INTERNATIONAL TELECOMMUNICATION UNION
WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE 2014

TRACKING FOUR YEARS OF ACHIEVEMENTS

IMPLEMENTING THE HYDERABAD ACTION PLAN

WTDC-2014
UNITED ARAB EMIRATES
DUBAI, 30 MARCH - 10 APRIL

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Contents

Foreword

I have great pleasure in presenting in this publication a snapshot of the programmes, projects and initiatives implemented since 2011 under the Hyderabad Action Plan (HAP) – a blueprint for the development of the telecommunication and information and communication technology (ICT) sector worldwide. HAP was adopted at the World Telecommunication Development Conference (WTDC-10), held in Hyderabad, India, in 2010, and defined the mandate of the ITU Development Sector (ITU-D) for the years 2011 to 2014.

Our Telecommunication Development Bureau was assigned five programmes to implement in the areas of information and communication infrastructure and technology development, cybersecurity, matters relating to ICT applications and IP-based networks, creating an enabling environment, capacity building and digital inclusion, not forgetting least developed countries, countries in special need, emergency telecommunications and adaptation to climate change.

Along with these programmes, 18 Questions were assigned to our two ITU-D study groups, and 28 regional initiatives were adopted – three for Europe and five each for Africa, the Americas, Arab States, Asia-Pacific, and the Commonwealth of Independent States. Member States were tasked with implementing these initiatives that range from human capacity building, broadband infrastructure development and access, digital broadcasting to emergency telecommunications and e-accessibility.

The World Telecommunication Development Conference (WTDC-14), taking place in Dubai, United Arab Emirates, from 30 March to 10 April 2014, follows regional preparatory meetings held in all six regions in 2013.

Tremendous progress has been made over the last four years in an effort to connect the world.

This snapshot view tracks some of the achievements, and is an information document intended to complement the report to WTDC-14 (Document 3) on the implementation of the Hyderabad Action Plan.

Let me take this opportunity to thank our ITU membership and our other development partners for their unwavering support. The resources they have provided made it possible for us to accompany beneficiary countries on their national journeys towards achieving equitable and sustainable development using telecommunication and ICT networks and services.

We look forward to taking up the new challenges that WTDC-14 will set for ITU-D in the Dubai Action Plan.

Brahima Sanou
Director, Telecommunication Development Bureau (BDT)
International Telecommunication Union


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21


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WTDC-10 and HAP

ITU-D, a Sector of ITU, is charged with fostering international cooperation and solidarity in the delivery of technical assistance and in the creation, development and improvement of telecommunication/ICT equipment and networks in developing countries. The Telecommunication Development Bureau (BDT) represents the operational entity of the Sector to make this happen. BDT, through its projects, programmes, studies, events and Sector Membership represents a major and accessible resource in ICT development expertise worldwide.

Strategic goals of BDT

BDT is committed to a 3-part strategic goal under the ITU Strategic Plan.

- To promote the availability of infrastructure and foster an enabling environment for telecommunication/ICT infrastructure development and its use in a safe and secure manner.
- To provide assistance to developing countries in bridging the Digital Divide by achieving broader telecommunication/ICT-related socio-economic development.
- To expand the benefits of the information society to the membership in cooperation with public and private stakeholders, and to promote the integration of the use of telecommunication/ICTs into the broader economy and society as drivers of development, innovation, well-being, growth and productivity globally.

About the Hyderabad Action Plan (HAP)

The *Hyderabad Action Plan (HAP)* was the work programme produced by the World Telecommunication Development Conference (WTDC-10) in June 2010 and mandates the international programme of BDT activities for the following four year cycle until 2014, and its successor conference, WTDC-14.

This publication highlights some of the outcomes and responses that emerged from the Hyderabad Action Plan, the programme of work 2011-2014 that the World Telecommunication Development Conference 2010 (WTDC-10) established for ITU-D.

BDT produces many resources concerned with the outputs of the HAP and the present report highlights some of the major representative themes, learnings and experiences in the HAP. Many HAP initiatives from this period continue to develop and expand.

The Hyderabad Declaration

The *Hyderabad Declaration* is a 26 item document that emerged from WTDC-10. It identified the major themes in the global telecommunication environment and made calls to action to engage with them. It declares (amongst other things) that broadband access to telecommunication and ICT is "essential for the world's collective economic, social, and cultural development and the building of a global information society".

Successful exploitation of these technologies will alleviate poverty and allow sustainable development everywhere. Economic development is fostered through ICT adoption, but so are e-government, e-health and e-education. However, in spite of an enormous increase in the deployment of ICT, the Declaration recognizes that a Digital Divide still exists in the world, both between countries and within countries and points out that rapid development of ICT is "an immediate priority for many countries".

Understanding the Hyderabad Action Plan at WTDC-10

The HAP was designed to support developing countries to promote the fair and equitable development of ICT products, services, policies, and uptake. The package of initiatives is detailed and covers many areas. It supports on-the-ground telecommunication project development, help to governments and policymakers in many areas including regulatory

governance, cybersecurity, the building of capacity, and assistance to marginalized and disadvantaged communities.

The HAP implicitly seeks to see support for development through partnership and collaboration, and wherever appropriate, emphasizes approaches to mobilize funding and investment to enable larger scale impact.

The HAP includes:

- The World Telecommunication Development Conference 2014 (WTDC-14) and its Regional Preparatory Meetings (RPMs). There is normally one regional development conference or RPM per region in the schedule.
- A Study Group Programme, monitored by the Telecommunication Development Advisory Group (TDAG).
- Five Work Programmes to be implemented by BDT.
- 28 Regional Initiatives implemented by Member States.

The Work Programmes are fully detailed in Appendix 1b and summarized as follows:

- Programme 1: ICT and technology development.
- Programme 2: Cybersecurity, ICT applications and IP networks.
- Programme 3: The enabling environment.
- Programme 4: Capacity building and digital inclusion.
- Programme 5: Special needs.

Study Groups

Under WTDC-10, BDT maintains two Study Groups (SGs). Study Group 1 addresses issues relating to the enabling environment, cybersecurity, applications, and related issues. Study Group 2 addresses issues relating to ICT infrastructure, technology development, emergency telecommunication, and climate change adaptation. Under the HAP, the Study Groups were authorized to address a total of 18 separate questions in these areas. Appendix 1a lists the Study Group Questions.

Telecommunication Development Advisory Group (TDAG)

TDAG is an oversight body for ITU-D operations and practices. It is authorized by WTDC-10 to act (until WTDC-14) in consultation with the Director of ITU BDT to maintain efficient and flexible working guidelines, evaluate working methods and functioning, assess the current work programme of the Study Groups, and, if necessary, create Study Groups or restructure them. TDAG implements accountability and transparency in ITU-D by means of reports and meetings, in particular through its annual meeting, under the HAP mandate.

Regional Initiatives

WTDC-10 adopted 28 Regional Initiatives spread across six world regions (see table opposite). These have the aim of bringing economies of scale to bear on international issues that may be addressed at regional levels, and especially where appropriate solutions could be deployed across national borders to enable communities to take maximum advantage of them.

Some themes identified by the Regional Initiatives appear in all regions. Digital broadcasting and the analogue to digital switchover are good examples of the need for coherent international practice and implementation at a time when the industry is experiencing a major once-in-a-generation transition with far reaching technology, socio-economic, and political implications for other sectors such as mobile cellular. Other themes are unique to one or more regions at a particular time, for example, emergency communications or the reduction of Internet access costs. Projects are funded with seed investment from BDT, but are designed to attract extra-budgetary funding from development partners.

Projects in the World

Related to *Regional Initiatives* - but crossing more than one region - are *Projects in the World*, stemming from the Work Programmes mandated by HAP. Several are highlighted in this report.

Examples include: *Global Girls in ICT Day, Human and Institutional Capacity Development*, *ITU-AMD Learning Labs, Least Developed Countries Infrastructure Protection Program*, *MCT Projects for Special Initiative Groups*, *Partnership in Measuring ICT for Development in Developing Countries*, *Rural Telecommunications Development in Least Developed Countries*, *School Connectivity in Five ITU Member States*, *Support for the Establishment of Harmonized Policies for the ICT Market in the ACP*, *Future of Spectrum Management Usage Rights in an Increasingly Competitive Environment*, *Transition from Analogue to Digital Broadcasting in Africa and Asia-Pacific*, and the *Youth Education Scheme*.

BDT has also created Global Development Initiatives that include the *Connect the World* series of Summits, *Smart Sustainable Development Model* initiative, *m-Powering Development* initiative, and the *ITU Academy*.

Global activities

Stemming from the HAP Objectives are also activities that naturally fit a global or substantial international scale, because they apply to many countries. Major ones are highlighted in this report, and include activities that are mandated by HAP and also those where BDT is involved in a wider remit, for example, where ITU itself has been tasked with a specific request. Emphasis is made throughout HAP to improving the ICT environment and its potential for disadvantaged, marginalized and under-served communities everywhere.

For example, in adopting programmes for implementation as the key elements of the Hyderabad Action Plan, WTDC-10 recognized "the need for congruence between the conclusions of the conference and the implementation of the outcomes of the *World Summit on the Information Society (WSIS)* within the core competence of ITU-D". The Work Programmes

Regional Initiatives in the Hyderabad Action Plan

Africa	Americas	Arab States	Asia-Pacific	CIS	Europe
Capacity building	*Emergency communications*	*Broadband access network*	*Unique ICT in land-locked countries*	*Implementing electronic meetings*	*E-Accessibility*
Strengthening and harmonizing policy and regulatory frameworks	*Digital broadcasting*	*Digital broadcasting*	*Emergency telecommunication*	*Digital broadcasting transition*	*Digital broadcasting*
Broadband infrastructure development	*Broadband access*	*Open-source software*	*Digital broadcasting*	*ITU Virtual Laboratory*	*ICT applications including e-health*
Digital broadcasting	*Reduction of Internet access costs*	*Arab digital content*	*Broadband access*	*Rural power supplies*	
Implementing Connect Africa Recommendations	*Human capacity building in ICTs*	*Cybersecurity*	*Telecommunication policy and regulation*	*Wireless payment systems*	

therefore represent components of the toolkit BDT uses when solicited by Member States and Sector Members to support their efforts to build the information society for all. All the individual Programmes also explicitly refer to linkage between WSIS activities and WSIS Action Lines in their implementation details in HAP. In several cases, ITU is charged with responsibilities under WSIS, for example, it is the sole facilitator/moderator of Action Line C2, covering information and communication infrastructure.

Also, these programmes, during their implementation, were required to take into consideration the resolutions, decisions, recommendations and reports emanating from WTDC-10, pursuant to the provisions of No. 142 (Article 22) of the ITU Constitution on the role of telecommunication development conferences.

HAP mandates other BDT activities of a similar global character. For example, in Programme 2, HAP calls on ITU-D to recognize that "cybersecurity should be dealt with taking into consideration the global, transnational nature of cyberthreats and under certain circumstances cybercrime, and taking into account the framework of the ITU Global Cybersecurity Agenda (GCA)" that ITU has developed.

In terms of providing an enabling environment under Programme 3, international activities are likewise supported by HAP. Encouraging the spread of evidenced-based policymaking is a good example. The collection and dissemination of quality indicators and statistics that measure and provide comparative analysis of advancements in the use and adoption of ICTs will continue to be a major factor for supporting developing economies. These indicators and their analysis provide governments and stakeholders with a mechanism to better understand key drivers of ICT adoption and assist in ongoing national policy formulation. They also serve to monitor the digital divide as well as progress towards achievement of internationally agreed goals, such as the Millennium Developments Goals (MDGs) and WSIS targets, which will be assessed by the United Nations General Assembly in 2015.

Global and local presence

Supporting ITU-D are BDT HQ at ITU Geneva with on-the-ground representation around the world. Under the control of the BDT Director, the Sector maintains Regional Offices (ROs) and Area Offices (AOs) in:

- Africa (Regional Office: Addis Ababa, Area Offices in Dakar, Harare, Yaounde)
- Americas (Regional Office: Brasilia, Area Offices in Tegucigalpa, Santiago, Bridgetown)
- Arab States (Regional Office: Cairo)
- Asia-Pacific (Regional Office: Bangkok, Area Office: Jakarta)
- Europe (Coordination in Geneva)
- CIS (Area Office: Moscow)

How to use this publication

No short report can encompass the very large number of initiatives that the HAP stimulated in this period, nor all the interactions that resulted. Instead, this publication highlights several pertinent areas to illustrate the common challenges faced by many countries and communities globally, and how they are being solved by partnerships on a small or large scale.

The publication is organized to show how HAP developments interlock everywhere and in every technology area. First, key global trends in the telecommunication development environment are discussed. Then, a regional section reports on particular initiatives and programmes, particularly in terms of HAP Regional Initiatives. Individual initiatives are reported in the HAP Programme order. Finally, overarching major themes that have international impact are detailed in the HAP Programme order to illustrate theme relationship links in a global context.

Selected BDT publications produced during the HAP are listed in Appendix 2.

The World of ICT 2011-2014

Now recognized as essential socio-economic drivers, telecommunication networks and services continue to proliferate worldwide. BDT tracks global ICT developments through the collection and dissemination of statistics on ICT access, use and prices. It analyzes regional and global ICT trends and publishes the flagship publication work on statistics and analyses of key ICT developments and affordability of ICT service, *Measuring the Information Society*.

Intersecting the development of telecommunication are regulatory structures and practices around the world that are also developing or in some cases being overhauled. BDT maintains an ongoing dialogue with ICT regulators around the world and produces events and publications such as *Trends in Telecommunication Reform* to identify trends and emerging best practices so that the benefits of telecommunication development will be maximized.

Growth

6.8 billion mobile cellular subscriptions

2.7 billion people are using the Internet

- At end-2013, an estimated 6.8 billion mobile cellular subscriptions existed worldwide.
- Over 90 per cent of the world's population lives within reach of a mobile cellular signal, and about half the world's population are covered by a 3G signal.
- There are over 2 billion mobile broadband subscriptions in the world (estimated for the end of 2013), and mobile broadband has been enjoying a market growth of 40% on a CAGR basis since 2007.
- Some 2.7 billion people are using the Internet.
- Services are becoming more affordable: in the space of four years (2008-2012), fixed-broadband prices as a share of GNI per capita have dropped by an average of 82 per cent.
- Some 146 governments have adopted a national broadband plan.

Trends

Digital natives drive ICT

New synergies in broadcasting & ICT

- Digital inclusion is expected to be an increasingly important factor. Young people all over the world are the most active users of ICTs, and 30 per cent of the youth population are digital natives — heavily involved and experienced in ICT usage. Within the next five years, the digital native population in the developing world is expected to double. This population and its expertise could become a major driver in wider development.
- In 2012, the number of households with digital TV overtook the number of households with analogue TV. This achievement reinforces the dual role of TV broadcasts: fulfilling some of the public services associated with communications and being a major market for private content creators, distributors and networks.

Challenges

4.4 billion people do not use the Internet

2015 targets under threat

- 1.1 billion households worldwide do not have Internet access, and 4.4 billion people are not yet online. ICT uptake remains limited in many developing countries, and particularly in the world's least connected countries (LCCs). Specific international ICT targets for achievement by 2015 are unlikely to be met in spite of progress around the world. However, future post-2015 goals may focus on affordable connectivity to this population, because:
- ICTs can become key enablers for achieving international and national development goals.
- Peak 2008 telecommunication investment levels have not yet been restored.

Africa

Focus

The aggregate ICT requirements of the African continent make all HAP programmes imperative, and there is considerable interaction between programmes. An appetite for advanced communications clearly exists. It is evidenced by the explosion of the mobile market everywhere across Africa and arrival of new, sophisticated ICT applications such as m-banking in many countries, on the one hand, and a sharp rise in broadband international connectivity linking Africa to the rest of the world, on the other.

Perspective

Africa has seen explosive mobile development and increases in new international connectivity capacity. However, differences in ICT development have continued to increase in several countries, according to ITU data, implying a widening of the regional digital divide. The region's top ICT Development Index (IDI) countries (including Seychelles, Mauritius, South Africa and Cape Verde) continue to make good progress in terms of ICT development. Seychelles, Zambia and Zimbabwe were among the most dynamic countries in the IDI.

Regional Initiatives

Capacity building, Strengthening and harmonizing policy and regulatory frameworks, Broadband infrastructure development, Digital broadcasting, and Implementing Connect Africa recommendations.

Within Sub-Sahara Africa, there is a wide variety of developmental imperatives and aspirations, but with the regional digital divide effectively widening, basic network and access infrastructure is an important — and urgent — provision. Without this, there can be little prospect of the socio-economic development possible through ICT mediation. Much development is expected to take place in the wireless broadband domain, and projects are already established that show the potential of wireless broadband. It is widely recognized that infrastructure and network architecture must be cost-effectively deployed using local Internet connectivity wherever possible to reduce interconnection costs.

An increasingly important feature during the period has also been the facilitation of policymaking to accommodate and maximize the new opportunities presented by broadband, and here the provision of wireless broadband masterplans and coherent transitions to digital broadcasting require support. Since similar issues may occur in different countries, it makes sense to achieve this on a harmonized, regional basis. Here, the emphasis is on providing satisfactory regulatory and legislative solutions to the common, emerging, sophisticated regulatory and policy challenges posed by the new environment, whilst still allowing national policymakers maximum freedom to tailor individual policy approaches. In this case, the HIPSSA (*Harmonization of ICT Policies in Sub-Sahara Africa)* project has provided three very different African regions — each with very different requirements — with policy and regulatory tools appropriate to the region. Cybersecurity and child online protection are other emerging challenges where participation in regional and international initiatives by African countries is now taking place. Emergency communications and developing ICT to support disaster preparedness and response are also important requirements, especially where ICT can be rapidly repurposed to provide appropriate emergency responses.

Alongside this, there is a pressing requirement for human capacity development at all levels. Here, a variety of initiatives target specific needs. Under several HAP Programmes, BDT looks to regional development forums to enable professional and regulatory expertise to be shared. Centres of Excellence provide high quality technical and professional training, and a vigorous *Connect a School, Connect a Community* programme spread across several countries has been facilitating both student and teacher training.

Wireless broadband master plans

Following HAP Programme 1, the project aims to facilitate deployment of wireless broadband in developing and least developed countries. ITU, in close collaboration with the Korean Government, implemented a project on master plan development for wireless broadband access in the Africa Region.

This project intended delivery of the following:

- Survey evaluation of the status of broadband connectivity, and wireless broadband in particular in Africa region.
- Collected information on development of appropriate policies, regulations and capacity building, including licensing, and planning for deploying wireless broadband access networks, from Guidelines and Recommendations developed by ITU.
- Wireless broadband access master plans for at least 4 (and up to 6) selected countries in the Africa Region subject to budget.
- Enhanced skills through training for devising the wireless broadband master plan.
- Project KPIs including the number of projects established and skilling.

Individual broadband national wireless network plans have been developed in Burkina Faso, Burundi, Mali, Rwanda, and Lesotho.

Digital transition

Roadmaps for digital transition have been developed to support countries in Africa moving from analogue to digital broadcasting. The Ministry of Internal Affairs and Communications, Japan is partnered with BDT in a global initiative supporting the digital transition in Africa and Asia-Pacific, in line with the expected ITU Asia-Pacific Regional Initiative (ASP RI 2011-2014) and the Africa Regional Initiative (AFR RI 2011-2014) *on Digital Broadcasting* as decided during the WTDC-10.

Clockwise from top left: Bujumbura workshop; Abidjan workshop; HIPSSA Steering Committee meeting, Addis Ababa; Global Human Capacity Forum 2012; Cybersecurity strengthening in Ghana.

The project is updating the information in the existing ITU guidelines on analogue to digital terrestrial television broadcasting and mobile television keeping in view its application to all ITU regions. Other aspects include the development of a database for providing information about the transition worldwide and the collection of case studies. The revised Guidelines are planned to include additional sections on satellite TV, IPTV and over-the-top (OTT) broadcasting. In addition, it aimed for assistance to four to six countries in Africa and Asia-Pacific region on developing national roadmaps based on demand from countries. These resources will also be used for developing human capacity through 2 to 3 training sessions/workshops for Members in Asia-Pacific and Africa.

A *Digital Migration Summit* was organized at the ministerial level in Accra (Ghana) in collaboration with the African Telecommunications Union (ATU) where a road map was approved for the Africa region. On the same occasion, the ITU Radiocommunication Bureau (BR) conducted the successful update of the GE06 Plan following appropriate coordination exercises. Specific assistance was also provided to countries to elaborate their respective broadband strategies and road maps, including Burundi, Chad, Gabon, Mali, Rwanda, Kenya, Tanzania, and the Democratic Republic of Congo (DRC).

Implementing wireless broadband

As a follow-up to the *Connect Africa* Summit, the *ITU/Craig and Susan McCaw Broadband Wireless Network project for Africa* is implementing broadband wireless networks and developing ICT applications to provide free or low cost digital access for schools and hospitals, as well as

for underserved populations in rural and remote areas in selected countries. The broadband wireless network is operational in Burundi and, ongoing in Djibouti, Burkina Faso, Lesotho, Mali and Rwanda.

The projects see many aspects of HAP Programmes interacting. They variously aim to: deploy wireless broadband infrastructure for identified areas in each country, develop ICT applications, train local experts on the operation of deployed wireless communication networks, develop national ICT broadband network plans, and finally, to develop an impact assessment report. For example, in Burundi, 13 local engineers were able to assist in the installation of the broadband wireless network in Burundi with the supervision of an expert from the McCaw Foundation in close collaboration with the engineers of Codium.

In July 2012, a donation agreement was signed with Nexpedience for 180 base transceiver stations of USD 1 000 000 value. The agreement will make possible further broadband wireless connectivity with ICT applications.

Keeping Internet traffic local

Some African countries have established national Internet Exchange Points (IXPs) and Internet Service Provider (ISP) peering has emerged as one of the most important and effective ways for ISPs to improve the efficiency of operation and to further reduce Internet access costs. A BDT project is improving Internet connectivity in Cape Verde and in Equatorial Guinea, with the ultimate aim of implementing national and regional IXPs and associated infrastructure and capacity building.

Spectrum management and monitoring

HAP Programme 1 explicitly calls on BDT to assist countries in their spectrum management and monitoring challenges. ITU has consistently led the industry in its training for spectrum management as well as providing specific high-level tools to enable professionals to execute daily tasks in complex spectrum managing requirements. These include the ground-breaking *SMS4DC (Spectrum Management System for Developing Countries)* software support toolkit, now deployed in more than 40 countries. Alongside this, in Africa, BDT held two workshops in the period — one in Abuja, Nigeria in May 2013 for English-speaking countries, and one in Libreville, Gabon in November 2012 for French-speaking countries — to maximize the potential of using new tools.

Cybersecurity and Child Online Protection

Following HAP Programme 2 requirements, there are emerging initiatives concerned with safe and secure use of ICT. In Nigeria, the Nigeria Communications Commission, and the National ICT Agency of Nigeria, are supporting the establishment and hosting of an ITU Regional Cyber security Centre under the ITU IMPACT initiative to further expand the initiative globally, address the particular challenges of the region, and provide a multi-stakeholder network of expertise that institutions can call upon. In 2013, the First Lady of Nigeria, H.E. Dame (Dr) Patience Goodluck Jonathan, graciously accepted the ITU invitation to be the ITU Champion for Child Online Protection.

For the Africa region, preparatory work has taken place between ITU and Uganda throughout 2013 to host the Africa Child Online Protection (ACOP) Summit in Uganda in order to bring together key stakeholders to brainstorm on the issue, to create awareness on the continent and to share best practices. The Summit is planned for Q2/2014 in Uganda.

ITU has been conducting projects in the African region to support the establishment of national Computer Incident Response Teams (CIRTs). ROA has performed CIRT assessment for more than 20 Member States in the Africa region providing technical expertise and recommendations to the countries for the development of their national CIRTs. National CIRT projects include implementations or confirmations for implementation in Burundi, Burkina

Faso, Ghana, Cote d'Ivoire, Tanzania, Zambia, Kenya, and Uganda. These national CIRTs are intended to serve as trusted, central coordination points of contact for cybersecurity, including identifying, defending, responding and managing cyber threats for the beneficiary countries.

Policymaking

Following HAP Programme 3 requirements, BDT and its regional partners have convened *the Forum on Telecommunication/ICT Regulation and Partnership in Africa* (FTRA) since 1999. FTRA-2013 was held in Zimbabwe and supported the theme of *Development of broadband and investments required to support sustained growth*. Sessions focused on the role of stakeholders in boosting broadband development, including regulatory reforms and universal service in a broadband environment, the economic impact of broadband in developing countries, and the need for spectrum for broadband. They also covered the ITU African Regional Initiatives on broadband development, and empowering and protecting the consumer, as well as the role of national broadband policies.

An important driver in providing the enabling environment specified in HAP Programme 3 has been the implementation of regional harmonization initiatives in Africa. Between 2008 and 2013, ITU implemented a project designed to support the regional harmonization of ICT policy and legislation in Sub-Sahara Africa, Caribbean and Pacific Group of States (ACP). It arguably has been one of the largest global initiatives aimed at both harmonizing and updating polices and legislations to date. It focused on two main areas – cybersecurity and telecommunication – and worked together with the regional organizations and their Member States. In order to support this process, ITU and EU decided to co-fund a project which forms part of the programme *ACP-Information and Communication Technologies* within the 9th European development fund (EDF).




Clockwise from top left: Ghana Girls in ICT Day; Connect a School, Connect a Community, Tanzania; Girls in ICT Day meeting H.E. Mrs Omobola Johnson, Nigeria's Minister of Communication Technology; Côte d'Ivoire Girls in ICT Day.

The Sub-Sahara region was supported with the *Harmonization of ICT Policies in Sub-Sahara Africa* (HIPSSA).

