INTERNATIONAL TELECOMMUNICATION UNION

No. 2 March | April 2014

ITU NEWS

itunews.itu.int

Milestones
From Hyderabad to Dubai

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

Special Edition

World Telecommunication Development Conference 2014

Your Partner for Planning Digital Network Technologies

Tomorrow's Communications Designed Today

System Solutions and Expertise for
Spectrum Management & Radio Monitoring
and Network Planning & Engineering.

LS telcom

www.LStelcom.com

Broadband and development

Synergies for success

Dr Hamadoun I. Touré
ITU Secretary-General

We are honoured that the Government of the United Arab Emirates is once again hosting, in Dubai, a major ITU event — the World Telecommunication Development Conference (WTDC-14). In 2012, four ITU global events were held in Dubai: ITU Telecom World 2012; the Global Standards Symposium; the World Telecommunication Standardization Assembly; and the World Conference on International Telecommunications. This is a clear testimony of the commitment of the United Arab Emirates to the development of information and communication technologies worldwide. WTDC-14 opened with a record 1650 registered participants, including more than 60 ministers and high-level delegates from around 150 countries and 100 private-sector entities and civil society.

The overarching theme of WTDC-14 is "Broadband for Sustainable Development". In the United Arab Emirates itself, almost all home Internet subscriptions are to broadband services. Mobile-cellular telephone penetration had already reached 170 per cent by the beginning of 2013. A household survey conducted by the country's Telecommunication Regulatory Authority confirmed that virtually all residents use a mobile phone and that 85 per cent of the population uses the Internet regularly, mostly through a high-speed connection.

Worldwide, much progress has been made in the information and communication technology sector, with over 6.8 billion mobile-cellular subscriptions globally by the beginning of 2014, and more than 2.7 billion people using the Internet.

The great news for WTDC-14 is that almost all of this growth has been in the developing world, which over the past four years has added two billion new mobile cellular subscriptions (90 per cent of the global increase). The same pattern is true of the growth in Internet users, where 817 million of the one billion new internet users over the past four years have come from the developing world.

Meanwhile, social media continues to skyrocket. At the time of the Hyderabad Conference, four years ago, there were around 30 million users of Twitter, and 400 million users of Facebook. Today, hundreds of millions of tweets are sent every day, and Facebook has over 1.2 billion users.

Governments are striving to bring information and communication technologies to everyone. Recent efforts to increase international connectivity include the deployment of additional international submarine cables along the coast of Africa.

Broadband could be the universal catalyst that puts access to health care, education and basic social services within the reach of all. This was a clear message from the Broadband Commission for Digital Development, which met in Dublin, Ireland, on 23 March 2014.

The Commission called for recognition of the transformational potential of high-speed networks and for broadband penetration targets to be explicitly included in the post-2015 sustainable development goals to be approved by the United Nations.

The output from WTDC-14 will be fed into the ITU Strategic Plan, which our Member States will endorse during the Plenipotentiary Conference in the Republic of Korea in October/November 2014. What will be decided in Dubai will shape not just the future of ICT development over the next four years, but the future shape of the very world we live in. So let's be bold — and let's dream big.

Getty Images

ISSN 1020–4148
itunews.itu.int
6 issues per year

Editor-in-Chief: Patricia Lusweti
Art Editor: Christine Vanoli
Editorial Assistant: Angela Smith
Circulation Assistant: Albert Sebgarshad

Printed in Geneva by the ITU Printing and Dispatch Division.

Editorial office/Advertising information:
Tel.: +41 22 730 5234/6303
Fax: +41 22 730 5935
E-mail: itunews@itu.int

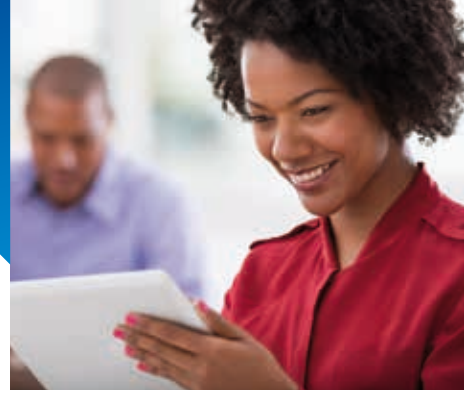
Mailing address:
International Telecommunication Union
Place des Nations
CH–1211 Geneva 20 (Switzerland)

Subscriptions:
Tel.: +41 22 730 6303
Fax: +41 22 730 5935
E-mail: itunews@itu.int

Milestones
From Hyderabad to Dubai

SPECIAL EDITION
WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

CONTENTS



World Telecommunication Development Conference 2014

Brahima Sanou

Setting strategies and objectives for the next four years

Brahima Sanou
Director, ITU Telecommunication Development Bureau

We are honoured to be in the splendid city of Dubai for ITU's sixth World Telecommunication Development Conference (WTDC-14). As we look forward to the next stage of our journey towards ensuring equitable and sustainable information and communication technology (ICT) networks and services for all, we can also contemplate with a measure of pride the progress made in implementing the Hyderabad Action Plan adopted at the World Telecommunication Development Conference in Hyderabad, India, in 2010.

The 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.

WTDC-14 is an opportunity to evaluate progress made by the two study groups of ITU's Telecommunication Development Sector (ITU–D) in responding to the 18 Questions assigned to them in the Hyderabad Action Plan. It will also give us a moment to assess the implementation and impact of the 28 regional initiatives identified for the six regions in the Hyderabad Action Plan. These initiatives address such vital matters as human capacity building, broadband infrastructure development and access, digital broadcasting, emergency telecommunications and e-accessibility.

More than one million low-income women have been trained since ITU and the Telecentre.org Foundation launched their joint Women's Digital Literacy Campaign in 2011. Key partnerships have been created to use mobile technology, in particular text messaging and apps, in the health sector. For the first time, ITU has quantified the real size of the digital gender gap and the digital native population. The Bureau has assisted 30 countries over the last four years in switching from analogue to digital broadcasting, and helped 43 countries with spectrum management and monitoring.

To promote inclusive and sustainable development across the world, I have launched three initiatives, which are close to my heart. The m-Powering Development initiative extends the benefits of mobile technology to all strata of

society, particularly those in rural, remote and underdeveloped areas. The Smart Sustainable Development Model links rural telecommunications and ICT development with disaster risk reduction and management efforts. The ITU Academy integrates and harmonizes all the Union's capacity-building activities.

Building confidence and security in the use of ICT is also high on our agenda. We continue to act as catalyst and facilitator in achieving a global culture of cybersecurity.

The work that ITU–D has been doing under its mandate to implement the outcomes of the World Summit on the Information Society (WSIS) and subsequent WSIS Forums will also be presented to WTDC-14, as will the results of activities undertaken to follow up major ITU conferences and meetings relevant to the work of ITU–D.

Also on the agenda are other important matters such as strengthening ITU's regional presence, the current state of telecommunication and ICT development, cooperation among ITU members, ITU–D working methods, and the authorization for the Telecommunication Development Advisory Group to act between world telecommunication development conferences.

The Hyderabad Action Plan has guided us to achieve great things. It is thanks to your commitment, your passion and your alliances that we now have so many success stories to tell. You will read some of them in this Special Edition of *ITU News*.

The discussions in Dubai will chart the course of ITU–D action over the next four years. WTDC-14 will adopt an Action Plan and Declaration to guide efforts to accelerate the development of telecommunications and ICT worldwide. It will also adopt a Strategic Plan for ITU–D, which will be integrated into the overall ITU Strategic Plan for the years 2016–2019 at the forthcoming Plenipotentiary Conference, to be held in Busan, Republic of Korea, in October-November 2014.

Getty Images

What the regions want

Great expectations from WTDC-14

In preparation for the World Telecommunication Development Conference (WTDC-14), ITU held six regional preparatory meetings around the world last year, from Chisinau, Moldova, for the Commonwealth of Independent States, to Phnom Penh, Cambodia, for Asia-Pacific, then to Montevideo, Uruguay, for the Americas, to Accra, Ghana, for Africa, to Manama, Bahrain, for the Arab States, and to Belgrade, Serbia, for Europe.

Following is a summary of some of the main needs of the six regions, as stated in the final reports of these regional meetings. Many of the needs are similar to those endorsed at WTDC-10 in Hyderabad as regional initiatives for the years 2011–2014.

Africa

The regional preparatory meeting for Africa was held from 2 to 4 October in Accra, Ghana, at the invitation of the Government of Ghana. The growing demand for information and communication technologies (ICT) in Africa in recent years has increased requirements for **broadband infrastructure development, ICT skills acquisition** and **policy and**

regulatory harmonization across the continent.

Strengthening **human and institutional ICT capacity building** through both enhanced training systems at the national level and increased **technical cooperation between African telecommunication/ICT administrations and training institutions** are seen as priority needs. As elsewhere, developing local content and languages online and the skills required to meet the ICT needs of persons with disabilities are other priority areas.

ICT policy and regulatory harmonization to achieve subregional and regional integration of telecommunication/ICT infrastructure, services and markets is another pressing concern, as is **technical standardization** to increase network/service connectivity. Reducing the level of intra-continental traffic routed by extra-continental transit centres and establishing a regional framework for cooperation on **e-waste management** are other objectives.

African States require further assistance in the **development of broadband infrastructure** in both urban and rural areas, with particular emphasis on subregional and continental interconnection and emergency communications. Support is also required at the national, regional and global levels on **spectrum management** and to ensure the smooth **transition to digital broadcasting.** More specifically, this entails *inter alia* assistance in using the tools to improve international coordination of terrestrial services in border areas; developing policies that promote efficient spectrum utilization; the transfer of spectrum management and digital broadcasting technology skills; help in meeting the deadline for the analogue to digital switch-over; and ensuring affordable access to digital services.

Finally, as elsewhere, African countries need to boost their preparedness and response capacities to address growing **cyberthreats.** This will require enhanced coordination to effectively implement cybersecurity strategies to protect consumers, in particular children and other vulnerable persons, and measures for privacy and personal data protection. To counter cyberthreats, national and regional **computer incident response teams** will have to be trained and deployed, and a legal framework on cybercrime developed.

Americas

The regional preparatory meeting for the Americas was held in Montevideo, Uruguay, from 20 to 22 August 2013 at the invitation of the Ministry of Industry, Energy and Mining, Uruguay.

Governments in the Americas acknowledge the urgent need to increase knowledge of the many information and communication technologies available today and to put in place an enabling regulatory environment to facilitate broadband uptake. Other priority needs relate mainly to emergency communications, digital broadcasting, broadband access, lowering Internet access costs, and ICT human capacity building.

The priority in the area of **disaster management emergency communications** is to develop or strengthen disaster preparedness and response mechanisms, including early-warning systems, particularly in small island developing States and in the least developed countries that are highly exposed to the adverse effects of climate change. This will require increased coordination and the development of appropriate policy, regulatory and legislative frameworks for emergency communications at both national and subregional levels.

Consensus prevails on the need to address the **transition to digital broadcasting** and **spectrum management** issues at the national, regional and global levels. Developing countries in particular are identified as requiring assistance in using the tools to improve the international coordination of terrestrial services in border areas. Building spectrum management and digital broadcasting technology skills as well as the promotion of strategies to increase access to digital broadcasting at affordable prices are other identified needs.

With regard to **broadband access and uptake,** national plans are needed to guide policies for increasing access to broadband services and promoting investment in networks in both rural and urban

areas, especially in landlocked developing countries. Assistance in developing and assuring broad access to ICT applications for e-government, e-health, e-education and e-commerce is also required, as is the need to support non-profit cooperatives providing services in underserved rural and suburban areas. Another area of need concerns the consolidation and dissemination of information related to the deployment and operation of interoperable international mobile telecommunications (IMT), satellite and fibre optic networks suited to provide enhanced broadband coverage and connectivity in rural areas at affordable prices to users.

Identifying ways and means to **reduce telecommunication service** and **Internet access costs,** as well as possibilities to develop national, subregional and regional IXPs, are areas viewed as requiring further study. Another goal is lower costs to access international fibre-optic networks, especially for landlocked developing countries and small island developing States.

Strengthening the capacities of Member States, especially developing countries, to create an enabling environment for ICT development, and encouraging them to actively participate in fora on global ICT policy, including on cybersecurity and Internet governance issues, are other target areas.

Arab States

The regional preparatory meeting for the Arab States took place in Manama, Bahrain, on 29 to 31 October 2013 at the invitation of the Government of Bahrain.

Bridging the **digital divide** between the tech-savvy and the least developed Arab States is a major challenge faced by governments and other key stakeholders in the region.

There is an urgent need, especially in the least developed Arab countries, to **eradicate digital illiteracy** and to develop **digital Arabic language content** and ICT applications that can support multilingualism in order to facilitate **wider access to ICT.** Particular emphasis is being placed on promoting ICT access in remote rural areas and for persons with disabilities.

At the same time, the region acknowledges that further progress must be made to enhance know-how on technical and economic aspects of broadband communication networks, and to increase regional cooperation on **conformance and interoperability.**

Growing threats to **cybersecurity** have highlighted the need to formulate regulatory, legal and technical measures, and to create national computer incident response teams, especially in the least developed Arab countries, to address this pressing issue.

Protecting children online and launching awareness campaigns to alert them to potentially abusive and harmful **Internet content** are also priorities, and plans are being considered to establish a regional centre to prepare and disseminate special awareness programmes.

To achieve **smart and sustainable development** corresponding strategic plans and regulatory frameworks need to be formulated complemented by an exchange of relevant expertise between countries in the region. As part of this process, Arab States recognize that a study should be undertaken to assess the negative effects of **e-waste** in the region and to find appropriate solutions to deal with the problem.

A consensus exists on the need to **harness ICT tools** throughout the region to address challenges posed by the scarcity of resources such as water and by the adverse effects of climate change, as well as to implement a gradual transition to clean and sustainable energy and "smart cities".

The **eradication of digital illiteracy** in the Arab region and development of **educational e-content in Arabic** for schools and universities are viewed as particularly urgent and important issues.


AFP

Asia-Pacific

The regional preparatory meeting for the Asia-Pacific region took place in Phnom Penh, Cambodia, from 30 April to 2 May 2013 at the invitation of the Government of Cambodia.

Telecommunication and ICT needs vary considerably across this vast region reflecting both its diversity in terms of development and income levels, and challenges related to the remoteness and vulnerability of some countries.

The least developed landlocked and small island developing States in the region have particular needs linked to their relative inaccessibility and, especially their case, exposure to the adverse impacts of climate change. The development of an enabling environment for broadband infrastructure and enhanced access to affordable ICT services, particularly in remote rural areas and islands, are needed for these countries to become more integrated into the world information society.

For this to happen these countries emphasize the need to further develop broadband access and the use of ICT applications, as well as skills to establish, manage and use **next-generation broadband communication networks,** to accelerate the transition to **digital broadcasting,** and to address **spectrum management** and **convergence** issues. Promoting digital literacy and multilingual local digital content are also seen as essential steps towards reducing the regional digital divide.

Emergency communication technologies, including early warning systems, for countries in the region affected by recurrent natural disasters and climate-related hazards need to be identified and put in place within appropriate national and regional policy, regulatory and legislative frameworks. Ensuring the availability of **dedicated equipment for emergency radio communications** and the skills required to operate it efficiently are other priorities in certain areas. More generally, there is a consensus that a regional mechanism for **sharing information and best practices** on utilizing ICT in emergencies should complement these measures.

As elsewhere, **cybersecurity** is a major concern that has prompted calls for national, subregional and regional frameworks to address the issue. Certain countries have also emphasized that more must be done to ensure environmentally sound **e-waste management.** Further study on the effective utilization and **optimization of fibre-optic cable** for submarine networks is yet another priority for some countries.

Commonwealth of Independent States

The regional preparatory meeting for the CIS region was held in Chisinau, Moldova, from 19 to 21 February 2013, at the invitation of the Government of Moldova.

Reducing the regional digital divide by bringing the benefits of ICT to more people, especially in rural areas, is a paramount objective in the CIS region, where broadband networks are recognized as the core infrastructure needed to support advanced applications and services for governments, businesses and consumers.

ITU continues to collaborate with telecommunication and ICT administrations in the region to help respond to the demand for improved **broadband infrastructure** to access ICT services at an affordable cost and acceptable quality in urban, rural and remote areas, using energy-efficient technologies.

The aim is to **increase connectivity for all sectors of society,** including state social institutions, training centres, and healthcare and social rehabilitation centres, and to develop public skills in the use of ICT to access these and other services through online training and other activities. Particular care is being taken to assist the CIS region in developing specialized training programmes to ensure the accessibility and user-friendliness of ICT for **persons with disabilities,** as well as access points equipped with specialized IT equipment and software.

Developing national programmes and training courses on harnessing **telecommunication and ICT for educational and human resource development** purposes is also an area where ITU is providing assistance. This will entail the development of distance-learning technologies, including methods enabling ethnic minorities to benefit from digital-based education sources in their own languages.

Ensuring a smooth transition from analogue to **digital broadcasting** is another priority area. The transition process has been facilitated by the opening of a consultative and methodological regional centre in Minsk (Belarus), set up with ITU support that is developing interactive multimedia applications for digital broadcasting and providing the relevant skills training.

Reinforcing cybersecurity has also been singled out as an urgent task. Of the ten CIS countries that have signed agreements requesting ITU help to establish computer incident response teams, four have already done so and the six others are in the process of doing likewise, with ITU support.

Promoting cross-regional cooperation on child online protection in line with ITU's global cybersecurity agenda is an ongoing project entailing centralized advisory and technical assistance on various aspects of this pressing issue.

Europe

The regional preparatory meeting for the Europe region was held in Belgrade, Serbia, from 26 to 28 November 2013, at the invitation of the Government of Serbia.

European telecommunication and ICT administrations recognize the need to coordinate the analogue to **digital switchover** and the management of the **digital dividend,** taking into account the most effective use of radio spectrum at regional level.

Other major needs relate to increasing **broadband diffusion,** creating an **enabling environment** for ICT development and uptake, making ICT applications more accessible, and building **spectrum management** capacities, including in **digital dividend bands.** Countries in the region have also proposed the elaboration

of studies, benchmarks and guidelines on the economic and policy aspects of the assignment and use of the radio-frequency spectrum.

Given the significant broadband access differences in Europe, there is an urgent need to assist certain national telecommunication and ICT administrations in every aspect of practical implementation and development of **high-speed networks.** Communication planners believe this may entail the establishment of local and regional broadband roll-out plans.

Several national administrations consider that broadband diffusion could benefit from the experience of **infrastructure sharing** within the energy sector (smart grids) and should aim to achieve **synergies in cross-sectoral fields.** Given the varying degrees of progress in this area across Europe, communication professionals see the sharing of best practices and the development of convergent regulatory policies as the best ways to use available resources effectively to achieve greater broadband diffusion at affordable cost.

Other objectives aim to promote **e-accessibility,** including for persons with disabilities, and to build confidence in ICT applications. **Child online protection** is a prominent focus area and efforts are to be concentrated on raising awareness on this issue and developing national or regional road maps to protect children from unsuitable online content.

Finally, countries in the region are endeavouring to promote the competitiveness and sustainability of small and medium-sized enterprises, and to promote the entrepreneurship of young unemployed people, through the acquisition and use of ICT skills in the employment market.

Shutterstock

ITU's Connect the World initiative

Connect summits come full circle

As a multistakeholder approach to turn commitments into action, ITU's Connect the World initiative, launched in 2005, helps in mobilizing the financial, human and technical resources needed to implement the outcomes of the World Summit on the Information Society.

As part of this effort, ITU organized five high-level regional events known as Connect Summits; the most recent being the Connect Asia-Pacific Summit, held on 18 November 2013, in Thailand, in conjunction with ITU Telecom World 2013.

The Connect Summits bring together stakeholders to strengthen existing partnerships and launch new ones to spur investment in information and communication technologies (ICT). They result in practical projects to expand ICT networks and access, as a means of fostering employment along with broader social and economic development.

Each summit was organized in collaboration with regional and global partners, and was preceded by an inclusive preparatory process to take account of the views of all stakeholders. At each summit, new partnerships have been announced for the benefit of the region concerned.

As a follow-up mechanism, ITU Regional Offices, in collaboration with regional telecommunication organizations and other stakeholders will continue to work together, with the aim of identifying gaps and avoiding overlap, as well as tracking progress in implementing the outcomes from these summits. ▶


Shutterstock

Connect Africa Summit

First in the series, the Connect Africa Summit, which took place in Kigali, Rwanda, on 29–30 October 2007, framed the Connect Africa programme around five goals (see box on next page), to ensure that Africa makes the most of broadband and ICT opportunities. To help achieve these goals, which reflect the challenges and opportunities in the Africa region, major pledges totalling some USD 55 billion were announced during the summit.

A variety of follow-up actions has already been implemented, with beneficial effect. For example, the landing of submarine cables has reduced communication costs. Also, the expansion of regional fibre networks and national backbones has increased the penetration of mobile broadband services.

The mobile industry has invested more than USD 20 billion, despite the global financial difficulties since the summit.

ITU has implemented a USD 6 million project on the Harmonization of ICT policies in Sub-Saharan Africa (HIPSSA).

With support from the Korea Communications Commission, the Republic of Korea, and Japan's Ministry of Internal Affairs and Communications, guidelines and national road maps for Angola, the Democratic Republic of the Congo, Ethiopia and Mali have been produced for the migration of television broadcasting from analogue to digital.

ITU has worked in partnership with the relevant governments and institutions to implement multipurpose community centres in rural areas, and is now partnering with Nokia Siemens Networks to connect villages. Connect a School Connect a Community projects are under

way in partnership with the Government of France, and more than 60 schools in Africa have been equipped with ICT and Internet connectivity.

