**MOD** ACP/22A14/2

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

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| **Outcomes** | **Performance indicators** | **Outputs (Product and services)** |
| Enhanced capacity of ITU Membership to make available resilient telecommunication / ICT infrastructure and services, including broadband and broadcasting, improving international connectivity, bridging the digital standardization gap, conformance and interoperability, effective and efficient management and proper use of telecommunication numbering resources within the mandate of ITU, and developing expertise in spectrum management and monitoring | - Number of Guidelines, Handbooks, assessment studies and publications finalized for the relevant subjects  - Number of users/subscribers accessing the tools for the relevant subjects  - Number of experts participating in trainings, Seminars, Workshops for the relevant subjects and their satisfaction | 2.1 - Telecommunication/ICT infrastructure and services, including broadband and broadcasting, international connectivity, bridging the digital standardization gap, conformance and interoperability, effective and efficient management and proper use of telecommunication numbering resources within the mandate of ITU, and spectrum management and monitoring |
| Enhanced capacity of ITU Membership to effectively share information of, find solution and respond to cyber threats and develop national cybersecurity strategies and capabilities, including capacity building. | - Number of cybersecurity national strategies implemented in countries that BDT contributed to develop  - Number of CIRT that BDT has contributed to establish  - Number of countries where BDT provided technical assistance and improved cybersecurity posture and awareness | 2.2 - Building confidence and security in the use of telecommunications/ICTs |
| Strengthened capacity of Member States to use telecommunication/ICT for disaster management and emergency telecommunications. | - Number of Member States where BDT assisted with disaster relief efforts both through provision of equipment and infrastructure damage assessments in the aftermath of a disaster  - Number of Member States that received BDT assistance in development and establishment of early warning systems  - Number of Member States that received BDT Assistance in developing and establishing national emergency telecommunications plans. | 2.3 - Disaster management and emergency telecommunications |

## Output 2.1 – Products and services on telecommunication/ICT infrastructure and services, including broadband and broadcasting, improving international connectivity, bridging the digital standardization gap, conformance and interoperability, effective and efficient management and proper use of telecommunication numbering resources within the mandate of ITU, and developing expertise in spectrum management and monitoring

### 1 Background

Infrastructure is central for enabling universal, sustainable, ubiquitous and affordable access to ICTs and services for all.

The ICT sector is characterized by rapid technological change, and by convergence of technological platforms for telecommunications1, information delivery, broadcasting and computing, which are key enablers for the digital economy. The deployment of common broadband, including mobile, technology and network infrastructures for multiple telecommunication services and applications and the evolution to all IP-based wireless and wired next-generation networks (NGNs) and their evolutions open up opportunities but also imply significant challenges for developing countries

Communications no longer just connect people: the Internet of Things (IoT) as well as Smart Grids concepts are fast becoming a reality.

Also notable is the worldwide transition from analogue to digital broadcasting, enabling more efficient use of spectrum and higher quality audio and video delivery.

### 2 Implementation framework

#### Programme: Telecommunication/ICT network infrastructure and services

The objective of this programme is to assist ITU Member States and ITU D Sector Members and Associates in maximizing the use of appropriate new technologies for the development of their information and communication infrastructures and services and building global Telecommunication/ICT infrastructure though partnership, bridging the digital standardization gap (BSG), Conformity and Interoperability and Spectrum Management programme.

Main areas of work include:

#### Next-generation networks including ICT networks for smart grids

The architecture of information and communication infrastructures is continuously changing to accommodate new requirements for a growing number of ICT-enabled services and applications, along with evolution to next-generation networks (NGN) and further evolutions, including NGN evolution and future networks.

Activities will be focused on:

• providing assistance to Member States on deployment and migration of their existing networks to NGN and further evolutions;

• assisting countries in planning the introduction and continuous adoption of new network elements and applications by making use of specialized planning tools;

• assisting countries in the digitization of analogue networks and in applying affordable wired and wireless technologies, including interoperability of ICT infrastructure;

• assisting countries in maximizing the use of appropriate new technologies for the development of the appropriate telecommunication / ICT networks including Smart Grids infrastructure and services;

• providing assistance to Member States on deployment of Next-generation ICT networks (NGN) and further evolutions into Smart Grids.