HIPSSA developed Model Laws for cybercrime, cybersecurity and data protection. Other aspects of the project provided for: assessment surveys on cross border frequency harmonization, and assessments of current practices in regulatory accounting and cost modeling, capacity building to set guidelines of access to submarine cables and universal access and service and toolkit workshops. Regional activities took place in Southern Africa, Central Africa, and West Africa. Assistance to support the transposition of the model legislations are in progress in 13 countries.

HIPSSA was initiated after a request by economic integration organizations and regional regulators' associations in Africa to the ITU and the European Commission for assistance in harmonizing ICT policies and regulations in their respective territories, and requests by individual regulators for assistance to enhance their ability to execute their mandates.

While HIPSSA does not cover the whole of Africa, it is an important building block in the establishment of a global pan-African harmonization process taking into account the high degree of heterogeneity of its various sub-regions. The importance and pertinence of HIPSSA was acknowledged by the AU at the 3rd African Union Communications and Information Technologies Ministers' Conference (CITMC-3) (Abuja, August 2010) (Abuja Declaration).

HIPSSA was officially launched in Addis Ababa, during December 2008. Participants at the launch meeting included 30 regional and continental representatives from the beneficiary countries. They represented regulators' associations; telecommunications/ICT departments' heads of the regional economic communities (RECs) and monetary communities; heads of ministries in charge of telecommunications and ICT in the countries chairing the RECs and monetary communities; as well as operators and service provider associations.

The HIPSSA Steering Committee was co-chaired by the African Union Commission (AUC) and ITU. To reflect the region's ownership of the project, it also comprises representatives from the regional economic organizations (RECs), the United Nations Economic Commission for Africa (UNECA), the African Telecommunications Union (ATU) and observers.

HIPSSA's first task was a comprehensive assessment and comparative study of the region's existing policies and legal frameworks. The conclusions were distributed during the 2010 AU Summit that included the Assembly of Heads of States and Governments (Addis Ababa, January 2010). It was also presented at the CITMC-2 (Johannesburg 2009) and CITMC-3 (Abuja, August 2010).

Based on the report conclusions, the HIPSSA Steering Committee identified the following priorities:

Sub-Saharan Africa priorities

- Analogue-to-digital broadcasting: French version of the migration strategy for Africa and a regional harmonized framework.
- Cross-border frequency management: a harmonized methodology for coordinating frequencies across borders.
- Regional statistics annual indicators.
- Interconnection cost modeling.

West Africa priorities

- ECOWAS cybersecurity guidelines.
- Open access to submarine cables guidelines.
- Access to landlocked countries.
- Evaluation and monitoring: measure the quality of the transposition of ECOWAS supplementary acts in the national framework.

Central Africa priorities

- ECCAS model legislation.
- ECCAS model legislation and CEMAC directives on cybersecurity.

Southern Africa priorities

- SADC ICT Policy and Legal Framework and SADC Protocol.
- CRASA universal access/service guidelines and toolkit.
- SADC model laws on cybersecurity.

In Eastern Africa, the Common Market for Eastern and Southern Africa (COMESA) already developed a series of regional guidelines. Therefore, HIPSSA has been focusing its efforts on providing technical assistance and activities in sub-regional workshops derived from the sub-Sahara activities on cost modeling and financial auditing, coordination of the frequencies at the borders, regional statistics, and open access to submarine cable connectivity. This is planned in close collaboration with the East

African Community (EAC) members that are also part of COMESA.

Once validated and approved, HIPSSA offered in-country technical assistance to 15 countries for transposing these regional guidelines into national policies and legislative frameworks.

Clockwise from top left: Connect a School site under installation in Sierra Leone.

Best practice development

BDT supported the Government of Burkina Faso in organizing the *African Forum on Best Practices in ICT* held in Ouagadougou, Burkina Faso, in October 2013. The Forum positions the data revolution as an emerging pillar of Africa's development agenda; it was attended by ICT Ministries, regulators, fixed and mobile network operators, ISPs and leaders of the content and knowledge industries bringing them face to face with heads of government, multilateral agencies and international civil society. Under the patronage of the President of Burkina Faso H.E. Blaise Compaoré, the ITU shared with the ITU Member States the current status of the ITU-IMPACT initiative.

Connect a School, Connect a Community and Community Telecentres

Connect a School, Connect a Community (CSCC) projects support several HAP Programmes, particularly Programmes 2 and 5. They aim to encourage broadband connectivity of schools in remote, rural and underserved areas of three sub-Saharan African countries (with at least one French speaking country), and develop these schools as community ICT centres. ITU is involved with programmes in several African countries including Lesotho, Sierra Leone, Tanzania, Gambia, and Niger, and in the case of the latter three countries, a national plan of CSCC. Funding has been provided by Switzerland and France.

The project aims to improve access to and use of ICT by students and members of the local community, including disadvantaged and vulnerable groups such as women and girls, indigenous people, rural residents, and people elderly or disabled.

In each selected beneficiary country, the project will connect schools to Internet broadband services, provide individual or shared computer equipment to students in schools and create connected community ICT centres. These will support the socio-economic development of the local communities. In some cases, selected paid services help to ensure the sustainability of community centres. The project will also provide the necessary training for teachers, ICT centre managers and trainers who will ensure the socio-economic formation of community members.

Developing the potential of CSCC initiatives involves developing best practice toolkits with resource models to ease implementation and address policy measures, applications, services, practical experiences, as well as developing low-cost computing programmes as a first stage. The current toolkit is available as a website download, and core content is being translated into all ITU official languages, assembled on a purpose-built website from ITU. The project also aims to encourage political and community support for school connectivity through hosting national workshops for stakeholders, with the aim of exploring steps to wider connectivity including policymaking, national planning, and development of appropriate funding through universal service policies. Sometimes development of other infrastructure, such as stable electricity supplies, is also required.

BDT has implemented a project in Malawi designated the *Malawi Multi-purpose Community Telecentres Project.* It is intended to support efforts by the Government of Malawi to extend ICT access and services to rural communities by providing basic sets of accessible ICT equipment, facilities and training to rural areas. The final objective of the project was to enable

Clockwise from top left: Meeting with Dr. Eugene Ikemefuna Juwah, Executive Vice Chairman and Chief Executive Officer of the Nigerian Communications Commission (NCC) and BDT Director; Meeting with Dr. Elham Mahmoud Ahmed Ibrahim, the AUC Commissioner for Infrastructure and Energy and BDT Director; Handover meeting for Lesotho broadband initiative; Cameroon workshop; Meeting with AUC Commissioner Dr. Jean Pierre Onvehoun-Ezin and BDT Director.

ICTs to provide better opportunities for education, employment, health services, and business opportunities and ultimately curtail rural to urban migrations.

In Sierra Leone, a BDT project aimed at providing access to telecommunication/ICT services to five identified and selected rural and underserved areas of Sierra Leone, namely Kambia, Makeni, Segbwema, Pujenhun and Mile 91, through the establishment of multipurpose telecommunication centres (MCTs). These MCTs will provide suitable services and applications to local communities which will enable them to make use of ICTs in their social and economic activities in order to improve their living conditions. As well as providing suitable services and applications to local communities, the project looked towards provision of reliable community based services such as e-learning, e-health, e-commerce and e-government when these are implemented in future.

Human capacity development

Alongside HAP Programme 5, the African Regional Initiative pinpoints human and institutional capacity building as an objective. Concentrated focus by major programmes and initiatives creates awareness, and helps to stimulate partnerships and delivery mechanisms.

BDT has established a sustainable network of training facilities including the *Centres of Excellence (CoE) for Africa* project which will run until 2015, under the Regional Initiative. Selected training and educational institutions become "nodes" that provide training opportunities in ICT topics. The overall objective is to promote human capacity building of governmental authorities, regulators, and senior managers of operators and service providers.

During the period 2010-2013, BDT has organized 12 subject-specific workshops, forums, and symposia to meet HAP Programme 5 requirements and African Regional Initiative objectives for institutional and human capacity development and competency in ICT institutions. The objective is to identify key challenges and needs of the sector, and to share best practices in learning, training and development. Meetings included:

- ITU sub-Regional Human Capacity Development Forum for English and Portuguese Speaking countries in Africa (2011) Banjul, Gambia.
- *Forum Sous Régional de l'UIT sur le développement des capacités humaines pour Pays d'Afrique francophone (2011)* Douala, Cameroon.
- The regional symposium on the development of effective ICT training capabilities

in the ICT/Telecoms sector in Africa (2011) Abidjan, Côte d'Ivoire and involved representatives from: Comoros, Côte d'Ivoire, Kenya, Liberia, Niger, Uganda, Sierra-Leone, and Zimbabwe.

- Deuxième Edition du forum sur la normalisation ayant pour thème: Sauver des vies à travers les telecommunications (2011) Abidjan, Cote D'Ivoire.
- ITU Régional workshop on ICT compétences développement in Télécommunication and Education (2012) Bujumbura, Burundi.

Transform Africa

As an African Regional Initiative under HAP, *Transform Africa* was convened to evaluate and progress achievements from the *Connect Africa Summit 2006*. *Transform Africa 2013* was co-hosted by the President of Rwanda and ITU in Kigali, Rwanda, in October 2013, and aimed to discuss and develop a new agenda for Africa to leapfrog development challenges through the use and uptake of broadband and related services, particularly, but not exclusively through the opportunities offered by high-speed Internet and advancing mobile technology.

In time of emergency

"UNHCR expresses its gratitude to ITU for providing its field operation with telecommunications equipment which has been instrumental for the protection and assistance of persons of concern in Mali, Burkina Faso and Niger."

Mr. Tshilombo Mbav César, Chief of Technical Support and Monitoring Section, UNHCR Headquarters.

Americas

Focus

Broadband penetration is an important factor for socio-economic growth and development and it is still relatively nascent in the Americas, particularly for fixed broadband. Mobile broadband, on the other hand, is proving to be the most widely used broadband platform in the region, given the relatively limited endowment of fixed networks in most countries, the higher cost of deploying fibre networks and current mobile penetration rates. Governments in the region are quickly recognizing the importance of broadband for economic and social development.

Perspective

Five Americas countries — USA, Canada, Barbados, Uruguay, Antigua and Barbuda - appear in the global top 50 of the ICT Development Index (IDI). Although the Americas display some of the largest regional disparities in ICT development — reflecting their diversity in terms of development and income levels — their regional digital divide is narrowing.

Regional Initiatives

Emergency communications, digital broadcasting, broadband access, reduction of Internet access costs, human capacity building on ICTs.

The region also recognizes an urgent need to increase knowledge regarding the many available technologies and is currently aware that in order to facilitate convergence and broadband diffusion, an enabling regulatory environment must be put in place.

With the support of ITU initiatives and programmes, the awareness towards the importance of improving infrastructure and digital inclusion in underserved and rural areas, as well as among people with special needs (marginal and vulnerable populations, including women, children, indigenous peoples, older persons and persons with disabilities) has increased considerably in the Americas.

In this sense, the HAP Programmes have proven to be very beneficial in covering the main issues where the region lacks training and direct assistance as to ensure all groups fully leverage the benefits of telecommunication/ICTs as greater emphasis is also now placed on utilizing broadband for transformation, innovation and for stimulating social and economic prosperity.

Broadband and digital broadcasting

In the framework of Programme 1 ITU in the Americas has implemented important activities covering the areas of spectrum management and radiofrequency, transition from analogue to digital broadcasting,broadband, wireless networking, Internet (transition to IPv6), EMF, conformance and interoperability, and roaming. Technical Cooperation (TC) Projects were implemented on spectrum management in Colombia, illegal telecommunication traffic in Honduras and electromagnetic field and human exposure in El Salvador.

ITU in the Americas, in close collaboration with ITU Regional Office for Asia and the Pacific, has provided assistance to the Ministry of the Public Service of Saint Lucia to prepare a National Broadband Policy and Plan for the period 2013-2018. A Draft National Broadband Policy/Plan focused on achieving affordable broadband access and improving broadband coverage and uptake in St. Lucia, with clear targets and metrics (e.g. coverage, scorecards and geographical approach) was completed. It is foreseen that this experience will serve as a reference to other countries.

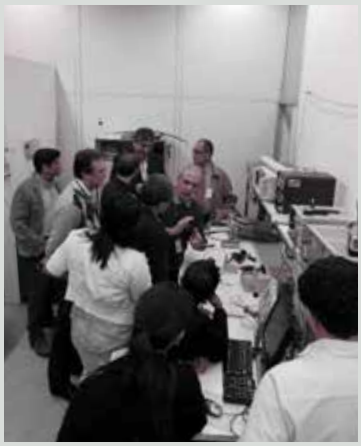
In a further effort to help switch over to digital broadcasting, ITU in the Americas has selected countries to help draft a national roadmap for the digital switch-over (DSO) process. A roadmap jointly with the National Roadmap Team (NRT) is presently determining timelines and other logistics for digital transition in Guyana.

Implicit in HAP, and particularly in HAP Programmes 1 and 2, interworking of products and services is increasingly necessary. To facilitate a safe usage of products and services anywhere in the world, regardless of manufacturer or service provider, it is crucial that products and services be developed in accordance with relevant international standards, regulations and

other specifications, and that their compliance is tested. BDT is keen to encourage the spread of expertise in Conformance and Interoperability (C&I) through its resources including training and partnerships so that regions can develop the appropriate C&I vehicles. The ITU C&I programme comprises four pillars of support (*Conformance Assessment*; *Interoperability*; *Capacity Building*; and, *Establishment of Laboratories and Mutual Recognition Agreements*).

In coordination with BDT/TND, the Americas Regional Office organized in 2013 a capacity building event on conformance and interoperability testing centres, in the framework of the MoU signed with the internationally recognized Research and Development Centre CPqD in Campinas, Brazil.

Training includes an overview on the ITU C&I programme. The C&I Training carried out at CPqD in Campinas, in June 2013, focused on electromagnetic compatibility (EMC) and eleven experts from nine countries of the Americas region participated, including: Brazil, Cuba, El Salvador, Honduras, Jamaica, Panama, Paraguay, Uruguay and Venezuela. The Guidelines for building test labs for conformance and interoperability of equipment and systems in developing countries were distributed during the course.



CLockwise from top left: BDT Director signing contract for the assistance to the Administration of Brazil on Cost Modelling; Spectrum management course CONATEL, Paraguay; Conformance and Interoperability (C&I) training in Americas.

Feedback was available and consisted of various comments highlighting the excellent quality of organization and support, experience of instructors, as well as wishes to extend the training and provide separate English and Spanish sessions. Future proposed C&I training includes mobile and wireless network technologies, NGNs, broadband, electrical protection, and optical technologies. Training will be made available in English and Spanish to cater for Caribbean and Latin American requirements, respectively.

Cybersecurity and ICT applications

In the framework of HAP Programme 2, ITU in the Americas has provided direct assistance to Costa Rica on reduction of Internet access costs and on the feasibility of a government wireless network initiative to provide free Internet access to citizens, based on best practices identified in the region.

A TC project on digital cities was implemented in Argentina and trainings on cyberthreats have been delivered to countries.

ITU also signed a MoU with Jamaica and Barbados to establish national CIRTs. Similarly, discussions are in progress to do the same with Trinidad and Tobago and the OECS for a sub-regional CIRT. ITU will assist these governments in building and deploying the technical capabilities and related trainings necessary to establish

Extending our reach

"The CTU is a Sector Member of the ITU and working in strategic partnerships enables us to extend our reach and do a lot more than we would be able to if we did not have this relationship.

We view the ITU as a strategic partnership. ITU has been working very closely with us in a number of our development initiatives. The ITU routinely participates in our meetings and we have been able to benefit from the expertise of the ITU. The ITU opens up a global experience to us which is very important."

Ms Bernadette Lewis, Secretary-General, Caribbean Telecommunications Union

An opportunity to shape markets

"Mobile or fixed: we must get our people access to broadband Internet and then making productive use of that access. Through effective legislation, policy-making and regulation, but also through region-wide collaborative projects such as HIPCAR and BIIPAC, we have the opportunity to shape our markets and achieve that goal."

Hon. Phillip Paulwell, President, Caribbean Telecommunications Union and Minister of Technology, Jamaica

their national CIRTs. Thus it is expected to lead to development of national cybersecurity capacity while moving forward on enhancing regional and international collaboration.

Connect a School, Connect a Community

CSCC projects have been funded in Jamaica, Nicaragua, Saint Vincent and Suriname. In Nicaragua, this project achieved the formulation of a *National School Connectivity Plan* for schools to serve as ICT Community Centres and ensured connectivity for five public schools, with a total donation of 100 computers. The schools were selected considering their geographical positions and access to the Internet in order to ensure that the pilot project offered connected schools with different technologies, which may be considered as models for most of the schools that still remain to be connected in the country. In Suriname, ITU launched a public-private partnership initiative to promote broadband school connectivity and a national school connectivity plan to serve both students and the communities in which they live.

In the framework of this important Initiative Jamaica and Saint Vincent also received donations of computers and, other IT equipment for the improvement of IT infrastructure of low income centres. Strong emphasis in Jamaica was made for schools attended by underprivileged girls.

Indigenous peoples

This training programme responds to the requirements of WTDC-10, in particular Resolutions 11, 46 and 68, and is also in line with Resolution 184 (Guadalajara, 2010) of the Plenipotentiary Conference, the aim of which is to ensure the provision of training for indigenous peoples in areas of relevance to them, using ICTs as a tool for the economic and social development of their communities.

Cooperation in key areas of concern

"For a long time, organizations such as LACNIC and ITU have been advancing along parallel paths. In recent years, we have been seeking many more areas of activity in which we can work together. I believe that in the Latin America and Caribbean region we have a good example of different players that have achieved a degree of maturity in their relations. With ITU, we have taken great strides towards identifying specific opportunities for cooperation, and have the shared capacity to bring together different players that can complement one another, thereby building a solid relationship founded on trust."

Raúl Echeberría, Executive Director, LACNIC

"Together with ITU, we have addressed a number of key areas of concern for our country, by means, for example, of workshops looking at disaster-related issues and mobile banking. As a driving force for the country's telecommunications, we have capitalized on the synergy with the Union and benefited from all the efforts made by BDT."

Cesar Diaz, Subdirector for Networks, ASEP, Panama

"I would highlight three key activities carried out with the Union over the past year. First, a symposium on the transition from analogue to digital television and the digital dividend. This international and regional event enabled participants to learn about the latest advances in terms of deployments in the countries of the region. Second, a workshop on indicators, designed to build awareness among all those required to provide information for the establishment of indicators, which are an essential input for the formulation of public policy in the area of telecommunications. And third, the organization of the Regional Forum and the Preparatory Meeting for next year's World Telecommunication Development Conference."

Sergio De Colla, National Director for Telecommunications, DINATEL, MIEM, Uruguay

The content of the courses was prepared by *Fondo Indígena (Indigenous Fund)* and transmitted to ITU for adaptation to online use within the framework of the distance learning provided by the ITU Academy, which is a platform for the delivery of such courses.

The courses offer progressive knowledge acquisition and strategies aimed at ensuring the proper development, administration and implementation of projects by indigenous leaders.

The purpose of this training process is to develop, within indigenous regional organizations, the competencies needed to elaborate and carry out development projects under the heading *Buen Vivir – Vivir Bien (Good Living – Living Well)*, thereby contributing to the digital inclusion of indigenous communities through the use of ICTs.

Since 2011, over 700 indigenous participants have attended these courses and acquired the knowledge and know-how necessary for the planning and formulation of development projects, the ability to analyze models and tools for proper management, the ability to evaluate and analyze, on the basis of key concepts, whether the execution and implementation of planned and formulated projects met the stated objectives, and the ability to identify the follow-up actions needed.

Policymaking

In the framework of HAP Programme 3, assistance has been provided to countries on number portability and cost modelling. Special emphasis must be given to a special contract over USD 10 million signed in August 2011, for the provision of assistance to the administration of Brazil on cost modeling in the framework of a TC Project. The work is being finalized and will be presented to serve as reference to the region during the ITU *Regional Economic and Financial Forum of Telecommunications/ICTs* scheduled for San José, Costa Rica, 11-12 March 2014.

ITU in the Americas has also provided a significant number of direct assistance to countries on telecommunication marketing and regulatory reform.

A joint ITU-UNDP project for the organization and development of CONATEL's capacity as a regulatory organ is under implementation in Paraguay.

The Americas region has also seen substantial progress under HAP Programme 3 in terms of supporting an improvement in the enabling environment. Between 2008 and 2013, ITU implemented a project designed to support the regional harmonization of ICT policy and legislation in Sub-Sahara Africa, Caribbean and Pacific Group of States (ACP). It was probably one of the largest global initiatives aimed at both harmonizing and updating polices and legislations to date. It focused on two main areas – cybersecurity and telecommunications – and worked together with the regional organizations and their Member States. In order to support this process, ITU and EU decided to co-fund a project which forms part of the programme *ACP-Information and Communication Technologies* within the 9th European development fund (EDF).

The Caribbean region was supported by the *Enhancing Competitiveness in the Caribbean through the Harmonization of ICT Policies, Legislation and Regulatory Procedures (HIPCAR)*.

Boundless gratitude

"I should like to express my boundless gratitude to all those who made this course a reality. On behalf of my grassroots people, the Guna of Panama, many, many thanks to all those involved. Thank you, my brothers!"

Geodisio Abdiel Castillo Díaz, Panama

"I am profoundly grateful...I have learned a great deal about projects and have been using the knowledge and material acquired to support women's initiatives."

Ofelia Álvarez Coleman, Mexico

"The experience has been wonderful and highly enriching, and, more than being just a tool, the courses have been precision instruments which are certain to create the conditions for the implementation of many future projects in a timely and proper manner.

Kyk'amonxa jun tb'anil q'olb'eb'l, noqitla tuj jun tb'anil ate'ya tuj kyaq'una ex tuj kychwinqela (Greeting in the Mam language)."

Elmer Geovanny Feliciano Cardona, San Marcos, Guatemala

"Thanks to the cycle of courses on projects focusing on indigenous peoples, we in Honduras have initiated a bilingual intercultural education project in one of our country's departments, working towards an inclusive education of a high quality and with its own identity, which will serve as a model for the 15 departments of Honduras with an indigenous and Afro-Honduran population. A key feature of the courses provided by the ITU and Fondo Indígena during this cycle is that they focus on learning by doing."

Cesar Andoni Vargas Sabio, Honduras

HIPCAR is a response to a request from the Caribbean Community (CARICOM) and the Caribbean countries to ITU and the European Commission for cooperation in harmonizing the ICT policies, legislation, regulatory processes and procedures within their respective territories. It was implemented within the framework of the Caribbean Single Market and Economy (CSME), the CARICOM Connectivity Agenda, and the region's commitments to the WSIS and the Millennium Development Goals (MDGs). It also relates to treaty commitments promoting competitiveness and enhanced access to services such as the CARIFORUM states' Economic Partnership Agreement with the European Union (EU-EPA).

ITU was the executing agency of HIPCAR and the Caribbean Telecommunications Union (CTU) was the project adviser on behalf of the CARICOM secretariat.

The HIPCAR project was officially initiated during the launch meeting (Grenada, December 2008) and was officially closed in 2013. Participants represented regional organizations, operators' associations, services providers and the private sector from each beneficiary country. The HIPCAR Steering Committee is chaired by the CTU and composed of regional organizations. It has adopted a list of priorities common to all beneficiary countries.

Once the regional model policy and legislation guidelines were prepared for each of the above priorities (work areas), HIPCAR was able to focus on the project's second phase: providing in-country technical assistance to 8 countries for transposing the regional model texts into national jurisdictions.

Overall, the HIPCAR project has created a real dynamism in the region, which was specifically highlighted during the Statement from ICT Ministers at the CTU Ministerial Forum (Trinidad and Tobago, August 2013).

Human capacity building

In the framework of HAP Programme 4, the Americas Region also concentrated efforts on the development of human and institutional capacity building. In close coordination with different partners from the Americas region, face-to-face and online training activities were organized in order to comply with the demand of ITU Members from the region.

Under the ITU Project Centre of Excellence for the Americas Region which represents a regional mechanism for knowledge sharing and network of excellence for capacity building development — during the period 2011-2013, more than 40 training activities were organized benefiting more than 1 100 professionals among governmental authorities, regulators, operators, service providers and academia.

With the main purpose to support Members to identify key challenges, share international experience and best practices, training activities were focused on current, important topics of the ICT sector, including 4G network technologies, advanced telecommunications networks, NGNs, spectrum management, QoS, digital cities, broadband (technologies, regulation and marketing), LTE, IPTV-OTT, digital TV, FTTH, cloud computing, and telecommunication regulation.

Emergency communications and climate change

In the framework of HAP Programme 5, ITU in the Americas has delivered several activities being demanded by State Members. ITU has organized during the HAP cycle different capacity building workshops in the region, involving different actors, and has also assisted different countries in improving their respective capabilities on emergency communications. Also, under the topic climate-change adaptation, ITU has partnered with the Basel Convention, including different actors and has organized and delivered to Members various events on e-waste.

ITU has organized and delivered 11 workshops to build capacity for ICT in disaster mitigation and management. Regional multi-stakeholder forums in South America have also allowed

input for 10 countries to develop their own national emergency telecommunication plans (NETPs), with ITU support. Work from the ITU-D Study Group initiative on emergency communications will be published in two handbooks.

A *Cooperation Agreement in Disaster Preparedness and Response through the use of ICTs* was signed in 2011 with CDEMA (The Caribbean Disaster Emergency Management Agency) to support activities and projects in the area of Telecommunication/ICTs in the Caribbean with particular focus on the use of ICT in disaster management and climate change adaptation.

