommendations, roadmaps and projects that engage all stakeholders. This enables stakeholders to strengthen their capability to integrate digital innovation into their national development agenda.

  Digital Innovation Profiles have been developed to provide an accurate assessment of an ecosystem's capacity and maturity. The assessment is done through a series of events in which stakeholders from the ecosystem come together to analyse the current situation and co-create appropriate solutions via flagship projects and/or initiatives, and policies designed to close the digital innovation gap.The Philippine's country digital innovation profile is under development. While study has commenced to develop the digital innovation profile for Indonesia. Yet another study is underway to compile the Regional ecosystem good practices. The ITU regional office also conducted a Regional Innovation Forum on 29 October 2020 that was part of the Global Innovation Forum.

- Bankable Ecosystems Projects: ITU provide a 360° advisory technical assistance including diagnosis, risk assessment, good practice transfer, capacity building and implementation. Depending on the project, this technical assistance includes the implementation of one bankable initiative, or a comprehensive sustainable project with multiple initiatives impacting key sectors to accelerate digital transformation and achievement of the 2030 Sustainable Development Goals. This technical assistance enables stakeholders to agree on projects and e engages in efficiently executed, high-impact initiatives to develop a mature ICT-centric innovation ecosystem.

3.6 Digital Services and Applications

Digital services and application program (WTDC-17 Output 4.2) is aimed at improving capacity of the ITU membership to accelerate economic and social development by leveraging and using new technologies and telecommunication/ICT services and applications. The Asia-Pacific Regional Initiative 2 "Harnessing information and communication technologies to support the digital economy and an inclusive digital society" largely contributes to this output. In addition, WTDC-17 report also outlines its linkages with SDGs (SDG 2, SDG 3, SDG 4, SDG 6, SDG 7, SDG 11), WSIS Action line (C7), PP Resolution (139, 183 and 201) and WTDC Resolutions (17, 21, 30, 32, 37, 52, 53 and COM3-2). The program supports Members in accelerating their digital transformation journey towards SDG 2030 and leaving no one behind. The importance of digital services has been clearly seen during COVID-19, where digital services were quickly adopted to mitigate the impact. It also triggered innovation with shifting of

traditional services to digital platforms (e.g. virtual meetings), fast tracking wide adoption of new ways of service delivery (e.g. online shopping, delivery) and mainstreaming new service application.

Despite significant efforts towards ICT enabled solutions for development, stakeholders are often operating and developing solutions in a 'siloed' manner, which leads to significant duplication and fragmentation of efforts, and affects resource effectiveness. ITU and DIAL project "Mainstreaming ICT for SDG" aimed to address existing challenges by adopting a whole of government approach to meet the SDGs. In addition, the ITU also has specialized toolkits, blueprints and programs to build sectoral strategies and support its implementation (e.g. Be He@lthy, Be Mobile (BHBM) with WHO, digital agriculture with FAO, connecting every school (GIGA) on with UNICEF, Smart village which is also being adopted to Smart Islands) is being developed to assist ITU Members in implementing their digital services and applications. This cluster is also closely linked with other ITU clusters (digital inclusion, digital skills, policy and regulation and digital infrastructure), initiatives (CONNECT2RECOVER, GIGA) and ITU-T activities (Smart Sustainable Cities).

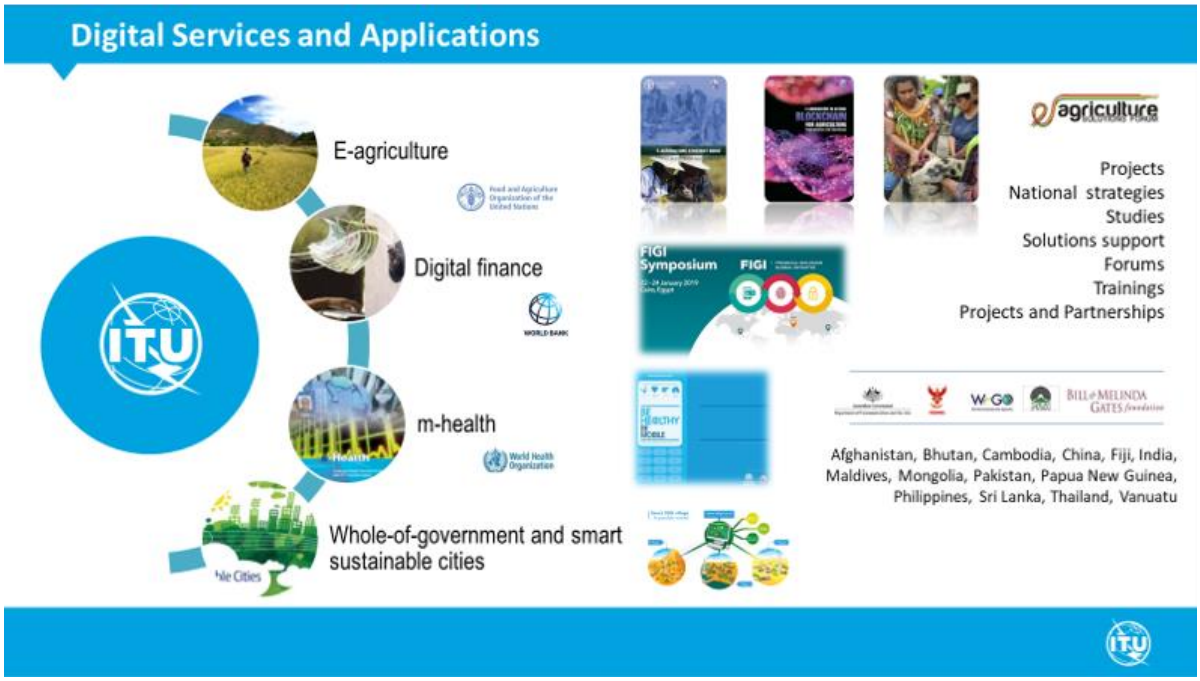
Digital services continue to be a priority area for ITU Members in the Asia-Pacific region. The ITU assists its Members and partners in the Asia-Pacific region (Figure 12) through

a) developing national strategies and action plans (e.g. digital government – Maldives, Pakistan, Papua New Guinea, Vanuatu; digital agriculture- Cambodia, Mongolia)
b) conducting studies (e.g. state of the digital divide which frames school education in Thailand and identify key infrastructural factors affecting access to and adoption of e-learning and other digital technologies in school),
c) solutions support (e.g. digital government – Bhutan, digital agriculture – PNG)
d) conducting forums and trainings (in areas of digital government, digital transformation, cross-sectoral skills and application of technologies to deliver digital services and applications).

Given the cross-sectoral nature of these services, ITU has strategic partnerships to meet Member needs. In doing so ITU continues to work with partners including UN sister agencies (WHO, ITU, UNESCO, UNICEF, UNCDF, UNDP, ILO, World Bank), Regional organisations (APT, APNIC, PITA), donor agencies and national governments, Regulators (NBTC) and other partners. Two projects (EU funded project *Support to Rural Entrepreneurship, Investment and Trade in Papua New Guinea (STREIT PNG*) implemented by FAO, ITU, ILO, UNDP, UNCDF) and Government of Australia supported project (*Harnessing ICTs to support the digital economy and an inclusive digital society)* are currently being implemented.

Supporting countries in developing their national strategies, implementing pilot solutions where strategies are being developed and its adoption to smart village and smart islands remain key areas of work. ITU has three requests for smart village and smart islands. One of the forthcoming new area of digital service includes mAging, where a handbook with WHO exists and a comprehensive program for adoption in the region is being developed.

Figure 12: Digital Services and Applications delivery in Asia-Pacific



3.7 Digital Inclusion

Enabling all the world´s people to access and use the Internet—and removing digital divides—remains a challenge that needs to be addressed if the world community is to achieve the United Nations Sustainable Development Goals (SDGs) by 2030. As referenced earlier, the digital divide appears not only among countries but also among different societal groups, between men and women, people with disabilities, age among others.

Women and Girls

A substantial divide persists between women and men and between girls and boys in Internet access and use. The proportion of women using the Internet is higher than that of men in only 8 per cent of countries, while gender equality in Internet use is found in just over one-quarter of countries. In Asia and the Pacific, only 41.3% of females are connected to the internet.[21]

Leaving no one behind is a central promise of the United Nations Sustainable Development Goals (SDGs). ICTs are an essential pathway to gender equality and empowerment, and will contribute towards SDG 5: achieving gender equality and empowering all women and girls.