Smart Africa Manifesto

In October 2013 the Government of Rwanda and ITU co-hosted the Transform Africa Summit in Kigali, Rwanda, to evaluate progress in implementing the Connect Africa goals and to leverage achievements.

Heads of State and Government present at this summit adopted the Smart Africa Manifesto in which they committed themselves to providing leadership in accelerating sustainable socio-economic development through affordable access to broadband and information and communication technologies (ICT).

Smart Africa is a bold and innovative approach to accelerate sustainable socio-economic development in Africa through affordable access to broadband and appropriate use of ICT. The initiative will help Africa realign its agenda to address contemporary challenges by harnessing emerging mobile and broadband technologies.

Introducing the manifesto, Paul Kagame, President of Rwanda, challenged African leaders to check their understanding of the power of ICT. "Do we believe that ICT are a central part of the things we need to consider in overall transformation, and not just a single entity? Do we understand the full dimension of ICT and the importance of ICT in supporting and driving progress and success in other sectors?" he asked.

A novelty of the manifesto is the prominence given to the private sector. African leaders agreed to put the private sector first. They reaffirmed the unique ability of the private sector to increase investment, drive job creation, increase productivity and foster innovation.

Subsequently, on 30–31 January 2014, the Smart Africa Manifesto was endorsed by all Heads of State and Government of the African Union at the 22nd Ordinary Session of the Assembly of the African Union in Addis Ababa, Ethiopia. This places the manifesto at the heart of the ICT agenda in Africa. ▶

Connect Africa Summit Goals

Goal 1 *Interconnect all African capitals and major cities with ICT broadband infrastructure and strengthen connectivity to the rest of the world by 2012.*

Goal 2 *Connect African villages to broadband ICT services by 2015 and implement shared access initiatives such as community telecentres and village phones.*

Goal 3 *Adopt key regulatory measures that promote affordable, widespread access to a full range of broadband ICT services, including technology and service neutral licensing/authorization practices, allocating spectrum for multiple, competitive broadband wireless service providers, creating national Internet Exchange Points (IXPs) and implementing competition in the provision of international Internet connectivity.*

Goal 4 *Support the development of a critical mass of ICT skills required by the knowledge economy, notably through the establishment of a network of ICT centres of excellence in each subregion of Africa and ICT capacity-building and training centres in each country, with the aim of achieving a broad network of inter-linked physical and virtual centres, while ensuring coordination between academia and industry by 2015.*

Goal 5 *Adopt a national e-strategy, including a cybersecurity framework, and deploy at least one flagship e-government service as well as e-education, e-commerce and e-health services using accessible technologies in each country in Africa by 2012, with the aim of making multiple e-government and other e-services widely available by 2015.*

Shutterstock

Connect CIS Summit

ITU organized the Connect CIS Summit on 26–27 November 2009 in Minsk, Belarus. Leaders from the Commonwealth of Independent States (CIS) identified priorities (see box on next page), including expanding broadband networks needed to support advanced applications and services, moving from analogue to digital broadcasting, building capacity, implementing cybersecurity, and fostering policy and regulatory reform to stimulate ICT investment.

Examples of actions taken to follow up the Connect CIS Summit include joint projects completed by ITU and Moldova (at a cost of more than USD 250 000), by ITU and Belarus (at an estimated cost of USD 200 000), and by ITU, Kyrgyzstan and the Alippe TV company (at a cost of around USD 1 200 000) to establish public Internet access points in rural areas and to implement interactive multimedia digital broadcasting for education purposes.

Within the framework of ITU's Connect a School Connect a Community initiative, ITU and Kyrgyzstan have provided training to upgrade the qualifications of village informatics teachers in Kyrgyzstan. Also, the private sector in Kyrgyzstan has invested more than USD 250 000 in ITU's Build on Broadband initiative.

Most of the CIS countries (Azerbaijan, Armenia, Belarus, Kazakhstan, Kyrgyzstan, Moldova, the Russian Federation, Uzbekistan and Ukraine) have developed and are implementing comprehensive national programmes on ICT development.

Connect CIS Summit Declaration "Towards a Digital Future"

We, the leaders of the peoples of the Commonwealth of Independent States (CIS), assembled in Belarus from 26–27 November 2009 for the Connect CIS Summit, have come together to forge a common future of prosperity for our region by leveraging the potential of information and communication technologies (ICT).

We reiterate our common desire to build an inclusive and development-oriented Information Society, where people can achieve their full potential and improve their quality of life.

We recognize the important contribution of ICT in stimulating economic growth, employment and broader sustainable development in the region, and in turn, their potential to help achieve the United Nations Millennium Development Goals.

We further recognize the essential role of governments in devising national e-strategies and establishing an enabling policy and regulatory framework to foster ICT investment.

We reaffirm our commitment to achieving the internationally agreed vision and goals of the World Summit on the Information Society (Geneva 2003; Tunis 2005).

We note the key proposals and initiatives brought to the attention of the Connect CIS Summit by the International Telecommunication Union and various partners.

We reach out to partners including those from the telecommunication/ICT sector, development banks and financial institutions, international and regional organizations and civil society to mobilize human, financial and technical resources for these and other initiatives, which help achieve the vision and goals of the World Summit on the Information Society in the CIS region.


Getty Images

Connect Arab Summit

As the third regional event in the series, ITU held the Connect Arab Summit on 5–7 March 2012 in Doha, Qatar. The summit was organized in close partnership with the League of Arab States and the Qatari administration.

All stakeholders, including governments, the private sector, civil society and regional and international organizations, committed to working together to achieve the summit goals in the following areas by 2015: access and infrastructure, digital content, cybersecurity and innovation (see box on next page).

On the occasion of the summit, a number of projects valued at some USD 46.6 billion were proposed by stakeholders, including projects for the least developed countries in the Arab region.

As a follow-up to the Connect Arab Summit, and as part of an initiative to promote digital content, ITU has worked with the League of Arab States to establish the ".ARAB" domain name, both in the Latin and Arabic strings, injecting a cash contribution of USD 380 000 for the submission of the application for this domain name.

ITU and its cybersecurity partner, the International Multilateral Partnership Against Cyber Threats (IMPACT) joined hands with the Omani government (represented by the Information Technology Authority — ITA) to establish a Regional Cybersecurity Innovation Centre through a project worth more than USD 2 million. Launched in March 2013, the centre is acting as ITU's cybersecurity hub in the region, localizing and coordinating cybersecurity initiatives and providing assistance to the Arab countries.

A regional Working Group on Legal Framework for Child Online Protection in the Arab region was established in January 2013 as a follow-up to the decisions and recommendations on cybersecurity made during the Connect Arab Summit.

Also, as decided at the Connect Arab Summit and endorsed by the Arab Council of Ministers, ITU and the League of Arab States are tasked with holding meetings to follow up on the summit goals. The first follow-up meeting was held in November 2013 in Hammamet, Tunisia. ▶

Connect Arab States Summit goals

Goal 1

Access and infrastructure

Establish and modernize infrastructure, achieve universal access and improve the quality of services as a long-term target, promote rapid deployment of broadband networks in urban and rural areas in all Arab countries, increase the availability and affordability of ICT services throughout the Arab region, build workforce skills to prepare for broadband-enabled economies, further promote the use of ICT to respond to the special needs of various segments of society, including persons with disabilities, establish Internet exchange points (IXPs) in all the Arab States, increase the connectivity among these States to help to reduce the international cost of the Internet, increase the security of telecommunications and information, avoid the use of international networks from outside the Arab region to connect the Arab States, and help in spreading Arabic digital content.

Goal 2

Digital content

Focus efforts to increase Arabic digital content on Internet sites by initiating national and regional programmes to develop content and promote innovation and incubators in order to encourage scientific research in processing the Arabic language, lower the cost of accessing digital content, and develop strategies to boost the consumption of digital content by Arab users so as to help in bridging the digital and ICT divide in the Arab region.

Goal 3

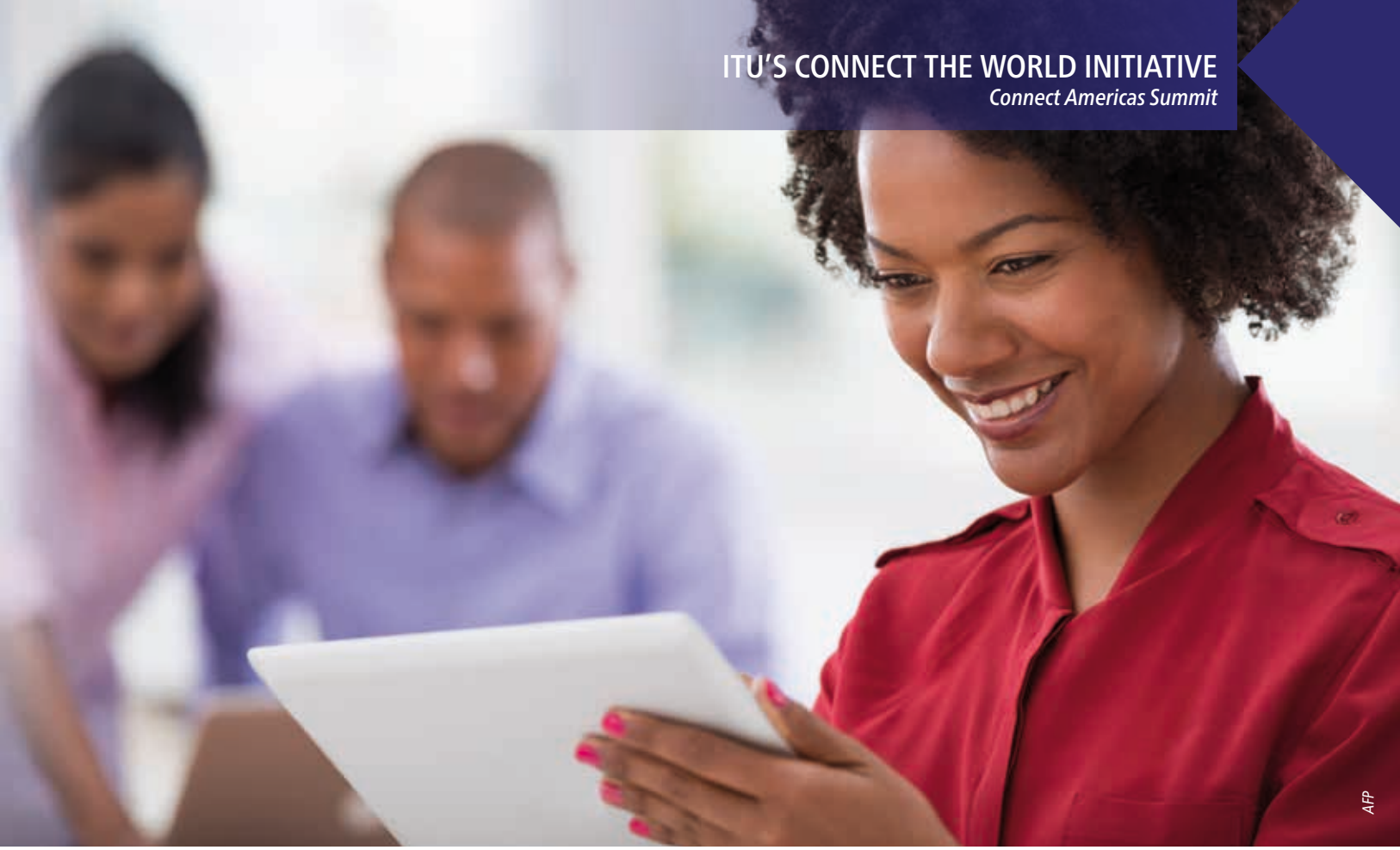
Cybersecurity

Improve regional cooperation and strengthen it through common or similar policies, strategies and legislations needed to effectively address the growing threat posed by cyberattacks and cybercrime, with a view to harmonizing policies, strategies and legislation, and also to establishing a regional legal framework on cybersecurity and cybercrime for all the Arab States. Make efforts to increase levels of protection against the risks posed by illegal use of ICT, with specific attention to children and young people as well as the safe use of the Internet.

Goal 4

Innovation

Integrate ICT innovation as a key component of government policy and develop national strategy in coherence with public development goals, with clearly expressed political support; and design and coordinate an Arab regional approach to ICT innovation. This will help Arab countries to collaborate efficiently and promote regional integration in the field of research and innovation; empower Arab citizens to innovate through a new educational approach, allowing for a wider range of skills needed for innovation; and provide appropriate financing for ICT innovation, and enable the competitiveness of the products of this sector in the world markets.



Connect Americas Summit

The Connect Americas Summit, the fourth in a series of ITU-led Connect Summits, was held in Panama City, on 17–19 July 2012. Leaders from the Americas region committed to furthering telecommunication development in line with the regional priorities agreed at the World Telecommunication Development Conference in 2010.

Stakeholders and ITU proposed a number of projects valued at USD 53.4 billion with the aim of achieving the summit goals (see box on next page). As with previous Connect events, the summit in Panama served as a platform to announce new partnerships. Efforts are under way by partners to implement the various initiatives announced.

Meanwhile, ITU has finished implementing the HIPCAR project on "Enhancing Competitiveness in the Caribbean through the Harmonization of ICT Policies, Legislation and Regulatory Procedures" funded by the European Union.

ITU is working with regional institutions such as the Caribbean Telecommunications Union (CTU), the Caribbean Disaster Emergency Management Agency (CDEMA), the Caribbean Broadcasting Union (CBU) and the Caribbean Association of National Telecommunication Organizations (CANTO) on broadband initiatives, spectrum management, the transition from analogue to digital television broadcasting, cybersecurity and disaster management. ITU in partnership with CTU hosted a follow-up Connect Americas meeting for the Caribbean countries in August 2013 in Trinidad.

In partnership with the Inter-American Development Bank (IDB), CANTO launched their "Broadband Infrastructure Inventory and Public Awareness Project" in which ITU was invited to be part of the technical team.

A project known as "Complementary Infrastructure for the Mesoamerican Information Highway" is also under way. It was presented to the Connect Americas Summit, and is one of the highest priorities for the countries of the Central American telecommunications regulatory commission COMTELCA *(Comisión Técnica Regional de Telecomunicaciones)*.

COMTELCA has started implementing a broadband project, financed by IDB. ITU has also been working with COMTELCA in the area of communications during emergencies.

Memoranda of Understanding and cooperation agreements have been signed, for example, with the Government of Haiti for the development of its telecommunication sector, and with Brazil's Telecommunications Research and Development Centre *(Centro de Pesquisa e Desenvolvimento em Telecomunicações — CPqD)* for non-exclusive collaboration in the area of conformance and interoperability. ▶

Connect Americas Summit goals

Goal 1

Promote the use of ICT as a tool for development by creating human and institutional capacities, particularly in rural and under-served urban areas, and with special emphasis on indigenous peoples, African-American descendants and persons with disabilities.

Goal 2

Develop telecommunication and information technology infrastructure, covering a complete range of access levels according to national needs and priorities: from basic telecommunication to broadband access and uptake in urban and rural areas.

Goal 3

Adopt national regulatory frameworks which help close existing gaps in ICT development, while addressing evolving needs, including those brought about by an increasingly converged environment.

Goal 4

Establish effective and practical emergency communication plans at the national and international level.

Goal 5

Plan for and implement a smooth transition to digital broadcasting to take advantage of the digital dividend.

Goal 6

Develop Internet Exchange Points at the local, national and regional level to reduce Internet access costs, as well as to enable the provision of new services.
The leaders also agreed that other priority areas could be included:

- *Development of local content and applications recognizing the role played by research and educational bodies.*
- *Development of small- and medium-sized enterprises including e-commerce.*
- *Child online protection.*


AFP

Connect Asia-Pacific Summit

The Connect Asia-Pacific Summit held in Bangkok, Thailand, on 18 November 2013, was the last in a series of ITU-led regional Connect Summits. Organized jointly with the Government of Thailand, in partnership with regional organizations and various other United Nations agencies, the summit was held in conjunction with ITU Telecom World (19–22 November 2013), which also took place in Bangkok.

The more than 600 participants from 37 ITU Asia-Pacific Member States, including seven Heads of State and Government and numerous ministers, as well as leading ICT company executives, and regional and international financial and development institutions, affirmed their common vision of a "Smartly DIGITAL" (Digital Inclusive Green Innovative Transformative Affordable Living) Asia Pacific by 2020.

The summit also adopted a communiqué outlining an action plan to achieve that goal. The communiqué envisioned a future for the Asia-Pacific region where everyone can access, use, create, and share information and knowledge to empower individuals, communities, industries and countries to achieve inclusive sustainable development goals and improve their quality of life, in accordance with the purposes and principles of the Charter of the United Nations and the Declaration of World Summit on the Information Society (WSIS).

In a video message to the summit, United Nations Secretary-General Ban Ki-moon noted that while many nations in the Asia-Pacific region had experienced rapid economic growth, a stark contrast in prosperity and development existed between high-income

and the least developed countries in the region. Mr Ban underlined that ICT have considerable potential to support sustainable and equitable economic and social development. "They can accelerate our efforts to achieve the Millennium Development Goals. Let us make the best use of technology to empower people with the information, knowledge and means to improve their lives," he asserted.

In determining priority action for Asia-Pacific, summit participants renewed their commitment to promoting specific measures of solidarity and assistance for the least developed countries in the region, with emphasis on landlocked developing countries, small island developing States and other countries facing the greatest challenges in meeting the Smartly DIGITAL 2020 goals.

The following priority areas for action were identified to be carried out in partnership with all relevant stakeholders:

- Investment in ICT Infrastructure;
- stimulating innovation and the creative use of ICT;
- encouraging innovative public-private partnerships;
- promoting sustainable development through ICT;
- fostering digital inclusion; and
- achieving digital literacy and building human and institutional capacity.

Participants viewed these priorities as challenges that offered opportunities to harness the potential for developing innovative ICT infrastructure and creative ICT applications in order to positively transform the lives of people in the Asia-Pacific region as it endeavours to realize the Smartly DIGITAL vision by 2020.

The summit communiqué advocated continued focus on the sustainable and inclusive expansion and diffusion of ICT/broadband technology as a national priority for overall socio-economic development as well as a powerful tool or enabler for achieving the Millennium Development Goals, the post-2015 Development Agenda, and the WSIS Declaration and Actions.

The summit had a practical, results-oriented format, including interactive, multistakeholder panel discussions, partnership announcements, as well as opportunities for participants to showcase their ICT development projects to potential partners and donors. It also provided an effective networking platform for leaders from the public, private and financial sectors to meet and forge new partnerships for the future.

During multistakeholder partnership meetings at the summit, projects and partnerships valued at USD 53 billion were identified as market opportunities by ITU, relevant partners and stakeholders. Following are examples of some of the partnerships developed during or after the Bangkok summit:

- ITU and the Malaysian Communications and Multimedia Commission developed and launched a project to promote the transformational power of broadband and demonstrate how it can be harnessed to transform lives and society.
- ITU and the National Broadcasting and Telecommunications Commission of Thailand developed and signed a project aimed at ensuring the smooth transition from analogue to digital television broadcasting in Thailand.
- ITU and the Department of Communications of Australia developed and signed a project to implement the priorities identified from the Asia-Pacific Summit and the Asia-Pacific Regional Initiatives.
- ITU and the Ministry of Science, ICT and Future Planning of the Republic of Korea developed and signed a project to develop "Master Plans for Spectrum Management", including a human capacity building component.
- Following the successful outcome of the Connect Asia-Pacific Summit and the launch of an ITU-Asian Development Bank (ADB) joint initiative on ICT development in the Asia-Pacific region, ITU and ADB plan to convene a follow-up meeting at the end of April 2014 in Manila (Philippines).

Ground-breaking new maps of the global information superhighway, which will help bridge the digital divide in Asia-Pacific, were jointly released by ITU and the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) during the summit. For the first time ever, the ITU Interactive Terrestrial Transmission/ESCAP Asia-Pacific Information Superhighway Maps will show policy-makers and investors where the missing links in terrestrial transmission are across the region; assisting ESCAP in its efforts to bring affordable ICT and broadband connectivity for all.

As was the case during previous Connect Summits, participants in Bangkok confirmed the importance of the transition to digital infrastructure and services, widely recognized as the engine of future employment, economic growth and social and economic development. ■


Shutterstock

Shutterstock

Transforming Africa

A continent on the move

Africa has seen exponential growth in the use of mobile phones and the Internet in recent years. Many African countries are driving innovations, for example in mobile money transfer applications — a game changer for people without a formal bank account — contributing to financial inclusion. Close to 7 per cent of households in Africa now have Internet access at home, compared to only 2 per cent in 2008. Nevertheless the digital divide persists, with only 16 per cent of people in Africa using the Internet today.

ITU's work in Africa over the past four years has focused on regional initiatives approved by the World Telecommunication Development Conference (WTDC-10) held in Hyderabad, India, in 2010. These initiatives aim to build human and institutional capacity; strengthen and harmonize policy and regulatory frameworks to integrate African telecommunication and information and communication technology (ICT) markets; develop broadband infrastructure and boost connectivity; introduce new digital broadcasting technologies; and implement the recommendations of the Connect Africa Summit.

Human and institutional capacities

In order to develop human and institutional capacities, ITU's Regional Office for Africa has focused on establishing six centres of excellence for English and French speaking countries across the continent. These centres form a network of educational nodes that provide training through both face-to-face workshops and e-learning within the scope of the ITU Academy. Target audiences include government authorities, regulators, and senior managers of operators and service providers. ITU provides logistical support and high-level expertise to these centres, which have trained more than 1560 experts from Africa in around 60 different workshops. Also, more than 160 experts were trained via distance-learning courses during the period 2010–2013.

