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| **Regional Preparatory Meeting for WTDC-17 for the Americas (RPM-AMS)** | P:\SUP\Logos\Post-150th Anniv\ITU-logo-UNblue.jpg |
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| REPORT ON THE IMPLEMENTATION OF THE DUBAI ACTION PLAN |

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# Introduction

The 2014 International Telecommunication Union (ITU) [World Telecommunication Development Conference (WTDC-14)](http://www.itu.int/en/ITU-D/Conferences/WTDC/WTDC14/Pages/default.aspx), held in Dubai, United Arab Emirates from 30 March to 10 April 2014, adopted the [Dubai Action Plan (DuAP)](http://www.itu.int/en/newsroom/wtdc-14/Pages/highlights10.aspx), which defined the mandate for the activities of the ITU Development Sector (ITU-D) during the 2015-2018 period. The Dubai Action Plan contains a comprehensive package aimed at promoting the equitable, affordable, inclusive, and sustainable development of telecommunication/information and telecommunications technology (ICT) networks, applications and services. DuAP consists of a set of five strategic objectives supported by 15 outputs in line with the Results Based Management approach.

The Dubai Action Plan implementation framework encompasses programmes, regional initiatives, study group Questions, resolutions and recommendations, and facilitation of the World Summit on Information Society (WSIS) action lines (<http://www.itu.int/net/wsis/>). The DuAP structure follows the structure of the ITU strategic plan, so as to ensure a consistent planning hierarchy and linkage across the different planning tools and instruments within ITU (strategic, financial and operational planning).

The results-based management (RBM) system was implemented in the Telecommunication Development Bureau (BDT) starting from2011, consistent with the United Nations-wide reform to move away from activity-based to results-based strategic planning and management (Resolution 151, Rev. Busan, 2014). The adoption of RBM by BDT is aimed at improving accountability and transparency, and identifying measures to further enhance long-term delivery and results of the activities of ITU.

In keeping with results-based management principles, this report provides an overview of the main outcomes of BDT activities since the beginning of DuAP implementation during the three years 2015 to 2017 and emphasizes the link between expected results and achievements. The report also details the implementation of the Regional Initiatives (Appendix 1) and the financial implementation by region (Annex 1).

Although the United Nations General Assembly adopted the 17 Sustainable Development Goals (SDGs) and the related 169 targets (<https://sustainabledevelopment.un.org/?menu=1300>) after the adoption of the Dubai Action Plan, the BDT started mainstreaming the SDGs into its work from the last quarter of 2015.

# Implementation of the Action Plan by Objectives and Respective Outputs

# Objective 1

# Foster international cooperation on telecommunication/ICT development issues

The purpose of Objective 1 is to develop, agree and review the work plan for the four-year development cycle through the preparation and approval of the action plan and draft strategic plan by the World Telecommunication Development Conferences, the preparatory process undertaken through the Regional Preparatory Meetings and the advisory role of the Telecommunication Development Advisory Group. It guides the implementation of the work programmes for the Study Groups and Questions concerned to ensure that they are executed in accordance with the WTDC decisions. Objective 1 also aims to enhance the knowledge-sharing, consensus-building and dialogue among Member States, ITU-D Sector Members, Associates and Academia, on emerging telecommunication/ICT issues for sustainable development.

##  World Telecommunication Development Conference (WTDC)

Every four years, the World Telecommunication Development Conference (WTDC) serves as a forum for discussion among ITU Member States Administrations and ITU-D Sector Members. WTDC sets the priority areas and the guidelines for the following four-year cycle. In addition, it assesses the results achieved and reviews work programmes and projects. The last WTDC was held in March-April 2014.

Following the kind invitation of the Government of Argentina and the approval by the Council with the concurrence of a majority of the Member States of ITU, the next Conference will be convened in Buenos Aires, Argentina, from 9 to 20 October 2017. The theme of WTDC-17 is “ICT for Sustainable Development Goals**”** (ICTSDGs). The draft agenda of WTDC-17 was approved by the ITU Council 2016 (in Document [C16/56](http://www.itu.int/md/S16-CL-C-0056/en)) and obtained the concurrence of a majority of the Member States. The website for WTDC-17 has been developed and launched to support the dissemination of information (including circulars, documents, reports, contributions) to Member States and Sector Members in order to facilitate the promotion of the event.

WTDC-17 preparatory process takes duly account of the Results-based Management (RBM) principles in order to ensure linkages between the strategic, financial and operational plans as required by Resolution 72 (Rev. Busan, 2014).

#### WTDC Resolutions, recommendations and decisions

WTDC Resolutions: 1, 2, 5, 30, 33, 37, 50, 53, 59, 81, 82

#### Other Conferences and assembly

PP Decisions 5, 13

PP Resolutions 25, 71, 72, 77, 111, 131, 133, 135, 139, 140, 151, 154, 165, 167, 172

#### WSIS Action lines

WSIS Action Lines C1 (The role of public governance authorities and all stakeholders in the promotion of ICTs for development) and C 11 (International and regional cooperation) of the Geneva Plan of Action the Tunis Agenda for the Information Society contributed to Output 1.1.

#### Contribution to the relevant SDGs

SDGs: 1, 3, 5, 10, 16, 17

##  Regional preparatory meetings (RPMs)

In line with WTDC Resolution 31 (Rev. Hyderabad, 2010), the ITU Telecommunication Development Bureau (BDT) is organizing one Regional Preparatory Meeting (RPM) per region. The RPMs started in November 2016 with the organization of the RPM for CIS countries in the Kyrgyz Republic; in December 2016 in Rwanda for Africa; then in January-February 2017 in Sudan for the Arab States; in February-March 2017 in Paraguay for the Americas; in March 2017 in Indonesia for Asia and the Pacific and in April 2017 in Lithuania for Europe.

These RPMs for WTDC-17 and the associated Regional Development Forums (RDF) were held with the purpose of engaging the ITU membership in the WTDC process early on and to consider, at the regional level, appropriate ICT development strategies. To this end, both events sought to identify priority areas and related initiatives, projects, and Study Group Questions that need to be addressed to foster the development of telecommunications and information and communication technologies. The meetings made full use of the regional offices to facilitate the preparatory process at the regional level. The respective websites for RPMs were developed in July 2016 to support the exchange of information (including circulars, documents, reports, contributions) with Member States and Sector Members in order to facilitate the promotion of the events.

#### WTDC Resolutions, recommendations and decisions

WTDC Resolutions: 1, 5, 17, 25, 30, 31, 33, 37, 48, 50, 59, 61, 81

#### Other Conferences and assembly

PP Decisions 5, 13

PP Resolutions 25, 71, 111, 135, 140, 165, 167, 172

#### WSIS Action lines

WSIS Action Lines C1 (The role of public governance authorities and all stakeholders in the promotion of ICTs for development) and C 11 (International and regional cooperation) of the Geneva Plan of Action and the Tunis Agenda for the Information Society contributed to Output 1.2.

#### Contribution to the relevant SDGs

SDGs: 1, 3, 5, 10, 16 and 17.

##  Telecommunication Development Advisory Group (TDAG)

The Telecommunications Development Advisory Group (TDAG) provided strategic guidance on key issues related to the fulfilment of the mission, objectives, outputs and expected results of the current work of BDT.

The 19th meeting of TDAG took place at the ITU headquarters in Geneva from 29 September to 1 October 2014. It provided a summary report on the conclusions of WTDC-14 held in Dubai. The main results of the meeting were:

* Establishment of correspondence groups for three key areas;
* Determination of specific roles of Vice-Chairmen;
* Review of the outcome indicators and key performance indicators (KPIs) for the Operational Plan 2015-2018.

TDAG held its 20th meeting at the ITU headquarters in Geneva from 28 to 30 April 2015. TDAG, among other things reviewed PP-14 outcomes and resolutions and their implications for the work of ITU-D; reviewed the implementation of the ITU-D Strategic Plan and Operational Plan for 2014, including WTDC-14 resolutions and regional initiatives; considered the draft Operational Plan 2016-2019; convened the first meetings of:

* the Correspondence Group on WTDC Resolution 1 (Rev. Dubai, 2014), “Rules of procedure of the ITU Telecommunication Development Sector” that mainly studied and reviewed Resolution 1 as well as related matters;
* the Correspondence Group on the Strategic Plan, Operational plan and Declaration that reviewed the Strategic Plan, the Operational plan as well as the Dubai Action Plan and proposed elements for the future draft Declaration;
* the Inter-Sectoral Team on issues of mutual interest to ITU Sectors that identified subjects common to two or three of the three ITU Sectors and necessary mechanisms to strengthen cooperation and joint activity among the Sectors.

A significant outcome is that these discussions allowed the preparation of key documents for WTDC-17 well in advance to enable ITU members to build consensus early on and to allow more time for policy discussion during WTDC-17.

The 21st meeting of TDAG took place from 16 to 18 March 2016 at ITU headquarters in Geneva. At this meeting, TDAG reviewed the results achieved so far:

* Preparations for WTDC-17.
* Implementation of the ITU-D Strategic Plan and Operational Plan.
* ITU-D four-year rolling Operational Plan 2017-2020.
* ITU-D contribution to the implementation of the WSIS Plan of Action, including the overall review and the Sustainable Development Goals.
* Working methods.
* Collaboration with the other Sectors.
* ITU-D Study Group-related matters.
* Membership, partnership and innovation-related matters.
* Outcomes of the Radiocommunication Assembly and the World Radiocommunication Conference.

The outcomes of TDAG discussions provided a clear picture of ITU-D specific priorities in the coming years (2017-2020).

The following three meetings took place on 15 March 2016, just a day ahead of the TDAG meeting:

* Correspondence Group on Rules of Procedure (WTDC Resolution 1).
* Correspondence Group on the Strategic Plan, Operational Plan and Declaration.
* Inter-Sector Coordination Team on Issues of Mutual Interest.

TDAG also endorsed the creation of the Correspondence Group on Streamlining WTDC Resolutions (TDAG CG-SR), agreed on the Terms of Reference and appointed the Chairman of the Group. The first meeting of the Correspondence Group took place on 17 March 2016, agreed on the working methods. Preliminary draft guidelines for streamlining WTDC Resolutions and a mapping and clustering of WTDC Resolutions and Recommendations were presented for discussion and review during the second meeting of the Correspondence Group which took place on 28 September 2016.

The outcomes of TDAG Correspondence Groups provided a tangible input for future discussions on key documents of WTDC-17.

The outcomes of TDAG discussions provided valuable views on ITU-D specific priorities in the coming years (2017-2020).

#### WTDC Resolutions, recommendations and decisions

WTDC Resolutions: 1, 5, 17, 24, 30, 33, 37, 50, 59, 61, 81

#### Other Conferences and assembly

PP Decisions 5, 13

PP Resolutions 25, 71, 111, 135, 140, 151, 154, 165, 166, 167, 172

#### WSIS Action lines

WSIS Action Lines C1 (The role of public governance authorities and all stakeholders in the promotion of ICTs for development) and C 11 (International and regional cooperation) of the Geneva Plan of Action the Tunis Agenda for the Information Society contributed to Output 1.3.

#### Contribution to the relevant SDGs

SDGs: 1, 3, 5, 10 and 16.

##  Study Groups

The ITU-D Study Groups (SGs) follow the process set out in Resolution 1 (Rev. Dubai, 2014) and work in accordance with the work plans adopted by WTDC-14. Study Group 1 (SG1) examines, issues relating to the enabling environment for the development of telecommunications/ICTs, and Study Group 2 (SG2) matters relating to ICT applications, cybersecurity, emergency telecommunications and climate change adaptation. WTDC-14 appointed 22 Chairmen and Vice-Chairmen to lead the work.

The two ITU-D Study Groups successfully held their first meetings for the new period from 15 to 26 September 2014. ITU-D SG1 welcomed close to 160 participants from 58 Member States, and ITU-D SG2 close to 158 participants from 63 Member States attending. The key results were:

* Establishment of work plans for each study topic and specific methods of work to allow the study groups to achieve the results set by WTDC. Preparation of initial tables of content and overviews for the specific deliverables that will be worked on during the 2014-2017 study period.
* Appointment of 111 rapporteurs and vice-rapporteurs in total in order to manage and organize the work of all study Questions and achieve the expected outcomes. A significant number of contributions (SG1: 74 contributions, SG2: 96 contributions), including liaison statements were received for consideration by the groups.

In 2015, the two ITU-D Study Groups held their second meetings for the 2014-17 study period from 7 to 18 September 2015 to progress the work items agreed by WTDC-14. ITU-D SG2 welcomed close to 190 participants from 52 Member States, and ITU-D SG1 close to 220 participants from 65 Member States. SG1 considered 136 contributions and SG2 121 contributions. Following agreement at the meetings, a number of surveys were launched to gather specific information with the end result of progressing the work on the study Questions.

Three associated events were held during the meetings:

* A joint ITU-T SG17 and ITU-D SG2 Question 3/2 Cybersecurity Workshop.
* The ITU Global Dialogue on International Mobile Roaming “Let’s roam the world”.
* 1st ITU-D Academia Network Meeting.

The ITU-D Study Groups held their first set of Rapporteur Group meetings for the new study period in April/May 2015. The result of the 2015 Rapporteur Group meetings was to review contributions received, review the tables of content for each Question and assess where further contributions are needed, refine the methodology that was to be used to reach the expected results for each Question, revise the work plans for each Question taking into consideration the new scheduling of the next WTDC, and progress with the drafting of text for the deliverables.

The ITU-D Study Groups held their second set of Rapporteur Group meetings in April 2016. As a result of the targeted and high quality contributions received for consideration, the Rapporteur Group meetings progressed well with the drafting of text for their deliverables.

In addition, an expert meetings for Question 8/1 (Examination of strategies and methods of migration from analogue to digital terrestrial broadcasting and implementation of new services) and WTDC Resolution 9 (Participation of countries, particularly developing countries, in spectrum management) were held from 15 to 19 February 2016 in Budapest (Hungary), in conjunction with a Workshop on spectrum management and digital terrestrial television broadcasting. A result of these meetings was that the Q8/1 and WTDC Resolution 9 Groups made significant progress on their draft deliverables and were able to gain additional contributions and contents through the holding of the associated workshop.  Other Expert meetings and associated workshops are planned for the remainder of the study period.

The ITU-D Study Groups will hold their third meetings of the 2014-17 study period from 19 to 30 September 2016.  These meetings aim to review draft reports and other deliverables requested by WTDC-14 which consist of practical guidance, checklists, toolkits, guidelines and training material as well as exchange preliminary thoughts on possible study topics for the future. The deliverables for the study period will be presented for approval during the final ITU-D Study Group meetings in March/April 2017.

#### WTDC Resolutions, recommendations and decisions

WTDC Resolutions: 1, 2, 5, 17, 21, 30, 33, 50, 59, 61, 80, 81

#### Other Conferences and assembly

PP Decisions 5, 13

PP Resolutions 25, 71, 133, 135, 140, 154, 165, 166, 167, 172

#### WSIS Action lines

WSIS Action Lines C1 (The role of public governance authorities and all stakeholders in the promotion of ICTs for development) and C 11 (International and regional cooperation) of the Geneva Plan of Action the Tunis Agenda for the Information Society contributed to Output 1.4.

#### Contribution to the relevant SDGs

SDGs: 1, 3, 5, 10, 16, 17

# Objective 2

# Foster an enabling environment for ICT Development and foster the development of telecommunication/ICT networks as well as relevant applications and services, including bridging the standardization gap

The main purpose of Objective 2 is to assist the ITU membership in creating and maintaining an enabling telecommunication/ICT policy and regulatory environment by promoting dialogue and cooperation among policy-makers, regulators and other telecommunication/ICT stakeholders, in developing and implementing effective financing policies and strategies; to assist the ITU membership in maximizing the utilization of new and sustainable technologies as well as relevant applications and services for the development and maintenance of resilient telecommunication/ICT networks;  and to  strengthen ITU membership capabilities to integrate ICT-centric innovation in their national development agendas and to promote a culture of innovation through enhanced partnership and cooperation with multi-stakeholders in converged ICT ecosystem.

#### 2.1 Policy and regulatory frameworks

This output seeks to achieve enhanced dialogue and cooperation among national regulators, policy-makers and other telecommunication/ICT stakeholders on topical policy, legal and regulatory issues to help countries achieve their goals of creating an enabling environment for a more inclusive information society through improved decision-making on an effective policy, legal and regulatory environment for the ICT sector.

##### Results achieved

* ITU-D convenes global and regional forums to discuss global trends in regulation for Sector Members and other national and international stakeholders, through organizing the Global Symposium for Regulators (GSR) as well as strategic dialogues on topical policy, legal, regulatory, as well as on economic and financial issues and market developments. GSR is the global annual venue for regulators to share their views and experiences, culminating in the adoption of Best Practice Guidelines. GSR-14 was hosted by Bahrain’s Telecommunications Regulatory Authority (TRA), attracting close to 700 participants from over 60 countries, GSR-15 hosted by the Gabonese Autorité de Régulation des Communications Electroniques et des Postes (ARCEP), welcoming close to 400 participants from over 60 countries, and GSR-16 by the National Telecommunications Regulatory Authority (NTRA) of Egypt attracting more than 540 participants from 64 countries. A series of pre-events precede each GSR, including the Regional Regulatory Associations Meeting and Private Sector Chief Regulatory Officers Meeting. In 2016, the Global Dialogue on Digital Financial Inclusion was held as a thematic pre-event with the support of the Bill & Melinda Gates Foundation, attracting over 500 participants from the telecommunication and financial services sectors. GSR-17 will take place in the Bahamas from 11 to 14 July 2017 under the theme “Living in a World of Digital Opportunities”.
* Regional economic and financial forums attracted more than 200 participants from over 60 countries in 2014, more than 200 participants from over 60 countries in 2015 and more than 275 participants from over 50 countries in 2016. The 2015 ITU High-Level Workshop on International Mobile Roaming (IMR) “LET’S ROAM THE WORLD” welcomed over 50 participants, and in 2016, the September IMR consultation meeting welcomed over 15 Regional Regulatory Associations, Consumer Associations and other international and regional organizations. The Let’s Roam the World initiative aims to support members in the definition and adaptation of best practices and guidelines for all stakeholders around the world on IMR.
* ITU-D provides data, research and analysis and tools (Trends reports, GSR discussion papers, publications, portals, databases) to support its 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. The Trends reports include Trends 2016: Regulatory Incentives to Achieve Digital opportunities; Trends 2015: Getting Ready for the Digital Economy and Trends 2014: Fourth Generation Regulation: Driving digital communications ahead. Various thematic studies including 10 Broadband Thematic and Economic and Financial reports were also published on cutting-edge policy, regulatory and economic issues.
* Annual questionnaires are disseminated regarding regulatory and policy issues and tariff policy issues. Based on such concrete data, ITU-D has developed the ICT Regulatory Tracker that covers over 150 countries for a period of 15 years, showcasing regulatory progress within the same country, amongst regions and worldwide. Using quantitative methods, it facilitates both the benchmarking and evolution of trends in legal and regulatory frameworks under four key topics: regulatory authority, regulatory mandate, regulatory regime and competition framework.
* ITU-D also provides knowledge exchange tools and platforms to enable inclusive dialogue and enhanced cooperation to help countries achieve a more inclusive information society and to raise national and regional awareness about the importance of an enabling environment. Website views and downloads of regulatory and financial data culminated in the following numbers from May 2014 - 6 September 2016: ICT Regulation Toolkit: 401,411 page views; Online knowledge center: 503,699 views; annual GSR websites: 219,047 page views; Publications: Trends in Telecommunication Reform 2014 (edition free of charge): 19,300 online downloads; Telecommunication Regulation Handbook 134,174 online downloads; ITU regulatory and market environment thematic reports: 335,250 downloads; and ICT-Eye: 398,593 page views.
* The ITU Inter sectoral International Mobile Roaming (IMR) Resources web portal consolidates in one portal all ITU activities on IMR.
* Since 2015, direct assistance has been provided to over 20 countries and regions to help countries achieve a more inclusive information society and to raise national and regional awareness about the importance of an enabling environment to allow digital empowerment and inclusion in a smart connected society.

##### In the Africa region (AFR)

* A workshop on universal service/access policies and regulations was co-organized with the Universal Service Obligation (USO) Fund of Tanzania in 2014 to further elaborate the guidelines developed under the ITU/European Commission Harmonization of the ICT Policies in Sub-Saharan Africa (HIPSSA) project with participation of all Eastern and Southern Africa countries. A similar workshop was held for West and Central African countries in 2015 with the attendance of 77 participants from 12 countries from these regions. Both workshops enabled participating countries to streamline their regulatory and legal frameworks on USO funds.
* The Kingdom of Swaziland implemented its new laws in ICT and established the new Regulatory Authority, Swaziland Communications Commission (SCCOM), with the assistance of ITU experts. This enabled the setup of an independent ICT Regulator in the Kingdom of Swaziland.
* The Gambia adopted a new ICT market and competition assessment framework enhancing the level of market efficiency and growth of the ICT sector through technical assistance provided by ITU.
* A platform for interaction between regulators, policy makers and the private sector, resulting in a better understanding on key regulatory issues, was provided to the 262 participants from 23 countries and 18 Organizations attending the Forum for Telecommunications Regulation in Africa (FTRA) and Working Party on Private Sector issues held in Abidjan, Cote d’Ivoire from 23-25 March 2016.
* AFR Regional Initiative (RI) 2 on Strengthening and harmonizing policy and regulatory frameworks for the integration of African telecommunication/ICT markets has achieved the following results to date: the harmonization of national ICT policies and regulatory frameworks in Economic Community for Central African States (ECCAS), the setting-up of the National Communications Authority of South Sudan and the development of a National Broadband Plan Model for Southern Africa Development Community Region (SADC) that countries are gradually transposing into their respective National Plans.
* AFR RI 3 on the Development of broadband access and adoption of broadband has achieved the following results to date: countries in the Africa Region adopting a harmonized approach on infrastructure sharing as a mechanism to reduce investment costs in under-served areas; development of Broadband Wireless Networks in Burundi, Burkina Faso and Rwanda, providing access to schools and hospitals; and the development of Broadband Wireless Master Plans for Congo Brazzaville and Malawi which laid the foundation for broadband adoption and usage in these countries.

##### In the Americas region (AMS)

* Several discussions on the quality of telecommunication services, e-applications and visions and strategies for the ICT sector were jointly provided by ITU and Anatel (Agência Nacional de Telecomunicações – Brazil) for Latin American countries during the FUTURECOM 2015 and 2016 – one of the main ICT events in Latin America. In 2016 participation at FUTURECOM made it possible for ITU to establish a presence, allowing networking and dissemination of information and materials on key ITU programmes through regular lectures, a panel with stakeholders and an information stand. One-hundred participants attended the session and the ITU stand was visited by over 450 participants. Several recommendations to promote broadband came out of the Session “Trends and a global perspective for delivering ICT to all: IoT, interoperability and IMT 2020”. Several Member States and private organizations attended and benefited from the session.
* AMS RI 3 on the development of broadband access and adoption of broadband has achieved the following results to date: assistance to the Commonwealth of Dominica in the development of a national broadband policy and sectoral strategy; sharing of studies on broadband; sharing knowledge with members on interconnection, cybersecurity, and Internet Protocol, version 6 (IPv6); establishing Community ICT Centres; support to South American countries in terrestrial optical cable systems; and formulation and development of national broadband policies to implement a broadband technology framework.
* Restructuring of the Barbados Regulatory Authority to help foster efficiency and streamlining of regulatory functions in the local environment. Twenty-one people received the training delivered in May 2016.
* Preparation of a model roaming bill for enactment and appropriate supporting regulations for Saint Lucia and their subsequent adoption in the other Eastern Caribbean Telecommunications Authority (ECTEL) Contracting States, as and when required. A first workshop in this context was held in Saint Vincent and the Grenadines in June 2016 in which 15 participants from the ECTEL group participated.
* AMS RI 4 on the reduction of telecommunication service prices and Internet access costs has achieved the following results to date: Support to Paraguay for the deployment of a national Internet Exchange Point (IXPs), provision of capacity building for the administration and management of a national IXP, as well as training on the planning, design and future implementation of the G-WAN. The Paraguayan national IXP was launched in August 2016; and formulation of model policies and laws related to e-waste. Forums on interconnectivity, cybersecurity and IPv6 were held in Panama and in Honduras in 2015 and 2016.
* ITU and the Caribbean Broadcasting Union collaborated on an ITU-funded E-waste Project (May 2015 – October 2016). The fulfilled objective of the project was an assessment of the Caribbean in environmental standards and electronic waste management and recycling, focusing in particular on television devices, mobile phones and computers. The assessment also included anti-dumping regulations for televisions that do not conform to regional requirements and international standards. The project report provided recommendations for an effective framework and enabling environment to optimize and standardize the environmental policy that results from the switch to digital broadcasting in the Caribbean region. Specifically, these model policies: (i) set out mechanisms to control the importation and/or production of devices that do not conform to the chosen digital television standard or that do not incorporate digital television tuners, and (ii) provide for the rational and environmentally sound processes for the recycling and safe disposal of e-waste, including television devices that do not function following the digital switch over.
* In 2016 ITU also provided assistance and consultancy in the formulation of e-waste management policy and regulatory framework for Saint Lucia. The policy and regulatory framework is completed and implementation-ready. This will be used as a blueprint for the development of policies for other countries of the Caribbean.

##### In the Arab states (ARB)

* An overview of the issues involved in establishing interconnection in an IP-based environment, the technical challenges of IP interconnection and charges and cost modelling for IP interconnection was provided to more than 40 participants from 7 Arab countries in the regional “IP Interconnection” workshop held in Khartoum on 23-25 May 2015.
* Increased the knowledge and skills of more than 50 participants from 11 Arab countries related to Roaming Principles, Models, the Roaming Processes, National and International Mobile Roaming (IMR), ITU recommendations on IMR, building roaming relationships, and the regulatory and commercial aspects of roaming in the Regional Workshop on Mobile Roaming: National & International Practices, held in Khartoum, Sudan on 27-29 Oct 2015.
* Understanding of more than 45 participants from 7 Arab countries on principles of competition in telecommunications/ICT markets, the types and structure of telecommunication/ICT markets, competition as an economical growth factor and how to regulate and manage telecommunications/ICT competition in the regional workshop on Competition in Telecommunications Market organized in Sudan on 24-26 May 2016.
* Created a platform for dialogue between more than 100 participants from telecommunication and financial services regulators from the Arab region (two-thirds from financial institutions) on the challenges facing this sector and discussed the opportunities and challenges of mobile payments to stimulate financial services and financial inclusion during a regional workshop for Arab states on Digital Financial Inclusion held on 24-25 August 2016 in Sudan.
* Enhanced the skills and experiences of more than 15 participants from Arab countries on changes in the regulatory and operational frameworks and increased their understanding of the impact of technological evaluation on the ICT sector through the regional training on “Big Challenges for Telecom Operators and Regulators” held in Rabat, Morocco, on 2-4 November 2016.
* Built the understanding of 80 participants from 14 countries in workshops organized during the 2015 and 2016 annual meetings of the Arab Regulators Network (AREGNET) on over-the-top (OTT) content and IoT regulatory and technical issues.
* Promoted the establishment of cooperation agreements on Conformity and Interoperability (C&I) between Arab countries through establishment of mutual recognition agreements in relation to C&I.
* Created a platform for dialogue on affordable access to broadband services, economic and financial issues in a converged broadband environment, and the challenges in the digital ecosystem during the ITU/BDT Regional Economic and Financial Forum of Telecommunications/ICTs for the Arab States held in Muscat, Oman, on 6-7 December 2016
* Assisted the Arab ICT Organization (AICTO) in the study on the impact of OTTs on Arab telecommunication markets.
* Training was provided to 65 specialists from the Arab region in the field of terrestrial and space radiocommunication services. Experts from the ITU Radiocommunication Bureau made presentations on terrestrial and space matters to help these specialists further understand the ITU tools and procedures, including the notification procedures, the preparation of frequency assignment notices and ITU/BR software.
* Assisted Djibouti by reviewing and developing its legal and regulatory framework instruments for the telecommunications sector.

##### In the Asia and Pacific region (ASP)

* Strengthened the regulatory environment exchange and information sharing through the annual Regulators Round Table and International Training Programme, reaching over 300 participants from more than 25 countries over the 2014 to 2016 period.
* Improved the decision making on policy and regulatory issues through enhanced awareness, improved skills and specialized advisory. This was achieved through several forums, seminars, workshops and training on issues relating to enabling environment for smart society, smart sustainable cities, OTT, compliance testing of mobile base stations and broadcast stations, regulation in the broadband and converged era, spectrum management, costing, licensing, quality of service and other regulatory issues. In addition, specialized assistance, including direct country assistance was provided in the areas of policy, legislation and regulatory frameworks for 20 countries: Afghanistan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, Fiji, Lao P.D.R., Maldives, Mongolia, Myanmar, Nepal (Republic of), Pakistan, India, Papua New Guinea, the Philippines, Samoa, Sri Lanka, Timor-Leste Thailand and Viet Nam.
* ASP RI 4 on the development of broadband access and adoption of broadband has achieved the following results: prepared National Broadband Policies for Bhutan, Brunei Darussalam, Marshall Islands, the Philippines, Sri Lanka and Vanuatu. Brunei Darussalam has since adopted their policy in 2015 while the Telecommunications Infrastructure and Broadband Development Plan for Cambodia is under preparation.
* Direct country assistance was provided to Member States to address key priority areas such as: Digital Terrestrial TV Broadcasting, Affordable Access to Internet, Transmission Technology Map, Strategic Plan on Telecommunications Infrastructure, Compliance Testing of Mobile Base Stations, Conformance and Interoperability and Type Approvals, and development of Spectrum Management Plans (for Bangladesh, Brunei Darussalam and Fiji in 2014-2015).
* Development of on-line interactive transmission maps for the Asia Pacific Region in collaboration with the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) (2014-2016).
* Improved awareness and built capacity through various trainings, workshops, seminars, forums, and conferences focused on ICT development, broadband infrastructure, applications and services, infrastructure development, spectrum management and related issues, satellite coordination, IPv6 implementation, Internet access, conformity and interoperability, pricing ICT indicators and statistics for over 1000 participants from the region between February 2014 to August 2016.
* ASP RI 5 on Policy and regulationhas improved policy, regulatory and legislative frameworks through direct country actions in the areas of: ICT laws, regulatory institutional strengthening, and policy and regulatory assistances in areas such as licensing, liberalization and sector review, numbering, tariff, national frequency table updates and dispute resolution.
* Enhanced capacity through the delivery of various trainings, workshops, seminars, forums, direct country assistances for the benefit of more than 800 participants from 38 Member States over the period from June 2014 to December 2016.

##### In the Commonwealth of Independent States countries (CIS)

* Improved satellite communication development in Armenia by providing ITU expert assistance in August 2015.
* Increased regional collaboration on radiocommunication and satellite issues and improved the understanding among 55 participants from 8 CIS countries of how WRC-15 and RA-15 decisions should be implemented in CIS countries during an ITU regional workshop held in Yerevan, Armenia from 27-29 June 2016.
* CIS RI 4 on Development of broadband access and adoption of broadband is planned to be implemented in 2017. As part of the planning process, the ITU established a framework for the implementation of the regional initiative, by identifying prospective partners for its implementation and the estimated funds required.
* Increased awareness of the results achieved within the framework of WDTC-14 CIS Regional Initiatives and received commitments from the ITU membership in the region to participate in ITU activities in 2017 at the Regional Development Forum for CIS, held in Bishkek, Kyrgyz Republic, on 8 November 2016 and attended by over 100 representatives of 11 countries.

##### In the Europe region (EUR)

* Capacity of 150 stakeholders from around 20 countries is strengthened through exchange of regulatory practices and review priorities for action at the annual regional regulatory conferences hosted by Agency for Electronic Communications and Postal Services, Montenegro (2015 and 2016).
* EUR RI 2 on Development of broadband access and adoption of broadband resulted in strengthening regional cooperation among relevant European stakeholders. The human capacity of more than 1000 professionals was built on broadband access technologies, quality of services and experience, network planning, spectrum management and broadcasting. Best practices were shared across the region on establishment of IXPs and national approaches towards broadband development. In addition bilateral cooperation was strengthened through twinning programmes with the participation of 4 countries, where technical specifications for the development of QoS and broadband mapping systems were developed and the capacities on spectrum management built. Specific studies and benchmarks were developed (e.g. Review of Broadband Plans in Central and South Eastern European Countries). European broadband infrastructure has been mapped ad information was reflected on the ITU Interactive Terrestrial Transmission Map.
* EUR RI 2 on Development of broadband access and adoption of broadband has achieved the following results: Human capacity of more than 1,000 professionals was built in the field of development of high-speed networks in Europe. A series of physical meetings and online trainings provided an opportunity for sharing best practices across the region. A national IXP was established in Montenegro and is fully operations. The terrestrial broadband infrastructure of more than 60% of European countries was reflected on the global ITU map.
* In addition, more than 10 countries exchanged their national approaches on quality of service (QoS) and peer reviewed the ITU Academy Quality of Service Training programme during the European Regional Workshop, for Europe "New issues in QoS measuring and monitoring", held in Bologna, Italy on 25-26 November 2015, Bologna, Italy, organized in collaboration with the Italian Ministry of Economic Development and hosted by the Foundation Ugo Bordoni (FUB).
* Strengthened cooperation with the European Commission in the field of broadband development, including by contribution to the Steering Committee and Technical Review Panel of the European Monitoring Platform for Mapping of QoS and QoE (meeting on regular basis in Brussels), European Commission led project that resulted in strengthened cooperation with European Commission in field of broadband development.