**Telecommunication Numbering Resources Management**

Emerging technologies such as Internet of Things and Machine to Machine communications are widely studied and applied in many areas. It is predicted that the number of IoT, M2M connected devices worldwide is set to rise dramatically. With an increasing need for such devices to be identifiable in the network, a more efficient approach in managing the telecommunication numbering resources within the mandate of ITU is required in order to facilitate the deployment of these technologies.

The focus on this issue will be as follows:

* Assisting Member States in managing telecommunication numbering resources within the mandate of ITU, effectively, efficiently and properly, enabling the deployment of emerging technologies such as Internet of Things and M2M communications.

#### Broadband networks: Wired and wireless technologies, including IMT

Broadband is critical in the transformation of the traditional economy to the digital economy. The introduction of different broadband technologies, are providing high bandwidth and connectivity. It is therefore important to provide developing countries with an understanding of the different technologies available for broadband using both wired and wireless technologies for terrestrial and satellite telecommunications, including International Mobile Telecommunications (IMT).

Activities will be focused on:

• providing assistance to developing countries in their medium- to long-term planning for the implementation and development of national ICT broadband network plans;

• collecting and disseminating information and analyses on the current status of broadband backbone and submarine cables, in order to assist members in network planning, avoiding duplication of efforts and resources and disseminating information on different countries' experiences with the use of different technologies and services. This is including the creation of an online Interactive Transmission Map related to national backbone worldwide connectivity (Optical Fibres, Microwaves, Submarine Cables, Satellite Earth Stations) as well as of other key metrics of the ICT sector;

• promoting Internet exchange points (IXPs) as a long-term solution to advance connectivity, and supporting ITU members with deployment of/transition to IPv6-based networks and applications, in collaboration with relevant expert organizations.

#### Rural communications

Rural populations will need to be provided with telephony and broadband access, by connecting remote areas to the broadband core networks. Choosing efficient, cost-effective and fast deployment technologies – whether wired or wireless networks – will improve accessibility and enable participation in the digital economy.

The focus in this area can be summarized as follows:

• providing information on suitable technologies for access, backhaul and source of power supply to bring telecommunications to rural, unserved and underserved areas;

• implementing projects on public/community broadband access points focusing on the provision of ICT services and applications through suitable technologies, including satellite, and business models which achieve financial and operational sustainability;

• disseminating information and analyses of the latest technologies and best practices through methods such as publications, symposia, seminars and workshops, taking into account the outputs of related ITU D study group activities.

#### Bridging the standardization gap

Increasing the knowledge and capacity of developing countries for the effective application/implementation of standards (Recommendations) developed in ITU T and ITU R is fundamental for bridging the standardization gap.

Good and liable standards help to improve the establishment of regional and national set of technical requirements and ultimately contributes to access safe, interoperable and affordable ICT equipment/systems contributing reducing the digital divide.

The focus in this area will be:

• to promote and coordinate activities in the regions to support the implementation of the relevant standards tailored to developing country needs;

• organize, coordinate and provide necessary assistance to the activities of standardization Committees in the regions also through the organization of capacity building events and;

• provide the necessary assistance to the regional groups of ITU study groups;

• provide assistance to the regional telecommunication organizations for the setting-up and management of regional standardization bodies.

#### Conformity and interoperability (C&I)

Availability of high-performing and interoperable products accelerates widespread deployment of infrastructure, technologies and associated services, granting people access to the information society regardless of location or choice of device.

Conformity with international standards and interoperability, i.e. the ability of equipment from different vendors to successfully communicate between them, can help avoid costly market battles over different technologies.