A Memorandum of Understanding was signed in 2012 with the government of Haiti to promote a dynamic framework for cooperation and technical assistance to contribute to the development of the telecommunication sector and, therefore, to national development which has an objective of making Haiti an emerging country by 2030.

Arab States

Focus

The *Connect Arab Summit* noted that "the Arab region has made good progress towards the attainment of universal access to ICTs. As in many other regions, the Arab region is characterized by disparities in terms of income levels, and ICT penetration between the high-income Gulf Cooperation Council (GCC) countries and non-GCC economies that include a number of least developed countries." Whilst there is evidence of increasing digital divide, activities in the most ICT-aware countries in the Arab States suggest that major regional centres of high quality expertise have now emerged in the period, for example, in the area of cybersecurity and child online protection, conformance and interoperability, and IPv6 migration. With regional hubs, the potential exists to extend training and awareness to up to 22 countries.

Perspective

A number of countries from the Arab States region with relatively high ICT Development Index (IDI) values continue to make great progress in ICT development, and four out of the regional top six — Bahrain, Lebanon, Oman and the United Arab Emirates — are among the most dynamic countries in the IDI 2012. At the same time, across the region there is evidence of an increasing digital divide.

Regional Initiatives

Broadband access network, digital broadcasting, open-source software, Arab digital content, cybersecurity.

A pivotal role

"It's an honour for Oman that we were designated by ITU to be the Regional Centre for Cyber Security. This will enable OCERT to engage and contribute more in the capacity building of cybersecurity initiatives in the Region. In addition, the Centre will play a pivotal role in supporting ITU's global initiative by localizing cybersecurity services and support to meet the unique needs of the region. Existing OCERT initiatives like the Child Online Protection will also be given the resources to continually improve and grow while other successful OCERT initiatives like the OCERT Ambassador programme will have the possibility to propagate externally to the region."

Dr Salim Sultan Al Ruzaiqi CEO of ITA, Oman

Wireless broadband implementation

Following HAP Programme 1, the ITU/Craig and Susan McCaw Broadband Wireless Network project is implementing broadband wireless networks and developing ICT applications to provide free or low cost digital access for schools and hospitals. In Djibouti, the project is ongoing, and a 4G Broadband Wireless Network (based on mobile WiMax standard IEEE802.16e) has been designed and planned for operation in late 2013.

Digital broadcasting

Also under HAP Programme 1, assistance to Member States in the Arab Region in making the gradual transition from analogue to digital broadcasting began in 2011. A concept paper on digital television transition in the Arab Region was developed in 2012 with the objective to provide a roadmap for the transition in selected countries and to demonstrate applications for enhanced broadcasting. More than 10 workshops and frequency coordination meetings were organized across regions in cooperation with the Radiocommunication Bureau and the Centre of Excellence (CoE) network.

Direct assistance is being given by BDT to Sudan and Yemen to plan a national migration strategy from analogue to digital. Lebanon is also supported for a national transition roadmap.

Conformance and Interoperability

In Tunisia, ITU signed a MoU with CERT (Research and Studies Telecommunication Centre) to collaborate in the implementation of a C&I programme to increase human capacity in different C&I domains in Arab and African countries.

Within this framework, in 2012, ARO organized in cooperation with CERT the *ITU Forum on Conformance and Interoperability for the Arab and African Regions* in Tunis. A key aim of the forum was to promote awareness in developing countries for establishing the most appropriate C&I regime. The forum programme discussed accreditation and certification, mutual recognition agreements (MRAs) and multilateral arrangements (MLAs), capacity building and establishment of regional test laboratories. Regional experiences,

activities of various regional and international institutions, standards organizations, test labs, views from industries, issues concerning counterfeit equipment were also presented.

C&I training courses were also scheduled from 2012 onwards, and included training in the theory and practice of EMC and radio issues in Tunisia for participants from the Arab and African regions, with another course for the Arab region in 2013. Further training courses are planned.

Cybersecurity

ITU-D has supported many awareness programmes, particularly in the Arab States, CIS and Europe to encourage the development of guidelines and model laws at the country level. The Arab States have pursued extensive work with ITU on developing legal frameworks for COP with a view to framing model laws and an ITU Working Group in conjunction with policymakers has been reviewing the existing legislative provisions for cybercrime in 12 Arab States that will include COP guidelines.

Clockwise from top left: Conformance and Interoperability (C&I) meeting in Tunisia; CULTNAT, Egypt, BDT partner and host of the Memory of the Arab World project; IPv6 training in Sudan; Oman Regional Cybersecurity Centre discussions.

In 2012, ITU signed an Administrative Agreement under the ITU IMPACT initiative with the Information Technology Authority (ITA) of the Sultanate of Oman to establish a Cybersecurity Innovation Centre for the Arab Region. The centre is supported by ITA represented by Oman CERT (OCERT), and hosted in Muscat, Sultanate of Oman, and was launched in March 2013.

This centre will extend ITU cybersecurity initiatives in the region and also enhance the capacity, capability, readiness, skills and knowledge in the areas of cybersecurity, critical infrastructure protection and human capacity building for the Arab Region. It will offer regional support in developing policies, capabilities, toolkits, applications, procedures and manuals, and these will be made available to 22 beneficiary countries. In establishing the centre, ITA made a contribution of USD 2 million, and ITU, USD 752 000 towards implementing this project.

The initial targets have been to create a regional centre and to improve the regional preparedness and response capability to cyberthreats/cybercrimes. Recent activities have included a cyberdrill in October 2013 and capacity building activities with regard to national COP strategy development. Follow up with ITU ARO includes developing a work plan that meets requirements of the beneficiary countries and the Global Cybersecurity Agenda (GCA).

A growing role

"Sudan has witnessed a rapid development in the telecommunications infrastructure in recent years as a result of policies adopted by the Government of Sudan which included (but not limited to) privatization and liberalization, as well as a result of the fruitful cooperation with ITU.

During his visit to Sudan, Mr Sanou witnessed our national initiatives implemented by NTC-Sudan such as the establishment of a national training centre on IPv6, establishment of the national Internet exchange point (IXP), and of a SudanCERT.

We, in Sudan, appreciate the growing role played by BDT in the development of the capacity building provided to developing nations. We are very pleased with this level of cooperation."

Mr Nadir Ahmed Gaylani, Director, Planning and International Relations Department, NTC-Sudan

A special relationship

"Egypt and BDT have a very strong and special relation since the creation of the Bureau.

Egypt and BDT are in continuous cooperation regarding ICT development. Egypt succeeded in launching three mega regional projects in Connect Arab Summit 2012 including the Regional Competitive Centre for Digital Arabic Content Innovation and its related Arab Digital Content Initiative, Phase II: Memory of the Arab World, and Arab statistical indicators portal for policy-making in the region.

Moreover, Egypt, through its activities is always coordinating with BDT and ITU Arab Regional Office (ARO) to help and assist the developing countries and LDCs to meet their needs, specifically through technical assistance and capacity building programmes in National Telecommunication Institute (NTI) and Information Technology Institute (ITI).

Egypt also hosted successfully many ITU events in coordination with ITU-ARO such as the 5th symposium on ICT and Climate Change 2010, a workshop on ICT as an enabler for smart water management 2013, and an event on Celebrating Girls in ICT 2013."

H.E. Mr Atef Helmy, Minister of Communication and Information Technology

Benefit

"In line with its policy of international cooperation, Tunisia has concluded a partnership agreement with ITU in the area of techniques for measuring the conformance and interoperability of electronic equipment. Within this framework, the Telecommunication Studies and Research Centre (CERT) has been tasked with implementing, in partnership with ITU, a cooperation programme consisting in the delivery of training modules in that sphere for the benefit of groups of Arab and African technicians.

Tunisia will continue to provide support to the programme as part of its active contribution to the skills development efforts being made in this field."

Ministry of Communication Technologies, Tunisia

IPv6 Training Centre

Following HAP Programme 2, NTC Sudan and NAv6 Malaysia have signed an MoU to establish an authorized IPv6 Training Centre to provide Certified Network Engineers for IPv6 (CNE6 Level-1, -2, and -3). These certificates are accredited by Universiti Sains Malaysia (USM.my) and the IPv6 Forum (IPv6Forum.org). Eight participants were sent to USM-NAV6 Training Centre to be certified as trainers within the programme of training the trainers. As a result the team developed the Virtual Laboratory and prepared the classroom at NTC Tower to deploy this knowledge to the local community in Sudan. ITU provided consultancy to help Sudan to develop an IPv6 migration plan in 2010, and again in 2011 to evaluate the national plan for IPv6 transition.

In 2011, 12 sessions enabled 347 participants drawn from government and operators to familiarize with IPv6 issues. Certification through online examination enabled 182 trainees to become certified IPv6 Engineers. These sessions were helping to promote IPv6 and accelerate the migration to IPv6 situated in the National Sudanese IPv6 Migration Plan 2011-2015.

In coordination with ITU ARO, the Sudanese IPv6 Training Centre has organized a training session for 5 days to Yemen in IPv6 that will act the basis of the assistance that ITU will provide to Yemen in the migration to IPv6.

Establishing the training centre including the classroom, virtual laboratories and trainer budget cost approximately USD 100 000, but running costs including logistics, salaries and overheads now need to be met. NTC is looking for continued cooperation with BDT and ARO to enable the centre to be sustained across the Arab region.

Connect a School, Connect a Community

A *Connect a School, Connect a Community* project funded by a Swiss contribution to the ITU ICT Development Fund is under implementation in Comoros. In addition to the Swiss-funded project in Comoros, ITU has also funded in the Arab region a CSCC project in Palestine.

Policymaking

The *Arab ICT Indicators Portal* is a virtual gateway and database for ICT indicators in the Arab region. Each country may monitor and compare their indicators against other Arab countries. In doing so, policymakers have an important tool to evaluate and develop the impact of their policies and strategies.

The portal comprises a range of indicators including accurate and meaningful broad scope indicators compatible with existing ITU definitions as well as sets of hard and soft data, updated as necessary. This is in addition to data about social networks, innovation, digital content, security, and ICT usage.

One feature of the Arab ICT Indicators portal is a discussion board to enable countries to share proposals and comments in their indicator data collection and analysis methodologies.

Digital inclusion

An ITU *Regional Workshop on ICTs for Women's Empowerment in the Arab Region* was organized in 2011 in Kuwait, during which ITU ARO launched a study on the role of ICTs in empowering Arab Women. The study provided insights on ICT usage in the MENA region, listed the obstacles hindering the full integration of Arab women in the digital revolution, presented ITU and the Regional Initiatives to bridge the digital gender divide and enhance the impact of ICT use on women empowerment in the Arab Region and highlighted success stories of Arab women active in the ICT field. The study also formulated recommendations focused on empowering Arab women.

Asia-Pacific

Focus

The enormous extent of the Asia-Pacific region sees extremes of ICT development, including both recognized leaders in broadband connectivity and deployment, as well as developing countries. Within the constellation of LDCs, small island developing states (SIDS) have particular needs in addressing their entry into the global information society stemming from their relative remoteness and inaccessibility, high communications costs, relatively limited resources, and lack of capacity and expertise in developing policymaking and structural components for deploying ICT. These difficulties are recognized by the United Nations and ITU as requiring special support. Under HAP Programme 5, BDT is called on to give specific support to these countries to advance their ICT participation.

Perspective

The ICT Development Index (IDI) value of the Asia and the Pacific region is close to the global average. Although Asia and the Pacific display the some of the largest regional disparities in ICT development — reflecting their diversity in terms of development and income levels — the regional digital divide is narrowing.

Regional Initiatives

Unique ICT in landlocked countries, emergency telecommunication, digital broadcasting, broadband access, telecommunication policy and regulation.

Within Asia-Pacific, it has been gratifying that BDT, in partnership with donor countries, private sector ICT stakeholders as well as international and regional organizations, has been able to support major projects involving ICT policy and regulation, human and institutional capacity building, spectrum management as well as several masterplans and digital broadcasting. Regional harmonization of policymaking, particularly for Pacific states has also been possible. During the period there has also been a focus on building competence in cybersecurity. Again, these plans are at their most effective when considered regionally.

Wireless broadband master plans

Under HAP Programme 1, the *Wireless Broadband Master Plan* project was a joint partnership between the ITU and the Korean Communications Commission to assist selected Asia-Pacific countries with the development of wireless broadband master plans. The master plan project aimed at addressing the digital divide by utilizing wireless broadband technologies and best practice regulatory frameworks for spectrum management, technology, competition and content development.

The master plan project has proved to be a great success, with national regulators in each of the four selected countries approving their respective plans.

The ITU wireless broadband master plan project for countries in the Asia-Pacific region aimed to assist countries in developing their own wireless broadband master plan to eventually allow access to broadband supported services and applications at rates that are affordable and comparable to those in developed countries. Myanmar, Nepal, Samoa, and Viet Nam received assistance to develop plans.

The Project also recognized the need to develop general guidelines for countries in the Asia-Pacific region as a reference with the means to develop their own wireless broadband master plan and the opportunity to explore wireless broadband issues as part of the development of an overall country broadband master plan.

The three main objectives of the wireless broadband masterplan project are:

- Assess existing policy and regulatory frameworks with a view to facilitate deployment of wireless broadband technologies taking into account convergence trends and provide recommendations for future requirements in selected pilot countries.
- Assess user demand and take up of wireless broadband applications, content and services in the Asia-Pacific region.
- Examine key policy and regulatory issues including licensing, spectrum access/ interconnection, deployment of new technologies, rollout of obligations, incentive

based regulation, infrastructure sharing, universal service obligations and provide concrete recommendations to promote broadband wireless services vis-à-vis identified national priorities and international best practices.

The framework addresses the main aspects of the wireless broadband ecosystem, from content to the provision of global Internet connectivity that can provide widespread affordable wireless broadband services.

These Guidelines cover various topics including:

- The global and regional context of broadband.
- The current state of play in the country's wireless broadband market.
- The need to ensure legal and regulatory certainty.
- The management of spectrum scarcity and the need to ensure harmonization.
- The technologies and innovations in wireless broadband.
- Conclusions, recommendation and a suggested roadmap.

All the masterplans as well as generic guidelines are published on the ITU website.

Clockwise from top left: Presentation of roadmap for transition from analogue to digital broadcasting for Papua New Guinea; National workshop on broadband masterplan, Nepal, 2012; ITU TRAI Asia Pacific Regulators Roundtable, Hyderabad, 2012.

Digital broadcasting

Digital broadcasting in Asia and the Pacific region was endorsed as a Regional Initiative for Asia-Pacific by WTDC-10, as well as a HAP Programme 1 component. Here, the objective is to assist countries in the Asia-Pacific region in the smooth transition from analogue to digital terrestrial television broadcasting. In 2012, with the support from ITU-KCC Project, the *Guidelines on Transition from Analogue to Digital Terrestrial Television Broadcasting* was updated taking into account the situation in the Asia-Pacific region, a section on *Migration of Broadcast Archives from Analogue to Digital* was also added.

In 2013, ITU-MIC Japan Project updated further the Guidelines to include the information on Satellite, Cable TV, and IPTV. The new Guidelines are scheduled for 4Q 2013-1Q 2014.

A number of countries completed their roadmap reports under the ITU-KCC project. In 2011, Cambodia, Mongolia, Nepal, Sri Lanka, and Tonga completed their roadmap reports.

During 2012-2013 Papua New Guinea, Fiji, Laos, Maldives, Myanmar, Philippines, Indonesia, Thailand were assisted in developing their roadmaps. Timor-Leste is in process. In 2013, ITU-MIC Project has assisted Bangladesh and Micronesia while ITU-KCC Project has supported Viet Nam and Vanuatu.

To-date, under ITU-KCC and ITU-MIC projects (2009-2013) the roadmap reports have completed in 14 countries (Bhutan, Cambodia, Fiji, Indonesia, Lao P.D.R., Maldives, Mongolia, Myanmar, Nepal, Papua New Guinea, Philippines, Sri Lanka, Thailand, and Tonga) and on-going (2013) 5 countries (Bangladesh, Micronesia, Timor-Leste, Vanuatu, and Viet Nam).

New horizons

"I do expect that during this workshop you all will get a more in-depth knowledge of the substance and open up new horizons on both regulatory and business on satellite.

On behalf of the Government of Indonesia, I would like to express our high appreciation to ITU in the organization, facilitation and arrangement of this very important workshop."

H.E. Mr Basuki Yusuf Iskandar, Secretary-General, Ministry of Communication and Information Technology Republic of Indonesia

Skill enhancement has been made possible by 8 regional workshops and training sessions organized during 2011 to 2013 with more than 650 attendees. Many of these were organized in partnership with national and regional regulatory associations. Subjects included: digital terrestrial TV coverage and frequency planning in Malaysia; a Thailand workshop on the introducing a digital broadcasting functional framework; a regional workshop on strengthening digital broadcasting experience in Viet Nam; a regional workshop on the transition to digital broadcasting and digital dividend; an ITU ASP CoE training and regional workshop on the roadmap for transition from analogue to digital broadcasting; an ITU-AIBD-ABU pre-summit workshop on digital broadcasting in Thailand; and an ITU-ABU-AIBD regional workshop on digital broadcasting implementation in Kuala Lumpur, Malaysia, back-to-back with ABU Symposium, and Pacific Media Partnership Summit in Vanuatu.

Satellite connectivity

In response to requests received by ITU from Member Administrations particularly from the Asia-Pacific region, ITU and the Ministry of Communication and Information Technology (MCIT) of the Republic of Indonesia jointly organized with support from the Department of Broadband, Communication and the Digital Economy (DBCDE), Government of Australia, *the ITU Asia-Pacific Regional Workshop on Satellite Launching and Coordination* in Yogyakarta, Indonesia in 2013.

The Workshop brought together 112 participants from 15 Member States from the Asia-Pacific region and included satellite operators, experts and practitioners, senior government officials and other stakeholder groups from the satellite industry. This workshop is an example of close working relationships between BDT and MICT-Indonesia.

Clockwise from top left: Presentation of the roadmap from analogue to digital broadcasting for Fiji; Wireless broadband masterplan presentation, Samoa; BDT roadmap reports; Tonga national roadmap team: transition from analogue to digital broadcasting.

The workshop concluded that: there was a need to develop a regional information depository of national regulatory frameworks for satellite communication in order to assist all the regional membership in their specific difficulties; coordination could be eased if Administrations could work with a goodwill approach during coordination procedures and if possible, have realistic protection of national satellite operators in favour of growth of the industry; and there was a need to address the challenges faced by administrations who are new entrants into satellite market especially in terms of lack of competent human capacity preferably making knowledge transfer as a part of regional partnerships.

Assistance was also provided to Mongolia in strengthening their national framework in terms of satellite related rules and procedures.

Cybersecurity

Following HAP Programme 2 calling for the safe and secure use of ICT, ITU and ASEAN agreed to collaborate on joint actions that will strengthen the capacity of Cambodia, Lao P.D.R., Myanmar and Viet Nam (CLMV) in the area of cybersecurity. Two concrete actions were undertaken to achieve the objectives of the collaboration:

- ITU-IMPACT CIRT Assessments for CLMV. The main goal of the assessments is to study and evaluate the current CIRT structures and capacities of the 4 countries to ensure computer incidents, intrusion attempts and emergencies are appropriately managed to levels consistent with industry standards and good business practices.

  CIRT assessments were undertaken for Cambodia, Myanmar and Viet Nam while a Readiness Assessment for establishing a National CIRT was undertaken for Lao P.D.R.. The LaoCERT was established in 2012 and is now operational. ITU provided capacity-building assistance to the newly-established LaoCERT.
- ITU-ASEAN Subregional CIRT Workshop for CLMV. ITU and ASEAN jointly organized the *ITU-ASEAN Subregional CIRT Workshop for CLMV* which was held in Yangon, Myanmar in November 2011. The workshop was hosted by the Ministry of Communications, Posts and Telegraphs of Myanmar. The workshop was a joint effort of ITU and ASEAN that aimed to provide a platform for cooperation, information sharing, and discussion on cybersecurity and with particular focus on CSIRT/CIRT/CERT policies, procedures, best practices, challenges and opportunities among participants from ASEAN Member Countries, in particular, CLMV and ASEAN dialogue partners. The workshop aimed to contribute to previous as well as ongoing global activities related to building confidence and security in the use of ICTs (WSIS Action Line C5) and was linked to the ITU GCA and HAP Programme 2 (Cybersecurity, ICT Applications and IP-based network-related issues). Participants from 10 countries representing CIRT practitioners, senior government officials, cybersecurity experts, related industry players and other stakeholder groups from ICT and security sectors were involved. One important feature of the workshop was the conduct of a cyberdrill/simulation on the last day of the workshop. This was the first cyberdrill undertaken by ITU-IMPACT.

Other activities included:

- In 2013, capacity building for the ICT Training Institute for Afghanistan was undertaken by providing technical literature.
- Support was provided to Bangladesh for building national strategy and capability for cybersecurity.
- As an input to the Ministerial Meeting in August 2010 in Maldives, CIRT Assessment was carried out in respect of five LDCs from South Asia covering Afghanistan, Bangladesh, Bhutan, Maldives, and Nepal in 2010 and 2011. Subsequently, implementation of CIRT infrastructure for Bhutan was carried out in 2013.
- ITU and UNODC organized an *Asia-Pacific Regional Workshop on Fighting Cybercrime*, which attracted 70 participants from 19 countries with legal and technical background. The workshop, organized in partnership with SPO, KISA and

Important exchange

"We heartfully thank ITU for organizing the Workshop and for facilitating the achievement of the successful outcome of this important ITU-ASEAN Subregional CSIRT/CIRT/CERT Workshop for CLMV. We likewise request the ITU to continue providing a platform where the very important exchange of experiences, best practices and operational updates in CIRT operations, capacity building can be facilitated."

Senior officials from Cambodia, Lao P.D.R., Myanmar and Viet Nam

Digital commitment

"On behalf of Minister for Communication & Information Technology, Hon. Jimmy Miringtoro, Secretary of the Department, Mr Paulias Korni, and Chief Executive Officer of our regulator (NICTA), Mr Charles Punaha, I commend the ITU for continuing to be a trusted partner for PNG in our ongoing efforts to harness the opportunities — and address the challenges —brought on by enhanced ICT tools and services.

Recently, this close cooperation was again aptly demonstrated when the ITU provided technical and related resource assistance for PNG to develop its Roadmap for Transition from Analogue to Digital Terrestrial Television Broadcasting.

PNG also places on record its sincere gratitude to the Korea Communications Commission (KCC), Republic of Korea for their invaluable contribution to this worthy cause.

Now that the Final Report on the Roadmap has been formally presented to PNG by Mr Brahima Sanou, BDT Director, the onus is on us to implement its objectives/recommendations so the benefits are enjoyed by the industry stakeholders, as well as our ordinary citizens.

We hereby commit ourselves to this important national undertaking."

H.E. Mr Kora Nou, Deputy Secretary, Department of Communication & Information, Papua New Guinea

KiC, adopted recommendations for the way forward while fostering international cooperation amongst cross-sectoral stakeholders. The ASP CoE Trainings on Securing Networks in 2011 organized in partnership with IMPACT and DBCDE (Australia) and Mobile Security with IMPACT and NBTC (Thailand) in 2013 built skills of more than 100 participants.

IPv6

In Asia-Pacific, six training sessions were held under ITU ASP CoE on issues relating to deployment of IPv6 that built skills of more than 150 participants in with partners including APNIC, MICT (Thailand), NAv6 and TOT Academy.

Connect a School, Connect a Community

WSIS set a target of connecting all primary, secondary and post-secondary schools to ICTs by 2015. In response, *Connect a School, Connect a Community* is a public-private partnership launched by ITU to promote broadband Internet connectivity for schools in developing countries around the world. Projects are often referred to in terms of "4Ps", embodying the concept of public-private-people's-partnerships. The *Connect a School, Connect a Community (CSCC*) initiative aims to broaden ICT usage to enable schools to become community centres and permit wider uptake particularly in marginalized communities.

One Asia-Pacific project, connecting rural schools to ICT resources in southern Sri Lanka shows the principle of supporting and developing partnerships around the project.

ITU funded 25 PCs and printers to supply 25 schools in Matara District. Braille printers and other e-accessibility facilities were also made available. Tables and chairs were donated by SLS Development Foundation and Kamburupitiya Kodithuwakku Development Foundation. Licensed operators Mobitel and Dialog Axiata supplied Internet connectivity to the schools on a concessionary basis. Finally, the Ministry of Education and Intel EM Sri Lanka supported ICT teacher training to utilize the new facilities. The project involved a public awareness programme that brought together marginalized groups including rural communities and individuals with accessibility needs, as well as different commercial groups and policymakers (Ministry of Education and the ICT Regulator, TRCSL). Governmental partners such as France, Switzerland, and the Kingdom of Saudi Arabia contributed funding to ITU and in-kind beneficiary country resources.

Policymaking

Following HAP Programme 3, Asia-Pacific has seen extensive support for regional harmonization of policymaking. Between 2008 and 2013, ITU implemented a project designed to support the regional harmonization of ICT policy and legislation in Sub-Sahara Africa, Caribbean and Pacific Group of States (ACP). It was probably one of the largest global initiatives aimed at both harmonizing and updating polices and legislations to date. It focused on two main areas – cybersecurity and telecommunications – and worked together with the regional organizations and their Member States. In order to support this process, ITU and EU decided to co-fund a project which forms part of the programme *ACP-Information and Communication Technologies* within the 9th European development fund (EDF).