In order to tackle the gender digital divide, ITU has developed the below initiatives.

EQUALS was founded in 2016 by five partners: ITU, UN Women, the International Trade Centre, GSMA and the United Nations University. Made up of four Coalitions – Access, Skills, Leadership and Research, the EQUALS global partnership takes a multidisciplinary approach to closing the gender digital divide.

[21] https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2019.pdf

EQUALS in Tech Awards are given every year to organizations and individuals working to help girls and women gain equal internet access, digital skills and opportunities in the tech industry. In 2020, EQUALS received 339 applications from 75 countries. In 2019, 24 women-led SMEs in the tech sector from Africa, Asia, the Middle East and South America attended ITU Telecom World for EQUALS Women in Tech. Out of 24 women-led SMEs, 12 companies (50%) were from Asia (Bangladesh, India, Philippines, Sri Lanka). The SMEs were able to generate half a million dollars in business leads at the event, by gaining exposure with buyers and investors and receiving tailored mentoring to improve their competitiveness.

International Girls in ICT Day is celebrated worldwide every year on the fourth Thursday of April, which is an opportunity for girls and young women to see and experience technology in a whole new light. Since 2011, over 422,000 girls and young women have taken part in more than 11,500 celebrations of International Girls in ICT Day in 171 countries worldwide. In the Asia and the Pacific, a total of 12 countries took part in the Girls in ICT day celebration, with a total of 27 events organised throughout the region.

In 2019 and 2020, the Ministry of Digital Economy and Society (MDES-Thailand), the National Broadcasting and Telecommunications Commission (NBTC-Thailand) and the International Telecommunication Union (ITU) organized Girls in ICT Day celebration in Thailand. In 2019, more than 100 female university students in Thailand in partnership with CISCO (Thailand), Microsoft (Thailand), and Food and Agricultural Organization (FAO) were given digital skills training in the area of Cybersecurity and Smart Farming. In 2020, the Girls in ICT day event was conducted virtually throughout the month of August and September from The Plenary and Launching Session to the Closing Ceremony, due to the COVID-19. Around 250 girls and young women participated in one-month full training programme in areas of Leadership, Artificial Intelligence, Cybersecurity and Smart Farming in partnership with UNESCAP, FAO, UNESCO, APT, CISCO and a mobile operator, DTAC. Based on the success, NBTC is considering the funding of 2021 activities, while ITU is in discussion with other countries which showed interests.

Youth

There will be tens of millions of jobs for people with advanced digital skills in the coming years, with some economies predicting a talent gap for workers with advanced digital skills, and others ranking ICT specialists among their fastest-growing roles. While young people are often considered “digital natives", the majority of them do not actually possess sufficient job-relevant digital skills to fill vacancies.

According to ILO Report on Youth Employment, the youth labour force participation rates (percentages) and gender gaps (percentage points) in Asia Pacific have seen a decline since a decade ago and currently stands below 50 per cent and 40 per cent respectively. The youth employment-to-population in Asia Pacific have seen a decline since 2009, and currently stands at less than 45 per cent.

Governments, social partners, the private sector, academia, civil society and other key stakeholders need to ensure that young people are equipped with the digital skills to benefit from employment and entrepreneurship opportunities to build an inclusive digital economy and society.

In 2020, ITU introduced the new Youth Strategy. This strategy aims to focus our work on youth in a strategic, coordinated and systematic way, to be Fit4Purpose, to reduce the youth digital divide, and to ensure the participation of youth in ITU as key stakeholders in the implementation of the 2030 Agenda for Sustainable Development. The new Youth Strategy is focused around three areas of action:

- EMPOWER: Supporting youth empowerment by creating a community of young leaders.
- ENGAGE: Bringing young people together to engage with ITU and its Members.
- PARTICIPATE: Fostering youth dialogue and participation in ITU activities and decision-making processes.

ITU Regional Office for the Asia and the Pacific will be supporting the implementation of this new ITU Youth Strategy, to mobilize, empower and engage youth, and harness youth's natural affinity with and understanding of technology to fully leverage the transformational power of digital in our efforts to achieve the Sustainable Development Goals by 2030.

Children

ICT has created unprecedented opportunities for children and young people to communicate, socialize, share, learn, access information and express their opinions on matters that affect their lives and their communities, while at the same time posing significant challenges to children's safety.

This year, ITU launched the four sets of the 2020 Child Online Protection (COP) Guidelines, aiming at raising awareness on the scope of child online protection, while providing resources and actual tools that support children and their families in the development of digital skills and digital literacy and that additionally support industry and government stakeholders in the development of corporate and national child online protection policies and strategies.

In February 2020, ITU-UNICEF-UNODC along with the Philippines Department of Social Welfare and Development (DSWD) and the Thailand Ministry of Social Development and Human Security (MSDHS) as the focal points for the ASEAN Ministerial Meeting on Social Welfare and Development, together with the United Nations Children Fund (UNICEF), United Nations Office of Drugs and Crime (UNODC), and ITU as co-conveners, organized the ASEAN Regional Conference on Child Online Protection on 25-27 February 2020 in Bangkok, Thailand.

To respond to the increasing interests in the topic and the work ITU has been conducting, ITU and the Department of Infrastructure, Transport, Cities and Regional Development, Australia are embarking on a project from 2020-2021 to strengthen the Child Online Protection frameworks in selected Asia and the Pacific countries with special emphasis on providing guidance, developing and disseminating guidelines, building human and institutional capacity, enhancing stakeholder's engagement and increasing awareness. ITU has currently received request for support from six countries for this project to be implemented.

Persons with Disabilities and Older Persons

The 2030 Sustainable Development Goals (SDG) Agenda promotes that no one is left behind, including persons with disabilities, The 2030 SDG Agenda reinforces Digital Inclusion to ensure that every person can access and use ICT, including persons with disabilities and older persons.

ICT Accessibility for persons with disabilities is a priority for ITU members, that recognize the need to ensure that the one billion people living with some form of disability can use ICT for their empowerment. Persons with disabilities constitute approximately 15 per cent of the population in any country, amounting to more than 690 million persons in Asia and the Pacific. ESCAP research indicates that only 40 per cent of government public websites of Asia-Pacific countries were reported to be available in accessible formats.[22]

Through Connect 2030 Agenda, the ITU and its members are committed to bridging the digital divide through the promotion of ICT accessibility, in all countries for all peoples, including older persons and persons with disabilities. An effective social-economic response must include mainstream and specific disability inclusive policy-making that benefits persons with disabilities on an equal basis with others and empowers them in all aspects of life.

The ITU Regional Assessment on ICT Accessibility for the Asia-Pacific Region was recently conducted to support all countries from the region, in particular policy makers and related stakeholders to jointly fulfil the Global Commitments and targets such as ITU target 2.9 calling on enabling accessible environment in all countries for Persons with Disabilities (PwD) until 2023.

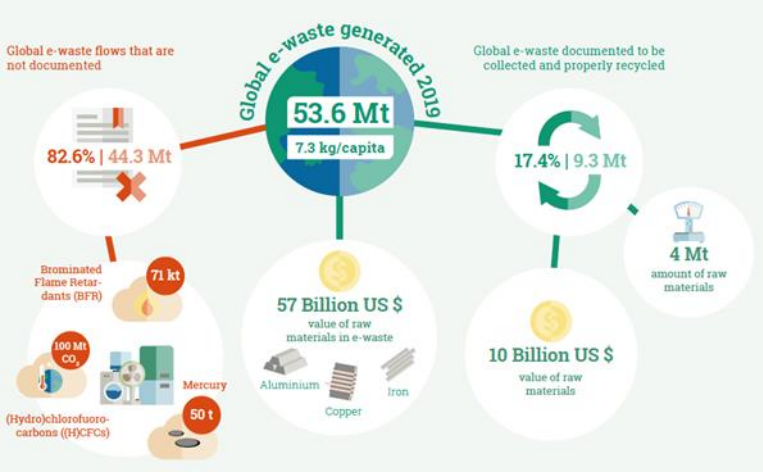
3.8 Environment (E-Waste) in the Asia and the Pacific: One Step Towards Circular Economy

ICT is a critical development tool and technological advancement and innovation have created new opportunities for global connectivity. As a result, more people, especially in rural and previously unconnected areas, have access to Internet. Mobile-cellular and broadband networks and services have expanded rapidly. At the end of 2019, some 4.1 billion people were connected to the Internet and the number of mobile-cellular telephone subscriptions is currently greater than the global population. Higher levels of disposable income, urbanization, and industrialization in many countries are leading to growing amounts of throw-away ICTs, and consequently to waste electrical and electronic equipment (WEEE), also called “e-waste”. The price of IT equipment, such as computers, peripheral equipment, TVs, laptops, printers and mobile handsets are dropping. Whilst other trends concerning electrical and electronic equipment (EEE), include growing multiple device ownership, the electrification of traditionally non-electrical equipment, a growth in cloud computing services and data centres, and an increase in shorter replacement cycles for EEE.