#### Study Group Questions

The following study group Questions contributed to Output 2.1 (See Appendix 2):

**Question 4/1:** Economic policies and methods of determining the costs of services related to national telecommunication/ICT networks, including next-generation networks

**Question 6/1:** Consumer information, protection and rights: Laws, regulation, economic bases, consumer networks

**Question 1/1:** Policy, regulatory and technical aspects of the migration from existing networks to broadband networks in developing countries, including next-generation networks, m-services, OTT services and the implementation of IPv6

**Question 3/1:** Access to cloud computing: Challenges and opportunities for developing countries

#### WTDC Resolutions, recommendations and decisions

WTDC Resolutions: 1, 9, 17, 21, 23, 30, 32, 43, 48, 62

#### Other Conferences and assembly

PP Decisions 5, 13,

PP Resolutions 25, 71, 102, 135, 138, 154, 165

#### WSIS Action lines

WSIS Action Line C6 of the Geneva Plan of Action and §§ 112-119 of the Tunis Agenda for the Information Society contributed to Output 2.1

#### Contribution to the relevant SDGs

SDGs: 2, 4, 5, 8, 9, 10, 11, 16, 17

## 2.2 Telecommunication/ICT networks, including conformance and interoperability and bridging the standardization gap

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 telecommunications, information delivery, broadcasting and computing. The deployment of common broadband technology and network infrastructure for multiple telecommunication services and applications and the evolution to all IP-based wireless and wired next-generation networks (NGNs) and their evolution open up opportunities but also imply significant challenges for developing countries. The rapid deployment of wireless and mobile technologies indicates the growing importance of radio spectrum management and the role it plays in the socio-economic development of countries. Also notable is the worldwide transition from analogue to digital broadcasting, enabling more efficient use of spectrum and higher quality audio and video delivery.

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. International standards are important for developing the global infrastructure of ICTs. Conformance to international standards can help avoid costly market battles over different technologies. For companies from emerging economies, international standards create a level playing field, offering access to new markets and offering economies of scale that can reduce costs for manufacturers, operators and consumers. The rapid growth of personal wireless devices, especially cellular phones and tablet computers, has raised new challenges as such devices are easily moved across national borders and conformance regimes.

ITU-D worked closely with ITU-R and ITU-T in all regions to develop infrastructure and services. Several countries were assisted in preparing wireless broadband master plans, spectrum management master plans and national broadband policies for their transition from public switched telecommunications networks (PSTN) to NGNs.

##### Results achieved

* ITU-D continues to implement and update the ITU Interactive Terrestrial Transmission Maps online. The ITU Interactive Transmission Maps (for broadband backbone optical fiber, microwave links and satellite earth stations as well as submarine cables) have been continuously updated in all regions and made available [online](http://www.itu.int/en/ITU-D/Technology/Pages/InteractiveTransmissionMaps.aspx). The plan for including IXPs on the ITU Interactive Transmission Maps is ongoing. At the time of this reporting, the Map presents information from 374 operator networks, 23,895 transmission links, and 16,266 nodes located in 157 countries. The research on the transmission links has reached 8,636,402 km of routes, of which 2,338,764 km have been imported to the Map.
* A report on the Implementation of Evolving Telecommunication/ICT Infrastructure for Developing Countries: Technical, Economic and Policy Aspects was developed and shared with all participants of the ITU-D Study Groups. The report introduces essential telecommunication/ICT infrastructure and their technologies as well as economic and policy aspects supporting effective adoption of NGNs. The report makes reference to more than 200 ITU publications (e.g. ITU-D Study Group Reports, ITU Guidelines, and ITU Recommendations from all Sectors).
* “The Essentials of Future Internet Exchanges and Services” guidelines and report was developed in order to assist ITU members to more effectively plan and implement future Internet Exchanges for the Internet of Things and OTT services.
* Awareness was raised on the role of governments in creating an enabling environment for establishing and developing IXPs during a workshop dedicated to the Arab IXP Group organized in collaboration with the League of Arab States, Internet Society (ISOC), and the African Network Information Center (AFRINIC), in Tunis in November 2014.
* In accordance with WTDC Resolution 47, regional forums and training courses on C&I were conducted in collaboration with TSB and BR, focusing on conformity assessment procedures, type approval testing for mobile terminals, and different C&I testing domains for Africa, Americas, Arab States, Asia-Pacific, and CIS. In, 2016, these capacity building events were offered to 130 participants from 60 countries in real testing facilities through the collaboration of laboratory partners in the C&I Programme; i.e. China Academy of Telecommunication Research of MIIT (CAICT), Centre d'Etudes et de Recherches des Télécommunications (CERT), Centro de Pesquisa e Desenvolvimento em Telecomunicações (CPqD), Telecom Italia Lab (TiLab). All training materials and case studies reported by participants on the current national C&I status is available on the C&I portal. An online training on C&I for PTN, Mobile Terminal and EMC offered under the ITU ASP CoE built the capacity of 52 participants.
* Regional integration is increasing along with ICT infrastructure development through assessment studies in the regions, including for Arab Maghreb Union (UMA), East African Community (EAC), Comisión Tecnica Regional de Telecomunicaciones (COMTELCA), and the Caribbean Telecommunication Union (CTU), to encourage the establishment of harmonized C&I programmes, notably through the development of Mutual Recognition Arrangements/Agreements (MRAs) between countries and/or building labs, as appropriate. As a follow-up to the studies, UMA, EAC and COMTELCA Secretariats are conducting Experts/Ministerial meetings in 2016 to finalize their respective MRAs.
* New guidelines on Establishing Conformity and Interoperability Regimes were published online and shared with members in 2015. These guidelines address challenges faced by developing countries as they plan and review their own C&I regimes, including conformity assessment procedures, legislation to promote an orderly equipment marketplace, surveillance, coordination across regulatory agencies and relevant international standards. Other related reports cover the creation of local or regional testing laboratories and the establishment of MRAs for promoting the efficiency of C&I programmes for telecommunication/ICT equipment.
* Spectrum Management Master Plans were prepared or are under preparation within the framework of an ITU-Ministry of Science, ICT & Future Planning (MSIP) (Republic of Korea) project for 6 countries in Asia-Pacific (Fiji, Brunei, Bangladesh, Brunei, Fiji, Pakistan, Thailand and Viet Nam) and 3 countries in the Caribbean (Grenada, Jamaica and Saint Vincent and the Grenadines).
* The Spectrum Management System for Developing Countries (SMS4DC) is now in use in over 40 countries, and training on SMS4DC provided to more than 45 participants in two workshops held in Africa and one in Timor-Leste. In-country SMS4DC training was provided in Yemen as part of the support ITU is providing to help their efforts in frequency management coordination with Sudan. Training was also provided to the British Virgin Islands for 15 participants. Training on SMS4DC to improve the management of the ITU software SMS4DC and its diffusion in the region was organized in Venezuela with 25 participants and Guinea. The International Meeting of Users of the Spectrum Management System for Developing Countries (SMS4DC) took place on 8-9 December 2016 in Geneva. This meeting aimed at summarizing why computerized spectrum management is required; analysing the main functions of SMS4DC; proposing further developments; understanding the needs and proposals as well as sharing the experiences of targeted users in order to meet their requirements.
* Version 5 of the software was released at the end of 2015 which contains modules for additional propagation models and import data from external sources in the system. The software is also available in Spanish.
* Guidelines have been prepared to assist countries in the development of their national table of frequency allocations, their national spectrum management assessments, for tendering for their national spectrum monitoring system and developing spectrum fee regimes.
* A digital switch‐over database was developed, and information from some 192 countries was entered into the database and shared with ITU members. (see [http://www.itu.int/en/ITU-D/Spectrum-Broadcasting/Pages/DSO/Default.aspx )](http://www.itu.int/en/ITU-D/Spectrum-Broadcasting/Pages/DSO/Default.aspx)
* Capacity of ITU members was built on a range of telecommunications/ICT network issues including the ITU Arab regional training workshop on SMS4DC in Djibouti, 14-18 June 2015 for around 20 participants from 8 countries, the ITU‐National Broadcasting and Telecommunications Commission (NBTC) (Thailand) workshop on “cross‐border frequency coordination” in Bangkok, 29 June-1 July 2015 for more than 60 participants from 7 countries, the Asia-Pacific regional workshop on satellite coordination in collaboration with BR (25-30 May 2015, Manila, Philippines, for around 40 participants from 15 countries), a seminar and training event for Pacific island countries on broadcasting and spectrum management issues (6-10 July 2015, Fiji, 40 participants from 14 countries); the 2015 ITU regional radiocommunication seminar for CIS/Eastern Europe countries in collaboration with BR; and the CIS/Europe regional workshop on spectrum management and the transition from analogue to digital terrestrial television broadcasting (5-7 May 2015, Budapest, Hungary, more than 50 participants from 16 countries).
* Direct assistance was provided in 2015 to more than 30 countries in all regions regarding frequency planning; spectrum management master plans; the transition from analogue to digital terrestrial television broadcasting; and other technical issues.

##### In the Africa region (AFR)

* Broadband connectivity in Burundi: 437 institutions in the country are connected to Broadband Wireless Networks. 25% of the connected institutions are schools and hospitals; 24 % are pharmacies, cooperatives and associations in rural areas; 8% are from the public sector and the remaining 13 % are from private users and SME (Small and Medium Enterprises).
* Training workshops on conformance and interoperability (C&I) for Africa were held in Tunis in June 2014 and December 2015 particularly devoted to procedures for establishing C&I regimes at Regional/Sub regional levels for 14 Member States.
* These were followed by C&I assessment studies and validation workshops which resulted in the establishment of MRAs in Southern African Development Community (SADC) and East African Community (EAC). MRAs will facilitate establishment and sharing of C&I labs by these Regional Economic Communities.
* Assisted countries in implementing the SMART Africa Manifesto and facilitated Smart Africa Steering Committee and Board meetings in the governance of the Initiative. The Smart Africa Alliance currently consists of 38 countries, 9 International Organizations and 6 Private Sector Members.
* Expertise provided to the sub-committee on the Smart Africa Scholarship Fund which facilitated the structuring of the fund and the establishing of rules and procedures. 7 scholarships were awarded to students pursuing Masters’ degrees.
* IPv6 test bed was implemented in Côte d’Ivoire, in partnership with the Telecommunications /ICT Regulatory Body of Côte d' Ivoire (ARTCI). The test bed will allow IPv6 network simulations prior to actual deployments to minimize mistakes. IPv6 test bed equipment was purchased for Uganda in December 2014, and a similar test bed will be implemented there.
* AFR RI 3 on the development of broadband access and adoption of broadband achieved to date the following results: countries in the Africa region adopting a harmonized approach on infrastructure sharing as a mechanism to reduce investment costs in under-served areas, development of Broadband Wireless Networks in Burundi, Burkina Faso and Rwanda, providing access to schools and hospitals. The development of Broadband Wireless Master Plans for Congo Brazzaville and Malawi laid the foundation for broadband adoption and usage in these countries.
* AFR RI 4 on Spectrum management and transition to digital broadcasting achieved to date the following results: increased number of African countries willing to sign Harmonized Calculation Method for Africa (HCM4A) agreement for their cross border spectrum coordination, 15 countries launching their migration processes in 2015 and 4 other countries implementing their road maps for Digital Terrestrial TV Broadcasting in 2016.

##### In the Americas region (AMS)

* American countries had the opportunity to learn on the regional scenario in terms of conformance and interoperability (C&I), increase networking and expand possibilities of signing mutual recognition agreements (MRAs) during the Training Workshops on C&I held in Campinas, Brazil, in 2014 (12-16 May), in 2015 (8-12 June) and in 2016 (27 June-1 July). The workshops helped identify the need to move forward with the possibilities of remote testing through virtual labs to increase conformity and interoperability of ICT equipment in the Americas region. The workshop planned in 2017 will explore the feasibility of this initiative.
* A workshop for the Caribbean to promote the development and implementation of conformance and interoperability (C&I) programmes brought together participants from academic and professional organizations, testing laboratories, certification and standards bodies, regulatory and governmental agencies from 8 Caribbean nations, the United Nations, Canada, Brazil and Switzerland.
* C&I assessment studies and validation workshops followed the trainings delivered, with the objective to facilitate the establishment of MRAs for lab sharing. Assessment studies were already developed for the Caribbean and Central American countries. Risk assessment was performed and demand and feasibility studies were conducted to determine the need for national or regional testing facilities to support C&I regimes in the Caribbean. From the outcome of these studies, the Caribbean would consider and/or draw up a plan for the development of in-country testing laboratories. Other outcomes from the workshop include the development of a general framework for conformity assessment regimes, as well as a specific framework for ICT C&I for the Caribbean region.
* A draft MRA for COMTELCA countries was prepared during 2016 and progress has been made on the process to establish virtual labs for conformity. An agreement to further develop the concept of virtual labs was achieved during the 2nd workshop on conformity and interoperability for COMTELCA member countries held in San Salvador, El Salvador (5-6 December 2016). Additional information on the C&I results for 2016 and the event can be found at: <http://www.itu.int/en/ITU-D/Regional-Presence/Americas/Pages/EVENTS/2016/15556.aspx>
* Guidelines for implementing regional IXPs for the Americas were developed and shared with members. – The guidelines take into account the drop in Internet interconnection rates and the legal and regulatory framework of around 10 countries assisted. Forums on Interconnectivity, cybersecurity and IPv6 were held in Panama and in Honduras in 2015 and 2016.
* The Regional Forums on interconnectivity and reduction of telecommunication service prices and Internet costs, organized by ITU in 2014 (in Paraguay and in Barbados), in 2015 (in Panama), and in 2016 (in Honduras), helped to continuously discuss and look towards regional solutions for international interconnectivity and reduction of Internet costs. The IV Regional Forum was organized by ITU with the collaboration of ISOC and the Latin American and Caribbean Network Information Center (LACNIC), represented an opportunity for Latin American countries to learn study cases of Argentina, Honduras, Mexico and Paraguay in launching national IXPs.
* Paraguay national IXP was launched after receiving support and technical assistance from ITU.
* Agreement to continue efforts towards deploying national IXPs and fibre-optic networks, with emphasis on borders for international interconnection, was reconfirmed in 2015 and 2016 regional events on connectivity for countries in the Americas (in 2014 there were meetings in Paraguay and in the Dominican Republic).
* Within the framework of the ITU-Latin-American Development Bank (CAF) Project, digital broadcasting road maps have been prepared for 8 countries (Bolivia, Colombia, Costa Rica, Dominican Republic, Jamaica, Panama, Paraguay, and Venezuela) and El Salvador, Guatemala, Honduras and Nicaragua were assisted within the framework of the yearly operational plan. A guideline for the development of digital broadcasting road map was also made available in Spanish.
* AMS RI 2 on Spectrum management and transition to digital broadcasting achieved the following results to date: support to countries on the transition to digital broadcasting as a result of applying ITU guidelines, the promotion of capacity building activities related to spectrum management and digital broadcasting, cost modelling and pricing for Latin American countries and guidelines on the policy and economic aspects of spectrum assignment. Partnership with the Republic of Korea’s MSIP helped establish spectrum management master plans, benefiting three Member States in 2016, namely Saint Vincent and the Grenadines, Grenada and Jamaica. In addition, a road map was developed for the transition from analogue to digital terrestrial television in Guyana. Promotion of events on optimization and efficient use of spectrum and on digital television and the digital dividend.
* AMS RI 3 on Development of broadband access and adoption of broadband achieved the following results to date: provision of assistance for the development of guidelines for sustainable broadband infrastructure in rural areas, delivery of studies on broadband, capacity building activities, support for the establishment of Community ICT Centers; support to South American countries in terrestrial optical cable systems; and the formulation and development of national broadband policies to implement a broadband technology framework.

##### In the Arab states (ARB)

* Broadband connectivity in Djibouti: 19 cities and sites are connected to Broadband Wireless Networks across the country. Two sites are located in Djibouti City, the nation’s capital, (Balbala and Boulaos) and other sites are located in secondary cities and rural areas including Arta, Ali Sabieh, Day, Dikhil, Obock, PK 51, Iroley and Tadjourah Nord.
* Coordinated the data collection and validation in the process of enhancing the Interactive Terrestrial Transmission Map in the Arab countries with the aim of promoting the Arab networks’ interconnection and traffic exchange.
* Assisted Lebanon, Mauritania, Palestine and Sudan in formulating their national master plans for the transition to digital broadcasting and frequency planning.
* Members’ capacity was built on the latest developments in digital terrestrial television, IPv6, and SMS4DC through workshops, trainings, and direct assistance.
* In the Arab States, specialized training programme on IPv6 development and deployment was provided to Arab LDCs and to the State of Palestine.
* Promoted the establishment of cooperation agreements on C&I between Arab countries through establishment of MRAs for C&I. Assisted Arab Maghreb Union (UMA) Countries in the elaboration of their Common C&I Regime Action Plan.
* Assisted selected countries in developing their national broadband plans, raised awareness, and built capacities on technical, economic and financial aspects relating to broadband deployment and adoption.
* Assisted Djibouti in the feasibility study for the establishment of a Regional Internet Exchange Point (IXP).
* The Forum on new technologies such as 5G, Cloud Computing, Big Data and Internet of Things held in Cairo, Egypt, on 23-24 November 2016 shed light on the opportunities, benefits and challenges of the application of these technologies in the development of the countries in the Arab region.

##### In the Asia and Pacific region (ASP)

* Organized forums, workshops, seminars and trainings in the areas of broadband network and services, wireless security practices, wireless network planning, IPv6 deployment and infrastructure security, smart technologies and services, ICT applications, cloud computing, cloud forensics and security, satellite network registration procedures, broadband quality of service, NGN project planning and costing etc. Specialized assistance was provided to Afghanistan, Bhutan, Cambodia, Laos, Mongolia, Sri Lanka and Timor-Leste to improve their planning for ICT networks and services.
* The ITU Asia-Pacific Centre of Excellence with focus on C&I has been established since 2015 that has conducted three trainings. In addition, assistance has been provided in this area to Islamic Republic of Iran, Mongolia and Sri Lanka and. Support has been provided to seminars on “Bridging the Standardization Gap” in cooperation with APT and TSB in Indonesia.
* Enhanced awareness and capability of countries in the fields of frequency planning and assignment, spectrum management and radio monitoring, in efficient utilization of tools for managing the spectrum and in measurement and regulation related to human exposure to electromagnetic fields (EMF) through forums, workshops, seminars and trainings. Specialized assistance was provided to develop Spectrum Management Master Plans for Bangladesh, Brunei Darussalam and Fiji in partnership with MSIP, Republic of Korea in 2014 and 2015. Pakistan, Samoa and Thailand will also be supported through additional funding received from MSIP to improve their planning.
* Guidelines on the transition from analogue to digital terrestrial television broadcasting have been updated. Case studies on digital terrestrial television broadcasting implementation have been completed on Australia, Japan, and Thailand.
* A report has also been written on “Interactive Multimedia Services in Asia Pacific: Trends and Insights” (2014-2015) to increase the awareness on the deployment of new technologies on the broadcasting sector in the Asia-Pacific. Several Forums, Seminars, Workshops and trainings have been implemented from 2014 to 2016 in the area of digital broadcasting and partnerships have been strengthened with regional organisations such as ABU and AIBD while organizing these seminar and forums. Specialized country expertise support has been provided to Thailand (NBTC), Papua New Guinea and the Philippines.
* Fiji implemented its Digital Terrestrial TV Broadcast through a national trial on 1 August 2016, and is targeting Analogue Switch Off (ASO) in 2017.
* ASP RI 3 on Harnessing the benefits of new technologies, the following results were achieved in the areas of Spectrum Management, Cloud Computing, Mobile App Development, Green ICTs Smart Grids and Smart Sustainable Societies through various trainings, seminars and forums. ITU partnered with the Food and Agriculture Organisation (FAO) in raising the capability of FAO & ITU members in the strategic use of ICTs for agriculture. Bhutan and Sri-Lanka were assisted in the 2015-2016 period while assistance is ongoing to Fiji, Papua New Guinea and the Philippines. Training of trainers was conducted to transfer the skills to interested countries. FAO-ITU E-agriculture Solutions Forum in 2016 raised awareness and provided a platform for solution providers and users to engage and partner.
* An assessment on the potential use of mobile applications in Health Sector of Bangladesh (2014) and surveys on Cybersecurity Readiness for Fiji and Vanuatu (2015). Awareness on m-health in India was increased through joint activities with WHO, ITU and the national government.
* Built capacity of policy makers, regulators and industry in multiple disciplines from Digital Terrestrial Television Broadcast, Interactive Multimedia Technologies, Mobile Cloud Computing, Satellite coordination and planning, amongst others strengthening the capacity of over 1400 participants from the region.
* ASP RI 4 on Development of broadband access and adoption of broadband has achieved the following results: Preparation of National Broadband Policies for Bhutan, Brunei Darussalam, Cambodia, Marshall Islands, the Philippines, Sri Lanka and Vanuatu. Brunei Darussalam has since adopted their policy in 2015. Direct country assistances were provided to member states to address key priority areas such as: Digital Terrestrial TV Broadcasting, Affordable Access to Internet, Management of Top Level Domain Names, Strategic Plan on Telecommunications Infrastructure, Compliance Testing of Mobile Base Stations and development of Spectrum Management Plans.
* Development of on-line interactive transmission maps for the Asia Pacific Region in collaboration with UNESCAP (2014-2016). Improved awareness and built capacity through various trainings, workshops, seminars, forums, and conferences focused on ICT development and other topics for over 1000 participants from the region between February 2014 and August 2016.

##### In the Commonwealth of Independent States countries (CIS)

* Raised ICT inclusiveness in Ukraine in April-June 2015 by creating Internet Access Centres in rural schools in Odessa Region covering over 500 pupils with broadband access of 2Mbps and faster.
* Raised ICT inclusiveness in Moldova by creating Internet access centres in 16 rural settlements in June-November 2015. 28 working places in these settlements enabled access to the Internet for 17,742 households and 51,575 people.
* Improved sustainability of power supply and contributed to advancement in green technologies in Central Asia in 2015 through finalizing WTDC-10 regional initiative in cooperation with the Communication Administration of Uzbekistan and in partnership with Uzbektelecom. Deployed self-sustainable telecommunication hub “Zambar” consuming around 8 kWh which is supplied by fully autonomous hybrid power source, mostly based on renewables.
* Enabled implementation of the WTDC-14 regional initiatives by creating common vision of the CIS countries and facilitated interregional cooperation at the RDF for CIS and Georgia, which was held in Chisinau, Moldova from 31 March to 1 April 2015 and attracted 66 participants from 10 CIS countries and 3 EU countries.
* Supported provision of broadband access in small and medium-sized settlements at ITU regional workshop, which was held in Moscow, Russia, from 17 to 19 February 2015 and attracted 62 participants from 8 CIS countries.
* Facilitated experience exchange between professionals from CIS countries in the area of digital transition and ensured better understanding of key challenges and existing solutions to complete digital switchover at ITU regional workshop, which was held in Moscow, Russia, from 16 to 18 February 2016 and attracted 63 participants from 6 CIS countries.
* Improved capacity and facilitated experience exchange between professionals from CIS countries on the issues of conformance and interoperability and mobile number portability at ITU training, which was held in Moscow, Russia, from 22 to 24 March 2016 and attracted 40 participants from 8 CIS countries.
* Increased regional collaboration on regulatory, economic and technical aspects of post-NGN, 4G and 5G and facilitated dialogue between policy-makers, regulators and the private sector during an ITU regional workshop held in Kiev, Ukraine, on 28-29 November 2016 and attended by 100 participants from 5 CIS countries and 3 EU countries.
* Raised ICT inclusiveness in the Kyrgyz Republic by creating 3 Internet access centres in rural settlements in October 2016, each providing 10 working places.

##### In the Europe region (EUR)

* Coordinated the data collection and validation in the process of enhancing the Interactive Terrestrial Transmission Map in Europe, covering infrastructure of more than 60% of European countries.
* Awareness of more than 200 European spectrum experts on the ITU software tools (BDT and BR) related to spectrum management and ITU notification procedures was built through contribution to the Electromagnetic Compatibility (EMC) Europe 2016 Wroclaw, International Symposium and Exhibition on Electromagnetic Compatibility, on 5-9 September 2016 in Wroclaw, Poland.
* A pan-European overview of the transition from analogue to digital terrestrial broadcasting was developed and information was input in the ITU Digital Switchover Overview Database, demonstrating the global status of the transition.
* Assistance to Serbia was provided in 2015 in line with Resolution 33. This included an annual review of the national priorities and provision of broadcasting equipment (gap fillers), ensuring that several municipalities were reached by digital TV.
* EUR RI 1 on Spectrum management and transition to digital broadcasting resulted in strengthened regional cooperation. Human capacities of more than 250 professionals from more than 16 countries in the field of spectrum management and digital broadcasting were built. A series of annual meetings were supplemented by direct assistance, twinning programmes, elaboration of benchmarks, national assessments and series of trainings.
* EUR RI 2 on Development of broadband access and adoption of broadband has achieved the following results: Human capacity of more than 1,000 professionals was built in the field of development of high-speed networks in Europe. A series of physical meetings and online trainings provided an opportunity for sharing best practices across the region. A national IXP was established in Montenegro and is fully operations. The terrestrial broadband infrastructure of more than 60% of European countries was reflected on the global ITU map.

#### Study Group Questions

The following study group Questions contributed to Output 2.2:

###### Study Group 1 Questions

**Resolution 9**: Participation of countries, particularly developing countries, in spectrum management

**Question 1/1**: Policy, regulatory and technical aspects of the migration from existing networks to broadband networks in developing countries, including next-generation networks, m‑services, OTT services and the implementation of IPv6

**Question 8/1**: Examination of strategies and methods of migration from analogue to digital terrestrial broadcasting and implementation of new services

**Question 5/1**: Telecommunications/ICTs for rural and remote areas

**Question 2/1**: Broadband access technologies, including IMT, for developing countries

###### Study Group 2 Questions

**Question 4/2**: Assistance to developing countries for implementing conformance and interoperability programmes

**Question 7/2**: Strategies and policies concerning human exposure to electromagnetic Fields

#### WTDC Resolutions, recommendations and decisions

WTDC Resolutions: 1, 9, 10, 11, 13, 17,18, 20, 21, 22, 23, 25, 30, 32, 35, 37, 39, 43, 47, 48,50, 51, 52, 57, 62, 63, 77

WTDC Recommendations 17, 19, 22

#### Other Conferences and assembly

PP Decisions 5, 13

PP Resolutions 25, 71, 101, 123, 176, 177, 178, 203

WRC Resolutions: see RPM Document 4

#### WSIS Action lines

WSIS Action Lines C2 on Information and Communication Infrastructure, C3 (Access), C7 (e-science) and C9 (Media) of the Geneva Plan of Action and the section "Financial mechanism for meeting the challenges of ICT for development" of the Tunis Agenda for the Information Society contributed to Output 2.2.

#### Contribution to the relevant SDGs

SDGs: 1, 8, 9, 11

## 2.3 Innovation and partnership

Innovation has been recognized as a powerful engine to promote development and address socio-economic challenges as well as increase the overall competitiveness of countries, while telecommunications/ICTs have been recognized as a key enabler for fostering innovation in various cross-sectors especially in a converged ICT eco-system. Although the world population is connected more than ever before, thanks to telecommunications/ICTs, more progress is still required to fully enjoy the benefits of ICTs, especially by leveraging innovation. Thus, fostering inclusive growth requires an understanding of the challenges facing ICT-centric innovation ecosystems, for which development of innovation policies, guidelines, recommendations and initiatives building capacity is critical to bridge the growing innovation divide.

##### Results achieved

To contribute to bridging the growing innovation divide, several innovation dialogues noted below have fostered knowledge and built capacity for ICT-centric innovation at national, regional and global levels, e.g.:

* An annual innovation track support during ITU Telecom in 2015 and 2016, where innovation dialogues were in forum sessions on various challenges facing innovation ecosystems.
* An annual innovation track support during WSIS in 2015 and 2016, where with over 6 Innovation dialogues were organized in on ICT-centric innovation ecosystems the dialogues had attracted over 200 participants and served as knowledge and networking platforms for experts and non-experts on the challenges and opportunities for strengthening the innovation capacity of membership and addressing the need for an ITU-D innovation framework.

As a result of extensive consultations and dialogues from various regions and global events, an innovation framework was developed identifying key pillars essential for monitoring, diagnosing, developing and impacting ICT centric innovation ecosystems. The ITU-D innovation framework will serve as a core model for a self-assessment toolkit  that membership can use as a basis for developing programs, policy recommendations, initiatives and projects to strengthen their ICT centric innovation ecosystems on local, national, regional, and global levels.

* The framework and methodology for national reviews of ICT-centric innovation ecosystems was developed through a partnership between ITU, United Nations Conference on Trade and Development (UNCTAD) and United Nations Industrial Development Organization (UNIDO).
* This framework was the subject of consultation and revision with membership at WSIS 2016 in Geneva with over 75 participants in three sessions.
* The framework was also validated and revised at the ITU-Organisation for Economic Co-operation and Development (OECD) Innovation Dialogue at the OECD Ministerial Event on the Digital Economy, on 23 June 2016 in Cancun, Mexico, led by and interacted with 20 high-level global experts on innovation.

ICT-centric innovation country review was conducted for Albania, with over 50 participants from the key stakeholders representing 40 organizations participating through a global innovation project developed and funded by the Republic of Korea. Other country reviews are underway using the same multi-stakeholder consultation methodology for Rwanda and Thailand in 2016. These reviews develop grassroots driven policy and project recommendations, and pilot and develop the methodology in partnership with UNCTAD and UNIDO.

Innovation tools, processes which allow using ICT innovative driven processes and methods, have been developed for innovation to help scale results, e.g.:

* An innovation platform (innovation.itu.int portal), which aims to promote knowledge sharing and communication between ICT-centric innovation ecosystem stakeholders.
* A co-creation tool (cocreate.itu.int), which aims at facilitating co‐creation for membership. This has been used for several idea management generations within BDT, including recently in co-creating themes for WTDC and soliciting contributions from ITU-D Study Groups through a pilot process examining smart society.
* A design thinking methodology (creativity process) has been developed around delivery of innovation dialogues, assessment, and development of digital innovation frameworks.

In accordance to the WTDC-14 mandate for internal innovation within ITU, especially ITU-D in particular, a series of activities have been undertaken in order to serve better its members and partners:

* A brainstorming to retain and attract new ITU‐D membership in April 2015, Geneva, where 20 participants shared insights on challenges and opportunities ITU can leverage to grow membership.
* A dialogue to enhancing participation of private sector in ITU‐D activities in May 2015, Geneva, where 18 people shared recommendations on strengthening the private sector work for ITU-D.
* Presentation and introduction of co-create tool to enhancing ITU-D Study Groups, from December 2015 through February 2016 respectively, where 27 study group members joined the co-create tool activity.

Public-private partnerships to promote the development of telecommunications/ICTs was fostered, including through a series of Private Sector Chief Regulatory Officers (CRO) meetings which bring together senior industry executives to share experiences and exchange ideas on how to strengthen the private sector’s involvement and engagement in global, regional and national initiatives and to identify mechanisms to better foster an enabling environment for future development of the sector. From 2014-2016, around 100 representatives from over 40 entities and associations ranging from operators, service providers, manufacturers have participated in CRO meetings.

* The 3rd Private Sector CRO Meeting took place on 2 June 2014 as a pre-event of the Global Symposium for Regulators (GSR) in Manama, Bahrain, where over 20 participants discussed ways and means for ITU-D members to be more involved in the Development Sector’s work in partnership with the BDT (i.e. projects, joint initiatives, study groups) and potential topics to be considered under the 15th Global Symposium for Regulators (GSR-15).
* As part of the Pre-event programme of the GSR-15, the 4th CRO Meeting was held on 8 June 2015 in Libreville, Gabon and was attended by over 30 high-level officials. Consensus was reached, amongst other outcomes, on two main topics of interest (Achieving the optimal regulatory environment and Promoting market access and infrastructure) for further elaboration by CRO participants.
* The 5th CRO Meeting took place on 11 October 2015 in Budapest, Hungary, as a pre-event of ITU Telecom. Approximately 15 delegates explored additional opportunities to exchange experiences with regulators and policy makers on areas of potential joint collaboration identified by the industry. Amongst the main outcomes, it was agreed to include a track for the private sector on the last day of 16th Global Symposium for Regulators (GSR-16), in parallel to the regulators track.
* The 6th CRO meeting was conducted in Sharm el-Sheikh, Egypt, on 11 May 2016 as a pre-event of GSR-16 where 20 participants reaffirmed the need for a selected portfolio of agreed proposals to be shared and piloted with interested regulators.
* In addition, the Industry Leaders’ Debate was held on 14 May 2016, in parallel with the regulators’ track during the last day of GSR-16. The debate brought together over 30 participants from the private sector and debated the impact of open innovation and new business models on collaborative regulation and on the importance of regulatory key performance indicators.
* The 7th CRO meeting will be held in Bangkok, Thailand, on 13 November 2016 as part of the pre-event of ITU Telecom and is expected to focus on concrete case studies and project proposals for future elaboration.