Digital Literacy powered in the Philippines

"Our Community eCentre (CeC) is a two year old Telecentre based in Malvar, Batangas, Philippines. In September 2012 it was declared winner of a contest organized by Telecenter.org Foundation (TCF) and the International Telecommunication Union (ITU) in conjunction with their joint Women's Digital Literacy Campaign. . . . With the prize equipment, we think of how much easier it will be for us to reach more women in remote areas and teach them basic computer literacy. Thanks and more power to Telecenter.org. Foundation and ITU! Immediately after delivery of the equipment, we deployed four computers to one of our Barangays, in effect establishing a Barangay Community eCentre. This Barangay CeC was opened on 4 March 2013 - the third community eCentre opened in 2013 by us - as on 1 February 2013 we opened two satellite CeCs in two barangays. This equipment and support from ITU will go a long way in ensuring our community is a place where anyone and everyone is entitled to learn, collaborate and transform the lives through the power of ICTs. So from CeC: Malvar, Batangas, Philippines, we say MARAMING SALAMAT PO AT MABUHAY ANG ITU!"

Ms Linda Navarro Balbuena, Municipal Government Department Head in the Office of Planning and Development of the Municipality of Malvar, Batangas, Philippines, and concurrently, CeC Manager of CeC Malvar

The Pacific region was supported by *Capacity Building and ICT Policy, Regulatory and Legislative Frameworks Support for Pacific islands Countries (ICB4PAC).* ICB4PAC addresses the needs expressed by Pacific regional organizations and the countries themselves for assistance in developing consistent ICT policies and legislations. The goal is to empower each country to implement the reforms necessary so that the region as a whole reaps the benefits of a harmonized ICT regulative landscape.

ICB4PAC has had to factor into all stages the very real logistical issue created by the vast distances between countries. As an example, organizing project meetings is a major task with dates agreed in close collaboration with regional organizations.

ICB4PAC was officially initiated at the launch meeting (Nadi, November 2009). There were 42 participants representing 15 countries, six regional organizations, and a number of private-sector and academic organizations. The level of participation, both in terms of number and seniority, demonstrated ICB4PAC's relevance and importance to the region. Participants included permanent secretaries, CEOs, assistant CEOs, director generals and regulators. The participants reviewed and updated a proposed list of priorities. They also discussed the methodology for project implementation with the aim of facilitating and consolidating ownership of the project by the beneficiary countries.

Priorities for ICB4PAC beneficiary countries include:

- National ICT policies.
- Interconnection and international roaming.
- Cybercriminality.
- Licensing.
- Universal service and access.
- Numbering (including addresses and domain names).

Further to the endorsement of the regional reports for each of the above priorities (work areas), ICB4PAC has supported individual countries putting the knowledge acquired into practice (in country technical assistance to 15 countries). This assistance has been provided by a so-called troika: a combination of the experts that worked on the regional knowledge reports, national experts (where available) and representatives from the ministries and regulators of more advanced countries in the region that could support their peers.

Overall, the ICB4PAC project has created a real dynamism in the region, which was specifically highlighted during the Pacific Regional Information and Communication Technology (ICT) Ministers' Meeting (Tonga, June 2010) (Tonga Declaration).

Asia Regional Development Forum

The ITU successfully concluded the Asia-Pacific Regional Development Forum (RDF-ASP) back-to-back with the Asia-Pacific Regional Preparatory Meeting for WTDC 2014 (RPM-ASP) in April 2013, in Phnom Penh, Cambodia. RDF-ASP with this year's theme *Asia-Pacific: Smartly DIGITAL (Digital-Intelligent-Greener-Innovative-Transparent-Accessible-Living*) and graciously hosted by the Royal Government of Cambodia through its Ministry of Posts and Telecommunication.

The forum was structured to investigate the digital opportunities offered by broadband, and the potential for digital empowerment for all, as well as creating a smarter, safer and greener society.

The forum emphasized the importance of political will for building digitally inclusive, literate and empowered citizenship, privacy and security, energy efficiency, e-waste management while the harmonizing emergency numbers with clear, single and well-advertised distress point of contact and international/regional coordination, among other themes. Forum participants likewise reiterated the

A cooperation model

"Priority areas identified at past World Telecommunication Development Conferences have benefited Cambodia enormously. Cambodia has successfully managed its transition into a vibrant telecommunications market with the expansion and upgrade of its telecom infrastructure. The ICT sector has also expanded and we are set to contribute to its regional and global growth in the future."

H.E. Sok An, Deputy Prime Minister, Cambodia

Faster digital inclusions

"With ITU assistance, TRCSL extended its support and backing to implement the pilot project initially. It was completed with great success. We learnt ways of doing things using the 4P model in ICT development. Under the new initiative as one among five other member countries, we have used the lab model as well as one computer per school model thereby giving remote rural schools connectivity. I thank all 4P partners for their contribution to make the project a success. ITU will encourage member countries to increase their contribution towards the success of initiatives such as Connect a School, Connect a Community facilitating faster digital inclusion in the rural sectors of the country.

Thank you."

Mr Anusha Palpita, Director General, TRCSL, Sri Lanka

importance of public-private-people's partners called 'smart partners' to realize the smartly digital society for all, regardless of gender, ages, cultures, locations and persons with disabilities in Asia-Pacific. Outcomes of the RDF will not only serve as an input to the RPM-ASP but also for the preparatory process of the overall review of the *World Summit on the Information Society (WSIS+10)*.

Human capacity building

ITU Member States and Sector Members have emphasized the critical role that capacity building plays in supporting an ever changing ICT sector. Human capacity building while being an ITU-D program in itself also has its components embedded as expected outcomes in other programs as well as the Asia-Pacific Regional Initiatives.

To deliver on these capacity building needs, a number of mechanisms including the ITU Academy initiative (Centres of Excellence (CoE) network and Internet Training Centres), regional projects and programs have been implemented.

ITU Asia Pacific Centres of Excellence Network

In the Asia-Pacific region, the CoE network is comprised of eight centres established to offer training programs on specific telecommunications/ICT themes. These include policy and regulation (Pakistan Telecommunication Authority, Pakistan); spectrum management (Ministry of Information and Communication Technology, Iran); rural ICT development (Universiti Utara Malaysia, Malaysia); technology awareness (Pusan National University, Republic of Korea); business management (Ministry of Information and Communication Technology, Thailand); broadcasting (Asia-Pacific Institute for Broadcasting Development); ICT applications (Viettel & Ministry of Information and Communication, Viet Nam) and cybersecurity (IMPACT).

The Asia Pacific (ASP) CoE network relies on partnerships to deliver high quality content that is international in nature. Some existing partnerships include the organizations hosting the centres, viz. Ministry (Thailand, Iran, Viet Nam); Regulator (Pakistan); Industry (Viet Nam); University (PNU (Republic of Korea), UUM (Malaysia)); International Organisations (AIBD, IMPACT) as well as partners such as Pacific Islands Telecommunications Association (PITA); Busan Metropolitan City (Republic of Korea); National Broadcasting and Telecommunications Commission (Thailand); Malaysian Communications and Multimedia Commission (MCMC); Telecom Regulatory Authority of India (TRAI), Asia Pacific Women's Information Network Centre (APWINC), APNIC, Telecenter.Org, NAv6 (Malaysia), Huawei, TOT Academy, Intel, IEEE, and Department of Communications (Government of Australia) amongst others.

Over 1 800 participants have been trained under the ITU ASP CoE trainings in 2011, 2012 and 2013 with support from the ASP Centres of Excellence and partners through 44 training programs while International Training Programs built skills of over 170 participants. The ITU-IDA training program in 2012 and 2013 benefited more than 50 participants. Projects with Department of Communications, Australia, NBTC, Thailand and in-kind assistances from ITU ASP COEs and partners supported the capacity-building activities.

Projects

Human capacity building formed an important element of a number of projects including: ITU-Korea Communications Commission (KCC)/Republic of Korea projects on digital broadcasting and wireless broadband; ITU-Ministry of Internal Affairs and Communications (MIC), Japan project on digital broadcasting; ITU-Department of Communications, Australia projects on Asia-Pacific Regional Initiatives; the ITU-European Commission (EC) project on *Capacity*

Building and ICT Policies, Regulatory and Legislative Frameworks for Pacific Island countries (ICB4PAC); and ITU-National Broadcasting and Telecommunications Commission, Thailand projects on training. These elements were implemented through ITU Asia-Pacific Centres of Excellence training sessions as well as other programmes.

The International Training Programmes organized with Australian Communications and Media Authority (ACMA), the Telecom Regulatory Authority of India (TRAI) and Korea Communications Commission (KCC) built skills for over 170 participants with a focus on the implications and challenges of convergence. While the ACMA ITU International Training Program 2011 provided a comprehensive overview and insight into Australia's contemporary converged communications regulatory environment, the International Training Program 2012 focused on India's regulatory environment, and the International Training Program 2013 with Korea Communications Commission focused on Republic of Korea's endeavor in realizing the smart society.

Another important partnership on capacity building is with the Infocomm Development Authority (IDA) of Singapore. The *ITU-IDA Executive Training Programme* raised awareness on *Enabling Frameworks for ICT Development — The Singapore Experience*.

Continuous support

"I wish to express my special thanks to the ITU for its continuous support, assistance and cooperation to the Ministry of Posts and Telecommunication and the Institute of Posts and Telecommunications for the last several years. In particular, we are indeed grateful that the ITU Project on Strengthening the Training Capacity of the Institute of Posts and Telecommunications of Lao P.D.R. has resulted successfully in very concrete outcomes that can be visibly, directly and immediately utilized by ICT personnel from the government, private sector and academia to improve their networking skills, contribute to capacity building and institutional strengthening and eventually drive sector investments, employment and socio-economic development in the country.

With a more equipped and effective Institute of Posts and Telecommunications, thanks to the ITU, we see these opportunities coming our way very soon."

H.E. Mr Hiem Phommachanh, Minister of Posts and Telecommunications, Lao P.D.R.

Strengthening training capacity

BDT and the Ministry of Posts and Telecommunications (MPT) of Lao P.D.R. jointly implemented *Project on Strengthening the Training Capacity of the Institute of Posts and Telecommunications (IPT), Lao P.D.R.* with the aim to strengthen the IPT human and institutional capacity as it relates to the country's telecommunication/ICT sector through review and improvement/upgrade of the educational and training programs, facilities and teaching staff of IPT.

The project has contributed to Lao Government's objectives to address the growing demand for local ICT professionals in the country while improving their career prospects and readiness to fully participate in the global ICT environment and help them fill a growing need for networking professionals around the world.

The project successfully delivered two very important concrete outputs:

- Establishment of CCNA D, CCNA Security and CCNP Laboratories in the Institute, and
- Six extensive training courses for IPT instructors, other government staff and the ICT industry in Lao P.D.R..

The ITU-IPT Laboratories were officially handed over to H.E. Mr Sithong Thonkkeo, Deputy Minister of Posts and Telecommunications, Lao P.D.R. in July 2013.

e-Accessibility

BDT received a request for technical assistance from Afghanistan and Nepal for developing an ICT framework for persons with disability. Recognizing the significance and potential of ICT for the empowerment of underprivileged groups, the Ministry of Information and Communication and Nepal Telecommunications Authority with Ministry of Information and Communications and ATRA Afghanistan carried out detailed assessment of both the countries including organizing a national workshop in Kathmandu to identify gaps and make recommendations for policy, regulatory and project intervention/initiatives in Nepal to implement ICT accessibility for persons with disabilities.

BDT provided a draft report to Nepal for feedback with a final report prepared both for Nepal as well as for Afghanistan which is now at publication stage. Outcomes included: a commitment from policymakers and industry to cooperate and participate in promoting ICT accessibility in Nepal; identifying organizations who will champion underprivileged groups, formulating a draft code of practice/ guidelines, as appropriate, to encourage a light touch regulatory approach. The initiative has received wide media coverage in the countries.

CIS

Focus

The existence of a digital divide across the region (and particularly in rural areas) places emphasis on deploying improved access to broadband capability for the public at large and providing the potential for reproducing successful deployments. The region is also characterized by the availability in several countries of significant and highly technical expertise and competences in advanced ICT that can be delivered through regional hubs and shared more widely to build capacity. Several countries have also been assisted in developing planning for digital broadcasting again on a regional basis.

Broadband access implementation

Under HAP Programme 1, the CIS Region has seen successful execution of public access projects, such as in the Republic of Moldova where the objective was to enable access to Internet in selected (pilot) rural areas by creating public access points with appropriate communications and broadband technology. Under this project, ITU established in selected rural areas of the Republic of Moldova public access points to Internet (PAPI), using broadband technologies, for the delivery of a wide range of on-line public services.

It is estimated that, with the launch of the early field trial, 43 rural settlements in different locations of the Republic of Moldova will be covered. Depending on the results of implementation, this project will serve as a pilot model for developing similar models all over the country. Meanwhile the project will implement ICT using broadband in rural areas, install required hardware and software, enable Internet access, train populations in ICT and PC use, and deliver public electronic services through public Internet access points created in the post offices, libraries, and schools. A similar project has been implemented in Belarus.

Perspective

Perspective: The CIS region sees advanced progress in terms of ICT development between countries such as the Russian Federation, Belarus, and Kazakhstan, which features in the global top 50 of the ICT Development Index (IDI), although regionally, quite a divide remains.

Regional Initiatives

Implementing electronic meetings, digital broadcasting transition, ITU Virtual Laboratory, rural power supplies, wireless payment systems.

Digital broadcasting

Within the framework of the CIS Regional Initiative on assistance in the transition from analogue to digital broadcasting, the project on establishing the advisory and methodical centre in Minsk, Belarus, was implemented. The purpose of the centre is to assist the CAs of the Regional Commonwealth in the field of Communications (RCC) member countries during the transition, to develop interactive multimedia applications for terrestrial digital radio broadcasting, and to train specialists in digital TV and radio broadcasting. The Centre is now operational and advisory assistance has been provided to Kazakhstan and Kyrgyzstan.

ITU FSUE ZNIIS Virtual Laboratory

The ITU and FSUE ZNIIS have started collaboration in building a virtual laboratory on the basis of the ITU-FSUE ZNIIS International Telecommunication Testing Centre project.

The project will be realized under the existing ITU Conformance and Interoperability Programme and will be directed to the implementation of goals of PP-10 Res.177, WTSA-12 Res.76, WTDC-10 Res.47 and the objectives of ITU C&I Programme Action plan (Council-12 C-48/12). The project has been conceived to comply with the Regional Initiative adopted in 2010 at WTDC-10 aimed at ITU virtual laboratory creation.

The major objectives of the project are:

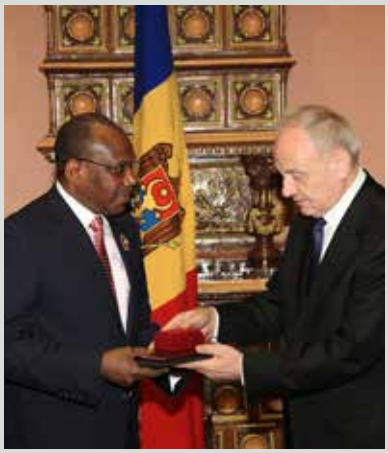
- The creation of the virtual laboratory.
- Development of test suites for ITU Recommendations.
- Performing remote tests on conformity and interoperability of new equipment/technologies, services, testing of end-to-end Internet speed, estimation of Network Performance (NP)/Quality of Service (QoS)/Quality of Experience.
- Conducting remote training of specialists from developing countries in the implementation of ICT testing approaches.

Spectrum management

The ITU Regional Forum on *Topical Matters of Telecommunication Regulation and Radio Frequency Spectrum Use* for CIS and Europe was carried out jointly by ITU and the Communication Authority of Ukraine. The forum focused on various aspects of the access to the electronic communications market, ways to reduce the digital divide, the improvement of legislation in the field of radio frequency resource and state monitoring, and ways to leverage on ICTs for reforming the economy and society.

In 2013, Ukraine hosted the ITU Regional Seminar for CIS and Europe on *Radio Frequency Spectrum Management: Radio Monitoring as an Effective Tool for Radio Frequency Spectrum Management.* The seminar provided an opportunity to some 100 experts and professionals from the regions for sharing practical experiences.

In the Republic of Moldova, BDT provided assistance in the evaluation and development of strategies related to the national radio frequencies management plan, as part of the draft national strategy *Digital Moldova 2020*. The assistance met its goal in reviewing and analyzing the current situation with radio frequencies management, identifying the main issues, elaborating strategic direction for the spectrum allocation and management, and providing concrete recommendations for revising the national strategy paper.



Clockwise from top left: Visit of ITU Secretary-General; PAPI implementation in Republic of Moldova; Visit of BDT Director.

IPv6 transition

The workshop on the regulatory and technical aspects of the migration to IPv6 for CIS countries was held in cooperation with the CA of Moldova and JSC Moldtelecom. The workshop was attended by 67 participants from 9 CIS countries. The workshop met its goal in increasing the number of trained specialists in the field of regulations for the transition from IPv4 to IPv6 and produced relevant recommendations to CIS CAs focusing on issues such as: the implementation of IPv6 by ICT network operators in CIS; information security; the development of IPv6 policy and strategies for developing countries; the development of mobile IPv6 (MIPv6); and the promotion of IPv6 over satellite.

Connect a School, Connect a Community

Within the framework of Connect a School initiative, 3 Internet access centres were created in remote areas of Tajikistan and 2 centres in Kyrgyzstan, thus allowing rural population to benefit from the access to the Internet. In partnership with Cisco, support was provided to the CA of Georgia for the creation of 2 Internet training centre for students — one in the universities of Batumi and Tbilisi, Georgia and one in the Tashkent University of Telecommunications, Uzbekistan. In addition, technical assistance was provided to the CA of Moldova in equipping a computer classroom in a boarding school.

In the CIS Region, building on the 2010 joint project of BDT, the Ministry of Transport and Communication of Kyrgyz Republic and the private company Alippe.TV on the creation of Interactive Multimedia Digital Broadcasting (IMDB) Networks in mountain areas, BDT has designed targeted capacity building opportunities within the framework of the *Connect a School* initiative to improve access to broadband in schools and enable them to serve as community ICT centres. In cooperation with Kyrgyz Telecom and the Kyrgyz State Technical University (KSTU), BDT organized 5 training courses for teachers from rural and remote areas of Kyrgyzstan. The training provided by the KSTU was aimed at increasing access to ICTs. 60 ICT trainers from rural areas had the opportunity to improve their professional skills and knowledge.

A mutual understanding

"I would like to express our gratitude to the ITU and to you personally, for all the contributions to the project Establishing broadband public access points to Internet (PAPI) in rural areas of the Republic of Moldova, which was implemented in 2011-2012.

I am pleased to inform you that this project was recently successfully completed and now, in 43 rural localities of Moldova, more than 170 000 inhabitants benefit from public access to the Internet via 133 fully equipped PC stations. It is my deep belief that this is the path the ITU can take to use its resources and capacities to promote information society development in the underprivileged regions of the world.

I am sure that the mutual understanding and the positive approach in our relationship would construct a firm platform for further joint efforts for the achievement of our common goals."

H.E. Mr Pavel Filip, Minister of Information Technology and Communications of the Republic of Moldova

Cybersecurity and Child Online Protection

The ITU *Regional Workshop on Integrated Aspects of Child Protection on the Internet for CIS and European countries* was carried out in cooperation with the Odessa National Academy of Telecommunications (Ukraine).

In CIS, expert assistance was provided to the CAs of Kyrgyz Republic and the Republic of Armenia to develop their national cybersecurity strategy. Key documents such as roadmaps, guidelines and recommendations to facilitate the creation of national capacities for dealing with cyber threats were produced. Expert assistance was also provided to the CA of Ukraine on the strategy for establishment of the National body for registration of object identifiers (OID).

In CIS, BDT signed agreements with ten countries for a total amount of some CHF 1.5 Million provided as voluntary contribution by the beneficiary Member States to develop CIRTs. To date, 4 CIRTs have been established with the assistance of BDT and the other 6 are under implementation.

Policymaking

Under HAP Programme 3 on the enabling environment, the *Regional Seminar on Costs and Tariffs of Telecommunication/ICT Services* organized with the Odessa National Academy of Telecommunications focused on current trends in ICT development globally and in the CIS region; the legislative environment of cost and tariff regulation; and the economic aspects of NGN costing in a broadband environment. The ITU seminar on new technologies and their impact on regulation focused on policies and strategies for fostering an environment that promotes the development of ICT networks and services. The seminar created momentum through providing and disseminating relevant information and know-how, with regard to the implementation of the WSIS outcomes.

The annual ITU *Regional Forum on Development for CIS countries on Policy and Strategy for ICT development in the CIS Region* was held in cooperation with the CA and the National Regulatory Agency for Electronic Communications and Information Technology of the Republic of Moldova. The Forum covered topics such as the main indexes for ICT development in the CIS region; education and research in ICTs; sector reform; legislative provisions to guarantee cybersecurity and protect children online; and licensing of converged broadband services. The seminar elaborated recommendations to the CIS CAs and regulators aimed at enhancing the ICT policies, strategies, and regulations in place.

From top:
Kyrgyz laboratory; Visit of ITU Secretary-General to Republic of Moldova; Digital Moldova 2020.

The ITU workshop for the CIS on technological and regulatory trends in the development of radiocommunications following WRC-12 was carried out in cooperation with the Leningrad Branch Central Scientific and Research Institute of Communications (Russian Federation). The workshop focused on issues related to the impact of WRC-12 decisions on the development of national communication systems; the development of modern radiocommunication and broadcasting systems; and mobile services and satellite radio-navigation.

Human capacity building

An interactive multimedia laboratory training centre aimed at studying protocol technologies for telecommunication networks, as well as for modeling networks was created in Bishkek, Kyrgyzstan. In addition, expert assistance was provided to Kyrgyzstan, Tajikistan and Uzbekistan on elaborating a coordinated broadcasting plan for the migration from analogue to digital broadcasting in their common border area in the Fergana valley.

In CIS, under the direct assistance activities to CAs from the region aimed at enhancing the enabling environment, expert assistance was provided to the Azerbaijani Administration in the area of coordination and registration of the National Satellite System in view of better international coordination in the Ku frequency band, within the framework of the ITU Radio Regulations.

CIS Centres of Excellence (CoE)

In CIS, within the framework of the Centres of Excellence for the CIS, the joint project of ITU and RCC, 4 CoE nodes are now operational: the Higher State Communication College in Belarus; the Kazakh Academy of Infocommunication in Kazakhstan, the Moscow Technical University for Communications and Informatics (MTUCI) in the Russian Federation; and the Odessa National Academy of Telecommunications Popov (ONAT) in Ukraine. The ITU AO for CIS is part of the CoEs Steering Committee. The Steering Committee discussed further opportunities of financial support for the CoE networks, the possibility of creation of an information web-page on CoE events to increase the number of participants,and a database of companies and organizations using the CoE distant training system for the CIS was discussed.

Further within the framework of the partnership with RCC, ITU delegations participated in the RCC Board Sessions. At the Joint 47th Session of the RCC Board and 18th Session of the Coordination Council of the CIS Member States for Information, ITU was represented by Dr Hamadoun I. Touré, ITU Secretary-General and Mr Orozobek Kaiykov.

Regional capacity building

BDT activities in the area of capacity building are a recognized source of high-quality training resources for different target audiences. Through a series of regional seminars, BDT

promoted and delivered training and development activities that trained some 350 telecoms/ICT professionals from 8 CIS countries and helped build local institutional capacity of CAs, regulators and operators in multiple areas. The seminar on ITU and its role in telecommunication/ICT development in CIS countries enabled a better understanding of ITU's activity and role in the region.

The seminars on capacity building and digital inclusion for CIS countries helped in promoting the importance of policies for accessibility. The seminar on capacity building through strategic management for telecommunication/ICT was held in cooperation with the Moscow Technical University of Communications and Informatics, leveraging on the multiple partnerships with training and educational institutions established in the region. More than 60 professionals were trained from 7 CIS and one non-CIS countries.

Within the framework of the CIS Regional Initiative on *Groundwork for the setting-up and holding of electronic meetings,* a number of projects were realized in 2012 aimed at ICT infrastructure and technology development. In particular, a videoconference network between the ITU AO for the CIS in Moscow and 4 CIS countries (Russian Federation, Armenia, Kyrgyzstan, Moldova) was created, enabling the ITU AO and the CAs to carry out electronic meetings involving a wide range of professionals, facilitating the exchange of information and experience as well as consultations, and allowing for providing virtual training seminars. Videoconference equipment was supplied to the CAs and installed, and training for CA specialists was delivered.

In the CIS region, CoEs operating on a self-funding basis delivered training opportunities to more than 300 participants from 7 CIS and 7 non-CIS countries in spectrum management and digital broadcasting. One long distance learning course on introducing the new generation of Internet Protocol-IPv6 was carried out on a self-funding basis. A CD-ROM was produced with the course materials.

From top:
Videoconference project;
Visit of the ITU Secretary-General to Republic of Moldova;
Kyrgyz laboratory

e-Accessibility

A pilot Internet-access centre for blind people and people with poor eye-sight was launched in Yerevan, Armenia. A preliminary agreement for partnership in the implementation of the project was signed with the UNESCO Office for the Russian Federation, Belarus, Moldova, Georgia and Armenia. In addition, a project for translating 30 000 ICT-related terms from English into Russian was initiated by the Deputy Secretary-General as a continuation of the project realized within the framework of CIS Regional Initiative on Terminology in 2010.

Special assistance

In CIS, within the framework of special assistance to countries in special need and to assist ITU Member States in integrating telecommunications/ICTs in disaster management, assistance was provided to 3 CIS countries. Technical assistance was also provided to the CA of Kyrgyz Republic for purchasing technical communication equipment and restoring the communication facilities destroyed as a result of an emergency situation. Expert assistance was provided to the CAs of Ukraine and Moldova to establish the telecommunications component of the 112 system to enable the countries to use data from active and passive satellite-based remote sensing systems for climate monitoring, disaster detection, and prediction and transmit it in real time to 112 emergency numbers.