Discarded equipment such as phones, fridges, PCs, TVs, laptops and sensors contain substances that pose considerable risks to society and the environment. As most WEEE is not properly documented nor managed through appropriate collection or recycling channels, inadequate methods are exacerbating environmental degradation and damages to human health.

[22] ESCAP (2017). Midpoint Review of the Implementation of the Incheon Strategy to “Make the Right Real” for Persons with Disabilities in Asia and the Pacific

Figure 13: Global E Waste Monitor 2020



At the same time, a large amount of the residual value in this equipment is not being reclaimed. The estimated value of the WEEE generated globally in 2019, was approximately 57 billion USD. According to The Global E-waste Monitor 2020, the world generated a total of 53.6 million metric tons (Mt) in 2019.

In the same year, through domestic and imported WEEE, India alone generated 3,230 kilotonnes (kt) whilst the whole of Asia generated 24.9 Mt (5.6 kg per person). This regional figure equates to an astounding 46% of all WEEE generated globally. As Asia and the Pacific is the world's most populous region, the issue cannot be left unaddressed, without proper tools and measurements to manage WEEE.

The highest policy making body of the ITU, the Plenipotentiary Conference, established targets in 2018 relating to e-waste:

- By 2023 increase the global e-waste recycling rate to 30%
- By 2023 raise the percentage of countries with an e-waste legislation to 50%

As a result of WTDC-17 in 2017, several Regional Initiatives were agreed upon pertaining to "e-waste", for implementation by the Telecommunication Development Bureau (BDT). One of the objectives of Regional Initiative 5 for the Asia-Pacific region – Contributing to a secure and resilient environment – stipulates "Formulation of comprehensive strategies and measures to help mitigate and respond to the devastating effects of climate change, including WEEE policy.

Some of the key output ITU has achieved in Asia and the Pacific are as follows:

- Enhanced skills of over 60 participants through a regional E-Waste Policy Forum in India resulting in enhanced understanding on E-Waste policies and management.
- Fostered collaboration amongst UN Agencies ITU UNU ILO WHO UNEP on E-Waste.
- Developed a project document to launch Pan India E Waste Monitor (ongoing)

Going forward, a number of countries from Asia and the Pacific such as India, Bangladesh, and Nepal, have expressed interest to seek technical assistance on collection of data and preparing national policies for circular economy. An information session on "E-Waste in the Asia and the Pacific: One Step Towards Circular Economy" has been planned to raise awareness about WEEE challenges and opportunities and to hear about the programme that BDT has developed to support the development of national WEEE policies, to ensure the environmentally sound management of WEEE and assist countries in development of national strategies.

3.9 Cybersecurity

The main purpose of cybersecurity programme is to support the ITU membership, in particular developing countries, in building trust and confidence in the use of ICTs. Cybersecurity efforts should consider the global, transnational nature of cyber threats. This is contained under ITU Asia-Pacific Regional Initiative "ASP5: Contributing to a secure and resilient environment" with an objective to assist Member States to develop and maintain secure, trusted and resilient networks and services, and to address challenges related to climate change and disaster management. The ITU's most populous region, Asia and the Pacific, is growing digitally, with increased reliance on digital payment, healthcare, commerce, trade, work, and educational solutions just to name a few. As a result, cybersecurity is more important than ever. As the coronavirus pandemic continues to disrupt essential social and economic functions, the risk of cyber threats has increased due to our increased reliance on digital tools and platforms.

Figure 14: WEF Global Risk Report

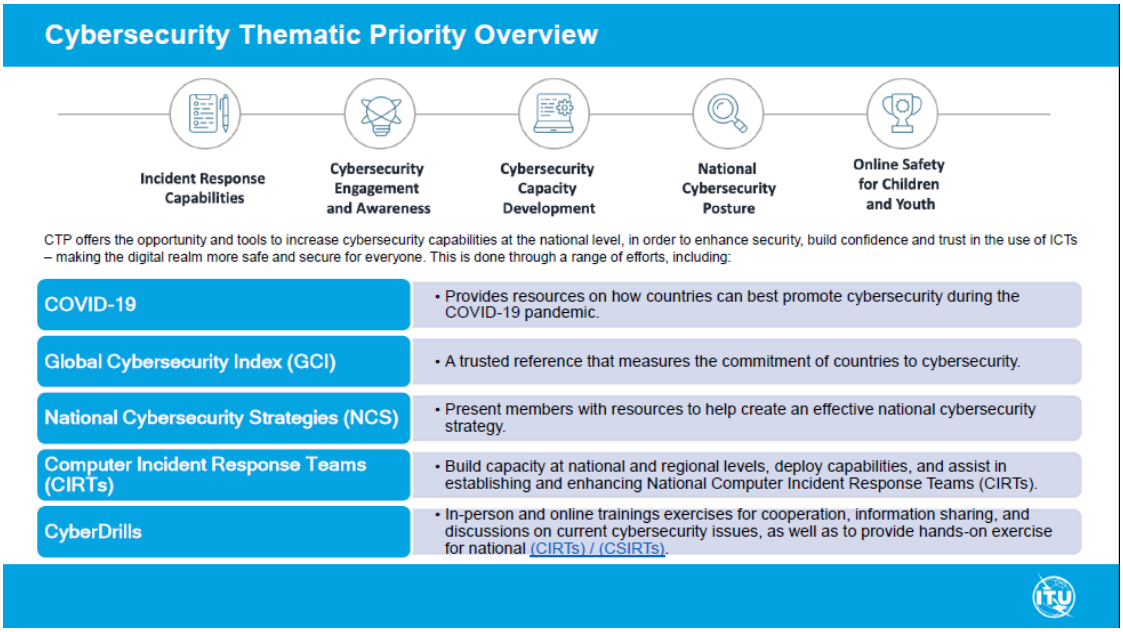
Source: [World Economic Forum Global Risk Report]

The digital nature of the Fourth Industrial Revolution makes them intrinsically vulnerable to cyberattacks that can take a multitude of forms—from data theft and ransomware to the overtaking of systems with potentially large-scale harmful consequences. The [Global Risks Report] states that offensive cyber capabilities are developing more rapidly than our ability to deal with hostile incidents. In recent years the Global Risks Report has identified cyberattacks as very likely to happen with a very high impact. Cybercrime as a-service is also a growing business model, as the increasing sophistication of tools on the Darknet makes malicious services more affordable and easily accessible for anyone.

ITU envisages creating trusted cyberspace for all along the four impact pathways:

- Technical and Policy Measures: Accelerating the development and adoption of sound national cybersecurity strategies and comprehensive action plans;
- Enhancing organizational structures: Establishing prepared organizational structures to support national commitment in cybersecurity.
- Capacity development: Improving cybersecurity capacity in the Least Developed and Developing Countries; and
- Cooperation and coordination: Promoting cybersecurity coordination and collaboration as one of enabling areas for the national digital transformation journey and trust building.

Figure 15: ITU Cybersecurity Thematic Priority Overview



Source: ITU

Effective mechanisms and institutional structures at the national level are necessary to deal with cyber threats and incidents. In this context, the National Computer Incident Response Teams (CIRT) plays an important role in the solution. ITU is working with Member States to build the necessary capacity at national and regional levels, deploy capabilities, and assist in establishing and enhancing CIRTs. To date, ITU has completed CIRT assessments in 76 countries and established or enhanced CIRT in 14 countries including 4 CIRTS established in Vanuatu, Tonga, Samoa, PNG in 2019. ITU's continued collaboration with the newly established CIRT ensures that support remains available, and institutions can be further enhanced.

