ITU Corporate Annual Report 2008

International Telecommunication Union

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Message from ITU Secretary-General, Dr Hamadoun I. Touré

The year 2008 proved immensely challenging for us all. The financial crisis that erupted in September 2008 triggered a global economic slowdown that continues to test firms', governments' and regulators' abilities to respond. In early 2008, few could have anticipated economic turmoil on this scale; in early 2009, few can predict the outcome. Massive uncertainty dominates the economic outlook - trading conditions are highly volatile and consumer demand highly uncertain, while firms and policy-makers alike struggle as to how to respond to markets that change and are transformed almost on a daily basis.

Now, more than ever, ITU must remain vigilant to ensure that it remains responsive to the needs of its membership. When I was elected Secretary-General, I drew attention to the long-term forces of convergence and technological change that are reshaping and transforming the telecommunication and ICT industries. These challenges remain; however, the impact of the crisis is posing more immediate and pressing issues to our Sector Members and Member States in how best to navigate the next few months.

As an intergovernmental organization, ITU is not removed from the difficulties and hardship being experienced by its membership – far from it, as the only UN specialized agency where private sector firms enjoy the full status and benefits of active membership, ITU shares the concerns of its Members very closely. ITU's work programme has been reviewed to give it new direction and to ensure that the work of ITU remains relevant to the needs of its Members in the current circumstances.

For I am confident that Information and Communication Technologies (ICTs) not only offer a key means of alleviating this crisis and economic slowdown; they also offer answers. ICTs are not only a key sector in their own right, they also drive productivity and efficiency gains in other sectors. Investments in ICT create technological spillovers for other sectors of the economy, making the ICT sector strategically important. Large-scale investments in broadband and information infrastructure are one way of generating jobs and fuelling economic recovery. Strong partnerships between government and the private sector are another, and must be accompanied by constant dialogue and capacity-building, to ensure that stimulus funds are put to best use.

The year 2009 offers us opportunities to respond to the current situation for better or for worse. I am determined to ensure that the World Telecommunication Policy Forum 2009, being held in Lisbon, the Portuguese Republic, in April 2009, and TELECOM World 2009, to be held in Geneva, Switzerland, in October 2009, will refocus the policy debate and help our Membership respond in these difficult times. The ICT industry has been in a similar situation before – the bursting of the dot.com bubble of 2001/2002 tested the ICT industry to its limits, but it emerged stronger and more resilient. I firmly believe that the industry can do it again – for an industry based on innovation and technological change, the present crisis offers both challenges to the established order, and opportunities for new technologies to enter the market and thrive.

I shall continue to work to ensure that ITU's work remains relevant to Members' needs in today's uncertain markets, so that ITU can continue to promote widespread, secure and affordable access to communications for all, despite the economic turmoil. We look forward from a difficult 2008 to a promising 2009, as the year when the global ICT industry turned the corner and helped fuel economic recovery.

Dr Hamadoun I. Touré
Secretary-General
of the International Telecommunication Union (ITU)

Foreword by the Chairman of ITU Council 2008, Dr Plamen Vatchkov

I was honoured to accept the Secretary-General's invitation to chair the Sixty-First Session of ITU Council in November 2008. As Chair of the State Agency for Information Technology and Communications of Bulgaria, I understand the issues posed by the transformation of the ICT sector and, indeed, face many of the same challenges that ITU Members face.

The ITU Council seeks to consider broader issues in telecommunication policy, so ITU's activities can adapt to the needs of Members and keep pace with current developments. The 2008 Session of ITU Council was noteworthy for ITU's new initiatives in response to climate change and the financial crisis, and for the important reforms which ITU is undertaking. The 2008 Session also enjoyed an unprecedented level of high-level representation. ITU Council was honoured by the presence of several Heads of State, who shared with us their perspective on the pressing priorities of how to combat climate change and promote cybersecurity. Furthermore, during the High-Level Segment, ITU launched a new "Child Online Protection" initiative to safeguard the most vulnerable users of the Internet, namely our children.

In terms of performance, ITU-R is continuing to implement the outcomes of the World Radiocommunication Conference (WRC-07) and has begun preparations for WRC-11 in line with the results of the first meeting of CPM-11. Following decisions at RA-07, all ITU-R Study Group restructuring has been implemented. During 2008, the decision was taken for ITU-R Recommendations to be made available free of charge online on a trial basis, a milestone in ITU's bold initiative to reach a wider audience. ITU–T hosted a highly successful World Telecommunication Standardization Assembly (WTSA-08) in Johannesburg, South Africa, and streamlined its Study Group structure and procedures. ITU-D undertook a range of exciting new initiatives and projects, some in close collaboration with the other Sectors, and strengthened the role of the Regional Offices. Not one, but two regional TELECOM events were held in 2008, as ITU gears up to WORLD TELECOM 2009 in Geneva in October 2009. In addition, at its 2008 session the Council agreed to celebrate the 40th anniversary of the ITU TELECOM events in 2011 and take steps to enhance TELECOM events, as a whole. Further efficiency measures were implemented throughout 2008, resulting in real cost reductions in some areas.

As Chair of the 2008 Session of ITU Council, I am pleased to report that the outcomes and resolutions of Council 2008 exceeded the expectations of most participants. ITU Council 2008 succeeded in establishing a sound foundation on which to build over the coming year. For the first time, the Council tried out new paperless working methods and even endorsed the creation of an ITU Visitors Centre. Therefore, I look forward to hearing more about ITU's achievements over the next year, as it faces the future with renewed confidence.

Dr Plamen Vatchkov
Chairman of the 2008 Session of ITU Council
Chairman of the State Agency for Information Technology and Communications of Bulgaria

Overview of 2008

ITU's mission is to promote the growth and development of telecommunications and information networks around the world, so people everywhere can participate in the global information society. As the financial crisis deepened and the global economic slowdown came to dominate media headlines over the course of 2008, the ability of telecom operators and ICT companies to invest in their expansion and the next generation of global communication networks looked increasingly uncertain. And yet, never has this mission been more important than now.

ICTs can play a vital role in fuelling economic recovery and generating economic growth. Research has repeatedly shown that ICTs can create jobs and maintain incomes.[1] ICTs are not only a major sector in their own right – typically accounting for anywhere between 5-15% of national Gross Domestic Product[2] – they can also boost productivity and efficiency across other sectors of the economy. Investments in ICT can create significant technological spillovers benefiting other sectors and industries. Large-scale investments in information infrastructure are a key means of generating new jobs and mobilizing broad-based economic recovery.

Now more than ever, ITU continues its vital work mobilizing resources and promoting the development of the global ICT industry to ensure that global communication networks can meet the new and growing demands made of them. ITU is the international forum for the management and allocation of global radio spectrum resources and the development of modern communication standards. ITU's standards and work in radiocommunications underpin the entire global communications framework, as well as other major policy priorities, such as emergency communications and mitigating the effects of climate change. Another of the ITU's

Box 1: Strengthening ITU's Capacity

Strengthening of reforms: In parallel with the broader reform initiative being implemented across the UN, ITU pursued and strengthened its programme of reforms designed to modernize its working practices and procedures and to help ensure that ITU's work remains relevant.

Extending outreach programme: ITU engaged directly with traditional and new partners, to ensure that its work is geared to the needs of a broader stakeholder base, including academia, commercial operators, technology vendors and software developers, as well as governments, policy-makers and regulators.

Free publication of standards online: To make its work more accessible, ITU-R standards and Recommendations are now available free online, in addition to ITU-T's Recommendations which are already available online. The standards negotiation and approval process has been streamlined and simplified. Standards approval has been cut by 80% and is down to an average of 9 weeks and as little as 5 weeks. In 2008, the number of ITU-T Recommendations approved reached its highest peak since 2001. ITU-T approved over 60 NGN Recommendations under its NGN-Global Standards Initiative alone.

ITU's leading role as a Policy Advocate: ITU continued to play a strong role in various international policy debates and regulatory affairs. It also published various cutting-edge analysis and research, with a range of reports, regulatory workshops, training programmes and toolkits on hot topics.

Building capacity: ITU continues to strengthen and reinforce the capacity of its on-the-ground network of regional and area offices to carry out local work programmes.

top priorities is to assist in bridging the digital divide – many of ITU's activities promote an enabling environment through regulatory reforms and policy harmonization.

2008 saw good progress towards achieving ITU's seven strategic goals. ITU continued to collaborate with a number of non-governmental, international and regional organizations, and private-sector entities, and succeeded in boosting its main areas of concern to the top of the global agenda. ITU is engaged in various initiatives to ensure that its standards, policy analysis and technical assistance programmes remain relevant to the needs of ITU's members.

The year 2008 was eventful and productive. TELECOM AFRICA 2008 was generously hosted by the Egyptian Government and inaugurated in Cairo, Egypt, on 11 May 2008 by President Hosni Mubarak. It featured a fully sold-out industry exhibition with 191 exhibitors from 37 countries, as well as a high-profile Forum, Telecommunication Development Symposium and Youth Forum. TELECOM AFRICA 2008 concluded with World Telecommunication and Information Society Day 2008, held on 15 May 2008 under the theme, *"Connecting Persons with Disabilities: ICT opportunities for all"*.[3]

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On this day, the Secretary-General presented *ITU World Telecommunication and Information Society Awards 2008* to three laureates honored for their work helping to bring ICTs to disabled communities. The Awards were presented to: H.E. Mrs. Suzanne Mubarak, the First Lady of Egypt, for her work promoting policies to empower young people and to support access to ICT services for disabled people; Ms. Andrea Saks, for her extensive involvement and work with ITU-T and ITU-D promoting the inclusion of accessibility standards; and the Digital Accessible Information System - DAISY Consortium – for the DAISY Standard, which enables people with reading difficulties to navigate audio-format text and enjoy equal access to information.

In August 2008, the US Academy of Television Arts & Sciences awarded the prestigious Primetime Emmy Award for Excellence to ITU, the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC), for work extending an advanced video coding standard for the delivery of high-definition images (ITU-T Recommendation H.264 | ISO/IEC Standard 14496-10 on Advanced Video Coding or AVC). ITU-T H.264 | MPEG-4 AVC is now being deployed in millions of products and services to deliver high-definition video images over broadcast television, cable TV and a variety of direct-broadcast satellite-based TV services as well as Blu-Ray disc formats, mobile phones and Internet Protocol television (IPTV).

ITU Telecom Asia 2008 was generously hosted by the Government of Thailand and held on 2-5 September 2008 in Bangkok, Thailand, on the theme of "New Generation, New Values". The event was inaugurated by Her Royal Highness, Princess Maha Chakri Sirindhorn of Thailand. At the Forum, high-level government officials, industry executives and key stakeholders debated important local innovations, as well as issues facing the Asia-Pacific region. The event underlined the dynamic advances being made in telecommunications throughout Asia-Pacific, whilst considering regulatory challenges. At the event, all

ITU TELECOM
ASIA2008
Bangkok
2-5 September

participants of the Youth Forum received a laptop, courtesy of the One Laptop Per Child programme.

The 2008 Session of ITU Council in November was honored by attendance from two Heads of State, the President of Burkina Faso, Mr Blaise Compaoré, and the President of Rwanda, Mr. Paul Kagame. In keeping with the initiative of the ITU Secretary-General, it featured a High-Level Segment (HLS) attended by a total of 21 Ministers, Ambassadors and heads of UN agencies and regulatory organizations, who exchanged their views and experiences on issues relating to cybersecurity and climate change. The Council endorsed the Union's operational plans for the years ahead and took important decisions, including the creation of a "Dedicated Group" on international Internet-related public policy issues.

"In Rwanda, as the national fibre backbone extends to all corners of the country – scheduled for completion in December 2009 – we have incorporated security measures at each node. We are also establishing a cybersecurity centre to monitor contraventions and take corrective measures. The insights from this important ITU Council Meeting will make valuable contributions to these efforts. We applaud ITU's leadership in extending the power of technology to improve the livelihoods of communities worldwide".

His Excellency Mr. Paul Kagame, President of Rwanda, speaking during ITU Council 2008, 12 November 2008.


AUSTRALIE


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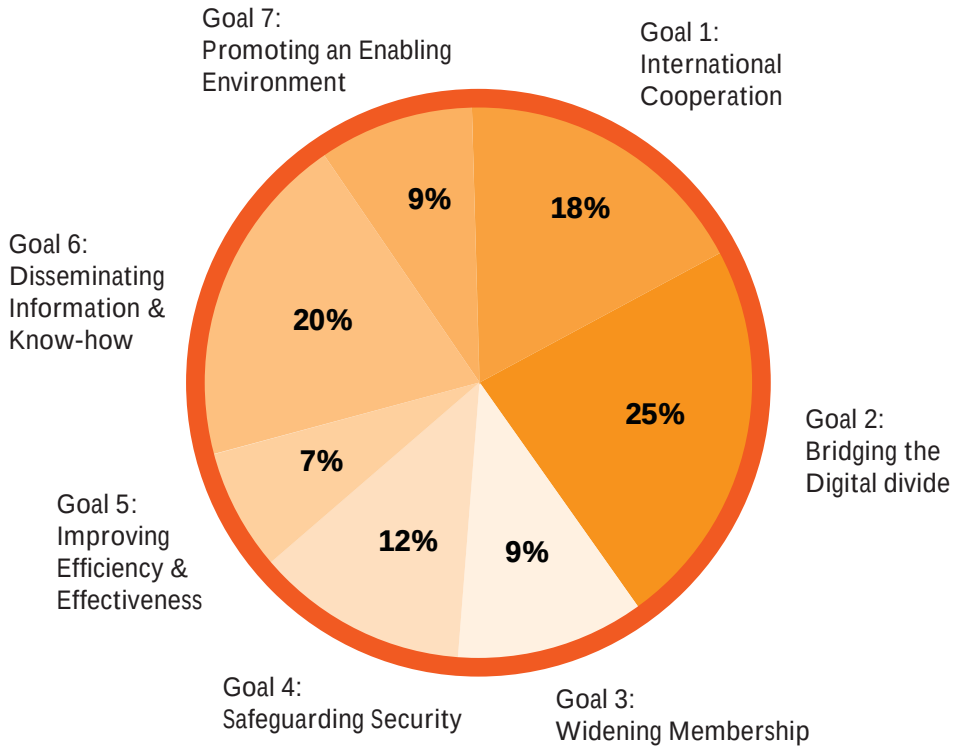
2008 in Key Financial Figures

- ITU's income amounted to CHF 169.1 million in 2008. Contributions accounted for 81% of income - 69% from Member States, 11% from Sector members and 1% from Associates.
- 17% of ITU's income was generated from ITU's products and services, including sales of ITU's publications and satellite network filings activities.
- Voluntary contributions amounted to some CHF 1 million.
- Project contributions amounted to some CHF 15.49 million.
- Member States' contributory units rose from 341.5 to 348 on 1 January 2009, with the Rep. of Korea, the Sultanates of Bahrain and Oman and the State of Qatar generously increasing their contributory units.
- ITU's expenditure fell to CHF 146.4 million in 2008, 9% below budget.
- ITU reduced its liquid assets by 4.2% in 2008 to CHF 119.5 million at 31 December 2008, but continues to maintain a high liquid asset share of total assets.
- ITU Telecom Africa 2008 and ITU Telecom Asia 2008 generated CHF 11.5 million in revenue, equivalent to a break-even result.

Figure 1: Breakdown of 2008 Expenditure by Strategic Goal



Source: ITU.

ITU Orientations

Strategic and Goals

4.1

Strategic Goal One:

International Cooperation

ITU is the United Nations specialized agency for telecommunications and ICTs and is hence the focal point within the UN system for initiatives and activities in relation to ICTs. Over 2008, ITU continued to take a leading role in international cooperation to promote the growth of a safe and secure global information society. ITU is the international forum for the management and allocation of radio-frequency spectrum and the development of modern communication standards, as well as a range of other activities relating to ICT development. In this respect, one of the major events during 2008 was the World Telecommunication Standardization Assembly (WTSA-08) in Johannesburg, South Africa, in October 2008, the first Assembly ever to be held in Africa.