Europe

Focus

From a development perspective, Europe has an enviable position in terms of ICT deployment. The region, however, contends with some major issues, and policymakers are vigorous in their encouragement of a continent-wide broadband capability for everyone in this decade. Wireless broadband, and the release of spectrum offered by the digital dividend, are of prime importance in this deployment. Moreover, as a result of the historical territorial nature of spectrum assignment and allocation (on a national basis), developing a coordinated spectrum policy harmonization programme is a major, regional challenge. For this reason, HAP programmes have focused on a regional approach to provide broadband resources, as evidenced by the initiatives reported below. Cybersecurity is another area that will require regional and international collaboration. Capacity building remains of importance.

Perspective

Europe is not only the region boasting the highest average ICT Development Index (IDI), at 6.73; it is also the most homogeneous. Furthermore, analyses for the period 2011 to 2012 indicate a narrowing of the regional digital divide.

Regional Initiatives

E-accessibility, digital broadcasting, ICT applications including health.

Digital broadcasting and digital dividend

ITU, in collaboration with the National Media and Infocommunications Authority of Hungary, organized the Regulatory Seminar for Europe on *Transition to Digital Terrestrial Television Broadcasting and Digital Dividend* held in November 2012 in Budapest, Hungary. This Seminar was an integral part of the European Regional Initiative on Digital Broadcasting for Europe. A main objective was to provide a basis for the exchange of best practices encountered on the path of digital migration, and discuss ways to maximize the economic and social benefits of the digital dividend. It managed to further develop a unified approach to enhance the advantages that digital migration will bring to the region of Central-Eastern Europe.

Digital broadcasting, frequency coordination and digital dividend

BDT, in collaboration with the Ministry of Administration and Digitization and the Office of Electronic Communication, Republic of Poland, organized the *ITU Regional Development Forum (RDF) and Regional Seminar for Europe and CIS Countries,* held back to back in 2012 in Warsaw, Republic of Poland. The RDF provided an opportunity for high level dialogue between BDT and decision-makers of ITU Member States as well as Sector Members on key challenges and actions related to the spectrum management and digital dividend. It also enabled better assessment of strategic orientations that may have an impact on the BDT regional work plan between the World Telecommunication Development Conference schedule.

The Seminar was an integral part of the European Regional Initiative on Digital Broadcasting for Europe that promotes a basis for the exchange of best practice encountered on the path of digital migration, and the ways to maximize the economic and social benefits of the digital dividend. It also considered how to further develop a unified approach in order to enhance the advantages that it would bring to the region of Central-Eastern Europe.

Regional Forum for Europe on Broadband

BDT in collaboration with the Minister for Innovation and Information and Communication Technologies, Republic of Albania organized the *Regional Forum for Europe on Broadband: A Pillar of Social and Economic Development* held in 2012 in Tirana, Albania. This Regional Forum provided the opportunity for high level dialogue between the stakeholders on strategies and policies directed towards broadband development in the

region. The Forum also facilitated discussions on challenges that were further elaborated within the framework of the Regional Preparatory Process of the World Telecommunication Development Conference (WTDC-14).

Public private partnership in ICT

BDT organized an Experts Group Meeting for Europe on *Increasing Role of Public Private Partnerships in the ICT Ecosystem - 25 Years of Telecom/ICT Sector Reform in Europe, and Beyond*, in Geneva in 2012. For a long time ITU has been working with its membership in the area of PPPs, building necessary capacity to develop an enabling environment, identify opportunities, negotiate, manage, and implement successful PPP projects. The main purpose of this Experts Group Meeting was to take a closer look at telecommunication/ICT reform in context of the increasing role of PPPs in the ICT ecosystem. The meeting used the opportunity to define existing challenges and develop recommendations that might be addressed at the regional level and be further elaborated within the framework of the Regional Preparatory Process of the World Telecommunication Development Conference (WTDC-14).

Cybersecurity

ITU in collaboration with the Ministry of Transport, Information Technology and Communication of Bulgaria, organized the *Regional Forum on Cybersecurity for Europe and CIS* which in Sofia, Bulgaria, in 2012. The forum, organized within the framework of the ITU-IMPACT endeavour, aimed to provide a platform for cooperation, information sharing, and discussion on cybersecurity and with particular focus on CSIRT/CIRT/CERT policies, procedures, best practices, challenges and opportunities among participants from all over the Europe and CIS Region. The forum contributed to regional as well as global activities related to building confidence and security in the use of ICTs (WSIS Action Line C5) and is linked to the ITU Global Cybersecurity Agenda (GCA) and Hyderabad Action Plan Programme 2 (Cybersecurity, ICT Applications and IP-based network-related issues).

It brought together CERT/CIRT practitioners, senior government officials, cybersecurity experts, related industry players and other stakeholder groups from ICT and security sectors with the end in view of strengthening the countries' CIRTs, their cybersecurity fundamentals, as well as building a network of cybersecurity experts in the region.

One important feature of the Forum was the ITU-IMPACT ALERT (Applied Learning for Emergency Response Team), on the final day of the workshop. The purpose of the ALERT, which can be seen as a simulation in a controlled environment, was to enhance the communication and participating teams' incident response capabilities. This simulation aimed at assisting Member States to develop and implement operational procedures in response to various cyber incidents, and to identify future planning and process improvements.

Experts Group Meeting on m-health

BDT organized an Experts Group Meeting of Regional Initiative on *m-Health: Towards Cure, Care and Prevention*, in Geneva in 2012. The meeting focused on the elaboration of a comprehensive report (including country case studies), policy and

Top: BDT Director visiting Serbia; Experts Group Meeting for Europe on Increasing Role of Public Private Partnerships in the ICT Ecosystem - 25 Years of Telecom/ICT Sector Reform in Europe and Beyond; ITU Experts Group Meeting on m-Health: Towards Cure, Care and Prevention

Clockwise from top left: H.E. Prof Dr Sali Berisha, Prime Minister of Albania and ITU Secretary-General; Regional Forum for Europe on Broadband; Users Field survey vehicle in Serbia; Regional Conference on Regulatory Activity in Electronic Communications Sector: Protection of the Interests of the Electronic Communication Users.

regulatory self-assessment toolkit for evaluation of national preparedness for m-health growth, creation of a roster of m-health expertise, facilitation of twinning programs and direct country assistance. This event was an integral part of the ITU Regional Initiative for Europe on ICT applications, including e-health, adopted by the ITU Resolution 17 (WTDC-10, Hyderabad) and aimed at sharing best practice in the implementation of e-applications, including e-health. The main objective of this meeting was to address challenges and opportunities arising from a rapid growth of the mobile health industry at the policy, regulatory, technical and business level.

e-Accessibility: ITU Assistance to Bulgaria and The Former Yugoslav Republic of Macedonia

ITU Assistance to Bulgaria and The Former Yugoslav Republic of Macedonia is a response to a Regional Initiative *E-accessibility in Central and Eastern Europe (Internet and digital television) for blind people and people with visual impairment problems* which is an integral part of the European Regional Initiatives adopted by the ITU Resolution 17 (WTDC-10, Hyderabad). ITU initiated this project to implement services that enable the efficient use of information society services by people with visual impairments, including those related to age.

Executive Training for Greek Professionals on DTT

ITU and the Ministry of Infrastructure, Transport and Networks, Greece, organized a three-day seminar on *ITU Procedures and Digital Terrestrial Television* in 2013 in Athens to train both BDT and BR experts working in DTT-International frequency coordination, and the ITU procedures on related activities. The seminar aimed to train the participants from the Greek administration through hands-on experience in GE-06 and ITU procedures (including frequency notification, plan modification, ITU forms submission).

Protection of the Interests of the Electronic Communication Users

In 2013, the 11th Regional *Regulatory Activity in Electronic Communications Sector,* held in Budva, Montenegro, focused on the *Protection of the Interests of the Electronic Communication Users*. The event was held within the framework of the *Festival of ICT Achievements — INFOFEST 2013* and co-organized by the Agency for Electronic Communications and Postal Services of Montenegro (EKIP) and ITU. The Conference aimed to provide a basis for identification of the challenges to protect consumers in the ICT ecosystem, presentation of current regulatory frameworks in relation to the protection of users in a digital world, exchange best regulatory practice as well as develop recommendations and guidelines to successfully address issues related to convergence.

ITU Assistance to Serbia in Response to PP-10 Resolution 126

In accordance with Resolution 126 of the ITU Plenipotentiary Conference held in 2010, *Assistance and support to Serbia for rebuilding its destroyed public broadcasting system*, and Resolution 33 (Rev. Doha, WTDC-06), BDT experts visited Serbia in 2011 to assess the assistance and support to be given to the country. After collecting information on the status of Serbia's broadcasting networks and the requirements for further development, ITU proposed guidelines for future assistance. BDT has already assisted Serbia by providing ETV with a field survey vehicle (a car equipped with an antenna mast and monitoring receiver, television receiver and set-top box, and a global positioning system). In addition, based on the information collected during the expert mission and after a review meeting held in Geneva in early 2012 during the World Radiocommunication Conference (WRC-12), ITU has prepared a project document in order to mobilize funds for the full implementation of Resolution 126.

Programme 1: ICT and technology development

Infrastructure is central to achieving the goal of digital inclusion, and enabling universal, sustainable, ubiquitous and affordable access to information and communication technologies (ICTs) and services for all. Without basic ICT infrastructure, no access is possible to ICT, and its potential, anywhere in the world.

Telecommunication infrastructure is therefore a key part of economic development. The Tunis Agenda for the Information Society assigned the responsibility to ITU to facilitate/moderate Action Line C2 of the World Summit on the Information Society (WSIS): *Information and communication infrastructure.* The WSIS goals, which are aligned with the Millennium Development Goals (MDGs), can be partly achieved through infrastructure capacity building.

Technological development, and broadband in particular, represents a major opportunity but also a challenge. The Hyderabad Declaration recognized the potential for NGNs and broadband, including wireless broadband, in 2010. It pointed out that ensuring seamless migration to NGNs also raised the challenge of ensuring "interconnectivity, interoperability, and end-to-end quality of service".

Access to ICTs is a particular challenge where remote and rural areas in these countries are involved. Programme 1 is designed to assist ITU Member States and ITU-D Sector Members and Associates in maximizing the utilization of appropriate new technologies for the development of their information and communication infrastructures and services, by taking due account of broadband deployment, transition from analogue to digital broadcasting, traffic and demand forecasting, spectrum management and radio monitoring, interconnectivity, interoperability, network management, security, and quality of service standards for wired and wireless networks, including mobile telecommunications, next-generation networks, rural and satellite telecommunications and the accelerated convergence of telecommunication networks and services.

Programme 1 sets work priorities in:

- Spectrum management and monitoring.
- Broadcasting.
- Next generation networks.
- Mobile communications.
- Broadband networks.
- Rural communications.

Conformance and Interoperability (C&I) issues are also relevant to this programme.

Spectrum management

The Hyderabad Declaration terms "efficient spectrum management and the transition from analogue to digital [as] critical issues for policymakers, regulators, broadcasters and other stakeholders." The major objective of BDT work in this area is to strengthen national regulatory bodies in the fields of frequency planning and assignment, spectrum management and radio monitoring, and provide efficient tools for managing the spectrum.

ITU has consistently led the industry in its training for spectrum management as well as providing specific high-level tools to enable professionals to execute daily tasks in complex spectrum managing requirements. These include the ground-breaking SMS4DC (Spectrum Management System for Developing Countries) software support toolkit, now deployed in more than 40 countries.

More than 300 copies of the report on the digital dividend released in 2012 were distributed and a new report on spectrum management trends was finalized in 2013. Two projects related to the human exposure to electromagnetic radiation (EMF) were implemented. Various materials regarding BDT activities in the area of spectrum management were made available online and shared with ITU-D Study Group 2 Resolution 9 (Spectrum Management) and Study Group 1 Question 23/1 (EMF).

Specific forums and seminars concerning spectrum management carried out on a regional basis are included elsewhere in this report.

Broadcasting

The multi-year shift from analogue to digital broadcasting around the world may arguably be the largest and most widespread technology transition since the invention of the telephone. The magnitude of the shift and of the opportunities available makes it important that there is extensive knowledge transfer and sharing at all professional levels and involving service providers, regulators, and governments.

BDT has developed a set of guidelines on the transition from analogue to digital broadcasting and mobile TV (MTV) to cover topics such as regulation, legislation, spectrum management, technologies, network planning, customer awareness, and business planning. The guidelines have been revised and updated in 2013 and translated in French under the ITU-EU HIPSSA project. Within the framework of the joint project between ITU and the Korea Communications Commission (KCC) and BDT's direct assistance programme, more than 10 countries were assisted directly in developing their own roadmap, thus contributing to narrowing the digital divide.

At present, a group of experts is working on the update of the guidelines based on best practice from around the world and the final report will be released in the beginning of 2014. The report was developed based on the related broadcasting activities of BDT and the relevant materials were shared with ITU-D Study Group 2 Question 11-3/2 – *Digital terrestrial television and digital dividend*. A report on the digital dividend was also released in 2012.

Currently, ITU Administrations have been working towards a harmonized approach to enable the use of the 700 and 800 MHz bands by the mobile service. A thematic report on broadcasting trends was prepared, translated and released in 2012.

A joint project between BDT and the Korea Communications Commission helped 10 countries plan their own roadmaps to narrow the Digital Divide. African countries involved included Angola, Ethiopia, and Mali in the updated Guidelines. Direct assistance is being given by ITU-D to Sudan and Yemen to plan a national migration strategy from analogue to digital. Lebanon is also supported for a national transition roadmap. Japan is supporting an ITU project to assist the digital transition in DRC and Mozambique.

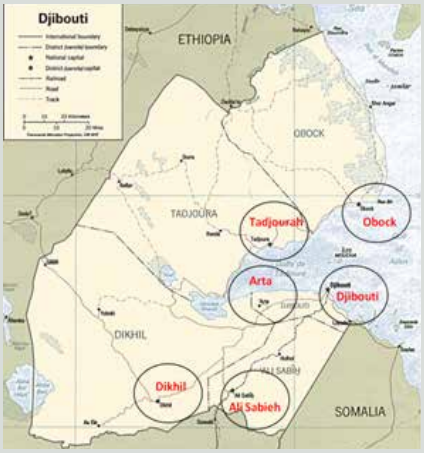
Next generation, mobile communications and broadband networks

Member States may require support in the formulation of national plans, or in actual network implementation together with commercial and public sector partners, or capacity building of local expertise. Some of these projects are specifically highlighted elsewhere in this report.

The dissemination of good broadband practice and approaches from countries that have deployed networks and services to those about to is seen as especially key. BDT is facilitating this experience transfer across workshops, symposia, and reports. Specific forums and seminars concerning NGNs, mobile, and broadband networks carried out on a regional basis are included elsewhere in this report.

Implementing a practical project

A good example of a practical project series illustrating HAP Programme 1 intentions is the development of broadband wireless in Africa. As a follow-up to the *Connect Africa Summit*,



From top: H.E Pierre Nkurunziza President of Burundi and Dr. Hamadoun I. Touré, the ITU Secretary General during the official ceremony in Ngozi province to launch the network operations in Burundi; Regions in Djibouti connected.

the ITU/Craig and Susan McCaw Broadband Wireless Network project for Africa is implementing broadband wireless networks and developing ICT applications to provide free or low cost digital access for schools and hospitals, and for underserved populations in rural and remote areas in selected countries. The broadband wireless network is operational in Burundi and in Djibouti. The 4G broadband wireless network (mobile WiMax standard IEEE802.16e) for Djibouti has been implemented and was officially launched in December 2013 by H.E. Mr Ismaïl Omar Guelleh President of the Republic of Djibouti and Dr Hamadoun I. Touré, ITU Secretary-General. This 4G Broadband Wireless project for Djibouti covers the following cities: Arta, Ali Sabieh, Djibouti-City, Dikhil, Obock and Tadjourah.

For Burkina Faso, the deployment of a broadband wireless network is ongoing and the following sites have been selected: Nouna, Niangologo, Gorom-Gorom, Manga, Gaoua, Tougan, Koupela, Léo, Orodara and Yako. Negotiations with Airtel have been positive and the appropriate backhaul solutions have been identified for the above sites.

The broadband wireless network for Lesotho is also ongoing and the Kingdom of Lesotho has contributed USD 377 000 to build a broadband wireless network.

Managing broadband deployment

To respond to the need of increasing the number of trained telecommunication/ICT professionals in developing countries and enhancing the capacity of the Administrations in charge of telecommunications/ICT, regulators and operators, BDT conducted expert-level training in the area of network development.

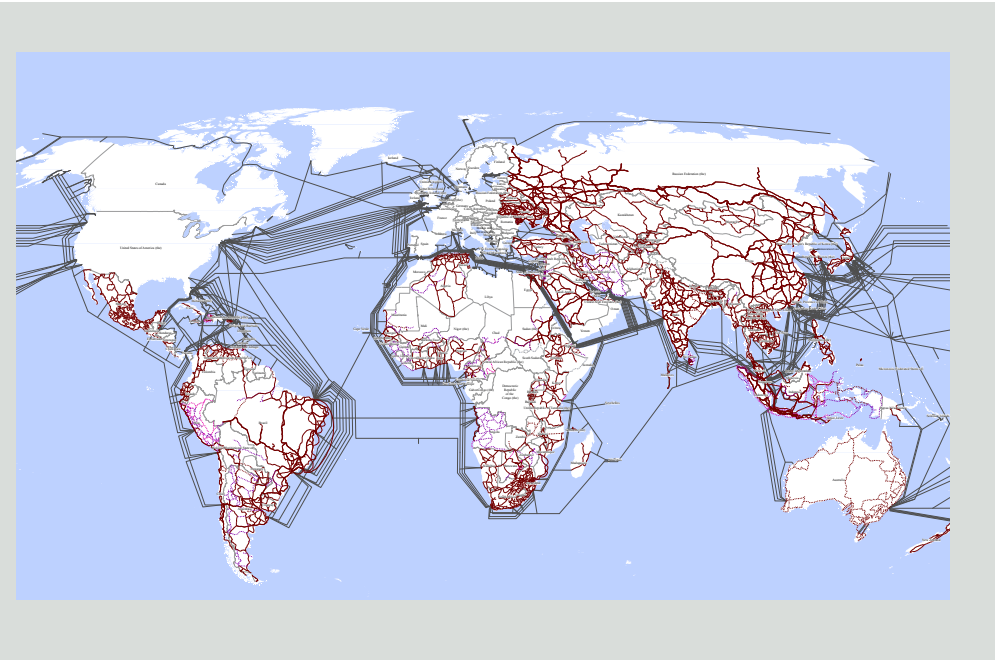
The ITU cross-regional seminar on broadband access for CIS, Asia-Pacific and Europe focused on the deployment of broadband networks using a variety of technologies, the development of new services and the related challenges at the technical, economic and legislative levels. The seminar contributed to increasing cooperation between regions and sharing best practices. The ITU regional workshop on current trends in telecommunication network development carried out in cooperation with the Communications Authority (CA) of Azerbaijan attracted over 120 experts from 6 CIS countries. The workshop focused on the implementation of ultra-wideband (UWB), next generation networks (NGN), Internet protocol over dense wavelength-division multiplexing (IP over DWDM), the optimization of business processes of telecom operators; and the convergence of ICT services and technologies.

In order to provide practical tools for promoting the built-out and management of broadband wireless networks to ITU Membership through technical skill transfer, guidelines on migration to NGN and infrastructure development were developed. The guidelines were customized in 3 CIS countries (Georgia, Tajikistan and Moldova) and case studies were prepared based on the experience. In the Asia-Pacific region, case studies on Bangladesh, India, Philippines and Sri Lanka were prepared.

Building on ITU's world leading expertise in ICT data analysis and taking advantage of its unique position as a UN specialized agency for telecommunication and ICT, BDT has launched a project for building the first global interactive online terrestrial (optical fiber and micro-wave) transmission map (for details, see http://www.itu.int/itu-d/tnd-map-public/). In the framework of this project, BDT has developed and released an authoritative ICT data mapping platform to take stock of national backbone connectivity (fiber and micro-wave) as well as of other key metrics of the ICT sector. The data collection for Africa, Americas, Arab States, Asia-Pacific and CIS regions has been concluded and the maps are available online. At present,

data collected from more than 150 operators worldwide are available. The data collection process for the Europe Region is scheduled for 2014 and will require close collaboration with Administrations.

In the framework of ITU-D Study Groups, Question 26: *Migrating from existing networks to Next-Generation Networks (NGN) for developing countries: technical, regulatory and policy aspects*, and Question 25/2: *Access technology for broadband telecommunications, including IMT, for developing countries*, have provided final reports.



ITU Interactive Terrestrial (Optical Fibers and Microwaves) Transmission Maps.

Conformance and interoperability

Interworking of products and services is increasingly necessary. To facilitate a safe usage of products and services anywhere in the world, regardless of manufacturer or service provider, it is crucial that products and services are developed in accordance with relevant international standards, regulations and other specifications, and that their compliance is tested.

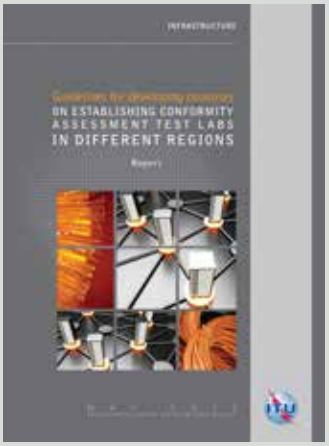
BDT pays special attention to conformance and interoperability (C&I) in its work, and links with other ITU activities (including the ITU-T and ITU-R Sectors) to initiate outreach and training programmes, as well as best practice guidelines. ITU has provided a major C&I Portal which compiles information on all current BDT C&I activities and resources.

The C&I programme is composed of four "pillars": 1) conformance assessment, 2) interoperability, 3) capacity building, and 4) the establishment of test centres and conformity and interoperability programmes. BDT is responsible for developing the last two work targets for its communities and all information is available on the C&I Portal.

The establishment of regional and national testing facilities is important as new generations of technology are introduced to different markets. BDT sees in many territories considerable enthusiasm to establish regional centres of expertise and has run training and awareness programmes in the Middle East, Africa, CIS, Americas and Europe. Clearly, testing facilities should in turn be operating to commonly agreed procedures that are recognized internationally. It is however a need many countries do not currently have the expertise to address.

With this in mind, BDT has placed a major emphasis on detailed guidelines that support countries embarking on this journey:

- *Guidelines for Developing Countries: Establishing Conformity Assessment Test Labs in Different Regions (2012).*
- *Development, Implementation and Management of Mutual Recognition Arrangements/ Agreements (MRAs) on Conformity Assessment (2013).*
- *Feasibility Study for the Establishment of a Conformance Testing Centre (2013)*
- *Establishing Conformance and Interoperability Regimes in Developing Countries (2014).*
- *Technical Report: Counterfeit Equipment* is under finalization in collaboration with ITU-T.



Left: Assistance on C&I - Communication Regulatory Commission (CRC), Ulan Bator, Mongolia, 2013

Right: Guidelines for developing countries on establishing conformity assessment test labs in different regions.

Seminars, forums, and training events on C&I have been conducted on a regional basis. Since 2011, two seminars, two forums, and training events have been held, with four more scheduled in 2014.

In addition, direct assistance from ITU has been provided to countries to review their conformity and interoperability (C&I) regime for type approval of ICT products.

The ITU Secretariat has signed MoUs for collaboration for the implementation of the C&I programme with CERT (Research and Studies Telecommunication Center, Tunisia), CPqD (Brazil), Sintesio (Slovenia), Tilab (Telecom Italia) and ZNIIS (Russian Federation).

Assessment studies are being conducted on a regional basis to determine C&I areas of commonalities and differences in the concerned countries. The study covers regulation, institutions, laboratories and type approval procedures of ICT products. Recommendations are produced to enable common C&I programmes. In 2013, an assessment study was conducted for SADC region.

Rural telecommunication

In the framework of ITU-D Study Groups, Question 10-3/2: *Telecommunications/ICTs for rural and remote areas,* has produced a final report and a number of case studies, available online through the case library.

Remote and rural communities place special demands on network deployment, as the Study Group Question indicates. These communities present particular challenges because of the investment required for networks to serve what may be widely-distributed or sparse populations. These populations may also have relatively low incomes, putting further demands on the business case. Configurations in support facilities such as power supplies may need particular implementations if the local area is off-grid with solar or other forms of alternative energy sources.

In a wider context, the Hyderabad Declaration calls for "green ICT" and renewable energy sources to assist in preserving the environment by reducing emissions of greenhouse gases (GHGs). Policies to implement the proper disposal of e-waste were also requested.

ITU has set a green agenda across its activities, and for the telecommunication industry as a community. The agenda will see a push to low-energy consumption practices by operational telecommunication networks and terminals, a switch away from fossil fuels to renewable energy sources, and a push for sustainable development across the entire lifecycle of telecommunication practice.

Programme 2: Cybersecurity, ICT applications, and IP networks

HAP recognizes that ICT for development initiatives need to work on an ecosystem approach with appropriate enabling environments, infrastructure builds, capacity building and the availability of ICT applications and services. Supporting the development of this ecosystem is Programme 2 targeted at:

- Achieving trust and confidence in the use of ICTs, the Internet and next-generation networks (NGNs). Cybersecurity should be dealt with taking into consideration the global, transnational nature of cyberthreats and under certain circumstances cybercrime, and taking into account the framework of the ITU Global Cybersecurity Agenda (GCA).
- Improving access to ICT applications and services to contribute to economic and social development, especially in underserved and rural areas.
- Promoting fair and equitable access to critical Internet resources (CIRs), by enabling the adaptation of adequate national and/or regional policy processes, specifically for IP-based networks.
- Capacity building, through enhancement of awareness of the use of critical Internet resources, in collaboration, when required, with relevant expert organizations.