For Portuguese and Spanish speaking countries in Africa, the ITU Academy has delivered e-learning workshops free of charge through these centres on topics such as policy and regulation, business management, new technologies and services, universal access, and ICT for rural development. The first train-the-trainers distance-learning workshop was held in June 2012 in Maputo, Mozambique. It was followed by workshops in Guinea Bissau on submarine cables, in Cape Verde on Gigabit passive optical network (GPON) technologies, in Equatorial Guinea on quality of service, in Angola on terrestrial mobile services, and in Sao Tome and Principe on intercommunication business.

Policy and regulatory frameworks

Regional harmonization continues to be a driver of enabling environments. The HIPSSA project — which stands for "Support for the Harmonization of ICT Policies in Sub-Saharan Africa" — launched in Addis Ababa, Ethiopia, in December 2008, has spearheaded this harmonization. HIPSSA has been one of three regional projects under a broader global initiative which ITU in partnership with the European Commission implemented between 2008 and 2013 to address policy and regulatory challenges facing the African, Caribbean and Pacific (ACP) group of countries. Known as "Support for the Establishment of Harmonized Policies for the ICT Market in the ACP", this initiative has been one of the largest global efforts 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 the case of Africa, ownership of HIPSSA was reflected through the composition of its Steering Committee, which was made up of representatives from the regional economic organizations, the United Nations Economic Commission for Africa (UNECA), and the African Telecommunications Union (ATU). The committee was co-chaired by the African Union Commission and ITU.

HIPSSA has developed model legislation on cybercrimes, electronic transactions and data protection for countries of the Southern African Development Community (SADC) and of the Economic Community of West African States (ECOWAS). Under HIPSSA, technical assistance was given to all the countries that requested it to enable them to transpose these model texts into their national laws. Through the project, regional guidelines were also developed on such topics as submarine cables and universal access and service with the active participation of ECOWAS and the Communication Regulators' Association of Southern Africa (CRASA). These guidelines were then shared with the whole of Africa in workshops, as well as through specific in-country assistance.

Recognizing the role of the regional economic communities as building blocks in the harmonization process on the continent, ITU's Regional Office for Africa strengthened SADC's efforts to harmonize national regulations on quality of service by organizing a workshop on the subject in Pemba, Mozambique in September 2012. In 2013, the office studied possible measures to lower roaming charges and to implement a "roam like a local" regime in SADC countries. The results are expected to be implemented in early

2014. The office also carried out a study for the Common Market for Eastern and Southern Africa (COMESA) with a view to protecting its critical information infrastructure. A workshop for COMESA and SADC regulators, operators and stakeholders on "Consumer Protection in a Converged ICT Environment" was held in Livingstone, Zambia, in December 2013.

In a separate initiative, the Government of Burkina Faso, assisted by ITU, hosted a high-level African Forum on Best Practices in ICT in Ouagadougou in October 2013. Sponsored by Microsoft, the forum positioned the data revolution as an emerging pillar of Africa's development agenda. It brought together heads of government, ICT ministers, regulators, fixed and mobile network operators, Internet service providers, leaders of the content and knowledge industries, multilateral agencies and international civil society.

Traditional expertise in institutional reform is provided regularly to countries upon request in order to address convergence issues. To date, Burundi, Chad, Equatorial Guinea and Madagascar have requested and received such assistance.

Broadband infrastructure and connectivity

Having collected data to assess the implementation of broadband networks in Africa, ITU has designed interactive broadband maps for each country indicating optical fibre cable length, location of nodes, type of transmission network equipment, network capacity per channel, number of optical fibres within the cable, and transmission network operational status.

Individual national broadband wireless network plans, based on ITU guidelines and recommendations, have so far been developed in Burkina Faso, Burundi, Lesotho, Mali and Rwanda. These countries will benefit from an ITU-McCaw Foundation Broadband Wireless Network project. The project aims to enhance broadband wireless connectivity, develop ICT applications, as well as provide free or low-cost digital access for schools, hospitals, and underserved populations in rural and remote areas of the selected countries. The Broadband Wireless Network is already operational in Burundi and Djibouti (see related story on pages 61–64).

An ITU project is also improving Internet connectivity in Cape Verde and in Equatorial Guinea, with the aim of implementing national and regional Internet exchange points. Some African countries have already established national Internet exchange points, and peering has emerged as an effective way for Internet service providers to improve operational efficiency and further reduce Internet access costs.

In another project, ITU and Cisco have launched a TelePresence initiative to enable real-time consultation among African Heads of State. By replacing physical meetings, TelePresence will facilitate high-level consultation and decision-making, while saving time and energy and therefore contribution to climate change mitigation by reducing greenhouse gas emissions.

Transition from analogue to digital broadcasting

ITU has developed guidelines on the transition from analogue to digital terrestrial television broadcasting and mobile television with support from the Korea Communications Commission and the Republic of Korea's Ministry of Science, ICT and Future Planning. These guidelines are being updated, with support from Japan's Ministry of Internal Affairs and Communications, to include cable television, satellite television and Internet protocol television. The guidelines are based on work done by ITU's Telecommunication Development Bureau and by ITU's Telecommunication Development Sector (ITU–D) Study Group 2 under Question 11-3/2 "Digital terrestrial television and digital dividend".

The analogue to digital migration process in Africa was launched by two regional workshops — in Bamako (Mali) and Kampala (Uganda) — organized by the Telecommunication Development Bureau in collaboration with ITU's Radiocommunication Bureau. More than 50 countries participated. A ministerial level Digital Migration Summit,

Shutterstock

held by ITU in Accra (Ghana) in July 2012, in collaboration with the African Telecommunications Union, approved a road map for Africa.

On the same occasion, the Radiocommunication Bureau successfully updated the GE06 Plan, following appropriate coordination exercises. The GE06 Plan is a digital broadcasting plan agreed for the frequency bands 174–230 MHz and 470–862 MHz at the ITU Regional Radiocommunication Conference held in Geneva in June 2006 (hence the name GE06 Plan). It covers some 116 countries (mainly in Africa and Europe) and requires them to have switched almost all their analogue broadcasts to digital by June 2015.

The last coordination meeting for Africa, organized by the Radiocommunication Bureau and the African Telecommunications Union, took place in Nairobi in July 2013, with more than 85 per cent of the planned assignment requests approved. Specific countries — including Burundi, Chad, the Democratic Republic of the Congo, Gabon, Kenya, Mali, Rwanda and Tanzania — were assisted in drawing up their migration strategies and road maps.

Spectrum management

Specific assistance has been given to several countries including Madagascar, Burundi and Gabon in spectrum management, pricing and monitoring.

To maximize the potential of using ITU's Spectrum Management System for Developing Countries (SMS4DC), ITU held two workshops — one in Abuja, Nigeria, in May 2013 and an earlier one in Libreville, Gabon, in November 2012.

ITU assisted Gabon and South Sudan in their spectrum management and frequency coordination with neighbouring countries. This assistance included training on SMS4DC for executives and senior engineers in those countries' ministries responsible for telecommunications.

In December 2013, ITU was able to broker negotiations in Addis Ababa between Sudan and South Sudan over the long-standing problem of frequency management. The parties agreed to collaborate and one party requested assistance

in capacity building. Responding to this request, ITU provided training on SMS4DC for 17 senior engineers, managers and executives from the Ministry of Communications and Postal Services of the South Sudanese Administration. The training took place in December 2013 in Juba, South Sudan.

Under the HIPSSA project, an instructive report on the global picture and regional reports on sub-Saharan Africa on cross-border coordination of frequency interference were produced and a Framework Agreement developed on a harmonized calculation method for Africa (HCM4A), which African countries are in the process of adopting at a very encouraging rate.

Connect Africa Summit follow-up

The Connect Africa Summit, held in 2007 is part of the Connect the World initiative (see related story on pages 13–14) led by ITU's Telecommunication Development Bureau to mobilize human, financial and technical resources to implement the regional initiatives adopted by Member States at world telecommunication development conferences, and the connectivity targets set by the World Summit on the Information Society.

ITU's Regional Office for Africa holds regular follow-up meetings to achieve the goals of the Connect Africa Summit. These meetings involve partners such as the Regional Economic Communities, the African Union Commission, the United Nations Economic Commission for Africa, the African Development Bank, and the World Bank. An assessment of progress towards achieving the Summit goals was undertaken with funding from the African Development Bank.

Another follow-up event was the Transform Africa Summit, held in Rwanda in October 2013 attended by seven Heads of State and high-level representatives from the public and private sectors. The summit envisaged the use of broadband and related services to leapfrog development challenges, and endorsed the "Smart Africa Manifesto". In this Manifesto, African leaders committed to integrating ICT into their development agendas to reduce poverty, create prosperity and increase productivity on the continent. ■

ITU cooperates with regional organizations and United Nations agencies.

ITU and the United Nations Economic Commission for Africa have jointly issued a report entitled "Impact of ICT on Employment and Poverty Reduction in Africa". The report highlights areas where governments could play a leading role, and where ICT can support governments in reducing unemployment and poverty among disadvantaged groups.

With a view to assisting the New Partnership for Africa's Development (NEPAD), an ITU expert is studying NEPAD's activities to draw up a road map for collaboration between ITU and NEPAD for the period 2014–2017.

ITU and the World Health Organization have renewed their commitment to promote and support increased use of ICT in health (e-health) in Africa, leveraging the fast-growing network infrastructure in the continent. The two agencies are also collaborating in supporting Member States to adopt appropriate e-health policies, in order to properly guide e-health development and implementation in countries. Sub-regional workshops were held in Addis Ababa and Dakar, where 13 African countries received orientation on the use of the ITU-WHO eHealth Toolkit. It is designed to help countries develop effective national e-health policies. The joint effort will continue until all African countries have fully adopted national e-health policies.

ITU is also helping the African Union implement the African Observatory on Science, Technology and Innovation. The observatory will provide a platform for all African countries to collect, process and disseminate data on science, technology and innovation, including ICT. ITU has funded a feasibility study for the platform, and together with the African Union is now considering funding and implementation options, including partnerships.

Digital broadcasting and broadband access in the limelight

Strengthening emergency communications a regional concern

Governments in the Americas are rapidly recognizing the importance of broadband technology for economic and social development even though use of this transmission medium, particularly fixed broadband, is relatively nascent in the region. Conversely, given the limited endowment of fixed networks and the relatively high cost of fibre networks in most of the Americas, mobile broadband has become the most widely used broadband platform there.

There is also wide acknowledgement of the urgent need to increase knowledge of the many information and communication technologies (ICT) available today and to put in place an enabling regulatory environment to facilitate broadband convergence and diffusion.

Although some of the widest regional disparities in ICT development are to be found in the Americas — mainly reflecting differences in development and income levels — the regional digital divide is narrowing. Five countries in the region — Antigua and Barbuda, Barbados, Canada, Uruguay and the United States — rank in the top 50 countries of ITU's global ICT Development Index (IDI).

Regional initiatives over the past four years related mainly to emergency communications, digital broadcasting, broadband access, lowering Internet access costs, and ICT human capacity building. These initiatives have sharpened awareness of the need to improve infrastructure and promote digital inclusion especially for indigenous peoples, persons with disabilities, women, girls, youth, children, and people living in underserved and rural areas.

Partnering for disaster preparedness, mitigation and management

To enhance the preparedness and response capacities of countries and areas exposed to recurrent natural disasters, ITU organized eight national and three regional workshops (for example, in Argentina, Barbados, Colombia, Ecuador and Guatemala) to help build capacity for ICT in disaster mitigation and management. ITU also organized an international symposium (held in Canada in 2012) on the role of telecommunication/ICT in mitigating and managing such disasters. These events enabled participants to share lessons learned from previous disasters and included hands-on training on the deployment and use of satellite terminals for disaster response and relief.

All workshops concluded with concrete action plans for disaster management to be undertaken by the various stakeholders at the national or regional level, while ITU-generated input served to help 10 countries develop national emergency telecommunication plans.

A cooperation agreement on disaster preparedness and response through the use of ICT in disaster management and climate change adaptation was signed in 2011 with the Caribbean Disaster Emergency Management Agency, and a memorandum of understanding on technical assistance to develop the telecommunication sector was signed with the Government of Haiti in 2012.

Climate change

The ITU Telecommunication Development Secor (ITU–D) in the Americas region engaged in numerous activities related to e-waste, smart sustainable cities, smart water management, and human exposure to electromagnetic fields. The activities were carried out in close collaboration with the ITU Telecommunication Standardization Sector (ITU–T) in 2013 and at the beginning of 2014 in Ecuador, Peru, and Uruguay. Additionally, a number of projects regarding deployment of antennas and control of non-ionizing radiation were implemented in El Salvador, Honduras, Panama and Peru.

Broadband and digital broadcasting

Over the past four years, ITU has endeavoured to mobilize the human, financial and technical resources required to close ICT gaps in the Americas through increased deployment of ICT networks, applications and services in the region.

ITU has selected countries where it plans to help draft a national road map for the digital switch-over process. In Guyana, for instance, a road map that includes timelines and other logistics for digital transition has already been formulated. A technical cooperation project is being implemented with CAF Development Bank of Latin America to assist six selected beneficiary countries in ensuring a smooth transition from analogue to digital terrestrial television broadcasting. Projects have also been implemented on spectrum management in Colombia, on illegal telecommunication traffic in Honduras, and on human exposure to electromagnetic fields in Argentina, Colombia, Ecuador, El Salvador, Honduras, Panama and Peru.

In a project expected to serve as a model elsewhere in the region, expert assistance helped Saint Lucia develop a National Broadband Policy and Plan for the 2013–2018 period emphasizing affordable broadband access and improved broadband coverage and uptake with clear targets and metrics.

Government experts, regulators, broadcasters and operators mapped the way forward at various ITU-led events on

key ICT issues such as spectrum management, digital broadcasting transition, and frequency coordination. These included two ITU regional workshops organized in 2012 in Barbados and in 2013 in Saint Vincent, in partnership with the Caribbean Telecommunications Union (CTU) and the Caribbean Broadcasting Union (CBU), and subregional workshops on digital television migration and the digital dividend conducted jointly by ITU and ICT regulatory authorities in Tegucigalpa (Honduras) in 2011 and in Montevideo (Uruguay) in 2012.

Human capacity building

Working with various partners and in response to ITU membership requests, numerous face-to-face and online institutional capacity building training events were organized through the ITU's Centre of Excellence for the Americas and the ITU Academy. Between 2011 and 2013, more than 1100 professionals among governmental authorities, regulators, operators, service providers and academia shared experiences and best practices during some 40 workshops.

Topics covered in human capacity building included fourth-generation (4G) network technologies; next-generation networks; spectrum management and the use of ITU's Spectrum Management System for Developing Countries (SMS4DC) software; quality of service; digital cities; broadband (technologies, regulation and marketing); Long-Term Evolution (LTE); Internet protocol television (IPTV); over-the-top (OTT) services; digital television; fibre-to-the-home; cloud computing; telecommunication regulation; and enhancing cybersecurity through


Shutterstock

cyberdrill workshops for computer incident response teams. Also, a project to improve "In Case of Emergency" technical capabilities in Costa Rica was undertaken in 2013.

The Inter-American Telecommunication Commission (CITEL) was an important partner in the delivery of these training activities, and granted over 160 fellowships distributed in 18 courses.

Conformance and Interoperability

There is growing acknowledgement in the Americas that ICT products and services should be developed in accordance with relevant international standards, regulations and other specifications, and that their compliance is tested. ITU continues to promote the development of regional expertise in conformance and interoperability (C&I) through training and partnerships. Its C&I programme comprises four pillars of support (conformance assessment; interoperability; capacity building; and the establishment of C&I testing laboratories and mutual recognition agreements).

An ITU training course on C&I testing conducted in Campinas, Brazil in June 2013 focused on electromagnetic compatibility and was attended by experts from Brazil, Cuba, El Salvador, Honduras, Jamaica, Panama, Paraguay, Uruguay and Venezuela.

This course was so successful that ITU was requested to organize more training events on other C&I issues. In response, two training workshops are foreseen to take place on mobile terminals during the first semester of 2014, one in Spanish and the other in English. The training in Spanish will take place in Campinas, Brazil, from 12 to 16 May 2014 and arrangements are currently being made with other ITU partners for the training in English.

Indigenous peoples

ITU delivers online courses annually (since 2005) to indigenous peoples. The *Fondo Indígena* (Indigenous Fund) prepares the content and the courses are organized and delivered in modules through the ITU Academy e-learning platform. These courses aim to help indigenous peoples throughout the Americas become digitally literate and address topics of special interest to indigenous leaders. A particular effort was made to encourage the participation of women in these courses, which constitute a first milestone in empowering indigenous communities and individuals to use ICT as a tool for social and economic development. Since 2011, over 700 members of indigenous communities have taken these courses and acquired the knowledge and know-how needed to formulate and implement development projects.

Testimonials and concrete results applied in indigenous communities can be found at: http://www.itu.int/en/ITU-D/Digital-Inclusion/Indigenous-Peoples/Pages/Testimonios.aspx

Policy-making

The Americas region continues to make substantial progress in creating an enabling environment for ICT deployment. Between 2008 and 2013, ITU helped update and harmonize ICT policy and legislation in the African, Caribbean and Pacific Group of States (ACP) in what was probably one of the largest global initiatives of its kind ever undertaken. This landmark project focused primarily on cybersecurity, and the harmonization of telecommunication legislation and regulations and was implemented together with regional organizations and their Member States. In support of this process, ITU and the European Union decided to co-fund a project which forms part of the ACP-Information and Communication Technologies programme financed from the 9th European Development Fund.

Various forms of policy-making assistance have been provided to countries in the region, including on ICT cost modelling (Brazil), on number portability (El Salvador and Nicaragua), on roaming (Central America), on ICT strategic management and on new national telecommunication plans (Costa Rica and Paraguay); and on


Shutterstock

interconnection and signalling, as well as tariff regulation and regulatory accounting (Paraguay).

The HIPCAR project (Enhancing Competitiveness in the Caribbean through the Harmonization of ICT Policies, Legislation and Regulatory Procedures) was concluded in 2013. HIPCAR was launched in 2008 in response to requests from the Caribbean Community (CARICOM) and individual Caribbean countries to ITU and the European Commission for assistance in harmonizing their ICT policies, legislation, regulatory processes and procedures in order to create an enabling environment that promotes competition and fosters investment and socio-economic development in the region.

Once it had established the regional model policy and legislation guidelines for each of the above priorities, HIPCAR was able to focus on the project's second phase: providing in-country technical assistance for transposing the regional model laws into domestic legislation.

ITU was the project executor while the Caribbean Telecommunications Union (CTU) fulfilled an advisory role.

ITU is currently conducting a study on the regulatory and legal frameworks, as well as research on the behaviour of consumers of telecommunication services in Latin America, which are expected to be published within the first semester of 2014. The study and research are being conducted with the support of CITEL and aim to assist ITU Member States in formulating adequate policies for the protection of consumers of telecommunication services. ■

Digital connectivity gaining ground in the Arab world

Tech-savvy group of Arab States leading the way

Several Arab States have made good progress towards the attainment of universal access to information and communication technologies (ICT). Four of the top six in the region — Bahrain, Lebanon, Oman and the United Arab Emirates — are ranked among the most dynamic countries on ITU's latest ICT Development Index.

As in many other parts of the world, however, 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 that the regional digital divide is widening, activities in the most tech-savvy Arab States suggest that major regional centres of high-quality ICT expertise have now emerged in areas such as cybersecurity. With the development of these regional high-tech hubs, the potential exists to extend ICT training and awareness to all the countries of the Arab world.

Since the World Telecommunication Development Conference in 2010 (WTDC-10), much of ITU's support has been directed to the regional initiatives on access to broadband networks, digital broadcasting, open-source software, Arab digital content, and cybersecurity.

Fresh momentum was injected into ICT development plans in the Arab world at the Connect Arab Summit in Doha, Qatar, in March 2012 (see related story on pages 17–18). The first follow-up meeting of this summit, organized jointly by ITU and the League of Arab States, was held in Hammamet (Tunisia) in November 2013, and looked at ways of furthering implementation of regional projects.

Broadband wireless networks for sustainable development

ITU has delivered numerous face-to-face workshops and online courses in the Arab region in recent years on technical issues related to the development of broadband networks and to other ICT domains such as IPv6 and satellite systems. In support of efforts by a number of Arab States to establish policies and regulations for broadband implementation, ITU studies have been conducted to provide them with the necessary tools to achieve these goals.

As part of this process, new trends for building and financing broadband networks in the Arab world were presented and discussed during two ITU-led workshops held in Manama, Bahrain, in September 2013 and in Algiers, Algeria, in November 2013. This followed an ITU-led Arab region forum on international mobile telecommunication (IMT) systems technology, evolution and implementation held in Tunis (Tunisia) in May 2013, which provided a vision of IMT as a new mobile broadband business, both from a technical and commercial perspective. It also gave

an overview of the current status and direction of the IMT industry.

In addition, various workshops and assessment studies have been carried out to strengthen institutional capacity, to develop skills in formulating Broadband Master Plans, to better measure the demand for broadband services, and to appraise likely traffic demand versus existing and planned supply capacities.

Under the ITU-Craig and Susan McCaw project, broadband wireless networks are being implemented along with the development of ICT applications to provide free or low-cost digital access for schools and hospitals in parts of the Arab world. In Djibouti, for example, a 4G broadband wireless network was set up in rural areas in late 2013. A similar project is under way to serve the local needs of fishing communities in Mauritania.

In partnership with Cisco, ITU has conducted surveys in Djibouti and Mauritania on the availability of the computational power needed for encoding and decoding telepresence real-time videoconferencing with a view to the possible introduction of such a system in these countries in 2014.

An ITU advisory project on spectrum management being carried out in Saudi Arabia, in collaboration with the United Nations Development Programme, has been ongoing for over 10 years and has been extended for another three years until the end of 2016.