Strategic Goal One

Maintaining and extending international cooperation among all Member States and with relevant regional organizations for the improvement and rational use of information and communication infrastructure of all kinds, taking the appropriate leading role in United Nations systems initiatives on ICTs, as called for by the relevant WSIS outcomes.

During 2008, ITU participated actively in the varied activities of the United Nations system, including the UN Chief Executive Board, High-Level Committee on Programmes, High-Level Committee on Management and other UN groups. ITU is an active player in the UN-led work programme on climate change, contributing to the associated working groups and populating the Climate Change Inventory. The ITU Secretary-General participated in the General Assembly meeting convened to discuss how to ma ke further progress towards achieving the Millennium Development Goals.

ITU also acted as the Chair for the UN Group on the Information Society (UNGIS) in 2008, which proved to be a critical year for WSIS implementation, when UNGIS members and participants indicated that it was time to reform the process. The WSIS cluster of events has now been given a sharper focus on implementation, with a more streamlined and interactive WSIS Forum to ensure follow-up of the WSIS goals, with a view to achieving the WSIS targets by 2015. ITU also took the decision to establish a permanent presence in New York in order to enhance ITU participation in all relevant UN meetings and to ensure that the importance of ICTs is fully recognized in the international development agenda. ●

World Telecom
Standardization A

The *World Telecommunication Standardization Assembly*[4] took place in Johannesburg, Republic of South Africa, on 21-30 October 2008 to review the policy, working methods and procedures for ITU-T. Preparations for WTSA-08 took place throughout the year, notably at regional preparatory meetings associated with the Regional Development Forums on Bridging the Standardization Gap. The event enjoyed the highest level of attendance ever, with 768 delegates including 13 Ministers and Vice-Ministers from a record 99 countries. WTSA-08 set out a roadmap for the future development of communication standards.

WTSA-08 adopted 21 new Resolutions and revised 27 Resolutions, while adopting two new Recommendations and revised seven Recommendations. ITU-T Study Groups were restructured to streamline ongoing work programmes - the number of study groups was consolidated from thirteen

"WTSA-08 saw the highest level of participation ever, a sure sign of the growing interest in the work of ITU-T. The decisions of the Assembly have strengthened ITU-T's remit in a number of key areas, including Internet resources, climate change, ending the digital divide, accessibility to ICTs for persons with disabilities, conformance and interoperability testing, and encouraging academic participation in ITU's work".

Malcolm Johnson, Director of the ITU Telecommunication Standardization Bureau

munication
Assembly (WTSA-08)

to ten, and there will be more co-located meetings. Resolutions were adopted that will direct future work on deployment of IPv6, ICTs and climate change, accessibility, conformance and interoperability testing, and establish an ITU mark to help buyers of equipment make more informed choices.

WTSA-08 was also preceded by a Global Standards Symposium,[5] designed to build consensus among government ministers, senior executives from the private sector and leading officials from standardization bodies. At the Symposium, industry leaders acknowledged the wide range of standards in force. Delegates agreed that keeping track of all these standards can sometimes prove costly and better coordination is needed at the international level between industry and Standards Development Organizations to ensure that standardization needs are met quickly and efficiently. ●

Malcolm Johnson
Director of the ITU Telecommunication Standardization Bureau

Acknowl of the work

"WTSA-08 was a landmark event for global ICT development and particularly notable for the great leaps made towards further taking into account the needs of developing countries. From our perspective, the Resolution relating to conformance and interoperability testing was of particular interest. Ghana, along with other African countries, feels that improving the interoperability of ICT equipment will reduce some of the problems faced by developing nations in the selection of equipment and the roll-out of new networks. The WTSA-08 has undoubtedly added momentum to the requirements for digital inclusion in the promotion of the Information Society".

His Excellency Haruna Iddrisu, Minister of Communications, Government of the Republic of Ghana.

"Today's ICT market is very demanding. Consumers require an ever-wider range of services and innovation. As a telecommunications operator, we must be able to pick and choose between interoperable products to remain competitive, roll out new services and keep our customers happy. ITU-T Recommendations remain the key point of reference for providing interoperability on a global scale. The ITU has a well-earned reputation for reliability and has adapted its working methods to meet the fast-paced nature of today's market. We are always with ITU and are pleased to assist in the development of reliable ITU-T Recommendations".

Takashi Hanazawa, Senior Vice President, Senior Executive Director for the Research and Development Planning Department, NTT.

edgements at WTSA-08

Bridging th Standardiz

Bridging the standardization gap to boost the participation of developing countries and assist them in implementing communication standards continues to be a top priority for ITU. A series of *Regional Development Forums on Bridging the Standardization Gap for Developing Countries*[6] was held during 2008 as a cross-ITU effort, kindly hosted by Brazil (in Brasilia), Ghana (in Accra), Syria (in Damascus), Uzbekistan (in Tashkent) and Viet Nam (in Hanoi). These Forums aimed to inform regulators, telecom operators and Service Providers of the latest developments and challenges the industry is facing in order to draw up strategies for greater participation in ITU activities. The Forums highlighted ways to enhance cooperation and participation in ITU's standardization work and standards implementation in the regions.

e
zation Gap

Training on Bridging the Standardization Gap was organized by ITU and the Ministry of Internal Affairs and Communications of Japan from 15-19 December 2008. It aimed to help managers of government organizations, national standardization organizations and telecom operators from developing countries in the Asia-Pacific and Arab regions, in understanding and applying standards. The voluntary fund[7] to help bridge the standardization gap has now risen to over CHF 200,000 following generous contributions from the Korea Communications Commission, Nokia Siemens Networks, Microsoft and Cisco. ITU is also pursuing greater participation of developing countries in standardization through greater use of remote participation tools in nearly one hundred remote meetings.

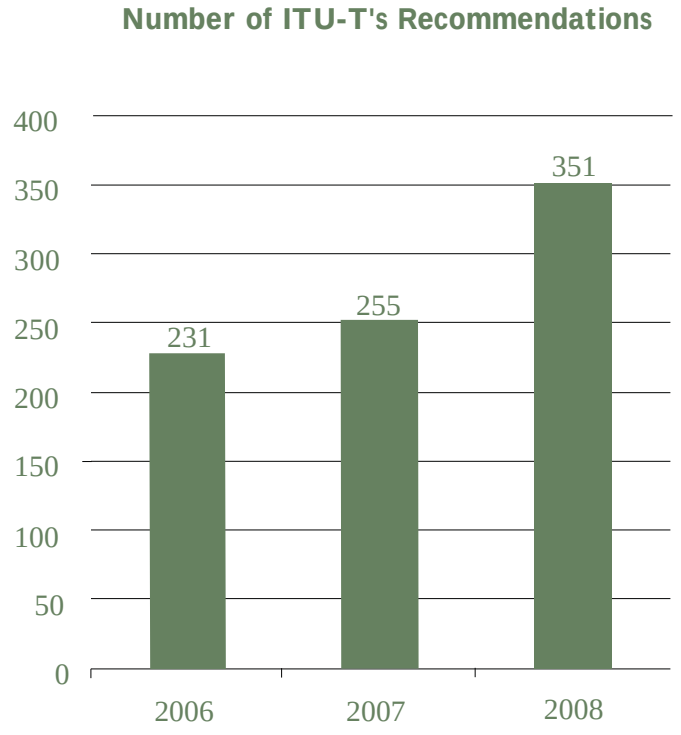
ITU's Pioneering Work in Standardization

During 2008, ITU-R and ITU-T published numerous standards to improve the functionality, interoperability, reliability and security of telecommunication equipment, as well as the efficient use of the radio frequency spectrum and satellite orbits. The number of standards published by ITU-T continues to rise year on year and reached its highest peak in 2008, since 2001 **(Figure 2)**.

Over the course of the year, ITU-T published several key standards that attracted industry attention. In February 2008, ITU-T Study Group 17 completed work on Rec. ITU-T G.711.1 to significantly improve voice quality in Voice over Internet Protocol (VoIP) calls by offering wideband quality, whilst retaining interoperability with G.711 narrowband legacy codec. This Recommendation will greatly enrich the audio quality and intelligibility of VoIP calls. In April 2008, ITU-T also published six new standards enabling a more secure ICT environment (see Strategic Goal 4.4).

Rec. ITU-T E.123 established a standardized language-independent way to identify emergency contacts in a mobile handset directory. Recommendation E.123 proposes to store emergency contact numbers in a standard form, "0nx". In June 2008, ITU-T's Study Group 12 gave their consent to key new standards for IPTV. Recs. ITU-T G.1080 and G.1081 define user requirements for Quality of Experience (QoE) and performance monitoring for IPTV services, respectively. ITU-T also developed a new Rec. ITU-T X.668 on tag-based applications and services in June 2008. Previously, there was no uniform system for reconciling different identification tag schemes (e.g. Radio-Frequency Identification or RFID and barcode tags). This standard unifies identification schemes used in multimedia mobile applications and permits the referencing of schemes using the object identifier (OID) system which ITU-T and ISO/IEC developed in the 1980s and which has been widely deployed, for example, in online transactions.

Figure 2: Number of ITU-T Recommendations, 2006 - 2008



Source: ITU.

Another Recommendation that received particular attention in 2008 was the G.hn standard on home networking establishing the technical basis for an in-home, high-speed network capable of delivering room-to-room High-Definition Television (HDTV) that will enable seamless communications between computers, HDTVs and telephones over existing wires and wireless. Rec. ITU-T G.9960 focuses on the physical layer, given data bit rates and quality of service for triple-play residential services, as well as business services, delivered over xDSL, PON, cable, wireless or other access technologies. This standard established the criteria for high-quality multimedia over power, coaxial and phone home network wiring to give up to twenty times the throughput of existing wireless technologies and three times the throughput of current wired technologies. It encompasses multiple existing-wire mediums for video distribution. The first equipment for home networking compliant with the G.hn standard is likely to be on the market in 2010.

Industry Recognition of ITU's pioneering work on G.hn standards

> ***"A single, unified technology for multimedia networks over power lines, coaxial cable, and phone lines has the potential to enable simple, easy-to-use networking devices in the home. We believe ITU's work is an important step towards eliminating fragmentation in the industry and achieving the vision of a networked home".***
>
> *Kurt Scherf, Analyst at the market analysis firm Parks Associates.*

> ***"The powerful world standards organization ITU has reached agreement on G.hn, a set of specifications that would encompass phone lines, power lines, and coaxial cable to provide HDTV room to room".***
>
> *US edition of the popular industry journal, PC World, 13 December 2008.*

ITU as the International Forum for Radiocommunication standardization and spectrum management

As the steward of the global framework for spectrum and satellite orbits, ITU continues to ensure the equitable and efficient use of radio-frequency spectrum. 2008 saw growth in demand for services including fixed, mobile, broadcasting, space research and emergency telecommunications. The number of the frequency registrations in 2008 was twice that anticipated. The Master International Frequency Register (MIFR) is a unique database of radio stations operating around the world, which is constantly updated. By the end of 2008, it contained over 1.8 million frequency assignments for terrestrial services and nearly 1.1 million assignments to space services. During 2008, BR published over 120,000 notices for stations of terrestrial services and 1,300 filings of satellite networks, covering some 0.5 million frequency assignments and 300 earth stations and radio-astronomy stations.

In line with the revised Radio Regulations, the BR improved the efficiency of its processing of space and terrestrial service notices, and introduced a new electronic filing system for terrestrial services, the WISFAT. BR has also improved the database and guidelines for emergency use frequencies. Different activities were undertaken for the review of the notification, coordination and registration procedures for space services, as called for by the WRC 07. BR is investigating new software tools, especially for the fixed-satellite service plan.

"A simple but effective illustration of ITU-R's work in standardization is the explosion in the number of mobile phones worldwide, which currently number some four billion, in use in practically every country in the world. ITU-R has been instrumental in providing the necessary spectrum and technical standards for the design and development of these devices and their related systems".

Valery Timofeev, Director of the ITU Radiocommunication Bureau

In 2008, ITU-R Study Groups approved Recommendations on radio standardization to improve operational performance and quality. During 2008, the new ITU-R Study Group structure was implemented in accordance with the decisions of RA-07. The *studies*[8] requested by WRC-07 have started and preparations are underway for WRC-11, which will deal with over thirty radiocommunication services and wireless applications.

During 2008, ITU-R initiated studies on the next generation of IMT and launched an *evaluation process*[9] for candidate radio technology interfaces for the terrestrial component of IMT-Advanced for mobile systems supporting low- to high-mobility applications and a wide range of data transmission rates, in response to user and service demands in multiple user environments. Since mobile broadband represents the future of the mobile industry, this work is of great importance to the mobile industry, and telecommunications more broadly. Broadband studies in ITU-R also included those via satellite with the objective of providing high-speed Internet services to developing countries. Digital broadcasting also represented a major area of ITU-R standardization in 2008, together with important frequency-sharing studies necessary for taking maximum advantage of the digital dividend arising from the analogue to digital switch-over. ITU also began studies on 3-D TV.

The *World Radiocommunication Seminar 2008 (WRS-08)*[10] took place in Geneva, Switzerland, on 8–12 December 2008 to examine international regulations on the use of the radio-frequency spectrum and satellite orbits. It was attended by nearly 500 participants, representing 121 countries and 13 organizations. Discussions centred on the application of the ITU Radio Regulations, which were published in a new edition in September 2008.

Valery Timofeev
Director of the ITU Radiocommunication Bureau

Climate change

For several decades, ITU has enjoyed excellent cooperation with the World Meteorological Organization (WMO) and other national and international meteorological organizations involved in monitoring climate change. More recently, ITU has worked closely with space agencies providing radio-frequency spectrum and satellite orbit resources for radio-based remote sensing that are the main tools for global monitoring. One example of ITU's cooperation is the ITU/WMO Handbook "*Use of Radio Spectrum for Meteorology: Weather, Water and Climate Monitoring and Prediction*"[11] (2008 edition), which provides comprehensive technical and operational information on observation applications and systems for the meteorological and radiocommunication communities, as well as for the general public.

ITU-R approves treaties (e.g. the Radio Regulations) and voluntary standards that are used for the development and operation of different radio applications for climate monitoring. In recognition of the vital importance of environmental monitoring, WRC-07 allocated additional spectrum for systems that are used for monitoring climate change. In 2008, the Radiocommunication Study Groups initiated additional studies and developed Recommendations on the further development of remote sensing applications that should improve the precision of climate monitoring and prediction of climate change.

Despite advances in the energy efficiency of ICT equipment, the ICT sector currently accounts for 2-3% of total global carbon emissions (without taking into account radiocommunications[12]), which is expected to double by 2020, due to the growing take-up of ICTs around the world. While ICTs contribute to Greenhouse gas emissions, they can be a critical part of the solution as an enabling technology to reduce emissions in other sectors. ICTs could facilitate a global reduction of up to 15% of total carbon emissions by 2020 (equivalent to 7.8Gt of carbon dioxide emissions) through virtualization and telepresence, as well as the use of more

energy-efficient ICTs and ICT application for smart buildings, smart grids, etc.[13] Reducing the energy intensity of Internet technologies, such as server farms (e.g., by turning them off when they are not in use) and introducing virtualization technologies (e.g. replacing servers with virtual machines) could reduce electricity use and yield positive externalities for the planet.[14]

ITU initiated a bold new work programme in this area in 2008 with its strategy on *ICTs and climate change*[15]. ITU held two successful symposia on climate change, the first hosted by MIC Japan in Kyoto, Japan, in April 2008, and the second hosted by British Telecom in London, UK, in June 2008. This led TSAG to establish an ITU-T Focus Group on ICT & Climate Change which will produce four deliverables by spring 2009, including a methodology to measure the impact of ICTs on climate change.