The focus of BDT on this area will be as follows:

• cooperation with international organizations, industry and Conformity Assessment Bodies (CABs) as well as Accreditation Bodies, considered as key element for the success of the ITU C&I programme;

• educating technicians, policy-makers and businesses on the importance of C&I procedures and testing, mobilizing the resources required to implement regional and national C&I programmes, in cooperation with other relevant regional and international organizations;

• providing assistance to developing countries in the establishment of national, regional or subregional C&I programmes, and conducting assessment studies for facilitating the establishment of common conformance and interoperability regimes at national, regional and subregional level through the implementation of Mutual recognition agreements/arrangements (MRAs);

• preparing guidelines on this process which outline the technical and human resources required and the international standards to be applied.

**Combating counterfeit and combating mobile device theft**

Counterfeiting and using stolen mobile devices are widely recognized as a significant and growing socio-economic problem. Counterfeit products have concerns on security, performance, quality of service delivery and revenue losses for all stakeholders. Using stolen mobile devices cause negative impacts to global economy and society.

The focus of BDT on this area will be as follows:

* to collaborate with other sectors of ITU and cooperate with relevant stakeholders including WTO, WIPO, GSMA and industries to limit the spread of counterfeit products;
* providing capacity-building and training opportunities to developing countries to raise awareness of the negative impact of counterfeit and mobile device theft and compile information on best practices and prepare guidelines and methodologies.

#### Broadcasting

The objective of BDT work in broadcasting is to enable developing countries to achieve smooth migration from analogue to digital broadcasting and to follow the post-transition activities, such as the introduction of new broadcasting services and allocation of the digital dividend.

In particular, activities will be focused on:

• providing assistance on policy and regulatory frameworks for digital terrestrial broadcasting, including frequency planning and optimization of spectrum use; digital broadcasting guidelines and master plans for the transition from analogue to digital broadcasting and new broadcasting services and technologies;

• organizing regional meetings between ITU members on the use of spectrum for broadcasting services and other services.

**International Connectivity**

Enhancing international connectivity is critical in improving access to the internet for all ITU Member States, especially for developing countries. Towards this, BDT should facilitate the sharing of best practices and strengthen international cooperation.

Activities will be focused on:

* analyzing the current status and demands on international connectivity of Member States, particularly for least developed countries, landlocked developing countries and small island developing states;
* identifying and disseminating best practices to assist Member States in resolving issues related to international connectivity.

#### Spectrum management

Wireless technology has great potential to improve our quality of life. BDT works to strengthen national regulatory bodies in frequency planning and assignment, management and monitoring.

This will involve, in particular:

• continuing to maintain, update and expand the Spectrum Management System for Developing Countries (SMS4DC) software, providing technical assistance and conducting training activities for its deployment and use;

• providing spectrum-management assessments, master plans and recommended action plans for the further development of spectrum-management structures, procedures and tools, including new spectrum-sharing approaches;

• providing assistance on spectrum fee regimes, including direct assistance in the establishment of such regimes; in the harmonization of regional spectrum allocations, including coordination procedures in border areas; and in the optimization and cost-effective use of spectrum-monitoring systems and networks.

#### Relevant regional initiatives

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| **Region** |
| **AFR Region** |
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| **AMS region** |
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| **ARB Region** |
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| **ASP Region** |
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| **CIS Region** |
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| **EUR Region** |
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#### Study group Questions

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| **Study Group X Questions** |
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### 3 References to WTDC resolutions, WSIS action lines and sustainable development goals

**PP and WTDC resolutions and recommendations**

The implementation of PP Resolutions 32, 33, 34, 64, 101, 123, 125, 126, 127, 130, 131, 127, 135, 137, 139, 140, 159, 160, 161, 176, 177, 180, 188, 193, 197, 199, 200, 203 and WTDC Resolutions 9, 10 11, 15, 17, 18, 20, 21, 30, 32, 33, 35, 37, 47, 50, 52, 57, and 62 will support Output 2.1 and will contribute to the achievement of Outcome 2.1