Another highlight is the "Connect Arab Internet Networks Project". This project on Arab Internet exchange points (IXPs) aims to build a network connecting the Internet infrastructure in the Arab States. This will enable these countries to better route traffic both inside and outside of the Arab region. ITU is providing support to the Arab working group (under the League of Arab States) to connect the Arab Internet through IXPs. This first working group issued its final study report in January 2012, which covered investment aspects, as well as concrete mechanisms and procedures for implementing the project. Based on a decision by the Arab ICT Council of Ministers in June 2012, a new working group was set up in October 2012 to implement the project.

Digital broadcasting — the big switchover gains momentum

Assistance to Member States in the Arab region in making the gradual transition from analogue to digital broadcasting began in 2011, alongside the development of a strong partnership with the key local players in this process such as the Arab States Broadcasting Union (ASBU) and the Arab Information and Communication Technology Organization (AICTO).

Following development of a road map for digital television transition in the Arab region in 2012, as well as demonstrations showcasing applications for enhanced broadcasting, ITU, ASBU and AICTO organized a workshop on the digital switchover and digital dividend in Khartoum (Sudan) in December 2013.

To accelerate the transition process, some 10 workshops and frequency coordination meetings have taken place across regions, organized by ITU's Radiocommunication Bureau and the Centre of Excellence network.

In parallel, direct assistance to ensure a smooth transition from analogue to digital is being provided to several Arab States, including Lebanon, Mauritania, Sudan and Yemen.

Combating growing threats to cybersecurity

ITU and its cybersecurity partner, the International Multilateral Partnership Against Cyber Threats (IMPACT) reached agreement in December 2012 with the Omani government (represented by the Information Technology Authority — ITA) to establish a Regional Cybersecurity Innovation Centre to cater to the needs of the Arab region. The centre was officially launched in March 2013, with a view to strengthening the role of ITU in building confidence and security in the use of ICT in the region. The centre will act as ITU's cybersecurity hub in the region, localizing and coordinating cybersecurity initiatives and providing assistance to the Arab countries. The centre will also act as a catalyst for enhancing regional cooperation, coordination and collaboration to address escalating cyberthreats.

Created in line with ITU's Global Cybersecurity Agenda, the Regional Cybersecurity Innovation Centre is helping Arab States to set up national critical incident response teams (CIRTs). ITA made a contribution of USD 2 million towards implementing this project, with ITU donating over USD 752 000. The centre will provide a better reach for ITU's cybersecurity initiatives in the Arab region. In addition, it will enhance the region's capacity, capability, readiness, skills and knowledge in the areas of cybersecurity, critical infrastructure protection and human capacity building.

ITU has carried out targeted missions and workshops on the deployment of cybersecurity capabilities in Lebanon, Mauritania and Djibouti to assess their readiness to establish national critical incident response teams. During the missions, a set of recommendations was developed. A mission was also undertaken in Sudan to assess the possibility of establishing the region's first forensic laboratory there. As a result, ITU is working with Sudan on a project to build a digital forensic lab with the assistance of IMPACT and the Regional Cybersecurity Innovation Centre in Oman.

A project to assist Palestine in the assessment of its CIRT capabilities is in progress with a view to establishing a national CIRT in 2014. A project is also under way to help Lebanon establish its national CIRT.

Drawing on its universally acknowledged expertise in the area of cybersecurity, ITU has trained more than 2400 government experts and regulators from around the world in various technical and policy aspects of ICT security, including malware analysis and investigation, securing networks, forensics and the establishment and operation of CIRTs.

Scores of Arab government officials, regulators and CIRT members have benefited from ITU cybersecurity expertise during various events. In October 2013, for example, the Oman-based Regional Cyber Security Innovation Centre, in coordination with ITU-IMPACT, hosted the second cyberdrill for the Arab region.

Shutterstock

The drill exposed members of national cybersecurity emergency response teams to various scenarios based on case studies and real-life situations, enabling them to test their skills and knowledge in responding to such attacks. The first cross border cyberdrill, designed to test the Arab region's cyber response capabilities and improve readiness and reaction in the event of a theoretical future cyberattack, was conducted in July 2012 with the collaboration of Jordan's Ministry of Information and Communications Technology.

Several ITU-led regional workshops in the Arab region have focused on policy advocacy, capacity building and legal aspects pertaining to child online protection. A working group has been established to raise awareness of these issues among governments, academia, the private sector, schools and other constituencies and to formulate guidelines on model laws, ICT legislation and regulatory procedures in the region. So far, the working group has reviewed the legislative frameworks on cybercrime in 12 Arab States. In addition, guidelines have been developed on the legal framework for child online protection in the Arab region and will be published and disseminated after submission to the Council of ICT Ministers.

Arab digital content

ITU initiatives have played a positive role in the development of Arab digital content. Notably, ITU supported the submission for the registration of a Top-Level Domain for the Arab region (.arab), which has great potential to boost Arab digital content in the years ahead. Heritage is an important part of digital content, and ITU has pushed for the digital preservation of Arab heritage by supporting the regional project entitled "Memory of the Arab World". ITU, in collaboration with the Egyptian Ministry of Communications and Information Technology and the support of CULTNAT (Egypt's Center for Documentation of Cultural and Natural Heritage) have made a concerted effort to establish the project, which is on track

to preserve Arab cultural and natural heritage, and associated train-the-trainer events have been organized on collecting Arab heritage documentation.

A regional competition on Arabic digital content was launched in Manama, Bahrain, on the sidelines of the Regional Preparatory Meeting in October last year for the ITU World Telecommunication Development Conference 2014 (WTDC-14), with the support of the Bahrain Telecommunications Regulatory Authority and in collaboration with the United Nations Economic and Social Commission for Western Asia (UNESCWA) and Egypt's Information Technology Institute. The purpose of this competition is to reward innovations from youth in this field.

A report on Arabic digital content was finalized with the support of UNESCWA and published by ITU at the end of 2013. It describes the nature of digital content in the Arab region and identifies the main players in the field. It also presents statistics indicating related social and business trends.

A forum on Arabic digital content, and on the challenges of spreading and increasing content, was held in December 2013, hosted by Egypt's Ministry of Communications and Information Technology, under the auspices of the League of Arab States and in collaboration with UNESCWA. A second round of this forum, foreseen to take place in May 2014 in Muscat, Oman, will bring together relevant stakeholders to discuss ways and means of pushing Arabic digital content forward and reducing barriers to its development.

Open-source software

A Free and Open Source Software Centre (FOSS) was established with ITU support in Tunisia in 2012 and work is under way to establish a regional network of FOSS Centres. The main activities of the centres will be to disseminate free open-source software and manage a portal that will provide a link to related resources and relevant news in Arabic.

The initiative, proposed by Saudi Arabia, was approved by WTDC-10 in Hyderabad (India), as well as by the ITU Plenipotentiary Conference in 2010, which took place in Guadalajara (Mexico). This is the first time that an ITU region has adopted an initiative or project on free open-source software.

Use of free open-source software depends on government policy, awareness campaigns, the training of individuals (developers, support personnel, users), software dissemination, and support and maintenance. For political reasons, many Arab countries prohibit access to websites that are repositories of free open-source software. ■

Policy-making

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, policy-makers have an important tool to enable them 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.


AFP

Digital footprint spreads

Emergency telecommunications a priority

The vast expanse of the Asia-Pacific region sees extremes in ICT development ranging from recognized leaders in broadband connectivity and deployment to least developed countries where the ICT footprint is comparatively far less visible.

Taken as a whole, the Asia-Pacific region is close to the global average on the ICT Development Index. Crucially, despite disparities in ICT development — reflecting the diversity in terms of development and income levels — the regional digital divide is narrowing.

Among the least developed countries in the Asia-Pacific region, small island developing States have particular needs for them to join the global information society. These needs are linked to their relative remoteness and inaccessibility, elevated communication costs, and high exposure to natural disasters and the adverse impacts of climate change. ITU recognizes that special support is required to overcome these difficulties.

In partnership with donors, private-sector ICT stakeholders and international and regional organizations, ITU has engaged in major projects in these countries involving ICT policy and regulation, spectrum management, digital broadcasting, and national broadband development master plans, including human and institutional capacity building.

Focus on the missing digital links in the Asia-Pacific region

In November 2012, ITU launched an interactive map of the information superhighway to show policy-makers and investors the location of the missing links in the digital divide in the Asia-Pacific region. The launch was the first in a series of interactive terrestrial maps covering the globe that have been posted on the ITU website (http://www.itu.int/en/ITU-D/Technology/Pages/InteractiveTransmissionMaps.aspx).

The maps pinpoint the geographical locations where the ICT connectivity deficit is most pronounced. In the Asia-Pacific region, the digital connectivity gap is particularly significant in the developing or least developed landlocked and small island States.

It is hoped that these maps will contribute to attracting the investments needed to help these countries benefit from ICT to drive their socio-economic development.

Facilitating regulatory dialogue

In response to the need for strategic dialogue and information exchange amongst top and senior regulatory authorities in the region, ITU has been organizing Asia-Pacific regulators' round table sessions annually since 2011. The round tables in 2011 (Melbourne, Australia), 2012 (Hyderabad, India) and 2013 (Seoul, Republic of Korea) were hosted by the Australian Communications and Media Authority, the Telecom Regulatory Authority of India, and the Korea Communications Commission, respectively, with support from Australia's Department of Communications, and have served as an effective platform to share practices and experiences on key issues of interest for policy-makers and regulators in the region. The round table, which is traditionally followed by the international training programme, is scheduled in Australia this year.

Charting wireless broadband master plans

ITU and the Korea Communications Commission have partnered in helping selected Asia-Pacific countries (Myanmar, Nepal, Samoa, and Viet Nam) chart national wireless broadband development master plans designed to ensure them affordable access to broadband-based services comparable to those available in more developed countries. The two partners have developed guidelines through their Wireless Broadband Master Plan project, which has three main objectives:

- To assess existing policy and regulatory frameworks with a view to facilitating deployment of wireless broadband technologies taking into account convergence trends, and to recommend the way forward in selected pilot countries.
- To assess user demand and uptake of wireless broadband applications, content and services in the Asia-Pacific region.
- To examine key policy and regulatory issues including licensing, spectrum access, interconnection, infrastructure sharing, universal service obligations, and to recommend broadband wireless solutions based on national priorities and international best practice.

National regulators in Myanmar, Nepal, Samoa, and Viet Nam have approved their wireless broadband development blueprints following ITU's assessment of these objectives.

In addition, ITU assisted Fiji in the development of its national broadband policy. It has also partnered with the Ministry of Science, ICT and Future Planning of the Republic of Korea to help developing and least developed Asia-Pacific countries in drawing up their national broadband policies (or plans) and ICT applications, and in building skill sets for broadband adoption.

Broadband plans for Cambodia, Bhutan, Bangladesh, Pakistan, and Indonesia have already been drafted and submitted to the administrations of these countries. Recently, ITU also assisted Lao P.D.R and Brunei Darussalam in drafting national broadband policies while plans for the Marshall Islands, the Philippines and Vanuatu will be developed during 2014.


AFP

Digital broadcasting — the switchover gains momentum

As elsewhere, ensuring a smooth transition from analogue to digital terrestrial television broadcasting in the Asia-Pacific region is an ongoing ITU priority. With support from the Republic of Korea, ITU updated its global guidelines for this process in 2012 to take into account developments in the Asia-Pacific region. The guidelines were again updated in 2013 with new information on satellites, cable television and Internet protocol television provided by ITU and Japan's Ministry of Internal Affairs and Communications.

During 2011–2014, 19 countries (Bangladesh, Bhutan, Cambodia, Fiji, Indonesia, Lao P.D.R., Maldives, Micronesia, Mongolia, Myanmar, Nepal, Papua New Guinea, the Philippines, Sri Lanka, Thailand, Timor-Leste, Tonga, Vanuatu, and Viet Nam) developed their national digital transition road maps with assistance from ITU in partnership with Australia's Department of Communications, the Republic of Korea and Japan's Ministry of Internal Affairs and Communications, including help from the ITU Direct Assistance Programme. Afghanistan, Kiribati, Nauru, Samoa, and the Solomon Islands are currently receiving similar assistance — again from ITU, along with Australia's Department of Communications and the Republic of Korea — to develop their national digital transition road maps.

To ease the digital transition implementation process more than 700 regulators, ICT and other experts participated in nine regional workshops and training sessions on digital migration between 2011 and 2014, organized in partnership with national and regional regulatory associations.

Emergency telecommunications

Emergency telecommunications play a critical role in the immediate aftermath of disasters by ensuring the timely flow of vital information needed by government agencies and other humanitarian actors involved in rescue operations and the provision of medical assistance to the injured.

Parts of the Asia-Pacific region are particularly prone to natural disasters such as hurricanes, tropical storms, floods, earthquakes, tsunamis and the adverse impacts of climate change, increasing the need to provide affected populations information on such emergencies.

ITU and its partners continue to deploy satellite terminals and other emergency telecommunication equipment to affected countries within the first 24 to 48 hours of a disaster to help restore vital communication links. For example, in the immediate aftermath of the magnitude 9.0 earthquake and tsunami that struck north-eastern Japan on 11 March 2011, ITU deployed satellite equipment to help re-establish communications vital for search and rescue operations in the disaster-affected areas. More than two years later (November 2013), ITU provided 125 satellite phones, 25 BGANS, 1 deployable base station, 6 very small aperture terminals (VSATs), 25 laptops and 100 solar panels for relief activities in the Visayas region of Central Philippines which was severely affected by Typhoon Haiyan. The typhoon — one of the most powerful ever recorded — packed deadly force with powerful winds and seawater surges, causing the loss of over 10 000 lives, mass population displacement and widespread destruction of buildings, telcommunication networks, and power utilities. Some satellite terminals for voice and high-speed data were also provided to the World Health Organization in support of its humanitarian work in the affected areas. In January 2014, ITU provided 10 satellite mobile phones to the Kingdom of Tonga to help the government with relief coordination in the Ha'apai group of islands that were hard hit by the category 5 Cyclone Ian.

ITU also built human capacity in this area of emergency communications in the region in cooperation with the National Broadcasting and Telecommunications Commission of Thailand, the Ministry of Information and Communications of Viet Nam and Viettel.

"We take our humanitarian work very seriously," says Brahima Sanou, Director of ITU's Telecommunication Development Bureau. "ITU stands ready to support United Nations agencies in their humanitarian effort to assist people caught up in such disasters, especially those who have been afflicted by illness and those who have been displaced from their homes."

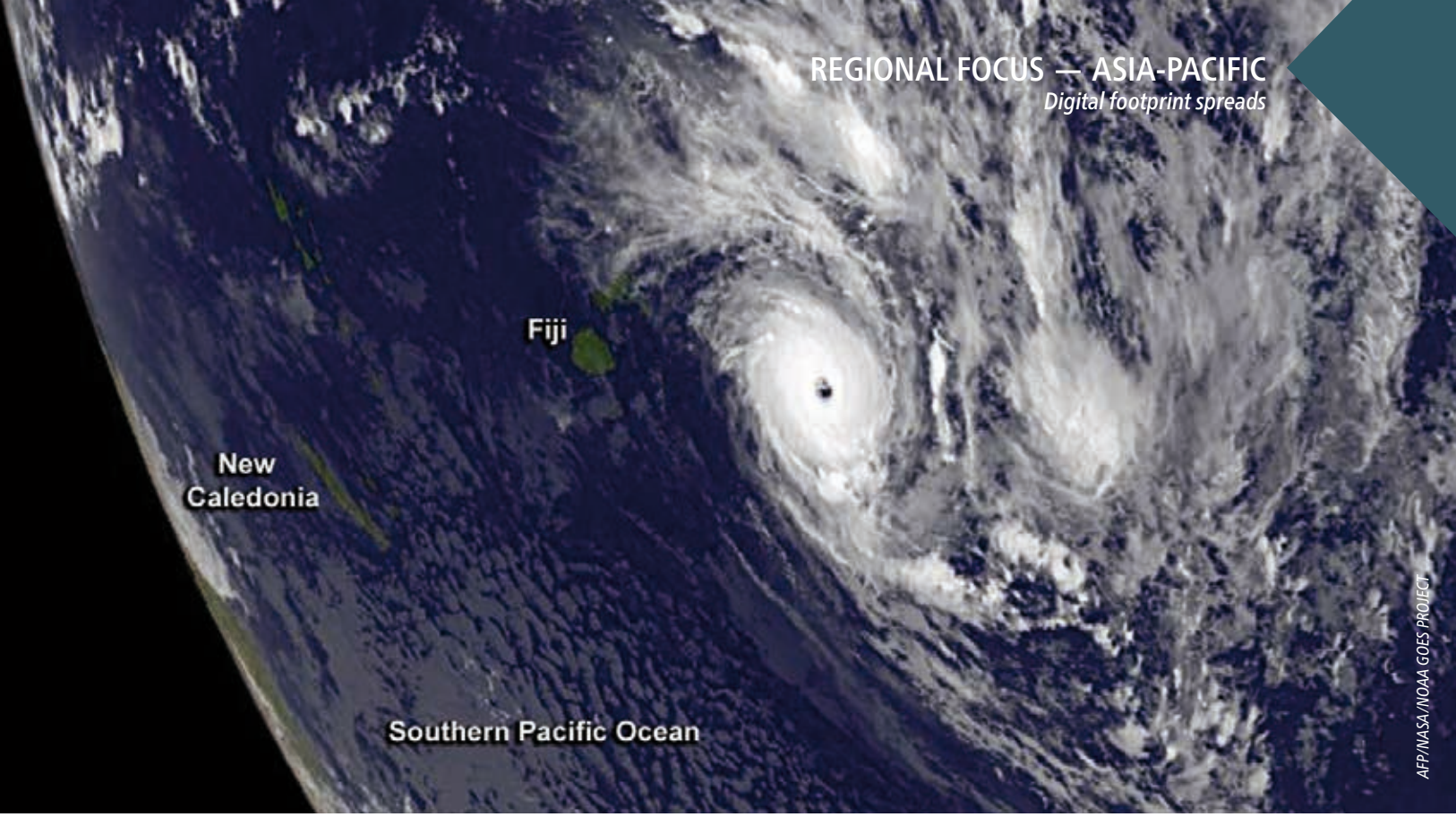
ITU's emergency telecommunication deployments are part of its Framework for Cooperation in Emergencies (more commonly known as IFCE). Besides providing telecommunication services for disaster mitigation during all phases of disaster management, IFCE also mobilizes resources to guarantee an immediate, reliable, and timely response should a natural disaster strike any ITU Member State.

Fostering satellite connectivity

A regional training workshop on satellite launching and monitoring was held in Bangkok (Thailand) in 2012. Hosted by Thailand's Ministry of Information and Communications Technologies, the workshop was attended by some 80 participants from 12 Member States in the region. A follow-up regional workshop on regulatory frameworks for satellite launching and coordination took place in Yogyakarta (Indonesia) in 2013, organized jointly by ITU and Indonesia's Ministry of Communication and Information Technology, with support from Australia's Department of Broadband, Communication and the Digital Economy (now Department of Communications). The 112 participating experts from 15 Member States concluded that a regional information depository of national regulatory frameworks for satellite communication was needed to assist countries in addressing specific issues such as the protection of national satellite operators and knowledge transfer. ITU also assisted Mongolia in building skills related to satellite launch coordination.

Human capacity building and ITU Asia-Pacific Centres of Excellence

Eight Centres of Excellence offering face-to-face and online training programmes continue to operate in the Asia-Pacific region. Each Centre provides training on a specific telecommunication/ICT theme, as follows: policy and regulation (Pakistan Telecommunication Authority); spectrum management (Faculty of ICT, Ministry of Information and Communication Technology, Islamic Republic of Iran); rural ICT development (Universiti Utara Malaysia, Malaysia);



AFP/NASA/NOAA GOES PROJECT

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 and the Ministry of Information and Communications of Viet Nam); and cybersecurity (International Multilateral Partnership Against Cyber Threats — IMPACT).

The Asia-Pacific Centre of Excellence network has worked in partnership with many other entities to deliver high-quality training. In the past three years, the centres have enhanced the ICT skills of more than 1800 participants, with support from numerous partners including: the Pacific Islands Telecommunications Association (PITA); Busan Metropolitan City (Republic of Korea); the National Broadcasting and Telecommunications Commission of Thailand; the Malaysian Communications and Multimedia Commission; the Communications Authority of Maldives; the Asia-Pacific Broadcasting Union; GSMA; the Telecom Regulatory Authority of India; the Asia Pacific Network Information Centre; Telecentre. org; the National Advanced Centre for IPv6; the TOT Academy; the Mobile Communication Company of Iran; the Telecommunication Company of Iran; Intel; and Australia's Department of Communications.

The International Training Programmes, organized with the Australian Communications and Media Authority, the Telecom Regulatory Authority of India and the Korea Communications Commission, after each annual Asia-Pacific Regulators' round-table meeting for heads or senior regulators in Asia-Pacific, have enhanced the skills of over 170 participants. The 2011 programme provided a comprehensive overview and insight into Australia's contemporary converged communications regulatory environment, while the 2012 and 2013 programmes focused respectively on India's regulatory environment and the Republic of Korea's experience towards achieving a smart society.

Another important partnership on capacity building has been with the Infocomm Development Authority of Singapore that shares Singapore's experiences on enabling frameworks for ICT development with other policy-makers and regulators.

In addition, national level awareness and capacities are being built as part of ITU's many projects, initiatives and programmes in Asia-Pacific. ■

Widening access to broadband technology

Technical skills transfer a priority

The digital divide across the Commonwealth of Independent States (CIS) region emphasizes the need to increase access to broadband technology and services, particularly in rural areas. Several countries in the region possess significant information and communication technology (ICT) expertise that could be shared more widely through regional hubs to help bridge this divide. ITU assistance in the transition from analogue to digital broadcasting continues to benefit the Commonwealth of Independent States.