In May 2008, ITU chaired the WSIS Facilitation Meeting of Action Line C7 on e-Environment jointly with UNEP. Nine speakers from UN agencies, the private sector and civil society addressed key topics including environmentally sustainable production, consumption and use and the safe disposal of ICT equipment. ITU

led the Dynamic Coalition on Internet and Climate Change which held its first meeting at IGF in India and comprises over twenty entities. In 2008, ITU published a scoping study for decision-makers on "*ICTs for e-environment*".[16] ITU also hosted two side-events dedicated to Climate Change and ICTs during the UN Framework Convention on Climate Change (UNFCCC) held in Poznán, Poland, in December 2008 and participated actively in the UN's Environmental Management Group to ensure that the vital role of ICTs is taken into account in global strategies to address climate change.

As agreed at WTSA-08, ITU will work to promote the use of energy-efficient devices and networks and the development of technical standards and Recommendations to limit and reduce the power requirements of ICT equipment and services and is collaborating with other entities and UN agencies in formulating future international efforts to mitigate climate change effectively.

ITU-R has already taken concrete steps to reduce greenhouse gas emissions by assisting ITU Member States in the implementation of the Geneva 2006 Digital Broadcasting Plan, resulting in a massive reduction in the power consumption of broadcasting transmitters, due to the use of digital modulation, instead of analogue (of up to a tenth of their previous emissions). The number of transmitters

can also be reduced by transmitting several TV and sound programmes in one frequency channel, instead of transmitting only one TV programme per channel. Taking into account the many tens of thousands of transmitters around the world (some with massive power), the resulting reduction in carbon dioxide emissions could prove very significant.

During 2008, ITU further strengthened its cooperation with international and national agencies and organizations involved in climate monitoring, including meteorological agencies such as EUMETSAT, ESA, JAXA, NOAA, NASA, RSA, the Group on Earth Observations (GEO) and Space Frequency Coordination Group (SFCG). ●

"BT has been proud to take a leading role in pushing the importance of ICTs and climate change on the global agenda. 2008 saw an accelerated level of interest in the topic in no small part due to ITU-T initiatives. We are very proud to have taken part in this work and will continue to take an active role in this area of truly global significance".

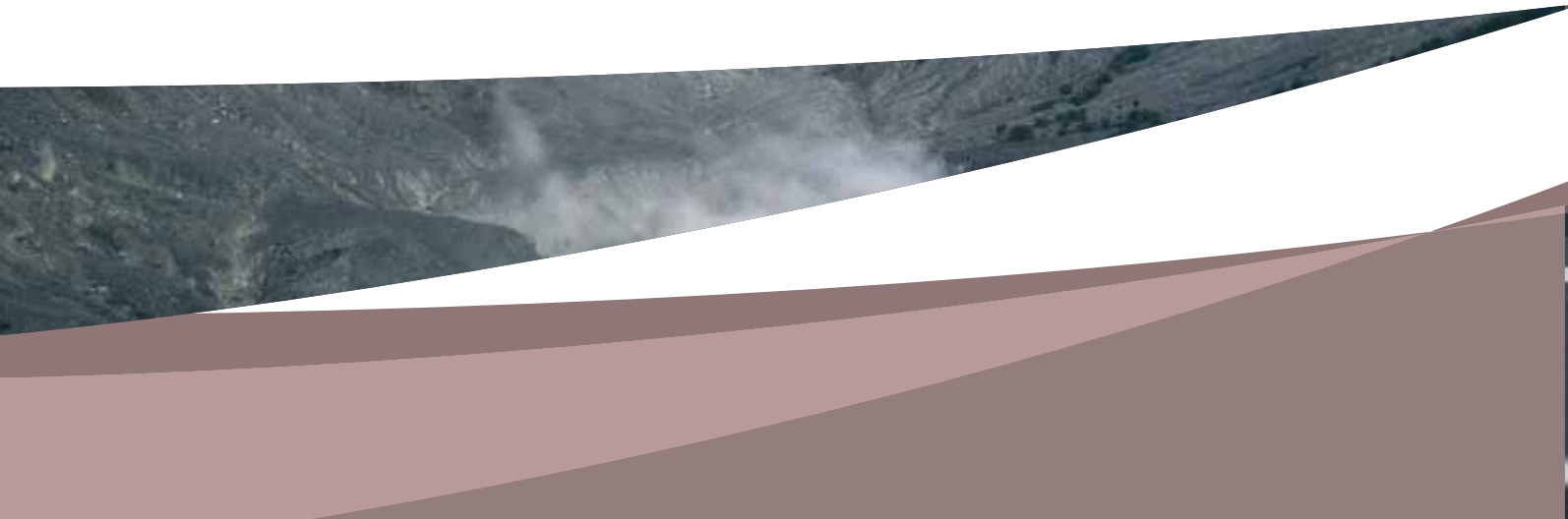
Keith Dickerson, Head of Global Standards at British Telecom (BT).

ITU as an International Forum for Emergency Telecommunications

Emergency telecommunications has been one of the key activities of ITU since its inception. For example, wireless communications succeeded in saving the lives of hundreds of sailors and officers onboard the battleship General-Admiral Apraksin at the end of 19th century. However, climate change combined with population growth and urbanization mean that natural disasters are causing an ever greater loss of life and devastation. When disasters strike, they leave a legacy of broken lives and destruction that may take years to recover from. Progress in development that may have taken decades to achieve can be wiped out in a matter of minutes. Nowhere is the impact of a natural disaster felt more strongly than in developing countries.

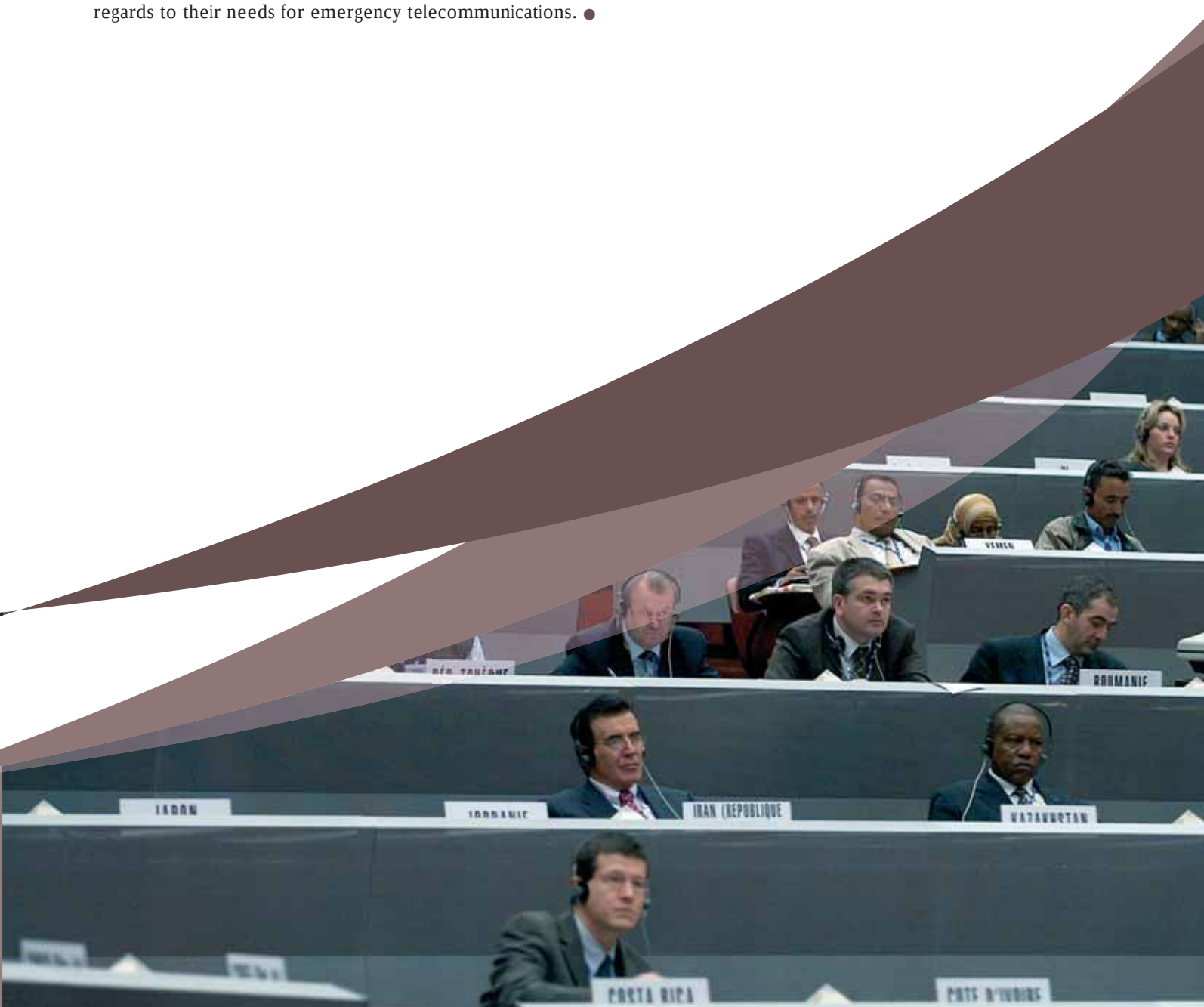
ICTs and communication infrastructure play a vital role in all phases of disaster response and recovery. ICTs are critical in the prevention, detection, response and relief efforts for natural disasters. Early warning systems and remote sensory systems are vital for effective disaster management and have helped authorities assess vulnerabilities and prepare. When disaster strikes, ICTs can help establish basic communication channels and coordinate rescue operations by governments and relief agencies.

Emergency telecommunications is a top priority for ITU, which is working to coordinate international initiatives and to integrate ICTs and climate change adaptation issues into disaster management plans and forecasting, prevention, detection, monitoring and relief efforts. ITU has established partnerships with many development partners, including local communities, governments, the private sector, civil society



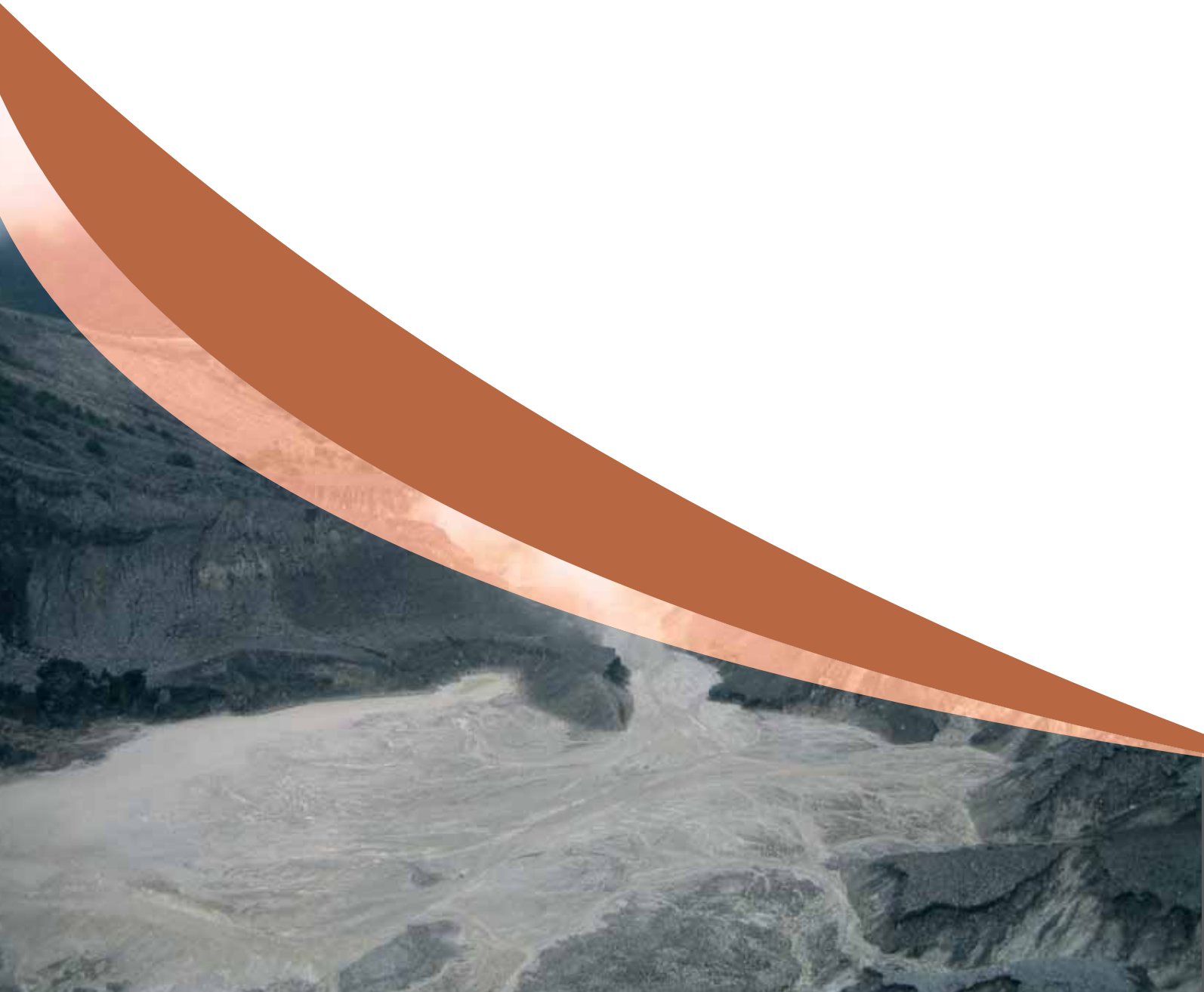
and other international organizations, to ensure vital access to ICTs after a disaster, especially by remote rural communities. Its work programme is designed to address multiple scenarios and promotes the use of a range of communications for maximum flexibility in response. ITU has developed an ITU Framework for Cooperation in Emergencies (IFCE)[17] for the deployment of ICT applications and services anywhere, anytime, in the immediate aftermath of a disaster.

ITU's work in this area encompasses the legal basis for emergency telecommunications (providing access to radio spectrum and information on the radio frequencies used), developing technical standards on alarm and signalling protocols for early warning and disaster relief, and assisting Member States with regards to their needs for emergency telecommunications. ●



Direct assistance in disaster relief to countries

During 2008, ITU responded to natural disasters and provided emergency telecommunications equipment to several Member States, including in response to severe floods in Zambia in March 2008, after the earthquake in China in May 2008, and after the devastating cyclone that hit Myanmar in May 2008, where ITU was among the first international agencies allowed to provide aid and assistance.[18] A pilot project is being implemented in Catanduanes in the Philippines to enhance early warning systems for cyclones. Relief workers must be able to communicate, wherever they are, through access to radio-receivers, mobile phones and the Internet.



Training Programmes & Preparation

ITU also provided training and guidance on how emergency telecommunications can be integrated into national disaster management plans for interested Member States. From 7-11 July 2008, a *workshop for the Central African region*[19] was held in Kigali, Rwanda, in which nearly all Central African countries participated. It focused on designing national emergency telecommunications plans to include technical, legal and regulatory aspects of emergency telecommunications. Another *training workshop*[20] was held on 17-18 July 2008 in Lusaka, Zambia, for countries from South-Eastern Africa, which focused on the integration of ICTs and Geographical Information Systems into national disaster management plans.

In 2008, ITU produced publications and standards on the use of Common Alerting Protocol (CAP), wired networks and terrestrial and satellite radiocommunication systems for early warning systems, the mitigation of negative effects of disasters, as well as the use of telecommunications for saving lives. ITU cooperates with other relevant UN agencies, such as the ICAO, IMO and the UN Office for Coordination of Humanitarian Affairs (UN OCHA).