**WSIS action lines**

The implementation of the WSIS Action Lines C1, C2, C3, C9 and C11 will support the Output 2.1 and will contribute to the achievement of Outcome 2.1

**Sustainable development goals and targets**

Output 2.1 will contribute to the achievement of the following UN SDGs: 1 (targets 1.4, 1.5), 3 (targets 3.8, 3.d), 5 (target 5.b), 8 (target 8.2), 9 (targets 9.1, 9.a, 9.c), 10 (target 10.c), 11 (targets 11.5, 11.b), 16 (target 16.10), 17 (targets 17.6 and 17.7)

## Output 2.2 – Products and services on building confidence and security in the use of telecommunications/ICTs

### 1 Background

Information and communication technologies (ICTs) are integral to the economic and social development of all nations as well as to the development of the information society. Security is an essential element of the operation and use of ICTs and requires that all persons involved be aware of security and take action appropriate to their role.

As the use of ICT continues to grow especially with the deployment of emerging technologies such as IoT, addressing cybersecurity challenges and combating the transmission of email spam would continue to be a priority among members. During the last four years, the ITU-D continued to work in this area.

BDT undertook many activities that offer development assistance to members and encourage cooperation among members, while Q-3/2 developed products and materials to support countries in developing national cybersecurity capabilities, to convene experts, and to contribute to ongoing information sharing on best practices. The Question also identified key areas of common concern as well as gaps, based on contributions to a compendium and a survey, respectively.

### 2 Implementation framework

#### Programme: Cybersecurity

The main purpose of this programme is to support the ITU membership, in particular developing countries, in building trust and confidence in the use of ICTs.

Cybersecurity needs to be dealt with taking into consideration the global, transnational nature of cyber threats.

The programme would seek in all cases to collaborate within ITU, in particular with ITU-T SG 17and ITU-D SG2 Question 3, as well as with all relevant organizations involved in building trust and confidence in the use of ICTs.

To this end, calling upon the breadth of the community in order to realizing broad partnerships will be one of the main enablers to achieve the programme’ s purpose.

The programme will:

• Support ITU Member States in the development of their national and/or regional cybersecurity strategies, taking into account the need to appropriately address emerging cybersecurity challenges caused by the deployment of new technologies;

• assist ITU Member States in establishing national cybersecurity capabilities such as Computer Incident Response Team (CIRTs) to identify, manage and respond to cyber threats, and participate in cooperation mechanisms at the regional and international level;

• organize cyberdrills at national and regional level, to strengthen institutional cooperation and coordination among the key actors and stakeholder;

• establish a culture of cybersecurity by sharing good practices collected through the Global Cybersecurity Index (GCI);

• support Member States in raising cybersecurity awareness, building their cybersecurity capacity and improving their cybersecurity posture;

• contribute to improving and maintaining the coherence of worldwide efforts in cybersecurity capacity building;

#### Relevant regional initiatives

The following regional initiatives will contribute to Outcome 2.2, consistent with WTDC Resolution 17 (Rev. Buenos Aires 2017)

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| **Region** |
| **AFR Region** |
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| **AMS region** |
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| **ARB Region** |
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| **ASP Region** |
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| **CIS Region** |
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#### Study group Questions

The following study group Questions will contribute to Outcome 2.2

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| Study Group X Questions |
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### 3 References to WTDC resolutions, WSIS action lines and sustainable development goals

**WTDC resolutions and recommendations**

The implementation of PP Resolutions 71, 101, 130, 174, 179 and WTDC Resolutions 17, 21, 30, 32, 45, 50, 52, 67, 69 and 80 will support Output 2.2 and will contribute to the achievement of Outcome 2.2

**WSIS action lines**

The implementation of the WSIS Action Lines C5 will support the Output 2.2 and will contribute to the achievement of Outcome 2.2

**Sustainable development goals and targets**

Output 2.2 will contribute to the achievement of the following UN SDGs: SDG 4, 9, 11 and 16

## Output 2.3 – Products and services on disaster management and emergency telecommunications

### 1 Background

Countries throughout the world are experiencing increased numbers of natural and man-made disasters, with a disproportionate impact on developing countries. LDCs, SIDS and LLDCs are particularly vulnerable to the impact that disasters can have on their economies and infrastructures, and such countries often lack the capacity to respond to disasters.