National Cybersecurity Strategy (NCS) is a critical element for any country's socio-economic security. ITU presents members with a reference guide to help countries create an effective national cybersecurity framework. ITU has assisted Kiribati, Solomon Islands and Bhutan in developing NCS in Asia-Pacific region as well as hands on tabletop exercise were carried out in Melbourne, Australia in 2020. Currently assistance for drafting NCS for Pakistan and Fiji are

underway. Under the thematic priority of cybersecurity, following are some key outcomes achieved in the Asia-Pacific region:

- More than 550 participants strengthened their awareness and skills on Safeguarding Critical National Infrastructure (CNI), Critical information protection and Cyberdrills;
- ITU supported Kiribati and Solomon Islands to strengthen their cybersecurity strategy frameworks while a tabletop exercise was conducted to build national capacity in developing or improving their national cybersecurity strategies.
- Specialized country assistances on CIRT assessments and skill building inter-alia was provided to Samoa, Vanuatu, PNG, and Tonga through a DITRDC supported project

As part of the Cyber Drill 2020, ITU is organizing Regional Dialogues, Global webinar, Global Trainings and exercised provides a unique platform for leaders from the Asia-Pacific cybersecurity ecosystem to share their experience in addressing cybersecurity issues such as incident response capabilities, latest tools and strategies to mitigate online threats in protecting critical national infrastructure.

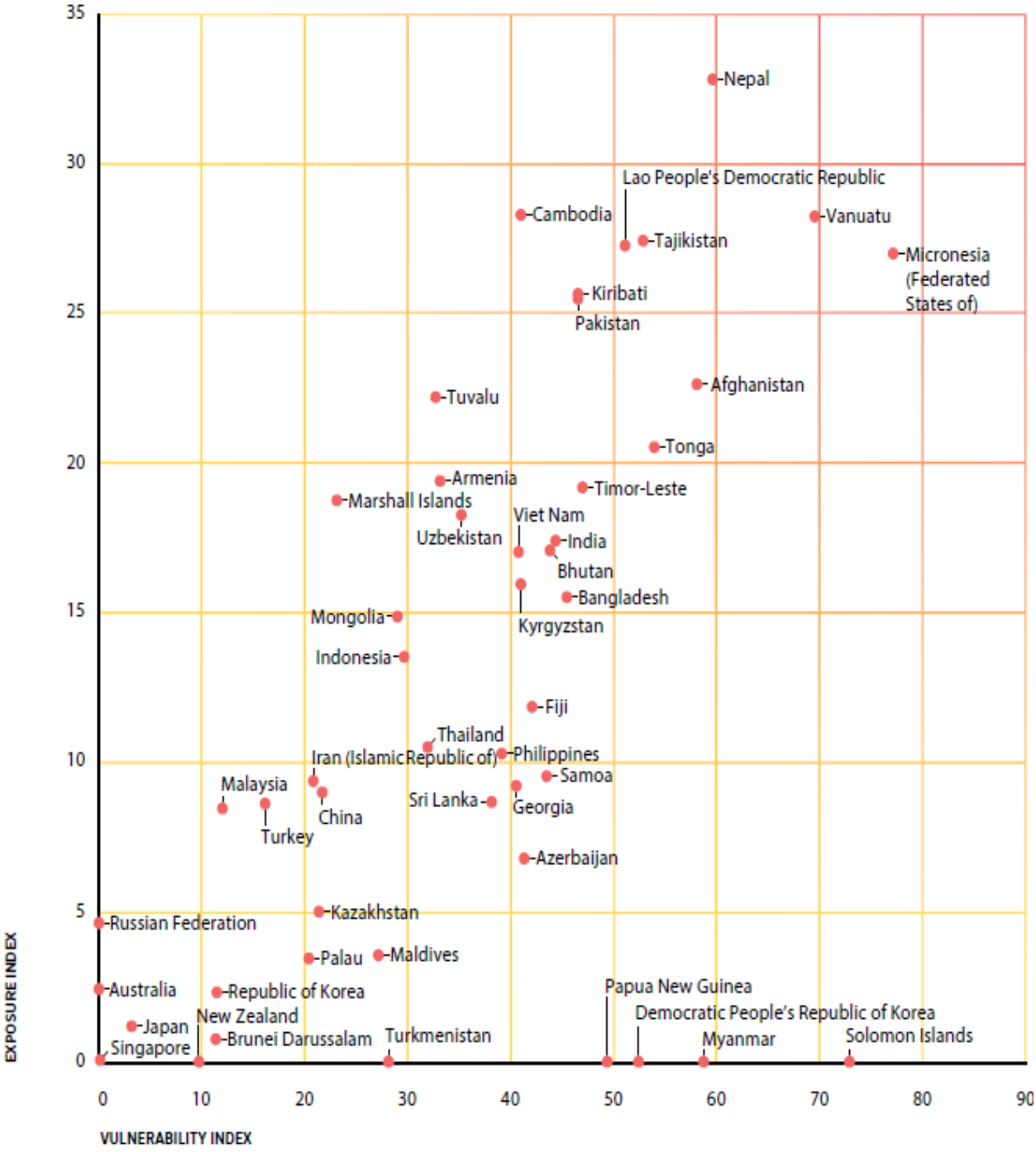
As a result of efforts to inform, create awareness and develop skills on cybersecurity by Regional Office, number of Member States are seeking ITU assistance on development of national strategies, CIRT Assessments and carrying out cyber drills and several partners are ready for cooperation in order to address the priority needs of countries to ensure safer cyberspace.

3.10 Emergency Telecommunication

The world is continuously facing different types of hazards, vast pandemics, epidemics, extreme weather events attributed to climate change, strong earthquakes, tsunamis, as well as all geological and human made related hazards pose continued challenges to countries and communities. The impact is even worse for those living in remote and isolated areas with no access to basic information and communication facilities.

Countries in Asia-Pacific region suffer from natural disasters disproportionately. The effect This could be explained better through the Vulnerability index and exposure index of countries in Asia and the Pacific as below:

Figure 16: Vulnerability index and exposure index of countries in Asia and the Pacific



Source: ESCAP

Emergency telecommunications play a critical role in disaster risk reduction and management. ICT is key to monitor the environment, analyze the information to deliver early warnings and alerts, and in the immediate aftermath of disasters by ensuring timely flow of vital information.

ITU plays an important role in emphasizing the critical role of ICTs in disaster risk reduction and management, and supports its Member States, in all the four phases of disaster management through the design of national emergency telecommunications plans, the setting up of early warning and monitoring systems and the provision of emergency telecommunications equipment when disasters strike.

ITU activities in Asia-Pacific in 2019-20 concentrated on having impact preparedness and response phase. In particular the activities of ITU RO-ASP can be categorized as follows

1) Preparedness:

a) Adoption of National Emergency telecommunication plan (NETP).
Vanuatu, Samoa, PNG, Afghanistan and Solomon Islands were assisted on NETPs which provides opportunity to develop action plans from all stakeholders and driver relevant organizations SoPs.

b) SATCOM Emergency telcomm capacity upgrade

Under the project funded by ICTDF and external partners, RO-ASP was able to assist 9 countries in developing strategic resources of satellite connectivity equipment (in total 93 satellite terminals in C, Ku and Ka band) that can be mobilized or utilized during emergency response. The impact of partnership project has been widely covered[23] by media and further partners like ADB has shown interest in continuing to build on the project successes.

Figure18: Snapshot of multiple media coverage of project on Pacific Satellite connectivity and Emergency Telcomm capacity building

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- https://www.scoop.co.nz/stories/WO1906/S00104/opening-of-the-pacific-satellite-connectivity-project.htm
- https://www.telecompaper.com/news/kacific-powers-samoas-pacific-satellite-connectivity-project--1297007
- https://news.itu.int/itu-and-kacific-join-forces-to-boost-emergency-telecoms-and-ict-development-in-vanuatu/
- https://www.satelliteevolutiongroup.com/magazines/A
- mericas-August2020/content/Digital%20Issue%20download.pdf

Source: ITU

2) **Response:** Disaster response assistance through deployment of equipment. A successful example of this partnership with Kacific was emergency response using deployed capacity in Vanutua in the aftermath of category 5 typhoon Harold.