4.2

Strategic Goal Two:

Bridging the Digital Divide

Telecommunications and ICTs continue to grow rapidly around the world. According to ITU statistics, in December 2008, the momentous milestone of 4 billion mobile subscriptions worldwide was achieved, with a billion new subscriptions added in just eighteen months. ITU has tracked and monitored the development of ICTs around the world for several decades now. At the end of 2008, according to ITU figures, there were an estimated 1.27 billion fixed lines and a projected 1.54 billion Internet users and nearly 800 million broadband Internet subscribers, of which 430 million were mobile broadband subscribers.

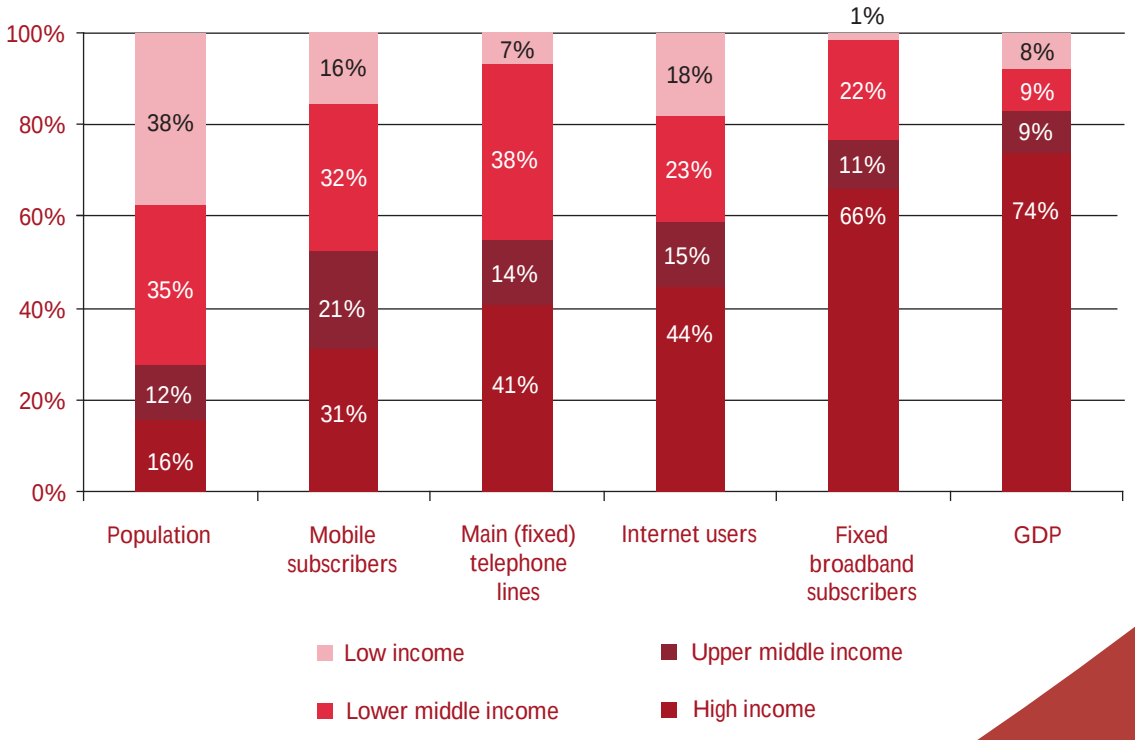
Strategic Goal Two

Assisting in bridging the national and international digital divides in ICTs, by facilitating interoperability, interconnection and global connectivity of networks and services, and by playing a leading role, within its mandate, in the multi-stakeholder process for the follow-up and implementation of the relevant WSIS goals and objectives.

However, the distribution of ICTs around the world remains highly uneven. Broadband Internet access is not only integral to a rich user experience, it is also vital for using many common web applications (including video streaming, YouTube, Skype and Voice over Internet Protocol). However, the vast majority of broadband subscribers (around two-thirds or 66%) were located in high-income countries **(Figure 3)**. The spread and uptake of new communication technologies remains unevenly distributed among countries, resulting in new forms of digital exclusion. ●

Figure 3: Tracking the digital divide

Global share in the distribution of population, major ICTs and Gross Domestic Product (GDP) by income classification of countries, 2006.



Source: ITU World Telecommunication Indicators Database.

Promoting ICT

At the WSIS in Tunis 2005, ITU was appointed as sole Facilitator of WSIS Action Line C2, "Information and Communication Infrastructure". ITU remains deeply concerned by persistent inequalities in ICT access and is committed to assist in bridging the digital divide and promoting easy and affordable access to ICTs for all. The growth of ICT networks is also threatened by the current global economic slowdown, which has made financing the roll-out of new networks more expensive and more difficult. ITU is working to mobilize the technical, financial and human resources needed to bridge the national and international digital divide in ICTs.

Throughout 2008, ITU undertook approximately fifty activities to facilitate the development of information and communication infrastructure worldwide. ITU has developed a number of *large-scale projects*[21] in conjunction with twenty-five regional initiatives facilitating development of ICT infrastructure in Africa, Arab, Asia-Pacific, Americas and the Commonwealth of Independent States (CIS) regions. In early 2008,

"Let this time of financial crisis be an opportunity for us to rethink existing economic and industrial models so as to move forward in a way that respects our environment and promotes cooperation. Now, more than ever, all players need to work together to spread connectivity and harness the potential of ICTs to boost economic growth around the world".

Sami Al Basheer Al Morshid, Director of the ITU Telecommunication Development Bureau

Infrastructure

BDT received US $4 million from the Craig and Susan McCaw Foundation and another US $2.4 million from the ITU ICT Development Fund (ICTDF) for its broadband wireless projects. Planning missions have been organized to a number of countries and implementation is underway. Two projects are being implemented under the global Multimedia Community Telecentres project for remote and rural areas in Malawi and Zambia under ICTDF funding.

ITU continues to work with many partners to promote the development of infrastructure. For example, ITU is working with the African Development Bank to meet the commitments made by African leaders at the Connect Africa Summit in Kigali, Rwanda, in October 2007. The two organizations are collaborating to promote the interconnection of all African capitals and major cities with ICT broadband infrastructure to strengthen connectivity with the rest of the world by 2012. ITU is also working with UNDP on the South-South Cooperation on the Strengthening of African Capacity for Cost-Effective Internet Access.

Sami Al Basheer Al Morshid
Director of the ITU Telecommunication Development Bureau

Applications, as well as Infrastructure

Access to ICT services encompasses far more than just access to infrastructure – it is also essential to provide services and applications that people can use. In 2008, ITU carried out several scoping studies *(e-Government for Developing Countries[22], ICTs for e-Environment – Guidelines for Developing Countries, with a Focus on Climate Change[23] and Implementing e-Health in Developing Countries – Guidance and Principles[24])* which aim to build awareness of the opportunities that ICT applications offer to developing countries, as well as addressing the challenges faced in implementing e-projects in these sectors.

ITU is elaborating guidelines and toolkits to assist decision-makers in assessing needs and establishing strategies for national master plans in e-health, e-government and e-environment. ITU also provides direct assistance to countries in need, using these tools to facilitate the deployment of infrastructure and services and to build capabilities in these vital areas, including through workshops and seminars. ITU carries out a range of work with potentially disadvantaged groups to ensure that, in keeping with the spirit and principles of the WSIS, these groups and included and can participate in online technologies to assist in bridging the digital divide on a range of fronts. ●

Persons with Disabilities

The principle of access by disabled persons to ICTs is one of the key obligations of the UN Convention on Rights of Persons with Disabilities. ITU has been active in standards for accessibility for persons with disabilities since 1991. Its work in this area increased significantly in 2008, in keeping with the theme chosen for World Telecommunication and Information Society Day 2008.

The ITU-T passed its first accessibility Resolution entitled "Telecommunication/Information and communication technology accessibility for persons with disabilities" at WTSA-08. To encourage universal design as specified by the UN Convention on the Rights of Persons with Disabilities, ITU-T has adopted an accessibility check-list to ensure that its international standards include accessibility features that will allow persons with disabilities to better use new technologies. ITU-T has also produced human factors specifications, telecommunication accessibility guidelines, and formed the Joint Coordination Activity on Accessibility and Human Factors, whose mandate is to assist and provide guidance to system designers, service providers and operators, to help them create all-inclusive communications. On 21 April 2008, ITU held a joint Forum with G3ict, entitled *"The Convention on the Rights of Persons with Disabilities: Challenges and Opportunities for ICT Standards".*[25] ITU also launched an Internet Governance Forum (IGF) Dynamic Coalition on Accessibility & Disability at the IGF in Hyderabad, India, in December 2008 where it agreed a Declaration on Internet Accessibility.

BDT held a regional workshop[26] to share experiences and best practices for ICT access by persons with disabilities in Zambia in July 2008. A number of ICT projects to provide ICT access and services to persons with disabilities are now being planned in Sri Lanka, Mali, Burkina Faso and Ethiopia to equip special schools, telecentres and villages with ICT facilities, including Braille printers and specialist devices. BDT carried out a *survey*[27] of Member States to collect statistics on ICT access by persons with disabilities. It also published a *report*[28] on policy models and best practices on ICT access for persons with disabilities, including an evaluation of cost and technological solutions.

Youth & Children

Applications to the *Youth Education Scheme (YES)*[29] increased from 59 in 2007 to 373 in 2008, demonstrating the strong interest in this initiative which assists young people from developing countries to complete their tertiary education. Through contributions from the Administrations of Portugal and Spain and Alcatel Lucent, 36 scholarships were awarded in 2008. Under the Youth Incentive Scheme, Alcatel Lucent has, every year since 2006, offered internships of 4-6 months to thirty graduates from developing countries or LDCs with a degree in computer science and related fields. An ICT Training centre was established in 2008 in Liberia to enable returnees to settle in Liberia after years as refugees in other countries. The project, undertaken by the ITU, UNHCR and a local NGO, provides ICT training and services to former refugees, supporting the government's efforts to resettle them and enable the returnees to contribute to the ongoing reconstruction of the Liberian economy as well as to find gainful employment and business ventures.

Indigenous Peoples

ITU's work on boosting the participation of *indigenous peoples*[30] in the online world is now in its fifth year. Since then, over 350 indigenous people have participated in three online career development courses. ITU has continued developing an ICT Portal for Indigenous People of the Americas Region and integrated this project with the Americas Regional Initiative for connectivity in rural areas, marginalized urban areas and isolated areas. These initiatives seek to extend ICTs, while respecting the traditional and cultural values of indigenous communities. ITU has also supported the Intercultural Telecenter in Brazil with ICT equipment to help the children of indigenous peoples to integrate into the Information Society through greater use and knowledge of ICTs. ●

4.3 Strategic Goal Three:

Widening Membership

ITU values its relationships with its Members and Associate organizations highly, as these relationships are the true strength of an institution founded on consensus and collaboration. ITU is one of the few, if not only, UN specialized agency to accord private sector companies full status as Sector Members, due to the historical origins of the telecommunication sector and ITU's close relationships with many telecom/ICT companies in the development of telecommunication standards. ITU's membership comprises Member States, represented by government administrations, and Sector and Associate Members, including operators, manufacturers, ICT companies, regulators and research and training institutes.

At the end of 2008, ITU enjoyed the support of 191 Member States, 580 Sector Members and 158 Associates. During 2008, ITU welcomed 59 new Sector Members and 27 Sector Member denunciations took place. There were 49 new Associates and 15 Associate denunciations **(Figure 4).** The distribution of sector members across Sectors is shown in **Figure 5.**

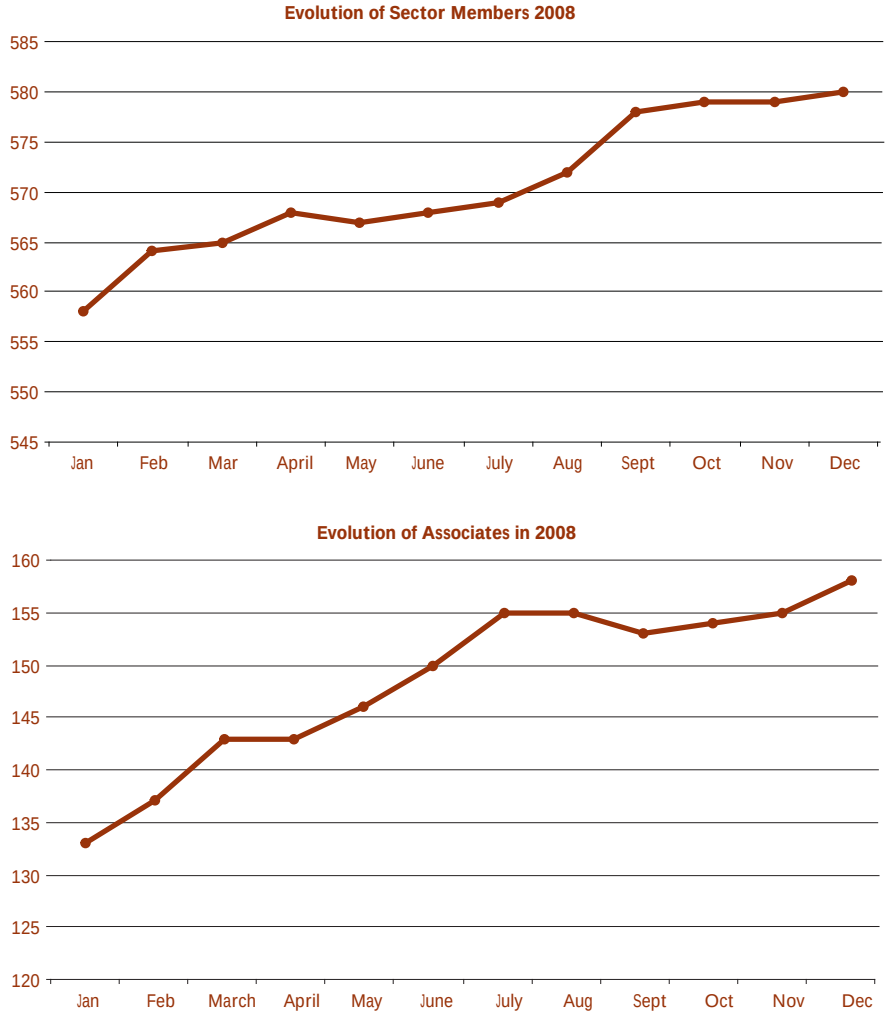
Strategic Goal Three

Widening the Union's membership, extending participation and facilitating cooperation of an increasing number of administrations and organizations, as well as new actors, such as relevant WSIS stakeholders.

"ITU attaches great importance to its Members. ITU has always sought to understand the concerns and needs of its Members through its various links and contacts with Members, including Assemblies, Conferences, meetings, its workshop programme and World and regional Telecom events. ITU realizes the important role of the various ICT industries and seeks to increase its industry members"

Mr Houlin Zhao, Deputy Secretary-General of ITU

Figure 4: Evolution of Sector Members and Associates, January – December 2008



Source: ITU.

Note: ITU Sector Members and Associates deleted for non-payment are excluded from these totals.