Deploying the tools to widen access to broadband technology

In order to provide practical tools for promoting the build-out and management of broadband wireless networks through technical skill transfer, ITU has formulated guidelines on migration to next-generation networks and infrastructure development. These guidelines have been customized for implementation in Georgia, Moldova and Tajikistan.

In one innovative pilot project to bring more people online, ITU established public access points to the Internet in post offices, libraries and schools located in rural areas of Moldova, using broadband technologies for the delivery of a wide range of online public services. With the launch of this initial field trial, it is estimated that 150 000 inhabitants in 43 rural settlements in different locations are now covered and can benefit from access to the Internet. If the results are positive, the project will be replicated throughout the country. A similar project has been implemented in Belarus. In Georgia, Internet access points were created in two colleges in 2013. Preparatory work is under way to create three Internet access points in rural settlements of Tajikistan in 2014.

The unrelenting drive towards digital broadcasting

One of the priority focus areas of ITU-CIS cooperation concerns the transition from analogue to digital broadcasting. To assist in this process and to develop interactive multimedia applications of terrestrial digital broadcasting and provide the necessary skills training, a consultative and methodological centre has been established in Minsk (Belarus), within the framework of the CIS Regional Initiative approved by WTDC-10. A regional workshop for CIS on implementation and monitoring of DVB-T/DVB-T2 systems, held in Minsk from 25 to 27 September 2013, marked the final implementation stage of the project. Since the centre recently became operational, Kazakhstan and Kyrgyzstan have benefited from its advisory services.

Virtual laboratory to start remote testing of new ICT

ITU and the Central Science Research Telecommunication Institute (ZNIIS) of the Russian Federation have started collaboration on building a virtual laboratory for the remote testing of equipment, new technologies and services in the Russian Federation in line with ITU's Conformity and Interoperability programme. The project also plans remote training of specialists from developing countries in the implementation of ICT testing approaches. The 3rd stage of equipment supply for the virtual laboratory is in progress. Initial training for CIS specialists on conformance and interoperability is planned for October 2014.

Spectrum management

Increasing access to ICT as a means of boosting economic and social development, and refining legislation on radio-frequency allocation were the main issues addressed at a 2012 regional forum for policy-makers, legislators and operators from the CIS and Europe regions, co-organized by ITU and the Ukraine's National Commission for the State Regulation of Communications and Information.

This "ITU Regional Forum on Topical Matters of Telecommunication Regulation and Radio-Frequency Spectrum Use for CIS and Europe", focused on various aspects of access to the electronic communications market, ways to reduce the digital divide, improving legislation in radio-frequency resources and State monitoring, and ways to leverage on ICT to reform the economy and society.

In 2013 some 100 experts from these same regions shared practical experiences on radio-frequency spectrum management at an "ITU Regional Seminar for CIS and Europe on *Radio-Frequency Spectrum Management: Radio Monitoring as an Effective Tool for Radio Frequency Spectrum Management"* hosted by Ukraine.

In addition, Moldova received concrete assistance to upgrade its national radio-frequency management plan based on universally recognized standards and best practices. The plan is part of the country's draft national strategy known as *Digital Moldova 2020*. The assistance made it possible to review and analyse the current

situation of radio-frequency management, identify the main issues, define a strategic direction for spectrum allocation and management, and provide concrete recommendations for revising the national strategy paper.

Trends in radiocommunication development

An ITU workshop for the CIS on technological and regulatory trends in the development of radiocommunications following the World Radiocommunication Conference in 2012 (WRC-12) was conducted in cooperation with the Leningrad Branch Central Scientific and Research Institute of Communication of the 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 radionavigation.

Human capacity building

An interactive multimedia telecommunication network protocol technologies and modelling training centre was established in Bishkek, Kyrgyzstan, and expert assistance was provided in building the capacity of communication administration professionals in Kyrgyzstan, Tajikistan and Uzbekistan to develop a coordinated plan for the migration from analogue to digital broadcasting in their common border areas in the Fergana valley. In cooperation with Kyrgyz Telecom and Kyrgyz State Technical University, six training courses for 118 teachers from rural and remote areas of Kyrgyzstan were organized to increase their connectivity and enhance their professional ICT skills and knowledge. Another series of ICT training sessions will take place in 2014.

In addition, Azerbaijani communication administration personnel received technical assistance on national satellite system coordination and registration as part of a global effort to improve international coordination in the use of the Ku frequency band, within the framework of the ITU Radio Regulations. Assistance on satellite network coordination was also provided to the communication administration of Armenia.

CIS Centres of Excellence

Four ITU-RCC (Regional Commonwealth in the field of Communications) Centres of Excellence are now operational at the Higher State College of Communication (HSCC) in Minsk, Belarus; the Kazakh Academy of Infocommunications in Astana, Kazakhstan; the Moscow Technical University for Communications and Informatics (MTUCI) in the Russian Federation; and the Odessa National Academy of Telecommunications in Ukraine.

As elsewhere, the centres were set up to offer continuous education to ICT managers in the public and private spheres through face-to-face or distance learning programmes, and were designed to serve as regional focal points for professional development, research, and knowledge sharing.

To date, the centres have trained more than 300 participants from seven CIS and seven non-CIS countries in spectrum management and digital broadcasting. One distance-learning course on Internet Protocol version 6 (IPv6) was carried out on self-funding basis. A CD-ROM was produced with the course materials.

IPv6 transition

Increasing the number of trained specialists in regulations for the transition from IPv4 to IPv6 is an important goal for CIS countries. At a workshop in Chisinau, Moldova, jointly hosted by ITU, the telecommunication administration of Moldova and national telecommunication operator, JSC 'Moldtelecom' brought together 67 experts from nine CIS countries. They addressed regulatory and technical aspects of IPv6 migration and produced recommendations to CIS telecommunication administrations covering such issues as implementation of IPv6 by ICT network operators, information security, formulation of IPv6 policy

and strategies for developing countries, development of mobile IPv6 (MIPv6), and promotion of IPv6 over satellite.

Regional capacity building

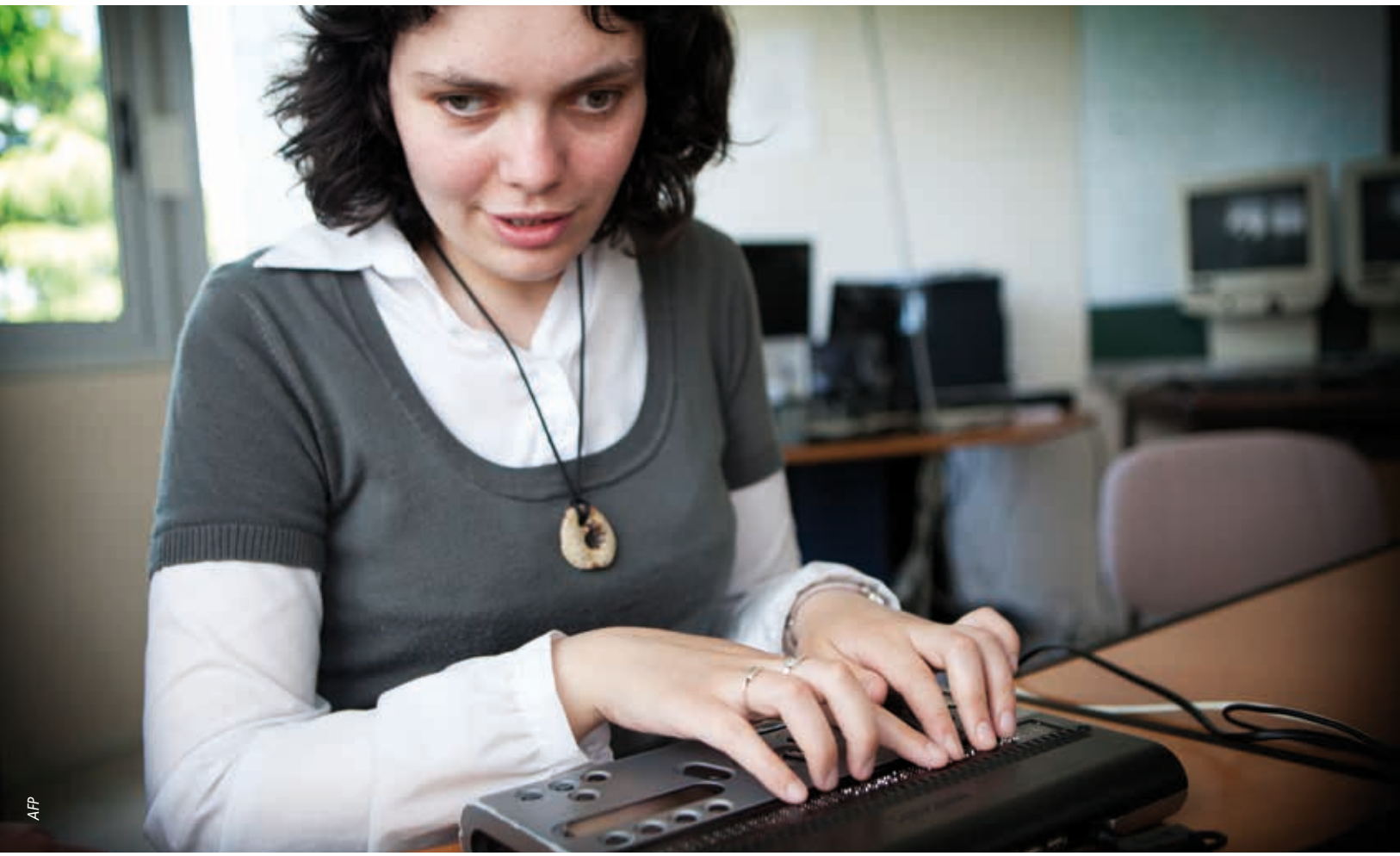
Through a series of 51 regional seminars conducted between 2011 and 2013, ITU has provided training to around 3400 telecommunication/ICT professionals from eight CIS countries and helped build the local institutional capacity of national communication administrations, regulators and operators in multiple areas.

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. A number of projects have been initiated on ICT infrastructure and technology development to promote electronic meetings in the CIS region. In particular, a videoconference network linking the ITU Area Office in Moscow with communication administrations in Armenia, Kyrgyzstan, Moldova and the Russian Federation has been established within the framework of the CIS Regional Initiative approved by WTDC-10, facilitating information sharing and consultations, and allowing for virtual training seminars. Videoconference equipment was supplied and installed in these countries' communication administrations, and training was also delivered. The communication administration of Uzbekistan was also connected to the videoconference system. Other CIS communication administrations installed videoconference connections at their own cost and can now participate in ITU videoconferencing events, which have become quite regular between the ITU Area Office and CIS communication administrations. Also, several videoconference training sessions and workshops were held in 2013, attracting many remote participants.

E-accessibility

A pilot Internet-access centre for blind people and people with poor eyesight was opened in Yerevan, Armenia. A preliminary agreement for partnership in the implementation of the project was signed with the UNESCO Moscow Office that works for Azerbaijan, Armenia, Belarus, Moldova and the Russian Federation.

Agreements on partnership between the ITU Area Office and the UNESCO Moscow Office on implementation of similar projects in Belarus and Kyrgyzstan will be signed in the near future. In addition, ITU initiated a project to translate ICT-related terms from English into Russian. Some 30 000 terms were translated under the CIS Regional Initiative approved by WTDC-06, bringing to more than 75 000 the total number that have now been translated from English into Russian. Implementation of the project was pursued on the initiative of ITU Deputy Secretary-General, Houlin Zhao, supported by the ITU Council. ■



AFP

Shutterstock

Fast track digital roll-out reaching more and more people

Policy-makers seek to maximize digital dividend

Europe has an enviable position in terms of information and communication technology (ICT) deployment and leads the world on ITU's global ICT Development Index. It is also the region with the most homogeneous ICT footprint. Europe is counting on ICT to fuel competitiveness, drive innovation and create new job opportunities.

To fully benefit from this potential, Europe's policy-makers have advocated strongly for broadband networks to be set up and made widely accessible for citizens and businesses alike before the close of the current decade, including in remote and underserved rural areas. Wireless broadband, and the release of spectrum offered by the digital dividend, are of prime importance in this deployment. Developing a coordinated spectrum harmonization policy remains a major regional challenge.

Broadband networks gain ground in Europe

At a Regional Forum for Europe on "Broadband: A Pillar of Social and Economic Development", co-organized in Tirana (Albania) in September 2012 by ITU's Telecommunication Development Bureau (BDT) and Albania's Ministry of Innovation and Public Administration — key stakeholders, in particular from Central and Eastern Europe — discussed strategies and policies to overcome challenges facing broadband development in the region. This dialogue continued at the regional European broadband conference, held in February 2014 in Greece, co-organized by ITU and the Greek Ministry of Infrastructure, Transport and Networks, within the framework of the Greek Presidency in the European Union, and addressing in particular the challenge of Speeding up NGN Ubiquity: A Pillar for Digital Growth.

A project to develop broadband infrastructure resulted in cooperation between the Administrations of Moldova and Poland aimed at the transfer of knowledge and the introduction of new legislation to foster the development of high-speed network infrastructure in Moldova.

Digital switchover and maximizing the benefits of the digital dividend

As the analogue to digital switchover takes root throughout Europe, governments have increasingly turned their attention to planning for or allocating the spectrum space — or digital dividend — released by this technological transition. This freeing up of spectrum is seen as an opportunity to introduce new services and technologies that can bring about social benefits and economic growth.

Europe's regional initiative number two from Hyderabad aims at assisting Member States in Central and Eastern Europe in making a smooth transition from analogue to digital broadcasting, taking into account the GE06 Agreement on digital terrestrial broadcasting as well as the work undertaken by relevant European regional organizations and entities, to avoid duplication of effort. Thanks to the hospitality of the National Media and Infocommunications Authority (NMHH) of Hungary, and Poland's Office of Electronic Communications, a series of ITU-led gatherings have taken place in recent years in Hungary and Poland to facilitate the migration process in Europe.

In 2011, the ITU Sub-Regional Seminar and Administration Round Table on Digital Terrestrial Television Broadcasting and the Digital Dividend in Central and Eastern Europe, hosted by the NMHH in Győr (Hungary), resulted in the elaboration of an overview of policy and regulatory frameworks for digital terrestrial broadcasting, including mobile television. The more than 70 participating European experts focused in particular on key technical, regulatory and economic aspects of the switchover and formulated an implementation plan of action for presentation to relevant national administrations.

In May 2012, in collaboration with Poland's Ministry of Administration and Digitization and Office of Electronic Communications, ITU organized a Regional Seminar for Europe and the Commonwealth of Independent States in Warsaw on the "Transition to Digital Broadcasting, Borderline Frequency Coordination and Digital Dividend". This meeting was followed in November 2012 by the annual Regional Seminar for Europe on "Transition to Digital Terrestrial Television Broadcasting and Digital Dividend" hosted by NMHH in Budapest, where participants also discussed planning for the recuperation and safe disposal of obsolete analogue equipment.

In January this year, ITU and NMHH again hosted the Regional Seminar for Europe on the "Transition to Digital Terrestrial Television Broadcasting and Digital Dividend". Policy-makers, broadcast engineers and regulators, alongside ICT experts from the private sector, exchanged views on regulatory issues and best practices experienced during the transition process. Discussions also centred on ways to maximize the economic and social benefits of the digital dividend,

as well as on licensing policies and criteria, the introduction of high-definition television, and emerging challenges in the digital television market.

This series of seminars, attended by more than 200 professionals, contributed to building regional capacity as well as bilateral and multilateral cooperation among European countries on identifying the most effective analogue to digital conversion mechanisms. The seminars also served as a platform for participants to discuss ways of ensuring a harmonized approach to maximizing the economic and social benefits of the digital dividend for countries in Central and Eastern Europe. Assistance in the switchover implementation phase has so far been provided to Albania, Bosnia and Herzegovina, and Greece.

Another outcome of the seminars was an ITU-facilitated survey on the status of the digitization process in Central and Eastern Europe. The survey results are contained in a new BDT publication produced jointly with the ITU Radiocommunication Bureau that was launched during the digital broadcasting seminar in Hungary in January 2014.

In addition, ITU facilitated a twinning programme between Albania and Poland that led to a study visit by a group of Albanian experts to Poland where they exchanged knowledge and experience on digital broadcasting with their Polish counterparts.

Access to e-health services

The European regional initiative on ICT applications aims to assist countries in building capacity for e-healthcare services using the potential of telecommunication and ICT applications, with a particular focus on mobile technologies.

In September 2012, the ITU Experts Group Meeting on m-health: Towards Cure, Care and Prevention, brought together some 50 key European stakeholders at ITU headquarters to discuss the challenges and opportunities arising from the rapid growth of the mobile health industry at policy, regulatory, technical and business levels. The meeting resulted in consensus


AFP

on coordinated action to foster m-health development in Europe. In follow-up action, a number of e-health case studies have been collected and a roster of m-health experts created. In addition, a thematic study elaborated by ITU is currently under review and will serve as a basis for the creation of a self-assessment toolkit for policy-makers. In addition, in 2013, ITU and WHO launched a repository of e-health related projects. This joint effort aims at building capacities at the regional and global level, while providing good practices.

Increased accessibility of ICT for persons with disabilities promoted

The regional initiative on "E-accessibility in Central and Eastern Europe (Internet and digital television) for blind people and people with visual impairment problems" entailed action stemming from a consultative process with all European communication administrations.

ITU assistance on e-accessibility was provided to Bulgaria and the Former Yugoslav Republic of Macedonia. In two Bulgarian schools for children with impaired vision in Sofia and Varna, 10 workstations were created with the necessary equipment, hardware, software and other facilities. In addition, a system that converts electronic Macedonian text into audio speech was developed and made available to the blind and persons with visual impairments.

Finally, in December 2013, in collaboration with the European Broadcasting Union, ITU held a Meeting for Central and Eastern Europe on e-Accessibility in Television Broadcasting in Zagreb (Croatia). The meeting allowed for an exchange of best practices and identified gaps in the implementation of e-accessibility solutions by national broadcasters in the region, to be addressed in the future by ITU when accompanying European Member States in facilitating e-accessibility for targeted groups.

Various tools on accessible ICT for persons with disabilities have been developed since 2011 and are posted on the ITU website. These include publications on Making TV Accessible and Making Mobile Phones and Services Accessible.

Building confidence and security in the use of ICT

The ITU Telecommunication Development Bureau continued to carry out several actions to further build confidence and security in the use of ICT in the region. Two regional cybersecurity conferences provided a platform for networking and building the cybersecurity capacity of ICT professionals.

In October 2012, in collaboration with Bulgaria's Ministry of Transport, Information Technology and Communications, ITU organized a Regional Forum on Cybersecurity for Europe and CIS held in Sofia. The Forum, held within the framework of the ITU-IMPACT endeavour, provided a platform for cooperation, information sharing, and discussion on cybersecurity with a particular focus on CSIRT/CIRT/CERT policies, procedures, best practices, challenges and opportunities among participants from throughout the Europe and CIS Regions. It contributed to previous as well as ongoing global activities related to building confidence and security in the use of ICT (WSIS Action Line C5) and is linked to the ITU Global Cybersecurity Agenda (GCA) and the Hyderabad Action Plan Programme 2 (Cybersecurity, ICT applications and IP-based network-related issues). The Forum brought together CERT/CIRT practitioners, senior government officials, cybersecurity experts, related industry players and other stakeholder groups from ICT and security sectors with a view to strengthening the countries' CIRT, their cybersecurity fundamentals as well as building a network of cybersecurity experts in the region.

One important feature of the Forum was an ITU-IMPACT ALERT (Applied Learning for Emergency Response Team) exercise that simulated a cybersecurity incident in a controlled environment to test the communication and participating teams' incident response capabilities. A similar activity called the International Shield Exercise is scheduled in May 2014 in Istanbul, Turkey. It will be hosted by

the Information and Communication Technologies Authority (ICTA) and the Ministry of Transport, Maritime Affairs and Communications of Turkey.

In addition, cybersecurity capability assessments have been carried out in Montenegro, The Former Yugoslav Republic of Macedonia, Cyprus and Monaco, to plan the establishment of national CIRTs in these countries.

In March 2014, in cooperation with the general secretariat for Telecommunications and Post (and Digital Convergence) of the Ministry of Infrastructure, Transport and Networks of Greece, ITU co-organized the Regional Conference on "Safety and Security in Cyber Space: Building-up Trust in the EU" in Athens. The conference provided an opportunity for high-level dialogue on strategies and policies to making cyberspace more secure. Particular emphasis was placed on examining potential cyberthreats and areas that have scope for improvement, while building confidence and security in the use of ICT.

Human capacity building

Since 2011, ITU has facilitated training for more than 500 communication professionals through several face-to-face and online courses delivered within the framework of the Centres of Excellence Project for Europe in Greece, the Former Yugoslav Republic of Macedonia, and Poland. The subjects covered included advanced Internet technologies for Europe, next-generation mobile and wireless networks, digital dividend challenges and opportunities, and mobile broadband: Long term evolution (LTE)/LTE-Advanced, WiMAX and WLAN, 4G mobile and the future Internet.

In order to enhance knowledge of training on conformance and interoperability testing of systems manufactured based on ITU recommendations and their effective application, ITU conducted a series of regional Europe-Commonwealth of Independent States events attended by over 200 experts from those regions.

In 2012, Albania was advised on the type of monitoring system to implement in order to best support the regulatory authority's mandate related to frequency planning, frequency engineering, licensing

and enforcement. In addition, strategic advice was provided on the development of the national numbering plan.