Partnerships with Academia to promote the development of telecommunications/ICTs, in particular in bringing new technologies and fostering ICT innovation, was and is being fostered, including through the development of studies and platforms for increased engagement with academic members:

* ITU-D Academia Network Meeting on 11 September 2015, as a side-event to the ITU-D Study Group 2, was held with approximately 50 participants who shared priorities and proposals including the development an ITU Journal and a Study on the impacts of ICTs for the socio-economic development.
* Based on the aforementioned meeting, an Impact Study on ICTs for SDGs is being developed on new and innovative business development and job creation to accelerate the SDGs with important contributions from the academic sector as well as other stakeholders.
* On 28-29 April 2014, the ITU Academy Event on Fostering Innovation and Partnerships in Human Capacity Building helped enhance the engagement of Academia in ITU. This event strengthened cooperation between the ITU Academy, Academia and other stakeholders from the private and public sectors and opened the door for further collaboration.

In addition, to support BDT resource mobilization efforts and to facilitate the identification of potential partners for ITU-D projects and initiatives requiring partners, BDT has created various products and tools as indicated below:

*Internal tools:*

* The funding partners’ database, which includes about 110 profiles of existing and potential partners from administrations, multi and bilateral agencies, development banks, foundations, and private-sector companies.
* *The partnership agreements’ database,* which includes more than 855 agreements signed by BDT with various stakeholders.

*External tools*

* *The* [*partnership opportunities website*](http://www.itu.int/en/ITU-D/Partners/pages/call4partners/partnerships.aspx)*,* which serves as preliminary information on BDT projects/initiatives for potential partners to consider and review, and as a guide for discussion prior to the development and submission of a more complete proposal.
* *The* [*sponsorship opportunities website*](http://www.itu.int/en/ITU-D/Partners/Pages/Sponsorships/Sponsorships.aspx),which offers information on visibility opportunities to entities for promoting their brand and presenting their products around events organized by BDT.

As a result of developing and implementing various tools, services and networking opportunities above to enhance partnership with existing the ITU-D memberships and potential partners, there have been progresses made as follows, e.g.:

* 42 new partnership agreements were signed in 2014; 68 in 2015; and 22 in 2016 (as of 30 November 2016).
* 13 new ITU‐D Sector Members, 1 Associate and 27 Academia joined in 2014; and 15 new ITU‐D Sector Members, 2 Associates and 26 Academia in 2015.

##### In the Africa region (AFR)

* On 4 August 2016 in Kigali, ITU facilitated a multi-stakeholder consultation, with over 25 participants from 15 different organizations representing innovation ecosystem, within the framework of national review on the ICT-centric innovation ecosystem for Rwanda. This provided the basis for planning and implementing future activities aimed at building a digital innovation framework for Rwanda.
* ITU provided technical assistance to SMART AFRICA Secretariat in Kigali, Rwanda, to the design of their new website. This resulted in easier and timely dissemination of information.

##### In the Americas region (AMS)

* During the delivery of the 2016 C&I Training Workshop for the Americas region, negotiations were carried out with CPqD (Centro de Pesquisa e Desenvolvimento - an ITU Academia Member) and COMTELCA for the signing of an innovative agreement for the implementation of a Pilot Project on Virtual Testing Laboratories as to allow increasing conformity and interoperability of ICT equipment in the Americas Region and capacity building opportunities, through the access to specialized testing facilities and high qualified professionals by the usage of modern ICT technologies. The agreement aims at benefiting Central American countries and negotiations are well advanced for signing in 2017. More information is available at: <http://www.itu.int/en/ITU-D/Regional-Presence/Americas/Pages/EVENTS/2016/15556.aspx>

##### In the Arab states (ARB)

* Assisted the Arab countries in the establishment of the Arab Incubators and Technoparks Network (ARTECNET) to promote cooperation between Arab technology parks on innovation and entrepreneurship.
* Assisted in a workshop on promoting youth employment and entrepreneurship in Cairo, Egypt, on 7-9 April 2015. The dialogue built capacity and knowledge for 30 participants on challenges facing stakeholders seeking to foster ICT-centric innovation.
* Oriented research and academic institutions about the ITU activities and contributed in attracting new memberships.

##### In the Asia and Pacific region (ASP)

* Partnerships were forged with (a) the Asian Development Bank and the Department of Information and Communication Technology of the Philippines in the organization of the Digital Strategy of Development Summit 2015 (DSDS 2015) and the Innovative Strategies for Development Summit (ISDS 2016) and (b) ASEAN for the Asia‐Pacific Regional Forum on Universal Access and Service and Broadband Deployment (2015) and the ITU-ASEAN Forum on Child Online Protection (2016).
* Assisted with the “Young ICT Leaders’ Forum 2016 (YILF-2016)” which was held during 7-9 September 2016 in Busan City, the Republic of Korea, and focused on connecting, sharing and empowering the youth in the ICT sector in order to enhance their capacity on creating Innovation and to have a competitive positioning in their professional work field.

##### In the Commonwealth of Independent States countries (CIS)

* Improved remote participation means and increased involvement of stakeholders in cooperation with ITU in the CIS in 2015 through connecting most active ITU-D Sector Members in the Region to the videoconference network hosted by the ITU Area Office for CIS.
* Supported integration of ICT in education in Kyrgyz Republic in 2015 by supplying TV LCD Monitors as technical assistance to the Institute of Electronics and Telecommunications under Kyrgyz State Technical University named after Iskhak Razzakov.

##### In the Europe region (EUR)

* Annual Digital Payments Summits co-organized in ITU in Athens, Greece (2015 and 2016), attracting every year more than 200 European stakeholders engaged in building a digital payment ecosystem, provide a unique opportunity for building their capacities through exchange of best practices and fostering innovation through making cashless environment reality.
* National ecosystem review in Greece (September 2015, Greece), ITU Expert Group Meeting on Entrepreneurship, Innovation and Youth (December, Athens, Greece), series of knowledge exchanges as well as national review (Albania, 2016) lead towards development of unique ITU methodology for comprehensive national review on ICT centric innovation ecosystem applied since 2016 across the world.
* RDF EUR Bucharest, Romania, on 20 April 2015 adopted ITU-Agora initiative under EUR RI5, followed by a workshop in Athens on 9-10 December 2015 where the Athens Manifesto was developed for the ITU-Agora pan-European innovation platform, including inputs from 35 participants from six key stakeholder groups representing the Greek ICT ecosystem and experts from Bulgaria, Hungary, Poland, and Romania.
* During Telecom in Budapest, Hungary, in October 2015, an Expert Challenge was held on Youth, Entrepreneurship and Innovation, where a group of over 50 experts and innovators contributed to a workshop addressing the innovation framework; and Forum Sessions on fostering technology champions and startup- government (public service innovation) were also organized with over 200 participants from around the world.
* EUR RI 5 on Entrepreneurship, innovation and youth resulted in strengthened regional cooperation in the field of entrepreneurship and innovation. More than 700 professionals from more than 25 countries took active part in diverse actions undertaken within the framework of this initiative. A series of knowledge exchanges, ecosystem reviews, and country reviews, fostered development of a tailor-made ITU methodology for use by ITU Member States for the national review of the ICT-centric innovation ecosystems. First national review was carried out in 2016 in Albania. In addition regional events like Annual Digital Payment Summits or Expert Group meetings on Mobile Identification provided an opportunity for strengthening regional capacities on innovation in governmental transformation. Strengthened cooperation and partnership has been developed with UNIDO and UNCTAD.

#### Study Group Questions

The following study group Questions will contribute to Output 2.3 (See Document 2, Part 4):

###### Study Group 1 Questions

**Question 1/1:** Policy, regulatory and technical aspects of the migration from existing networks to broadband networks in developing countries, including next-generation networks, m‑services, OTT services and the implementation of IPv6

**Question 5/1:** Telecommunications/ICTs for rural and remote area

**Question 8/1:** Examination of strategies and methods of migration from analogue to digital terrestrial broadcasting and implementation of new services

###### Study Group 2 Questions

**Question 1/2:** Creating the smart society: Social and economic development through ICT applications

**Question 2/2:** Information and telecommunications/ICTs for e-health

**Question 5/2:** Utilization of telecommunications/ICTs for disaster preparedness, mitigation and response

**Question 6/2:** ICT and climate change

#### WTDC Resolutions, recommendations and decisions

WTDC Resolutions: 1, 5, 30, 33, 50, 59, 71

#### Other Conferences and assembly

PP Decisions 5, 13

PP Resolutions 25, 71, 72, 172

#### WSIS Action lines

WSIS Action Lines 3, 4, 5, 6, and 7 of the Geneva Plan of Action and the section "Financial mechanism for meeting the challenges of ICT for development" of the Tunis Agenda for the Information Society will contribute to Output 2.3.

#### Contribution to the relevant SDGs

SDGs: 1, 2, 3, 4, 5, 9, 10, 12, 16 and 17

# Objective 3

# Enhance confidence and security in the use of telecommunications/ICTs, and roll-out of relevant applications and services.

The purpose of Objective 3 is to support the ITU membership in facilitating the development and improving access to ICT-based applications and services, particularly in underserved and rural areas, achieving trust and confidence in the safe use of ICTs, and increasing the robustness of networks.

## Building confidence and security in the use of ICTs

With universal and affordable access to ICTs being recognized as pivotal for bringing the 2030 Sustainable Development Agenda forward, the increased ICT uptake and Internet connectivity will not be sufficient and sustainable if the underlying infrastructure and the devices connected to it are not safe and secure. Member States need to be strategic about cybersecurity where the country’s socio-economic vision is aligned with its digital security agenda. The cybersecurity capacity of a Member State is strengthened through a well thought out strategy that includes having effective legislation to punish cyber attackers, adequate technical and human resources, and a sustainable win-win collaboration locally and on the international front to respond to cyber threats in a timely manner.

##### Results achieved

* As gathered from the Global Cybersecurity Index (GCI) 2014 and other reliable sources, there are 103 countries with a national computer incident response team (CIRT) and 72 with a National Cybersecurity strategy (NCS). We are on the journey to reduce if not remove the cybersecurity divide. The second iteration of the GCI should complete in 2016, with 134 responses received from Member States, a 25% increase from 2014. The work on the GCI in 2014 and 2016 has resulted in helping countries identify areas for improvement, motivating action to improve cybersecurity, raising the level of cybersecurity worldwide, helping to identify and promote best practices, and has fostered a global culture of cybersecurity.
* As a result of its cybersecurity activities, ITU has strengthened the capacity of Member States to incorporate and implement cybersecurity policies and strategies into nation-wide plans and build organizational capacity, including through:
	+ 14 CIRT assessments[[1]](#footnote-2) conducted during the reporting period which entailed in-country missions for information gathering and capacity building. In the same period, ten countries[[2]](#footnote-3) are being equipped, at their request, with a National CIRT. These projects took between 1 year and 3 years depending on the prevailing circumstances. The approach to CIRT design and implementation is currently being reviewed so that Member States can get even better value out this key assistance;
	+ 16 Regional Cyber Drills were conducted where 146 countries participated represented by a total of 1,456 persons;
	+ 15 additional technical workshops have been conducted attracting a total of 170 participants;
	+ three ITU publications on Cybersecurity have been elaborated and disseminated to our Member States together with 20 other publications from partners;
	+ six WSIS workshops and four pre-study group workshops have been conducted with the participation of 350 persons;
* a National Cybersecurity Strategy Guide is under completion through a 15-member partnership selected for their strong contribution in this area. This Guide will be used by ITU and other NCS partners to assist Member States with a standard, coordinated approach where resources will be optimized and overlaps removed;
* through its various global partnerships in cybersecurity (22 as of the time of this report), ITU has enhanced cooperation and best practices exchange among Member States and with relevant players, helping find synergies and optimizing resources to deliver quality service to Member States.

##### In the Africa region (AFR)

* In September 2014, a cyber drill was conducted in Zambia for African countries, where more than 100 participants, from 16 countries attended.
* A similar regional cyber drill was conducted in Rwanda in May 2015, with the attendance of 150 participants, from 18 countries. These cyber drills enabled African countries to share experiences and assess their readiness in cybersecurity.
* A cyber drill was organized in Mauritius, with the attendance of 150 participants from 15 countries. This activity resulted in the enhancement of the participating countries national capacity.
* AFR RI 5 on Building Confidence and Security in the use of telecommunications/ICT resulted in more African countries implementing CIRTs and building capacity and awareness through expert training and the Cyberdrills that were conducted in the region. A Joint Arab/ Africa Regional Workshop on Cybersecurity Strategy co-organized by ITU/ATU back-to-back with the first Arabic and African Regional Cybersecurity Symposium laid the foundation for the harmonization of cybersecurity legal frameworks in Africa.

##### In the Americas region (AMS)

* ITU increased awareness and enhanced the capacity of Member States in the region to respond to cyber threats in a timely manner by delivering, from 2014 to 2016, three (3) Regional Cyber Drills in Peru-2014 (9 countries, 24 participants), Colombia-2015 (13 countries, 46 participants) and Ecuador-2016 (15 countries, 60 participants). In 2015 and in 2016, the cyberdrill was part of the Regional Cybersecurity Week in which participated main key regional institutions (OAS, LACNIC, ISOS) and regional cybersecurity partners.
* ITU introduced the Caribbean School Cyber Security Awareness workshops which were designed to assist the Ministries of Education to promote the safe use of ICTs, anti-cyber bullying and general cybersecurity awareness in secondary schools in the Caribbean. Three countries are to benefit from the programme in the Caribbean - Belize, Grenada and Saint Vincent and the Grenadines. The first workshop was held in Belize in June 2016 and was attended by more than 105 participants (48 teachers were trained on the signs of, and on measures to deal with, cyber-bullying and cybercrime; others in attendance were - parents/guardians, student representatives and school counsellors). The second workshop was held in Grenada in December 2016 and brought together more than 105 participants. The third workshop was held in Saint Vincent and the Grenadines in December 2016 and attended by more than 65 participants. An anti-cyberbully manual was completed in December 2016 for educators and parents to help deal with cyberbullying.
* AMS RI 5 on Capacity building to engage in global ICT policy, with special focus on improving cybersecurity and developing countries’ participation in the existing Internet governance institutions has achieved the following results to date: support to countries to enhance confidence and security in the use of telecommunications through ICT workshops and cyber drills for computer emergency response teams (CIRTs and CERTs); assistance to countries to implement national CIRTs, perform national cybersecurity assessments, and several technical cooperation projects were signed and are being implemented. Promotion of events on interconnection, cybersecurity, IPv6, cybersecurity issues, including child online protection. Assistance was provided to Ministries of Education through the Caribbean School Cyber Security Awareness Programme.
* ITU assisted countries in the Caribbean to establish national CIRTs and technical cooperation projects were signed and were implemented in Barbados, Jamaica and Trinidad and Tobago. An implementation review of the National CIRT project in Barbados (Project 9BAR13002) was conducted in September 2016 and results achieved were confirmed. Barbados is now operationalizing the established CIRT to make it functional for the entire island.
* Technical assistance was provided to the Trinidad and Tobago Administration in 2015-2016 to develop its national cybersecurity data protection and classification policy and two consultation workshops were delivered. These workshops were attended by more than 75 participants, who benefited from the meetings. ITU also provided consultancy in: current state and readiness assessment (Phase 1); a “needs” assessment that identiﬁes and prioritizes the design of a national data classification policy and data classiﬁcation strategy with a road map for enterprise-wide implementation as well as data classification guidelines (Phase 2); and a focused stakeholder analysis and consultation, including practices currently in use (Phase 3).

##### In the Arab states (ARB)

* The Annual Regional Cyber Drill organized in 2014, 2015 and 2016 enhanced the communication and incident response capabilities of the participating teams from the Arab region as well as ensured a continued collective effort in mitigating cyberthreats among the region’s national Computer Incident Response Teams (CIRTs) in a timely manner.
* Built the Arab region’s cybersecurity technical and management capacity in Computer Incident Response in 2016 by conducting the first Arabic and African Regional Symposium in Sharm el-Sheikh, Egypt.
* Improved skills and enhanced awareness and capability of countries in the fields of cybersecurity through the Annual Regional Cybersecurity Summit organized by the Arab Regional Cybersecurity Centre (ARCC) in 2014, 2015 and 2016. The theme of the Regional Cyber Security Summit of 2016 was “Boundless Collaboration, Boundless Protection”. It focused on the cooperation in cybersecurity as one of the key pillars in tackling the complexity and scalability of the main challenges of today’s cyberthreats, and provided an appropriate platform for senior ICT and cybersecurity officials from the Arab and African regions to discuss, and formulate strategic directions and plans to tackle emerging threats to the global and regional security sector.
* Provided advocacy on the formulation of national and regional regulatory and technical policies and frameworks and legal measures to ensure data privacy, cloud services privacy, data protection and security at the ITU-AICTO Regional Workshop on “Policy Advocacy on Data Privacy & CyberSecurity”, that was held in Tunis, Tunisia, from 5 to 6 December 2016 and attracted 70 participants from the Arab region. Another highlight is the ITU panel discussion on data privacy and policy frameworks to secure cloud services organized during the Regional Cybersecurity Summit held in Sharm el-Sheikh, Egypt, from 30 October to 3 November 2016.
* A Joint Arab/ Africa Regional Workshop on Cybersecurity Strategy co-organized by ITU/ATU in Khartoum, Sudan, in July 2016.
* The Regional Legal Framework on Child Online Protection (COP): Guidelines for the Arab region were developed in 2015.
* National COP Challenges were conducted and awareness raised among children, teachers and parents in Egypt in cooperation with MCIT and local stakeholders.
* The workshop on National Child Online Protection Strategy for Sudan, organized in Khartoum, Sudan, on 14-15 December 2016, aimed to analyse the landscape of Child Online Protection and thereafter facilitate the development of National COP Strategy for Sudan. This workshop was preceded by a COP Challenge conducted in one school on 13 December 2016.
* ARB RI 2 on building confidence and security in the use of telecommunications/ICTs raised awareness and guidelines were developed on Child Online Protection (COP). In addition, selected countries were assisted in establishing their national CIRTs and regional cybersecurity drills were conducted to test readiness of CIRTs and strengthened optimal coordination between Arab CIRTs. In terms of technical and policy frameworks, a regional study was conducted on “Cloud Computing in Arab Countries: Legal and Legislative Aspects, Facts and Horizons” to help define the legal measures that ensure data privacy and secure use of the Internet and its various applications.

##### In the Asia and Pacific region (ASP)

* The ITU developed National Cybersecurity strategy including COP for Nepal in 2015 and 2016 enhancing awareness and capacity building of about 100 government, regulatory and private stakeholders and also demonstrated successful cybersecurity simulation, and enhanced cooperation with the Nepal Telecommunication Authority (NTA) for continued work on cybercrime legislation with potential funding by them.
* A survey of cybersecurity readiness was carried out for a number of countries in the Asia-Pacific region (2015-2016) based on the five pillars of the Global Cybersecurity Agenda (GCA).
* ITU also assisted in development of a Cybersecurity Policy in 2015 for Lao P.D.R. to foster an ICT enabling environment.
* Improved skills and enhanced awareness related to cybersecurity and Child On-line Protection (COP), through trainings and events for Afghanistan, Cambodia, Indonesia, Lao P.D.R., Myanmar, the Philippines, Sri Lanka and Thailand. In addition, regional trainings were also conducted under ITU ASP CoE on Internet and IPv6 Infrastructure Security (Thailand)), Cloud Forensics and Security, Wireless Security etc. with partners such as Asia Pacific Network Information Centre (APNIC), Ministry of Information and Communication Technology (MICT) (Thailand), Globeron, NBTC. National Guidelines for COP were prepared for Vanuatu (Oct 2014) and Brunei (2014).
* Country CIRT assessments were carried out for Fiji and Lao P.D.R., providing recommendations for the establishment of national CIRTs. Based on these assessments, the LaoCERT was established.
* Cyberdrills were organized, with Cambodia, Lao P.D.R., Myanmar, Sri Lanka and Viet Nam participating.
* ASP RI 3 on Harnessing the benefits of new technologies achieved the following results: built capacity in Cybersecurity and Child On-Line Protection and Network Readiness (Nepal-2015); provided direct assistance on “National Cybersecurity Law” (Lao P.D.R.-2015); “Network Security Assessment” (Afganistan-2015); National Strategy/Policy, Laws & Institution Mechanism for Cybersecurity” (Nepal-2016); developed technical skills to assist Incident Responders in Myanmar, Vietnam, Lao P.D.R. and Cambodia (2016).

##### In the Commonwealth of Independent States countries (CIS)

* Elaborated recommendations for development of mobile payments in the CIS and increased cooperation between regulators and other stakeholders in the region at an ITU regional workshop that was held in Baku, Azerbaijan from 14 to 16 October 2014 and attracted 68 participants from 14 countries.
* Improved the CIS region’s cybersecurity capacity building mechanism in 2015 by creating an ICT Research and Training Centre for professional education in partnership with Moscow Technical University of Communications and Informatics (MTUCI) in Moscow, Russia.
* Facilitated the exchange of experiences between cybersecurity professionals and provided an overview of the results of implementation of RI CIS1 on COP at an ITU regional workshop, which was held in in Odessa, Ukraine from 15 to 17 June 2016 and attracted 70 participants from 12 countries.
* CIS RI 1 on Creating a child online protection centre for the CIS region” achieved to date the following results: development of an online course on Safe Use of Internet Resources (3 modules: basic – for preschoolers and primary school pupils, intermediate – for pupils on their 5-9 years and advanced – for senior schoolers, informatics teachers and parents), development of a database of over 70 technical solutions for child online protection and software for choosing the most appropriate one and automated distribution system of "black" (unsafe) and "white" (safe) lists of Internet resources.
* CIS RI 5 on Building confidence and security in the use of telecommunications/ICTs” has achieved the following results: an analysis of the current status in the CIS, recommendations on assessing the level of confidence and security in the use of ICTs and conducting relevant training for professionals in the area.

##### In the Europe region (EUR)

* The 2015 ITU Applied Learning for Emergency Response Teams (ALERT) International Cyber Drill Exercise for the Europe Region (Montenegro) gathered more than 50 participants from ten European countries to build the human capacity of more than 10 country CIRT teams.
* Assistance and technical advice on establishing or strengthening the capabilities of national CIRTs was provided to countries including Albania, Bosnia and Herzegovina, TFYR of Macedonia and Serbia.
* The Child Online Protection (COP) guidelines for parents and educators and the COP guidelines for children were updated in 2015 and are used to inform implementation at the national level. National communication campaigns on child online protection were conducted and awareness raised among children, teachers and parents in Bosnia and Herzegovina, Croatia, Italy, Montenegro, Romania, and Serbia.
* EUR RI 4 on building confidence and security in the use of telecommunications/ICTs resulted in strengthened regional cooperation of relevant stakeholders in field of building trust and confidence in the use of ICTs among children and young people. The human capacity of more than 2,500 professionals was built as a result of activities carried out under the regional initiative. Updated Child Online Protection Guidelines served as the basis for national campaigns and supported requests by Member States. A series of physical meetings served as the platform for collection and exchange of best practices. A regional review of the national approaches on COP provided a reference point for discussions on regional actions and development of a model policy guide on COP. Cooperation was strengthened with European Union Agency for Network and Information Security (ENISA), the European Commission and the Council of Europe.

#### Study Group Questions

The following study group 2 Questions contributed to Output 3.1:

**Question 3/2:** Securing information and communication networks: Best practices for developing a culture of cybersecurity

#### WTDC Resolutions, recommendations and decisions

WTDC Resolutions: 1, 5, 9, 15, 30, 33, 37, 45, 50, 59, 64, 67, 69, 78, 79

#### Other Conferences and assembly

PP Decisions 5, 13

PP Resolutions 25, 71, 72, 130, 172, 179, 181

#### WSIS Action lines

WSIS Action Line C5 of the Geneva Plan of Action contributed to Output 3.1.

#### Contribution to the relevant SDGs

SDGs: 1, 4, 5, 7, 8, 9, 11, 16, 17

## ICT applications and services

ICT applications and services are an important demand-side driver that can encourage the adoption of broadband services. There is a need to facilitate the development and use of ICT applications and services that support sustainable development, including in the fields of public administration, business, education and training, health, employment, environment, agriculture and science within the overall context of national e-strategies. Related needs include elaborating national strategic planning frameworks and toolkits for ICT applications and services; promoting development of cross-domain mobile application frameworks to improve delivery of value-added services using mobile communications, such as mobile health and mobile banking; facilitating access to ICT-based government services; improving agriculture and health care; enhancing access to quality education and environment management; and, assisting developing countries to adapt to new application environments such as cloud computing, machine-to-machine communications and the Internet of Things (IoT), high-volume data exchange, intelligent terminals and the adoption of public consumer applications such as social networks.

##### Results achieved

The capacity of ITU Member States to develop national e-strategies to foster an enabling environment for upscaling ICT applications was built through:

*For e-Health:*

* A High-Level joint ITU-World Health Organization (WHO) “Digital Health Policy Dialog” held in Geneva on 23-24 May 2016 which shared experiences and identified strategies among 250 participants, including five ICT and five Health ministers on how policies and cross-sectoral collaboration between the health and ICT sectors could foster innovation to improve the quality, equity and accessibility of health services.
* Technical Assistance provided to Benin, Mali and Tunisia to develop and validate their national e-Health Strategy.
* A “Toolkit and Implementation Guidelines for a Digital Health Platform” was developed to guide decision makers and health planners in designing and implementing a national "digital health platform".

*For e-Agriculture:*

* A joint ITU-FAO e-Agriculture Strategy Guide was published to provide countries with a framework to develop their national e-agriculture strategies. E-agriculture strategies will help to rationalize both financial and human resources, and address ICT opportunities for the agricultural sector in a more holistic and efficient manner.
* Two Regional workshops were co-organized with FAO in Bangkok (Thailand) on 9-11 February 2015 and Budapest (Hungary) on 22-24 June 2015 which supported 80 delegates from ministries of agriculture in 15 countries to develop e-Agriculture strategies.
* The Joint ITU-FAO e-Agriculture Solutions Forum, held in Bangkok on 29 August - 31 September shared e-Agriculture solutions that benefit agriculture stakeholders and established an Experts Group among e-Agriculture solution providers. In addition, the capacity of more than 120 participants from 29 countries was built on developing e-Agriculture strategies in a training held following the Forum on 1-2 September.

*For e-Learning:*

* A joint UNESCO-ITU “Policy Forum on Mobile Learning” held on 11 March 2016 built the capacity of 250 participants including 4 ministers and 2 vice-ministers of ICTs and 2 ministers and 3 vice-ministers of education on how new, more affordable digital devices can help address urgent educational challenges and meet the needs of students, teachers and administrators.
* A joint ITU-UNESCO Policy Note on Mobile Learning was published in 3 languages (English, French and Spanish) which made policy recommendations on the way forward. The Policy Note is available at: <http://www.itu.int/en/ITU-D/Initiatives/m-Powering/Pages/ITU_UNESCO_MLW_PolicyForum.aspx>

The capacity of countries to leverage ICT/mobile applications to improve the delivery of value added services was improved through the public-private deployment of innovative ICT applications that provide effective solutions for a variety of challenges for sustainable development:

* Three different mDiabetes programme were launched in Senegal, India and Egypt in collaboration between the Ministry of Health and the Ministry of ICT to help diabetic patients to safely manage their illness and reduce the number of emergency hospitalizations. Currently 100,000 users are subscribed in India, and 52,000 and 50,000 users are subscribed respectively in Senegal and Egypt, all of whom receive regular messages about diabetes prevention and control.
* Three mSmokingCessation programmes were launched in India, Tunisia and the Philippines to use mobile applications to assist smokers to quit smoking. Close to 2,000,000 users are subscribed in India, with the launch of the pilot phase already begun for Tunisia and the Philippines.
* Guidelines on the use of mobile applications for smoking cessation, diabetes prevention and control and cervical cancer were developed in collaboration with WHO.
* Built the human and institutional capacity of 7 Afghan participants on mobile application development to address the existing gaps and lack of skilled professionals in mobile application development in Islamabad, Pakistan, from 16-26 February 2016.

Awareness was raised among ITU members and advocacy conducted on ICT for development best practices:

* An ITU-Telecom Regulatory Authority of India (TRAI) training on “Leveraging ICTs for Smart Sustainable Cities” in addition to a national symposium on “ICT Regulatory challenges in Indian Smart Cities” held on 24-26 March 2015 raised awareness among more than 190 participants on the latest trends in smart city developments.
* Raised awareness by featuring more than 25 ICT applications that are relevant for the Sustainable Development Goals (SDGs) in the BDT thematic pavilion at ITU Telecom in Budapest, under the theme of “Smart ICTs for Sustainable Development” on 12-15 October 2015.

##### In the Africa region (AFR)

* A West African Regional Workshop on National eHealth Strategy Implementation held on 26-27 April 2016 in Abuja, Nigeria, which supported 50 participants from ministries of Health and ICT from 15 countries in the West African region to develop and/or to implement their national eHealth strategies. A regional workshop on National eHealth Strategy development organized in Cotonou, Benin on 24-26 November 2015, which built the capacity of 30 delegates from ministries of Health and ICT in 6 Francophone countries to develop national eHealth Strategies.
* Assistance was provided to Zimbabwe through an infrastructure and equipment audit to extend telemedicine services in remote areas of the country, as well as in-country training.

##### In the Americas region (AMS)

* Two successful editions of a mobile apps regional competition were conducted to select innovative and creative solutions to benefit persons with disabilities (PwD), bringing more social inclusion and interaction, comfort and quality of life to their daily routine through mobile technologies. The first edition in 2015 accounted 42 participations (27 passed the first screening) and in 2016, the first edition on ITU platform, 18 out of 32 proposals passed the first screening for both categories of the competition: (1) Ideas, solutions or projects that still need to be developed or that are under development so target public can enjoy them; and (2) Solutions to benefit people with disability that are already developed or available in the market. The winners of both categories received a fellowship to attend the event “Accessible Americas III: Information and Communication for ALL” held in Mexico in November 2016. Both winners presented their projects and received a participation certificate from ITU.
* ITU also launched another regional contest in the Americas to select the logo that best gives the idea of the annual series of the Accessible Americas event– Member States were requested to promote the invitation to this contest to academic institutions and it was also divulged among ITU academia members. Only two proposals were received and the Evaluation Committee (Brazil, Colombia, Mexico and the ITU) decided to cancel the contest. Since the series of Accessible Americas events is now a landmark in the region, the contest may be re-launched in 2017 with a broader promotional campaign.
* ITU organized in August 2016, the forum "Sustainable Municipalities for the Costa Rica of the XXI century" in San Jose, Costa Rica. More than 60 participants from around 30 national key entities benefited from the forum. More than 20 local governments participated. The report of the forum and its recommendations for the future can be found on the forum webpage: <http://www.itu.int/es/ITU-D/Regional-Presence/Americas/Pages/EVENTS/2016/15557.aspx>

##### In the Arab states (ARB)

* Launched the first Arab network for Free and Open Source Software (FOSS) in 2015 in collaboration with the Ministries of Communication in Egypt, Palestine, Oman and Lebanon. The purpose of this activity was to create a platform to promote collaboration between interested stakeholders with FOSS in the Arab region with the aim of increasing the quantity and quality of FOSS in the Arab region. This network is now being run by the membership with occasional support from the regional office.
* ARB RI 3 on Use of telecommunications/ICTs for smart and sustainable development and protection of the environment raised awareness on smart, sustainable cities and the use of ICT for the transition to smart and sustainable development, as well as a study to identify a road map for leveraging ICTs for the transition to smart and sustainable cities in Arab region.
* Improved capacity of more than 160 participant from Arab countries on how to use telecommunications/ICTs for transition to different aspects of sustainable development, this includes, digital economy, e-waste management, emergency telecommunication plans, smart and sustainable cities, IoT and ICTs and climate change. This was achieved through a regional forum on the “Use of ICT for transition to Smart and Sustainable Development” held in Khartoum, Sudan, on 12-13 December 2016 in partnership with SUDACAD.
* Through the ITU Arab CoE network, capacity of ITU members was built in a range of telecommunication/ICT applications and services, including project management for ICT implementation, business analysis of ICT projects, digital archiving and marketing and sales of ICT apps and services.
* Raised awareness on the opportunities and challenges of smart learning as well as digital transformation in the Arab region through the organization of two forums.
* Built capacities of policy-makers regionally in formulating national strategies for smart learning through the implementation of the signed cooperation agreement with the Telecommunication Regulatory Authority of the United Arab Emirates and the Mohamed Bin Rashid Smart Learning Programme.
* Upscaled efforts to promote smart learning regionally by preparing for the organization of a high-level conference on smart learning to take place in the third quarter of 2017 aiming to adopt a regional action plan on smart learning.

##### In the Asia and Pacific region (ASP)

* Improved capacity of countries for the planning of national sectoral e-strategies to foster the enabling environment for upscaling ICT applications.
* For e-Government: technical assistance was provided to develop an e-Government policy for Bhutan.
* In partnership with FAO, Technical Assistance was provided towards development of the e-Agriculture Strategy for Sri Lanka, Fiji and PNG and the national E-Renewable Natural Resources Master Plan for Bhutan. M-health program was strengthened in India in partnership with WHO.
* ASP RI 3 on harnessing the benefits of new technologies raised awareness on new technologies through trainings, seminars and forums, in the areas of Spectrum Management, Cloud Computing, Mobile App Development, Green ICTS and Smart Grids, e-Government and Smart Sustainable Cities/Societies. Several forums, seminars, workshops and trainings were carried out in the Asia-Pacific region (e-agriculture, e-health, e-government, smart sustainable city, postal e-strategies, Green ICTs, Smart Grids, Telecom strategy for the Pacific, digital financial services) that improved the capacity of countries to leverage ICT/mobile applications to improve delivery of services in high priority areas in the Asia-Pacific region.
* Partnered with the Food and Agriculture Organisation (FAO), in raising the capability of FAO & ITU members in the strategic use of ICTs for agriculture. Developed a National e-agriculture strategy guide to assist countries in the development of national e agriculture strategies. Assisted Bhutan and Sri Lanka in the development of their e-agriculture guides in 2015-16. Stakeholders meetings were conducted in Fiji and Papua New Guinea in 2016, with Vanuatu and the Philippines planned for 2017.
* Carried out an assessment on the ‘Potential Use of Mobile Applications in Health Sector of Bangladesh (2014) and carried out survey on Cybersecurity Readiness for a number of countries in Asia-Pacific (2015).
* Built capacity of policy-makers, regulators and industry in multiple disciplines from Digital Terrestrial Television Broadcast, Interactive Multimedia Technologies, Cloud Computing, Satellite coordination and planning, e-applications, IPv6 transition, infrastructure and security, conformance & interoperability, amongst others, strengthening the capacity of over 1400 participants from the region.