In **2019-20** the ITU RO-ASP implemented a total of **5** activties whose outcomes were related to the impact pathways of the Thematic area. Under these activites, **14** direct country assistances[24] were provided and **3** regional/sub-regional events were organized which were attended by **261** participants in total.

Going forward, the key area of ITU Regional Office work in the region will be:

1. **GIS for decision making during disaster:** This is particularly important as many countries in ASP had to undergo a situation in which they natural disaster during the COVID-19 situation. The lack of GIS based decision making effected the efficient use of limited resources in dual disaster scenario.
2. **Increased information on Common Alerting Protocol (CAP):** RO-ASP has received increasing interest from countries in developing a national CAP. Thematic activity shall be targeted to

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7. 5 NETPs: Samoa, PNG, Vanuatu, Afghanistan and Solomon Islands
8. 9 under Satcom Project: Fiji, Kiribati, Micronesia, Nauru,Papua New Guinea, Samoa, Tonga, Tuvalu and Vanuatu

organize event to increase the information on requirements on deploying CAP in partnership with National stakeholders.

3. **Addressing requests on developing of NETPs**

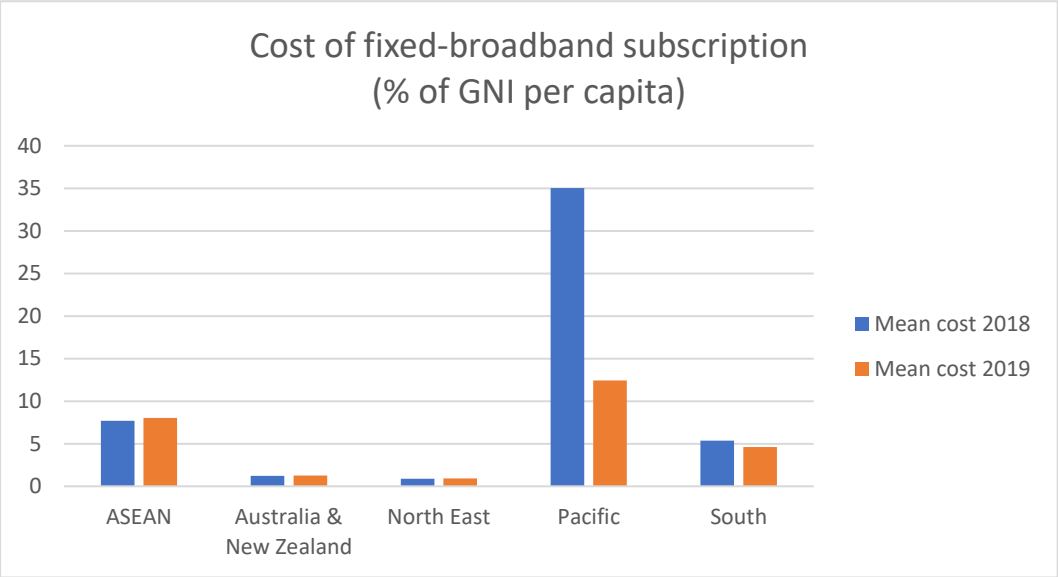
4. Subregional analysis: challenges and opportunities

This section summarises the achievements by subregion. In Asia-Pacific, there is a huge variation across subregions and the aim of this section is to highlight the need for subregion specific interventions in the next planning cycle.

From sub-regional comparative perspective, let us explore the key parameters such as affordability, gender gap in the Asia-Pacific region and the growth and spread of development underpins the diversity of the demography and heterogeneous nature of the region.

The figure below describes cost of fixed broadband subscriptions in various sub-regions.

Figure 18: Cost of Fixed broadband subscription



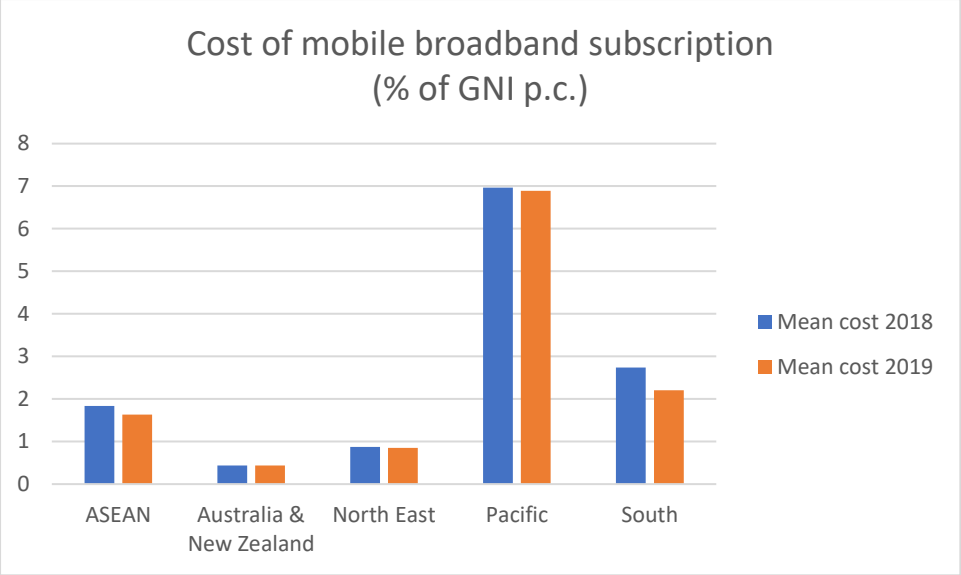
Source: ITU WTI Indicators (2020)

Pacific islands saw a sharp decline in cost in 2019 due to the unavailable data of Solomon Island whose cost of fixed broadband subscription was 164% of GNI p.c. in 2018.

The figure below describes cost of Mobile broadband subscriptions in various sub-regions.

The figure below describes cost of Mobile broadband subscriptions in various sub-regions.

Figure 19: Cost of Mobile broadband subscription

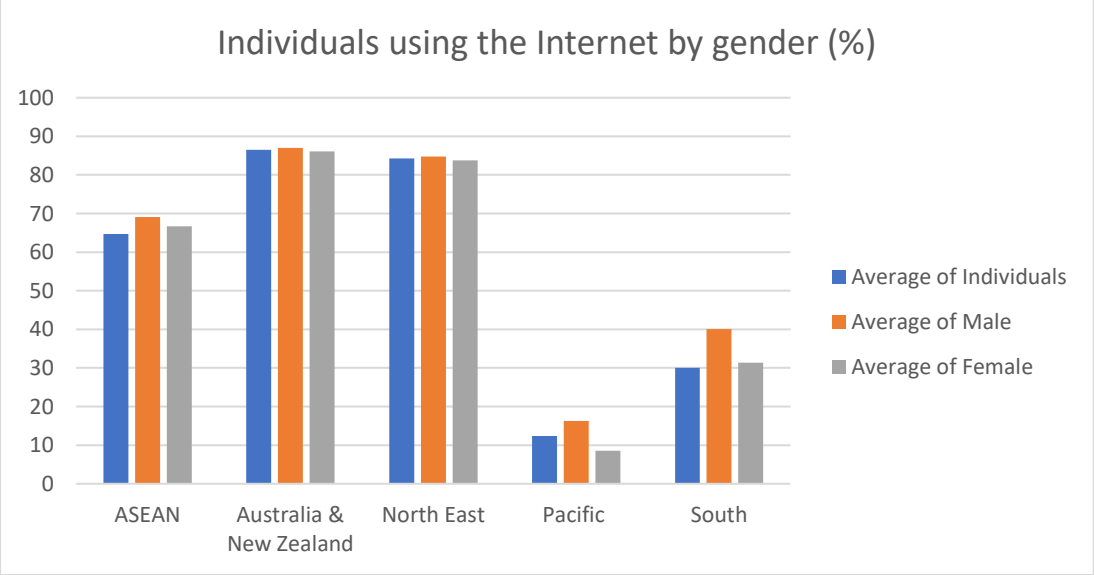


Source: ITU WTI Indicators (2020)

Affordability of mobile broadband subscription is much better than the of fixed broadband subscription.