Some 20 Greek telecommunication professionals benefited from a three-day intensive seminar on ITU procedures related to the introduction of digital terrestrial television, co-organized in 2013 by ITU and the Greek Ministry of Infrastructure, Transport and Networks in Athens. These experts received hands-on experience in the Geneva 2006 frequency plan (GE06) modification and notification procedures.

Also in 2013, Bosnia and Herzegovina was assisted in conducting an assessment of current spectrum management practices to identify possible options for its own future use.

In addition, BDT and the Czech Technical University in Prague (Czech Republic) are organizing an ITU Academy Event on "Fostering Innovation and Partnerships in Human Capacity Building: Enhanced Engagement of Academia in the Work of International Telecommunication Union", which will take place in the National Library of Technology in Prague from 28 to 29 April 2014. This event will provide an opportunity for high-level dialogue on strategies and policies directed towards integrating and providing education, training and information resources on ICT aimed to harmonize, integrate and gather under one umbrella all existing ITU training services corresponding to the organization's main areas of activity — radiocommunications, standardization and development — and to extend the current portfolio of training programmes. The event will also facilitate discussions on possible challenges that might be addressed at the regional level, including: ITU Academy: Global Platform for Human Capacity Building, Building win-win Partnerships between the ITU Academy and Academia, the New Paradigm for Centres of Excellence as an Effective Mechanism for Training Delivery at Regional and Global Level, Fostering the Development of Training Materials through Partnerships with Academia and other Stakeholders, and the Role of Academia in ITU: Opportunities and Challenges.

Protecting the interests of electronic communication users

In September 2013, Montenegro hosted the eleventh ITU conference on regulatory frameworks to protect the interests of electronic communication users in Europe. More than 70 representatives of European regulatory agencies, ministries, electronic communications operators, as well as experts from international organizations and other institutions in charge of electronic communications regulation and development policy attended the conference. Participants examined the main user protection challenges, reviewed current regulatory frameworks, exchanged views on regulatory best practices, and recommended guidelines to address convergence issues.

Public private partnerships in ICT development

In Europe, as elsewhere around the world, ITU has for several years acted as a catalyst for the creation of public-private partnerships in the ICT sector. In November 2012, ITU convened an experts meeting on the increased role of these partnerships in ICT development and telecommunication/ICT sector reform in Europe and beyond. Among the issues discussed were the impact of telecommunication/ICT reform in Europe on ICT sector growth; the strategic role of public-private partnerships in ICT development; policy and regulatory measures fostering public-private partnerships; existing opportunities as well as barriers and challenges facing such partnerships; and boosting investment in the ICT sector.


Shutterstock

ITU assistance to Serbia

ITU experts visited Serbia in 2011 to assess the assistance and support to be given to the country to rebuild its destroyed public broadcasting system. 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, ITU prepared a project to mobilize funds for the full implementation of Resolution 126 of the ITU Plenipotentiary Conference (Guadalajara, 2010) on assistance and support to Serbia for rebuilding its destroyed public broadcasting system. ■

Shutterstock

Cybersecurity

ITU consolidates global alliance against cyberthreats

The battle to eradicate misuse of information and communication technologies (ICT) for criminal or other purposes has yet to be won as challenges to cybersecurity such as denial-of-service attacks, identity and data theft, and destructive malware proliferate and become more sophisticated.

In line with its Global Cybersecurity Agenda, ITU has consolidated its global alliance with governments, academia and industry experts to promote a culture of cybersecurity awareness and a holistic approach to counter misuses of online networks. Altogether 149 ITU Member States have joined the coalition, cooperating among themselves and with ITU at the global level.

In collaboration with United Nations agencies, other international organizations and the European Commission and, in association with IMPACT — the International Multilateral Partnership against Cyber Threats — ITU is helping countries around the world to address cybersecurity challenges.

Some 50 countries have received assistance to assess their national cybersecurity preparedness and response capabilities since the World Telecommunication Development Conference in 2010 (WTDC-10). Five countries (Burkina Faso, Kenya, Montenegro, Uganda and Zambia)

have received support to set up a national computer incident response team (CIRT) and eight others (Barbados, Burundi, Côte d'Ivoire, Cyprus, Ghana, Jamaica, Tanzania, and Trinidad and Tobago) are currently receiving assistance to do likewise.

The cybersecurity needs of the least developed countries are the focus of particular attention under ITU's "Enhancing Cybersecurity in Least Developed Countries" project.

Member States also have access to ITU's comprehensive cybersecurity-related research, analysis and training materials.

ITU has also established formal cooperation with cybersecurity companies such as Symantec and Trend Micro, which have agreed to share information on current and emerging global cyberthreat trends, as well as with the United Nations Office on Drugs and Crime to build mechanisms to counter cybercrime. In addition, ITU is working with the global Forum for Incident Response and Security Teams (FIRST) — the world's biggest computer incident response teams association — to share best practice on how to develop national incident response capabilities and, through IMPACT, with INTERPOL to synergize with the law enforcement community.

Another key component of ITU's Global Cybersecurity Agenda is its Child Online Protection initiative established in conjunction with other United Nations agencies and partners as an international collaborative network for action to promote safe online behaviour. In this regard, specific guidelines have been developed for children, parents, guardians, educators, industry and policy-makers.

Harmonization of cybersecurity legal frameworks

A persistent concern is the lack of harmonization of cybersecurity related legislations, which makes it difficult to investigate and prosecute offenders if the categorization of cybercrimes and other misuses of cyberspace differ from country to country. In response, ITU is familiarizing selected countries with legal aspects of cybersecurity and helping to harmonize their legal frameworks with a view to making them applicable and interoperable across the world. An example of ITU's cybercrime legislation resources is its publication (in six languages) entitled "Understanding Cybercrime: A Guide for Developing Countries and the Toolkit for Cybercrime Legislation".

Responding to cyberattacks

IMPACT's centre in Malaysia is playing a key role in supporting ITU's mandate on cybersecurity to introduce technical measures to combat new and evolving cyberthreats. Designed to be the world's foremost cyber-threat information resource, the centre has been set up to deploy an early warning system and to provide timely guidance to countries under cyberattack. It also plans to link designated ICT experts in ITU Member States to a dedicated communication network that will enable them to mount a collaborative response to cybersecurity emergencies at short notice.

The essential role of cybersecurity training

The important role that ICT play today in providing services in sectors as varied as health, education, finance and commerce, highlights the paramount need to be aware of both the opportunities offered by a secure cyberenvironment and the threats inherent to cyberspace. Today, however, there is a shortage of qualified cybersecurity professionals in all countries — including the most technologically advanced among them.

To help bridge this gap, ITU has organized cybersecurity training workshops for more than 2700 government officials, regulators and public and private sector ICT professionals around the world. The workshops cover various technical and policy aspects of ICT security, including malware analysis and investigation, securing networks and forensics. Some of these workshops feature mock trials to test participants' knowledge of national legal frameworks applicable to cyberrelated offences. In addition, several national

computer incident response teams around the world have taken part in ITU-IMPACT cyber drills conducted within simulated cyberattack scenarios to test their communication and response capabilities in emergencies.

Following are snapshots of how ITU has been helping to address cybersecurity issues since WTDC-10 in the Africa, Americas, Asia-Pacific, Commonwealth of Independent States and Europe regions. Information on cybersecurity developments in the Arab world is contained in the article focusing on the Arab region (see pages 34–38).

Africa

In the framework of a joint ITU-European Commission project to create harmonized ICT policies and an efficient regulatory environment in African, Caribbean and Pacific countries, model policies on cybercrimes, electronic transactions and data protection have been developed and are now being transposed into domestic legislations.

Under the project known as HIPSSA (Support for the Harmonization of ICT Policies in Sub-Saharan Africa), input was provided to the African Union to develop a continent-wide Convention on Cybersecurity.

Many African countries have benefited from ITU-IMPACT assessments of their cyberthreat preparedness and response capabilities (Botswana, Burkina Faso, Burundi, Cameroon, Chad, Cote d'Ivoire, Democratic Republic of the Congo, Ethiopia, Gabon, Gambia, Ghana, Lesotho, Mali, Niger, Nigeria, Kenya, Senegal, Sierra Leone, Swaziland, Tanzania, Togo, Uganda, Zambia and Zimbabwe). Since 2010, four of them (Burkina Faso, Kenya, Uganda and Zambia) have set up computer incident response teams and four others (Burundi, Ghana, Côte d'Ivoire and Tanzania) are in the process of doing likewise, with ITU-IMPACT support.

Various other cybersecurity initiatives are foreseen in Africa, and in July 2013 Nigeria's Communications Commission signed a Memorandum of Understanding with ITU to set up a regional cybersecurity centre in Nigeria. This regional centre will facilitate collaboration on combating cyberthreats at the regional and national levels—with an emphasis on activities related to protecting children online.

An ITU-led series of Africa Child Online Protection summits is also planned to identify risks and vulnerabilities to children in cyberspace, to develop practical tools to help minimize risks, and to share knowledge and experience. In 2013, the First Lady of Nigeria, Dame Patience Goodluck Jonathan, graciously agreed to be ITU's Champion for Child Online Protection.

Finally, in 2014, ITU-IMPACT will organize a training workshop for African country computer incident response team personnel during which a simulated cyberattack will be staged to test their computer-incident preparedness and response skills.

Asia-Pacific

Joint action by ITU and the Association of Southeast Asian Nations (ASEAN) has increased regional cooperation to address cybersecurity challenges. It has also been instrumental in strengthening the capacities of several least developed or developing countries to counter cybersecurity threats and manage related emergencies.

Cambodia, Lao P.D.R., Myanmar and Viet Nam are among the countries to have received direct assistance in this regard in recent years. Cooperation on cybersecurity issues between these countries was enhanced following their participation in an ITU/ASEAN subregional workshop held in Myanmar in 2011. The workshop focused on national computer incident response team policies, procedures, best practices, challenges and opportunities.

Cooperation between Asia-Pacific countries on combating cybercrime was further consolidated at a regional workshop organized by ITU and the United Nations Office on Drugs and Crime (UNODC) in Seoul, Republic of Korea in 2011.

In partnership with IMPACT, ITU has continued to assess the capacity of existing national computer incident response teams of several Asia-Pacific countries to manage cybersecurity emergencies, to help set up these teams

Shutterstock

in countries where they do not exist, and to provide training and material assistance. Afghanistan, Bangladesh, Brunei, Bhutan, Cambodia, Lao P.D.R., Maldives, Myanmar, Nepal, Sri Lanka and Viet Nam, have received various forms of assistance to bolster their cybersecurity in recent years.

Americas

Several countries in the region are benefiting from ITU expertise on cyberthreats. Since 2012, ITU-IMPACT cyberthreat preparedness assessments have been conducted in 15 countries in the Americas (Anguilla, Antigua and Barbuda, Barbados, Costa Rica, Dominica, Dominican Republic, Grenada, Ecuador, Haiti, Honduras, Panama, Saint Kitts and Nevis, Saint Lucia, Suriname, and Trinidad and Tobago).

Memoranda of Understanding have been signed with Barbados and Jamaica to establish national critical incident response teams and discussions are under way to do likewise in Trinidad and Tobago. Furthermore, plans have been agreed to create a subregional critical incident response team overseen by the Organisation of Eastern Caribbean States. ITU-IMPACT will provide the necessary technical input and training to establish and manage these critical incident response teams, which aim to strengthen national cybersecurity capacity and to enhance regional and international collaboration in this domain.

In collaboration with the Latin American and Caribbean Internet Registry (LACNIC) the first edition of the ITU-IMPACT cyberdrill exercises for the Americas region took place in Montevideo (Uruguay), in August 2013, with the participation of ICT and security experts from Barbados, Bolivia, Chile, Colombia, Ecuador, Paraguay, Peru, Trinidad and Tobago, and Uruguay.

As part of the joint ITU-EU Commission project to create harmonized ICT policies and an efficient regulatory environment in African, Caribbean and Pacific countries, the cybercrime legislative frameworks in 8 of the 15 beneficiary Caribbean countries were reviewed in 2011 and 2012, and final recommendations for updated legislation developed through

stakeholder consultations were submitted to Barbados, Grenada, Saint Kitts and Nevis, and Trinidad and Tobago. Proposed national legislation or amendments to existing laws were also transmitted to Haiti, Jamaica, Saint Lucia, and Saint Vincent and the Grenadines.

Commonwealth of Independent States

More than 90 ICT and security experts from Europe, the Commonwealth of Independent States and Asia-Pacific discussed strategic aspects of cybersecurity and cybercrime during an ITU-IMPACT cross-regional seminar organized in partnership with the Odessa National Academy of Telecommunications (Ukraine) in March 2012. Legal frameworks and international cooperation to combat cybercrime, child online protection and the role of public-private partnerships were among agenda topics. Participants proposed the creation of a public reference repository of recommended and prohibited Internet resources for children.

A year earlier (April 2011), cross-regional cooperation on child online protection was boosted at a workshop attended by some 55 cybersecurity experts from CIS and European countries organized by ITU, in partnership with the Odessa National Academy of Telecommunications of Ukraine. Armenia and Kyrgyzstan benefited from targeted assistance to develop national cybersecurity strategies, and Ukraine received guidance in setting up a national body for the registration of object identifiers.

ITU also supported the government of Azerbaijan in organizing an international conference on cybersecurity in 2013, in partnership with the World Bank, the World Economic Forum and INTERPOL.

Europe

In partnership with the Bulgarian Ministry of Transport, Information Technology and Communications, the "ITU Regional Forum on Cybersecurity for Europe and CIS" took place in Sofia, Bulgaria, in October 2012. The forum brought together more than 90 participants from 19 countries.

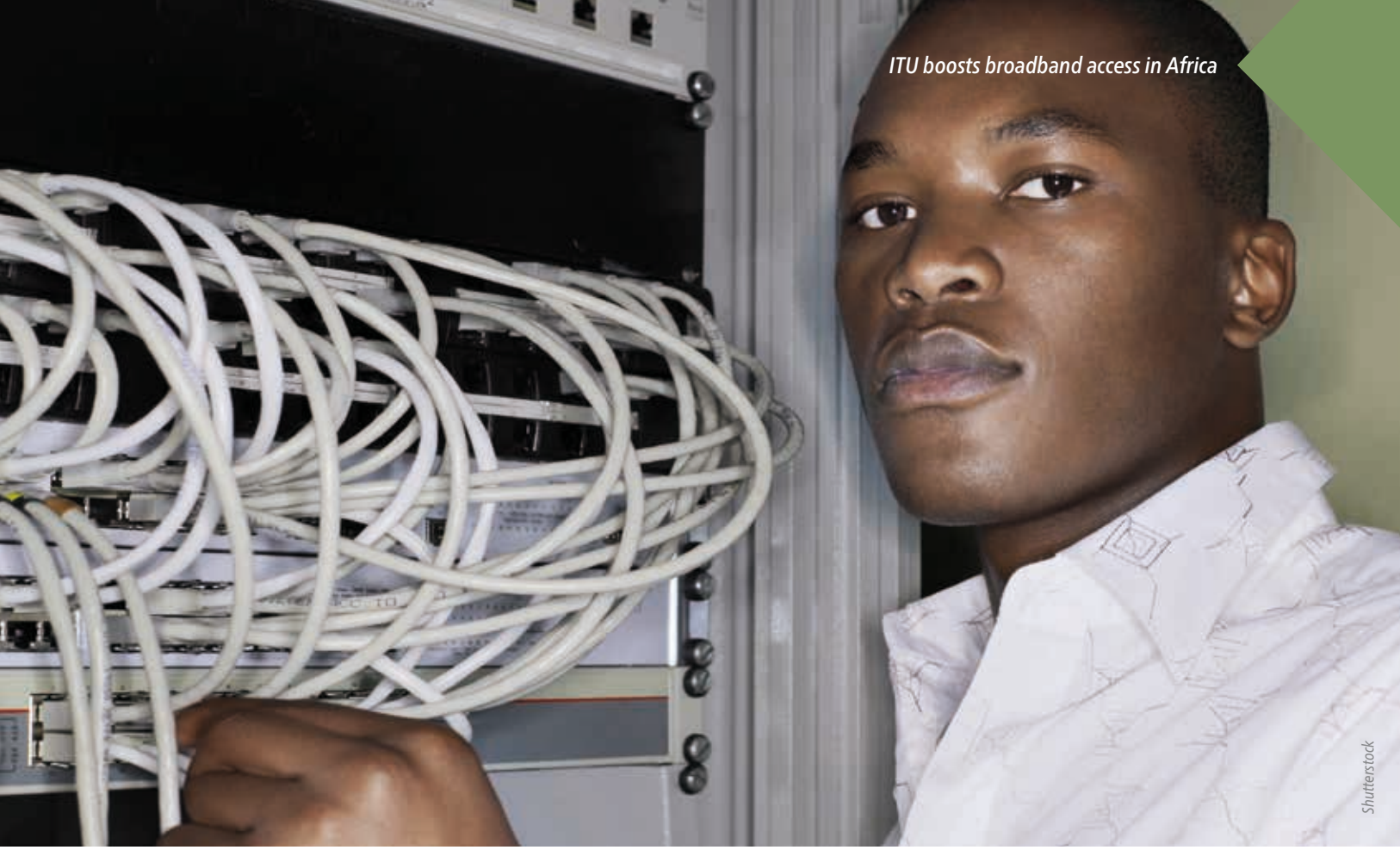
During the forum, ITU and IMPACT organized a cross-border cybersecurity drill for Europe and the CIS countries designed to test national cyberresponse capabilities and improve readiness and reaction in the event of a cyberattack.

The "Applied Learning for Emergency Response Team" (ALERT) cyberdrill featured eight actively participating countries: Armenia, Bulgaria, Moldova, Montenegro, Romania, Slovakia, Turkey and Ukraine, with 11 other nations taking part as official observers: Albania, Austria, Azerbaijan, Croatia, Italy, Kyrgyzstan, Luxembourg, Malta, Poland, Portugal and Tajikistan.

A series of scenarios totalling 250 minutes were triggered during the exercise to put participants to the test and observe their responses. These scenarios included phishing, web defacement and wireless security breach. The simulation, which was sponsored by ABI Research, also benefited from the participation of ITU-IMPACT's key industry partners including Codenomicon, Internet Society Bulgaria, Kaspersky Lab, Lirex.com, Microsoft, Symantec and The Cyber Guardian.

Cyberemergency preparedness assessments were conducted in Albania, Bosnia and Herzegovina, Montenegro, Serbia, and the Former Yugoslav Republic of Macedonia with a view to establishing computer incident response teams in these countries.

In September 2013, Montenegro hosted the eleventh ITU conference on regulatory frameworks to protect the interests of electronic communication users in Europe. Participants sought to identify the main user protection challenges, reviewed current regulatory frameworks, and exchanged views on regulatory best practices.



Shutterstock

ITU boosts broadband access in Africa

As a follow-up to the Connect Africa Summit, ITU is pressing ahead with its project to widen broadband access and uptake in Africa, in partnership with the Craig and Susan McCaw Foundation.

The project has been given a boost under an agreement with Nexpedience (one of the world's leading suppliers of proprietary point-to-multipoint broadband infrastructure) to deploy 180 new broadband base stations worth USD 1 million in six African countries. These deployments will contribute to broadband wireless connectivity, providing free or low-cost digital access for schools, hospitals and underserved populations in rural and remote areas.

Burundi was the first of the six countries to benefit from equipment and training to establish a broadband wireless network in 2011. It is being followed by Djibouti — on 19 December 2013 a broadband launch ceremony was attended by ITU Secretary-General Hamadoun I. Touré alongside Djibouti President Ismaïl Omar Guelleh and members of his government. Similar deployments are planned in Burkina Faso, Mali, Rwanda and Swaziland.

Burundi

The training of local experts was organized in Burundi in March 2011. Professional training was provided at ONATEL's premises in Bujumbura and focused on the following four modules based on Expedience (Nexpedience's point to multipoint proprietary broadband technology):

- Module 1 — Expedience overview, infrastructure site preparation, installation and configuration;
- Module 2 — Expedience NetProvision system overview and operation;
- Module 3 — Expedience customer-premises equipment installation, configuration and operation; and
- Module 4 — Expedience net manager, element management, system configuration and operation.

Figure 1 — Broadband wireless project for Burundi showing the areas covered by the network (outlined in blue)

Examinations were held at the end of the training course, and a certification awards ceremony was organized. Thanks to the training provided, 13 local engineers were able to assist in installing the broadband wireless network in Burundi.

The areas outlined in blue on the map of Burundi (see Figure 1) are connected. There are three sites in Bujumbura (the capital of Burundi), while the cities of Ngozi, Bururi, Mwaro, Gitega and Muramvya each have one site.

The network is operational, and 212 personal computers and other related equipment for local area networks in schools and hospitals have been provided.

Djibouti

Both the ITU Secretary-General and the Djibouti President hailed the broadband launch as a major step forward in connecting Djibouti to cutting-edge broadband technology for its socio-economic development. President Guelleh praised Dr Touré for his efforts to connect Djibouti — and Africa in general — to the global information highway.

The 4G broadband wireless network (mobile WiMax standard IEEE802.16e) for Djibouti has been set up in a highly secured environment to protect it against cyberattacks (Figure 2). The network is expected to be used for videoconferencing, e-health, e-education and e-government purposes.