Cybersecurity

ITU has a major on-going *Global Cybersecurity Agenda (GCA),* a framework programme that is designed to raise awareness and develop strengths worldwide. ITU continues to encourage the formation of international partnerships that bring together various actors to help fight common problems, such as challenges to cybersecurity that exist across borders.

In the largest and most comprehensive international initiative of its kind, ITU is also involved in *IMPACT (International Multilateral Partnership Against Cyber Threats)*, an alliance of 145 states. The *ITU Child Online Protection (COP)* initiative is also an important feature of the work.

ITU-IMPACT

The close synergies between the five work areas of the GCA and the services and infrastructure provided by IMPACT made a joint-partnership a logical step in the global fight against cyberthreats, cybercrime and other misuses of ICTs.

ITU-IMPACT's endeavour is a truly global multi-stakeholder and public-private alliance against cyberthreats. It supports Member States and others with the expertise, facilities and resources to effectively enhance the global community's capability and capacity to prevent, defend against and respond to cyberthreats. ITU-IMPACT is open to all stakeholders — governments, industry, civil society, academia, international and intergovernmental organizations. The main objectives of ITU-IMPACT are to share knowledge, build capacity, and promote a global culture of cybersecurity.

IMPACT has:

- A community of 147 Member States in the initiative.
- Conducted over 50 country assessments to determine cybersecurity readiness.
- Facilitated the deployment of 15 CIRTs.
- Trained over 2700 cybersecurity professional and practitioners globally.
- Granted over 360 scholarships to 52 countries to create new professionals.
- Conducted world's first cyberdrills benefiting more than 60 countries.

CIRT establishment

A fundamental role of ITU, following WSIS and the 2006 ITU Plenipotentiary Conference, is to build confidence and security in the use of ICTs.

In line with WSIS Action Line C5 and HAP Programme 2, ITU and its cybersecurity executing arm, IMPACT, have been supporting ITU Member States' national and regional efforts to build capacity to protect against cyberthreats and cybercrime, as well as assisting in establishing organizational structures, such as CIRTs, to identify, manage and respond to cyber threats, and cooperation mechanisms at the regional and international level.

A national CIRT has been identified as a key organizational structure in the response to cyber threats and cybercrime. Acting as a single point of contact within the country for all cybersecurity incidents, a national CIRT will assist in detecting and identifying malicious activities, provide early warning of threats, develop mitigation and response strategies, establish trusted information sharing mechanisms, support cybersecurity awareness and capacity building initiatives.

ITU, together with IMPACT, has performed over 50 CIRT assessments worldwide and assisted five Member States in the implementation of a national CIRT: Montenegro, Burkina Faso, Uganda, Zambia, and Kenya, with a further six implementations confirmed for Côte d' Ivoire, Barbados, Ghana, Jamaica, Tanzania, and Burundi.

ITU is intent on providing support to Member States to develop national and/or regional cybersecurity strategies. Sometimes this includes assisting the development of particular national legislation (where this is permitted by governments). It also may include assisting in provisions for the security of national ICT infrastructures.

BDT has been involved in many guises of analysis, information sharing and training. In terms of deliverables, BDT is tasked with the creation of tools and toolkits to educate professionals and consumers alike, particularly in vulnerable communities, such as children and youth. Other support includes the convening of workshops and meetings that focus on particular issues. Under HAP, Study Group 1 is also called on to study best practices for developing a culture of cybersecurity in information and communications networks. Detailed programmes variously focus on:

- Enabling more expertise in the regulatory environment. Following HAP, BDT places heavy reliance on enhancing the knowledge and skills of national regulators and equivalent policymakers in relation to cyberthreats. These include providing awareness and training in many different formats, including workshops, cyberdrills, awareness of the feasibility of harmonized legislation frameworks, and in the case of Asia-Pacific, a complete regional mock court exercise to raise awareness on cybercrime. Regional education is supported by ITU in the form of many regional fora. Asia-Pacific has seen the ITU in partnership with UNODC and ASEAN, respectively, to conduct workshops on fighting cybercrime, and investigating the social media security. In 2012, ITU, jointly with the Ministry of Transport, Information Technology, and Transport of Bulgaria, organized a regional forum on cybersecurity for Europe and CIS States in Sofia.
- Increasing the number and capability of Computer Incident Response Teams (CIRTs). ITU-D has conducted in-country assessments in 50 countries, and trained nearly 2000 security professionals in CIRT operations. Programmes extend across all regions. CIRT teams from African, Americas, Arab, Asia-Pacific and CIS countries have been given cyber exercises to upgrade their response capability. Furthermore, BDT has established formal agreement with the biggest CIRT association in the world (Forum of incident Response Teams, or FIRST) to foster cooperation among national CIRTs and advocate a global culture of cybersecurity.
- Increasing legal and policy measure provisions. Harmonized legislative provision and protection against cybercrime is a key area where the involvement of ITU (and ITU-D) as an intergovernmental organization can play an important role.

- BDT has produced the *National Cybersecurity Guide* and the *Cybercrime Guide* in 6 languages as an aid to help countries develop the appropriate legal frameworks. Work also looks to harmonization. Where provisions are harmonized across borders, cyberthreats are less likely to find and exploit vulnerabilities from jurisdiction to jurisdiction. ITU-D has worked with many regions such as the Caribbean in the HIP-CAR programme to provide support for updating legislation. Model legislation on a harmonized basis is also being adopted under the HIPSSA programme in several east African and SADC countries.
- In the area of international cooperation, ITU has established agreements with key private sector companies, such as Symantec and Trend Micro to make use of expertise emerging from industry and disseminate knowledge and know-how.
- To further develop a global culture of cybersecurity, BDT is leading the elaboration of a *Global Cybersecurity Index* or GCI, in partnership with ABI Research, a market intelligence company. The aim of the project is to assess the level of preparedness of countries on cybersecurity and work together with Member States to improve the level of cybersecurity at the national regional and global level.
- Developing the Child Online Protection initiative. BDT has supported many awareness programmes, particularly in the Arab States, CIS and Europe to encourage the development of guidelines and model laws at the country level. The Arab States have pursued extensive work with ITU on developing legal frameworks for COP with a view to framing model laws and an ITU Working Group in conjunction with policymakers has been reviewing the existing legislative provisions for cybercrime in 12 Arab States that will include COP guidelines.

ICT applications and services

The emerging ICT ecosystem will be capable of delivering sophisticated services and applications of all kinds to support commercial as well as social development, including e-government, e-education, and e-health initiatives. Programme 2 of HAP calls for the "elaboration of national strategic planning frameworks and associated toolkits for selected ICT applications and services in close collaboration with related UN agencies and programmes, the private sector and other international organizations". In turn, these frameworks and toolkits should facilitate the development of cross-sector national e-strategies that will support the implementation of large scale applications and services that leverage existing infrastructure more effectively to better serve socio-economic development. A second strand related to ICT applications in Programme 2 determined by HAP calls for the development of cross-domain mobile application frameworks to improve the delivery of value added services using mobile communications, for example, mobile health applications.

BDT conducts many programmes related to this area on global and regional scales, for example, *Connect a School, Connect a Community*, that aim to provide new capabilities and toolkits to enable services to be supplied to underserved populations.

E-health is another area that provides good examples of service delivery and interagency partnerships as outlined above. E-health is the subject of several current ITU and ITU-D initiatives; BDT is specifically tasked with the remit of examining information and telecommunication/ICTs in this area. Once again, the challenge is in detecting and disseminating best practice and experience, alongside trying to achieve a substantial scale in activities, or determining what is practical with existing facilities, rather than implementing the technology per se, although e-health requirements impose exacting requirements on ensuring networks, applications, terminals and most of all, human beings, work together to fulfil its promise. Apart from the ongoing demand for better healthcare facilities to disadvantaged communities, one particular focus has been on child and maternal health initiatives in support of UN Millennium Development Goal (MDG) targets.

BDT has promoted key reports and event initiatives to create a dialogue in this area. *Scaling e-services in step with ICT transformation*, a report produced by BDT was directed at the healthcare planning community worldwide, and focused on the issue of introducing practicable services now, rather than waiting for new networks to be implemented. Another initiative

More than 85 participants at the ITU IPv6 Symposium in 2013.

has seen BDT pool its expertise with the World Health Organization (WHO) to develop an online e-health projects repository that details the best practice experiences from ongoing projects. In an emerging area, the need for high level planning resources becomes evident (comparable to developing a national broadband plan). Other reports include *ICT for improving information and accountability for Women's and Children's Health* (2013) *and E-health Standards and Interoperability* (2012) from ITU-T.

Another BDT project, also with WHO, created the *National E-Health Strategy Toolkit*, provides resources to countries that need a national planning framework and e-health vision. A companion workshop, again run jointly, focused on the development of e-health strategies.

Mobile health is an emerging area with considerable potential and may be particularly useful in addressing the burden of non-communicable diseases (NCDs), the leading cause of death worldwide, with middle- and low-income countries particularly affected. NCDs dominate health care needs and expenditure, but are largely preventable through tackling common risk factors: tobacco use, unhealthy diet, physical inactivity and the harmful use of alcohol. They lead to the four common NCDs: Cardiovascular diseases, cancers, chronic respiratory diseases and diabetes. Mobile technology could be used to deliver health promotion messages on the NCD risk factors, to survey epidemics, to persuade users to change unhealthy behaviours and to help countries implement national laws on NCDs.

In collaboration with private sector partners, ITU and WHO, have launched an *m-Health initiative* to address the possibility of mobile technologies in NCDs, and particularly investigates the prospect of scalability through the use of mobile networks. An 8-country, 4-year plan is underway in this area. Costa Rica has embarked on an implementation of this framework. In April 2013, Costa Rica initiated a project *Using mobile for smoking cessation* in agreement with ITU and WHO.

IP networks

Reliable access to critical Internet resources (CIRs) for people, organizations and nations remains extremely important. In turn, this means access to adequate IP networks at a national and international level because all-IP networks are being adopted in most cases in network technology and a shift from PSTN to IP is already underway. Within the IP world, a very important and generational migration and deployment of IPv4 to IPv6 is underway, and strategies on a national level are needed given the expiry of IPv4 capacity worldwide. Equitable allocation is important. This involves support from ITU in monitoring and evaluation of how address space is being allocated, and ITU set up an IPv6 Group — to examine the issues — which concluded activities in 2012. BDT continues capacity-building work on IPv6 migration with several partners, including Member States and the Regional Internet Registries. In Malaysia, ITU-D has set up (in partnership) an International IPv6 Centre for in-country readiness, assessment and capacity building. Other activities include events and workshops in Switzerland, Rwanda, Moldova, and Asia-Pacific. ITU is also called upon to assist Member States in the management and use of domain names.

Programme 3: The enabling environment

HAP states that creating and supporting an enabling environment is the key to development of a sustainable information society that ensures affordable, ubiquitous and universal access to ICTs and digital inclusion for all.

This enabling environment must take into consideration all policy areas that have an impact on the spread and uptake of ICTs, including the elaboration and implementation of national ICT policies and plans, the creation and adaptation of legal and regulatory frameworks, the promotion of investments through effective financial mechanisms in the telecommunication/ICT sector, the inclusion of ICTs in national poverty reduction strategies, and fostering accessible ICT use by people with special needs, as well as quantitative and qualitative methods to monitor and evaluate ICT development and measure its social and economic impacts. These methods will also support evidence-based policymaking and formulation, enable stakeholders to better understand the drivers for ICT adoption, monitor the digital divide, as well as progress towards internationally agreed goals such as the WSIS targets and MDGs.

BDT has fulfilled these requirements by convening major forums to discuss key regulatory and policy topics, assembling regulatory and policy toolkits to share knowledge and expertise, collecting and disseminating internationally comparable ICT statistics, and conducting extensive research and analysis measuring the ICT world on an annual basis.

Clockwise from top left: Setting realistic expectations for spectrum auctions workshop at GSR-13 Warsaw, Poland; Media conference at GSR-12; Opening session, GSR-12; Panel at GSR-12.

Regulatory and market environment

BDT has developed a number of tools to help guide countries in creating the right regulatory and market environment. This includes the publication of the flagship report *Trends in Telecommunication Reform* and the annual *Global Symposium for Regulators (GSR)* series of events organized by BDT which have become the largest and most comprehensive of their kind in the communications regulatory environment anywhere in the world. GSR events have been deliberately planned so that issues of important and current regulatory focus can be discussed in detail with specially commissioned white paper studies prepared in advance by experts that address the key topics. Networking between policymakers and industry representatives is encouraged through a combination of open and closed events, allowing participants to speak candidly. Additional forums for regional associations and chief regulatory officers are also held.

Best practice

"The GSR is a perfect place to share best practices and inform about many activities of the administrations. Poland is highly committed to building a fully inclusive information society around the world. This requires both developing the broadband infrastructure and promoting a wider use of ICT.

Our goal is to encourage all individuals and communities to participate in various aspects of the information society. Bearing this in mind, in my opinion the Symposium is a very good platform where people from across world meet, share ideas and experience."

Ms Magdelena Gaj, President UKE, Poland

GSR allows regulators to compare approaches around the world allowing the possibility for new avenues of policy-making to be explored or current ones adjusted in the light of experience elsewhere. Apart from its other activities, GSR also provides a series of *Best Practice Guidelines* for regulators everywhere as a major outcome of each GSR.

In 2013, GSR-13 was convened in Warsaw, Poland, following GSR-12 in Sri Lanka, and GSR-11 in Colombia. GSR-13, under a theme of *4th Generation regulation: driving digital communications ahead,* studied a number of topics including: finding more spectrum; infrastructure financing and the role of the regulator for next generation networks; the potential for universal service funds; digital transactions in the smart society; migration issues in the IP address space; and broadband interconnection. GSR-12, under a theme of *Why regulate in a connected society?* investigated policy-making with respect to net neutrality, spectrum policies, roaming, cloud computing, online safety (with a focus on data protection and privacy), international and regional IP interconnection, and public-private-partnerships to foster investment and deployment of broadband NGN networks. GSR-11, under a theme of *Smart regulation for a broadband world,* examined the prospective "smart" regulatory measures that regulators can take to achieve broadband for all, foster innovation and address the complexities and challenges of the broadband ecosystem.

Other initiatives to enhance the regulatory dialogue are available, as called for by HAP. The *Global Regulators' Exchange (G-REX)* allows information sharing and dialogue on a forum basis. An *Executive Regulators Exchange Forum (Executive G-REX)* allows senior management dialogue to be developed. BDT is also responsible for the publication of the annual flagship report, *Trends in Telecommunication Reform* in all 6 ITU official languages, on themes which are related to the preceding GSR. BDT also co-publishes the *Broadband Thematic Reports Series* in conjunction with the *Broadband Commission on Digital Development*.

High-Level Workshop on Regulatory & Economic Aspects of Roaming

The High-Level Workshop was organized by the BDT in coordination with the TSB and convened in Geneva in September 2013. It was addressed to senior representatives of telecommunication/ICT stakeholders. The objective of this High-Level Workshop was to review developments in international mobile roaming services (IMRs), by examining in particular the economic and regulatory steps which have been taken to reduce prices and improve competition in this market. Best practices and recommendations based on the initiatives which have had positive effects in the IMRs market by lowering prices, facilitating more competition and protecting users were discussed. The results of the ITU Report on *International Mobile Roaming services: Facilitating competition and protecting users* were presented and discussed during the Workshop. This and the Workshop report are available on the ITU website.

ICT Statistics

BDT is the official source for global ICT statistics and analyzes key ICT trends. It also carries out a number of activities to increase the quality and availability of ICT statistics worldwide.

Measuring the Information Society Report

The *Measuring the Information Society (MIS)* report features key ICT data and benchmarking tools to measure the information society, including the ICT Development Index (IDI). The IDI captures the level of ICT developments in over 155 economies worldwide and compares progress made during the last year. The MIS 2013, which was launched in October 2013, also presents the first comprehensive mobile-broadband price data set for almost 130 economies. It features a new model and data to measure the world's digital native population — those young people who were born into the digital age — and a quantitative overview of digital TV broadcasting trends. The MIS reports attracted considerable attention from countries and the media worldwide.

4th Meeting of the ITU Expert Group on Telecommunication & ICT Indicators (EGTI) Mexico City, Mexico, December 2013.

World Telecommunication/ICT Indicators Symposium

The World Telecommunication/ICT Indicators Symposium (WTIS), is the key global forum to discuss telecommunication/ICT measurement issues. The Symposium takes place annually and is targeted at those responsible for ICT statistics in relevant ministries, regulatory agencies, national statistical offices, telecommunication operating companies, as well as experts in the subject of information society measurement. The 11th WTIS was held in Mexico City in December 2013. Each WTIS agrees on a set of conclusions and recommendations, which provide guidance to ITU and Member States on the future work on ICT statistics.

ITU Expert Groups on Indicators

ITU develops international standards on ICT statistics through its Expert Groups which are open to the ITU membership and to experts in the field of ICT statistics. The outcomes of the Expert Group on Telecommunication/ICT Indicators (EGTI) and the Expert Group on ICT Household Indicators (EGH) are submitted to World Telecommunication/ICT Indicators Symposium (WTIS) for adoption and play a key role in determining the future international work on ICT statistics.

The EGTI first met in March 2010 and annually since then. The 4th Meeting of the EGTI took place in Mexico, in December 2013, back-to-back with the 11th WTIS.

The 1st meeting of the EGH took place in São Paulo, Brazil, in June 2013. The meeting examined the contributions received from members of the EGH online discussion forum over the past year, and finalized the revision of the *Partnership on Measuring ICT for Development* core list of indicators on ICT household access and individual ICT use, as well as the related revision of the *ITU Manual*

Indicators are important

"The Ministry of ICT of Thailand realizes the importance of indicators and statistical data as useful tools to benchmark and assess the use of ICT for country development in different aspects, be it economy, trade and commerce, education, public services and so on."

H.E. Mr Anudith Nakornthap, Minister of Information and Communication Technology, Thailand, during his opening speech in the 10th World Telecommunication/ICT Indicators Meeting (WTIM) held in Bangkok in September 2012

Dynamic challenge

"We are glad to be the most dynamic [in the IDI] and are challenged to do more, and faster. Although we still have a long way to go, our objective is to be among the top performers globally or at least middle performers."

H.E. Mr Jean Philbert Nsengimana, Youth and ICT minister of Rwanda, during an interview with The New Times

Improve with best practice

"It is a good opportunity for countries like us to join this forum and learn what's happening around. We would certainly like to improve our indicator database in accordance with best international practices."

Delegate from Pakistan

for Measuring ICT Access and Use by Households and Individuals. The results of the EGH were presented to and adopted by the 11th World Telecommunication/ICT Indicators Symposium (WTIS).

Definition, standards and capacity development for ICT statistics

ITU/BDT assists governments in developing countries in their ICT data collection and dissemination efforts. Support, in the form of manuals and training/workshops, is provided for the production of statistics in the areas of ICT infrastructure, as well as access and use by households and individuals. Technical workshops are carried out at the national and regional levels to exchange experiences and discuss methodologies, definitions, survey vehicles and other issues related to the collection of ICT statistics. Specifically, the BDT delivers a one-week training course to staff of National Statistical Offices (NSOs) and other national institutions in charge of the production of official ICT statistics and on household surveys from countries around the world.

The course is based on the *ITU Manual for Measuring ICT Access and Use by Households and Individuals*. The training materials are available in the six official languages of ITU. Several trainings were delivered between 2010-2012, in partnership with UNCTAD, Economic Commission for Africa (ECA), Arab Institute for Training and Research in Statistics (AITRS) and Secretariat of the Pacific Community (SPC). There were 58 participants representing 44 countries trained during the period.

The *Harmonization of Telecommunication/ICT Indicators with International Standards* ITU Regional Workshop was held in collaboration with the Ministry of Communication and Information Technologies of Republic of Azerbaijan in the city of Nakhichevan, Republic of Azerbaijan, from 24 to 26 April 2013. The workshop was attended by 47 participants representing 8 countries of the CIS region, as well as the Executive Committee of the Regional Commonwealth in the field of Communication (RCC) and the United Nations (ITU, UNCTAD). The workshop participants noted the significance of the issues covered by the workshop, the substantial and balanced programme, and the good working atmosphere.

The regional workshop *Capacity Building Workshop on Information and Communication Technology (ICT) indicators* was organized by ITU in collaboration with the National Directorate of Telecommunications and Broadcasting Services (DINATEL), under the Uruguayan Ministry of Industry, Energy and Mining. The workshop took place in Montevideo, Uruguay, in May 2013 and was attended by participants representing 11 Latin American countries as well as two experts from AHCIET (Asociación Iberoamericana de Centros de Investigación y Empresas de Telecomunicaciones). The workshop aimed at strengthening the capacities of participant countries to produce high quality and harmonized telecommunications/ICT statistics and indicators.

Meaningful statistics will guide

"We have come this far with respect to the Philippine ICT Statistics Portal. Let us continue moving forward in as much as an updated and meaningful ICT statistics portal would undoubtedly serve as guide for stakeholders in decision making."

H.E. Undersecretary Casambre of ICT Office, Philippines, opening the National workshop on Strengthening the Philippines ICT Statistics Portal

Measuring the ICT world

BDT produces an annual study, Measuring the Information Society (MIS). It features two benchmarking tools: the ICT Development Index (IDI) and the ICT Price Basket (IPB).

The IDI captures the level of ICT developments in 157 economies worldwide and compares progress made during the last year. The IPB combines the consumer prices for (fixed and mobile) telephone and Internet broadband services for 161 economies into one measure and compares these across countries, and over time. The IDI is a composite index combining 11 indicators into one benchmark measure (presented on a scale from 0 to 10) that monitors and compares developments in ICT across countries. The main objectives of the IDI are to measure:

- *The level and evolution over time of ICT developments in countries and relative to other countries;*
- *Progress in ICT development in both developed and developing countries;*
- *The digital divide, i.e. differences between countries with different levels of ICT development.*

The IDI is divided into three sub-indices: the access sub-index, the use sub-index and the skills sub-index, each capturing different aspects and components of the ICT development process. The 2013 report presents IDI results for 2012 in comparison with 2011, for 157 economies.

Programme 4: Capacity building and digital inclusion

HAP Programme 4 specifies "strengthening the human and institutional capacity of developing countries to adapt to an evolving ICT and telecommunication sector and promoting digital inclusion".

Digital inclusion means including everyone in the emerging world of ICT, especially those who remain outside the mainstream user base for various reasons. Inclusion means access for people with disabilities, indigenous peoples, children, people in remote areas, and those who have been excluded by gender: women and girls. Programme 4 specifically calls for work towards removing gender barriers to ICT training and promote equal training opportunities in ICT-related fields for women and girls.

Gender inclusion

BDT outreach to women and girls has the hope of remedying, not merely access and participatory deficiencies, but encouraging career aspirations into the ICT industry itself. One initiative teams BDT and Sector Member, Telecenter.org, to enable 1 million women who have little opportunity to get ICT knowledge, and use their resulting digital skills for socio-economic improvement and even develop online businesses.

To date, the programme has reached at least 800 000 women in 85 countries and is on track to reach its milestone. The developers provide training materials and resources to train the on-the-ground trainers. Facilities often include the existing *ITU Connect a School, Connect a Community* installations.

A major awareness campaign, the *Telecentre Women Digital Literacy Campaign* contest, attracted participation from 221 organizations from 65 countries, and was won by the Malvar Community eCentre, in the Philippines.

Girls in ICT Day

The 2010 Plenipotentiary mandate tasked ITU to create an *International Girls in ICT Day* which ITU-D develops and promotes each year. Key initiatives include the *Girls in ICT Portal* and *Girls in ICT Events*. The Portal has an expanding range of content and features more than 550 programmes of online networks, scholarships and internships, as well as case studies and success stories of role models. ITU-D has also produced a report discussing the challenges and possibilities: *A Bright Future in ICTs: Opportunities for a New Generation of Women*.

The *Girls in ICT* Events have further expanded awareness. In 2013, participation reached 1500 events in 121 countries, extending to 40 000 women and girls worldwide. Social media was a particularly powerful advocate. The *#GirlsinICT* Twitter hashtag was used by 2 000 users to send 6 000 tweets that were received by over 6 million unique users. The events involve a broad sweep of activities with many members and other agencies participating.

Time for change

"'Today, not diamonds, but ICT skills are girls' best friends, and Digital Women are worth more than diamonds for the industry! Getting more women in ICT will enhance equality and competitiveness in an increasingly digital world."

H.E. Ms Neelie Kroes, European Commission Vice President and European Commissioner of the Digital Agenda on Girls in ICT Day 2013

"Girls in ICT Day" is being celebrated today across the globe with activities in 100+ countries . . . I commend this initiative, and I'm pleased the FCC will be spreading awareness of important issues in ICT."

Ms Mignon Clyburn, FCC Commissioner, during an FCC Girls in ICT Day 2013 event

"Women and girls are also often under-represented or even misrepresented on screen/off screen and across all platforms, resulting in serious negative consequences such as impact on self-esteem, sexual identity, social acceptance, peer pressure, gender stereotypes that affect leadership, achievement and career choice."

Ms Deborah Taylor-Tate, ITU Special Envoy for Child Online Protection and Co-Chair of Healthy Media Commission

"The time for change is now, and all of you in this room are powerful agents of change."

Ms Geena Davis, Oscar winning actress and ITU Special Envoy for Women and Girls in ICT

"Having more women at all levels in the media and new technologies is not only morally right but it makes great sense economically."

Dr Javad Mottaghi, ABU Secretary-General

Young people will drive ICT

"Regardless of language, ethnicity or geography, you come to [BYND 2013] to speak in a common language: The language of hope for a more prosperous, fair and free world, thanks to the incorporation of ICTs as an instrument of change."