##### In the Commonwealth of Independent States countries (CIS)

* Facilitated experience exchange on the issues of telemedicine and enhanced cooperation within the region at ITU regional workshop, which was held in Tashkent, Uzbekistan from 7 to 9 October 2015 and attracted 35 participants from 6 countries.
* Raised awareness of stakeholders in the region on how to implement and develop the most popular mobile applications during the ITU regional workshop held on Issyk Kul Lake, Kyrgyz Republic from 6 to 8 September 2016.

#### Study Group Questions

The following study group Questions contributed to Output 3.2 (See Document 2, Part 3):

**Question 1/2:** Creating the smart society: Social and economic development through ICT applications

**Question 2/2:** Information and telecommunications/ICTs for e-health

Two study group meetings for the new ITU-D Question 1/2 on “Smart Society” were held in 2016. Two study group meetings for the ITU-D Question 2/2 on “e-Health” were held in 2016.

#### WTDC Resolutions, recommendations and decisions

WTDC Resolutions: 1, 5, 30, 54

#### Other Conferences and assembly

PP Decisions 5, 13

PP Resolutions 25, 71, 72, 139, 140, 183, 202

#### WSIS Action lines

WSIS Action Line C7 of the Geneva Plan of Action for the Information Society contributed to Output 3.2.

#### Contribution to the relevant SDGs

SDGs: 2, 3, 4, 6, 7, 11

# Objective 4

# Build human and institutional capacity, provide data and statistics, promote digital inclusion and provide concentrated assistance to countries in special need

The purpose of Objective 4 is to assist the ITU membership in building human and institutional capacity in the field of telecommunications/ICTs, including through the use of study groups questions of priority to developing countries; to foster digital inclusion that promotes telecommunication/ICT accessibility; to make informed and effective decisions on ICT policies and strategies based on high-quality, internationally comparable ICT data and statistics; and to provide concentrated assistance to countries in special need.

## Capacity building

Decision-makers need to make sure that the digital divide, which remains a key concern for developing countries, does not also become a knowledge divide. There is a need to provide assistance in human and institutional capacity building that improves skills to support the development and use of ICTs. It is important to also take advantage of the most current methods and means of delivery that leverage the use of ICTs — ranging from training for government policy makers and regulators, to professional business-focused curricula for senior ICT executives and managers, to specialized programmes for technical and operational staff.

##### Results achieved

* BDT contributed to strengthening the capacities of ITU Member States through the implementation of the new Centre of Excellence (CoE) strategy. In line with WTDC Resolution 73 (Rev. Dubai, 2014), the CoE project was reviewed in 2014. A new CoE strategy, including new operational processes and procedures were developed. The launch of this new phase resulted in a total of 99 applications received from 65 institutions across the world, expressing their interest to be a part of the CoE network.
* Thirty-two Centres of excellence were selected and each signed a cooperation agreement with ITU. Steering committees with representatives of the selected institutions were established for each region, to manage the implementation of the CoE strategy. The steering committees successfully conducted their annual meetings for 2015. Five regions have conducted their steering committee meetings for 2016, the remaining meeting for Europe will be conducted in January 2017. The Centres of Excellence strengthened capacities in Member States by conducting training programmes in policy and regulation, broadband access, cyber security, conformance and interoperability, spectrum management, digital broadcasting, ICT applications and services, emergency telecommunications, internet governance, e-waste and climate change mitigation and adaptation. 25 training activities were conducted across all regions through the CoE network in 2015, with a total of 820 participants. In 2016, 51 training activities were implemented, with a total of 1167 participants.
* The engagement of the academic community in the work of ITU was increased through a meeting held in 2014, in Prague, Czech Republic. The event, entitled “Fostering Innovation and Partnerships in Human Capacity Building: Enhanced Engagement of Academia in the International Telecommunication Union”, attracted around 80 participants, strengthened the cooperation between the ITU Academy, academic institutions and other stakeholders from the private and public sectors and opened the door for further collaboration.
* ITU continued to strengthen capacities in Member States, by developing standardized training material, which were made available through the Centres of Excellence, as well as other cooperating partners from academia. The development of training materials in the area of spectrum management was concluded in 2015 and on quality of service in 2016. Training materials on the topic of ICT and climate change, and Internet of Things are currently being developed. A training programme on international internet governance is planned for 2016-2017.
* Activities under this output 4.1 contributed to increasing cooperation between ITU and relevant partners in the field of capacity building. ITU signed a cooperation agreement in December 2015 with the Czech Technical University to deliver the Spectrum Management Training Programme (SMTP). Those students, who complete all modules and write a thesis, will be awarded an academic degree in spectrum management. In June 2015, ITU signed another agreement with the United Kingdom Telecommunications Academy, for the delivery of a joint “online Master of Communications Management” training programme (eMCM). Delivery of the eMCM started in April 2016 and 10 participants are enrolled. In April 2016, a cooperation agreement was signed with the African Advanced Level Telecommunications Institute (AFRALTI) for the delivery of basic and advanced level training in SMTP.
* In May 2016, ITU improved the quality of service and upgraded the ITU academy platform, which has enhanced user experience. The upgrade resulted in new features and functionalities being added to the platform, which include, among other functions, secure online course payments through the use of debit and credit cards; enhanced features for generation of invoices for payments through wire transfer; automatic generation of certificates at the end of a training course, and plagiarism detector for assessing essay-type questions.
* Under this output, ITU enhanced the dialogue between key stakeholders by organizing the global ICT Capacity Building Symposium (CBS) in Kenya from 6-8 September 2016. The Symposium was preceded by two pre-events, on “Capacity building in Internet Governance” and “Regulators as Enablers and Consumers of Capacity Building” and attracted more than 400 participants. The Symposium focused on new skills requirements in a digital era, and brought together high-level officials, CEOs of private sector companies and training providers such as Universities and Centres of Excellence. The outcomes of the Symposium will provide strategic guidance to the national and international community, including ITU, on capacity building in the field of ICT, and on strengthening collaboration among the global ICT capacity building community. This will directly contribute to the achievement of the SDGs across all development sectors. For universities and other training providers, the Symposium has provided a forum to gauge the needs of the market in terms of training and capacity building in the field of ICT, and helped them shape their future training and delivery programmes.

##### In the Africa region (AFR)

* Raised awareness and discussed possible solutions through a regional workshop on “Human Capital Development and Digital Economy in Sub-Saharan Africa, Issues, Challenges and Prospects, held in Niamey, Niger in June 2014. A total of 102 participants representing 33 countries attended the workshop.
* Increased knowledge with the organization of two high level capacity building workshops on cost modelling and pricing for next generation networks (NGNs) and Quad play environment for Africa, which were held in Yaoundé for French-speaking countries and Namibia for English-speaking countries. A total of 85 participants representing 22 countries attended the workshops, thereby improving the level of competition in their market.
* In a bid to strengthen African Least Developed Countries (LDC) capabilities in telecommunication/ICT standardization and statistics, workshops were held in Madagascar and Gabon in 2016, with 20 and 23 participants respectively, providing the appropriate understanding on ICT Indicators and data collection. A similar workshop for all Africa countries was held in Ethiopia in 2015 with attendance of 140 participants representing 14 African countries.
* AFR RI 1: Strengthening Human and Institutional Capacity Building: This regional initiative was mainly implemented in the framework of Centers of Excellence Network and the ITU Academy through which a number of professionals in Africa were trained on various priority ICT related subjects in the region. In 2015, 21 face-to-face training courses were delivered by the ITU-CoE Network, which strengthened the capacity of 113 participants, from 6 African countries. The participants were trained in the fields of cybersecurity, telecommunication regulation and 4G LTE. Other notable achievements include the co-founding of the Smart Africa Scholarship Fund, whose first group of six Master’s degree students will graduate in 2017, from Carnegie Melon University.

##### In the Americas region (AMS)

* Enhanced capability of Member States by delivering in 2015 an on-line training course on spectrum management. Participants from the six beneficiary countries (Colombia, Dominican Republic, Ecuador, Mexico, Uruguay and Venezuela) well evaluated the course stating that it fully met expectations.
* Built capacity of over 30 participants on satellite communications through the delivery of a training jointly prepared with the Caribbean Telecommunications Union (CTU) and the International Telecommunications Satellite Organization (ITSO).
* Built capacity of 8 professionals from Argentina, Costa Rica, Colombia and Honduras by delivering training on Advanced Communication Networks; trained 8 professionals from Argentina, Bolivia and Uruguay on regulation trends in spectrum modern management; and in cooperation with ANE (Agencia Nacional del Espectro, Colombia) assisted Colombia and Paraguay in building their capacity in spectrum assignment and methods.
* AMS RI 5: Capacity building to engage in global ICT policy, with special focus on improving cybersecurity and developing countries’ participation in the existing Internet governance institutions: Results achieved to date include the support to enhance confidence and security of Member States in the use of telecommunications through the delivery of three (3) ICT Workshops and cyber drills for computer emergency response teams (CIRTs and CERTs) and also by assisting countries in national cybersecurity assessments and in the establishment of national CIRTs.
* A technical cooperation project was specifically designed to develop knowledge in several technology-related topics for the staff of Instituto Costarricense de Electricidad (ICE). Discussion forums were organized to share experiences and enhance knowledge on interconnectivity, cybersecurity issues, including Child Online Protection (COP) and IPv6 in Latin American countries. Through a successful partnership with the Caribbean School Cyber Security Awareness Programme, ITU provided technical assistance to Ministries of Education of Barbados, Belize, Grenada, and Saint Kitts and Nevis.
* Training assistance was provided to Jamaica, Trinidad and Barbados in the implementation of CIRT. ITU has continued its assistance to Jamaica in the framework of Project 9JAM13002 for the establishment of a national CIRT. Training commenced in April 2015. The equipment procured by ITU for the Jamaica CIRT project was delivered, installed and deployed for initial training. Training commenced in May 2015 and ended early June. Similarly, training and CIRT establishment was done in May for Trinidad and Tobago (Project 9TRI14003 was completed) and a CIRT was established for Barbados (Project 9BAR13002). A post implementation review and evaluation of the Barbados CIRT was conducted in September 2016.
* Caribbean regional seminar was held on cybersecurity issues, including child online protection. ITU introduced the Caribbean School Cyber Security Awareness workshops designed to assist the Ministries of Education to promote the safe use of ICTs, anti-cyber bullying and general cybersecurity awareness in secondary schools in the Caribbean. Three countries are to benefit from the programme in the Caribbean - Belize, Grenada and Saint Kitts and Nevis. The first workshop was held in Belize in June 2016 and was attended by more than 105 participants (48 teachers were trained on the signs of, and measures to deal with cyberbullying and cybercrime; others in attendance were parents/guardians, student representatives and school counsellors). The second workshop was held in Grenada in December 2016 and brought together more than 105 participants. The third workshop was held in Saint Vincent and the Grenadines in December 2016 and attended by more than 65 participants. An anti-cyberbully manual was completed in December 2016 for educators and parents to help deal with cyberbullying.

##### In the Arab states (ARB)

Within the approved ITU ARB CoEs Network activities for 2016, the following CoEs training events were organized, which resulted in enhanced capacities of the participants:

* Training on Business Analysis for ICT projects, from 14 - 16 March, 2016. The training was organized in cooperation with Sudan Telecom Company Ltd. (Sudatel) Telecommunications Academy (SUDACAD). The training aimed to teach participants from the Arab region, on the role of ICTs application on analyzing the business and enhancing the business environment. 30 trainees attended, 9 of them were women.
* Training on Project Management for ICT Implementation, from 18 - 20 April, 2016. The training educated participants on the project management cycle and the process for managing ICTs projects. The training was organized in cooperation with SUDACAD-Sudan. 28 participants attended, 3 of them were women.
* A second training session on Business Analysis for ICT Implementation was organized in cooperation with SUDACAD-Sudan, from 9 - 11 May, 2016. Due to the high demand of this training, an additional session was organized with the aim of training participants from the Arab region, on the role of ICT application on analysing the business and enhancing the business environment. The training was attended by 17 participants, 3 of them were women.
* Training on Certified IPv6 Network Engineering – Level 1 (CNE6 Level 1) was organized in cooperation with SUDACAD-Sudan, from 24-26 May, 2016. The objective of this training was, share with participants, the current and future wireless broadband technologies and services, help them understand the Internet Ecosystem and its resource management framework, the limitations in the current version of the Internet Protocol, as well as the features of IPv6. The training was attended by 39 participants from Arab countries, 2 of them were women.
* Training on Spectrum Engineering Techniques was organized in cooperation with National Telecommunication Institute (NTI) Egypt, from16 -18 August, 2016. The training provided participants with tools and techniques related to an efficient spectrum management. Thirteen participants attended the training from 3 Arab countries, 1 of them was a woman.
* Training on “The Big Challenges for Telecom Operators and Regulators” was organized in cooperation with Institut National des Postes et Télécommunications (INPT), Rabat, Morocco, on 2-4 November 2016. The training provided both operators’ managers and regulators useful knowledge to improve the implementation of future projects for operators and regulators alike in the light of the rapid changes taking place in the sector, gave an insight into the changes in the regulatory and operational frameworks, and helped understand the impact of technological evaluation on the ICT sector. More than 15 participants from the Arab region attended the training.
* A third version of Business Analysis for ICT Implementation and Project Management for ICT projects were organized in Nouakchott, Mauritania**, on** 7-9 November 2016 and 5-7 December 2016 respectively. These training activities were attended by more than 30 participants from the Arab region.
* A regional training on Very Small Aperture Satellite Terminal (VSAT) and Satellite took place in Tunis, from 6 -10 December, 2015. The objective of the training was to provide participants with in-depth knowledge of policies and regulations associated with Satellite systems, its spectrum and technologies. More than 30 participants attended the training from 4 Arab countries.
* A regional training on VSAT and Satellite was held in Oman, from 13 - 17 March, 2016. The training provided participants with knowledge on the use of Satellite systems for the delivery of broadband services, broadband connectivity and associated broadband technologies. More than 90 participants from 11 Arab countries attended this training.
* Within the framework of the partnership initiative with Telecommunications Regulatory Authority (TRA-UAE), a regional project was signed on human capacity building on IPv6 for Arab LDCs and Palestine. The project started its implementation in 2016. The project aims to build human and institutional capacity to improve the technical skills in the development and use of IPv6, as well as assist them to better deploy the IPv6. Twenty-eight participants from Arab LDCs and Palestine are planned to be trained and become certified IPv6.
* The ITU Arab regional office developed with the TRA-UAE a human capacity building project on telecom regulatory and policy related issues. The project seeks to enhance the skills the TRA staff on different regulatory tracks and aspects.
* In addition to the above mentioned trainings, the first and second meetings of the steering committee of the ITU ARB CoE Network took place in Sudan and Tunisia in December 2014 and November 2015 respectively. The meeting discussed the operational aspects of the ITU Arab CoEs network and how to mobilize resources of the network. Both meeting were attended by representatives of the selected CoEs.
* The third steering committee of the ITU ARB CoE Network was organized from 10- 11 November, 2016 in Rabat-Morocco. The meeting discussed the challenges and opportunities for the operation of the ITU Arab CoEs network and approved the proposed activities for 2017. All three meetings resulted in enhanced dialogue among members.
* The Arab Technology incubators and Techno parks Network (ARTECNET), sponsored by ITU, aimed to promote youth employment and entrepreneurship in the Arab region. ARTECNET organizes an annual conference which aims at gathering the network members and sharing good regional and international incubation practices from the members’ knowledge, national and international experiences. Two trainings on Business Incubation Management (InfoDev Course) were held in Egypt and in Morocco. InfoDev certificates have been delivered to participants on the selected modules.

##### In the Asia and Pacific region (ASP)

* All ASP Regional Initiatives have an expected outcome linked with capacity building and skills development. The ITU Asia-Pacific Centres of Excellence built capacity of around 475 participants in 2014 (11 regional trainings) and around 300 participants in 2015 (8 regional trainings) in specialized areas.
* The trainings were organized with support from the Centres of Excellence and also received support from funding partners such as Department of Communications and the Arts (Australia), National Broadcasting and Telecommunications Commission (Thailand), APNIC, Ministry of Science ICT and Future Planning (MSIP, Rep. of Korea), Telecom Regulatory Authority of India, Ministry of Internal Affairs and Communications (Japan), Asia-Pacific Broadcasting Union (ABU), TOT Public Company Ltd., Busan Metropolitan City, Pacific Islands Telecommunications Association, and several other companies providing speakers in training programs.
* In 2016, around 9 trainings were carried out under ITU ASP CoE, building capacity of more than 350 participants. Partners such as NBTC (Thailand) NTIPRIT, and Faculty of ICT of the Islamic Republic of Iran have supported the trainings.
* Strengthened the capacity of Internet Training Centre Initiative (ITCI) in Samoa through the train-the-trainer programme.
* The ITU partnered with APT to build capacity in the area of preparing participants for ICT international conferences. The two-stage training (online and face-to-face) was attended by 50 online participants in 8-19 February with 28 joining the face to face training in 28-31 March 2016.
* In partnership with Asian-Pacific Postal Union, capacity was built in the area of Postal e-strategies.
* Three meetings of the ITU ASP CoE steering committee were held that strengthened the Asia-Pacific CoE framework and also enhanced the partnerships.

##### In the Commonwealth of Independent States countries (CIS)

* CIS RI 3: Introduction of training technologies and methods using telecommunications / ICTs for human capacity building: The results achieved to date include the development of software to assess human susceptibility to different channels of information perception.
* As well, best practices of e-learning resource and glossary of terms were created.
* Developed methodological requirements for e-learning resources, identified e-learning related gaps in the national legislation in Kyrgyz Republic and prepared recommendations for the development of e-learning resources.
* Facilitated operation of CIS CoEs by addressing challenges related to collection and distribution of training fees and improved cooperation and coordination between CoEs in the region at the 3rd ITU CIS CoE Steering Committee Meeting, held in Odessa, Ukraine, on 24 November 2016 and attended by 11 representatives of 6 CIS countries.
* Improved skills of over 80 school directors and teachers from 4 CIS countries during the workshop on "Using telecommunications/ICTs for quality and safe educations" held in Odessa, Ukraine, on 24 November 2016.

##### In the Europe region (EUR)

* To improve capacity, ITU provided a series of trainings through the European Network of Centres of Excellence, in the fields of broadband, cybersecurity, internet governance, and e-waste.
* Since 2015 more than 400 professionals were trained online through the ITU Academy or at the face-to-face meetings in Czech Republic, Germany, TFYR of Macedonia, Poland, and Portugal, resulting in enhanced capacity of the participants.

#### Study Group Questions

There are no Study Group questions specific to capacity building.

#### WTDC Resolutions, recommendations and decisions

WTDC Resolutions: 1, 5, 9, 15, 20, 21, 22, 30, 32, 33, 36, 40, 50, 59, 73, 77

#### Other Conferences and assembly

PP Decisions 5, 13

PP Resolutions 25, 71, 72, 137, 139, 140, 172, 176, 188, 189, 197, 199, 202

#### WSIS Action lines

The activities implemented under Output 4.1 contribute to the implementation of WSIS Action Line C4 of the Geneva Plan of Action and §§ 8, 22, 23a, 26g, 49, 51, 65, 72h, 86, 87, 90c, d, f, 95, 114b of the Tunis Agenda for the Information Society.

#### Contribution to the relevant SDGs

SDGs: 1, 2, 3, 4, 5, 6, 12, 13, 14, 16, 17, 18

## Telecommunication/ICT statistics

With the growing recognition of ICTs as a driver for social development and economic growth, and as more and more people join the global information society and high-speed communication networks become an indispensable infrastructure, the tracking and measurement of developments in telecommunications/ICTs remain as relevant as ever. The statistical standards, definitions and methodologies developed by ITU are now used widely by countries for their production of ICT statistics. ITU’s reliable, comprehensive and comparable statistics are indispensable to identify progress and gaps, track information society developments at the national and global levels and to enable government and industry making informed and strategic decisions to ensure equal access, use and impact of ICTs. The collection and dissemination of high-quality data and statistics that measure and provide comparative analyses of advancements in the use and adoption of ICTs globally are essential to support developing economies.

The main outcomes achieved under this output are (i) enhanced information and knowledge of policy-makers and other stakeholders on current telecommunication/ICT trends and developments based on high-quality, internationally comparable telecommunication/ICT statistics and data analysis; and (ii) enhanced dialogue between telecommunication/ICT data producers and users and increased capacity and skills of producers of telecommunication/ICT statistics to carry out data collections at the national level based on international standards and methodologies.

##### Results achieved

* BDT hosts the world’s most comprehensive collection of ICT data and statistics in various thematic areas, including ICT infrastructure, access and usage, policy and regulation, and cost and tariff policy issues. The work of ITU under this output has resulted in the enhanced availability and dissemination of internationally comparable, timely ICT statistical databases.
* In 2014, 2015 and 2016, a number of statistical products were released to enhance the information and knowledge of policy-makers and other stakeholders on current telecommunication/ICT trends and developments based on high-quality, internationally comparable statistics: the ICT Facts and Figures 2014, 2015 and 2016; the World Telecommunication/ICT Indicators database (June and December 2014, 2015 and 2016); the Little Data Book on ICT 2014 and 2015; and the Yearbook of Statistics 2014, 2015 and 2016.
* ITU’s flagship publication, Measuring the Information Society Report 2014, 2015 and 2016, has enhanced the knowledge of policy makers, investors and business people about current ICT market trends allowing them to take evidence-based decisions and by providing an accurate analysis of telecommunication/ICT development worldwide. The 2016 edition of the Report was released in November 2016 (during WTIS-16). The 2016 Report includes, among others, the results of the ICT Development Index (IDI) 2016, the role of ICTs in monitoring the SDGs, new data on ICT prices, analysis of mobile uptake, and an analysis of Internet user and activity trends. The Report received wide media coverage with over 1600 news articles.
* ITU also contributed to enhanced knowledge of policy makers and other stakeholder from the ICT community by publishing the “Final WSIS Targets Review: Achievements, challenges and the way forward”, 2014 (published jointly with the Partnership on Measuring ICT for Development). The report provides a comprehensive evaluation of the achievements made towards the WSIS Targets that governments agreed upon at the World Summit on the Information Society. It reviews progress made on each one of the WSIS Targets, which range from connecting villages, schools and health centres to developing content and providing people with ICT access and makes recommendations on policies that are most relevant in impacting the WSIS Targets. The report also reviews the relevance of targets and indicators to track the information society and draws attention to the availability (and lack) of data to track progress today, and over time.
* By organizing the annual World Telecommunication/ICT Indicators Symposium (WTIS), which is the main global forum to discuss ICT statistics, ITU has enhanced the dialogue between ICT data producers and users and the awareness and capacity of countries to produce telecommunication/ICT statistics. The 12th WTIS was held from 24-26 November 2014 in Tbilisi, Georgia. The 13th WTIS was held from 30 November to 2 December 2015 in Hiroshima, Japan, with over 600 participants. The 14th WTIS was held from 21 to 23 November 2016 in Gaborone, Botswana, with over 400 participants. WTIS adopted a number of conclusions and recommendations which will guide countries and ITU in future work on ICT measurement.
* ITU contributed to strengthening the capacity in Member States in ICT data collection by publishing the “Manual for Measuring ICT Access and Use by Households and Individuals 2014”. The Manual, available in 6 languages, has become the main reference document for national statistical organizations in their work on producing ICT household statistics and contributed towards harmonizing definitions, indicators and collection methodologies.
* ITU’s activities under this output contributed towards increased cooperation, and improved methodologies and international standards on ICT statistics through the work of the Expert Group on Telecommunication/ICT Indicators (EGTI) and the Expert Group on ICT Household Indicators (EGH). The two Expert Groups met in September 2014, September 2015 and October 2016, in Geneva. The meetings were attended by around 120 participants, from more than 50 countries, as well as regional and international organizations, private sector, academia and civil society. The meetings agreed on a number of decisions concerning the future work on ICT statistics, which were presented to, and adopted at, the 12th, 13th and 14th World Telecommunication/ICT Indicators Symposium.
* Activities under this output also contributed towards the monitoring of international development goals by providing input to the annual Millennium Development Goals (MDGs) indicators report and the MDG gap report concerning ICT developments, as well as the Partnership on Measuring ICT for Development proposal for ICT indicators for the SDG indicators framework. As a result of these activities, the latest version of the SDG indicators framework adopted by the UN Statistical Commission in March 2016 includes 7 ICT indicators, covering 6 targets under Goals 4, 5, 9, and 17.
* Increased capacity and skills of producers of ICT statistics to carry out data collections, produce and analyze international comparable ICT indicators, was achieved through a number of capacity building activities: A multi-country training workshop for national focal points on ICT Indicators was held from 15-18 March2016 in Nay Pyi Taw, Myanmar, attended by 35 delegates from Indonesia, Lao P.D.R., Myanmar, Timor-Leste and Viet Nam. Country assistance/training on developing a national ICT indicators and statistical framework was provided to Albania, Angola, Comoros, Gabon, Myanmar and Pakistan.

##### In the Africa region (AFR)

* A regional training workshop for the African countries took place in October 2015 in Addis Ababa, attended by around 140 participants.
* An ICT observatory was launched in Madagascar in 2016, in collaboration with the regulatory authority (L'autorité de régulation des télécommunications, ARTEC). This will enable policy-makers to collect and analyse ICT data for improved policy making.

##### In the Americas region (AMS)

* Member States benefited from an appropriate forum to address improved data gathering and measures to determine access to broadband infrastructure, services and applications through the Caribbean training workshops on ICT Indicators delivered in 2015 and 2016. During both workshops training enhanced the capacity of 16 Caribbean countries to produce national statistics and indicators on telecommunications and ICTs:
	+ A Regional Training Workshop on Information and Communication Technology (ICT) Indicators, held in Barbados in April 2015, increased capacity and skills of producers of ICT statistics to carry out data collections at the national level - representatives from eleven countries participated in this event.
	+ A Regional Training Workshop on ICT indicators was held in May 2016 in Port of Spain, Trinidad and Tobago. Forty-five participants from five countries in the region and 13 other sector entities attended a subsequent workshop on “IDI”. Participants are now better apprised of ITU’s MIS Report; methodology of compiling and analysing the IDI and key indicators of the Short Telecoms and Short Household Indicators questionnaires. Participants were able to articulate a number of key issues for discussion at the Expert Group on Telecommunications Indicators (EGTI) and Expert Group on Housing Indicators (EGH) and there is now greater awareness among participants of the workings of the EGTI & EGH.

##### In the Arab states (ARB)

* Highlighted the progress made by countries, particularly in the Arab region, in their efforts to improve their telecommunication/ICT development through the launch of the Measuring of the Information Society (MIS) reports in 2015 and 2016 in 2 press conferences respectively organized in collaboration with the Ministry of Communications and Information Technology (MCIT) of Egypt.
* The ITU Regional Forum on ICT Measurement was held in Dubai, United Arab Emirates, from 13 to 15 December 2016. The forum was attended by officials and national experts, from ministries, regulatory agencies, national statistical offices, service providers, regional and international organizations as well as other relevant stakeholders. The forum helped to strengthen the capacity of countries in the region to produce national indicators and statistics on telecommunication/ICT, based on internationally agreed standards and methodologies.

##### In the Asia and Pacific region (ASP)

* In 2016, 45 delegates from 10 countries participated in the Training Workshop for National Focal Points on ICT Indicators and Measurements (Myanmar, 2016)
* ITU assisted Viet Nam in developing a robust national ICT indicators and statistical framework (2016).
* ITU organized a national ICT Indicators Symposium on 25 July 2016 in Islamabad, Pakistan. In 2014 “ICT Indicators in Statistics” a workshop for ASEAN and Pacific Island countries, raised awareness of 80 participants, from 20 countries.
* Improved ICT statistics collection in Lao P.D.R. and Myanmar after implementing direct country assistance (2014 in Lao P.D.R.; 2016 in Myanmar) to these countries on assessment, development and capacity building for a National ICT database.
* Partnered with ASEAN in organizing a workshop on ICT Indicators and Measuring ICT Adoption (October 2014, Bangkok, Thailand).

There are no regional initiatives directly related to Telecommunication/ICT statistics.

#### Study Group Questions

There are no study group Questions specific to Telecommunication/ICT statistics

#### WTDC Resolutions, recommendations and decisions

WTDC Resolutions: [1, 5, 8, 30, 33, 37, 43, 50, 51, 52, 57, 59, 60](https://www.itu.int/en/ITU-D/TIES_Protected/WTDC14/WTDC14-FinalReport-E.pdf)

#### Other Conferences and assembly

PP Decisions [5, 13](https://www.itu.int/en/plenipotentiary/2014/Documents/final-acts/pp14-final-acts-en.pdf)

PP Resolutions [25, 71, 72, 137, 139, 140, 172, 176, 188, 189, 197, 199, 202](https://www.itu.int/en/plenipotentiary/2014/Documents/final-acts/pp14-final-acts-en.pdf)

#### WSIS Action lines

ICT statistics are relevant to monitoring the implementation of all WSIS action lines of the Geneva Plan of Action and are referred to in §§ 112-119 of the Tunis Agenda for the Information Society.

#### Contribution to the relevant SDGs

SDGs: 4, 5, 9, 17

## Digital inclusion of people with specific needs

Digital Inclusion means ensuring ICT accessibility and the use of ICTs for the social and economic development of people with specific needs. Despite the expanding deployment of ICT/telecommunication networks, many women and girls, persons with disabilities, youth, children and Indigenous Peoples people remain excluded from the Information Society. People with specific needs often face barriers to using ICTs/telecommunication. Persons with disabilities, depending on their disability, may not be able to see screens, hear sound on a phone or input commands to a mouse, computer or touch screen phone. These barriers can be overcome where accessible and affordable ICTs are available. Women, youth and Indigenous Peoples who are not currently online, often require basic and advanced digital literacy training along with an understanding of how to use ICTs for their social and economic empowerment.

Barriers faced by people with specific needs can be removed through effective laws, policies, national broadband plans, regulations and business practices as well as through ICT training and development strategies, which take into account the specific needs of women, girls, Indigenous Peoples and persons with disabilities to ensure an inclusive Information Society.