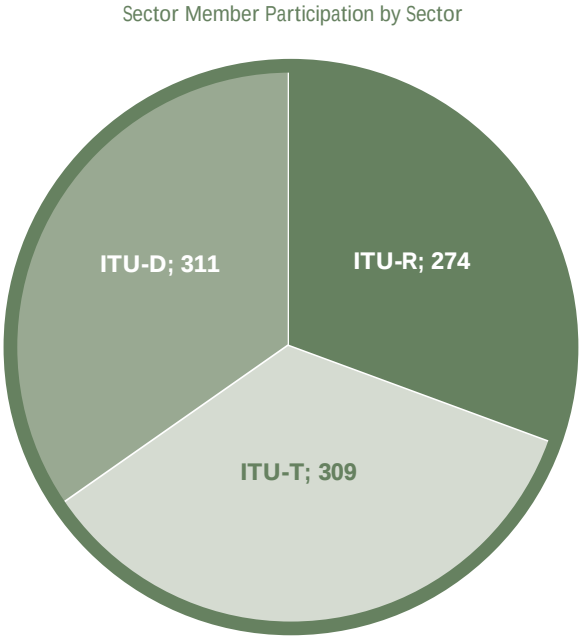
Houlin Zhao

Deputy Secretary-General of ITU

ITU recognizes that continual investment is needed to maintain its close relationships with its Members – now more than ever, when both governments and companies are being challenged in unprecedented ways in the difficult economic climate. In recognition of the need to engage with more Members in new and emerging fields of the telecommunication and ICT industries, in 2008, ITU expanded and reinforced the activities of its outreach programme and surveyed some members as to their needs and level of satisfaction with ITU's services.

ITU launched an outreach programme aimed at raising awareness of its work and forging links with new partners that has now been running for several years. ITU-T's highly successful Kaleidoscope programme continued its series of conferences in partnership with academic institutes – as a direct result of the Kaleidoscope programme, the UK Telecommunication Academy, Institute for Information Research and the University of Zimbabwe joined ITU. As a result of ITU-T's new activities in the field of intelligent transport systems, several new members joined ITU-T in 2008, such as Ygomi and Head Acoustics.

Figure 5: Sector Member Participation by Sector



Source: ITU.

Note: Members can participate in several Sectors, so the overall total is greater than the total number of individual Members.

ITU-D Survey

In order to better understand the needs of its Members, in 2008, ITU-D conducted a satisfaction survey of its Sector Members. This survey asked Sector Members to indicate their awareness of ITU-D's activities, the relevance of these activities to their immediate needs and to comment on their level of satisfaction. The results of this survey have enabled BDT to focus its attention and resources where they are most needed, according to the direct interests and needs of its members, and also to target potential new members more accurately. ●

The Global Industry Leaders Forum (GILF)

ITU-D also sought to enhance its contacts with the private sector and to address their concerns more directly by organizing the first ever Global Industry Leaders Forum in March 2008 preceding the Global Symposium for Regulators. The GILF provided a high-level platform for CEOs and industry leaders to put across their views and make proposals on key regulatory issues affecting the industry in a face-to-face exchange with regulators and policy-makers. The GILF 2008 focused on stimulating investment and business expansion, universal access issues and emergency telecommunications. The outcomes were presented to the GSR for the consideration of the regulators present. Based on the success of this first event, BDT will organize a second GILF in 2009. ●

4.4

Strategic Goal Four:

Safeguarding Networks

At the WSIS, ITU was appointed as sole Facilitator of Action Line C5, "Building confidence and security in the use of ICTs". The rapid growth of global communication networks has created alarming new opportunities for cybercriminals to launch online attacks from anywhere with Internet connectivity. Governments, firms and individuals are now more reliant than ever on critical information systems. Cybercrime is causing real and growing losses – in terms of lost revenue, denial-of-service attacks, theft or loss of sensitive data and network outages.

Meanwhile, cybercriminals are growing more daring in their ambitions, and their attacks are becoming more varied and sophisticated. The element of surprise alone is a great advantage, but cybercriminals also operate outside the law and do not have to respect jurisdictional boundaries or due legal procedure, unlike the authorities tasked with investigating and responding to cyber-attacks. In the absence of a clear multilateral framework, cybercriminals simply have to operate beyond borders to confound the authorities and defy the law.

With its diverse public-private sector membership (including 191 Member States and over 700 Sector Members and Associates), ITU is uniquely placed to serve as a global forum for the development of a framework for international cooperation in cybersecurity. Resolution 140 (Antalya 2006) instructs the ITU Secretary-General to take all necessary measures for ITU to fulfill its role from the WSIS to facilitate the work of multi-stakeholder teams of interested stakeholders, including governments, private sector, civil society, and international organizations.

ITU is fulfilling its role building confidence and security in the use of ICTs through numerous activities to promote a culture of cybersecurity, raise awareness of the issues involved, provide technical assistance to Member States and develop tools promoting end-user confidence. ITU continues its detailed technical work on a series of Recommendations and publications seeking to safeguard the efficiency, security, integrity and interoperability of networks. ITU remains deeply committed through its range of activities to helping ensure that communications over public telecommunication networks remain secure, reliable and user-friendly. ●

Strategic Goal Four

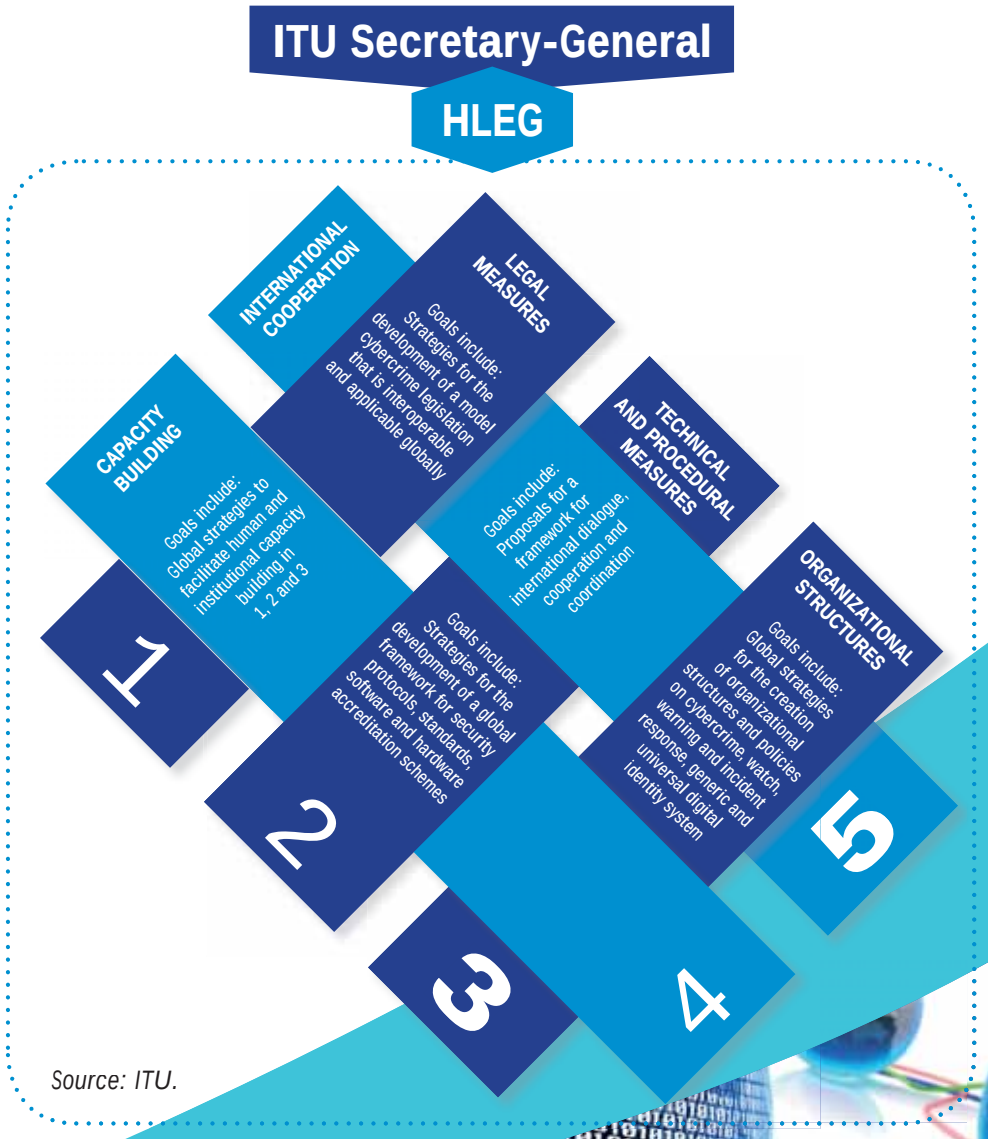
Developing tools, based on contributions from the membership, to promote end-user confidence, and to safeguard the efficiency, security, integrity and interoperability of networks.*

** Information and communication network efficiency and security cover threats including, inter alia, spam, cybercrime, viruses, worms and denial-of-service attacks.*

Global Cybersecurity Agenda (GCA)

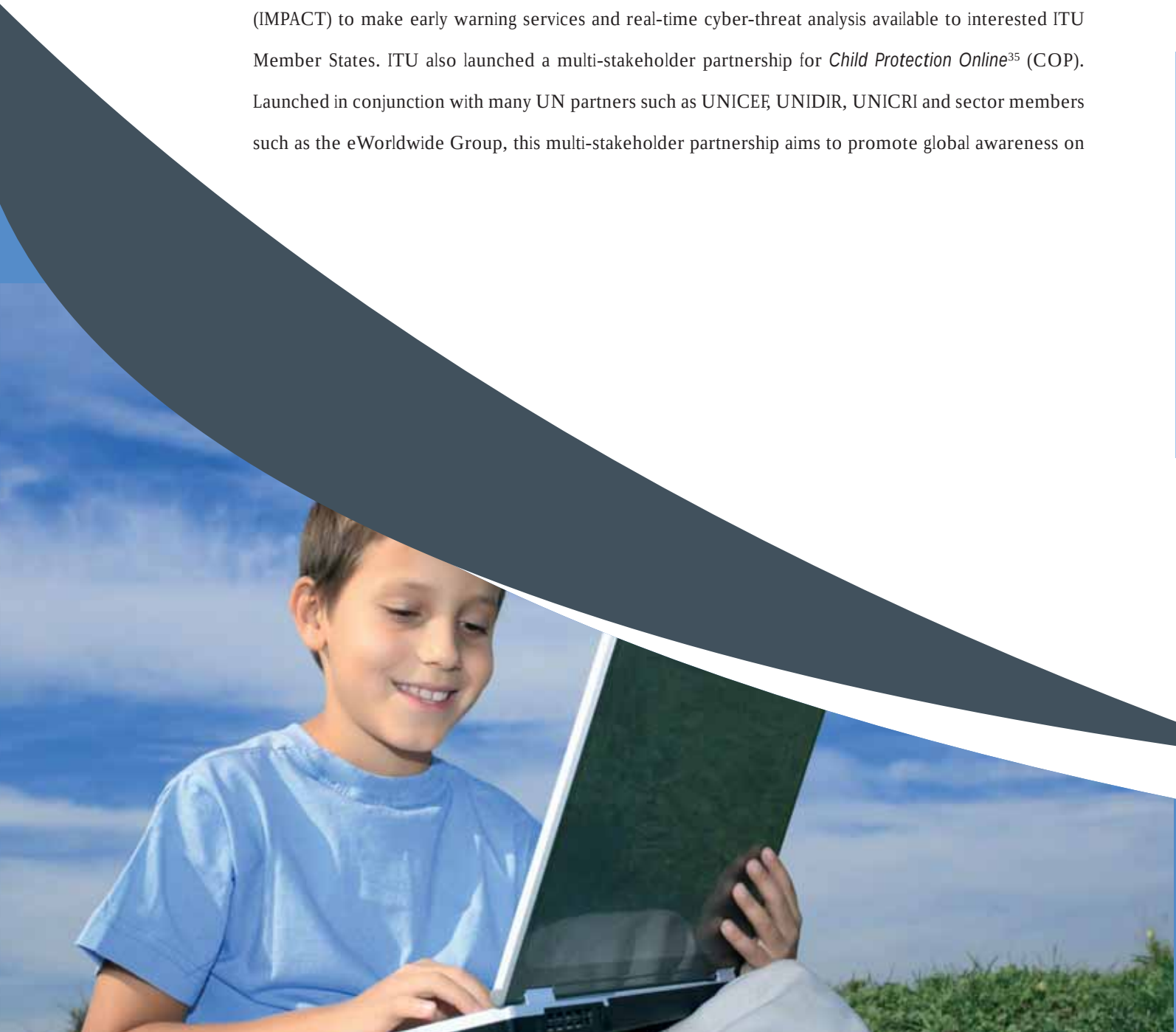
The *Global Cybersecurity Agenda (GCA)*[31] is a global framework for dialogue and cooperation to coordinate the international response to the growing challenges to cybersecurity. It seeks to build on existing work to develop an international framework for coordination, working with some of the leading experts in the field. It is built on five work areas of legal measures, technical and procedural measures, organizational structures, capacity building and international cooperation **(Figure 6).** The *High-Level Expert Group (HLEG)*[32] established in 2007 comprised over one hundred renowned experts from a broad range of backgrounds, sectors and geographical regions. These experts worked tirelessly throughout the first half of 2008 to formulate proposals to the ITU Secretary-General on strategies to curb cyber-threats, combat cybercrime and promote cybersecurity. Its outputs include the Report of the Chairman of the HLEG, *a set of strategic proposals*[33] and the *HLEG Global Strategic Report*,[34] which summarizes the work of the HLEG seeking to promote cybersecurity around the world.

Figure 6: ITU's Global Cybersecurity Agenda



During the year since its launch, the GCA has achieved some notable successes, including endorsement by the WSIS stakeholder community during the 2008 WSIS Action Line C5 Facilitation Meeting and at the Internet Governance Forum (IGF) as a credible multi-stakeholder global framework for international cooperation in addressing the global challenges in cybersecurity. The GCA initiative has helped ITU assume a leadership role in issues relating to cybersecurity and WSIS implementation.

2008 marked GCA's transition from strategy into concrete activities. During 2008, ITU signed a Memorandum of Understanding with the International Multilateral Partnership Against Cyber-Threats (IMPACT) to make early warning services and real-time cyber-threat analysis available to interested ITU Member States. ITU also launched a multi-stakeholder partnership for *Child Protection Online*[35] (COP). Launched in conjunction with many UN partners such as UNICEF, UNIDIR, UNICRI and sector members such as the eWorldwide Group, this multi-stakeholder partnership aims to promote global awareness on



the importance of child safety in the ICT world. While ICTs bring many benefits, the risks for children must be understood. COP will identify key risks to children in cyberspace, raise awareness of these risks, develop practical tools to assist governments, industry and educators and to share their experiences in working to protect children online. The GCA has helped forge a common understanding of threats to cybersecurity among countries at all stages of economic development.

"I reaffirm my support for the Global Cybersecurity Agenda launched in May 2007 by ITU, which offers an appropriate framework for international cooperation to organize a joint response to the threats to cybersecurity. Burkina Faso will continue to invest fully in promoting the ITU Global Cybersecurity Agenda. I, for my part, am personally committed to promoting this initiative with the support of other African countries and the international community, with the aim of building a more secure information society".