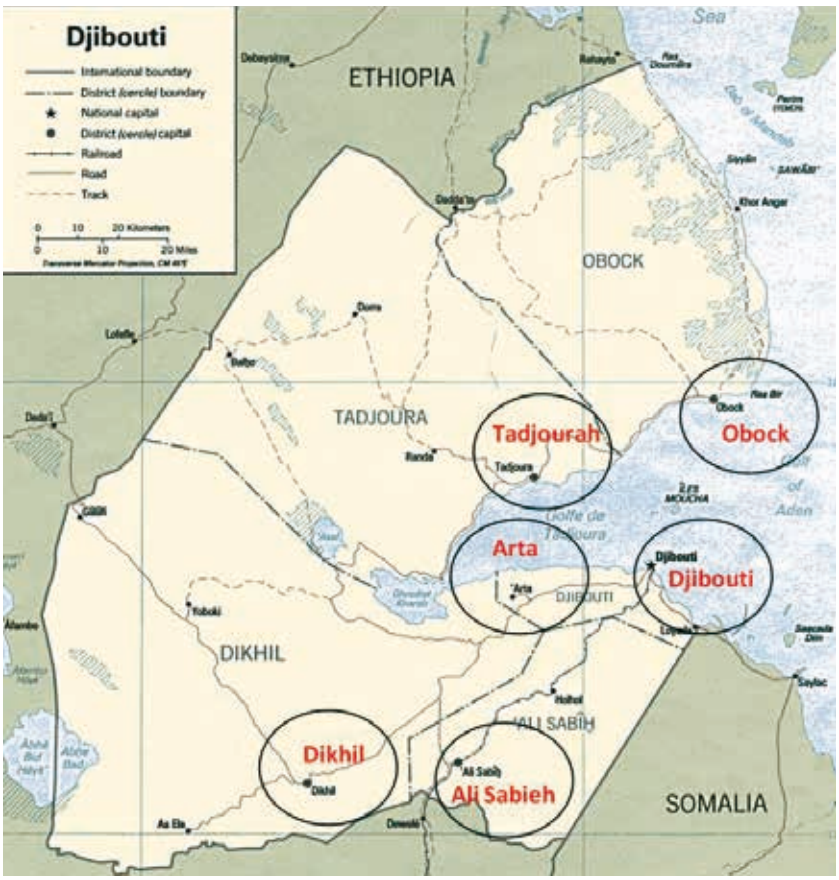
Burkina Faso

The deployment of a broadband wireless network is under way in Burkina Faso, with Nouna, Niangologo, Gorom-Gorom, Manga, Gaoua, Tougan, Koupela, Léo, Orodara and Yako having been selected as the sites to be covered. Negotiations with Airtel have been positive, and the appropriate backhaul solutions have been identified for each of the sites.

Lesotho

Lesotho has contributed USD 377 000 to build a broadband wireless network. Work on the network is now under way.

Figure 2 – 4G broadband wireless project for Djibouti covering Arta, Ali Sabieh, Djibouti-City, Dikhil, Obock and Tadjourah



Interactive map of transmission networks

With a view to obtaining a global perspective of broadband connectivity that will allow the ITU membership to identify broadband investment opportunities, the Expert Group on Telecommunication/ICT Indicators and the World Telecommunication Indicators Meeting in 2012 encouraged ITU to develop a worldwide interactive map of transmission networks. A new set of broadband transmission capacity indicators has been identified for the purpose.

ITU has launched a project for building the first interactive online transmission map. Within the framework of this project, ITU's Telecommunication Development Bureau will develop and release in the public domain an authoritative, leading-edge ICT-data mapping platform to take stock of national backbone connectivity (fibre and microwave), as well as other key metrics of the information and communication technology sector.

Training sessions in Burundi

Participants in the training sessions in Burundi

Internet protocol (IP) 4G backhaul installations in Djibouti

Training of Djibouti local experts in the deployment of 4G broadband wireless networks

Base transceiver station installation in Arta (Djibouti)

Network installation by the local team of experts in Bujumbura

ITU

Djibouti's new WiMax network

An opportunity to boost access to basic services in health and education

Mohamed Siad Doualeh

By Mohamed Siad Doualeh

Ambassador, Permanent Representative of the Republic of Djibouti to the United Nations and other international organizations in Geneva

As we move into 2014, I should like to begin by addressing a message of peace and prosperity to all members of the international community, and by emphasizing our deeply-held conviction that no great undertaking is possible in our world without close cooperation and unstinting solidarity.

This assertion holds true for us whether we are looking at the management of challenges or the elaboration of global solutions.

On 19 December 2013, in Arta, a town situated some 40 km from Djibouti, the Head of State of Djibouti, Ismail Omar Guelleh, and the Secretary-General of ITU, Dr Hamadoun I. Touré, inaugurated the WiMax network within the framework of the "Millennium Village" project. This project, initiated during the Connect Africa Summit held in Kigali (Rwanda) in 2007 in the presence of numerous Heads of African States, falls within the framework of ITU's objectives aimed at strengthening the capacities of the information and communication technology (ICT) infrastructure of African countries.

Ten African countries, including Djibouti, were selected to be the recipients of wireless broadband infrastructure. This project also forms part of Djibouti's strategy for the development of ICT for use in enhancing social development. It lays particular emphasis on the use of ICT in the areas of health and education.

Within the health sector, ICT will help to improve the management of healthcare services through applications for data collection and for the provision of training and decision-making support to healthcare providers.

In schools, ICT and broadband can be used to provide large-scale training, modernize curricula and enhance skills. Connected schools constitute a truly open window on the world and on all available resources and information.

The various speakers who took the floor, including the Minister of Communication responsible for posts and telecommunications, all drew attention to the importance of the WiMax network, an innovative project designed to enable better access to basic services such as health and education.

President Guelleh stated that with new information and communication technologies having transformed the world, the launch of the WiMax network was a timely development that would henceforth serve to improve the living conditions of people in the country's hinterland,

who must not be left out of the progress being made in the telecommunication sphere.

In his address, President Guelleh took the opportunity to express his gratitude to ITU, whose support had been a decisive factor in the launch of the WiMax network, which, by bringing key facilities to people living in the rural areas of Djibouti, constituted a major step forward.

Following the discussions with the President of the Republic, the Secretary-General stated: "As an international organization with responsibility for ICT, it is our duty to support countries as they pursue their own vision. We are very happy to witness this country's great dream, and will do our utmost to build on this collaboration."

On behalf of my Government and on my own behalf, I express our deep gratitude to Dr Touré, whose vision and commitment to ICT development we salute.

4G base transceiver station installed in Djibouti

Customer-premises equipment provided to Djibouti

ITU

E-health highlights

Disseminating knowledge of ICT applications is one of the main strategies used to mainstream ICT for socio-economic development. In collaboration with key stakeholders, the ITU Telecommunication Development Bureau (BDT) has developed a twofold strategy to achieve this goal based on the publication of specialized reports in the form of handbooks and guidelines and the organization of targeted regional and global events on ICT applications.

In the area of health, for example, a handbook on "Scaling e-Health Services in step with ICT Transformation" made available to health authorities in ITU Member States in 2011 detailed the e-health services which can be deployed immediately with available ICT infrastructure as opposed to those which can only be acquired as that infrastructure develops.

An ITU report published in July 2013 on the use of ICT for improving information and accountability for women's and children's health, highlights the contributions that ICT applications can provide in fast tracking the fulfillment of Millennium Development Goals 4 (to reduce by two-thirds the under-five mortality rate) and 5 (to reduce by three-quarters the maternal mortality ratio) by 2015.

In 2013, ITU and the World Health Organization (WHO) created an online repository to collect information on operational e-health projects around the world in order to demonstrate the effective use

of ICT in healthcare delivery. All administrations and stakeholders have been encouraged to provide input to the repository that will contribute to the sharing of experiences and good practices regarding e-health initiatives.

Between 2010 and 2013, more than 1000 participants from over 50 countries benefited from some 10 global and regional ITU-led events to share knowledge on ICT best practices for e-health. These events included:

- The e-health pavilion at ITU World Telecom 2011 that showcased innovative and emerging e-health solutions.
- The February 2012 workshop on How e-Science Can Help Solve Pressing Societal Challenges: Fostering a Global Effort to Develop a Worldwide e-Infrastructure for Computational Neuroscientists to Fight Alzheimer's Disease.
- The ITU booth at the 2012 Geneva Health Forum that disseminated ICT applications to strengthen health systems and improve healthcare services delivery, especially in low-resource settings.
- The April 2012 workshop on "e-Health Standards and interoperability" that initiated a dialogue towards a comprehensive road map on global standards development, interoperability, and adoption for enabling the sustainable development of e-health services.
- The September 2012 Expert Group Meeting on "m-Health: Towards Better Care, Cure and Prevention in Europe" that shared best practices in the implementation of m-health while addressing the urgent need to focus on various policy, regulatory, technical and business-related challenges.
- The "e-Health track" at ITU Telecom World 2012 covering both B2B (business-to-business) and B2C (business-to-consumer) e-health models in collaboration with Verizon and McKinsey.
- The February 2013 regional workshop on "e-Health services in low-resource settings" held in Tokyo (Japan), in collaboration with the Japanese Ministry of Internal Affairs and Communications and the Nippon Telegraph and Telephone Corporation.
- The 2011 Asia-Pacific Regional Forum on ICT Applications, organized in partnership with various other United Nations agencies, together with ICT industry leaders, was attended by 168 participants from 17 countries and served to enhance partnerships with key stakeholders.

Enhancing national e-health planning and skills

In 2012, a joint ITU-WHO "National e-Health Strategy Toolkit" was published to respond to the growing need for specialized skills and capacities in ITU Member States. So far, five countries have adopted the toolkit to develop or update their national strategies while many others are applying it in their national planning

To assist countries in implementing an integrated e-health strategy, build capacities related to e-health planning, and support the initiation of e-health planning processes, a joint ITU-WHO training workshop was organized for Ministry of Health officials and ICT experts from 15 countries in July 2012.

In Asia-Pacific, regional workshops were organized with WHO in Manila (Philippines) in September 2013, Bangkok (Thailand) in September-October 2013, Addis Ababa (Ethiopia) and Dakar (Senegal) in October 2013, with a view to supporting innovation through ICT to improve information and accountability for women's and children's health and to develop participants' understanding of the main steps involved in developing a national e-health strategy.

AFP

Supporting the use of mobile for health

ITU and WHO launched a joint initiative to use mobile technologies to address non-communicable diseases through scalable m-health solutions during ITU Telecom World 2012. The four-year work plan targets eight countries in the areas of prevention, treatment and policy enforcement. In the Americas region, Costa Rica was the first country to implement this initiative by launching a smoking cessation programme using mobile to help smokers quit the habit. In the Africa region, Senegal is the second country to be part of the initiative to use mobile for diabetes prevention and control.

Through partnership development with WHO and industry associations such as the International Federation of Pharmaceutical Manufacturers and Associations (IFPMA), Bupa (a healthcare company) and the Verizon Foundation, additional budgetary resources have been made available to support ICT use for maternal and child health care and to combat non-communicable diseases.

Two events were organized during the WHO General Assembly in May 2013 and during the United Nations Economic and Social Council meeting in July 2013 to raise awareness about the potential of mobile health applications, especially with regard to the reduction of non-communicable diseases.

ITU

Spotlighting Sri Lanka

Education to reach 8500 students in 33 provincial schools, with help from ICT

The Connect a School, Connect a Community project in Sri Lanka is helping to bridge the rural-urban digital gap and opening up economic opportunities for rural communities.

The project has been received with great enthusiasm by students and community members alike. Yeheni Shanika, a grade 9 student at Gonawala Vidyalaya School, Ginigathena, for example, had this to say: "I don't have a computer in my home and my friends don't have computers in their homes either. We now have our own computer lab at our school. So now I have the chance to learn with computers. The first thing I learnt was how to draw and colour pictures. Other than that, I learnt how to use dictionaries, the calculator and study the e-THAKSALAWA online educational programme of the Ministry of Education. I found the Internet really wonderful and fantastic. We can search information and pictures, listen to music and watch educational movies. Occasionally, we get the chance to play computer games."

Another example is from M.N.M. Akmal, a blind student at Zahira Primary School, Special Education Unit, Puttalam, who has benefited from the

project. "The computer lab equipped for people with special needs gives us a great opportunity to learn ICT lessons easily and effectively. We can now improve our ICT skills and knowledge. I am really enjoying my classroom lessons, reading stories, listening to songs, among other activities. Since I can't do these things at home, I am now even more eager to attend school."

The project was launched in 2011, following its successful implementation in Nicaragua. That year 25 schools in the Akuressa, Southern Province education zone, each with an average of 100 students, were converted into community ICT centres after being connected to broadband Internet and receiving basic computer equipment. Following that positive pilot stage, the project took on a new dimension in December 2013 when ITU and the Telecommunications Regulatory Commission of Sri Lanka (TRCSL) announced plans to extend its scope to nine provinces in all 21 districts countrywide.

The extended programme covered another 33 remote primary and secondary schools that currently have low connectivity and little digital literacy and benefited over 8500 students as well as the communities where these schools are located. It was formally launched by Sri Lankan Education Minister, Bandula Gunawardana, at a ceremony marking the opening of a primary school computer laboratory in Homagama, Padukka, Colombo District. During the inaugural ceremony, TRCSL Chairman Lalith Weeratunga said: "This school and rural community-oriented ICT project will be beneficial to the rural sector and, in the future, these schools will play a key role in the penetration of ICT knowledge into rural and remote areas of the country."

The extension project was launched as a result of proposals made during the Multi-stakeholder Partnership Meeting at the Connect Asia-Pacific Summit held in November 2013 in Bangkok, Thailand. ITU and TRCSL are covering the initial funding of the hardware and software for the ICT centres. The schools will then take over the running and maintenance of the computer laboratories, with telecommunication operators providing broadband Internet connectivity at reduced rates.

Sri Lanka's Ministry of Education Secretary, Anura Dissanayake, reasserted the ministry's commitment to the project: "The Ministry of Education is committed to equipping teachers and students in Sri Lanka with digital literacy skills in order to empower them to take advantage of the opportunities offered by the global economy and the project will bring technology into the classroom and allow teachers to teach their students critical thinking, problem solving and collaboration skills."

ITU Secretary-General, Dr Hamadoun I. Touré, who was represented by Dr Eun-Ju Kim, ITU Regional Director for Asia-Pacific, said in a statement: "This is a smart initiative which sets a milestone in driving ICT access to rural and remote areas and benefits not only teachers and students, but also the communities where they live. Such an innovative public-private-peoples' partnership, which promotes school-based community ICT centres, represents an attractive, affordable, inclusive, scalable and sustainable step forward in providing digital opportunities for the people of Sri Lanka. This is certainly an excellent way forward to realize the Asia-Pacific Vision 2020: Smartly DIGITAL, which was endorsed in November 2013 by leaders at the Connect Asia-Pacific Summit held in Bangkok, Thailand."

The Connect a School, Connect a Community project in Sri Lanka is a public-private-peoples' partnership involving ITU, TRCSL, the Sri Lanka Ministry of Education, the Information and Communication Technology Agency of Sri Lanka, the United Nations High Commission for Refugees, as well as various institutions and ICT equipment providers.

''I would love to have a suitable career in the computer field in the future. So, I would like to give my warm thanks to ITU, TRCSL, and the Ministry of Education for giving us this rare opportunity,'' concluded Yeheni Shanika.

Youth employment

Harnessing technology for jobs

Kelvin Doe is an inspiring teenager from Sierra Leone, whose self-taught technical wizardry and abilities attracted the attention of the Massachusetts Institute of Technology (MIT) — one of the most prestigious technical schools in the world. He became the youngest fellow at MIT's International Development Initiative, demonstrating his impressive skills to more experienced engineers. Kelvin also participated in the "Meet the Young Makers" panel at the 2012 Maker Faire in New York, serving as an inspiration to young innovators.

Kelvin used his hands-on, do-it-yourself "maker" creativity to build a self-powered FM community radio station — with transmitters, generators and batteries made from recycled waste. Kelvin operated the radio station, broadcasting as DJ Focus.

This story from a new ITU report *Digital opportunities: Innovative ICT solutions for youth employment,* suggests there could be many Kelvins out there. The report was produced by the Telecommunication Development Bureau (BDT) and grew out of the Youth Employment & Entrepreneurship partnership between ITU and Telecentre.org, and was published to coincide with the World Telecommunication Development Conference taking place in Dubai from 30 March to 10 April 2014. Here are some highlights from the report.

Unemployment

Today, 73 million young people are unemployed worldwide, and three times as many are underemployed — often those working in the informal sector, facing low wages, no benefits, and a higher probability of being laid off. A further 621 million youth are said to be "idle"

Kelvin Doe — an inspiring teenager from Sierra Leone

Shutterstock

— not in education or training, and not looking for employment. Youth make up 17 per cent of the world's population and 40 per cent of the world's unemployed.

The costs to society are huge when young people disengage from school and work. For example, absorbing just 20 per cent of alienated youth into the European labour market would save European Union countries more than EUR 21 billion a year collectively, according to the report. In the United States, the social cost for each young disengaged individual is estimated at USD 37 450 per year.

"When youth struggle at the beginning of their careers the repercussions can last a lifetime. This is not a future we want for the next generation, making it imperative that we take concrete steps to ensure youth have meaningful work opportunities and can lead productive and fulfilling lives," says Brahima Sanou, Director of BDT, in his foreword to *Digital opportunities: Innovative ICT solutions for youth employment.*

Digital natives

Advances in information and communication technologies (ICT) are transforming old sectors and creating new ones. For most jobs, digital literacy is becoming as important as reading and writing. People with advanced digital skills can embark on a wide range of business and entrepreneurial careers.

An opportunity open to youth is the ITU Young Innovators Competition, held annually as part of ITU Telecom World. Hosted by Bangkok in 2013 and Dubai in 2012, the event offers young entrepreneurs intensive one-on-one sessions with industry mentors, including ongoing support over a one-year development period. There are training sessions focused on developing entrepreneurial skills, as well as opportunities to network with ICT representatives in industry, government and academia. In Dubai, for example, nearly 400 entrepreneurs aged 18–25 from 77 countries had the opportunity to showcase their ICT-based projects.

As early adopters of ICT, young people are better positioned than their parents' generation to harness the power of digital technologies in new and imaginative

ways. To do so, they need a range of web skills.

How can young people become ICT-savvy? Teachers can act as facilitators of learning, while students can own the learning process and acquire knowledge at their own pace. New ways of interacting in the learning environment are emerging. Three such models are blended learning, self-directed learning and collaborative learning.

Blended learning integrates digital and face-to-face instruction. It relies on digital environments that enable the creation of a virtual classroom.

In self-directed learning, motivated students can choose from the vast amount of free educational content available on the Internet, creating their own learning pathways, and choosing what and when to learn, including in massive online open courses (MOOCs).

Collaborative learning allows peers to share their knowledge, explore new areas of interest, and benefit from the cumulative knowledge of the group. Evidence suggests that working collaboratively improves learning outcomes. Technology hubs, coworking spaces, hackerspaces and makerspaces are popular with young people.

Of course, job seekers need to show evidence of their knowledge or skills, because employers judge candidates based on their qualifications.

Certificates can be obtained online or through certification centres. Technology companies, including Microsoft, Cisco, HP, Samsung, Apple and Google, also offer certificates.

The Mozilla Foundation, through its Mozilla Open Badges initiative, offers "badges" — online representations of skills learned — as a new form of accreditation.

BDT has created the new Youth Employment and Entrepreneurship Resources Database (available at www.itu.int/ITU-D/youth) to assist young people to find and use these digital opportunities.

Digital careers

Thanks to ICT, skill-intensive activities can now be performed anywhere. Information technology, business processes and industry-specific services, for example, can all be outsourced. The offshore services industry employs about 4.1 million people around the world, offering good salaries and careers for graduates and professionals, and the opportunity to incorporate unemployed youth, rural women and other marginalized groups into the labour market.

More recently, other ICT-driven job markets have emerged. For example, microwork refers to a series of small tasks (part of a larger business process or project) that can be completed via the Internet or mobile devices. The World Bank estimates that the global microwork market generates USD 450 to 900 million annually, employing 1.45 to 2.9 million microworkers. Crowdsourcing operates in a similar way to microwork but tends to require higher-level technical skills and to involve larger projects.

The app economy

The app economy has grown in sync with the rise of smartphones, tablets and social media. From 2007, when the iPhone was introduced, up to July 2013, the app economy had generated roughly 752 000 app-related jobs in the United States and 530 000 jobs in the 28 European Union countries.

Apps have inspired a new class of entrepreneurs, spawning a multibillion-dollar industry virtually overnight. The Apple App store surpassed a million apps in October 2013. The number of apps for Android has risen at roughly the same pace.

Games are considered to be the most lucrative apps. Young people around the world aspire to cash in by creating the next Angry Birds. Interestingly, winners of Pivot East's recent app competitions for the mobile and developer communities in East Africa have both been games — a racing game called "Matatu" (meaning privately owned minibuses mainly used in Kenya) that has been downloaded 150 000 times in over 200 countries, and Tough Jungle, an action game with an African jungle setting.


Shutterstock

But will the app economy produce enough revenue in emerging markets to support this new generation of entrepreneurs? That remains to be seen. Sustaining an app in the market requires more than developing and launching the app, and waiting for profits to roll in. It requires continuous investment in development, upgrades and new features.

Start-ups

Young people can become job creators rather than job seekers, although successful entrepreneurship requires motivated people with the right set of abilities — ICT skills are just one component — as well as funding.

"ITU has a long history in helping young people to become entrepreneurs and launch ICT careers. That's why I am proud to be the Patron of the Young Innovators Programme at ITU Telecom World events, and why, as Director of the ITU Telecommunication Development Sector, I am fully engaged in empowering youth through initiatives such as my flagship m-Powering Development initiative, which seeks to harness the power of mobile phones to promote education, commerce, health, sport and more. International Girls in ICT Day, celebrated on the fourth Thursday of every April, is likewise designed to ensure that young women join the swelling ranks of ICT careers," says Mr Sanou.