##### Results achieved

* The capacity of Member States to develop and implement digital inclusion policies, strategies and guidelines to ensure telecommunication/ICT accessibility for persons with disabilities was strengthened through the following:
	+ Over 350 ITU Members benefited from training on ICT accessibility policies and practices at the Rapporteurs Group and ITU-D Study Group Question 7/1 meetings in 2015. In addition, 161 participants were trained on the Model ICT Accessibility Policy Report at the Rapporteurs Group meeting in 2016.
	+ Over 186 persons attending the regional event Accessible Americas II: Information and Communication for ALL, carried out in Medellin, Colombia in 2015, and 188 participants attending Accessible Americas III: Information and Communication for All, carried out in Mexico City, Mexico, in 2016 benefited from training on ICT accessibility policies in particular, on the guidelines for accessible websites to be implemented at the regional level.
	+ Recognizing the importance of public procurement in ensuring that accessible ICTs are widely available to persons with disabilities, BDT developed an extensive set of online training materials on “Public procurement of accessible ICT products and services”, which were delivered to some 75 participants in two online training courses, one in 2015 and one in 2016 through the ITU Academy and also during Accessible Americas III: Information and Communication for ALL carried out in Mexico City, Mexico.
	+ The Model ICT Accessibility Policy Report is now available in all 6 official ITU languages to facilitate its use by countries around the globe. It was published in Arabic, French, and Spanish and accessible English e-book versions in 2015 and in Chinese and Russian in 2016 and shared with members and disabled persons’ organizations around the world including the World Federation of the Deaf and the Pacific Disability Forum and is used both to raise awareness on the types of ICT accessibility policies that ITU Members can adopt and to build their capacity to adopt and implement such policies.
	+ Guidance was provided in 2016 to the Organismo Supervisor de Inversión Privada en Telecomunicaciones (OSIPTEL), to promote a web accessibility policy in Peru and to Egypt in 2016 to develop a national ICT accessibility policy.
* Since WTDC-14, awareness was raised among over 1500 participants around the world, on the type of ICT accessibility policies ITU members can adopt and implement to ensure telecommunication/ICT accessibility for persons was disabilities. This was achieved through meetings and workshops, such as: “Accessible Americas I” in Brazil in 2014, “Accessible Americas II” in Colombia in 2015 and “Accessible Americas III” in Mexico in 2016; the M-Enabling Summit in Washington, DC in 2014, 2015 and 2016; the 2016 Asia Pacific Economic Cooperation Telecommunications and Information Working Group (APEC-TEL) Seminar on “Social inclusion of people with disabilities through access to telecommunications/ICTs” , the 2016 European Foundation Forum for Inclusion; a series of EUR Regional Initiative meetings in 2015 in Barcelona, Brussels, Rome, Serbia and Slovenia organized with key European partners including the European Commission, the European Broadcasting Union (EBU) and EUR academic institutions; ARB and CIS Regional Initiative meetings in 2015 and 2016; a United Nations Department of Economic and Social Affairs (UN DESA)/United Nations Human Settlements Programme (UN-HABITAT) meeting on disability and development for Africa in 2015, a 2016 WSIS Forum session on public procurement of accessible ICTs, organized within the framework of the EUR Regional Initiative and in partnership with TSB and the ITU Regional Office for Africa in partnership with the East Africa Community (EAC) have developed a Draft Information and Communication Technology (“ICT”) Accessibility Policy for the East Africa Community countries that was adopted by the participants of the “E-accessibility Policy for East Africa Region” workshop held in Nairobi, Kenya on 6-7 October 2016.  The 40 participants from 5 EAC countries that attended the workshop recommended that once the policy is adopted, the use of Universal Services and Access Funds should be considered as one of the sources to funding and that monitoring and evaluation mechanisms for a five-year period should be developed. Since 2011, when the first International Girls in ICT Day was celebrated, over 7,200 events in 160 countries have taken place, empowering more than 240,000 girls and young women from around the world. ITU Headquarters and all ITU regional offices have organized Girls in ICT Day events. More than 66,600 girls and young women from 133 countries took part in the 1,800 celebrations of International Girls in ICT Day 2015.In 2016, more than 66,000 girls from 138 countries participated in over 1,900 events. This includes events held in 28 countries in the AFR region, 33 in the AMS region, 18 in the ARB States, 19 in the ASP region, 5 in the CIS and 35 in EUR. The ITU [Girls in ICT Portal](http://www.girlsinict.org) received 383,552page views in 2016, an increase from 337,936 page views in 2015. In 2016 the *#GirlsinICT* hashtag reached 54.3 million Twitter accounts.
* The capacity of members in using telecommunications/ICTs for the social and economic development of people with specific needs, including telecommunication/ICT programmes to promote youth employment and entrepreneurship was improved through:
	+ The publication of research and guidelines in the ITU report, “Digital Opportunities: Innovative ICT Solutions for Youth Employment” that was provided to all ITU members.
	+ The publication of a report on “Coding bootcamps: a strategy for youth employment” that was provided to all ITU members.
	+ The Coding bootcamp reported was also provided as a contribution from ITU to the Global Initiative on Decent Jobs for Youth (GIDJ4Y), a coalition of some 20 UN agencies created to address the global youth unemployment crisis. ITU committed to lead the digital skills and tech hubs thematic area of the GIDJ4Y.
	+ Two courses to support ITU members to launch coding bootcamps in their countries, in order to promote youth employment and ensure that graduates of university computer science programmes develop job-ready skills, were developed and delivered to some 50 participants from over 20 State Universities and Colleges in the Philippines in October 2016. The training, provided by a successful Australian coding bootcamp, was hosted by the Lyceum University of the Philippines and organized by ITU in partnership with Member State Administration DICT of the Philippines.
	+ Creating and making available to all ITU members, young job seekers and entrepreneurs an online database of ICT-enabled resources. This database includes links to training opportunities, crowd funding for start-up capital, mentoring networks and job-matching services to enable members and youth to leverage digital opportunities to enhance their employment and entrepreneurship opportunities. See <http://www.itu.int/net4/ITU-D/CDS/sis/Youth/Resources/index.asp>.
* Awareness was raised and best practices shared among ITU members through the weekly publication of innovative digital inclusion practices and strategies on the ITU-D Digital Inclusion news log at: <http://digitalinclusionnewslog.itu.int/> . The Digital Inclusion newslog highlights the latest digital inclusion practices and strategies such as digital literacy, coding training, initiatives to encourage more girls and women to take up ICT studies and careers and ICT accessibility practices for persons with disabilities.
* Direct assistance has been provided to African countries in the organization of Girls in ICT Day celebrations in 2015 and 2016 in addition to the organization of an African regional competition and conference.

##### In the Americas region (AMS)

* Support for the establishment of community centres in Belize, Barbados, Saint Kitts and Nevis, Grenada and Saint Vincent and the Grenadines. The centres provided Internet access to unserved communities and aimed at reducing the digital divide in those countries.
* The first three editions of the regional event “Accessible Americas: Information and Communication for ALL” were carried out in Brazil, in 2014, Colombia, in 2015 and in Mexico in 2016. Accessible Americas is a landmark event carried out yearly in the Americas, holding discussions on the identification of principles to implementation of practices on how stakeholders can work together in order to ensure the rights and the inclusion of Persons with Disabilities (PwD), considering equality and affordability.
* ITU delivered specific trainings to over 300 participants attending the Accessible Americas regional series, aiming at assisting countries in the development of national policies and strategies to help remove barriers and enable the empowerment of PwD.
* BDT in cooperation with “Fondo Indígena”, is providing online courses yearly to indigenous leaders, since 2005 – and, as from 2014 through the ITU Academy. This training programme has been delivered to almost 300 indigenous leaders in the Americas to build their capacity to use telecommunication/ICT for social and economic development. Since 2014 the programme consists of three online training courses on digital tools for the development of indigenous communities, including e-commerce, as well as related web tools to develop, manage and operate local network radio-stations.

##### In the Arab states (ARB)

* ARB RI 5: Ensuring access to telecommunications/ICTs, in particular for persons with disabilities: Focused on upscaling efforts regionally to create enabling environments for ICT accessibility as well as build capacities to promote ICT accessibility.
* Increased efforts in making ICTs accessible to PwDs through the establishment of a regional innovation centre on PwDs as per the signed agreement with the Ministry of Communications and Information Technology of Egypt on 27 November 2016.
* Formulated the national ICT Accessibility Policy of Egypt to create an enabling environment for accessible ICTs.
* Raised awareness on the opportunities and challenges of ICT accessibility by organizing and participating in several events on this issue.
* Raised awareness among regional organizations on the necessary means to organize accessible events in an effort to increase the number of persons with disabilities participating in events organized by these organizations.

##### In the Asia and Pacific region (ASP)

* Strengthened capacity of Member States to develop and implement digital inclusion policies, strategies and guidelines to ensure telecommunication/ICT accessibility for people with specific needs and the use of telecommunications/ICTs for the social and economic empowerment of people with specific needs.
* ITU, the Philippines Administration and Tinder Foundation launched a trial of interactive online curriculum in the Philippines to test its relevance for English-speaking developing countries to improve members’ capacity to provide people with specific needs with digital literacy training and training on the use of telecommunications/ICTs for social and economic development.
* ASP RI 3: Harnessing the benefits of new technologies: Improved skills and enhanced awareness related to Digital Literacy for Children in the rural areas and promoting awareness of children and teachers on staying safe online, and for persons with disabilities. Provided assistance in the development of “Text to Speech Development” to assist persons with disabilities (Lao P.D.R.-2016).Encouraged participation of Women and Girls in ICTs through the “Women with the Wave“(2014-2015) and Girls in ICT Day (2014-2016) programmes. Organized the “Coding Bootcamp for Youth Employment” to encourage employment amongst youth in society in the region.

##### In the Commonwealth of Independent States countries (CIS)

* Raised inclusion of the rural population in Kyrgyz Republic by training informatics teachers in rural areas. Additionally, these trainings contribute to reducing gender gap, since the absolute majority of teachers trained are women. Trainings are organized each spring by the ITU and the Institute of Electronics and Telecommunications (IET) under the Kyrgyz State Technical University (KSTU) since 2012 and much appreciated by the Government of Kyrgyz Republic. In 2015, the training courses were completed by 137 rural teachers, including 114 women. In 2016 training courses were completed by 107 rural teachers, including 83 women.
* Encouraged young women to start careers in ICT at regional videoconference for CIS dedicated to the Girls in ICT Day and ITU 150th Anniversary, which was held in ITU Area Office for CIS on 23 April 2015 and attracted 93 participants from 6 CIS countries.
* Encouraged involvement of young researchers in ICT development in CIS at International Scientific and Technical Conference of Students and Young on Information Technologies and Communication Systems, which was held in Moscow, Russia from 11 to 16 May 2015.
* Improved inclusiveness in Kyrgyz Republic by elaborating interactive electronic textbook for self-study of basics of Internet and web technologies within the scope of Connect a School Initiative in 2015.
* Analyzed gender gap in ICT in CIS and promoted opportunities to build ICT careers for women at ITU videoconference workshop, which was held in ITU Area Office for CIS on 28 April 2016 and attracted 68 participants from 8 CIS countries.
* CIS RI 2 “Ensuring access to telecommunication/ICT services for persons with disabilities”: Results achieved to date include the establishment of an Information and Training Centres for Persons with Disabilities in the Republic of Belarus, the Kyrgyz Republic, the Republic of Moldova, the Russian Federation and the development and adaption of online resources to the needs of persons with disabilities.

##### In the Europe region (EUR)

* In 2015 and 2016 special campaign was carried out at the regional level, encouraging European stakeholders to organize celebrations of the Girls in ICT Day. Several activities were carried out by governments, civil society, academia and private sector in at least 36 European countries. Stocktaking report has been elaborated and broadly shared with the aim of highlighting good practices.
* A joint ITU – European Conference of Postal and Telecommunications Administrations (CEPT) Committee for ITU Policy annual celebration of the Girls in ICT Day was organized in Bucharest, 2015 and Lucerne, 2016, which aimed at raising attention of the European Administrations, to the issue of gender mainstreaming and the importance of creating new career opportunities for women in the ICT sector.
* EUR RI 3: Ensuring access to telecommunications/ICTs, in particular for persons with disabilities: Implementation of this initiative resulted in a strengthened regional cooperation of relevant stakeholders in the field of accessibility. Human capacity of more than 500 professionals was built, thanks to the activities carried out under the regional initiative.
* A series of physical meetings and online trainings provided the opportunity for sharing best practices across the region, while giving advice on the policies and regulatory frameworks that promote e-accessibility, including television/ICT applications for people with disabilities.
* Special attention was given to the public procurement of accessible ICTs, where two online courses in 2015 and 2016 provided a unique opportunity for procurement professionals to build their capacities, while advancing their national e-accessibility agendas.
* In addition, cooperation with diverse European accessibility organizations was strengthened, including the European Disability Forum, European Commission, European Broadcasting Union and G3ICT.

#### Study Group Questions

The following study group 1 Question contributed to Output 4.3 (See Appendix 2):

**Question 7/1:** Access to telecommunication/ICT services by persons with disabilities and with specific needs

#### WTDC Resolutions, recommendations and decisions

WTDC Resolutions: 1, 5, 9, 11, 15, 20, 21, 22, 23, 30, 32, 55, 58, 68, 76, 77

#### Other Conferences and assembly

PP Decisions 5, 13

PP Resolutions 25, 30, 32, 33, 34, 36, 37, 64, 70, 71, 131, 139, 140, 175, 184, 198, 202

#### WSIS Action lines

WSIS Action Lines C2, C4 and C7 and C8 of the Geneva Plan of Action and § 90 of Tunis Agenda for the Information Society contributed to Output 4.3.

#### Contribution to the relevant SDGs

SDGs: 4, 5, 8, 10, 17

## Concentrated assistance to LDCs, SIDS and LLDCs

Despite the progress that has been made over the last decades, the number of countries with special needs remains very high. Least Developed Countries (LDCs), Small Island Developing States (SIDS) and Landlocked Developing Countries (LLDCs) in particular, remain vulnerable and face a number of development challenges that require special attention. Given the opportunities of ICTs for social and economic development and to deliver access to ICT services and applications, concentrated assistance to these countries is particularly important, especially in line with the 2030 Agenda for Sustainable Development’s call to ‘leave no one behind’.

ITU is committed to fulfilling its mandate and striving to reach its commitments under the Istanbul Programme of Action (IPoA) in regard to ICTs for LDCs, the Barbados Plan of Action (BPoA) for SIDS and the Almaty Plan of Action (APoA) for LLDCs. Each of these plans of action are mainstreamed into the Dubai Action Plan.

##### Results achieved

* ITU has increased the awareness of the importance of ICTs for sustainable development, provided concentrated assistance as well as enhanced capacity to LDCs, LLDCs and SIDS, in all ICT related activities, initiatives, programmes and projects. These activities include market regulatory reforms, emergency telecommunications and disaster response, gender equality, ICT infrastructure and spectrum management, and climate change adaptation. This has resulted in increased awareness and better capacity to deal with topics of mentioned above.
* Since WTDC-14, ITU has provided emergency disaster response, strengthened capacity, and improved communications for disaster relief in a total of 15 countries (including developing countries, LDCs, SIDS, and LLDC).
* It supported countries that were affected by disasters, to re-establish their communication networks in its aftermath, by delivering direct assistance through the provision of equipment and infrastructure damage assessments, and in reconstructing and rehabilitating telecommunication infrastructure. During these deployments, more than 150 users were trained in the use of satellite telecommunication equipment, during 10 capacity building workshops. ITU is also increasing the capacity of LDCs to address disasters by developing and establishing early warning systems.
* ITU increased the awareness of the importance of ICTs for development and by integrating ICTs within the larger development debate. ITU contributed references to ICTs in the toolkit developed to mainstream the implementation of the Istanbul Programme of Action for the Least Developed Countries. It has also provided inputs for the full implementation of the establishment of a Technology Bank for the LDCs (by January 2017).
* ITU increased the capacity of countries in special need, to launch a number of new and innovative projects, by providing seed money for the development of infrastructure, including in rural areas, and to build human resources development/management.

##### In the Americas region (AMS)

* Provided assistance to the Conseil National des Télécommunications (CONATEL), Haiti, in the form of emergency radio communications equipment for its response to disasters, as well as assistance to ensure that disaster-resilient response features are incorporated in their National Emergency Telecommunication operations network and infrastructure.
* Launched the Bahamas Smart Island initiative in February 2016. This initiative will be a blueprint for other Caribbean countries. The improvement in urban infrastructures, systems and governance will help the nations to become more efficient, livable and help save lives by better preparing to meet the challenges of climate change including disruptions in the wake of a disaster. It will also contribute to social equality through universal access of public services – health care, security and intelligent traffic systems, as examples.
* Supported the restructuring of the Barbados Regulatory Authority, to foster efficiency and streamline the regulatory functions in the local environment. Twenty-one participants were trained during a workshop organized in May 2016.
* Support to the establishment of Community Centres in Belize, Barbados, Saint Kitts and Nevis, Grenada and Saint Vincent and the Grenadines. This resulted in bridging the digital divide in these countries by providing internet access to unserved communities.
* The ITU introduced the Caribbean School Cyber Security Awareness Programme which is designed to assist the Ministries of Education to promote the safe use of ICTs, anti-cyber bullying and general cyber security awareness in secondary schools in the Caribbean. 3 countries benefited from the programme in the Caribbean - Belize, Grenada and Saint Vincent and the Grenadines.
* A workshop on “The Role of Education in Cyber Security: Developing Digital Citizenship” was held in Belize and attended by over 105 participants in June 2016. The ITU developed a manual for educators and parents to help them confront the issue of cyberbullying. This regional policy document was completed in December 2016.
* Support to Dominica was provided, with the formulation and development of national broadband policies, to implement a broadband technological framework.
* A model Roaming Bill for performing and appropriate supporting Regulations was made in Saint Lucia and for its subsequent adoption in the Eastern Caribbean Telecommunications Authority (ECTEL). The first workshop related to this subject was held in Saint Vincent and the Grenadines in June 2016, where 15 participants from the ECTEL group participated.

##### In the Arab states (ARB)

* Assisted the development and deployment of the IPv6 infrastructure in Comoros, Djibouti and Yemen in the elaboration of a national strategic report, on IPv6 development and deployment. The reports were delivered in 2015.
* A regional capacity-building project on IPv6 development and deployment for Arab LDCs was signed and the first activity in this context was implemented on 25-29 December 2016. The training, attended by 14 participants representing all Arab LDCs and Palestine, had the aim of enhancing the technical skills of two participants from each country to the level of becoming certified in IPv6 deployment.
* ITU assisted Palestine to assess their ICT market and issuance of new license and re-new the current licenses. The assistance was delivered in June 2016 and November 2016.
* Supported Comoros to better understand how to liberalize their ICT market and develop their own national guidelines on infrastructure sharing. The assistance was delivered via a dedicated workshop for Comoros organized jointly in collaboration with World Bank in Moroni, 5-6 October 2016. 30 participants from Comoros ICTs stakeholders in addition to Tunisia, Morocco and Mauritius attended the workshop. Support to Djibouti was given, on the development of the legal/regulatory requirements for establishing an independent ICT regulator. The study was delivered in December 2016.
* ITU assisted Djibouti, reviewed, and developed its legal and regulatory framework instruments for the telecommunications sector.

##### In the Asia and Pacific region (ASP)

* ASP RI 1: Special consideration for least developed countries, small island developing states, including Pacific island countries, and landlocked developing countries: Improved human, policy and regulatory capacity in the areas of licensing, spectrum management, including the development of National Table for Frequency Allocations (NTFA), legislative frameworks, cybersecurity, broadband, broadcasting, ICT applications, satellite coordination, Internet transit planning, Internet Exchange, pricing, licensing, numbering and other regulatory assistances in SIDSs, LDCs, and LLDCs.
* Built capacity in various areas including spectrum management licensing and service regulation, cybersecurity awareness, Child Online Protection, digital literacy for children, and promoting awareness of children and teachers on staying safe online.
* The implementation of the Pacific Connectivity Project was initiated. The Pacific Regional Project Framework on the development of Satellite Communications Capacity and Emergency Communications solutions for the Pacific Islands will continue implementation.

#### Study Group Questions

There are no study group Questions specific to concentrated assistance to LDCs, SIDS and LLDCs.

#### WTDC Resolutions, recommendations and decisions

WTDC resolutions: 16, 17, 18, 21, 25, 26, 30, 33, 36, 37, 50, 51, 52, 53, 57, 60

#### Other Conferences and assembly

PP Decisions 5, 13

PP Resolutions 25, 30, 32, 33, 34, 36, 70, 71, 123, 124, 125, 126, 127, 135, 159, 160, 161, 172, 193, 202

#### WSIS Action lines

WSIS action lines C4 and C7 of the Geneva Plan of Action and §§ 9, 23, 26, 49, 59, 87 and 95 of the Tunis Agenda for the Information Society contribute to Output 4.4.

#### Contribution to the relevant SDGs

SDGs: 1, 3, 4, 5, 6, 9, 11, 12, 13, 14, 15, 16, 17

# Objective 5

# Enhance environmental protection, climate change adaptation and mitigation and disaster management efforts through telecommunications/ICTs

The purpose of Objective 5 is to assist the ITU membership by providing assistance in the field of climate change adaptation and mitigation, and disaster management. Efforts are focused on identifying opportunities and using ICTs to address the adverse impacts of climate change, and to prepare for and respond to disasters.

## ICTs and climate-change adaptation and mitigation

Climate change is one of the key present development challenges the world faces. It is an important concern addressed in the current policy debate, including the Paris Agreement adopted by the climate change conference in December 2015, the Sendai Declaration and Framework for Disaster Risk Reduction 2015-2013, the 2030 Agenda for Sustainable Development. Climate change severely affects sustainable, socio-economic development, and exacerbates disaster risk since climate and weather-related events occur more frequently and with greater intensity, impacting water resources, land use and marine ecosystems. Although the most vulnerable countries, in particular the LDCs, face particular risks since mortality rates and economic losses are proportionally higher, climate change affects the economies of all ITU Member States.

ICTs play an important role in limiting climate change, and reducing and adapting to its effects by providing important and innovative tools. ICTs can curb greenhouse gas (GHG) emissions by providing more efficient equipment and tools, and by delivering innovative services and networks. ICTs also increase the exchange of information and knowledge, help monitor climate related changes, and support disaster management, including through the provision of early-warning systems. At the same time, a growing ICT industry and increasing uptake of ICTs is producing more e-waste, calling for guidance on how to reduce the environmental footprint.

##### Results achieved

* ITU contributed to the adaptation and mitigation of climate change by setting up clean power generation systems through the “Development of Satellite Communications Capacity and Emergency Communications Solutions for the Pacific Island” Project. This project helped to reduce GHG emissions by setting up solar power based systems for powering some 20 computer centers, using clean power generation systems.
* ITU increased the knowledge of Member States on the use of telecommunications/ICTs for climate change adaptation and the importance of green ICT strategies through workshops, which were carried out in those 15 countries that received ICT equipment and training in the aftermath of disasters.
* ITU contributed to the development of an environmentally friendly early-warning system by setting up solar-powered sirens and control centres in eastern Uganda. This has helped the country to deploy a sustainable solution to climate change and increased risks of flooding.

##### In the Asia and Pacific region (ASP)

* Enhanced capability in Smart Sustainable Cities, Green ICTs and E-Waste through Forums. Workshops, trainings as well as development of training material and conducting training.
* Enabling efficiency in energy management through ICTs built capacity of over 50 participants from Islamabad, Pakistan in November 2014, with a report prepared for the Ministry of Information and Technology, Pakistan.

There are no regional initiatives directly related to Output 5.1.

#### Study Group Questions

The following study group 2 Question contributed to Output 4.3 (See Appendix 2):

**Question 6/2:** ICT and climate change

**Question 8/2**: Strategies and policies for the proper disposal or reuse of telecommunication/ICT waste material

#### WTDC Resolutions, recommendations and decisions

WTDC Resolutions: 17, 21, 30, 32, 37, 50, 52, 53, 66

#### Other Conferences and assembly

PP Decisions: 5, 13,

PP Resolutions: 25, 71, 172, 182

#### WSIS Action lines

Action Line C7 (e-environment) of the Geneva Action Plan is closely linked to Output 5.1. In close cooperation with World Meteorological Organization (WMO), ITU has continuously raised awareness among participants through various events and talks organized during WSIS forums and during its preparatory phase. This has allowed different stakeholders from various countries and organizations to connect, and to share their experiences. ITU has encouraged various stakeholders to submit their projects through the WSIS platform and share with other participants. Many projects that contributed to the output 5.1 have won WSIS awards.

#### Contribution to the relevant SDGs

SDGs: 9. 11, 13, 14, 15

## Emergency telecommunications

Countries throughout the world are experiencing increased numbers of natural and human-made disasters. Disasters have a devastating impact on human lives, and important negative effects on sustainable development by disrupting the economy and destroying critical infrastructure and services. LDCs, LLDCs, and SIDS are particularly vulnerable to the impact of disasters, since many are not well prepared and lack the capacity to respond.

The critical importance of using telecommunications/ICTs to respond to these devastating phenomena is widely recognized. Because of the role that telecommunications/ICTs play in the phases of a disaster prediction, detection, mitigation and relief, 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.

Because disasters often extend beyond the borders of a Member State, effective disaster management may involve the deployment of efforts by more than one country, in order to prevent the loss of human lives and a regional crisis. Prior coordination and collaboration among disaster-management experts, including governments, the private sector, international organizations and non-governmental organizations, including humanitarian organizations, can limit the risks of disasters and increases the probability of saving human life.

Member States need to be aware 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, taking into account persons with disabilities and specific needs.

##### Results achieved

* Since WTDC-14, ITU has facilitated emergency disaster response, strengthened capacity, and improved communications for disaster relief. It helped 15 Member States that were affected by disasters, to re-establish communication networks in the aftermath of a disaster, by delivering direct assistance through the provision of equipment and infrastructure damage assessments and in reconstructing and rehabilitating telecommunication infrastructure. During these deployments, more than 350 users were trained in the use of satellite telecommunication equipment, during 15 capacity building workshops.
* By organizing the 2nd Global Forum on Emergency Telecommunications (GET-2016): SAVING LIVES", which took place in Kuwait City, Kuwait, from 26-28 January 2016, ITU has increased the awareness and capacity of countries to take advantage of ICTs for emergency telecommunication and enhanced the dialogue between disaster-management experts, including governments, the private sector, international organizations and non-governmental organizations, including humanitarian organizations. The Forum was attended by more than 500 participants from ITU Members States, industry, UN agencies, NGOs, academia and humanitarian organizations. The event highlighted the important role of telecommunication/ICTs in the implementation of the Sendai Framework, and made concrete recommendations on how to use ICTs to support countries to attain the agreed Sustainable Development Goals (SDGs).

##### In the Africa region (AFR)

* ITU enhanced the ability of Member States to save lives when disaster strikes, through the deployment of emergency telecommunication equipment, and building capacity to use the equipment and services, in response to Malawi (flooding, January 2015) Mozambique (flooding, April 2015), Kenya (flooding, May 2015).
* Disaster Management and Early Warning systems were implemented in Zambia and Uganda. These projects aim at providing, natural disaster early warning systems disseminating alerts for flooding and impending disasters, for public safety and for enhancing information dissemination in designated areas.
* ITU raised awareness, increased cooperation, and demonstrated the value of ICTs, including big data, for development in the area of health-related emergencies. ITU organized a high-level Ministerial meeting in Sierra Leone in 2015, which was attended by fifteen Ministers from both the ICT and Health sectors. The meeting resulted in a declaration calling for continued efforts to use big data for combating the scourge of Ebola and other epidemics.
* ITU also launched a big data project in Sierra Leone, Guinea and Liberia, which demonstrates how governments can use big data from mobile operators to help contain infectious diseases spread by humans.

##### In the Americas region (AMS)

* AMS RI 1: Emergency telecommunications: Supported Member States in the Americas on enhancing ability to respond to emergencies in a timely manner.
* ITU prepared a project document for communications during emergencies for COMTELCA member countries during 2015 and efforts are being made to find funding sources for its implementation.
* ITU collaborated for the success of the course on telecommunications during emergencies jointly organized by CEPREDENAC and COMTELCA in Costa Rica from 27 June to 1 July 2016 with the participation of first responders from five different countries (Guatemala, El Salvador, Honduras, Nicaragua and Costa Rica) and representatives of all governmental entities from the telecommunication sector of Costa Rica. The participants recognized the importance of this kind of training gathering first responders and telecommunication authorities.
* ITU provided support for the improvement of the Emergency Operations Centre (EOC) in Guyana.
* ITU organized activities to enhance capacities on Emergency communications, Climate Change, Smart Sustainable Cities, e-waste and related to National Computer Incident Response Teams (CIRTs).
* In September 2015 in Guayaquil, Ecuador, the ITU Office for Americas region, jointly with INICTEL UNI of Peru and Mintel of Ecuador, co-organized a workshop on technology to mitigate the effects of earthquakes and tsunamis. An EWBS-prototype demonstration was given on emergency alerts for tsunamis.
* Assistance was provided to Guyana in the form of emergency telecommunication system equipment and emergency equipment deployment was provided to Dominica to support the Government’s response, following the devastation of Tropical Storm Erika. ITU also provided Dominica with informatics equipment for its Emergency Operations Centre (EOC).
* Emergency radio communications equipment was procured for the Guyana National Emergency Operations Network, which has acknowledged that this procurement has enhanced their capabilities to respond to disasters. The procurement has also helped ensure that disaster-resilient response features are incorporated in Guyana’s national emergency telecommunication operations network and infrastructure.
* ITU procured emergency radio communications equipment to assist CONATEL Haiti in its responding to disasters, and ensuring that disaster-resilient response features are incorporated in the country’s national emergency telecommunication operations network and infrastructure.
* ITU and the Caribbean Broadcasting Union collaborated on an ITU-funded E-waste Project (May 2015-October 2016). The fulfilled objective of the project was an assessment of Caribbean in the areas of environmental standards, electronic waste management and recycling, focusing in particular on television devices, as well as mobile phones and computers. The assessment/study also included anti-dumping regulations for televisions that do not conform to regional requirements and international standards. The project report provided recommendations for an effective framework and enabling environment that will optimize and standardize the environmental policy that results from the switch to digital broadcasting in the Caribbean region. Specifically, these model policies: (i) set out mechanisms to control the importation and/or production of devices that do not conform to the chosen digital television standard or that do not incorporate digital television tuners, and (ii) provide for the rational and environmentally sound processes for the recycling and safe disposal of e-waste, including television devices that do not function following the digital switch over.
* In 2016 ITU also provided assistance and consultancy in the formulation of e-waste management policy and regulatory framework for Saint Lucia. The policy and regulatory framework is completed and implementation-ready. This will be used as a blueprint for the development of policies for other countries in the Caribbean.

##### In the Asia and Pacific region (ASP)

* ASP RI 2: Emergency telecommunications: Built capacity and capability through emergency telecommunications training, improved awareness through: Seminars, Workshops, Meetings and Forums on climate change adaptation, disaster risk management and mitigation, emergency telecommunications.
* Emergency Equipment Assistance was provided to: the Philippines following Typhoon Ruby in December 2014; Vanuatu following Cat 5 Tropical Cyclone Pam, March 2015; the Federated States of Micronesia following Typhoon Maysak, April 2015; 8.0 Earthquake in Nepal, May 2015; severe flooding in Myanmar in July/August 2015, Fiji following Cat 5 Tropical Cyclone Winston, February 2016.
* Direct country assistance was provided to Pakistan Telecommunication Authority in preparing Pakistan Emergency Telecommunication Regulatory Framework (PETRF) in 2016.
* Provided technical assistance for the production of a Mobile Network Disaster Restoration Plan (Nepal 2015) and an Emergency Communications Plan (Timor-Leste-2015).
* To restore basic telecommunication infrastructure in the post-disaster periods, a Movable and Deployable ICT Resource Unit (MDRU) was installed at the island of Cebu in the Philippines. MDRU installation is a part of the wider study on quick infrastructure restoration and its usefulness. This project was implemented with support of MIC Japan and as a result of its implementation, Cebu Island is now better prepared for post-disaster communications.

#### Study Group Questions

### The following study group 2 Question contributed to Output 5.2:

**Question 5/2:** Utilization of telecommunications/ICTs for disaster preparedness, mitigation and response

#### WTDC Resolutions, recommendations and decisions

WTDC Resolutions: 1, 5, 17, 21, 30, 32, 34, 37, 50, 52, 53, 69

#### Other Conferences and assembly

PP Decisions: 5, 13,

PP Resolutions: 25, 37, 71, 98, 136, 140, 182, 202

#### WSIS Action lines

Action Line C7 (e-environment) of the Geneva Action Plan is closely linked to Output 5.1. In close cooperation with WMO, ITU has continuously raised awareness among participants through various events and talks organized during WSIS forums and during its preparatory phase. This has allowed different stakeholders from various countries and organizations to connect, and to share their experiences. ITU has encouraged various stakeholders to submit their projects through the WSIS platform and share with other participants. Many projects that contributed to the output 5.1 have won WSIS awards.

#### Contribution to the relevant SDGs

SDGs: 9, 11, 13, 14, 15

# Appendix 1: Details of the implementation of the Regional initiatives

#### AFRICA REGION

##### AFR RI 1: Strengthening human and institutional capacity building

* This regional initiative was mainly implemented in the framework of Centres of Excellence Network and the ITU Academy**.**
* The first Steering Committee meeting of the ITU Centre of Excellence (CoE) Network for Africa was successfully held in Cape Town, South Africa, in February 2015. The six training institutions selected as an ITU CoE for the period 2015-2018: Centre for Learning, Telkom SA (South Africa); University of Rwanda, College of Science and Technology (URCST), Rwanda; Digital Bridge Institute (DBI) Nigeria, Ecole Supérieure Multinationale des Télécommunications (E.S.M.T), Senegal; Ecole Supérieure Africaine des Technologie de l'Information et de la Communication (ESATIC), Cote d’Ivoire; African Advanced Level Telecommunications Institute, (AFRALTI), Kenya, coordinated and agreed on an overall training strategy, individual plans, shared opportunities and ways to resolve potential challenges.
* The second Steering Committee of the ITU Centre of Excellence Network for Africa was held in Mauritius in December 2015 and coordinated the delivery of the 2016 planned courses. A total of 14 participants from 6 CoE training institutions, host country and 3 officials from the ITU attended the meeting.
* Professionals were trained in various ICT related subjects using the six Centre of Excellence (CoE) nodes and the ITU Academy, which increased the number of ICT educated professionals in the region, improving their knowledge and skills.
* To enhance capacity, 21 face-to-face training courses were delivered in 2015 by the ITU-CoE network. These courses were attended by 113 participants, from 6 African countries, who were trained in the fields of cybersecurity, telecommunication regulation and 4G LTE. During the same period, an ITU- International Telecommunications Satellite Organizations (ITSO) satellite communication face-to-face training was delivered to 73 participants, from 8 African countries.
* The Smart Africa Scholarship Fund was established with seed funding from the ITU and initial contributions from Rwanda and South Sudan. The Fund has awarded seven scholarships to students, who undertook Masters programmes at Carnegie Mellon University in ICT/Engineering, to strengthen their human capacity in ICT. Additional scholarships to the Ecole Supérieure Multinationale des Télécommunications (ESMT) in Dakar, are currently under consideration.
* To enhance awareness, in 2014, 2015 and 2016, direct assistance was provided to 15 African countries in the organization of their Girls in ICT Day celebrations. During the same years above mentioned, Girls in ICT Day celebrations were also organized in Addis Ababa, Ethiopia, in collaboration with the African Union Commission and other UN agencies. These activities in Addis Ababa had the participation of 265, 250, and 230 high school girls respectively.