His Excellency Mr. Blaise Compaoré, President of Burkina Faso, speaking during Council, 12 November 2008

Standards for Cybersecurity

ITU continues its vital standardization work to directly address security vulnerabilities in networks and transmission capabilities. ITU's security standards cover a broad range of areas, including security architecture and frameworks; vulnerabilities, threats and risk management; countering spam; IP multimedia systems[36]; telebiometrics; information security management; identity management; and security for NGN, IPTV, home networks, ubiquitous sensor networks, mobiles[37] and secure application services. The number of standards published by ITU-T on security has risen steadily, from under ten in 2006 to over 30 in 2008 **(Figure 7).**

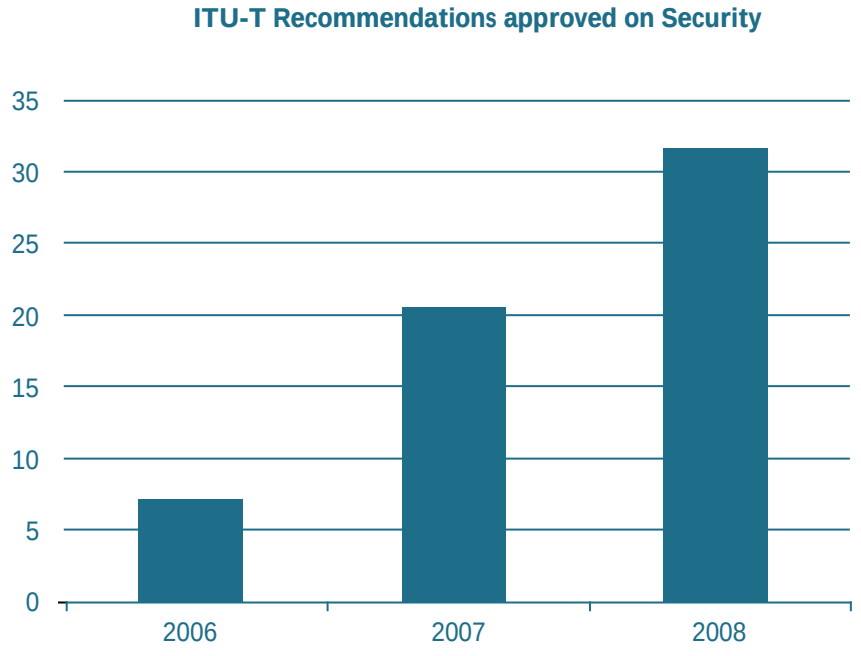
ITU-T Study Group 17 remains the lead ITU-T Study Group for security, but its work has been sharply refocused by the decision at the WTSA-08 to change its name simply to "Security". At WTSA, ITU members also asked for increased emphasis on security in a number of Resolutions, particularly a revised Resolution 50 on Cybersecurity and Resolution 52 on Spam. ITU's work on incident handling and traceback has made good progress. Traceback enables the determination of the origin of electronic communications and ITU's work will mitigate denial of service (DoS) attacks and short message service (SMS) spam.

During 2008, ITU-T published six new standards promoting a more secure ICT environment. ITU-T Rec. X.1205 establishes consensus definitions of cybersecurity and a classification of security threats, essential for establishing firm foundations for securing networks. ITU-T Rec. X.1206 seeks to make multiple patches/updates from different software vendors easier to manage, and provides a vendor-neutral framework for the dissemination of information and updates.

ITU-T Rec. X.1207 provides guidelines enabling users to identify spyware and vendors to avoid their products being mistaken as spyware. It also offers best practices for users on PC security (including use of anti-spyware, anti-virus, personal firewall, and security updates of software on client systems).

ITU-T Rec. X.1231 sets out requirements for combating spam. It outlines key ways to counter spam, and a hierarchical model to establish an efficient and effective anti-spam strategy. ITU-T Rec. X.1240 is aimed at end-users and focuses just on e-mail spam and mature spam-combating technologies. ITU-T Rec. X.1241 promotes greater cooperation between service providers in tackling spam, with a framework for communicating alerts on identified spam.

Figure 7: Number of ITU-T Recommendations approved relating to Security

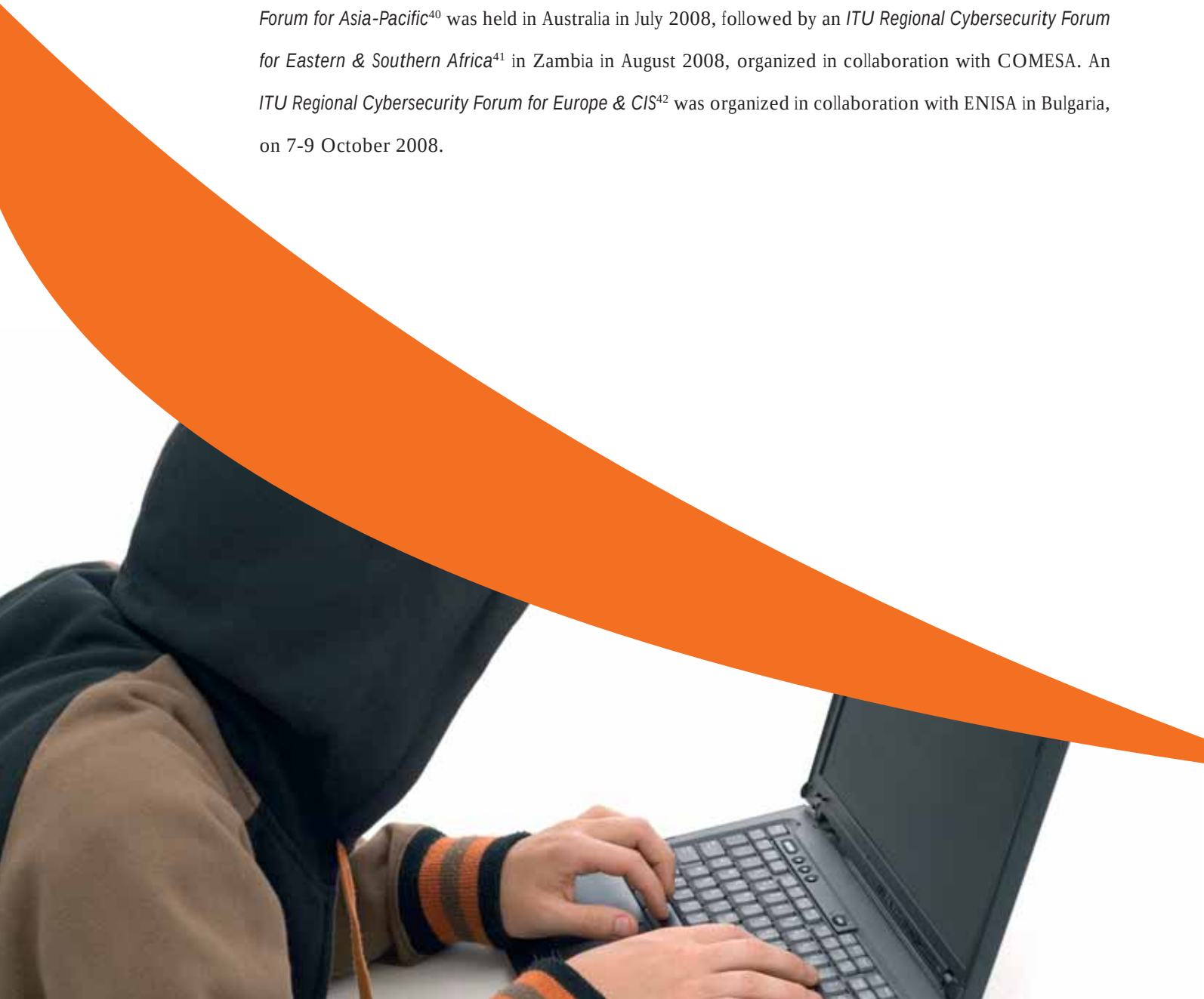


Source: ITU.

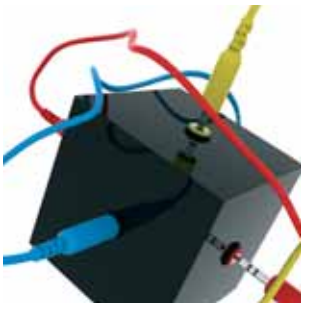
Cybersecurity for Developing Countries

Developing countries with limited human, institutional and financial resources face particular challenges in designing and developing cybersecurity and Critical Information Infrastructure Protection (CIIP)-related capabilities. ITU is engaged in numerous activities offering direct technical assistance to Member States for building capacity to promote cybersecurity.

A series of *capacity-building regional events*[38] were held in 2008 to identify the major challenges in promoting a culture of cybersecurity, share information and best practices. An *ITU Regional Workshop on Frameworks for Cybersecurity & CIIP*[39] was held in Qatar in February 2008. An *ITU Regional Cybersecurity Forum for Asia-Pacific*[40] was held in Australia in July 2008, followed by an *ITU Regional Cybersecurity Forum for Eastern & Southern Africa*[41] in Zambia in August 2008, organized in collaboration with COMESA. An *ITU Regional Cybersecurity Forum for Europe & CIS*[42] was organized in collaboration with ENISA in Bulgaria, on 7-9 October 2008.



BDT, together with various partners from the public and private sectors, has developed specific cybersecurity/CIIP tools to assist developing countries in awareness and self-assessment, capacity-building and expanding watch, warning and incident response capabilities. Examples of these tools include the *ITU National Cybersecurity/CIIP Self-Assessment Toolkit*[43] which assists governments in enhancing their cybersecurity and addressing CIIP requirements, the *Botnet Mitigation Toolkit*[44] covering technical means, as well as a toolkit for establishing effective organizational structures to promote cybersecurity, such as Computer Emergency Response Teams (CERTs/CSIRTs). Other ITU initiatives to assist countries include the development of anti-spam legislative surveys, evaluations of national cybercrime legislation and research into the economics of network security, malware and spam.



Improving Efficiency and Effectiveness

In line with its longstanding commitment to members, ITU is engaged in several key initiatives for improving the efficiency and effectiveness of ITU's operations, including far-reaching financial and budgetary reforms. ITU is also undertaking the reform of its internal systems, business processes and operational procedures. These reforms are being introduced across the Sectors and General Secretariat, as well as ITU's various support services, such as Administration & Finance, and the Information Services Department.

The Sectors and General Secretariat have undergone significant restructuring and streamlining for efficiency since the last Plenipotentiary Conference. For example, the work of TSB underwent restructuring with a reduction in the number of Study Groups at WTSA-08 to ensure greater clarity and efficiency in their work. Another example is TSB's commitment to provide appropriate electronic participation or observation facilities for meetings (e.g. by webcasts, audio conference, web conference/ document-sharing, videoconferencing, etc) through the revised Resolution 32, "Strengthening electronic working methods for the work of ITU-T".

The 2008 Session of ITU Council was the first paperless Council, with around 80% of delegates working electronically. ITU has introduced a system of providing USB keys with all relevant documentation to delegates, which was first carried out in full at WTSA-08. Laptops have also been made available for those delegates and participants requiring them. These initiatives worked so well that they were repeated for the World Radiocommunication Seminar in December 2008.

Strategic Goal Five

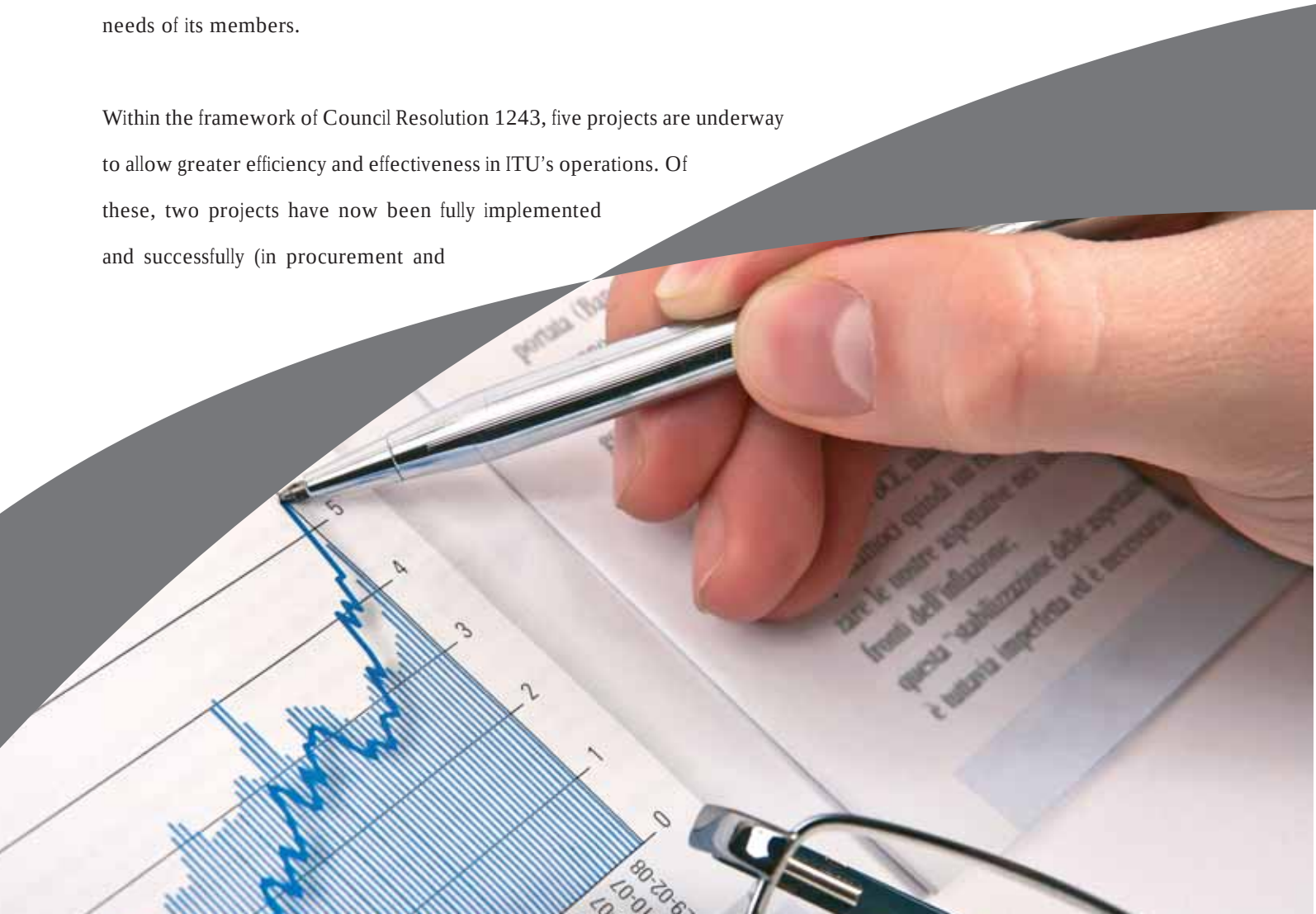
Continuing to improve the efficiency and effectiveness of ITU's structures and services and their relevance to the requirements of the membership and the wider global community.

Financial and Budgetary Reforms

In terms of the financial reforms currently ongoing, several major reform initiatives were carried out during 2008. The introduction of Service-Level Agreements was completed across ITU, as a key tool for planning and control. The recommendations of the External Auditor concerning mechanisms to improve the internal control processes in ITU were reviewed with a view to implementation. The availability of internal audit reports to the membership was reviewed and a mechanism for sharing internal audit reports with Member States was agreed.

The Financial Regulations have been revised and harmonized to make them clearer and more transparent (for example, notably Article 6 on the Budget of the Union). ITU's budget will be restructured to allow for the integration of Results-Based Budgeting (RBB) and cost accounting mechanisms, so that, for the first time, categories of expenditure can be directly linked with the outputs contained in the Strategic Plan of the Union. This should ensure that ITU's expenditure is targeted directly in line with the expectations and needs of its members.

Within the framework of Council Resolution 1243, five projects are underway to allow greater efficiency and effectiveness in ITU's operations. Of these, two projects have now been fully implemented and successfully (in procurement and



travel). The remaining three projects (human resources issues, the Key Performance Indicators or KPI project and the management project) were still underway in 2008.

The development of an ITU-wide Performance Measurement & Reporting (PMR) Framework is ongoing. Significant results have been achieved in the evaluation framework for assessing progress in implementing the seven overall Strategic Orientations and Goals of the Union. A framework has been developed, based on a methodology measuring a set of nine strategic, nine financial and nine operational KPIs. These KPIs will allow the benchmarking of ITU's activities against its strategic objectives. It also provides a common methodology for the Sectors and General Secretariat to use, when reporting to the Sector Advisory Groups and to the Council.