Gender Gap

Figure 20: Gender Gap in Asia-Pacific



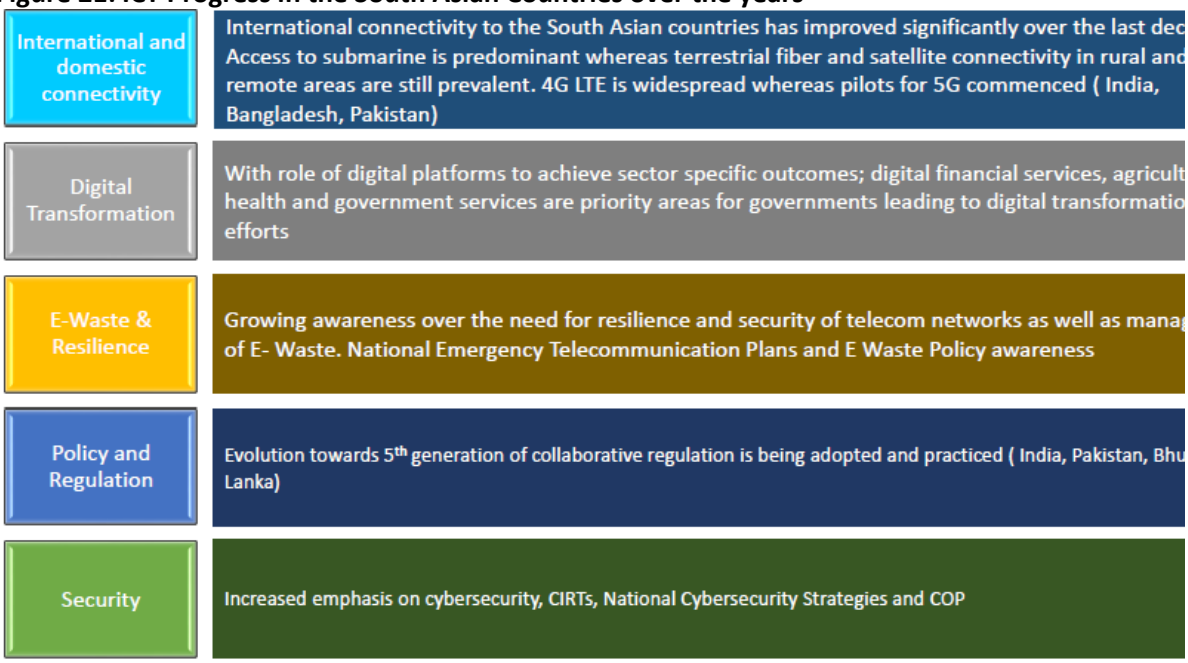
Source: ITU WTI Indicators (2020)

Pacific Island countries there is more pronounced gender gap which calls for urgent action for gender mainstreaming policies for inclusive growth.

South Asia comprises of Afghanistan, Bangladesh, Bhutan, India, I R Iran, Pakistan, Maldives, Nepal, and Sri Lanka covering over one fourth of world's population. Afghanistan, Bhutan and Nepal are landlocked countries which face unique challenges of access to submarine connectivity making the

access and reach of the digital infrastructure very difficult for its citizens. The figure below depicts the progress that has been made over past decade in this sub-region.

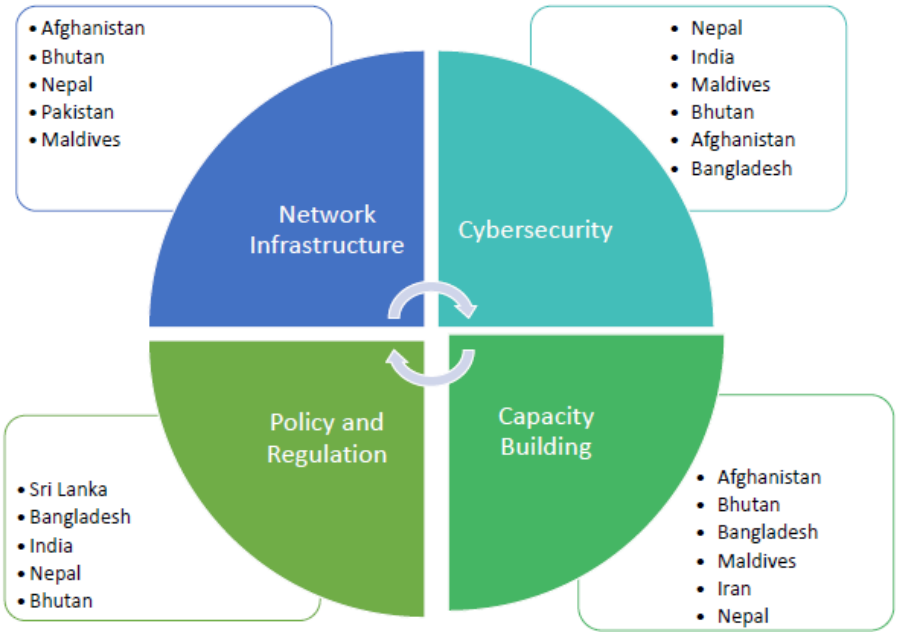
Figure 21: ICT Progress in the South Asian Countries over the years



Source: ITU

Despite the challenges, commitment of top leadership towards digital economies through digital transformation, we see national digital strategies in each of these countries that underpins the whole of government approach. The following figure suggests possible areas of attention such as Network Infrastructure, Policy and Regulation, Cybersecurity and Capacity building that would harness equitable, inclusive development in South Asia.

Figure 22: Focus area and strategy with Impact and Outcome in South Asia



Source: ITU

4.1 Pacific

In recent years, the Pacific has experienced significant progress in increasing international bandwidth (submarine cable and satellite) and domestic broadband access, improving cybersecurity awareness, enhancing emergency telecommunication, building digital skills and introducing digital services. The region also seen a number of regional cooperation platforms (e.g. PRFP, CROP, PITA, PACSON), UN agencies, regional organizations and industry active in the ICT area.

Pacific Islands countries have also embarked upon digital economy and digital transformation policies, strategies and plans. Digital Fiji and Digital Transformation Policy (Papua New Guinea), are examples of national level manifestations of these approaches. Countries also continue to build on e-strategies to deploy digital services. For instance, following the development of e-agriculture strategy, PNG is adopting digital agriculture through its projects and programs. ITU is also assisting Papua New Guinea and Vanuatu to develop a whole-of-government approach to provide digital services.

Digital services are on the rise both from public and private enterprises. During COVID-19, Fiji witnessed the launch of contact tracing application, online shopping (vitikart) and online food delivery services. PNG had set up a nationwide COVID-19 information website.

The past five years have witnessed very significant progress on bandwidth availability. There are more than 20 submarine cables currently connected to one or more Pacific islands with six of them have been commissioned within the last three years (after 2018). Further, there are at least seven planned cables that are proposed to include a landing in a Pacific island. Having established a first cable connection, a number of Pacific islands have turned their attention to the construction of a second (or even third cable) and laying down inter-island connectivity. Operators in the Pacific continue to deploy 4G systems to increase access. The Pacific islands have long been dependent on satellites as their only source of international connectivity. For many of them this will remain the case for some time to provide universal access to digital services. Fortunately, the availability of transponder capacity in the region has increased significantly in recent years and there have also been start of services in Ka band. The region has also seen interest in managing national traffic locally by setting up Internet Exchange Points (IXPs). Migration to IPv6 from IPv4 still remains an area of work despite continued capacity building endeavours.