H.E. President Laura Chinchilla Miranda, Costa Rica

"Young people, perhaps more than anyone, understand how ICTs can help make a difference in people's lives. In recent years we have seen how youth-driven social media platforms can help disseminate ideas and generate momentum for change… Information technology has a growing role in connecting friends and families, teachers and students, doctors and patients, farmers, traders and markets."

H.E. Mr Ban Ki-moon, United Nations Secretary-General, in remarks delivered by his Envoy on Youth, Ahmad Alhendawi, in his message to the BYND 2013 Global Youth Summit, in San José, Costa Rica

Awareness of gender inclusion issues in ICT remains a significant objective especially at high levels in the ICT community. *Women with the Wave* was the title of an ITU Forum on the Digital Inclusion of Women and Girls jointly organized with the Asia-Pacific Broadcasting Union (ABU) and the Korean Broadcasting System (KBS) held in Seoul in October 2012. Other supporting organizations included UNESCO, the Korean Ministry of Gender Equality and Family, the Korean Communications Commission, and the Australian Department of Broadband, Communications, and the Digital Economy. It attracted 150 senior delegates from 35 countries including ITU Special Envoy for Women and Girls in ICT, Ms Geena Davis, and Ms Deborah Taylor-Tate, ITU Special Envoy for Child Online Protection, and Co-Chair of Healthy Media Commission.

The forum posed questions concerning the capability of women to take advantage of the opportunities ICT offers them, and the roadblocks that still remain to prevent their equitable access. In a published statement, it called on stakeholders to make better provision for women in ICT.

Specifically, amongst other requests, it called upon stakeholders to support frameworks that will allow broad provisions of training and access to digital media by women, ensuring women were fairly represented by the media, assessing and encouraging wider use of gender-sensitive indicators in the industry, encouraging the media and industry to promote success stories featuring women in ICT, and enabling outreach, particularly in remote areas designed to empower women in marginalized communities.

e-Accessibility

A significant proportion of the global population suffers from disability. Access to ICT is now enshrined as part of the *UN Convention on Persons with Disability* which in its preamble: "*Recogniz[es] the importance of accessibility to the physical, social, economic and cultural environment, to health and education and to information and communication, in enabling persons with disabilities to fully enjoy all human rights and fundamental freedoms.*"

A unique knowledge base

"The e-Accessibility Policy Toolkit for Disabled Persons and its Handbook edition provide a unique global knowledge base to promoting a barrier free digital environment, a prerequisite to ensuring that persons with disabilities can fully enjoy all human rights and fundamental freedoms."

H.E. Luis Gallegos, Permanent Representative of Ecuador to the United Nations in Geneva

BDT has promoted accessible ICT requirements to its core constituents including regulators and policymakers at the *Global Symposium for Regulators* and *ITU TELECOM* events. ITU-D has provided resources for Members in publications such as *Making TV Accessible*, *Making Mobile Phones and Services Accessible*. In a partnership programme with Sector Member G3ict, an *e-Accessibility Toolkit* and *e-Accessibility Policy Handbook for Persons with Disability* were developed. E-accessibility is also a European Regional Initiative.

As noted elsewhere in this report, community ICT centres and the *Connect a School, Connect a Community* initiatives have also been equipped in many cases to provide accessible facilities. ICT projects include centres for persons with disability in Burkina Faso, Ethiopia, Mali, Malawi and Zambia.

ITU has also been involved in assistance to Nepal and Afghanistan which have carried out detailed assessments and prepared recommendations for policy, regulatory, and project interventions, as well as awareness programmes, including the setting up of a national workshop to identify gaps in provisioning and discussing possible strategies.

BYND 2015 Global Youth Summit

Young people are adept in the world of ICT, and growing more so. According to ITU data, 30 per cent of the world's youth have been active online for at least five years. The proportion of "digital natives" in developing countries is expected to double in the next five years alone.

This trend poses a challenge — of encouraging digital inclusion — and an opportunity — of maximizing this human capital as positively as possible. One major initiative by ITU aims to explicitly involve youth in a global debate — and to seek their answers in coherent policy recommendations that can be broadcast worldwide. BYND2015, established in Costa Rica in 2013, brought together 700 attendees at the event and a further 3 000 attending virtually via 43 hubs in 25 countries.

BYND2015 had the overarching aim of developing a debate about the post-2015 development agenda. A key part of the initiative was to encourage digital inclusion by a raft of pre-event dialogues. The main 'community' online hub for BYND2015 was the crowdsourcing platform developed by ITU and built around the challenges identified during off-line workshops and Millennial jams held in mid-June 2013. Prior to the event there were some 2 500 users registered who logged almost 1 000 unique ideas (proposing solutions to the challenges they identified) which in turn have prompted more than 13 200 votes from the community. A major part of the initiative was to stimulate the creation of youth communities around the world, connected by ideas and aspiration, that would persist beyond the event itself.

The world of tomorrow

"Young people in a world of technological innovation have demonstrated at BYND 2015 that ICTs are the driving force to meet future sustainable development goals. Their engagement in the Global Youth Summit — the hundreds who made the journey to Costa Rica, and the thousands who connected from around the world — ensures their inclusion in the most important decisions of the 21st century. Today's youth will inherit the world tomorrow. And they will be our future leaders."

Dr Hamadoun I. Touré,
ITU Secretary-General

BYND2015 featured conference-style sessions with senior executives and other VIPs, as well as workshops concerned with developing youth employability and entrepreneurship via their ICT skills. It also introduced possibilities to raise their advocacy and impact amongst global policymakers via a coordinated and intensive use of ICT platforms and social media.

It encouraged the creation of a crowdsourced policy statement — by youth, for youth — that could be transmitted to the United Nations as a *Global Youth Summit Declaration*. Essentially, the Declaration formed a vehicle to emphasize the importance of ICT in the post-2015 global development debate. It touched upon many aspects of ICT including online protection and cybersecurity, fair online business practices, as well as regarding Internet access as a fundamental right. Further, it proposed free online education and accessibility to digital skills by all youth and children.

Clockwise from top left: H.E. President Laura Chinchilla Miranda of Costa Rica at BYND 2015; BYND 2015 activities.

Lower left: Ms Geena Davis, ITU Special Envoy for Girls in ICT.

Supporting regional priorities

"We consider ICTs as the engine for sustained and future economic prosperity and sustainable development in the region and we are determined and confident that the ITU Connect Arab Summit will play a key role in supporting this regional priority."

Dr Hessa Al-Jaber, ictQatar

Implementing commitments from WSIS inevitably requires a multi-stakeholder approach embodying global and regional partners, and ITU responded by launching the *Connect the World* initiative in 2005. Five events have been held, most recently *Connect Arab States Summit*, *Connect Americas Summit*, and *Connect Asia-Pacific Summit*. All regions of the world will have benefited from a *Connect* event by the end of 2013.

BDT is responsible for convening the programme, and frequently partners with the key regional communications associations to maximize the engagement of the professional community. This event series was predicated on bringing together, and then mobilizing, like-minded financial, human and technical resources from stakeholders on specific and concrete projects to act as role models for wider development.

These often reflect gaps identified by WTDC and WSIS-level initiatives. Each initiative benefits from an intensive pre-summit preparatory process. Subjects have included broadband access and uptake, digital broadcasting, emergency communications, reduction of Internet access costs, human capacity building, digital content, and cybersecurity.

From top:
Connect Arab States Summit; Connect Arab States Summit; Connect Americas Summit.

The projects proposed for discussion generally are large-scale near-national, national, or regional initiatives, and cover areas of direct interest in the HAP, and more specifically may explicitly target HAP Regional Initiatives.

The *Connect Arab Summit* for example proposed an *Arab ICT Highway* covering broadband networks, digital broadcasting, Internet exchange points, spectrum management, and wireless broadband master plans. It also detailed projects for e-services, cybersecurity but also included projects specifically focusing on empowerment and employment creation through the deployment of ICT and the digital preservation of Arab cultural heritage.

The Summits are frequently used as platforms for participants to announce new partnerships and projects. For example, BDT launched its *Youth Employment and Entrepreneurship Initiative* during the *Connect Americas Summit* in partnership with the Telecenter.org Foundation to explore resources that could enable young people to become more employable.

The Summits generally also set priority areas for development and state leadership vision for the goals involved, and frequently feature political leaders to support this. At *Connect Asia-Pacific,* for example, the Prime Minister of Thailand, H.E. Ms Yingluck Shinawatra, was joined at the event by the President of Micronesia, the President of Nauru, the Prime Ministers of New Zealand, Pakistan, Tonga and Vanuatu, and the Deputy Prime Minister of Cambodia.

A key feature is the proposal of major projects, many for implementation in LDCs, which require substantial funding commitments to potential partners, and partnerships in their broadest forms are emphasized to achieve the vision. *Connect Arab* for example proposed projects valued at USD 46.6 billion; *Connect Americas* proposed projects to the value of USD 53.3 billion, and *Connect Asia-Pacific* proposed projects valued at USD 53 billion.

ITU Global Forum on Human Capacity Development

The biennial *Global ICT Forum on Human Capacity* was convened in Cape Town in 2012 with the theme *Digital Inclusion: Transition from analogue to digital broadcasting*. The forum is dedicated to building human capabilities and skills that prepare people for the digital economy and digital society. The forum was held jointly with the second South African national *e-Skills Summit 2012*.

The expected forum outcomes included an identification for clear programmes of action at a global level on how nations can prepare their human capital to leverage changes in the digital broadcasting transition in particular.

Beyond that, the Forum discussed how countries can develop national e-skills capabilities to leverage a digital economy. Outcomes were therefore expected to be targeted at people as recipients of training; policymakers in terms of initiating the right policy frameworks, as well as other stakeholders in the private and public sector.

ITU Academy

The ITU Academy was launched by the BDT Director at the Global ICT Forum, to respond to demands for knowledge and skills in ICT training, teaching and research. The ITU Academy has a primary objective of harmonizing and integrating all existing ITU training services and extending the current portfolio of training programmes.

The Academy offers a wide and growing range of general and specialized courses on all aspects of telecommunication in radiocommunication, telecommunication standardization and telecommunication development. Programmes are delivered face-to-face, as well as through online learning. These are designed to equip an expanding number of target groups with the specialist knowledge and tools they require, to find their way around the rapidly-evolving domain of ICTs and use the skills and relevant technology in creating a Knowledge Society.

Human capital forum success

"This Global ICT Forum on Human Capital Development, which encompasses the second e-Skills Summit of South Africa, not only addresses the aims of the ITU but also interacts with us and other developmental states to build our own approaches which recognize our own cultures to harness the existing astuteness of our people and grow it in ways that can maximize our position in an ICT-enabled world."

H.E. Ms Stella Ndabeni-Abrahams, Honourable Deputy Minister of Communications of the Republic of South Africa

"Thank you very much for your consideration and for the pertinent information you've transmitted to us during the Global ICT Forum. For me, the trip to Cape Town was very interesting and I learned so much from the speakers. Bravo!"

Mr Mustapha Benaissa, Project Manager, DRHF Algeria Telecom

"We had a great stay, thank you for everything and for the smooth running of the Forum. Finally, I thank you for the draft report which is a magnificent piece of work."

Mr Hassani Mohamed Abdou, Human Resources Administrator, National Regulatory Authority ICT Union of COMOROS

"On behalf of Syrian Telecom, we thank you very much for your efforts in organizing this fruitful Forum, and thanks for the report. It's very comprehensive and convenient."

Mrs Rima Kousa, TOSP Project Manager, Syrian Telecom

Programme 5: Special needs

HAP makes special emphasis of the needs of least developed countries (LDCs) throughout its provision. Under HAP, the aim of Programme 5 is "To provide concentrated and special assistance to least developed countries and countries in special need, and to assist ITU Member States in responding to climate change and integrating telecommunications/ICTs in disaster management."

Excellent timing

"Timing of the [early warning system] implementation is an excellent test because October is one of the harsh months concerning heavy rainfall and flooding."

Mr Peter Mwesigwa, Executive Director UCC

Ensuring safety

"Adopting a common protocol alerting system helps to ensure the safety of lives. We look to ITU for the opportunity to showcase early warning systems and to plan relevant workshops not just for Member States but also so that citizens can benefit from cautionary ICTs."

H.E. Tuisugaletaua A. Sofara Aveau, Minister, Ministry of Communications and Information Technology, Samoa

ITU assistance to LDCs is a long established intent of the Union, and of the United Nations, which convenes a special conference every decade to discuss relevant issues. ITU aims have been to deliver concentrated assistance to a relatively small group of countries to maximize impact and benefit in particular areas. In terms of least developed countries, the programme was expanded to include countries that had particular needs because of their circumstances. These include small island developing states (SIDS) which, in many cases, are relatively vulnerable because of the small size, limited resources, and relative remoteness. Landlocked developing countries (LLDCs) may also face comparable development difficulties because of their relative isolation from maritime resources and trade.

Special assistance, emergency telecommunications, and climate change

BDT assisted countries that were hit by various natural disasters through providing satellite equipment including satellite terminals and phones, and paid-for airtime. This service is initiated through a request from countries. The same assistance has also been offered to other UN agencies including WHO and UNHCR.

BDT has held regional workshops, forums and symposia on the role of telecommunications and ICTs in disaster mitigation and management in Kyrgyzstan in August 2013 and Barbados September 2013, jointly organized with the ministries and regulatory authorities of the host countries and focused on the importance of ICTs in saving lives.

BDT also participated at the Global Amateur Radio Emergency Communications Conference (GAREC) in June 2013. GAREC is a conference of the International Amateur Radio Union (IARU). ITU has an MoU with IARU and IARU is also a Sector Member. BDT also presented at the AT&T demonstration of its disaster management equipment and a forum on ICT and Climate Change.

In September 2013 in Barbados, BDT represented ITU at the United Nations inter-regional preparatory meeting for the *3rd International Conference on SIDS* which will be held in Samoa in August 2014. Member States were urged to consider ICTs as one of the enablers of any future post 2015 plan of action.

An LDC graduates

"ITU assistance in developing ICTs for Samoa played a huge role in Samoa's graduation from her LDC status."

H.E. Tuilaepa Lupesoliai Neioti Aiono Sailele Malielegaoi, Prime Minister of Samoa

Climate change adaptation

BDT organized the workshop on *Using ICT to Save Lives and Control Climate Change* in Kyrgyzstan in August 2013. The workshop was attended by 42 participants from 6 CIS and 2 non-CIS countries and represented communications administrations, regulators, international organizations, research and scientific institutions, telecommunication providers, universities.

BDT also jointly organized the forum for the Caribbean region on *Emergency Telecommunication and Climate Change* (Action 13084) held in Barbados in September 2013. The event brought together national agencies involved in disaster risk reduction and disaster management, private telecommunication entities, United Nations agencies and NGOs to share knowledge, discuss and exchange views on how to assist countries and communities to mitigate, respond and cope with natural disasters.

The Caribbean was well represented with officials from 14 Governments, regional organizations and national entities from the host country. Caribbean government representatives concluded that there is a lot of assistance required for work that will allow the Caribbean region the capacity to use ICTs to save lives during disasters that hit them on an almost annual basis.

BDT also jointly organized with ITU-T, UNEP (Secretariat of the Basel Convention for Central America and Mexico), Partnership for Action on Computing Equipment (PACE), the Central American Commission for Environment and Development (CCAD) and the Ministry of Environment and Natural Resources of El Salvador (MARN) organized the first Central American Workshop for *Capacity Building on Environmentally Responsible Management of Waste Electrical and Electronic Equipment (WEEE)* (Action 13084) held in El Salvador, March 2013. The outcome of the event was the *Central American and Caribbean Agenda for Environmentally Sound Management of Waste Electrical and Electronic Equipment (WEEE).*

UN interagency meetings

BDT represents ITU at many UN Agency global forums including the *Global Platform for Disaster Risk Reduction* organized by UNISDR (May 2013), the ECOSOC Special Event on *A Renewed Global Partnership for Connecting Landlocked Developing Countries to World Markets* (July 2013). There was also participation at the UNISDR preparatory meeting for the *Consultations towards a post-2015 disaster risk reduction framework* (September 2013). In addition, BDT provided input into the UN Secretary's report on the implementation of the *Barbados Plan of Action* and *Mauritius Strategy* for SIDS, the *Almaty Plan of Action for LLDCs* as well as the *Istanbul Plan of Action* for LDCs.

Filling the gap

"The deployment of satellite communication equipment will help fill a major resource gap in the health sector's response to the Mali crisis. During a humanitarian crisis, WHO operations require a range of logistical equipment, including communications for health information management and to comply with field security measures."

Dr Richard Brennan, WHO Director of Emergency Risk Management and Humanitarian Response

Assistance in emergencies

"I really appreciate the ITU assistance to our countries especially emergency telecommunications."

H.E. Mr D. Abdyldaev, Deputy Minister of Transport and Communications of Kyrgyz Republic

Essential contributions

"ICTs have made an essential contribution to the work of the weather and climate community, from observations to predictions to services."

Mr Jerry Lengoasa, WMO Deputy-Secretary General

Projects

Currently, the Government of Uganda has worked jointly with the ITU in developing early warning systems in Eastern Uganda, which is an area that is prone to flooding that has claimed many human lives in the past. The procurement for two early warning systems for Bududa and Buteleija districts has been done. The equipment is being sent for project implementation shortly.

The presentation of the *Smart Sustainable Development: Pacific Satellite Rural Connectivity* project dynamics was conducted in Samoa during the Pacific Forum in April 2013. The BDT Director provided opening remarks and moderated a session. The BDT Director and colleagues also visited the Prime Minister of Samoa.

Currently, letters expressing interest and in-kind contributions were received from Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Papua New Guinea, Samoa, Tonga, Tuvalu and Vanuatu. Solomon Island's letter is forthcoming. Official confirmation of in-kind contribution

Clockwise from top:

BDT Director with Hon. Gordon Darcy Lilo, Prime Minister of Solomon Islands; WSIS 2013 Thematic workshop on Emergency Telecommunication; BDT Director with H.E. Tuilaepa Lupesoliai Neioti Aiono Sailele Malielegaoi Prime Minister of Samoa; BDT Director with village Chief wearing his mobile which he uses in his duties as a Chief.

has been received from Inmarsat of CHF 100 000 which can be increased to CHF 200 000 between 2013 and 2016. ITU is awaiting an official confirmation of cash and/or in-kind contribution from other partners.

BDT and the ICB4PAC project implemented the public consultation for Solomon Islands first ever national ICT policy. The broadcasting roadmap for the Solomon Islands has also been completed leaving the rest of the priority development areas highlighted by the Minister to be implemented in 2014.

Study Groups

In this area, there are three Study Questions. BDT is working closely with SG2 Question 22-1/2: *Utilization of telecommunications/ICTs for disaster preparedness, mitigation and response* in developing two handbooks. The first is the *Handbook on emergency telecommunications*, and the second is the *Handbook on emergency telecommunication outside plants*. BDT is also assembling an on-line tool kit for Q22-1/2.

For Question 24/2: *ICT and climate change*, BDT has provided information on activities implemented during the year and planning workshops and forums on climate change adaptation. For SG1 Question 24/1: *Strategies and policies for the proper disposal or reuse of telecommunications/ICT waste material — A first compendium of best practices*, described in the final report of the Question has been the outcome of this study period.

World Summit on the Information Society

WTDC-10 acknowledged the congruence between HAP and WSIS outcomes, and the HAP explicitly recognizes this. Although WSIS activities are the responsibility of several intergovernmental and UN agencies including the ITU, ITU is specifically involved with Action Line C2 (Information and communication infrastructure), C4 (Capacity building), C5 (Building confidence and security in the use of ICTs), C6 (Enabling environment), and C7 (ICT applications). Under HAP, BDT convenes many of its WSIS activities around facilitation meetings and the annual WSIS Forum itself.

Clockwise from top left: Mr Houlin Zhao, Deputy Secretary-General, ITU, speaking at the WSIS+10 Preparatory Process; WSIS Forum 2013 - Measuring the WSIS Targets (The Partnership on Measuring ICT for Development); Opening WSIS 2013; WSIS 2013 Cybersecurity Action Line C5.

Action Line C2, Information and communication infrastructure

WSIS Action Line C2 called for governments "to take action in the framework of national development policies, in order to support an enabling and competitive environment for the necessary investment in ICT infrastructure and for the development of new services." Amongst other projects, this resulted in programmes such as the *Regional Harmonization of ICT Policies and Legislation in ACP Countries.*

WSIS Action Line C2 had 3 facilitation meetings after WTDC-10. In 2011, the meeting was configured around *Broadband Infrastructure*. Featured topics included the reduction of regulatory burdens, the adequate and harmonized approach to frequency allocation, the standardization of broadband wireless access technologies, reliable and safe energy systems, and universal connectivity.

In 2012, the discussion moved *to Innovative Technologies and New Opportunities and Providing Access to ICT*, and featured the transition from analogue to digital terrestrial TV and the digital dividend, the growing demand for ICT access; the economic and social dimension of digital broadcasting; the smooth transition from analogue to digital broadcasting and regional harmonization of frequency use.

In 2013 the discussion focused on *Broadband Backbone Connectivity*, and featured the difficulties of building such backbone in rural and geographically-challenged regions. Data collection, appropriate planning, and long term investment supported by the government were identified as important keys for success.

Action Line C4, Capacity Building

WSIS Forum 2012 Action Line C4 Interactive Facilitation Meeting was held jointly with Action Line C7, e-Learning (UNESCO) and focused on the multi-faceted mobile learning, opportunities and advantages it can offer to the education system and human capacity building.

The AL C4 Facilitation Meeting as part of the WSIS Forum 2013 addressed various aspects of national strategies for developing national e-Skills for a Knowledge Society.

Action Line C5, Cybersecurity

Following the mandate given to ITU as sole facilitator for this Action Line, several meetings and consultations have been held, mainly during the annual WSIS Forums. The overall result was the development in 2012 and 2013 of outcome documents on emerging trends beyond 2015, which capture and reflect the input and positions of all WSIS stakeholders.

Action Line C6, Enabling Environment

The 2011, 2012 and 2013 editions of the WSIS Forum Action Line C6 Facilitation Meeting focused respectively on the advantages and challenges of cloud computing technology to governments, industry and other ICT stakeholders, smarter regulation of the information society: ICTs as an enabler for better governance and future consumer behaviour and demand. The events, for which ITU was the lead facilitator, allowed multiple stakeholders, including national governments, regulators, industry, civil society and international organizations, to exchange and showcase successful experiences and look for positive synergies for implementing the WSIS goals.

Action Line C7, e-Environment

ITU, as the focal point for the WSIS Action Line C7, coordinated activities aimed at facilitating the implementation of e-environment and climate change-related policies and initiatives. The activities were carried out jointly with partner organizations such as World Meteorological Organization (WMO), United Nations Environmental Program (UNEP) and the Basel Convention Secretariat. A Cooperation Agreement between ITU and the Secretariat of the Basel Convention was signed in 2012. In addition to the Action Line C7 Facilitation Meeting, a series of workshops were organized together with TSB during the WSIS Forum 2012 on advancing the green ICT agenda (High-level Dialogue); e-Waste: challenges, solutions and benefits; measuring e-waste; and climate change monitoring and disaster risk reduction.

ITU has been actively engaged in the United Nations Climate Change Conference (UNFCCC) process. ITU's main objective is to get ICTs recognized as a facilitator in combating the negative impact of climate change through mitigation and adaptation. Advocating for this cause, BDT took active part in the 2012 UNFCCC (COP18-CMP8).

Action Line C9, Media

During the Action Line C9 Facilitation Meeting in 2012, following the permanent request of the Action Line Facilitator, updated information was provided about the ITU activities on the transition to digital terrestrial television broadcasting.

WSIS Monitoring

The WSIS process attaches an important role in monitoring outcomes for its goals, and here WSIS implementation is monitored within the framework of a joint effort between agencies in the *Partnership on Measuring ICT for Development*. BDT is closely involved with this partnership in addition to its own statistical work, leading the *Task Group on Measuring WSIS Targets*. The partnership has organized several WSIS meetings and published the report, *Measuring the WSIS targets — a statistical framework.*

The report, which includes a concrete list of indicators to monitor the 10 WSIS targets, is a practical tool for policy makers and data producers and expected to become the main reference document for the final review of the achievements made towards meeting the WSIS targets in 2015. During the WSIS Forums 2011, 2012 and 2013, two sessions were

organized respectively, on *Measuring the ICT sector for policy analysis* (2011), on the WSIS+10 review process: *Monitoring the WSIS Targets* (2012 and 2013) and on *Measuring Gender and ICT* (2013).

The Partnership organized several WSIS-related sessions at the World Telecommunication/ ICT Indicators Meetings in 2011 and 2012. At the WTIM in December 2011, the UNEP Secretariat of the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal* joined the Partnership on Measuring ICT for Development as its 12th member. The Partnership developed a new list of seven e-government indicators that were added to the core list of ICT indicators and presented at the UN Statistical Commission in February 2012. In November 2012, the Partnership, through the UN Regional Commissions, sent out a WSIS target meta-data questionnaire to assess the availability of country data on the WSIS targets. The results of this survey were presented at the Paris and Geneva WSIS meetings in 2013 2013 and served as the basis for the preparation of the WSIS+10 assessment report prepared by the Partnership for the WSIS high-level event in 2014.

Other global development initiatives

Two other global development initiatives have also been activated. They are to support mobile applications, and cost effective ICT deployments that link socio-economic development and disaster management, respectively. They also capture relevant directions in HAP Programmes 2 and 6.