The ITU Council resolved on the date of 1 January 2010 for International Public Sector Accounting Standards (IPSAS) to be introduced across ITU and for the budget to be presented in its new format. The introduction of IPSAS includes reforms for inventory accounting, accounting for non-expendable equipment, and the recognition and reporting of accrued liabilities, revenues and expenditures. ITU will also implement a capital budget as part of its adoption of IPSAS.

Initiatives in Information Services

The Information Services (IS) Department continues to support ITU's activities and the interests of members through the provision of IT infrastructure (networks, communications and security), desktop services, applications (ERP solutions, Enterprise Content Management and websites) and new systems. The IS Department continues to implement reliable and cost-effective IT services, and is implementing Service Level Agreements (SLAs) that will specify the availability, quantities, serviceability, performance and operation of services.

To ensure the smooth management and control of IT resources, the IS Department has adopted the Control Objectives for Information and related Technology (COBIT) framework. COBIT provides managers, auditors and users with a set of measures, indicators, processes and best practices to ensure that IT empowers the organization and maximizes returns, while IT resources are used responsibly and risks managed appropriately.

To protect ITU against evolving threats from within the organization as well as external Internet-based threats, ITU's network infrastructure was redesigned and upgraded in early 2008. The Corporate Portal was also deployed during 2008 as an online information service for ITU staff, members and ITU Councilors. This portal provides secure access to financial and human resource information and data. New tools for on-demand collaboration, online meeting, web conferencing and video conferencing solutions were implemented.

The IS Department uses the very latest standard Internet technologies to facilitate and enhance communications between ITU staff, its field and regional offices, and its delegates across the range of ITU activities. The use of innovative new web-based technologies and working methods is being pioneered, as discussed under Strategic Goal 6. ●

4.6

Strategic Goal Six:

Disseminating Information and Know-how

ITU is a leading source of telecommunication/ICT research and statistics for over 200 territories around the world. ITU's publications remain key works of reference for the industry as a whole and ITU is the main source and repository of official telecommunication/ICT statistics. ITU's research seeks to anticipate and explore the key trends shaping the industry, so ITU can inform and engage with policy-makers and industry leaders on vital issues of interest.

ITU statistics are widely disseminated via electronic and printed publications, CD Rom and over its website. The ICT Eye is an online portal providing data and other ICT information including national tariff policies, regulatory information and links to the WSIS stocktaking database. Searching for data and statistics is one of the most popular activities on the ITU website, with over 760,000 visits recorded during 2008.

ITU also maintains an active workshop programme. ITU workshops help disseminate information and training with a strong network of contacts among the leading experts in the field, helping ensure that ITU's training remains at the forefront of trends in the industry. For example, ITU organizes regular seminars on regulatory issues and pricing in telecommunications, as well as radiocommunications to ensure that stakeholders are familiar with the detailed application of the Radio Regulations.

Strategic Goal Six

Disseminating information and know-how to provide the membership and the wider community, particularly developing countries, with capabilities to leverage the benefits of, inter alia, private-sector participation, competition, globalization, network security and efficiency and technological change in their ICT sector, and enhancing the capacity of ITU Member States, in particular developing countries, for innovation in ICTs.

In order to enhance accessibility and the dissemination of its Recommendations and standards, in 2008, for the first time, ITU decided to allow free online access to ITU-R Recommendations. This means that both ITU-T and ITU-R Recommendations are now accessible online, free of charge. This move will help ensure that ITU's work is more accessible by a broader public.

ITU's website is continually being revamped and enhanced to offer a broad range of online resources, publications, interactive portals and online databases. New collaborative working methods have been introduced, including wikis, blogs, webcasts, RSS feeds, newsletters and online access to the working documents of many conferences and meetings, to improve the participation of Members in ITU's activities. ITU also launched in 2008 its You-Tube channel which today hosts various videos and online interviews viewed by thousands of people. ITU News magazine continues to provide updates on all of ITU's activities for a readership of over 17,000 leading ICT policy-makers and CEOs, including follow-up reports on Connect Africa and the first WSIS compendium of speeches.

"I often go to the ITU website for information, and have always found it very useful".

Ana Davies, Senior Economist in a well-known US economic consultancy.

Publications and Portals

In 2008, ITU issued publications of major importance for the international framework regulating radiocommunications. The *Radio Regulations 2008* contains the complete texts of the updated Radio Regulations, the treaty governing international wireless communications. The *Final Acts of WRC-07* includes the new Radio Regulations and Appendices, Resolutions and Recommendations adopted by WRC-07. ITU also published two regional reports in 2008 featuring key ICT indicators and their latest trends - the *African Telecommunication/ICT Indicators Report*,[45] and *Asia-Pacific Telecommunication/ICT Indicators Report*,[46] ITU's first report on indicators to measure access and the use of ICTs by youth was also released. BR maintains online databases for technical information, such as the Maritime mobile Access and Retrieval System (MARS). Available 24/7, this system details all ship, coast and earth stations participating in the Global Maritime Distress and Safety System. BR also maintains the Global Administrative Data System, with information on station identification. In 2008, ITU-R initiated "My Administration portal" project providing online access to broadcasting assignments in the MIFR and broadcasting frequency Plans.

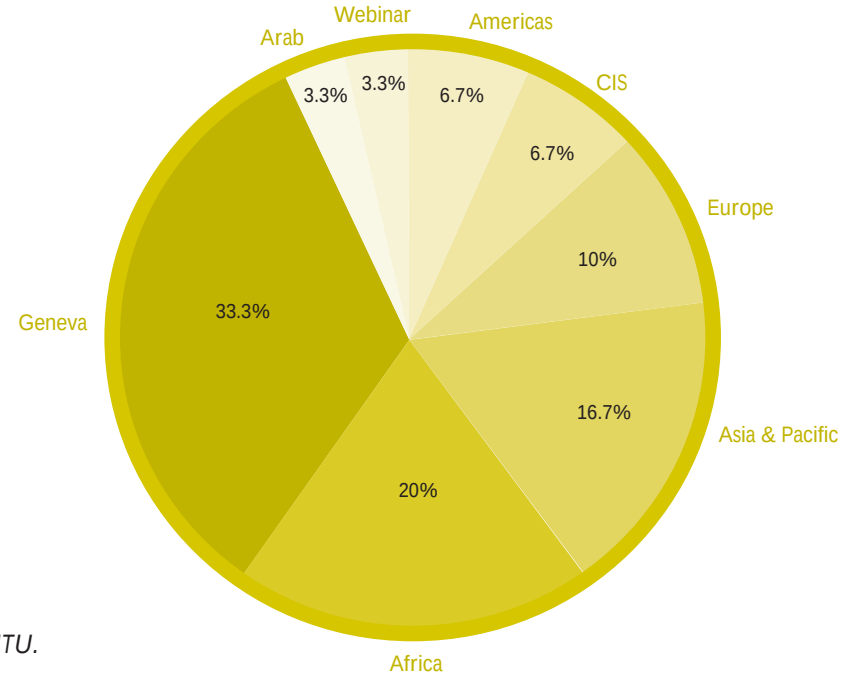
Workshops

The *World Radiocommunication Seminar 2008 (WRS-08)*[47] took place in December 2008, with record attendance of 490 participants representing 120 countries and 12 organizations on the use of the radio-frequency spectrum and satellite orbits, with

discussions on the application of the ITU Radio Regulations. The Seminar also examined the activities of the ITU-R Study Groups and the use of ICTs in emergency situations and to combat climate change. ITU also held a *Regional Radiocommunication Seminar*[48] in Buenos Aires, Argentina. Other workshops were held in 2008 dealing with topical wireless issues as software-defined radio, convergence of radio services, and introduction of digital broadcasting.

ITU also held its first 'Kaleidoscope academic conference' on 'Innovation in NGN' in Geneva on 12-13 May 2008 to establish closer ties between ITU, academia and research institutes. The event was co-sponsored by the IEEE Communications Society and attracted over 140 papers highlighting technologies, services and applications building on NGN infrastructure over the next five years and beyond, and ultimately leading to the ubiquitous network society. The three best papers were awarded prizes totaling US$10,000. Some excellent work was presented, some of which has been integrated into ITU-T's standardization work. ITU-T hosts a range of events around the world to help address the standardization gap and strengthen regional presence **(Figure 8).**

Figure 8: Geographical Distribution of ITU-T Workshops



Source: ITU.

Deployment of a new learning platform

During 2008, ITU was pleased to launch the ITU Academy portal,[50] including:

- A **Learning Management System,** which will ultimately be used to deliver, track and manage all of BDT's training opportunities, whether delivered through conventional face-to-face training, e-learning or a combination of 'blended learning'. The ITU Academy portal features online registration, tracking and management of students and their access rights, as well as the training workflow, organisation and management of conventional and online learning courses (from simple text to multimedia-based to mobile platforms). It also includes online student assessment tools and collaborative working tools (blogs, wikis, forums, chat) to support learning communities, as well as their interactions with instructors, and detailed reporting capabilities including the automatic generation of final course certificates.
- A **training resources management system,** with the objective of creating a central knowledge base of telecommunication/ICT training materials available on a managed access basis to ITU staff, ITU training partners and instructors e.g. at Centres of Excellence.

Reference materials (including manuals, Powerpoint and e-learning course templates, multimedia and graphical resources, instructional design guides, best practice examples for e-learning) are available on the ITU Academy platform to support instructors. During 2009, the BDT's Human Capacity Building Division will collaborate with BDT focal points and experts to build up a knowledge base of training assets.

Library & Archives Service

The ITU Library & Archives Service maintains and offers access to a wealth of information resources for ITU members, delegates, telecommunication experts and interested members of the public. Its resources and holdings include published works (print and electronic) and unique archival materials on the history, functions and current status of ICTs worldwide. Nearly all of its extensive holdings are open to public reference.

The ITU Library has a range of paper and digital collections and information resources that enable users to browse and to search for relevant information on ICT technologies and regulation as well as ITU's history. It also maintains subscriptions to online databases and portals to access information from other external sources. Its collections represent an indispensable source of research and analysis.

"I am piecing together a large database of telephony statistics since 1900 from ITU information and local references. ITU might be the only place with that historical data in the world, so please take care of it, and digitalize before anything else happens, because history is so important for the future. This kind of collaboration would have been unthinkable just a few years ago, but thanks to modern communications, it is now possible. I acknowledge the kind help of the ITU Library & Archives Service in my research".

José Cordeiro, Visiting Research Fellow, Institute of Developing Economies,
IDE - JETRO, Founder of the Sociedad Mundial del Futuro & Chair of the Millennium Project of Venezuela.

4.7

Strategic Goal Seven:

Promoting an Enabling Environment

"Programme 1: Regulatory Reform" of the WTDC Doha Action Plan aims to assist Member States in developing an enabling environment that fosters a supportive policy and regulatory framework providing incentives for investment and promoting universal access to ICTs. During 2008, twelve countries benefited from direct assistance in the field of regulatory reform (BDT Programme 1) and ten from direct assistance in economics and finance (BDT Programme 4).

BDT's Regulatory & Market Environment Unit has developed various tools for effective regulation to help regulators keep up to date with the latest issues in the field. It aims to raise awareness and exchange experience among regulators, so countries can make a smooth transition to the new telecommunication environment.

Strategic Goal Seven

Promoting the development of an enabling environment that assists governments in fostering supportive, transparent, pro-competitive, harmonized and predictable policies, as well as legal and regulatory frameworks that provide appropriate incentives for investment in, and development of, the information society.

ITU/*info*Dev ICT Regulation Toolkit

In order to respond to developing countries' need for guidance in a rapidly-changing market, ITU and its partner infoDev developed the ICT Regulation Toolkit.[51] The Toolkit helps regulatory professionals and specialists in the design of effective regulatory frameworks that can harness the latest technological advances, while responding to the challenges of an evolving sector. It shares analysis and information on key regulatory issues, as well as the latest best practices.

The Toolkit numbers seven themed modules in total, each of which gives an introductory overview of the issues associated with each topic, along with links to online resources (amounting to 1300 html pages) and reference documents (nearly 850 in the entire Toolkit). A new module on Universal Access and Service was launched in September 2008 to respond to developing countries' need for practical guidance in promoting wider access to ICTs.

infoDev

"As a regulator, this "Toolkit" is a reference of incredible usefulness for understanding regulatory best practices and their evolution. In this way, taking into account the specific circumstances of Mexico, we can design more effective telecommunication regulation".

Clara Alvarez, former Commissioner, Comisión Federal de Telecomunicaciones (COFETEL), Mexico.

The Toolkit is available online free of charge. It draws on regulators' experiences from around the globe. It is regularly updated to keep pace with the market and changing dynamics of regulation. In 2008 alone, the Toolkit was accessed by over 156,000 visitors from all the major world regions, a sign of its immense popularity.

The *ITU/World Bank ICT Regulatory Decisions Clearinghouse*[52] (ICTDec) is another online resource that provides a one-stop access point to decisions originating from ICT decision-making bodies (including telecommunication regulators, industry ombudsmen and specialized dispute resolution tribunals). This online catalogue of regulatory decisions includes a meta-crawler linked to regulatory websites. This search engine indexes thousands of documents that have been published on the websites of ICT decision-making bodies around the world, enabling users to search for decisions on specific topics. Although still a pilot project, the number of visits more than doubled in 2008, compared with 2007. ●

"the Toolkit is the single most helpful regulatory tool that I have seen. It has such a tremendous potential to assist all the staff at the INCM, as well as to help me too. I am very happy to have been here today to see the how easy it is to use this legal module and how much information is so easily accessible".

Dr. Salomão Manhiça, former Chairman, National Institute of Telecommunications of Mozambique (INCM).

"As a regulator, on the online toolkit will be a valuable aid in decision-making, which will allow us to stay abreast of the latest developments in ICT regulation, a sector in perpetual evolution. More precisely, it will make available best practices in regulation in very complex and varied areas such as: spectrum management, interconnection price regulation, the provision of new services, universal service obligations and infrastructure sharing etc. For regulators, this will be a tool which will certainly become indispensable for developing capacity".

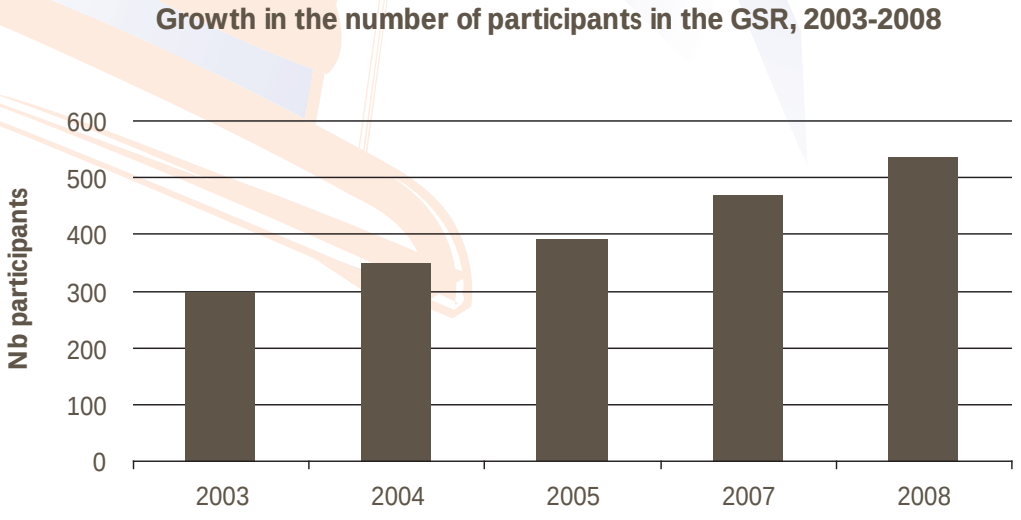
Modibo Camara, Director-General, Telecommunications Regulation Committee (CRT), Mali.