#### AFR RI 2: Strengthening and harmonizing policy and regulatory frameworks for the integration of African telecommunication/ICT markets

* Guidelines for the development of a national broadband plan (NBP) and a model national broadband plan were elaborated for countries of the Southern African Development Community (SADC). Following the recommendation from the validation workshop held from 1 to 5 June 2015 in Windhoek, Namibia, the SADC countries adopted the proposed Guidelines and NBP model during the SADC ICTs Ministers meeting held in Namibia, on 23-26 June, 2015. This meeting facilitated the transposition of the model into National Broadband Plans.
* From 2014 to 2015, direct assistance continued to be provided to South Sudan to operationalize its National Communications Authority (NCA) and the setup of a new Board.
* Strengthened the African Least Developed Countries (LDC) capacities in telecommunication/ICT standardization and in statistics. National workshops were held in Gabon and Madagascar, with 25 participants each, which provided an increased understanding on ICT Indicators and data collection.
* Workshops were conducted in Economic Community of Central African States (ECCAS) to harmonize national ICT policies and regulatory frameworks. This resulted in the drafting of a Models Set of Laws which are awaiting transposition into national legislations of requesting countries.
* ITU assisted the Republic of Namibia and the Kingdom of Swaziland in developing their respective NBP, using the guidelines and model developed in 2015. This assistance resulted in the adoption by both countries of the NBPs, following the validation exercise that took place in Namibia, on 27 February 2016 and Swaziland, on 24 May 2016.
* ITU assistance provided to Rwanda, laid the foundation for new ICT bills, a secondary legislation and the creation of new specialized Regulatory Agencies (Frequencies and ICT). Similar assistance has also been provided to Cameroun, Guinee Equatorial and Togo.

##### AFR RI 3: Development of broadband access and adoption of broadband

* Wireless broadband infrastructure projects under the McCaw/ITU partnership, are being implemented in six countries: Burkina Faso, Burundi, Lesotho, Mali, Rwanda and Swaziland, to develop their wireless broadband infrastructure, applications and enhance their capacity. The projects in Burkina Faso and Burundi have been completed and provide broadband access to hospitals and schools. The projects in Lesotho, Mali, Rwanda and Swaziland are ongoing.
* Under the ITU-KOREAN project, wireless broadband access master plans were developed for Congo Brazzaville and Malawi, laying the groundwork for the adoption and usage of broadband in these two countries.
* Facilitated a MoU between China, ITU and East African Community countries on “Joint Partnership and Cooperation on the Acceleration of Development of Infrastructure for ICT in East Africa” which provides a basis for implementation of different ICT projects in the future.
* Continued the development of an Interactive Terrestrial Transmission map, in in Africa, which will facilitate not only business but infrastructure planning (sharing of passive Tele Infrastructure and power supply) in all the countries in the region.
* Distribution of a newly developed ICT infrastructure sharing and access framework and the guidelines adopted by SADC Members in March 2016. This supported countries in the implementation of their infrastructure sharing policies.
* ITU prepared and shared a case study of the One Network Area (ONA) roaming framework for the East Africa Northern Corridor countries, which was adopted as a benchmark for roaming in Africa.
* Assisted Burundi in the development of broadband policy, strategy and regulatory framework.
* A broadband universal access study was conducted for the Kingdom of Lesotho, which provided strategic guidance in the implementation of the universal broadband strategy and the overall development of their ICT sector.

##### AFR RI 4: Spectrum management and transition to digital broadcasting

* In 2014, assistance was provided to Swaziland in the establishment of a road map, with the calculations for their broadcasting network.
* In 2015, assistance provided to Equatorial Guinea resulted in the elaboration of the digital migration plan and the design of the network.
* Finalized the road map and migration strategy for Burkina Faso, resulting in the launch of a tender for the 2015 implementation of the Digital Terrestrial Television Broadcasting (DTTB).
* Technical assistance was provided in 2015 to 15 countries, which launched their digital migration processes.
* In 2016, additional 4 countries received assistance with digital migration, also launching their migration processes.
* In 2016, a Cross Border Frequency Coordination workshop was conducted for the SADC region, attended by participants from Angola, Botswana, Lesotho, Malawi, Namibia and South Africa, as well as partners and private sector, such as Ericsson and LS Telekoms. This resulted in enhanced cross border frequency coordination among these countries, the establishment of a task force and indicating their willingness to sign the Harmonized Calculation Method for Africa (HCM4A) agreement.

##### AFR RI 5: Building confidence and security in the use of telecommunications/ICT

* A methodology and action plan to implement the Child Online Protection (COP) Guidelines in Africa was developed and shared with all countries in the region. To raise awareness on COP matters, a successful regional conference took place from 15 to 16 December 2014 with more than 200 participants from 21 African countries. A COP Country Development Action Framework was also developed.
* To enhance information and knowledge, national stakeholder workshops on COP matters were organized in 2015 for Gabon and Chad. Drafts of national policies and strategic frameworks of three countries (Chad, Gabon and Rwanda) were completed. Regional and national projects on “Creation of an enabling environment for effective development of COP” were identified. Improved technical expertise of the Regional Office for Africa in the implementation of COP.
* A Computer Incidence Response Team (CIRT) project was implemented in Tanzania in August 2014 and an assessment for the establishment of a CIRT was done in April 2015 for Angola.
* In September 2014, a cyber drill was conducted in Zambia for African countries, where more than 100 participants, from 16 countries attended.
* A similar regional cyber drill was conducted in Rwanda in May 2015, with the attendance of 150 participants, from 18 countries. These cyber drills enabled African countries to share experiences and assess their readiness in cybersecurity.
* A cyber drill was organized in Mauritius, with the attendance of 150 participants from 15 countries. This activity resulted in the enhancement of the participating countries national capacity.
* A second phase of the CIRT project was initiated in Kenya, to facilitate more advanced protection against cyber-attacks.
* In 2015 the annual regional capacity building workshop for African countries was organized in Abidjan, Cote d’Ivoire, from 14 to 18 September 2015, under the theme: Digital Migration and Human Capacity Building. This workshop was able to raise awareness and build human capacities of 161 participants, from 21 countries and 8 organizations.
* A Joint ITU-ATU (African Telecommunications Union) Workshop on Cybersecurity Strategy in Africa as well as the first Arabic and African Regional Cybersecurity Symposium, were organized in Khartoum, Sudan, from 24 to 28 July 2016. More than 110 participants from 18 countries, several companies and international organizations took part. The workshops laid the foundation for the harmonization of cybersecurity legal frameworks in Africa.

#### AMERICAS REGION

##### AMS RI 1: Emergency telecommunications

* ITU developed a project document on “Technical Solutions for Communications during Emergencies” (STCE in Spanish) in cooperation with several Latin American countries in 2015-2016 and supported the implementation of a national workshop on National Emergency Telecommunication Plan in the Dominican Republic in 2015 with the participation of around 100 people from the region.
* ITU supported Dominica in its Emergency Operations Centre (EOC) with the delivery of emergency equipment to support the Government’s response, following the devastation of Tropical Storm Erika in 2015.
* ITU also provided Guyana with emergency radio communications equipment for the Guyana National Emergency Operations Network which enhanced national capabilities to respond to disasters, and ensuring that disaster-resilient response features are incorporated to Guyana’s National Emergency Operations Network and infrastructure.
* Assistance was provided to Haiti in 2016 on emergency radio communications to assist the *Conseil Nationale des Télécomunications* (CONATEL) in its response to disasters.
* ITU organized a workshop entitled “From Preparedness to Recovery” in Cusco, Peru in 2015. The workshop focused on the experiences and lessons learned in recent disasters, including observations, needs, opportunities and best practices, as well as the legal and regulatory environment required; telecommunication/ICT networks and applications, building redundancy and protecting communications systems in times of crisis, prioritizing the protection, restoration and use of telecommunication networks in emergency situations; and creating and implementing a national emergency communications plan including presentations of examples of disaster management plans that link communications to national disaster response priorities.
* The 2nd Regional Workshop on Emergency Communications, Climate Change was delivered in Guayaquil, Ecuador, in 2016. The main purpose of the workshop was to raise awareness on the importance of including ICTs in disaster risk reduction and disaster management activities as well as the importance of developing and establishing national emergency telecommunication plans and standard operating procedures. Early warning and alerting systems for earthquakes and tsunamis was one of the main subjects discussed throughout the event. Ecuador, Peru and Chile have been recently affected by these hazards resulting in loss of lives and economic damage. Under the framework of this event, different presentations were made and technical discussions took place on how to incorporate EWBS into the current analogue to digital transition. Different technologies developed by universities were displayed and demonstrated.
* ITU jointly organized with the Caribbean Disaster Emergency Management Agency (CDEMA), the Caribbean Telecommunication Union (CTU), and ECTEL, a one-day emergency communication and disaster awareness meeting in Barbados in September 2016.
* ITU supported the joint training on Emergency Telecommunications for First Responders organized by *Centro de coordinación para la prevención de los desastres naturales en America Central* (CEPREDENAC) and *Comisión Técnica Regional de Telecomunicaciones* (COMTELCA), addressed to Central American countries (Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua) with the participation of five Emergency First Response Agencies (COE-Costa Rica, *Protección Civil*-El Salvador, CONRED-Guatemala, COPECO-Honduras and SINAPRED-Nicaragua), in addition Costa Rica was represented by *Instituto Costarricense de Electricidad* (ICE), *Superintendencia de Telecomunicaiones* (SUTEL) and *Ministerio de Ciencia, Tecnología y Telecomunicaciones* (MICITT) – over 30 participants attended the event.
* ITU and the Caribbean Broadcasting Union collaborated on an ITU-funded E-waste Project (May 2015-October 2016). The fulfilled objective of the project was an assessment of the Caribbean in environmental standards, electronic waste management and recycling, focusing in particular on television devices, as well as mobile phones and computers. The assessment/study also included anti-dumping regulations for televisions that do not conform to regional requirements and international standards. The project report provided recommendations for an effective framework and enabling environment that will optimize and standardize the environmental policy that results from the switch to digital broadcasting in the Caribbean region. Specifically, these model policies: (i) set out mechanisms to control the importation and/or production of devices that do not conform to the chosen digital television standard or that do not incorporate digital television tuners, and (ii) provide for the rational and environmentally sound processes for the recycling and safe disposal of e-waste, including television devices that do not function following the digital switch over.
* In 2016 ITU also provided assistance and consultancy in the formulation of e-waste management policy and regulatory framework for Saint Lucia. The policy and regulatory framework is completed and implementation-ready. This will be used as a blueprint for the development of policies for other countries in the Caribbean.

##### AMS RI 2: Spectrum management and transition to digital broadcasting

* With the aim to enhance awareness and capabilities of frequency planning and assignment of spectrum management, radio monitoring and in the transition from analogue to digital broadcasting, ITU/CAF provided support to 8 countries on the transition to digital broadcasting as a result of applying ITU guidelines. Bolivia, Colombia, Costa Rica, Dominican Republic, Jamaica, Panama, Paraguay and Venezuela countries were assisted within the scope of ITU Project funded by Latin America Development Bank (CAF).
* Road maps for the transition to Digital Broadcasting were prepared and submitted to Honduras and Nicaragua in 2015 and Guatemala and El Salvador in 2016 within ITU Operational Plan.
* The ITU Project supported by the Republic of Korea on the Development of Master Plans for Spectrum Management for Caribbean Countries (Grenada, Jamaica and St. Vincent & the Grenadines) was implemented in 2016. ITU conducted a survey to understand the current situation and needs related to spectrum management, conducted a capacity building workshop as well as completed an assessment for the three countries which resulted in an Assessment Report with key recommendations and future implementation covering all pertinent tasks to development and enhancement of a master plan for spectrum management for the three beneficiary countries.
* From 2014 to 2016, ITU has delivered online training courses in the field of spectrum management and digital broadcasting to the benefit of Latin American countries. In particular, online training courses through ITU Academy Platform and face-to-face capacity building were delivered in Bolivia bringing together theories and practical knowledge on the new trends and facilities offered by latest generation of Radio Frequency engineering tools in the control and verification process with the aim to improve, in terms of efficiency, the use of Radio electric spectrum, a well to respond in practical manner the challenges of the liberalization of new spectrum bands for terrestrial mobile communications (IMT), among others. In 2016, also in the field of spectrum management, training courses were mainly focused on spectrum management regulation trends, spectrum assignment and radio electric spectrum. In addition, online training courses in the field of digital broadcasting were carried out and enhanced capacity on digital broadcasting systems of approximately 100 professionals from Latin America.
* An advanced training on Cost Modelling and Pricing for Latin American Countries and Guidelines on the policy and economic aspects of the assignment and use of the radio-frequency spectrum was delivered in Nicaragua in 2015 with the participation of around 60 participants from 8 countries (Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama).
* In 2015 ITU delivered a Regional Forum on Optimization and Efficient use of Spectrum in Mexico with the participation of 120 participants from 14 countries (Bolivia, Brazil, Colombia, Costa Rica, Ecuador, Mexico, Guatemala, Haiti, Honduras, Nicaragua, Paraguay, Peru, United States and Uruguay). The forum has shown the best practices for radio spectrum utilization and business plans, creating capacity for the future activities related to spectrum management and bid processes in the Americas countries.
* Online courses on Radio Electrum spectrum management and on New Generation Network were delivered to Colombia and Paraguay with participation of 13 attendees.
* ITU and COMTELCA delivered the “Central American Summit on digital television and the digital dividend” in El Salvador in July 2016 with the presentation of various scenarios for the migration from analogue to digital broadcasting, and the development of El Salvador Declaration stipulating the next steps in the transition process for each country.
* ITU in collaboration with CAF, *Secretaría de Comunicaciones y Transportes de Mexico* (SCT) and Forum Global organized a series of events in the “Americas Week on Digital Broadcasting and Regional Conference on Spectrum Management” in October 2016: (i) Policies of Spectrum Planning and Digital Dividend, (ii) Results of ITU-CAF Project on Support for Transition from Analogue to Digital Broadcasting in the Americas Region, (iii) Spectrum Management Master Plans and Cross Border Coordination, (iv) 3rd Annual Latin America Spectrum Management Conference).
* Guidelines on policy and economic aspects of the assignment and use of the radio-frequency spectrum, delivered in 2015 to Argentina, Bolivia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama.

##### AMS RI 3: Development of broadband access and adoption of broadband

* The ITU partnered with the Republic of Korea’s MSIP (Ministry of Science, ICT and future Planning) to establish spectrum management master-plans in 2014 – benefiting Saint Vincent and the Grenadines, Grenada and Jamaica.
* ITU delivered a study on broadband in the aspects of technology, market and regulation analyzing the status of broadband development of Andean Sub-region (Bolivia, Colombia, Ecuador, Peru and Venezuela).
* Training on Conformance and Interoperability (C&I) for the Americas region, in the framework of Global C&I Programme, was delivered to countries in 2014, 2015 and 2016 benefiting in 2014 16 representatives from 10 countries (Argentina, Brazil, Costa Rica, Cuba, Ecuador, El Salvador, Haiti, Paraguay, Peru and Venezuela), in 2015 10 participants from 6 countries (Brazil, Costa Rica, Jamaica, Paraguay, Suriname, Trinidad and Tobago) and in 2016 to 14 participants from 10 countries (Brazil, Costa Rica, Cuba, El Salvador, Haiti, Honduras, Mexico, Nicaragua, Paraguay and Venezuela) aiming at increasing knowledge and awareness on the importance of working jointly to increase the number of Mutual Recognition Agreements (MRAs) in the region. The 2017 edition will focus on remote testing through virtual labs in a bid to increase conformity and interoperability of ICT equipment in the Americas region.
* Assessment of C&I regime and mutual recognition agreements has been specifically conducted for COMTELCA member countries (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama and the Dominican Republic).
* A workshop to enhance capacity to the establishment of a common C&I regime and mutual recognition agreements for COMTELCA member countries (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama) was held in San Salvador, El Salvador, in December 2016. Participants agreed to further develop the draft MRA and the establishment of a virtual test laboratory.
* ITU performed risk assessment, demand study and feasibility study to determine the need for national or regional testing facilities to support C&I regimes in the Caribbean in 2015), as to support Caribbean countries in establishing a plan for the development of Caribbean in-country testing laboratories. One of the main outcomes from the C&I validation workshop was the need to develop a general framework for conformity assessment regimes, as well as a specific framework for ICT C&I for the Caribbean region. ITU will jointly with CTU (Caribbean Telecommunications Union) & CROSQ (Regional Organization for Standards and Quality) implement MRA with selected member states. Six senior executives from the Caribbean region visited CPqD premises during the C&I training course for the region from 8 to 12 June 2015 in Brazil, in order to acknowledge testing lab good practices.
* From 2014 to 2016 a series of Case Studies on the massification of ICTs and the Digital Ecosystem were prepared for a number of selected Latin-American countries, with the main objective of performing an analysis on the use of ICTs considering the regulatory environment, the institutional structure, as well as the status of development and implementation of telecommunication policies and the broadband plans. Case Studies were carried out in Bolivia, Dominican Republic, Nicaragua, Panama and Paraguay, and provided strategic recommendations that intend to contribute to the development of the sector for a more effective use and application of ICT in these countries.
* The collection of data for building the Interactive Terrestrial Transmission Maps in the Countries of the Americas was completed for 47 stakeholders from Latin America and the Caribbean and some are ongoing.
* Forums on Interconnectivity, Cybersecurity and IPv6 held in Paraguay and in Dominican Republic in 2014 with more than 90 participants from 11 countries in both forums. In 2015 the Forum was held in Panama with the participation of over 80 representatives from 17 countries and in Honduras in 2016, with 112 participants from 10 countries. These Forums have shown the best practices for Interconnectivity, Cybersecurity and IPv6, creating capacity for the future activities related to interconnectivity in the Americas countries.
* In 2014, 2015 and 2016, ITU supported the establishment of Community Centres in the Caribbean in Barbados, Belize, Grenada, Saint Vincent and the Grenadines and Saint Kitts and Nevis. This helped with bridging the digital divide in these countries by providing internet access to the communities.
* A Regional Workshop on Strategic Broadband Infrastructure for Development for the Americas was jointly organized in Sao Paulo, Brazil in 2015, by BDT and ANATEL in collaboration with FUTURECOM.
* ITU provided support to South American countries in mapping the long distance optical cable system - terrestrial to allow administrations and regulators in their work of building/reviewing public policies.
* Support was provided to Dominica in 2014 with the formulation and development of national broadband policies to implement a broadband technological framework in Roseau, Commonwealth of Dominica. From 18 to 22 April, 2016 ITU assisted in the formation of appropriate working groups (Policy, Legal, and Regulatory; Infrastructure, Connectivity and Devices; Capacity Building, Awareness, Content, and Applications; Financial, and Investment; Implementation, Monitoring and Evaluation) and in the development of a National Broadband Policy and Sectoral Strategy.
* Case studies were developed on the overall ICT environment in Nicaragua in 2016 and Panama in 2015 considering the country’s regulatory framework, the institutional structure, the development and implementation status of telecommunication policies and broadband plans.
* From February 2016 work on the establishment of PRODOC to support the Bahamas Smart Island’ initiative.
* The ITU supported the restructuring of the Barbados Regulatory Authority aiming to foster efficiency and streamlining of regulatory functions in the local environment. Twenty-one officials benefited from the training carried out during 4-6 May 2016.
* ITU support on the preparation of a model Roaming Bill for enactment and appropriate supporting Regulations to be made in Saint Lucia and their subsequent adoption in the other Eastern Caribbean Telecommunications Authority (ECTEL) Contracting States, as and when required. The first workshop on roaming aspects was held in Saint Vincent and the Grenadines on 24 June 2016, where 15 participants from the ECTEL group participated.
* ITU participated in the Congress FUTURECOM 2014, 2015 and 2016 held in Brazil and highlighted ITU’s role in enhancing awareness on ICT infrastructure. Side events on C&I were organized in close collaboration with *Agência Nacional de Telecomunicações* (Anatel), Brazil.

##### AMS RI 4: Reduction of telecommunication service prices and Internet access costs

* Forums on Interconnectivity, Cybersecurity, and IPv6 held in Paraguay and in Dominican Republic in 2014 with more than 90 participants from 11 countries, in Panama in 2015 with participation of 81 representatives from 17 countries as well as in Honduras in 2016, with 112 participants from 10 countries. These Forums have shown the best practices for Interconnectivity, Cybersecurity and IPv6, creating capacity for the future activities related to interconnectivity in the Americas countries.
* For the Organization of Eastern Caribbean States (OECS) members, assistance was provided to the Development of a Roaming Policy, Legislation and Regulations Guidelines in 2015.
* The Regional Training Workshop on Number Portability was carried out from 28 to 30April 2015, in Paramaribo, Suriname. Thirty-four participants attended from Bahamas, Guyana, Haiti, Saint Kitts and Nevis, Saint Lucia, Trinidad and Tobago, the regulatory body ECTEL. Participants from Suriname were comprised of: Suriname Ministry of Transport, Communications and Tourism, UNIQA Telecommunications Suriname and various departments of the Telecommunications Authority of Suriname (TAS). The workshop provided participants with an appropriate forum for capacity building in Number Portability and to discuss the critical Technical, Regulatory, Commercial/Cost, Application and Implementation issues of Number Portability, types of Number Portability and its impact on stimulating innovation and competitive intensity. Regional telecommunication regulators, policy makers, legislators and other technical staff involved in number portability, interconnection and related issues were able to acquire a better understanding on the cost, benefits and opportunities on the matter.
* The Regional Forums on interconnectivity and reduction of telecommunication service prices and Internet costs organized by ITU since 2014 in Paraguay and in Barbados, in 2015 in Panama, and in 2016 in Honduras, helped to continuously discuss and look towards regional solutions for international interconnectivity and reduction of Internet costs.
* ITU supported enhanced dialogue between Bolivian telecommunication company ENTEL Bolivia and *Compañía Paraguaya de Telecomunicaiones* (COPACO) with the aim of promoting the first broadband connection between Paraguay and Bolivia (the only two landlocked countries in South America).
* ITU has supported the Paraguayan Administration with the deployment of a national Internet Exchange Point (IXP) in 2014. ITU has developed three models and the Paraguayan regulatory body presented to Public Consultation which included recommendations on the internal regulation and on the structure and organization of the selected model.
* Regional Economic and Financial Forum for Latin America and the Caribbean countries and Meeting of the ITU-T SG3RG-LAC Group (Regional Group of the ITU-T Study Group 3 – Tariff) were carried out in the Bahamas in 2015 and in Brazil in 2016.
* As a follow-up of the outcomes of the ITU-EC “Enhancing the competitiveness in the Caribbean through the harmonization of ICT Policies, Legislation and Regulatory Procedures (HIPCAR)” project concluded in 2013, the ITU has initiated the formulation of E- waste –model policies and laws for the Caribbean in the areas of environmental standards, electronic waste management and re-cycling of televisions, mobile phones and computers. The model policies will also include anti-dumping regulations for televisions that do not conform to regional requirements and international standards.
* In addition, the Caribbean Government Wide Area Networks (G-WAN) project seeks to assist three (3) Caribbean Governments (Dominica, Grenada and St. Kitts & Nevis) in the planning, designing and implementation of a comprehensive, secure IP-based Government wide area network in order to provide a platform on which other major initiatives, including e-Government services, may be built. In2015 the ITU and CTU teams have conducted kick-off meetings in Dominica, Grenada and St. Kitts with close to ninety participants across Ministries, Departments and Agencies of the Public Sector. GWAN site assessments were conducted as well as a workshop for Capacity Building and Knowledge Transfer in each of the beneficiary countries; Training on aspects of planning and design and future implementation of the G-WAN.

##### AMS RI 5: Capacity building to engage in global ICT policy, with special focus on improving cybersecurity and developing countries’ participation in the existing Internet governance institutions

* From 2014 to 2016 ITU in Americas delivered 3 Regional Cyber Drills in Peru-2014 (9 countries, 24 participants) Colombia-2015 (13 countries, 46 participants), and Ecuador-2016 (15 countries, 60 participants). The objective of the Cyber Drills was to enhance the capacity of Member States in the region to respond to cyber threats in a timely manner.
* In 2015 ITU delivered in Bogota Colombia the Regional Forum on Cybersecurity and 3rd Cyber Drill applied learning for emergency response team for the Americas Region, with participation of more than 500 representatives in the Forum from 13 countries, and around 50 participants in the Cyber Drill from (Antigua and Barbuda, Argentina, Barbados, Bolivia, Colombia, Costa Rica, Cuba, Ecuador, Guatemala, Honduras, Mexico, Paraguay and Venezuela).
* In 2016 ITU held in Quito, Ecuador, a regional forum on cybersecurity and conducted the fourth cyberdrill in applied learning for emergency response teams for the Americas region, with the participation of more than 300 representatives in the forum from 14 countries; and around 60 participants in the cyberdrill (Argentina, Bolivia, Colombia, Cuba, Ecuador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Paraguay, Peru, Suriname, Trinidad and Tobago and Uruguay).
* Forums on Interconnectivity, Cybersecurity and IPv6 held in Paraguay and in Dominican Republic in 2014 with more than 90 participants from 11 countries in both forums. In 2015 the Forum was held in Panama with the participation of over 80 representatives from 17 countries and in Honduras in 2016, with 112 participants from 10 countries. These Forums have shown the best practices for Interconnectivity, Cybersecurity and IPv6, creating capacity for the future activities related to interconnectivity in the Americas countries
* Computer Incident Response Team (CIRT) assessment and workshop was conducted in Bolivia in 2014 with attendees from Ministry of Defense, Ministry of Economy and Finance, Ministry for Development, Ministry of Government, Ministry of Communications, Public Oil Company, Central Bank of Bolivia, Private Banks, public and private ISPs, management from public and private universities, management from the police, governmental cybersecurity working groups, governmental teams for security of the information, vice-presidency, vice-ministry of Telecommunications, research center of the army, Authority for Transport and Telecommunications. Participants gathered a broad understanding about CIRTs, the functionalities, the type of CIRTs, the responsibilities, and the implications of a possible implementation.
* From 2014 to 2016, the ITU assisted countries to establish national CIRTs and technical cooperation projects were signed and are being implemented in Barbados, Jamaica and Trinidad and Tobago with the objective to identify, defend, respond and manage cyberthreats. A CIRT and cybersecurity posture assessment was conducted for Central American (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama).
* To support countries to improve capacity in ICT mobile application, sub-regional assessment delivered to Latin American countries on the potential of mobile technologies, evolution, policies, and challenges of m-government and tools to address such challenges as well as recommendations to promote the rapid implementation of m-government in Latin America.
* Technical assistance was provided to the Trinidad and Tobago Administration to develop the national cybersecurity data protection and classification policy as well as two workshops on Data Classification and Retention 2015
* Countries in the Americas region participated in the 7th and 8th Editions of the South School on Internet Governance (SSIG) in cooperation with ITU. The SSIG represents a capacity building event aims at training new leaders in the most important aspects related with Internet Governance, from a global perspective and with special focus to the Latin America and the Caribbean Region.
* An on line meeting was organized for all Spanish speaking countries in the Americas region to discuss Internet policy issues with regional representatives of ISOC, LACNIC and ICANN.
* A Caribbean Regional Seminar on Cybersecurity issues, including Child Online Protection was organized in 2016.
* ITU introduced the Caribbean School Cyber Security Awareness Programme in 2016 which is designed to assist the Ministries of Education to promote the safe use of ICT, anti-cyber bullying and general cyber security awareness in secondary schools in the Caribbean. Three countries are to benefit from the programme in the Caribbean (Belize, Grenada and St. Vincent & The Grenadines). The First workshop was held in Belize with more than 105 persons in attendance during the two days period 27 to 28 June 2016. ITU has produced a manual for educators and parents to help deal with cyberbullying, which was finalized in December 2016.

#### ARAB REGION

##### ARB RI 1: Development of broadband access and adoption of broadband

* Assistance was provided to Iraq, Libya, Palestine, Sudan and Yemen for the establishment of their national broadband master plan to support their development of broadband infrastructure and adoption of broadband services.
* Training was conducted in Tunisia in 2016 for 40 participants from 11 Arab countries on the implementation and management of Internet exchange points (IXPs). The objective of the training was to provide participants with the tools needed to lower the costs and improve the quality of their national Internet traffic.
* Training was conducted in 2015 and 2016 for 12 technicians from 8 Arab countries on conformance and interoperability (C&I) to enhance the awareness and capability of countries on relevant standards and procedures used for the control and type approval of equipment. C&I training was also provided in 2015 to 5 technicians from the Syrian Regulator (SYTRA) to support the country in implementing its C&I lab.
* Another 13 participants from 5 Arab countries were trained in 2016 on the organizational and administrative aspects of conformity assessments.
* An assessment study for Maghreb Countries was developed and circulated in 2014 which led to the development of a Mutual Recognition Agreement to foster cooperation on C&I between Arab Maghreb Countries.
* Guidelines were shared in 2016 with 10 Arab countries on developing innovative investment models for minimizing barriers to broadband adoption including adoption of infrastructure sharing and market competition.
* The first draft of guidelines on cloud computing for education was issued and discussed during an experts meeting organized in collaboration with the Arab League Educational, Cultural and Scientific Organization (ALECSO). These guidelines will support policy makers in Arab countries to select the model of cloud platform that corresponds to their needs/budgets.
* Improved the capacity of 10 Arab countries in identifying the appropriate policy, regulatory and technical measures to better benefit from the adoption of new technologies particularly Big Data, Cloud Computing, Internet of Things and 5G in the Forum on New Technologies for Development in Cairo, Egypt hosted by Nile University and collaboration with the National Telecommunication Regulatory Authority of Egypt in 2016.
* Training was provided in 2015 to eight Palestinian participants on cloud computing technology to assist them in understanding cloud computing technology and to enable them to more effectively design their data center.
* Recommendations were developed and guidance was provided on “Alternative calling procedures” and on “Digital Financial Inclusion” issues to the 40 participants at the Forum on Building and Financing Broadband held in Bahrain in 2015. The objective of the forum was to support Arab countries to effectively address alternative telephone call traffic and prepare the environment for digital financial services.
* Training was provided to 60 participants from Arab Countries in 2015 on new trends for promoting broadband services in the context of Over the Top (OTT) services to support policy makers in Arab countries to develop effective OTT service policies.
* Assistance was provided to expand Djibouti Telecom’s broadband network through WiMAX broadband wireless networks.
* A dedicated workshop for Comoros on Liberalizations and infrastructure sharing and local loop unbundling will be organized. The workshop is to support Comoros to more effectively design their networks and how to develop their national guidelines on infrastructure sharing. The workshop will be held in Moroni during 5-6 October 2016 and expected to be attended by morae than 40 from local stakeholders.
* An assessment study was developed to support Palestine in establishing a satellite earth station.
* Under the Framework Cooperation Agreement signed between the TRA-UAE and ITU, a project on Human Capacity Building on IPv6 was implemented.
* Assisted Arab countries in identifying the appropriate policy, regulatory, technical and commercial measures to achieve affordable access to broadband access and services.
* Created a platform for dialogue on affordable access to broadband services, economic and financial issues in a converged broadband environment, and the challenges in the digital ecosystem during the ITU/BDT Regional Economic and Financial Forum of Telecommunications/ICTs for the Arab States in Muscat, Oman, on 6-7 December 2016.
* Assisted the Arab ICT Organization (AICTO) in the study on the impact of OTTs on the Arab telecommunication markets.
* Assisted selected countries in developing their national broadband plans, raised awareness, and built capacities on technical, economic and financial aspects relating to broadband deployment and adoption.
* Assisted Djibouti in the feasibility study for the establishment of a Regional Internet Exchange Point (IXP).
* The Forum on new technologies such as 5G, Cloud Computing, Big Data and Internet of Things held in Cairo, Egypt, on 23-24 November 2016 shed light on the opportunities, benefits and challenges of the application of these technologies in the development of the countries in the Arab region.
* Promoted the establishment of cooperation agreements on C&I between UMA (Union du Maghreb Arabe) countries by establishing an MRA for C&I. (Experts meeting held in the UMA HQ 14-15 December 2016).
* Training was provided to 65 specialists from Arab region in the field of terrestrial and space radiocommunication services during an ITU Regional Workshop on Terrestrial and Space Radiocommunication Services for the Arab States held in Amman, Jordan, from 29 November to 1 December 2016.