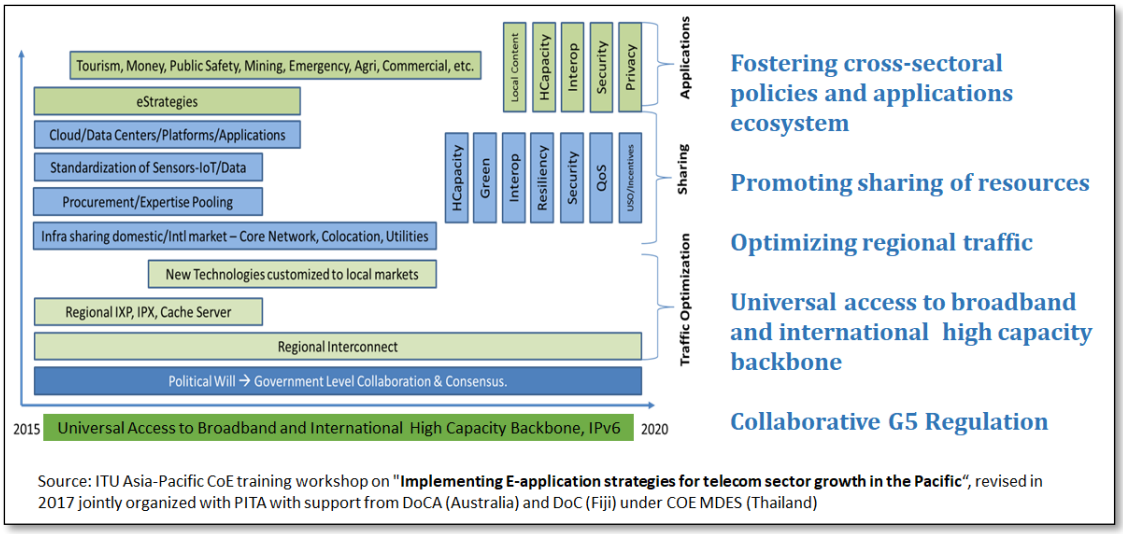
While connectivity is on the rise, the price of these services remain a challenge as mobile data remains above affordability threshold in a number of Pacific Islands (Figure 4).

The region has also witnessed increasing awareness in the area of cybersecurity including regional cooperation (e.g. PACSON), national cybersecurity strategy (e.g. Fiji, Kiribati, Solomon Islands), and CIRT (e.g. Samoa, Vanuatu, Papua New Guinea, Fiji, Tonga). However, there is significant effort needed in enhancing the cybersecurity environment. In the data world that is fast approaching Pacific, data management, data protection and data privacy are emerging as key priorities.

Emergency telecommunications have been a high priority area for the Pacific as the region remains highly prone to disasters. There has been growing awareness amongst the Pacific islands onthe need for resilience and security of telecom networks. There are continued endeavours to develop National Emergency Telecommunication Plan (NETP) (e.g. PNG, Solomon Islands, Vanuatu, Samoa) and associated Standard Operational Procedures (SOPs), building capacity and increased cooperation amongst stakeholders. Despite the rise in awareness, there is still significant effort needed for all the Pacific Islands Countries to develop their NETPs and set up processes for resource sharing across the region. The ongoing pandemic (COVID-19) has further accelerated the need to revisit plans to manage double disasters with travel restrictions and quarantine in place (e.g. Cyclone Harold).

Although there is continued progress, the region still needs significant efforts leveraging on a comprehensive approach (e.g. Whole-of-Government approach) driven by partnerships (international, national and sub-regional) to address generic and unique challenges that Pacific experiences (Figure 23).

Figure 23: Impact of E Applications strategies for ICT Sector growth in Pacific



Source: ITU Asia-Pacific CoE training workshop on "**Implementing E-application strategies for telecom sector growth in the Pacific**", revised in 2017 jointly organized with PITA with support from DoCA (Australia) and DoC (Fiji) under COE MDES (Thailand)

4.2 South-East Asia

ITU's Area Office Jakarta covers Timor-Leste and all the countries in South-East Asia except Thailand. ITU has very good collaboration with Association of South-East Asian Nations (ASEAN). The headquarters of ASEAN is in Jakarta, Indonesia. South-east Asia is very diverse, ranging from very developed countries such as Singapore to Land Locked developing country like Lao PDR. At the same time we have countries with large population like Indonesia and Philippines and very small country like Timor-Leste and Brunei.

ITU works closely with ASEAN as well as with Individual Member countries. At the ASEAN level ITU is one of the development partner of ASEAN and both have signed an MoU. Under the MoU ITU and ASEAN jointly developed the Child Online Protection and Next Generation Universal Service Frameworks (USO 2.0). Both these frameworks have been endorsed by the ASEAN Ministers. ITU is always invited to the annual ASEAN Telecommunication High level Officials Meeting as well as the ICT Ministers Meeting. ITU and ASEAN have conducted joint workshops on ICT Statistics and Child Online Protection. ITU is also in discussion with ASEAN on reviewing the work related to ASEAN Master Plan 2025.

On an individual country level, ITU helped Philippines in the criteria for selecting the third Major Player in the telecom sector in Philippines. This is likely to bring in about USD 5.2 Billion investment into the country. Beside the new major player also plan to have its build a submarine cable.[25] ITU also assisted Vietnam in cost modelling regional workshop, ICT statistics regional workshop, spectrum roadmap and 5G deployment scenarios and 2G, 3G switch off.

[25] https://www.capacitymedia.com/articles/3824952/third-philippines-operator-building-own-subsea-network-cto-says

In 2019 ITU assisted Philippines in the Digital Innovation Ecosystem framework and country's innovation profile. ITU also conducted a Regional Innovation Forum with participants from ASEAN. ITU also established two out of the three Digital Transformation Centres Asia-Pacific in the ASEAN countries, namely, Philippines and Indonesia. Both centres have launched successfully training programs. ITU was also the major partner in the Girls in ICT day celebration in Thailand. ITU also conducted a very successful Cyber Security Drill in Malaysia that was attended by many participants from the ASEAN countries. ITU also assisted ASEAN in hold the Smart City Workshop that was hosted by Brunei.

ITU is also in the process of conducting an assessment of the Cyber Education and Capacity Development for Vietnam. On an another front ITU is actively engaged with the World Bank, UNOPS, Ministry of Villages, Indonesia and Ministry of Communication and Informatics, Indonesia in the Smart Village Initiative. ITU along with Ministry of Informatics Indonesia hosted the online ITU Asia-Pacific Spectrum Management and Satellite Symposium. This year's ITU Digital World was also held online that was hosted by Vietnam.

ITU is also part of the UN country team in Indonesia and is also planning to be actively involved with the UNCT Malaysia. ITU and the UNCT held the ICT Girls in ICT day celebration in Indonesia in 2019.

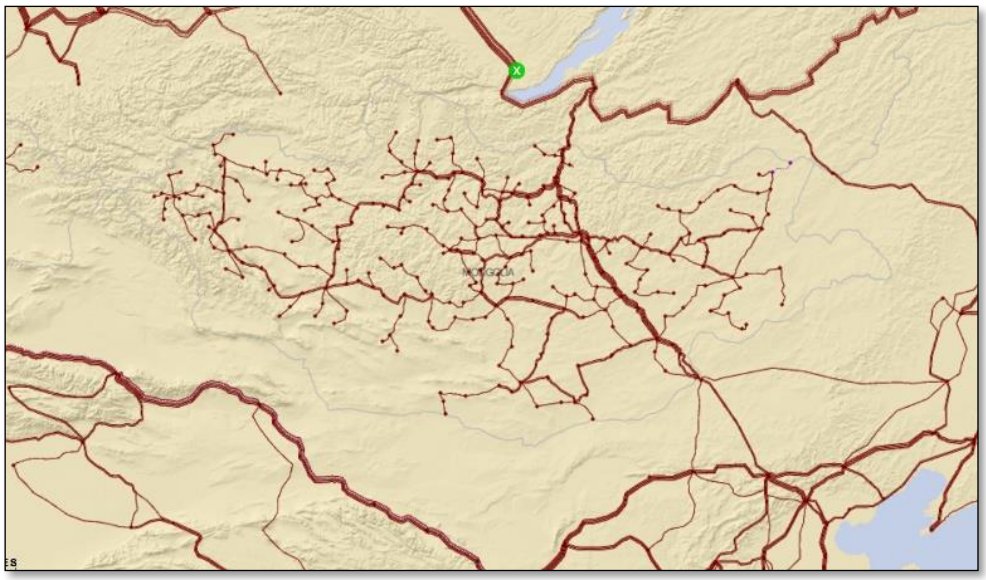
4.3 North-East Asia

ITU's North-East Asia subregion of Asia and the Pacific covers 5 countries namely Japan, DPRK, Mongolia, RoK and China.