Global Symposium for Regulators (GSR)

Since its launch in 2000, the annual Global Symposium for Regulators (GSR) organized by BDT has provided a renowned venue for regulators and policy-makers from both developed and developing countries to exchange views and experiences on new and emerging regulatory issues. The meeting fosters open dialogue between regulators and other key ICT stakeholders, including the private sector, investors and consumers.

At recent GSR meetings, the world community of regulators has adopted best practice guidelines in key areas including universal access (GSR-03), promotion of low-cost broadband connectivity (GSR-04), spectrum management (GSR-05), Next-Generation Network (NGN) migration (GSR-07) and infrastructure-sharing (GSR-08).[53] The forthcoming GSR-09 will address the challenges of convergence, the new expectations it is generating among stakeholders and the changing roles of regulators. The GSR is growing in popularity every year **(Figure 9)**.

Figure 9: Growth in the number of participants in the GSR, 2003-2008



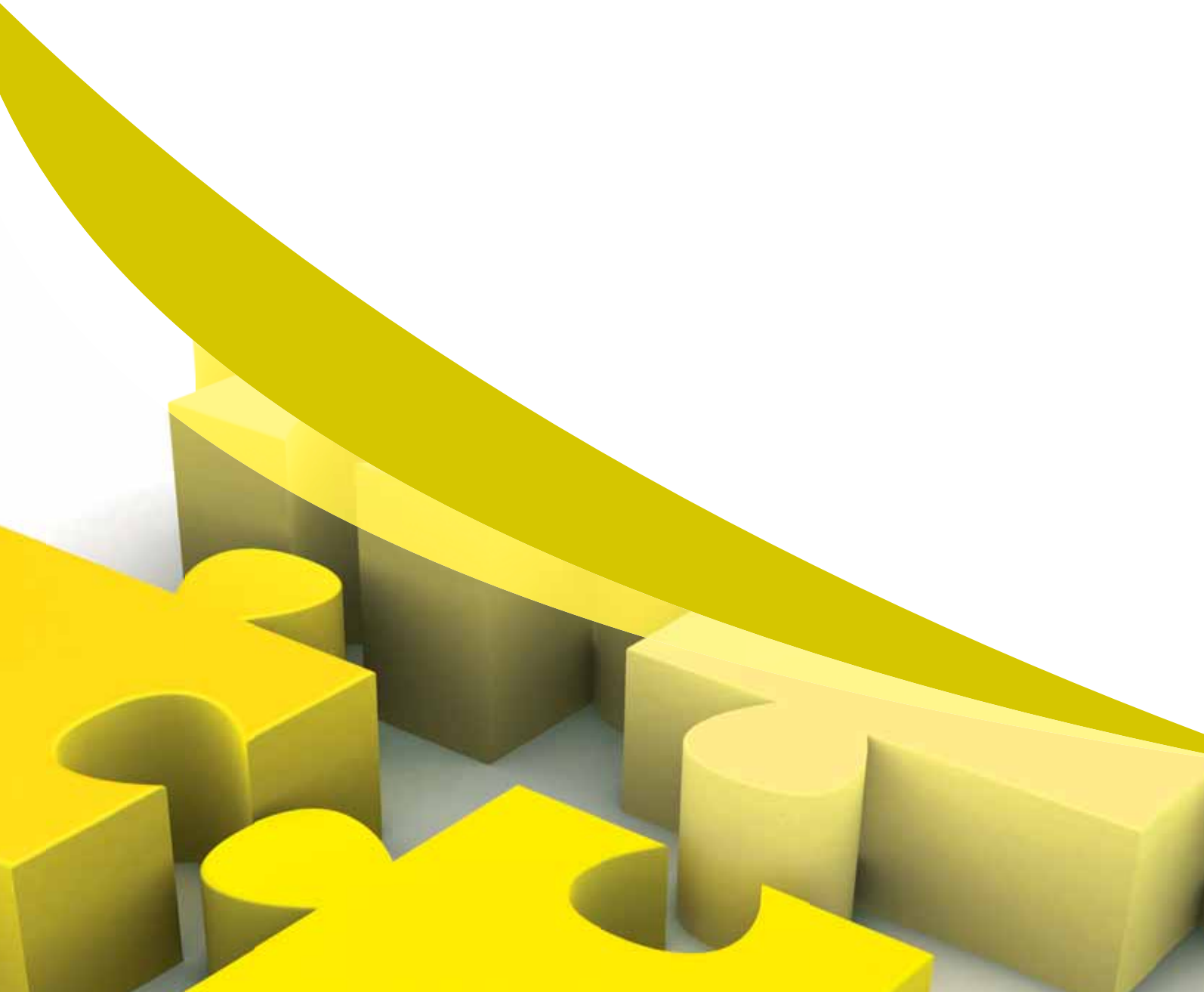
Source: ITU.

"I would like to thank ITU, and BDT in particular, for convening this symposium. Such symposia are of great usefulness to developing countries. We are in a position to learn very much. The setting and framework are excellent for the sharing of experiences. My delegation has read through the practices and guidelines and we find them extremely relevant".

Spokesperson for the delegation from Senegal, speaking at the GSR 2008, 13 March 2008.

Trends in Telecommunication Reform

The *Trends in Telecommunication Reform* series of reports[54] provides a valuable reference for different viewpoints and strategies on key issues affecting regulators. This report is a key part of ITU's dialogue with regulators and policy-makers. The 2008 edition of *Trends* focused on the range of different strategies for infrastructure-sharing that regulators can use to promote affordable access to ICTs for all. It examined different regulatory frameworks for infrastructure-sharing, and how regulators can accommodate and promote infrastructure-sharing to boost the productivity of networks and expand service provision for content providers and, ultimately, consumers. The 2009 edition of *Trends* will explore the impact of convergence and how regulators and policy-makers can promote an enabling environment to in a converging industry.



Capacity-Building, Training and Seminars

In the fast-evolving ICT environment, pricing and cost modeling are central to the regulator's role in promoting an enabling environment for the telecommunication/ICT sector. It is therefore essential to provide regulatory authorities with sufficient cost modeling tools and knowledge to enable them to understand how to develop their own cost models or to adapt existing cost models to the changing environment. To respond to this need, a two-week, high-level in-depth training on cost model development was provided to regulatory costing experts in Geneva in 2008, in addition to a two-day executive-level training event designed for heads of regulatory authorities on the strategic impact of cost modeling.[55] Materials developed for this training initiative are being adapted for inclusion in the ICT Regulation Toolkit module on competition and price regulation.

ITU also holds regular regional meetings and Forums on Telecommunications and ICT Regulation,[56] as well as annual regional Seminars on costs and tariffs for the Member Countries of the ITU-T Study Group 3 Regional Group for Africa, Latin America & the Caribbean, and Asia & Oceania. The ninth Forum on Telecommunication/ICT Regulation and Partnership in Africa (FTRA-2008) was held in Dakar, Senegal, from 4-6 June 2008, on the theme of "Connect Africa: Challenges for Regulators and Operators". It was attended by over 180 regulators, policy-makers and ITU Sector Members, as well as representatives of regional and international organizations from 43 countries.

To facilitate the transition from analogue to digital broadcasting, BR and BDT in collaboration with the Administration of the Kyrgyz Republic, and with participation of the Regional Commonwealth in the Field of Communications (RCC), organized a regional seminar on the regulatory, technical and economic aspects of the introduction of digital broadcasting in the Kyrgyz Republic from 25-27 August 2008.

Investing in the Future

Amid the massive uncertainty that currently dominates the economic outlook, ITU seeks to remain vigilant and ensure that its work remains relevant to the changing needs of its Members. The financial crisis and global economic slowdown pose immediate and pressing challenges to our Sector Members and Member States as to how best to respond to the volatile trading conditions and lack of cheaper financing. ITU's management team reviewed and reoriented ITU's work programme to give it new direction to ensure that ITU remains responsive to the needs of its Members in the current circumstances.

Despite the difficult economic climate, the approaching years, 2009 and 2010, promise to be as busy and charged as ever. Among the key events in ITU's calendar, ITU looks forward to the World Telecommunication Policy Forum 2009 (WTPF-09), being held in Lisbon, the Portuguese Republic, on 22-24 April 2009. It will be preceded by a one-day Strategic Dialogue on ICTs: Confronting the Crisis, which seeks to refocus the policy debate on how our membership can respond to the challenges posed by these difficult times.

TELECOM WORLD 2009 will be held in Geneva, Switzerland, in October 2009. This will be a major event for the telecommunication industry, uniting Heads of State, CEOs, Ministers, regulators and policy-makers from across the world to debate the future of the industry during these challenging times. The Forum will feature an Open Summit reviewing the challenges that the industry is facing and exploring the prospects for growth, the role of broadband infrastructure in economic stimulus packages and much more. The Heads of State Programme will assemble leading politicians tasked with designing and crafting policy packages to hear from them how they plan on addressing the crisis and prioritizing telecommunications. The Exhibition promises to provide a wealth of networking opportunities for forging the essential sales contracts and business partnerships to promote trade and investment in ICTs.

The ninth annual Global Symposium for Regulators will be held on the theme of convergence. This Symposium brings together regulators from developed and developing countries to share their views and experiences on the very latest developments in regulation and to establish an open dialogue between regulators, the private sector, investors and consumers alike. This year, it will be preceded by the second Global Industry Leaders Forum.

ITU is working hard to adapt to the changing needs of its membership, especially at this time. ITU continues to streamline its spectrum allocation and standardization activities, to make them more efficient and tailored to Members' needs. ITU also continues to reinforce and enhance its technical assistance programmes for developing countries to adapt them to their requirements. This work is all the more essential, since ICTs are a key means of alleviating the crisis and economic slowdown. ICTs are not only a key sector in their own right, they also drive productivity and efficiency gains in other sectors. Investments in ICT can create technological spillovers for other sectors of the economy, making the ICT sector strategically important. Large-scale investments in information infrastructure are a key means of generating new jobs and fuelling economic recovery across many sectors. ITU will continue to work to ensure that the role of ICTs in generating a broad-based economic recovery is fully recognized. ●

List of Abbreviations and Acronyms

AVC	Advanced Video Coding
BDT	Telecommunications Development Bureau
BR	Radiocommunication Bureau
CAP	Common Alerting Protocol
CERTs	Computer Emergency Response Teams
CHF	Swiss Francs
CIIP	Critical Information Infrastructure Protection
COBIT	Control Objectives for Information and related Technology
COMESA	Common Market for Eastern and Southern Africa
COP	Child Online Protection
CSIRTs	Computer Security Incident Response Teams
DAISY	Digital Accessible Information System
ENISA	European Network and Information Security Agency
ERP	Enterprise Resource Planning
FTRA	Forum on Telecommunication/ICT Regulation and Partnership in Africa
GCA	Global Cybersecurity Agenda
GDP	Gross Domestic Product
GEO	Group on Earth Observations
GILF	Global Industry Leaders Forum
GSR	Global Symposium of Regulators
GSS	Global Standards Symposium
HDTV	High-Definition Television
HLEG	High-Level Expert Group (of the ITU Global Cybersecurity Agenda)
HLS	High-Level Segment (of ITU Council)
ICT	Information and Communication Technology
ICTDF	ICT Development Fund
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IFCE	ITU Framework for Cooperation in Emergencies
IGF	Internet Governance Forum
IMPACT	International Multilateral Partnership Against Cyber-Terrorism (in Malaysia)
IMT	International Mobile Telecommunications
IPSAS	International Public Sector Accounting Standards
IPTV	Internet Protocol Television
IPv6	Internet Protocol version 6
IS	Information Services Department of the ITU
ISO	International Organization for Standardization (ISO)
ITS	Intelligent Transport Systems
ITU	International Telecommunication Union
JCA-AHF	Joint Coordination Activity on Accessibility and Human Factors
KPIs	Key Performance Indicators
LMS	Learning Management System
MARS	Maritime mobile Access and Retrieval System
MCTs	Multimedia Community Telecentres

MIFR	Master International Frequency Register
NGN	Next-Generation Network
OID	object identifier
PMR	Performance Measurement & Reporting
PON	Passive Optical Network
PwDs	People With Disabilities
QoE	Quality of Experience
RBB	Results-Based Budgeting
RCC	Regional Commonwealth in the Field of Communications
RFID	Radio-Frequency Identification
RR	Radio Regulations
SDOs	Standards Development Organizations
SFCG	Space Frequency Coordination Group
SLAs	Service Level Agreements
SMS	Short Message Service
TSB	Telecommunication Standardization Bureau
UN	United Nations
UNFCCC	UN Framework Convention on Climate Change
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNGIS	UN Group on the Information Society
UNHCR	United Nations High Commission for Refugees
UK	United Kingdom
UNICEF	United Nations Children's Fund
UNOCHA	UN Office for Coordination of Humanitarian Affairs
USD	United States Dollars
VoIP	Voice over Internet Protocol
xDSL	x Digital Subscriber Line
WGET	Working Group on Emergency Telecommunications
WMO	World Meteorological Organization
WRC	World Radiocommunication Conference
WSIS	World Summit on the Information Society
WTDC	World Telecommunication Development Conference
WTISD	World Telecommunication and Information Society Day
WTSA-08	World Telecommunication Standardization Assembly

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[1] For example, see Waverman et al (2005), or more recently, Qiang & Rossotto (2009), quoted in Chapter 3 of the Information and Communication Technologies For Development Report (2009), World Bank, Washington DC.

[2] Chapter one, Information and Communication Technology Outlook 2008, December 2008, OECD, Paris.

[3] See www.itu.int/wsis/c2/docs/2008-May-19/meeting_documents.html and www.itu.int/wtisd/2008/call-for-action.html.

[4] www.itu.int/ITU-T/wtsa-08/. For more information, see the WTSA Press release, 31 October 2008, available at: www.itu.int/newsroom/press_releases/2008/31.html.

[5] GSS press release: www.itu.int/newsroom/press_releases/2008/30.html

[6] www.itu.int/ITU-D/tech/indexDevelopmentForum.html

[7] WTSA-04 Resolution 44; see Circular Letter.

[8] www.itu.int/ITU-R/index.asp?category=study-groups&rlink=rcpm-wrc-11-studies&lang=en

[9] www.itu.int/ITU-R/index.asp?category=study-groups&rlink=rsg5-imt-advanced&lang=en

[10] http://web/itu-r/go/geneva-2008

[11] www.itu.int/publications/publications.aspx?lang=en&media=electronic&parent=R-HDB-45-2008

[12] According to European Commission: "ICTs are now embedded in almost all parts of the European economy. As a result of its own success, use of ICT products and services represents about 7.8% of electricity consumption in the EU and may grow to 10.5% by 2020" . Carbon dioxide emission is more than 2-3% - see: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0111:FIN:EN:DOC.

[13] An opportunity five times larger than the size of the ICT sector's footprint of its own products and services including manufacturing, use and end of life impacts. Source: Executive Summary, Smart 2020 report: www.theclimategroup.org/assets/resources/publications/Smart2020Report_lo_res.pdf.

[14] See the ITU reports, "ICTs for e-Environment: Guidelines for Developing Countries, with a Focus on Climate Change", ITU (2008), available from: www.itu.int/ITU-D/cyb/ and "ICTs and Climate Change", ITU (2008), available at: www.itu.int/oth/T2301000003/en.

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[16] www.itu.int/ITU-D/cyb/app/e-env.html

[17] www.itu.int/ITU-D/emergencytelecoms/events/global_forum/itu-ifce.pdf

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[26] The Declaration, workshop report and other documents can be found at http://web.itu.int/ITU-D/sis/PwDs/Seminars/Zambia/index.html.

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[32] www.itu.int/cybersecurity/gca/hleg/

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[56] www.itu.int/ITU-D/treg/Events/Seminars/index.html

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