Revolutionary changes from mobile

"Sri Lanka recognizes the need for rapid progress in the field of ICT, a technology that is racing ahead with innovations and new applications that make our world smaller each day. It opens pathways to progress to the people, breaking down the barriers of race, ethnicity, community, faith and geography … We see how mobile communications can bring revolutionary changes to the lives of people in new life skills, new employment opportunities, and new links to markets in one's country and abroad. It can bring new educational opportunities, expand health and healing services, have a positive impact on sustainable development, increase production in agriculture, and expand the market potential of small industry."

H.E. Mr Percy Mahendra Rajapaksa, President of Sri Lanka

m-Powering Development

The *m-Powering Development* initiative aims to extend the benefits of mobile technology to all strata of society, in order to build a truly inclusive information society, with special focus on remote rural and underserved areas. It is expected that this initiative will add to GDP growth and create employment opportunities through reliable mobile teleconnectivity, provision of affordable services and use of latest technology.

Under *m-Powering Development*, the provision of reliable mobile teleconnectivity will help open new models of development. Improved access to and use of mobile technologies may also boost positive social and economic impact in the areas of m-education, m-health, m-government, m-banking and m-sport. This initiative is also closely related to the ICT applications part of HAP Programme 2 which calls for the development of cross-domain mobile applications frameworks and services to improve the delivery of value-added services using mobile communications.

This initiative envisages pooling the strengths of governments, international organizations, private sector and the civil society to create a dynamic partnership for the purpose of increasing reliable mobile connectivity. The overall purpose of the *m-Powering Development Initiative* is to:

- Harness mobile networks in health, education, agriculture, banking, commerce, sport and other fields that foster sustainable development.
- Increase the use of mobile services and applications in our daily lives, in order to improve economic activity, particularly in rural and remote areas.
- Foster mobile services in areas that may not be economically profitable for operators today, but where there is a social urgency to include them in the ICT society.
- Create synergies in existing initiatives to cross-fertilize experiences and avoid duplications.
- Optimize the use of scarce resources.
- Forge public-private partnerships and promote large scale multi-stakeholder projects wherever possible.

BDT has published two related reports in the potential for extending mobile services: *M Government: mobile technologies for Responsive Governments and Connected Societies* (2011) and *Innovative ways of appropriating mobile telephony in Africa* (2010).

Smart Sustainable Development Model

As The UN Specialized Agency for ICT, ITU believes that meaningful development should take into account disaster risk reduction and effective disaster management measures. There are a number of initiatives by governments, international organizations, and private sector firms, aimed at ICT for Development (ICT4D) and those by other entities aimed at disaster preparedness and response.

However, a clear link still remains to be made between ICT for Development (ICT4D) and ICT for Disaster Management (ICT4DM) to optimize the use of resources. The SSDM Initiative, in this regard, seeks to match and marry all ICT4D and ICT4DM activities being undertaken by all players for sustainable development.

The overall purpose of the Smart Sustainable Development Model (SSDM) initiative is to:

- Harness the potential of ICTs in socio-economic development and use the same technologies for saving lives in times of emergencies.
- Link rural telecommunications/ICT development to both disaster risk reduction and management efforts.
- Make optimal use of scarce and high cost resources such as satellite systems by putting in use unused satellite capacity.
- Create ecosystems where investments made for deploying telecom infrastructures for economic development are also used for disaster response for public safety.
- Ensure deployment of robust and resilient communication networks that continues to provide services in the immediate aftermath of disasters.
- Avoid duplication in efforts by development partners (including governments, private sector, intergovernmental organizations) focusing on either development only or disaster management only without taking the other into account. This reduces costs of infrastructure investments for ICTs particularly in rural communities.

ITU-D Sector Memberships and Partnerships

Promoting Sector Membership

There were 321 ITU-D Sector Members, Associates and Academia at the beginning of 2011. There were 371 ITU-D Sector Members (345), Associates (10) and Academia (16) at the end of August 2013, representing an increase of 15%.

In order to provide all Members with an interactive platform for information exchange, networking opportunities and enhanced visibility, BDT launched the ITU-D Sector Membership Portal. The portal showcases varied information on ITU-D Sector Membership, such as institutional or company profiles, generic contact information, personal CEOs profiles (20 entities), success stories (10 entities) and RSS news feeds (35 entities). BDT is in the process of expanding the outreach and enhancing the functionalities of the portal. Nevertheless it has already proven as an invaluable tool for strengthening the communication between the Membership and BDT.

Top:
Innovation Challenge;
BDT Strategy Jam.

ITU-D Sector Membership is further promoted by developing the BDT database of entities that could be potentially interested in joining the Sector in the future. According to their feedback, these prospective entities appreciate being informed of the most important upcoming events and activities of the Sector. Following BDT's latest campaign, 13 entities responded positively and would be willing to join the Sector in order to be able to participate in RPMs-2013 and WTDC-14.

ITU-D Sector Members, Associates and Academia have expressed their appreciation for the promotion of the ITU-D Sector Membership Portal during events such as TDAG and Study Group meetings and have complimented the BDT Director about its success.

In addition, a chief regulatory officers meeting was created in 2011 as a side event of the *Global Symposium for Regulators* to allow the exchange of views and experiences among Industry leaders regarding regulatory-related matters. The first meeting was a success and the experience has been repeated. This meeting is becoming a standing side-event during GSRs.

Partnerships

In furthering the mission of ITU-D to foster international cooperation and solidarity in the delivery of technical assistance and in the creation, development and improvement of telecommunication/ICT networks and services in developing countries, various partnership agreements were signed with ITU Member State Administrations, ITU-D Sector Members and regional and international organizations in specific areas, as defined in the HAP.

ITU-D has been working closely with regional and subregional organizations, developing, promoting and stimulating new initiatives and also encouraging the private sector to take actions in benefit of member countries (Resolution 32, Hyderabad 2010).

Some 27 partnership agreements were signed (7 in 2011, 14 in 2012 and 6 in 2013) with a wide range of stakeholders for the implementation of specific projects assisting ITU Membership in maximizing the use of new technologies, including broadband and to design and deploy resilient telecommunication/ICT network infrastructures and services. In the area of e-applications, 20 partnership agreements were signed (4 in 2011, 10 in 2012 and 6 in 2013) focusing mainly on the implementation of e-health projects and on the establishment of CIRTs. In addition, 9 partnership agreements have been signed (1 in 2011, 5 in 2012 and 3 in 2013) to boost BDT activities in enhancing an enabling policy and regulatory environment, including 5 sponsorship agreements for GRID, as part of the annual GSR event in 2012 and in 2013. 13 partnership agreements were signed in 2011, 5 in 2012 and 5 in 2013 with regard to activities providing human and institutional capacity building and allowing digital inclusion for people with special needs. In order to support concrete projects on emergency telecommunications, 8 partnership agreements were signed between 2011 and 2013.

In addition, 7 partnership generic framework agreements with ITU Administrations and regional and international organizations were signed between 2011 and 2013, covering two or more of the HAP areas listed above. In addition, close collaboration was maintained with TSB, BR and the ITU General Secretariat, which proved an important factor for maximizing communication and promotion efforts as well as alerting external audiences on inter-sectoral activities.

A number of forums and workshops have been utilized to raise awareness of stakeholders on ITU activities and to build partnerships. In addition, one-to-one meetings and national workshops with stakeholders are regularly held to apprise the current and potential members of ITU, thereby enhancing engagement in ITU activities and carrying out new projects and partnerships.

Promotion and resource mobilization

Partnership-building activities supported by the development of branding and promotional material (printed and web-based) on BDT activities have been successfully carried out on a continuing basis. A particular focus was given to promoting partnership agreements and joint activities and providing visibility opportunities to ITU partners. Partnership and resource mobilization efforts were reinforced through promotion of BDT activities at ITU-D and other ITU events as well as to external audiences. In addition, BDT has brought additional visibility to ITU's longstanding years of experience in the execution of ICT development projects by revamping its project database, regularly updating project proposals and calls for partnerships, and bringing up-to-date Project Management Guidelines.

A BDT resource mobilization strategy has been developed and approved by the BDT management towards enhancing partnership and resource mobilization efforts. As part of this strategy, a database of existing and potential funding partners for ICT development projects and activities was created. The database, which includes a reporting and a search tool, contains information on some 70 entities from the public and private sectors (including Administrations, multi-and bi-lateral agencies, development banks, foundations, and private sector companies).

ITU-D Study Groups

The two ITU-D Study Groups (SGs) follow the process set out in Resolution 1 (Rev. Hyderabad, 2010) and work in accordance with the work plans which were adopted by WTDC-10. Overall, the Groups have met the main milestones as per the agreed work plans and have delivered their expected final outputs which include reports, analysis of survey results, guidelines and recommendations. The annual interim reports from the Chairmen of the Study Groups include detailed information on the progress made for each of the 18 Questions under study and the joint ITU-D/ITU-R activities as per Resolution 9 (Rev. Hyderabad, 2010). Chairmen's reports are available for both Study Groups for the work period together with meeting schedules.

ITU-D Study Group 2 meeting, September 2013

Collaboration with the other ITU Sectors has been functioning exceedingly well as can be seen by the large number of liaison statements exchanged between ITU-D SGs and the Groups in the other Sectors. There has been strong participation by and collaboration with other UN and international organizations in the work of several Questions, which in turn is extending the expert base involved in the finalization of the deliverables, notably with UNEP, WMO and UN-SPIDER on the Study Questions dealing with e-waste and ICT and climate change, with WHO on studying human exposure to electromagnetic fields and e-health, and others.

In preparation for WTDC-14, an initial June 2012 *Innovation Challenge* session that included ITU Members and staff and Study Group leadership, was held to share ideas on how Study Group procedures and outputs could be improved to ensure high quality products for the membership and WTDC-14. Further discussions were held on these topics during the annual 2012 and 2013 Study Group meetings.

The last meetings of the ITU-D Study Groups for the 2010-2014 study period were held between 9 and 20 September 2013. The meetings reported on the results achieved and deliverables developed by the 18 Questions under study and the joint ITU-D/ITU-R work on Resolution 9 to implement the ambitious work programme established by WTDC-10. The meetings presented their final reports and guidelines for approval by the two Study Groups. Two new recommendations related to Telecommunications/ICTs for rural and remote areas, and ICT and climate change were also considered.

Pursuant to PP Resolution 140 (Rev. Guadalajara, 2010) and instructions from ITU Council and TDAG, a Correspondence Group on the elaboration of a working definition of the term "ICT" was formed in September 2012. The Group is open to members from all sectors. The Correspondence Group presented its work to the final meeting of Study Group 1 in September 2013. Since its initiation in September 2012, a total of 28 proposed definitions were received from the membership for consideration by the Group. A face-to-face meeting of the Correspondence Group was held prior to Study Group 1 meeting in September 2013 under the chairmanship of Ms Roxanne McElvane (United States), Chairman of Study Group 1 and the Co-convener, and Chairman of TDAG, Mr Vladimir Minkin (Russian Federation). The working definition of the term "ICT" agreed on by the Group is the following: *Technologies and equipment that handle (e.g. access, create, collect, store, transmit, receive, disseminate) information and communication.*

During the study period, the Groups have fully utilized the allocated budget for facilitating participation of LDCs and LICs through fellowships, providing interpretation as requested for its meetings and have gone beyond budget to translate contributions received (many arriving late) and final deliverables. New tools such as multilingual remote participation, captioning, e-Forum platform, survey platform, and case study library/repository have been made available to the members and the website is under constant revision for increased efficiencies, easy access to documents and useful material, and to support discussions on innovation.

Glossary

ACP	Africa, Caribbean, Pacific
AO	*Area Office (ITU)*
ATU	African Telecommunications Union
CARICOM	Caribbean Community
CSME	Caribbean Single Market and Economy
CA	Communications authority (or national regulatory agency)
CIR	Critical Internet Resource
COMESA	Common Market for Eastern and Southern Africa
COP	*Child Online Protection*
CRASA	Communications Regulators' Association of Southern Africa
CSCC	*Connect a School, Connect a Community*
CTU	Caribbean Telecommunications Union
DWDM	Dense wave division multiplexing
ECCAS	Economic Community of Central African States
ECOWAS	Economic Community of West African States
GCA	*Global Cybersecurity Agenda*
GHGs	Greenhouse gases
GSR	*Global Symposium for Regulators*
HAP	*Hyderabad Action Plan*
HIPCAR	*Enhancing Competitiveness in the Caribbean through the Harmonization of ICT Policies, Legislation and Regulatory Procedures*
HIPPSA	*Harmonization of ICT Policies in Sub-Sahara Africa*
ICT	Information and communication technology (Defined by Study Group as: *Technologies and equipment that handle (e.g. access, create, collect, store, transmit, receive, disseminate) information and communication*)
ICT4D	Information and communication technology for development
ICB4PAC	*Capacity Building and ICT Policy, Regulatory and Legislative Frameworks Support for Pacific Islands Countries*
IDN	Internationalized domain name
IMPACT	*International Multilateral Partnership Against Cyber Threats*
KPI	Key Performance Indicator
LCC	Least connected country
LDC	Less developed country
LIC	Low income country
LLDC	Land-locked developing country
MDG	Millennium Development Goal
MoU	Memorandum of Understanding
MRA	Mutually recognized agreement
NCD	Non-communicable disease
NEPAD	New Partnership for Africa's Development
NGN	Next generation network
OECD	Organisation for Economic Co-operation and Development
OER	Open educational resource
RI	*Regional Initiative (HAP)*
RO	*Regional Office (ITU)*
SADC	Southern African Development Community
SG	Study Group/Secretary-General
SIDS	Small Island Developing States
SMS4DC	*Spectrum Management Software for Developing Countries*
SSDM	*Smart Sustainable Development Model*
TDAG	*Telecommunication Development Advisory Group*
UNDESA	United Nations Department of Economic and Social Affairs
UNECA	United Nations Economic Commission for Africa
UWB	Ultra-wideband
WG	Working Group
WSIS	World Summit on the Information Society
WTDC-10	World Telecommunication Development Conference 2010, Hyderabad

Appendix 1a Study Groups

In accordance with Resolution 2 (Rev. Hyderabad, 2010), WTDC-10 maintained two study groups, determined the Questions to be studied by them, and adopted the list of chairmen and vice/chairmen of the ITU-D study groups.

The working procedures to be followed by the study groups are set out in Resolution 1 (Rev. Hyderabad, 2010) adopted by WTDC-10.

The following Questions were adopted by the conference for study by Study Groups 1 and 2:

Study Group 1

- Question 7-3/1: Implementation of universal access to broadband services.
- Question 10-3/1: The impact of the licensing and authorization regime and other relevant regulatory measures on competition in a converged telecommunication/ICT environment.
- Question 12-3/1: Tariff policies, tariff models and methods of determining the costs of services on national telecommunication networks, including next generation networks.
- Question 18-2/1: Enforcing national policies and regulations on consumer protection notably in a converging environment.
- Question 19-2/1: Implementation of IP telecommunication services in developing countries.
- Question 20-1/1: Access to telecommunication/ICT services by persons with disabilities and with special needs.
- Question 22-1/1: Securing information and communication networks: best practices for developing a culture of cybersecurity.
- Question 23/1: Strategies and policies concerning human exposure to electromagnetic fields.
- Question 24/1: Strategies and policies for the proper disposal or reuse of telecommunication/ICT waste material.

Study Group 2

- Question 9-3/2: Identification of study topics in the ITU-T and ITU-R study groups which are of particular interest to developing countries.
- Question 10-3/2: Telecommunications/ICTs for rural and remote areas.
- Question 11-3/2: Examination of terrestrial digital sound and television broadcasting technologies and systems, interoperability of digital terrestrial systems with existing analogue networks, and strategies and methods of migration from analogue terrestrial techniques to digital techniques.
- Question 14-3/2: Information and telecommunications/ICTs for e-health.
- Question 17-3/2: Progress on e-government activities and identification of areas of application of e-government for the benefit of developing countries.
- Question 22-1/2: Utilization of telecommunications/ICTs for disaster preparedness, mitigation and response.
- Question 24/2: ICT and climate change.
- Question 25/2: Access technology for broadband telecommunications, including IMT, for developing countries.
- Question 26/2: Migration from existing networks to next-generation networks for developing countries: technical, regulatory and policy aspects.

The full definition of the Questions is available in WTDC-10 Documents 139 (Rev.1) and 162.

Appendix 1b Work Programmes

Programme 1: Information and communication infrastructure and technology development

The main purpose of Programme 1 is to assist the ITU membership in maximizing the utilization of appropriate new technologies for the development of their information and communication infrastructures and services.

Programme 2: Cybersecurity, ICT applications and IP-based network-related issues

The main purpose of Programme 2 is to support the ITU membership in improving access to ICT applications and services, especially in underserved and rural areas, achieving trust and confidence in the use of ICTs, the Internet and next-generation networks, promoting fair and equitable access to critical Internet resources.

Programme 3: Enabling environment

The main purpose of Programme 3 is to assist the ITU membership in creating and maintaining an enabling telecommunication/ICT policy and regulatory environment, in developing and implementing effective financing policies and strategies, and to maintain ITU's global leadership as the prime source of international telecommunication/ICT indicators, through the collection and dissemination of statistical information.

Programme 4: Capacity building and digital inclusion

The main purpose of Programme 4 is to assist the ITU membership by ensuring that human and institutional capacity building in the field of telecommunications/ICTs is of the utmost quality and is available worldwide, and by fostering digital inclusion that promotes telecommunication/ICT accessibility and the use of telecommunications/ICTs for the social and economic development of people with special needs.

Programme 5: Least developed countries, countries in special need, emergency telecommunications and climate-change adaptation

The main purpose of Programme 5 is to assist the ITU membership by delivering concentrated assistance for the general socio-economic development of countries through ICTs, focusing on the specific needs of least developed countries and countries in special need, by promoting universal access to ICTs in least developed countries, small island developing states and landlocked developing countries, by providing assistance to developing countries in disaster risk reduction and prevention, preparedness and relief/response and telecommunication infrastructure reconstruction/rehabilitation in countries affected by disasters, and by providing assistance to developing countries in the use of ICTs to mitigate and address the effects of climate change.

Appendix 2 Selected ITU-D Publications 2010-2014[1]

The Hyderabad Action Plan
World Telecommunication Development Conference 2010
April 2011

The body of the text (Annex C) is available as a download from http://www.itu.int/ITU-D/pdf/op/HAP.pdf

Measuring the Information Society
5th Edition, 2013

The ITU *Measuring the Information Society (MIS)* Report, which has been published annually since 2009, features two benchmarking tools to measure the information society: the ICT Development Index (IDI) and the ICT Price Basket (IPB). The IDI captures the level of ICT developments in 157 economies worldwide and compares progress made during the last year. The IPB combines the consumer prices for (fixed and mobile) telephone and Internet broadband services for 161 economies into one measure and compares these across countries, and over time.

Yearbook of Statistics – Telecommunication/ICT Indicators – 2003-2012
39th Edition, 2013

The ITU *Yearbook of Statistics* provides the most authoritative source of data about the evolution of the telecommunication sector, the availability of ICTs in households and usage of ICTs by individuals.

World Telecommunication/ICT Indicators Database CD-ROM
17th Edition, 2013

The *World Telecommunication/ICT Indicators Database* on CD-ROM contains time series data for the years 1960, 1965, 1970 and annually from 1975 to 2012 for around 140 telecommunication/ICT statistics covering fixed telephone network, mobile-cellular telephone subscriptions, quality of service, Internet, traffic, staff, prices, revenue, investment and statistics on ICT access and use by households and individuals. Selected demographic, macroeconomic and broadcasting statistics are also included. For the June release, data for 2012 are available for selected indicators such as fixed-telephone subscriptions, mobile-cellular telephone subscriptions, international Internet bandwidth, fixed (wired)-broadband subscriptions and percentage of individuals using the Internet. Data for over 200 economies are available. Important: Please note that since ITU relies primarily on official country data, availability of data for the different indicators and years varies.

Trends in Telecommunication Reform 2013:
Transnational aspects of regulation in a networked society
13th Edition, 2013

The annual *Trends in Telecommunication Reform* publications are a key part of the dialogue with the world's information and communications technology (ICT) policy-makers and regulators. The 13th edition examines transnational aspects of regulation in a networked society and provide a sound understanding of the digital ecosystem in place and the role of regulation.

[1] Details are available at http://www.itu.int/en/publications/ITU-D/Pages/default.aspx

M-Government – Mobile Technologies for Responsive Governments and Connected Societies
1st Edition, 2011

This report aims to foster a better understanding of how to leverage the economic and social impacts of the use of mobile technologies and applications to enable ubiquitous governments, sustain public sector innovation and transform public service delivery. The report is a joint-product of the collaboration between the International Telecommunication Union (ITU), the Organisation for Economic Co-operation and Development (OECD) and the United Nations Department of Economic and Social Affairs (UNDESA). The pdf version is free of charge.

Acknowledgements and credits

1 BDT Director (ITU/P.M.Virot)

9 Bujumbura workshop; Abidjan workshop; HIPSSA Steering Committee meeting, Addis Ababa; Global Human Capacity Forum 2012; Cybersecurity strengthening in Ghana.

11 Ghana Girls in ICT Day; Connect a School, Connect a Community, Tanzania, Girls in ICT Day meeting H.E. Mrs Omobola Johnson, Nigeria's Minister of Communication Technology; Côte d'Ivoire Girls in ICT Day.

13 Connect a School site under installation in Sierra Leone.

14 Clockwise from top left: Meeting with Dr. Eugene Ikemefuna Juwah, Executive Vice Chairman and Chief Executive Officer of the Nigerian Communications Commission (NCC) and BDT Director; Meeting with Dr. Elham Mahmoud Ahmed Ibrahim, the AUC Commissioner for Infrastructure and Energy and BDT Director.; Handover meeting for Lesotho broadband initiative; Cameroun workshop; Meeting with AUC Commissioner Dr. Jean Pierre Onvehoun-Ezin and BDT Director.

17 BDT Director signing contract for the assistance to the Administration of Brazil on Cost Modelling; Spectrum management course CONATEL, Paraguay; Conformance and Interoperability (C&I) training in Americas.

23 Conformance and Interoperability (C&I) meeting in Tunisia; Development in Egypt; IPv6 training in Sudan; Oman Regional Cybersecurity Centre discussions.

27 Presentation of roadmap for transition from analogue to digital broadcasting for Papua New Guinea; National workshop on broadband masterplan, Nepal, 2012; ITU TRAI Asia Pacific Regulators Roundtable, Hyderabad, 2012.

28 Presentation of the roadmap from analogue to digital broadcasting for Fiji; Wireless broadband masterplan presentation, Samoa; BDT roadmap reports; Tonga national roadmap team: transition from analogue to digital broadcasting.

36 Visit of ITU Secretary-General; PAPI implementation in Republic of Moldova; Visit of BDT Director.

38 Kyrgyz laboratory; Visit of ITU Secretary-General to Republic of Moldova; Digital Moldova 2020.

39 Videoconference project; Visit of ITU Secretary-General to Republic of Moldova; Kyrgyz laboratory.

41 BDT Director visiting Serbia; Experts Group Meeting for Europe on Increasing Role of Public Private Partnerships in the ICT Ecosystem - 25 Years of Telecom/ICT Sector Reform in Europe; and Beyond; ITU Experts Group Meeting on m-Health: Towards Cure, Care and Prevention.

42 H.E. Prof Dr Sali Berisha, Prime Minister of Albania and ITU Secretary-General; Regional Forum for Europe on Broadband; Users Field survey vehicle in Serbia; Regional Conference on Regulatory Activity in Electronic Communications Sector: Protection of the Interests of the Electronic Communication Users.

46 H.E Pierre Nkurunziza President of Burundi and ITU Secretary-General during the official ceremony in Ngozi province to launch the network operations in Burundi; Regions in Djibouti connected.

47 ITU Interactive Terrestrial (Optical Fibers and Microwaves) Transmission Maps.

48 Assistance on C&I - Communication Regulatory Commission (CRC), Ulan Bator, Mongolia, 2013; Guidelines for developing countries on establishing conformity assessment test labs in different regions.

52 ITU IPv6 Symposium in 2013.

53 Setting realistic expectations for spectrum auctions workshop at GSR-13, Warsaw, Poland, (ITU/R.Farrell); Media conference at GSR-12, opening session, GSR-12, (ITU/R.Farrell) Panel at GSR-12 (ITU/ R.Farrell).

55 4th Meeting of the ITU Expert Group on Telecommunication & ICT Indicators (EGTI) Mexico City, Mexico, 2013 (ITU/M Jacobson-Gonzalez).

59 H.E. President Laura Chinchilla Miranda of Costa Rica at BYND 2015; BYND 2015 activities (ITU/I.Wood); Ms. Geena Davis, ITU Special Envoy for Girls in ICT.

60 Connect Arab States Summit; Connect Arab States Summit; Connect Americas Summit (ITU/R.Farrell).

64 BDT Director with Hon. Gordon Darcy Lilo, Prime Minister of Solomon Islands; WSIS 2013 Thematic workshop on Emergency Telecommunication; BDT Director with H.E. Tuilaepa Lupesoliai Neioti Aiono Sailele Malielegaoi, Prime Minister of Samoa; BDT Director with village Chief.

65 Mr Houlin Zhao, Deputy Secretary-General, ITU, speaking at the WSIS+10 Preparatory Process ITU/I.Wood; WSIS Forum 2013 - Measuring the WSIS Targets (The Partnership on Measuring ICT for Development) (ITU/J.M.Planche); Opening WSIS 2013 (ITU/R.Farrell); WSIS 2013 Cybersecurity Action Line C5 (ITU/Claudio Montesano Casillas).

70 Innovation Challenge; BDT Strategy Jam (ITU/I.Wood).

72 ITU-D Study Group 2 meeting, September 2013 (ITU/I.Wood).

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