##### ARB RI 2: Building confidence and security in the use of telecommunications/ICTs

* Assistance was provided in 2015 to Comoros, Djibouti, Jordan, Lebanon, Mauritania and Palestine in cybersecurity readiness assessment for the establishment and implementation of national Computer Incident Response Teams (CIRTs).
* Within the framework of the Least Developed Countries Infrastructure Protection Project, assistance was provided to nearly 50 participants from Comoros, Djibouti and Mauritania, in 2015 and 2016 during a two-week programme to strengthen the countries’ cybersecurity capabilities, including infrastructure risk management issues. The programme was implemented within the framework of the Least Developed Countries Infrastructure Protection Project.
* Guidelines on a Regional Legal Framework on Child Online Protection (COP) and Model Law: Guide for the Arab region were developed in 2015 and are designed to be used by Arab countries when developing and amending their national laws on children’s safety.
* The capacity of 45 participants was built on child online protection issues during the Child Online Protection (COP) Strategy Framework workshop and COP challenge organized in Bahrain in partnership with the Telecommunications Regulatory Authority (TRA) of Bahrain from 14-16 September 2014 under the umbrella of the regional cybersecurity centre.
* Awareness was raised on issues related to cyber safety among the 280 participating Egyptian children, parents and schools in the Child Online Protection (COP) challenge in Aswan, on 21 February 2015, and in Damanhour on 27 February 2016, in partnership with the Ministry of Communications and Information Technology and the Ministry of Education of Egypt in addition to mobile operators and private sector companies.
* Regional cooperation among experts on cybersecurity was fostered among 125 participants from 8 Arab countries, in addition to international experts, during the Cybersecurity Regional Summit that was held in March 2015 in Oman. In addition, the summit raised awareness on new cybersecurity trends and threats.
* Cooperation was enhanced among the 45 participants from 7 Arab countries, including between Arab CIRTs and the sharing of knowledge with those countries that do not yet have CIRTs, which attended the Regional Cyber Drill for the Arab Region that was held from 17-19 May 2015 in Hurghada, Egypt. The drill was followed by the Capacity Building Programme on the protection of critical infrastructure in the Arab region from 20-21 May 2015 also in Hurghada, Egypt which built capacities on issues related to the protection of critical infrastructure.
* Ideas, knowledge and good practices on issues related to child safety were exchanged among 65 participants from 10 Arab countries, in addition to promoting inter-institutional networking and dialogue to establish a Pan-Arab Network of experts, during the ITU Arab Regional Strategy Workshop on (COP): Empowering the future digital citizens that was organized under the umbrella of the League of Arab States in cooperation with the Ministry of Communications and Information Technology of Egypt from 25-26 October 2015 in Egypt.
* Assistance was provided to Mauritania in 2015 to develop its National Cybersecurity Strategy; to be followed by a workshop in 2016 to local stakeholders on the way forward.
* Assistance was provided to 50 participants in Djibouti on strengthening their cybersecurity capabilities within the framework of the Least Developed Countries Infrastructure Protection project, including technical cybersecurity training conducted on 1-5 November 2015 and management training conducted on 22-26 November 2015.
* A study benchmarking legislation of cloud security in the Arab region with Europe was conducted in November 2015, and later published in 2016 and circulated to the membership to assist countries in the region to understand the legal and regulatory aspects of cloud computing.
* A regional cyber drill was conducted in Tunisia in May 2016 for Arab countries to foster the exchange of experience between cybersecurity professionals from Arab countries and to strengthen their collaboration with regard to cybersecurity. The drill attracted 70 participants from 11 countries.
* ITU-ATU Workshop on Cybersecurity Strategy in African Countries was held in Sudan on 24 -26 July 2016.The workshop attracted 100 participants and built capacity, shared experiences and best practices in countries, and provided information regarding the status of implementations of existing cyber security strategies, to identify any gaps; and to yield a way forward. The workshop was a joint activity between BDT and TSB.
* Regional cooperation on cybersecurity was strengthened among 150 participants during the workshop for Arab CIRTs organized in the Regional Cybersecurity Summit held on 30 November in Egypt.
* The ITU panel discussion on data privacy and policy frameworks to secure cloud services organized during the Regional Cybersecurity Summit held in Sharm el-Sheikh, Egypt from 30 October to 3 November 2016.
* FIRST Arabic and African Regional Cybersecurity Symposium to be held in Egypt, November 2016.
* The ITU-AICTO Regional Workshop on “Policy Advocacy on Data Privacy & CyberSecurity”, that was held in Tunis, Tunisia, from 5 to 6 December 2016 and attracted 70 participants from the Arab region and discussed the formulation of national and regional regulatory and technical policies and frameworks and legal measures to ensure data privacy, cloud services privacy, data protection and security.
* The workshop on National Child Online Protection Strategy for Sudan, organized in Khartoum from 14 to 15 December 2016 and aimed at analysing the landscape of Child Online Protection and thereafter facilitating the development of a National COP Strategy for Sudan by the end of 2016.
* Organized a COP Challenge in a school in Khartoum on 13 December 2016.

##### ARB RI 3: Use of telecommunications/ICTs for smart and sustainable development and protection of the environment

* Awareness was raised on the importance of using ICT in sustainable development and environmental protection in order to achieve smart and sustainable development among the more than 30 participants from different organizations working on sustainable development and environment protection that attended the kick-off meeting to launch this initiative. This event was organized in cooperation with United Nation Economic and Social Commission for Western Asia (UNESCWA), League of Arab of States (LAS) and United Nations Environment Programme (UNEP) in Manama, Bahrain on 6 May 2015.
* Awareness was raised on how information and communication technologies can be leveraged in efficient implementation of Smart Sustainable Cities and the roles of various stakeholders can play in this domain among more than 60 participants in the Regional Forum on Smart Sustainable Cities for the Arab region organized in cooperation with TSB, hosted by the Telecommunications Regulatory Authority (TRA) of United Arab Emirates (UAE) in Abu Dhabi, UAE on 3-4 May 2015. The Forum, which was attended by representatives of regional smart cities and ITU members, adopted an ICT road map for the transition to smart sustainable cities in the Arab region.
* A road map for leveraging ICTs for the transition to smart and sustainable cities in the Arab region was developed in 2015 for the benefit of the 22 Arab countries.
* Awareness was raised on how information and communication technologies can be used for transition to smart and sustainable development in Arab region for moare than 120 participants from Arab region attended the regional Forum on Use of ICTs for transition to Smart and Sustainable Development in Arab region held in Khartoum-Sudan, 12-13 Dec, 2016.
* Developed a global model policies/ legislation for ICTs generated e-waste management. This global model policies/ legislation will be used to develop a regional policy for ICTs generated e-waste management in Arab region.
* Signed a project document in 2016 with the Ministry of Communications and Information Technology of Egypt on Smart Groundwater Management. This two-year project aims at showcasing the opportunities of utilizing ICTs to efficiently manage groundwater resources. The project was initiated with a site inspection visit on 19 November 2016 by all stakeholders collaborating on the project that will be implemented in the Marashdah area near Luxor.
* Awareness was raised on the importance of telecommunications/ICT in smart and sustainable development, the role of national ICTs strategies on sustainable development and how ICTs can be used for climate change and disaster risk mitigation and adaptation among the 40 participants and 10 countries participating in the Regional Forum on the Use of ICTs for the transition to Smart and Sustainable Development for the Arab region organized in cooperation with SUDATEL Telecommunications Academy (SUDACAD) on 11-12 December 2016.
* To support countries to develop their own national policies, a Model Policy and case studies report on ICT-generated e-waste in the Arab Region will be developed and expected to be delivered by mid of December 2016.
* A regional study on Regulatory Framework of ICTs for the transition to smart and sustainable development in Arab Region will be conducted and delivered by mid of Dec 2016. The study aims to formulate a Model of Regulatory Framework using Telecom/ICT for the transition to smart and sustainable development in Arab Region.
* To support countries develop their own national telecommunications emergency plans, a Model National Emergency Telecommunication Plan for the Arab Region will be developed and delivered by mid of December 2016.

##### ARB RI 4: Smart learning

* Awareness was raised on smart learning issues among the 200 participants who attended the ITU/Arab League Educational, Cultural and Scientific Organization (ALECSO) Smart Learning Forum on 14-16 December 2015, hosted by the United Arab Emirates (UAE) Telecommunication Regulatory Authority (TRA) in collaboration with Intel and Millennium@EDU.
* A series of four capacity building workshops will be organized over two years with the purpose of building the capacity of around 30 policy makers and planners in the education and ICT sectors in the countries of the Arab region. These workshops will be developed through a cooperation agreement signed with the UAE TRA designed to build the capacity of governments in the Arab region in the field of Smart Learning.
* An advanced draft set of guidelines aimed at assisting policy-makers in the Arab region in formulating their national strategies on smart learning was presented in the ITU/ALECSO Smart Learning Forum held in Dubai from 14 to 16 December 2015.
* The opportunities and challenges of transforming a selected number of schools to smart learning, particularly in less developed countries, were identified in a pilot project on smart learning conducted with the Palestinian Ministry of ICT.
* Start preparations for a high-level conference on Smart Learning to take place in the third quarter of 2017, the aim being to adopt a regional action plan on smart learning.
* Raised awareness on the opportunities and challenges of digital transformation in a forum organized in Rabat, Morocco, from 8 to 10 November 2016 in collaboration with Intel.

##### ARB RI 5: Ensuring access to telecommunications/ICTs, in particular for persons with disabilities

* Awareness was raised among nearly 200 participants on the importance of ICT accessibility for persons with disabilities and the goals of the regional initiative to promote buy in, seek comments and adopt the implementation framework during the kickoff workshop for the Arab Regional Initiative on ICT Accessibility held in Cairo, Egypt on 20-21 April 2015.
* In an effort to support countries in the Arab region to develop their own national policies, the ITU Model ICT Accessibility Policy Report was translated and published in Arabic for all 22 Member States from the region.
* In an effort to support regional organizations in their efforts to hold events (meetings, workshops, conferences, etc.) that are accessible for persons with disabilities, an advanced draft of a manual on ICT accessibility in meetings, workshops and conferences was developed and presented in the 5th ICT Accessibility Conference organized by ALECSO from 21 to 23 December 2015 in Marrakech, Morocco.
* Countries in the region will be assisted in promoting innovations in ICT accessibility for persons with disabilities in a regional innovation centre on ICT Accessibility that will be established through a project that was signed by the Ministry of Communication and Information Technology of Egypt on the 27 November 2016.
* Supported Egypt to formulate its national policy on ICT Accessibility to create an enabling environment for ICT accessibility for persons with disabilities in Egypt and encouraged other countries in the Arab region to follow suit by showcasing Egypt’s transformed national policy framework in this domain.

#### ASIA-PACIFIC REGION

##### ASP RI 1: Special consideration for least developed countries, small island developing states, including Pacific island countries, and landlocked developing countries

* The first ITU Asia-Pacific Regional Initiative (ASP RI 1) calls for special consideration for Least Developed Countries (LDC), Small Island Developing States (SIDS), including Pacific land countries, and Landlocked Developing Countries (LLDC), in order to meet their priority ICT requirements. A number of these activities were supported through projects such as those supported by the Department of Communications and the Arts (Australia).
* In a partnership between ITU and the Republic of Korea’s Ministry of Science, ICT and Future Planning (MSIP), assistance was provided to the Asia-Pacific region to support some members establish their Spectrum Management Master Plans (covered in detail under ASP RI 3 below).
* The project to further develop the Spectrum Management System for Developing Countries (SMS4DC) started in 2014 with support also from MSIP. During the first quarter of 2014, more than 10 countries were assisted with higher resolution terrain data and a time-limited version for testing the software.
* Capacity building training on SMS4DC was provided from 11 to 21 August 2014 to Samoa, Solomon Islands, Timor-Leste, Tonga and Vanuatu which currently use the System to manage their national spectrum.
* Following the release of the latest version (SMS4DC v.5) in 2015, and request received from Kiribati, additional training was provided in February 2016 for 22 participants from 10 member states and also enhanced capacities in these countries in the field of spectrum management.
* Direct Country Action for Lao P.D.R. on Tariff Policy and Regulation with draft tariff regulation was prepared and, from 2014 to 2016, at least 8 Ministry of Posts and Telecommunications (MPT) staff were involved in the work of the expert benefiting from relevant knowledge transfer.
* Direct country assistance was provided to BICMA, Bhutan, on measurement of EMF radiations from mobile and broadcasting stations and drafting Standard Operating Procedures (2016).
* In 2014, ITU carried out review on Competition Regulation and review of Universal Service Fund (USF) mechanism for the ICT sector for Bhutan InfoCom and Media Authority (BICMA), Bhutan.
* Capacity building for 5 experts from (Afghanistan Computer Emergency Response Team (AfCERT), Afghanistan on EC-Council Information Security was provided under a Bootcamp Program in November 2014.
* Timor-Leste benefited from a licensing framework and a sector development strategy, Internet Exchange and converged regulatory framework in 2014, 2015 and 2016, respectively, the latter based on a post-liberalization review.
* ITU developed National ICT Statistics and Indicators Framework in 2014 and a Cybersecurity Policy in 2015 for Lao P.D.R. to foster an ICT enabling environment.
* For Myanmar, ITU supported the development of Telecommunication Regulatory Dispute Resolution approach in 2014 and a National ICT Statistics and Indicators Framework in 2016.
* Licensing Rules and Regulations were developed for Cambodia in 2014, enhancing Cambodia’s telecommunication regulatory environment and institutional capacity in the area of licensing.
* ITU- Pakistan Telecommunication Authority (PTA) Regulatory Training on Licensing and service regulation benefited 20 trainees from Telecommunications Regulatory Authorities from Afghanistan and from Pakistan from 20 to 23 July 2015.
* Assistance was provided to Mongolia on regulatory and technical matters such as satellite coordination & planning in 2014, transit traffic planning (2015), IPv6 (2015), licensing (2015) and mobile in 2015 that enhanced the capacity of stakeholders in Mongolia to improve the enabling environment.
* In November 2015, capacity building benefited 50 participants from 9 Pacific Member States through the ITU Asia-Pacific Centre of Excellence (CoE) training on Telecom Strategy for the Pacific – The Next 5 Years. This was carried out in partnership with Pacific Islands Telecommunication Association (PITA) and Department of Communications and the Arts (Australia) and of the Internet Training Centre in Samoa through a train-the-trainer program.
* The ITU developed National Cybersecurity strategy for Nepal from 4 to 8 August 2016 enhancing awareness and capacity building of about 100 government, regulatory and private stakeholders and also demonstrated successful cybersecurity simulation, and enhanced cooperation with the Nepal Telecommunication Authority (NTA) for continued work on cybercrime legislation with potential funding by them
* In addition, the ITU developed Compliance Testing of Mobile Base Stations and Broadcast stations for InfoCom and Media Authority (BICMA), Bhutan in 2016.
* ITU-Pakistan Telecommunication Authority (PTA)-Information Communication Technology Institute (ICTI) Training on Mobile Application Development was delivered for Afghanistan in February 2016 in order to enhance capacity in this field.
* Within the Pacific Regional Project Framework on the Development of Satellite Communications Capacity and Emergency Communications Solutions for the Pacific Islands, cooperation agreements were signed with 11 Pacific Islands Members as beneficiaries. The project has a climate change adaptation component with the Master Service Agreement being finalized with Intelsat for its implementation as of August 2016.The enabling environment for ICT applications was improved through development of e-agriculture strategy (E-Renewable Natural Resources (E-RNR) master plan) for Bhutan in [2015-2016] and assistance is ongoing to Fiji (2016) and Papua New Guinea (2016).

##### ASP RI 2: Emergency telecommunications

* The Moveable, Deployable, ICT Resources Unit (MDRU) Project was initiated in 2014 after Typhoon Yolanda ravaged the Philippines in 2013. The Project, implemented in partnership with Japan’s Ministry of Internal Affairs and Communications (MIC), the Department of Science and Technology ICT Office (DOST-ICTO) of the Philippines and ITU, was launched and handed over to the Philippines DOST-ICTO in February 2015 enhancing the capacity and readiness of the country on disaster preparedness. Other partners engaged in the MDRU project include Nippon Telegraph and Telephone Corporation (NTT) Japan and The Central Visayas Information Sharing Network Foundation, Inc. (CVISNet) of the Philippines. The MDRU Project has the capability to be replicated not only in other municipalities in the Philippines, but also in other Member States, if required. MIC, Japan is currently developing future GSM/LTE models for ease of deployment.
* From 2014 to 2016, the ITU has continued to support the region during disaster situations with the appropriate and timely deployment of satellite communications equipment. Equipment deployed during these emergency situations include: satellite phones, B-GAN satellite terminals, very small aperture terminals (VSATs) and QUALCOMM Deployable Base Stations. In this sense, assistance was provided to the Philippines following Super Typhoon Yolanda (Cat 5) in November 2013 and Typhoon Ruby (Cat 3) in December 2014; Vanuatu following Severe Tropical Cyclone Pam (Cat 5) in March 2015; the Federated States of Micronesia following Super Typhoon Maysak (Cat 5) in April 2015; 8.0 Earthquake in Nepal in May 2015; severe flooding in Myanmar in July/August 2015 and Fiji following Severe Tropical Cyclone Winston (Cat 5) in February 2016.
* The ITU provided technical assistance to Nepal and enhanced capacity in emergency preparedness by developing the Nepal Emergency Telecommunication Continuity Management System (NETCOMS) in 2015.
* Assistance to Autoridade Nacional de Communicações (ANC), Timor-Leste, in the development of their Emergency Communications Plan was provided in 2015.
* ITU made substance contributions to the Asia Broadcasting Union (ABU) Media Summit on Climate Change, ICTs and Disaster Risk Reduction June 2014, in Jakarta, and to the 6th Asia Pacific Telecommunity (APT) Workshop on Disaster Management/Communications (WDMC-6) in July 2015 in Nadi, Fiji, through sharing of information on the ITU standardization, development activities on the issues and emergency response in the ASP region, as well as a presentation and contribution to discussion at the Emergency Telecommunications Cluster Workshop held in Samoa in July 2016.
* The region has seen improved capacity and awareness of its Member States in addressing issues pertaining to emergency telecommunications through various activities, including: “Direct country assistance in sharing “Best Practices on Emergency Communications” and in a study carried out in a report “Accessible ICTs for Persons with Disabilities : Addressing Preparedness” 2014, in India.
* Direct country assistance to MOIT, Pakistan, in drafting Pakistan Emergency Telecommunication Regulatory Framework (PETRF) in 2016.

##### ASP RI 3: Harnessing the benefits of new technologies

* The ITU developed Spectrum Management Master Plans for Bangladesh, Brunei Darussalam and Fiji in partnership with Ministry of Science, ICT and Future Planning (MSIP), Republic of Korea, in 2014 and 2015. In 2015 and 2016, Pakistan, Samoa and Thailand are also being supported through additional funding received from MSIP in 2015.
* Twenty-four Member States in the region have since been assisted in developing their national road maps for the transition from analogue to digital terrestrial television broadcasting: Afghanistan, Bangladesh, Bhutan, Cambodia, Fiji, Indonesia, Kiribati, Lao P.D.R., the Maldives, Micronesia, Mongolia, Myanmar, Nepal (Republic of), Nauru, Papua New Guinea, the Philippines, Samoa, Solomon Islands, Sri Lanka, Thailand, Tonga, Timor-Leste, Vanuatu and Viet Nam. This was made possible with the support of the Ministry of Science, ICT and future Planning (MSIP), Korea, Ministry of Internal Affairs and Communication (MIC), Japan, and the Department of Communications and the Arts (DoCA), Australia and ITU’s operational programmes. The ITU is also working closely with the ABU and the Asia-Pacific Institute for Broadcasting Development (AIBD) in this area.
* Guidelines on the transition from analogue to digital terrestrial television broadcasting have been updated in 2014 which have benefited the membership of ITU. Case studies on digital terrestrial television broadcasting implementation have been completed on Australia, Japan, and Thailand between 2013 and 2015. A report has also been written on “Interactive Multimedia Services in Asia Pacific: Trends and Insights” (2014-2015) to increase the awareness on the deployment of new technologies on the broadcasting sector in the Asia-Pacific.
* From 2014 to 2016, ITU also implemented a number of projects that included digital broadcasting (television and radio) with the National Broadcasting and Telecommunications Commission of Thailand (NBTC). The projects, whilst focused on Thailand, have also benefited countries in the Asia-Pacific region.
* Analogue Switch Off (ASO) and Digital Terrestrial Television Broadcasting (DTTB) Regulations were reviewed for Papua New Guinea in August 2015.
* The ITU also reviewed the road map and status of Analogue Switch Off (ASO) and Digital Terrestrial Television Broadcasting (DTTB) Plan for the Philippines, in October 2015. Under the current plan, the Philippines is targeting 2020 for its implementation.
* Fiji implemented its Digital Terrestrial TV Broadcast through a national trial on 1 August 2016. ITU assisted in the development of Fiji’s DTTB Transition road map. Analogue Switch Off (ASO) is targeted by 2017.
* In partnership with ABU and AIBD, the 4th Regional workshop on OTT and IBB technologies and services for media built awareness of around 60 participants from 20 countries in this area.
* In 2014, support was provided to Vanuatu in the updating of the National Table for Frequency Allocations. Capacity building assistance was also provided to Bhutan in 2015 to review the National Spectrum Management for efficient resource utilization through delivery of a national workshop attended by 26 participants from 12 organizations.
* Improved framework and capability for conformity and interoperability and type approvals was provided to several countries in the region through the following actions:
* Review meeting on the Type Approval Regime was carried out for Mongolia, in January 2015, in Ulaanbaatar. It was attended by 30 participants
* Support was provided to Asia Pacific Telecommunity (APT) in their Conformance & Interoperability (C&I) programs in September and October 2015 targeting ITU membership (38 countries) in the region.
* Enhanced the capability of policy makers, regulators and industry on IPv4 to IPv6 transition and related infrastructure security through country actions, which was delivered to Lao P.D.R. (2014), Mongolia (2015) and Cambodia (2016).
* From 2014 to 2015, enhanced awareness on new technologies was provided through the following seminars and forums:
* The ITU - ASEAN (Association of Southeast Asian Nations) Forum on Over-the-Top (OTT) carried out in December 2015, with the participation of 60 delegates from 12 countries;
* Forum on Positive Use of Internet and Social Media in Public Service carried out in December 2014, in Jakarta, Indonesia), in partnership with ASEAN and Malaysian Communication and Multimedia Commission (MCMC), with 45 participants from the ASEAN countries;
* ITU Asia-Pacific Regional Seminar on IMT towards 2020 and beyond - Technology and Spectrum delivered in February2014, in Viet Nam was attended by 156 participants from 24 Member States (16 ITU Member States from Asia-Pacific Region, 8 ITU Member states from outside Asia-Pacific Region) and several worldwide ITU recognized operating agencies and Scientific or Industrial organizations;
* Regional workshop to enhance digital terrestrial television broadcasting experience, was delivered in May 2015, in Malaysia, in collaboration with Asia-Pacific Institute for Broadcasting Development (AIBD) and ABU, benefiting 45 participants from 20 countries;
* Pacific Media Partnership Conference, Partnering for Broadcasting was held in August 2015, in Samoa, in collaboration with ABU was attended by over 50 participants;
* Asia-Pacific Regional Workshop on Satellite Coordination with ITU Radiocommunication Bureau (BR) was held in 2015 and attended by 70 participants from 20 countries;
* Asia-Pacific Regional Forum on e-Government and Smart cities was held in Bangkok, Thailand, in August 2015 which was attended by about 333 participants from 39 countries.
* From 2014 to 2016, members were assisted members in the development of applications and cloud computing through:
* Assessment and Potential Use of Mobile Applications in Health Sector of Bangladesh (2014).
* National workshop on cloud computing, Colombo, Sri Lanka (July, 2015) enhancing the capacity of 60 participants from government, regulator, industry and academia.
* Tailored training to build capacity and skill set on mobile application development and mobile mediated solutions for 8 trainees from the Information Communication Technology Institute (ICTI) Afghanistan, in February 2016. The training was facilitated by Pakistan Telecommunication Authority (PTA), Pakistan.
* Enhanced capability of 38 participants from 4 countries (in 2015, Nonthaburi, Thailand) in Green ICTs and E-Waste through development of training material and conducting training in the areas ofSmart Sustainable Cities, Green ICTs and Smart Grids.
* Enabling efficiency in energy management through ICTs built capacity of over 50 participants from Pakistan from 10-14 November 2014, Islamabad, Pakistan and a report was prepared for the Ministry of Information and Technology, Pakistan.
* In partnership with the Food and Agriculture Organization (FAO), the ITU enhanced the capability of FAO and ITU members and stakeholders in agriculture to use ICTs for agriculture in a strategic manner. To this effect FAO and ITU developed a National e-agriculture strategy guide to assist countries in developing their own national strategies (2014-2016). Assistance was also provided to develop E-RNR Master Plan for Bhutan (2015-2016) and National E-agriculture Strategy for Sri Lanka (2015-2016). Several new partners (e.g., Technical Centre for Agricultural and Rural Cooperation (CTA), CAB International (CABI)) have been engaged in this area since 2014.
* In 2015, capacity was also built for 20 participants from policy makers, regulators and industry in Mongolia, in the area of Internet transit traffic planning.
* Assistance was provided to Lao P.D.R, Mongolia and Cambodia in the area of IPv6 deployment. In this endeavour, partners from national governments, APNIC and the Government of Australia provided support.
* Built capacity of participants from government, regulators and industry, through various trainings, in the following areas:
* Digital Broadcasting Technologies and Implementation (77 participants from 16 countries, February 2014, New Delhi, India).
* Wireless Security Practices for Policy Makers and Regulators (18 participants from 13 countries, March/April 2014, ITU Academy online).
* Smart Technologies and Services in LTE‐Advanced Era (26 participants from 10 countries, May 2014, Busan, Republic of Korea).
* IPv6 Infrastructure Security for Telecom Networks (32 participants from 8 countries, June/July 2014; 29 participants, June 2015, Nonthaburi, Thailand; 42 participants from 10 countries, May 2016, Nonthaburi, Thailand).
* Spectrum Monitoring (42 participants from 14 countries, August 2015, Beijing, China).
* Interactive Multimedia Services and Pay TV (65 participants from 6 countries, September, Hanoi, Vietnam).
* Mobile Cloud Computing Applications on Developing Value Added Services 73 participants from 7 countries, September 2014, Hanoi, Vietnam).
* Cloud Forensics and Security (31 participants from 9 countries, November 2014, Nonthaburi, Thailand).
* Satellite Network Registration Procedures and International Regulations with BR (66 participants from 25 countries, June 2015, ITU Academy Online) under the ITU Asia-Pacific Centers of Excellence together with centers and partners.
* Broadband Access Network Planning (9 participants from 4 countries, October 2015, Ghaziabad, India).
* Conformity and Interoperability (15 participants from 7 countries, October 2015, Beijing, China).
* Broadband Quality of Service (51 participants from 7 countries, October 2015, Bangkok).
* Developing the ICT ecosystem to harness Internet of Things (46 participants, December 2016).
* Improved skills and enhanced awareness related to cybersecurity and child on line protection (COP), through trainings and events:
* 30 staff from national Computer Emergency Response Teams (CERT) of Cambodia, Lao P.D.R., Myanmar and Sri Lanka through CERT training held in Vientiane, Lao P.D.R. in 2014.
* 5 experts from Afghanistan Computer Emergency Response Team (AfCERT), Afghanistan on EC-Council Information Security, Bootcamp Program in November 2014.
* The “Cyber Incident Simulation and Conference on National Critical Infrastructure Protection” took place on 23 November 2015 in Bangkok, Thailand, in collaboration with the Ministry of Defense of Thailand, with over 200 participants.
* A study report was prepared for Nepal on cybersecurity and COP and a national workshop was organized with 60 participants.
* 30 incident responders, from 20 different Philippine government agencies, who work in the area of cyber incidence handling (March 2016).
* Children and teachers from three rural villages in Indonesia, participated in activities, in partnership with Intel Indonesia. Around 70 teachers and students from local elementary schools took part.
* Assisted in the development of the National Cybersecurity Strategy for Nepal, in August 2016 and built capacity for over 50 participants.
* Built capacity, raised awareness and strengthened engagement of participants from government, regulators and industry in the following areas:
* Training on the development of a telecom sector strategy for the Pacific. A draft road map was developed. The training targeted senior management, which also increased their awareness on a telecom strategy for the Pacific for the next 5 years. More than 50 participants from 9 countries took part in November 2015, in Nadi, Fiji.
* Direct country assistance was provided to the Communications Regulatory Authority of Maldives on Affordable Access to Internet (2015.) where capacity was built for over 20 participants.
* NGN Project Planning and Costing (23 participants from 6 countries, February 2016, Ghaziabad, India).
* Strengthened engagement of partners in India, in the area of mHealth, through discussions with key stakeholders. An mHealth Stakeholder and Partners Meeting was organized on 6 April 2016, in New Delhi, India, to garner support, which was attended by 40 participants from the Ministry of Health and Family Welfare, the Ministry of Communications & Information Technology, Telecom Regulatory Authority of India, National Standardization Organization (TEC), National Health Portal, insurance companies, telecom service providers, hospitals, ITU APT Foundation, Advanced Level Telecom Training Centre (ALTTC) (ASP CoE), Academia, experts, WHO and ITU.
* Training on Spectrum Management and Monitoring (45 participants from 14 countries, Chengdu, China).
* Online training C&I for PTN, Mobile Terminal and EMC (52 participants from 15 countries).
* Conformity and Interoperability for IP Multimedia Subsystem (IMS) and fourth Generation-Long Term Evolution (4G-LTE) (39 participants from 10 countries, October, 2016).
* Improved cybersecurity framework in Thailand, by conducting an assessment on cybersecurity and critical infrastructure protection in Thailand, in collaboration with the Global Cyber Security Capacity Centre, Oxford University and NBTC Thailand.
* Training for 17 participants, to develop a postal e-strategies in partnership with *Asian-Pacific Postal Union* (APPU) in June 2016, in Bangkok, Thailand.
* Improved awareness on Smart Cities and e-Government by organizing the 2nd Asia-Pacific Regional Forum on Smart Sustainable Cities and e-Government on 30 August to 1 September 2016 in Phuket, Thailand.
* An E-agriculture Solutions Forum was organized on August 2016, in Nonthaburi, Bangkok, with the purpose to establish a community of e-agriculture solution providers and enhance the engagement amongst ICT and Agriculture community in Asia-Pacific. The Forum raised awareness of 120 participants from 29 countries in the area of e-agriculture. It also enhanced the engagement with policy-makers, regulators and industry from agriculture and ICT sectors.
* Trained stakeholders in developing national e-agriculture strategies, through train-the-trainer program jointly with FAO (1-2 September 2016, Nonthaburi, Thailand).

##### ASP RI 4: Development of broadband access and adoption of broadband

* National Broadband Policies were prepared for Bhutan (2012-2014, 2015), Brunei Darussalam (2013-2014), Marshall Islands (2014), the Philippines (2014) and Vanuatu (2014), Cambodia (2016) and Sri Lanka (2016). Brunei Darussalam adopted their policy in 2015.
* Enhanced knowledge on broadband infrastructure by improving the On-line interactive transmission map for the Asia-Pacific region, in collaboration with United Nation Economic and Social Commission for Asia and the Pacific (UNESCAP).
* Study on national broadband policies for Smartly Digital Asia-Pacific-2020, and Affordable access to the Internet, and a Broadband feasibility Study Report which was presented to the Papua New Guinea National Information and Communication Technology Authority (NICTA), in 2015.
* Enhanced awareness on improving access to broadband infrastructure, applications and services through the following events:
* The Asia-Pacific Regional Forum on “Universal Access and Service and Broadband Deployment 2015” was held in Bangkok, Thailand from 25-27 March 2015 and attended by over 250 participants.
* The “Digital Societies Policy Forum” was held from 27-29 April 2016 in Bangkok, Thailand, and attended by over 150 participants from 20 countries.
* The Asia-Pacific Regional Forum on “e-Government, Smart Cities, and Digital Societies for Sustainable Development” was held in Bangkok, Thailand from 19-20 August 2015 and attended by over 200 participants.
* The ITU Asia-Pacific Regional Forum on “Reshaping Policy and Regulatory Landscape for Accelerating Broadband Access” was held in Jakarta, Indonesia in September 2015 and was attended by 115 participants from 19 countries in the region and beyond.
* In addition, the following trainings were organized to build capacity in different areas:
* “Broadband Policy for Universal Access” (51 participants from 30 countries, 27 January-23 February, 2014, ITU Academy Online).
* “Smart Sustainable Cities”, jointly by ITU-T & ITU-D (50 participants from 11 countries, 29 Sep-2 Oct 2014, Bangkok, and, 107 participants, from 12 countries, and in India from 24-26 March 2015).
* “Wireless Broadband Roadmap Development” (55 participants, from 9 countries, 6-9 August 2016, Tehran, Iran).
* “Quadplay: Costing and Pricing Infrastructure Access” (around 60 participants from 14 countries, 15-19 August 2016, Bangkok, Thailand.)
* Online training on broadband access technologies (November-December 2016).