The critical importance of using telecommunications/ICTs to respond to these devastating phenomena is widely recognized.

Because of the role telecommunications/ICTs play in all phases of a disaster – preparedness, response, rehabilitation/recovery – it is important to develop disaster telecommunications preparedness plans and strategies, including taking account of the need for resilient and redundant infrastructures and systems as part of disaster risk reduction and early warning.

In line with WTDC Resolution 34 (Rev. Dubai, 2014) many countries have benefited from this outcome. In the preparedness phase, ITU partner with countries and sector members to implement early warning systems in the most affected areas.

Disasters are often extend beyond the borders of a State, and effective disaster management may involve the deployment of efforts by more than one country in order to prevent loss of human life and regional crisis. Prior coordination and collaboration among disaster-management experts, including governments, the private sector, international organizations and non-governmental organizations, before disasters increases the probability of saving human life when rescue operations are conducted and thereby mitigates the consequences of a disaster.

Member States should take account of a diverse range of telecommunication/ICT solutions that are appropriate and commonly available for disaster response and mitigation, including those provided by amateur radio services and satellite and terrestrial network services/facilities, by Machine to Machine (M2M)/Internet of Things (IoT) based technological solutions***,*** taking into account persons with disabilities and specific needs.

### 2 Implementation framework

#### Programme: Disaster management including emergency telecommunications

The programme will benefit the Member States in many fronts:

• providing assistance to countries in the development of national disaster management including emergency telecommunication plans;

• strengthening and expanding ICT-based initiatives for providing early warning, safety confirmation, medical (e-health) and humanitarian assistance in disasters and emergencies;

• ensuring that disaster-resilient features are incorporated in telecommunication networks and infrastructure;

• making ICT-based solutions available to members, including wireless and satellite-based technologies, in order to establish basic communications for the coordination of humanitarian work during and following disasters and emergencies;

* Use of M2M/IoT based solutions to empower the early warning systems by utilizing smart sensors/actuators/gauges /meters etc.;

• carrying out infrastructure damage assessments after disasters strike, and assisting countries to reconstruct and rehabilitate telecommunication infrastructure using such technologies;

• promoting regional and international cooperation for easy access to, and sharing of, information for disaster management, and exploring modalities to facilitate participation of all countries with economies in transition;

• promoting technical cooperation and enhancing the capacity of countries, particularly LDS, SIDS and LLDCs, to utilize ICT tools;

• identifying and establishing partnerships with relevant organizations dealing with the use of active and passive space-based sensing systems for the purpose of disaster prediction, detection and mitigation;

• achieve Goal 13 of the 2030 Agenda for Sustainable Development Goals.

#### Relevant regional initiatives

The following regional initiatives will contribute to Outcome 2.3, consistent with WTDC Resolution 17 (Rev. Buenos Aires 2017)

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| **Region** |
| **AFR Region** |
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#### Study group Questions

The following study group Questions will contribute to Outcome 2.3

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| **Study Group X Questions** |
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### 3 References to WTDC resolutions, WSIS action lines and sustainable development goals

**PP and WTDC resolutions and recommendations**

The implementation of PP Resolution 36, 136 and WTDC Resolutions 34 will support Output 2.3 and will contribute to the achievement of Outcome 2.3

**WSIS action lines**

The implementation of the WSIS Action Lines C2 and C7 will support the Output 2.3 and will contribute to the achievement of Outcome 2.3

**Sustainable development goals and targets**

Output 2.3 will contribute to the achievement of the following UN SDGs: 1 (target 1.5), 3 (target 3.9), 5 (target 5b), 11 (target 11b), 13 (targets 13.1, 13.2, 13.3)