Business incubators around the world are seeking to emulate the successes of Silicon Valley. Wired Magazine likens the opportunities in Africa to those of the pre-dotcom boom. Kenya's Silicon Savannah has become a hotbed for innovation, start-ups and app creation. Google, Intel, Microsoft, Nokia and Vodafone all have a presence there, and IBM recently chose Nairobi for its first African research lab. Nigeria is becoming known as Silicon Lagoon. Amman, Jordan has been dubbed Silicon Wadi (Arabic for valley). Latin America is also experiencing a boom of start-ups, business accelerators and incubators.

Oasis 500, a seed investment company based in Jordan, serves the Arab States. It provides entrepreneurs in the

ICT, digital media and mobile sectors with money, training and mentorship to transform their business ideas and start-ups into high growth companies. Entrepreneurs submit a start-up plan, and if selected get USD 15 000 in seed capital. The funded start-ups are required to go through an intensive five-week boot camp in how to build a company, and are given office space for three to six months. For those that manage to grow after their first stage of incubation, there is more funding, legal advice, mentoring and networking opportunities with local business leaders, and possibly investment directly from Oasis 500. Since starting up in 2010, Oasis 500 has received 2000 applications and has invested in 49 companies.

The Internet houses a multitude of resources for entrepreneurs, from online mentoring and networking to crowdfunding and contents which have become new mechanisms for attracting seed funds.

Green jobs

A shift to a greener economy in response to the global environmental crisis could generate an estimated 15 to 60 million additional jobs globally over the next two decades, presenting an opportunity for youth. A recent report by the Organisation for Economic Co-operation and Development argues that promoting ICT skills in the green and smart economy pays a double dividend by encouraging job creation and accelerating the transition to green growth.

ITU, as part of the United Nations Conference on Sustainable Development (Rio+20), called for the identification of concrete targets and a specific road map for the use of ICT as part of sustainable development strategies, as well as to mobilize the financial and human resources required to implement ICT strategies towards greener and more resilient societies.

To sum up

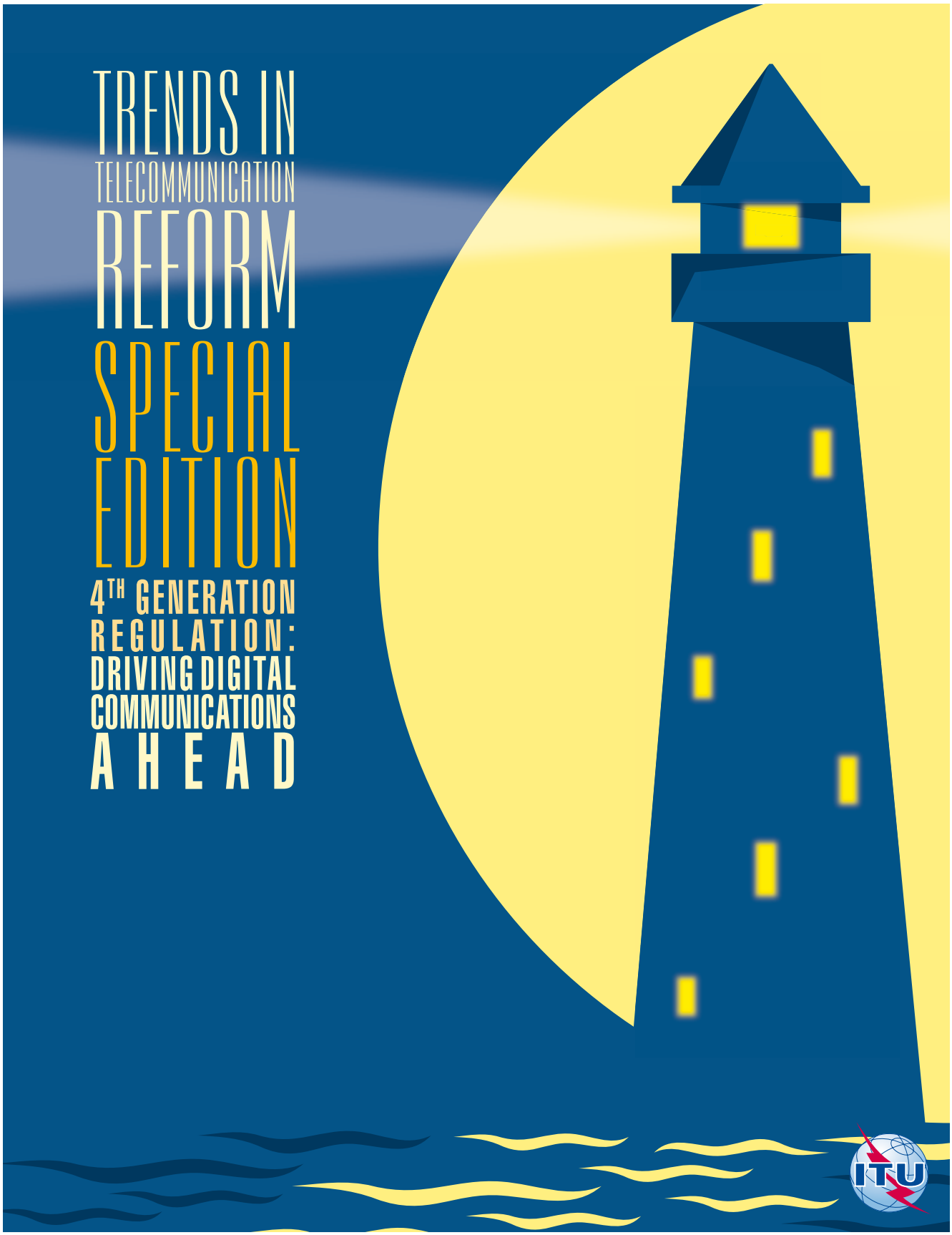
The information technology revolution is reshaping established industrial sectors and generating new ones.

The private sector, foundations, non-profit organizations and governments are making a wide range of resources available to help young people get a job or start a business.

Governments can promote youth employability and entrepreneurship by integrating ICT into education, embracing MOOCs, hackathons, contests and other non-formal channels of learning and supporting alternative accreditation schemes. Governments can also foster dialogue with the private sector to overcome youth employment challenges.

Europe, for example, is proposing "Entrepreneurship, Innovation and Youth" as a regional initiative to be discussed at the World Telecommunication Development Conference in Dubai. If adopted, the initiative would be implemented in the period 2015–2018. By creating an enabling environment and building capacities at regional level, the aim is to increase entrepreneurship and innovation in the ICT ecosystem, while encouraging the empowerment of young people.

The goal of this ITU report is to raise awareness about these new trends, share resources to address the needs of youth and support governments in implementing youth employment and entrepreneurship strategies. ■


TRENDS IN
TELECOMMUNICATION
REFORM
SPECIAL
EDITION
4TH GENERATION
REGULATION:
DRIVING DIGITAL
COMMUNICATIONS
AHEAD
ITU

AFP

Mobile broadband, smartphones, apps, fixed networks

Four challenges for fourth generation regulators

Governments throughout the world are striving to bring information and communication technologies (ICT) to everyone. Many depend on ITU for industry information, and a special edition of Trends in Telecommunication Reform 2014 themed *Fourth-Generation Regulation: Driving Digital Communications Ahead,* has been published by ITU's Telecommunication Development Bureau to coincide with the World Telecommunication Development Conference, to be held in Dubai, United Arab Emirates, from 30 March to 10 April 2014. In the first chapter, on which this article is based, authors Nancy Sundberg and Youlia Lozanova deal with "Key ICT market and regulatory trends".

Mobile broadband

Half the world's population was covered by a third-generation (3G) mobile broadband network in 2013. Migration to long-term evolution (LTE) technology seems to be happening much faster than the earlier migration from 2G to 3G networks. By 2013, commercial LTE networks were operating in 88 countries (according

to the GSM Association) or 101 countries (according to the Global mobile Suppliers Association), up from 14 in just three years. Ericsson estimates that 65 per cent of the world's population will be covered by LTE by 2019, compared with 10 per cent in 2012.

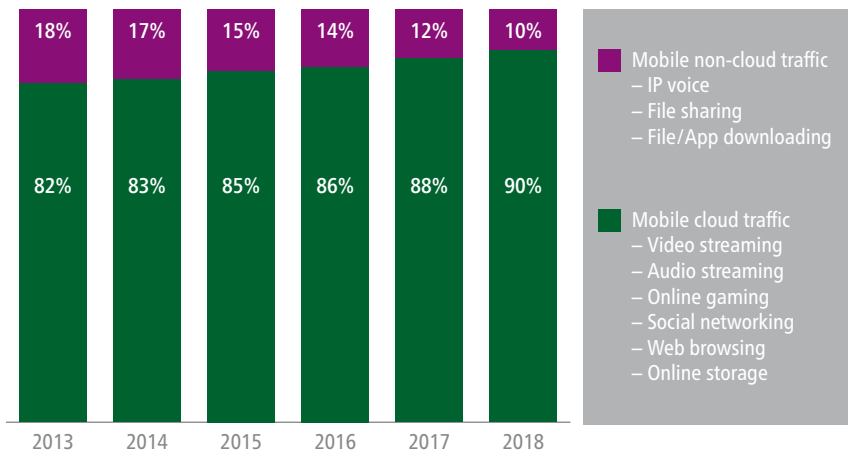
More than a billion smartphones were shipped in 2013, representing 38 per cent annual growth and overtaking feature phone sales. Sales of smartphones in 2014 are expected to rise — by 500 million more handsets in China and India, 47 million more in Brazil and 46 million more in Indonesia. Tablets are also selling well, with more than 263 million of them expected to be sold in 2014 compared with 179 million just a year ago.

Apps and mobile data traffic

The applications (apps) market reached more than 100 billion downloads in 2013, representing 50 per cent growth over the previous year. Total revenues were estimated at USD 26 billion in 2013, even though free apps accounted for 91 per cent of total downloads.

Mobile video traffic accounted for more than 50 per cent of mobile data traffic at the end of 2013, and is expected to grow to nearly 70 per cent by 2018. By then, mobile cloud applications are likely to account for 90 per cent of total mobile data traffic (Figure 1).

Figure 1 — Global growth of Internet traffic



Source: ITU, based on data from ITU, Gartner, Cisco VNI, Telegeography and IDC.

Cisco estimates that the number of mobile Internet connections will exceed 10 billion by 2018 and will be 1.4 times greater than the world's population. According to Ericsson, mobile data traffic is expected to grow at a compound annual growth rate (CAGR) of 45 per cent over the 2013–2019 period, and fixed data traffic will grow at a CAGR of 25 per cent. Cisco further predicts that by 2018, Wi-Fi or small cell networks will handle 52 per cent of global mobile traffic, up from 45 per cent in 2013.

Fixed-broadband networks

At the end of 2013, more than 11.7 million kilometres of fibre and microwave backbone transmission networks were available in five global regions — Africa, the Arab States, the Asia-Pacific, the Commonwealth of Independent States (CIS), and Latin America and the Caribbean. Data collecting for these regions is part of an ITU project to map global connectivity (Figure 2).

International submarine cables have been deployed along the eastern and western coasts of Africa, increasing the options for international high-speed connectivity between that continent and the rest of the world.

Looking at the regional distribution of the available capacity, it appears that the Asia-Pacific region accounts for no less than 85 per cent of fibre and microwave backbone networks outside Europe and North America, with China and India alone operating more than 9.7 million kilometres (Figure 2, left chart). The top 10 countries by route-kilometre account for 95 per cent of all operational fibre and microwave infrastructure but many smaller countries rank high in terms of the proportion of their population connected.

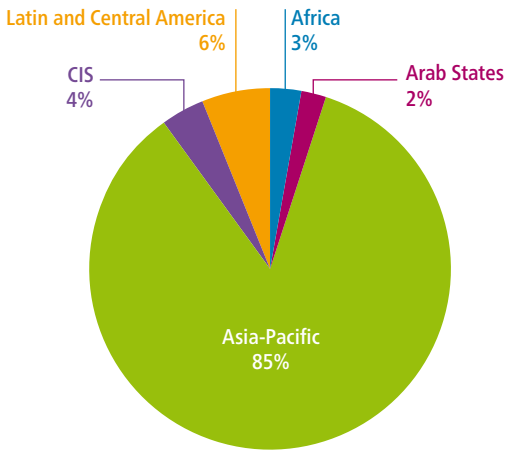
State subsidies have largely contributed to covering four out of every five citizens in the CIS region, while in Latin America, public-private partnerships and private entrepreneurship have been the main drivers of expanding networks to cover more than two-thirds of the population.

Despite the gigantic efforts being deployed and the achievements to date, the digital divide remains significant in the Asia-Pacific region, where some 40 per cent of the population remains out of reach of a backbone transmission network. Only slightly more than one-tenth of the population is within 10 km of a backbone network. Geography and demography are undoubtedly among the factors complicating connectivity efforts, because large territories, arid zones and scattered populations constitute major infrastructural challenges.

In Africa and the Arab States, about one-quarter of the population falls within a 25 km range of a backbone network, and in CIS and Latin America

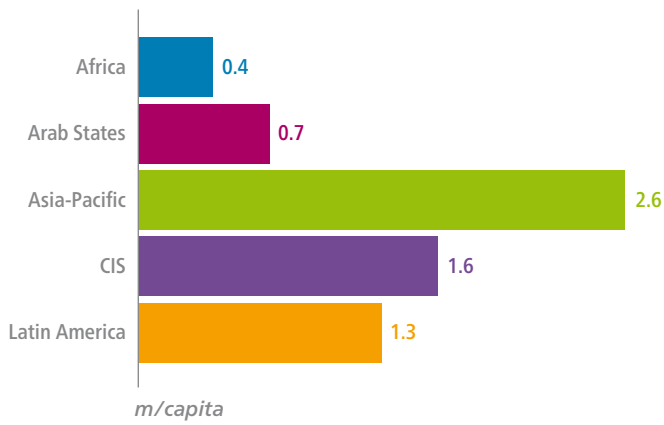
Figure 2 — Fibre and microwave routes in selected regions, 2013

Fibre and microwave routes (km), selected regions, 2013



Total: 11 751 358

Fibre and microwave routes (m/capita), selected regions, 2013



Note — Data for Europe and North America will be available at the end of 2014.
Source: ITU.

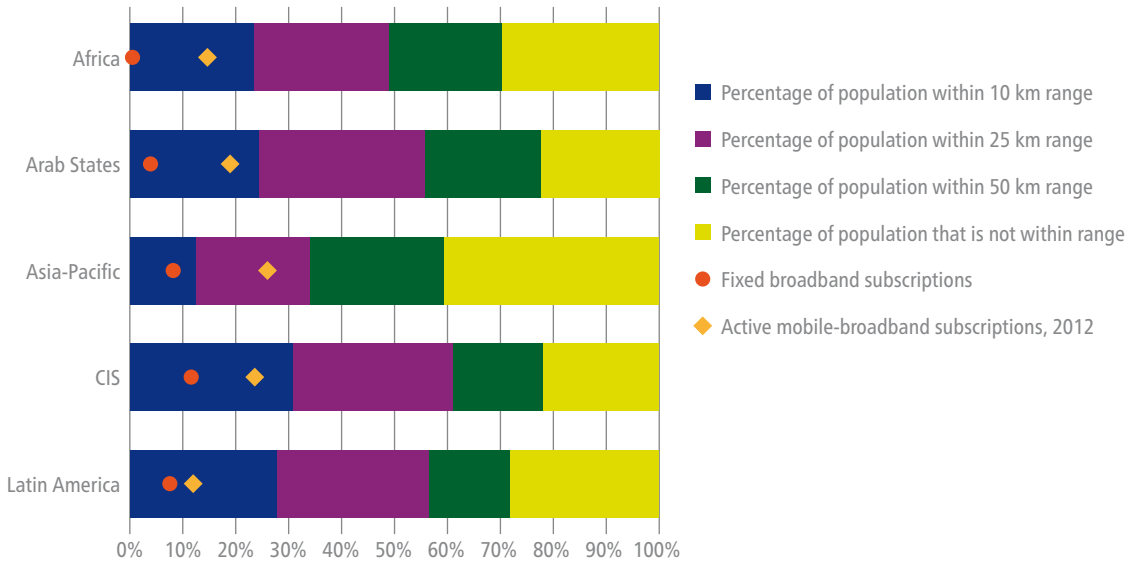
this proportion is closer to one-third of the population.

Comparing actual broadband service penetration figures (both fixed and mobile) with the proportion of people within a 50 km range of a backbone network, it appears that further efforts are needed to capitalize on the potential market and available capacity (Figure 3). The best performing region for take-up as a proportion of capacity is Asia-Pacific, where more than half of the population within the 25 km range has been connected. At the opposite end of the scale, Africa is still struggling to connect half of those within the 10 km range.

Getting the unconnected population living within reach of an operational fibre transmission network to subscribe to digital access services clearly requires governments to undertake further economic and regulatory efforts. Economies need to capitalize on the existing fibre networks by bringing affordable broadband services closer to the user. Within a 10 km range of a backbone network, there is a clear economic model for access and backhaul networks. Effectively connecting the population within the 25 km range is, however, also likely to require establishing viable public-private partnerships.

ITU's mapping project highlights the importance of bringing transmission networks closer to the population to foster Internet connectivity and broadband uptake. It also indicates that, by adding kilometres of fibre in the transmission network, the number of people having

Figure 3 — Status of backbone connectivity and take-up of selected data services, 2013



Note — Based on available data for 83 countries across the covered regions. Data on fixed-broadband subscriptions for selected countries comes from the Economist Intelligence Unit.
Source: ITU.

Shutterstock

access to the digital world may increase in a similar proportion.

Meanwhile, it is important to make the most of the existing copper lines to ensure that citizens benefit from high-speed broadband services. This can provide an alternative solution, at least in the short term, for increasing access speeds up to 1 gigabit per second (Gbit/s) in the last hundred metres of the network. The G.fast project is one of the solutions that can be envisaged.

G.fast is a suite of new ITU broadband standards capable of achieving access speeds of up to 1 Gbit/s using existing copper telephone wires. G.fast is optimized for short-range deployments within a range of 250 metres of a fibre terminal, which is connected to a dozen or more existing copper telephone lines leading to nearby premises.

However, providing greater capacity on the supply side may not be enough. Adopting digital literacy strategies and local content development policies to stimulate demand for digital services is crucial to ensure that telecommunication pipes are not left empty.

Policy-makers need to devote attention to educating consumers and preventing misbehaviour and hazards online, so that citizens can fully understand the potential of the digital ecosystem and truly benefit from being online. In a globalized, data-driven world, digital content (data) can be stored, processed, published and made available instantaneously to all. Whether consumers can trust that their rights are protected will increasingly weigh on users' behaviour in the digital world. ■

Official Visits

During February 2014, courtesy visits were made to ITU Secretary-General Dr Hamadoun I. Touré by the following ministers, ambassadors to the United Nations Office and other international organizations in Geneva, and other important guests.

Dr Hamadoun I. Touré, ITU Secretary-General and Marc Bichler, Executive Secretary of the United Nations Capital Development Fund

Bruce W. McConnell, Senior Vice President of EastWest Institute

Juan José Quintana, Ambassador of Colombia

Aya Thiam Diallo, Ambassador of Mali

From left to right: Jean-Pierre Chamoux, Professor at the Paris Descartes University; Dr Hamadoun I. Touré, ITU Secretary-General; and Sébastien Lévy, ITEMS International, France

Frédéric Riehl, Ambassador, Head of International Relations, Swiss Federal Office of Communications (OFCOM)

Aly Diané, Ambassador of Guinea

M.F. Farooqui, Secretary, Government of India's Department of Telecommunications

M. Fodé Seck, Ambassador of Senegal

Jean-Marc Hoscheit, Ambassador of Luxembourg

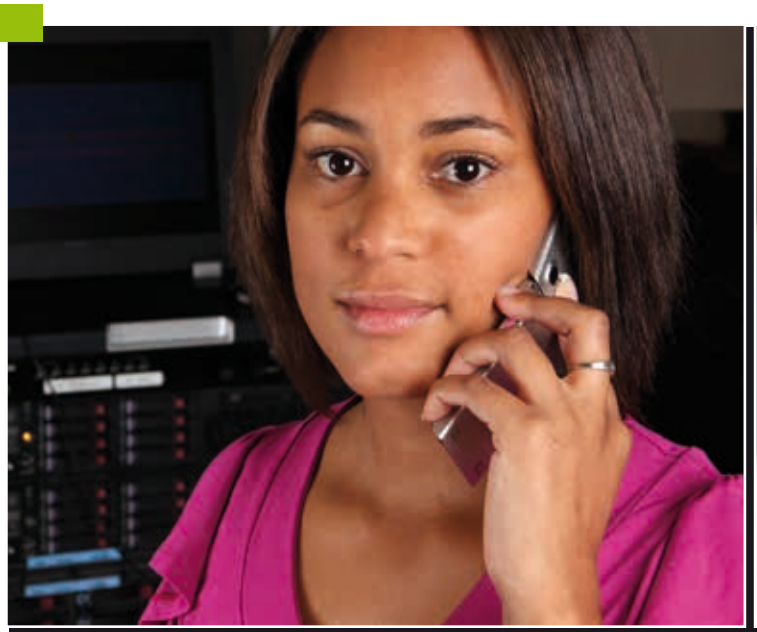
U Myat Hein, Union Minister, Ministry of Communications and Information Technology, Myanmar

All photos are by Ivan Wood/ITU.

ITU NEWS

More than a magazine — Content that connects you with the world

Advertise with us and spread your word far and wide.



For advertising information, contact:
International Telecommunication Union | ITU News
Place des Nations | CH–1211 Geneva 20 | Switzerland
Tel.: +41 22 730 5234 | E-mail: itunews@itu.int

itunews.itu.int

Join us in Doha, Qatar

2014

to continue
the conversation
that matters

ITU TELECOM WORLD '14

Doha, December