##### ASP RI 5: Policy and regulation

* National telecommunication and ICT policy and regulatory and legislative frameworks have been strengthened through direct country actions in the areas of:
* A draft Amended Telecommunications Law was developed for the Philippines in 2015.
* A document on tariff policy and regulation was prepared for Lao P.D.R. Eight Ministry of Posts and Telecommunications (MPT) staff members worked with the expert, which allowed the transfer of knowledge.
* A licensing framework (2014), a post-liberalization review and sector development strategy (2015) and converged regulation framework (2016) were developed for Timor-Leste.
* A National ICT Statistics and Indicators Framework (2014), a Numbering Plan (2015) and a Cybersecurity Policy (2015) and Tariff Regulations (2016) were developed for Lao P.D.R.
* A Telecommunication Regulatory Dispute Resolution (2014) and a National ICT Statistics and Indicators Framework (2016) were developed for Myanmar.
* Direct country action on licensing was provided to Cambodia in 2014 which developed draft Licensing Rules for Cambodia. In addition, 30 staff from different ministries related to the issue, benefited from capacity building.
* Countries also improved their regulatory frameworks through direct assistances in the areas of:
* A detailed report on policy and regulatory aspects was provided to Mongolia (2014) for introduction of Next Generation Mobile Networks in the country.
* Direct country assistance on Interconnection cost modeling for Communications Regulatory Authority of Iran (2014).
* Guidelines were prepared for the Nepal Telecommunications Authority, Nepal (2014) on how to foster growth of telecom sector.
* Awareness of telecom sector stakeholders in general and the regulator in particular was enhanced through expert assistance to Mongolia on Unified Licensing (Mongolia-2015).
* Numbering Plan and Introduction of Number Portability (Timor-Leste-2015).
* Direct country assistance on developing a study report on “.mv - Domain Name Management and Operation”, provided to the Communications Authority of Maldives in Male, Maldives, from 3-7 April 2016.
* Strengthened national frameworks and raised awareness for more than 90 participants through a symposium in the area of smart sustainable cities (TRAI-ITU Symposium on ICT Regulatory challenges in Indian Smart Cities, March 2015).
* Enhanced and exchanged information on regulatory matters, through top-level regulatory dialogue at the following events:
* The “Asia-Pacific Regulators Round Table” in 2014 (Australia), with 55 participants from 24 countries; 2015 (Malaysia) with 52 participants from 19 countries; 2016 (Pakistan) with 48 participants from 17 countries.
* The “International Training Program” in 2014 (Australia), 56 participants from 26 countries; 2015 (Malaysia), 62 participants from 18 countries; 2016 (Pakistan) with 66 participants from 18 countries.
* ITU-IDA Executive Training Programme, Singapore (in 2014 with 25 participants, from 14 countries and in 2015 with 22 senior delegates from 10 countries and 26 participants from 22 countries in 2016).
* ITU and the Malaysian Communication and Multimedia Commission (MCMC) co-organized the Asia-Pacific Regional Forum for Telecommunication/ICT and Financial Regulators on Digital Financial Inclusion” (August 2015, Kuala Lumpur, Malaysia), supported by the Ministry of Communications and Multimedia, Malaysia (KKMM), the Department of Communications and the Arts (DoCA) of Australia and the Bill and Melinda Gates Foundation. More than 70 delegates, from 17 countries participating in the Forum.
* Enhanced awareness for Chinese policy makers, through the following annual ITU Ministry of Industry and Information Technology (MIIT), China seminars:
* 2014 - “Broadband Development and Innovation using Internet”, 30 June-1 July 2014 in Yinchuan, China.
* 2015 - “ICT Development in Internet+ Age”, from 30 June-1 July 2015, in Harbin, China, with more than 100 participants.
* 2016 – “Regulation in the New Era”, from 14-15 July 2016, in Chongqing, China, with more than 150 participants.
* Improved policy and regulatory skills of participants from government, regulator, industry and academia in the areas such as:
* “Strategic Costing and Business Planning for Quadplay” training, with 60 participants from 18 countries, from 13-22 August 2014, in Bangkok, Thailand.
* “Strategic Costing and Convergence Planning for the Pacific” training, with 16 participants from 5 countries, from 6-10 October 2014, in Suva, Fiji).
* On-Line Training “Broadband Quality of Service-Regulatory Perspective”, with 26 participants from 17 countries; 25 November to 19 December 2014.
* 2014 “ICT Indicators in Statistics” workshop for ASEAN and Pacific Island countries, with 80 participants, from 20 countries.
* “ITU-PTA Regulatory Training on Licensing and service regulation” for trainees from Afghanistan Telecommunication Regulatory Authority (ATRA), Afghanistan and Islamabad, which took place in Pakistan, from 20-23 July 2015.
* A review was prepared on licensing regime for Sri Lanka (2015-2016).
* Improved collaboration with the Asia-Pacific Telecommunity (regional telecommunication organization) by partnering through the following activities:
* A seminar on “Spectrum Management and Terrestrial TV Broadcast in Pacific” was organized in Nadi, Fiji on 10th July 2015. This was preceded by a training program on “Radio Spectrum Management and Services in Pacific” organized by APT in collaboration with ITU from 6-9 July 2015. 34 participants representing ten ITU Pacific island member administrations, 2 regional organizations (APT and PITA), 3 ITU member countries from outside pacific region and 4 ICT industry organizations.
* ITU built capacity in the area of preparing participants for ICT international conferences in general and APT and ITU in particular through a two-stage training (8-19 February .2016 online and 28-31 March 2016 face-to-face). Around 50 participants joined the online course, out of which 28 participants joined the face to face training.
* Other actions to strengthen national frameworks included:
* Direct country assistance in ICT sector growth for Nepal (Republic of), enabling efficiency in energy management through ICTs (Pakistan), licensing (Cambodia and Timor-Leste), national ICT indicators and statistics framework (Lao P.D.R.), telecommunication regulatory dispute resolution (Myanmar), improving interoperability framework (Mongolia), e-agriculture (Bhutan, Fiji, PNG, Sri Lanka), competition framework (Bhutan), improved awareness and skills towards the deployment of IPv6 (Lao P.D.R., Cambodia, Mongolia).
* Future assistance is planned for the Islamic Republic of Iran.
* Additionally the outcomes of the WRC-15 were communicated in 2016 through multiple regional, sub-regional and national workshops, to ensure the harmonization of spectrum usage.

#### CIS REGION

##### CIS RI 1: Creating a child online protection centre for the CIS region

* The CIS RI 1 is being implemented in partnership with the A.S. Popov Odessa National Academy of Telecommunications (A.S. Popov ONAT), an ITU-D Sector Member and with support of the Communication Administration of Ukraine.
* Developed a multimedia distance-learning course on the Safe Use of Internet Resources. The course is organized in 3 modules: basic (for preschoolers and primary school pupils), intermediate (for pupils on their 5-9 years) and advanced (for senior schoolers, informatics teachers and parents). The course is available in Russian at <https://onlinesafety.info> and on DVD. The project implemented by A.S. Popov ONAT on creation of multimedia distance-learning course on the Safe Use of Internet Resources was recognized as WSIS Prize 2016 champion in the nomination of Building confidence and security in the use of ICTs.
* The course was presented in Odessa, Ukraine and Bishkek, Kyrgyz Republic in December 2015 with the participation of over 200 school directors. It was also presented at a roundtable in Bishkek, Kyrgyz Republic on 9 December 2015 with participation of ITU, UNESCO, government officials, the private sector and academia.
* During the 2016 summer school holidays, A.S. Popov ONAT organized a series of lectures for children, who were attending summer camps in Odessa. The lectures explained existing threats for children on the Internet and different ways to avoid these threats. The lectures were very interactive and attracted the participation of over 100 children.
* During the first 6 months since its launch in December 2015, more than 13,500 users from over 60 countries of the world viewed the course and more than 4,400 certificates of course completion were issued. Project outcomes are being continuously promoted at ITU-D Study Groups, Council Working Group on COP and at ITU regional events in the CIS. Information letters describing the course have also been sent to Ministers of ICT in the CIS countries and to Ministers of education of the CIS countries (by UNESCO).
* Other outcomes within the scope of CIS RI 1 include the development of a database to store data on technical solutions for child online protection and software for choosing optimal technical solution. More than 70 existing technical solutions for child online protection were tested by experts and included into this database. The software and database is available in Russian at <https://contentfiltering.info>
* Development of an automated distribution system of "black" (unsafe) and "white" (reliable) lists of Internet resources. The system includes modules for administrators, experts and users and can be used by educational institutions, telecommunication operators and other interested stakeholders. The system was filled by internet resources and templates, which are specific for the CIS countries. The system is available in Russian at <http://bwld.online>
* On the basis of CIS RI1 outcomes A.S. Popov ONAT organized mini-performance in a kindergarten for around 20 preschoolers teaching them how to stay safe on the Internet (Odessa, Ukraine, 9 February 2016). During the month of February, 2016, a series of lectures about Safety in the Internet were provided to children, in more than 100 schools of the Odessa Region.
* The outcomes of the CIS RI 1 were shared at a meeting with the Chair of the Government of the Republic of Sakha (Russian Federation), Ms. Galina Danchikova. This meeting, which took place on 17 August 2016 within the scope of the Lensky Education Forum in Yakutia, was also attended by several other high-level government officials. The government of the Republic of Sakha is interested in using the RI outcomes and in a future cooperation with ITU.
* The CIS RI 1 implementation was completed in August 2016.

##### CIS RI 2: Ensuring access to telecommunication/ICT services for persons with disabilities

* CIS RI 2 is being implemented in partnership with:
* Belarussian State Academy of Communications, with the support of the Communication Administrations of the Republic of Belarus;
* Institute of Electronics and Telecommunications (IET) under Kyrgyz State Technical University named after Iskhak Razzakov, an ITU-D Sector Member, with the support of the Communication Administrations of the Kyrgyz Republic;
* Ministry of Information Technology and Communications of Moldova;
* Government of the Republic Sakha, with the support of the Communication Administrations of the Russian Federation;
* UNESCO Institute for Information Technologies in Education, Moscow, Russian Federation (IITE UNESCO).
* Established an Information and Training Centre for Persons with Disabilities in Kyrgyz Republic on the basis of IET. The Centre was opened on 22 October 2015 and it provides six working places for motor impaired users and six for visually impaired users. The centre provides all necessary conditions for the continuation of school education and mastering different professions for persons with disabilities. The opening ceremony was attended by the Vice Prime-Minister, Minister of Education, Parliament Members and other senior government officials of the Kyrgyz Republic.
* Following the success of the operation of the centre, ITU supported in 2016 an upgrade in the centre, adding four more working places: two for persons with hearing impairments and two for persons with speech impairments.
* The project on creation of Internet Access and Training Centre for Persons with Disabilities in Bishkek was recognized as WSIS Prize 2016 champion in the nomination of Access to Information and Knowledge.
* In order to create the human capacity required to train persons with disabilities in the established Internet Access and Training Centre, ITU in cooperation with IITE UNESCO and IET, conducted training on 8 October 2015 and a seminar from 7 to 8 December 2015 to teach staff of the IET which attracted 35 participants.
* Project outcomes and next steps were discussed at a roundtable in Bishkek, Kyrgyz Republic on 9 December 2015, which attracted representatives from regulators, policy makers, academia and civil society from 5 CIS countries, as well as representatives from UNESCO.
* Established in November 2015, an Internet Access and Training Centre for the visually impaired (3 working places) in the suburb of Chisinau, Moldova.
* Tested a sample of public web resources in Kyrgyz Republic, using Web Content Accessibility Guidelines (WCAG) 2.0, on accessibility for persons with disabilities.
* Designed and elaborated an information and education portal for persons with disabilities, which is being managed by IET and so far has been mostly used by the Kyrgyz Republic. It is planned that others countries in the CIS will also benefit from this portal. Prepared the methodology of adapting university curricula to the needs of persons with disabilities. Developed multimedia training resources: audio materials for visually impaired users and audio and video materials for users with musculoskeletal disorders.
* Trained government web-site developers in the area of web-accessibility. Adapted the IET web portal to the special needs of persons with disabilities. Elaborated an online testing system for visually impaired users and for users with musculoskeletal disorders. Elaborated a web portal aimed at employment assistance to persons with disabilities.
* In close cooperation with IITE UNECO, established in August 2016, in the Republic Sakha, of the Russian Federation, an Internet Access and Training Centre for users with motor and speech disabilities. The centre provides two working places for blind users, three working places for visually impaired users and five working places for users with musculoskeletal disorders and speech impairments.
* The outcomes of the CIS RI 2 were shared at a meeting with the Chair of the Government of the Republic of Sakha (Russian Federation), Ms. Galina Danchikova. This meeting, which took place on 17 August 2016 within the scope of the Lensky Education Forum in Yakutia, was also attended by several other high-level government officials. The government of the Republic of Sakha is interested in using the RI outcomes and in a future cooperation with ITU.
* Established an Internet Access and Training Centre for persons with hearing disabilities in Minsk, Belarus in September 2016. The centre provided five working places.
* CIS RI 2 implementation was completed in September 2016.

##### CIS RI 3: Introduction of training technologies and methods using telecommunications/ICTs for human capacity building

* CIS RI 3 is being implemented in partnership with:
* Institute of Electronics and Telecommunications under Kyrgyz State Technical University named after Iskhak Razzakov, an ITU-D Sector Member, with the support of the Communication Administrations of the Kyrgyz Republic.
* A.S. Popov Odessa National Academy of Telecommunications, an ITU-D Sector Member, with the support of the Communication Administration of Ukraine.
* Developed software (Automated System) for the diagnosis of human susceptibility to one or more channels of information perception. This software is being tested as a pilot by Ukraine. The software allows users to determine its predominant perception channel and provides valuable recommendations to improve the quality of its educational process with the use of ICT. The main purpose of the System is to identify the personal pupils’ qualities that affect the achievement of good results in the learning process, as well as the definition of the optimal forms and methods of supplying materials for training with the application of telecommunications/ ICT.
* A study of best practices in the use of e-learning resources was conducted and the results presented on 31 May 2016 at a roundtable meeting in Bishkek, Kyrgyz Republic, co-funded by the Tempus Programme of the European Union. An e-learning resource glossary of terms was created and posted on the IET website: [www.iet.kg](http://www.iet.kg)
* Elaboration of methodological requirements for e-learning resources. Relevant gaps in the national legislation of Kyrgyz Republic were discovered. Recommendations on the creation of an e-learning resource were drafted and published on the IET web site, to be shared with other countries in the CIS region: [www.iet.kg](http://www.iet.kg)
* The outcomes of the CIS RI 3 were shared at a meeting with the Chair of the Government of the Republic of Sakha (Russian Federation), Ms. Galina Danchikova. This meeting, which took place on 17 August 2016 within the scope of the Lensky Education Forum in Yakutia, was also attended by several other high-level government officials. The government of the Republic of Sakha is interested in using the RI outcomes and in future cooperation with ITU.
* CIS RI 3 implementation was completed in October 2016**.**

##### CIS RI 4: Development of broadband access and adoption of broadband

* In 2016, as part of the planning process, the ITU established a strategy for the implementation of the regional initiative, by identifying prospective partners for its implementation and the estimated funds required.

##### CIS RI 5: Building confidence and security in the use of telecommunications/ICTs

* CIS RI 5 is being implemented in partnership with Moscow Technical University of Communications and Informatics, with the support of the Communication Administrations of the Russian Federation*.*
* Analyzed the current situation in the CIS, in the area of building confidence and security in the use of ICTs.
* Developed recommendations containing general indications on how to evaluate the level of confidence and security in the use of ICTs, which will be shared in the future with CS countries.
* Developed training materials for lab-based Intrusion detection / prevention systems (IDS/IPS) "Forpost", including profession-oriented modules, training aids, and test materials for information security engineers.
* The implementation of the CIS RI 5 was completed in October 2016. ITU and partners will continue to support the dissemination and implementation of the CIS RI 5 outcomes, within the scope of ITU-D Operational Plan.

#### EUROPE REGION

##### EUR RI 1: Spectrum management and transition to digital broadcasting

* EUR RI 1 is being implemented in partnership with several stakeholders including the National Media and Infocommunications Authority of Hungary, the National Authority for Management and Regulation in Communications (ANCOM), Romania, Ministry of Communications and Information Society, Romania; Information and Communication Technologies Authority of Turkey, Electronic and Postal Communications Authority (AKEP), Albania; ETV and [Ministry of Trade, Tourism and Telecommunications](http://mtt.gov.rs/en/), Serbia.
* Implementation of this initiative from 2014 to 2016 resulted in strengthened regional cooperation. Human capacities in field of spectrum management and digital broadcasting were built for more than 250 professionals from more than 16 countries. Series of annual meetings on spectrum management and broadcasting were supplemented by direct assistance, twinning programmes, elaboration of benchmarks, national assessments and trainings.
* Technical specification for establishment of spectrum monitoring centre in Albania was elaborated in 2014 addressing the requirements and facilitating creation of the monitoring station.
* A regional workshop for Europe and CIS on Spectrum Management and Transition to Digital Terrestrial Television Broadcasting was held from 5 to 7 May 2015, in Budapest, Hungary, organized in collaboration with the National Media and Infocommunications Authority of Hungary, provided an unique opportunity for more than 15 European administrations to build the human capacity of more than 80 professionals, while raising awareness of digital switch-off process and exchanging best practices.
* Training on spectrum management carried out in September 2015, in Turkey, was organized in collaboration with the Information and Communication Technologies Authority of Turkey and aimed at building national capacities of more than 50 national professionals.
* Twinning programme was organized in 2016 between Albania and Hungary leading towards exchange of knowhow between countries in field of spectrum management and development of spectrum strategy.
* ITU contributed to the EMC Europe 2016 Wroclaw, International Symposium and Exhibition on Electromagnetic Compatibility (EMC), held from 5 to 9 September, 2016, in Wroclaw, Poland.
* Knowledge exchange on transition to digital broadcasting and setting up an innovative Digital Terrestrial Television (DTT) monitoring network with the aim of assessing in real time the DTT broadcasting signal’s integrity across a country was carried out in 2014, in Turkey.
* A Pan-European overview of transition from analogue to digital terrestrial broadcasting was completed in 2015 and information was provided to the ITU Digital Switchover Overview Database demonstrating global status of transition.
* Assistance to Serbia has been provided on annual basis which included an annual review of the national priorities and in 2015 provision of broadcasting equipment (gap fillers), thanks to which several municipalities were reached by digital TV.

##### EUR RI 2: Development of broadband access and adoption of broadband

* EUR RI 2 is being implemented in partnership with several stakeholders including the Office for Electronic Communications (UKE), Republic of Poland; Agency for Electronic Communications and Postal Services, Republic of Montenegro; Ministry for Information Society and Telecommunications, Montenegro; Electronic and Postal Communications Authority (AKEP), Albania; Agency for Communication Networks and Services, Slovenia; Ministry of Economic Development, Italy; Foundation Ugo Bordoni (FUB), Italy; Italian Communications Regulatory Authority (AGCOM), Italy; European Commission; Internet Society (ISOC).
* Implementation of this initiative form 2015 to 2016 resulted in strengthened regional cooperation. Human capacity in field of the development of high-speed networks in Europe of more than 1000 professionals from more than 30 countries was built. Series of physical meetings and online trainings provided an opportunity for sharing best practices across the region. In addition, bilateral cooperation was strengthened by twinning pogramme with participation of 4 countries. Specific studies and benchmarks were developed. Direct assistance was provided to some countries, e.g. establishment of a national IXP in Montenegro which led towards building regional capacities in this field.
* The Regulatory Conference for Europe on Expanding Broadband Access and Adoption was held from 28 to29 September 2015, in Budva, Montenegro, organized in collaboration with the Agency for Electronic Communications and Postal Services, Republic of Montenegro. It attracted more than 150 experts from more than 15 European countries and provided opportunities for identification most important regional challenges to be addressed through the regional initiative. It also provided an opportunity for review of the national broadband strategies as well as led towards series of concrete actions undertaken in field of Quality of Services (QoS).
* Sub-regional review of national broadband strategies and roll out plans with focus on South and Eastern Europe was carried out in 2015 and reflected information on 12 European countries.
* The Regulatory Conference for Europe on Regulation of Electronic Communications Market, held from 26 to 27 September 2016, in Budva, Montenegro, was organized in collaboration with the Agency for Electronic Communications and Postal Services, Republic of Montenegro. It attracted more than 150 experts from more than 15 European countries. Meeting provided a unique opportunity for identification of concrete steps supporting countries in their efforts of harmonization of regulation taking into account ongoing review of EU regulatory framework. Awareness was built in field of international roaming and related sub-regional actions were discussed.
* The Regional Workshop for Europe on New Issues in QoS Measuring and Monitoring was held from 25 to 26 November 2015, in Bologna, Italy. This Expert Workshop was co-organized by the ITU together with the Italian Ministry of Economic Development and hosted by the Foundation Ugo Bordoni (FUB) aiming to collect best practices in field of quality of service and experience. More than 50 experts from 12 countries provided exhaustive case studies. Workshop provided an opportunity for peer-reviewing of the new curriculum of the ITU Quality of Service Training Programme. This meeting was also an opportunity for strengthening cooperation with European Commission in field of Broadband.
* From 2015, the ITU prepared a collection of best practices on quality of services and consumer protection on the basis of input from the Member States for enhanced knowledge and information sharing.
* Since 2015 ITU has been contributing to the Steering Committee and Technical Review Panel of the European Monitoring Platform for Mapping of QoS/QoE, European Commission led project that resulted in strengthened cooperation with European Commission in field of broadband development.
* ITU-EC Regional Conference on Mapping Broadband Infrastructure and Service was held from 11 to 12 April 2016, in Warsaw, Poland, organized in partnership with Office for Electronic Communications, Poland. It attracted more than 120 professionals from 25 European countries discussing the opportunities for harmonization of national approaches related to mapping and monitoring of Quality of Services and Experience (QoS/QoE). Meeting resulted in the launching two twinning programmes.
* Twinning programme was carried out between Albania and Slovenia in field of mapping of broadband infrastructure in 2016 which resulted in development of technical specifications for setting up the infrastructure mapping system in Albania.
* Twinning programme between Albania and Poland was carried out in 2016 aiming at establishment of technical specification for setting up national monitoring system for QoS/QoE.
* From 2014 to 2016, ITU Interactive Terrestrial Transmission Maps continued to be developed reflecting information on core broadband infrastructure in more than 60% of European countries.
* ITU developed case studies for Montenegro (National IXP) and Portugal (New Legislative Paradigms) in 2015.
* A Sub-regional Workshop on Setting up National IXP was held in 2015 in Montenegro and attracted more than 100 professionals from 8 countries.
* Direct assistance was provided in the establishment of National IXP in Montenegro, operational since July 2015. Capabilities of IXP were extended in 2016 upon request of Administration, responding to the gradual increase of demand for IXP services at the national level.
* More than 10 trainings events were delivered enhancing capacity and knowledge of over 600 professionals through the ITU Network of Centres of Excellence trainings on the following subjects: next-generation networks (NGN), mobile broadband, broadband access, software quality control and testing, assess compliance of telecommunication and data communication cables and devices, strategic aspects for Internet governance and innovations in end-to-end quality of service network design.

##### EUR RI 3: Ensuring access to telecommunications/ICTs, in particular for persons with disabilities

* EUR RI 3 is being implemented in partnership with several stakeholders including the following: Ministry of Transport, Information Technology and Communications, Bulgaria; Ministry of Culture and Information of Serbia; Ministry of Trade, Tourism and Telecommunications of Serbia; United Nations Development Programme; European Commission; European Broadcasting Union; Universitat Autònoma de Barcelona (AUB); Roma Tre University; ProForma; Mercato Internazionale Audiovisivo; SUB-TI Access; International Chamber of Commerce.
* Implementation of this initiative resulted in strengthened regional cooperation of relevant stakeholders in field of accessibility and human capacity was built for more than 500 professionals from more than 30 countries. A series of physical meetings and of online trainings provided an opportunity for sharing best practices across the region while sharing advice on the policies and regulatory frameworks promoting e-accessibility, including television/ICT applications for people with disabilities. Particular attention was given to the public procurement of the accessible ICTs, where a special online course provided a unique opportunity for procurement professionals to build their capacities, while advancing relevant national e-accessibility agendas. In addition cooperation with diverse European accessibility organizations was strengthened, including European Disability Forum, European Commission, European Broadcasting Union; Global Initiative for Inclusive ICTs (G3ICT).
* ITU together with Universitat Autònoma de Barcelona (AUB) and European Commission jointly delivered a regional workshop on Smart Accessibility on Connected TV in March 2015, in Barcelona. This event gathered more than 70 relevant European stakeholders active in field of e-accessibility and resulted in the identification of top challenges for broadcasters and demonstrating possible technical solutions for broadcasting.
* ITU Experts Group Meeting on Accessibility back to back with International Symposium on Respeaking-live-subtitling-and-accessibility was carried out in June 2015, in Italy. It gathered more than 30 accessibility experts providing proposals for actions within the framework of the regional initiative. Meeting also provided peer review of the curriculum for online course on accessibility.
* ITU co-organized a conference with Mercato Internazionale Audiovisivo and SUB-TI Access on Cinema and Accessibility at the Rome International Film Festival in October 2015, in Italy, which gathered more than 70 accessibility experts, including film producers, with the aim of discussing the need of incorporation of accessibility component in the film production.
* ITU contributed to the EUROVISION / European Broadcasting Union experts’ group meeting held in October 2015, in Brussels which gathered more than 80 representatives of European broadcasters engaged in implementation of accessibility in broadcasting. The meeting resulted in strengthened coordination with European Broadcasting Union and closer cooperation, in particular on possible stocktaking exercise on accessibility in IPTV to be carried out within the framework of this regional initiative.
* Regional Conference for Europe on the Role of ICT in Development of an Inclusive Society was held in October 2015, in Serbia. Capacity was built for more than 80 accessibility professionals and representatives from relevant organizations from over 16 countries. The Conference resulted in the development of a series of recommendations for stakeholders proactively involved in implementation of accessibility solutions across the region.
* ITU Academy held online training on Public Procurement of Accessible ICTs in the period of October/November 2015 which provided an opportunity for building the capacity of more than 15 procurement professionals from 6 European countries. Upon series of requests by stakeholders, a second edition of this training has been scheduled for the end of 2016. ITU Academy will also deliver online training for broadcasters on audio description and closed caption in November 2016).
* In cooperation with the Bulgarian Post and the Ministry of Transport, Information Technology and Communication of Bulgaria, ITU implemented in 2015 the pilot project for border municipalities (Zlatograd) aiming at setting up of Wi-Fi access points, training adults with impaired vision and hearing problems and increasing digital literacy.
* More than 50 accessibility experts benefited from the knowledge exchanges on ICT Accessibility on Making ICTs Accessible and Inclusive for ALL and from the Public Procurement of Accessible ICTs which took place in April and May 2016, respectively, in Geneva. This fostered the exchange of best practices and innovative solutions in the field of e-accessibility and provided a platform for discussion on standardisation of public policies for procurement of accessible ICTs respectively.
* ITU contributed to the national workshop on accessibility in Slovenia held in December 2015, in Slovenia. It was attended by more than 80 experts from 10 countries and resulted in review of country practices in policy making related to the ICT accessibility as well as building awareness of challenges that requires action at the regional level.
* Based on the ITU report on Model ICT Accessibility Policy, a sub-regional project on ICT accessibility is being jointly developed by ITU, ProForma, relevant Ministries and UN Development Programme. It aims at targeting professionals in the field and increasing capacity in least in four European countries, including Serbia, Bosnia and Herzegovina, Montenegro and Croatia.
* ITU regional benchmark on accessibility services in IPTV is being launched in 2016 and aims at developing a unique dataset to be used for comparison of level of accessibility by traditional broadcasting systems and IPTV.

##### EUR RI 4: Building confidence and security in the use of telecommunication/ICTs

* EUR RI 4 is being implemented in partnership with the Ministry of Transport, Information Technology and Communication of Bulgaria; Agency for Electronic Communications and Postal Services, Republic of Montenegro; Ministry for Information Society and Telecommunications, Montenegro; Information and Communication Technologies Authority of Turkey; [Ministry of Trade, Tourism and Telecommunications](http://mtt.gov.rs/en/), Serbia; the European Union Agency for Network and Information Security (ENISA); Council of Europe and the Swiss Web Academy.
* Implementation of this initiative resulted in strengthened regional cooperation of relevant stakeholders in field of building trust and confidence in the use of ICTs among children and young people and human capacity was built for more than 2500 professionals. Updated Child Online Protection (COP) Guidelines served as the basis for the national campaigns supported by more than 5 countries. A series of physical meetings served as the platform for collection and exchange of best practices. Regional review of the national approaches on COP provided good reference point for discussions on regional actions and for the development of the model policy guide on COP. Special attention was given to strengthening cooperation with the European Union Agency for Network and Information Security, the European Commission and the Council of Europe.
* ITU co-organized annual International Conferences for Europe on Keeping children and young people safe online in both in 2015 and 2016, in Warsaw, Poland. These events have brought together more than 600 participants from over 20 countries, providing a platform for sharing of experiences and fostering cooperation.
* ITU co-organized annual Conferences on Central European Cybersecurity Public-Private Dialogue Platform” carried out in 2014, 2015 and 2016, in Sibiu, Romania. These have gathered over 500 cybersecurity experts, providing a unique environment for discussing challenges in field of cybersecurity including child online protection and fostering collaboration between different stakeholders, some potentially through public private partnerships.
* Since 2014 assistance on establishment or strengthening of capabilities of national CIRTs has been provided to Albania, Bosnia & Herzegovina, TFYR of Macedonia, Serbia.
* ITU ALERT International Cyber Drill Exercise for the European region was held in 2015, in Montenegro. It gathered more than 50 participants from 10 European countries, and facilitated development of human capacity of country CIRT teams.
* ITU contributed to the official kick off of the 2015 October Awareness Month organized by European Union Agency for Network and Information Security (ENISA) in Brussels. In 2016, organized special high level panel on the occasion of the 2016 October Awareness Month engaging key European partners relevant for the implementation of the regional initiative.
* ITU-ENISA Regional Cybersecurity Forum for Europe will be held in November 2016, in Sofia, Bulgaria in collaboration with Council of Europe, and aims at providing unique platform for high level discussion on regional challenges and concrete actions to building confidence in the use of ICTs.
* Upon request by the membership in 2015, the COP guidelines for parents & educators and the COP guidelines for children were updated. Updated versions of the guidelines served as the basis for a series actions carried out at the national level which included national communication campaigns on child online protection facilitated by ITU, raising awareness of the children as well as teachers and parents in some of the European countries, including Bosnia and Herzegovina, Croatia, Italy, Montenegro, Romania and Serbia.
* 2015 twinning programme between Poland and Romania facilitated transfer of materials for national campaigns to roll out in schools targeting children and teachers in both countries.
* A regional review of national approaches for child online protection in Europe has been elaborated in 2016 with particular focus on 19 Central Eastern European Countries, depicting diversity across the region and providing direction for possible actions in the future to address emerging trends.

##### EUR RI 5: Entrepreneurship, innovation and youth

* EUR RI 5 is being implemented in partnership with Ministry of Infrastructure, Transport and Networks, Greece; The Ministry of National Development, Hungary; Office for Electronic Communications, Poland; Ministry for Digital Affairs, Poland; Ministry of Trade, Tourism and Telecommunications, Serbia; Technical Chamber of Greece (TEE); Hellenic Association of Mobile Application Companies, Greece; Hellenic Association of Computer Engineers (HACE), Greece; United Nations Industrial Development Organization (UNIDO) and United Nations Conference on Trade and Development (UNCTAD).
* Implementation of this initiative resulted in strengthened regional cooperation in field of entrepreneurship and innovation. More than 700 professionals from over 25 countries took active part in diverse actions undertaken within the framework of this initiative. A series of knowledge exchanges in Hungary and Switzerland in 2015, ecosystem reviews in Greece, as well as country review in Albania in 2016 enabled the development of a unique methodology applied by ITU for the national review of the ICT centric innovation ecosystems. In addition, regional actions like Annual Digital Payment Summits co-organized by ITU and ITU Expert Group meetings on Mobile ID have been providing a unique opportunity for strengthening regional capacities on innovation in governmental transformation. Strengthened cooperation has been developed with UNIDO and UNCTAD.
* Annual innovation track was delivered at WSIS Forum in 2015 and 2016, in Geneva. It provided a platform for more than 50 stakeholders to discuss challenges, opportunities and concrete actions fostering ICT centric innovation.
* Digital Payments Summits (2015 and 2016) were co-organized by the ITU and the General Secretariat of Telecommunications &Posts of Greece, Hellenic Association of Computer Engineers, Technical Chamber of Greece, Hellenic Association of Mobile Application Companies, in Athens, Greece. Each year, it attracted more than 200 professionals engaged in building digital payment ecosystem. The event was also an opportunity to exchange views on necessary steps fostering the development of cashless environment.
* National ecosystem review was carried out in Greece in September 2015. It attracted around 70 stakeholders from Greek innovation ecosystem and provided an opportunity for taking initial stock on the strengths and weaknesses of the national ICT centric ecosystem. Building upon this result the ITU Expert Group Meeting on Entrepreneurship, Innovation and Youth, which was held in December 2015, in Greece, agreed upon the Athens Manifesto as the guiding tool for future actions on enabling environment.
* The Onsite Expert Challenge on Innovation and Entrepreneurship Ecosystem at TELECOM WORLD 2015, in October, Hungary, attracted more than 50 diverse stakeholders and provided guidance on the requirements and necessary steps for the development of ITU-ICT-Agora.
* Partnership established between ITU, UNCTAD and UNIDO led towards the development of a unique ITU methodology of the National Reviews of the ICT Centric Innovation Ecosystem carried out in Europe as well as in other regions in 2016.
* National Reviews of the ICT Centric Innovation Ecosystem were carried out in Albania in 2016 and resulted in the comprehensive study, including policy options and proposals of concrete actions for implementation at the national level. It required organization of three national workshops as well as carrying out more than 50 interviews with key stakeholders driving innovation at the national level.
* Innovation week in Albania in April 2016, supported by ITU, attracted more than 100 stakeholders from the ICT sector and benefited from the contributions of the representatives from Greece and Hungary. It provided an opportunity for development of a partnership between diverse stakeholders, while addressing outcomes and proposals of the national review.
* Expert group meeting on Mobile ID in October, 2016, in Warsaw, Poland, aims at reviewing technical solutions for implementation of mobile ID at the country level. A series of country case studies are planned to be presented and documented with the aim of developing practical guidance for administrations aiming to implement mobile ID.
* Ecosystem review in Hungary in November 2016 aims at developing taking stock of the national challenges and possible actions at the regional level to address them.

# Annex 1: Financial implementation by region

The tables and charts below provide detailed information on the 2015 budget implementation for the Operational Plan and Projects, by Region.

##### Implementation of the Operational Plan



##### Project implementation





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1. In 2014: Cyprus, Congo, Zimbabwe, Swaziland, Monaco, Angola, Fiji, Vanuatu, Comoros, Bolivia, Jordan, Palestine, Liberia; In 2015: Republic of Congo [↑](#footnote-ref-2)
2. In 2014: Tanzania, Cote D’Ivoire, Ghana; In 2015: Cyprus; In 2016: Barbados. In progress now The Gambia, Trinidad & Tobago, Jamaica, Lebanon, Burundi [↑](#footnote-ref-3)