The region is diverse in a sense that the three countries RoK, china and Japan are on the higher end of the ICT development not only in the region but globally. This is evident by the fact that all these three countries have launched commercial 5G services at some level in their countries. Nevertheless, some unique the challenges remain in all these countries for example in china universal access, Japan further strengthening disaster and emergency response due to its geographic vulnerabilities to natural hazards etc. ITU has worked with all three countries directly to arrange workshops and seminars to disseminate information and best practices in the region (e.g. FIGI project in China). In addition, all of them are actively contribute to ITU projects (e.g Japan's contribution to CONNECT2RECOVER initiative) and also in ITU study groups across all sectors.

On the other hand Mongolia being a LLDC has is ICT challenges but also enormous potential as it connects its two big neighbours china and Russia through multiple fiber connectivity links. (see figure below).

Figure 25: ITU transmission map Mongolia (ITU)



Source: ITU Broadband Map

Over the years Mongolia has been successful in building a good ICT market with options of service providers for the consumers. This year the regulator CRC in Mongolia is also marking 25th anniversary of its founding with key success.

In October 2020 Mongolia launched a digital platform "E-Mongolia" which provides 181 government services. Until the end of 2020 E-Mongolia platform users will not be charged for data for accessing the app in agreement with mobile service providers, such as Mobicom, Unitel and Skytel as part of their social responsibility. ITU has worked with both Ministry CITA and ICT regulator CRC on various thematic priorities including Spectrum Management, RF monitoring, capacity building, Policy and regulations, E-agriculture etc. ITU is also working to assist Mongolia under GIGA initiative as well.

5 Conclusion

In order to narrow the digital divide and achieve meaningful connectivity for all in Asia and the Pacific by 2030, ITU has undertaken a wide range of activities along the five Regional Initiatives approved at the WTDC-17. This report contains the highlights of progress achievements made in each Regional Initiative and Thematic Priority. The report also summarized subregion-specific contexts and the need to address subregion-specific challenges and opportunities.

There is no doubt that the COVID-19 pandemic has affected the governments' and ITU's ability to deliver the planned activities since March 2020 when lockdowns were implemented across the region. In response, ITU has shifted the mode of delivery and operation to virtual platforms and organized a series of webinars and online delivery of technical assistance.

Nonetheless, there are activities which could be undertaken to achieve the expected results under each Reginal Initiative and at the same time minimize the negative socioeconomic impact of COVID-19 especially among LDCs, LLDCs and SIDS.

Some of the measures which are being implemented include the Giga initiative and Connect2COVID which aim to connect schools to ensure the continuation of learning among all children and rapid assessment and measures to address COVID-related connectivity challenges.

Another approach ITU has been implementing is partnerships with partners and UN agencies. With ADB, ITU has organized the first Webinar to address connectivity gaps and promote affordable technology in view of COVID. ITU also works closely with the UN Resident Coordinators and UN Country Teams to respond to digital technology requested requests and create synergies with various socioeconomic sectors at the national level.

Despite these actions, initiatives and approaches, much more needs to be done and faster, so that the member countries in Asia and the Pacific can achieve the national and internationally agreed goals and recover from the pandemic with the power of digital technology. For this to happen, ITU will further accelerate the implementation of affordable and last mile connectivity, dialogues and technical assistance on policies and regulations and deepening the support to digital government and digital services. In response to an increasing number of requests, ITU will continue and expand support in the area of e-waste, climate change, digital inclusion, capacity development, innovation and cybersecurity.

ITU also intends to work closely with ITU Sector and Academia members to bring expertise, knowledge and resources together for more impact and synergies.

Text Box 1: Broadband Commission for sustainable development, three pillar agenda and key areas of action for faster recovery from COVID-19:

A. Resilient connectivity

Sustain and extend resilient, stable and secure infrastructure to support all populations, including emergency responders. Increase bandwidth, restore service access where this has been restricted, strengthen network resilience, manage network congestion, prioritize connections to critical government functions, vital services and strategic connectivity points (such as hospitals, pharmacies, emergency centres, transportation hubs…), and ensure continuity of public services, which may require temporary relaxation of regulations and other policy measures necessary to fast-track response.

B. Affordable access

Increase affordability, availability and accessibility of services and devices to ensure business and service continuity, support digital connectivity to ensure access to information and to promote social cohesion during confinement, and to help with financial hardship and economic challenges, through measures like price reductions and discounts on capacity, airtime and devices. Support alternative funding models for complimentary access solutions.

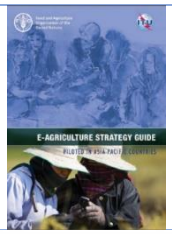
C. Safe use of online services

Support safe use of online services by all, especially children and vulnerable population; respect the right to privacy; promote trust and security in the use of data; enable safe digital content sharing to support e-education, e-health, digital agriculture, e-financial services and mobile payments, and e-government platforms; empower youth, ensure and promote child safety online; promote the use of broadband to provide distance-learning programmes for all ages; empower people with quality journalism and evidence-based and scientific information about COVID-19; promote media and information literacy to detect disinformation and to advance understanding on the dangers of sharing false facts about COVID-19.

This project aims to work on these three action areas to leverage the power of ICTs for more effective emergency response and to promote faster and better recovery.

ANNEX 1

Table 1	**Products of digital services and applications (examples)**
	An **SDG Digital Investment Framework** was developed as an analytical guide to digital investment by identifying *reusable ICT building blocks*** to deliver priority SDG use cases
	ITU's **Smart Villages** project comprises a locally led, integrated, and holistic approach to providing access to digital services to all citizens of rural communities, with the integration of digital technologies serving as a crucial enabler of equitable, qualitative and efficient delivery of SDG-related services for all. The blueprint is now being adopted to **Smart Islands**.
	Be He@lthy, Be Mobile (WHO-ITU partnership) supports countries and governments by providing technical expertise to integrate mobile health interventions in their national health systems and sustainably scale at the national level. Central tools in this are the mHealth handbooks, which consolidate all relevant information and background necessary. Handbooks available on mDiabetes **mTobacco Cessation** **mTB-Tobacco** **mCervical Cancer** **MBreathe Freely** **mAgeing**



The national e-agriculture strategy guide developed by FAO and ITU provides an essential framework for developing or revitalizing a country's e-agriculture strategy in alignment with agricultural goals and priorities. This guide has been adopted by a number of countries in developing their national strategies. The program has also created a number of case study publications (E-agriculture in Action), sharing of experiences, development of applications and building skills.

ITU has published a thematic report entitled Digital Transformation and the Role of Enterprise Architecture that provides an introduction on how digital services and applications are to be shaped and delivered to induce this transformation for government public services and other sectoral areas and the central role of enterprise architecture to reach this.

For details: please visit https://www.itu.int/en/ITU-D/ICT-Applications/Pages/default.aspx

ANNEX - 2

Recently concluded GSR-20 Regional Regulatory Roundtable for Asia and the Pacific in July 2020 under the theme of "Digital Transformation for Digital Economies @COVID-19 South-Asia adopted the following recommendation for S-Asian countries:

Box 2: Key Recommendations as outcome of GSR-20 Regional Regulatory Roundtable for Asia and the Pacific "Digital Transformation for Digital Economies @COVID-19 South-Asia

- Adoption of moderate and liberal licensing regimes by regulators and governments has emerged as a trend in response to the present pandemic, but needs to be balanced with a consistent and stable regulatory environment.
- Encourage use of innovative spectrum policies such as use of technology neutrality, spectrum sharing, spectrum re-farming, spectrum trading while regarding spectrum as an enabler of connectivity that drives the digital economy;
- Consideration for adopting Network as a Service model (NaaS) approach to bridge the digital divide;
- Encourage optimal use of both licensed and unlicensed spectrum bands for enhancing seamless connectivity;
- Foster cross sectoral collaboration and ecosystem approach for facilitating take up of competitive ICT Industry, taking into consideration the evolution towards 5G;
- Foster digital innovation and level playing field to encourage synergies among MSMEs and affordable access;
- Encourage passive and active infrastructure sharing to reduce infrastructure development cost and expand access as a key enabler towards digital transformation; and
- Develop skills for digital literacy to foster an inclusive ICT ecosystem through institutional and human capacity building in areas of new technologies and regulatory approaches.

[i] https://www2.telegeography.com/network-impact