



ITU AND CLIMATE CHANGE

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I. INTRODUCTION

Unequivocal and authoritative scientific evidence, recent climate events and an increased public awareness have elevated climate change to the highest ranks of the political agenda-globally, regionally and at national levels.

It is estimated that information and communication technologies (ICTs) contribute around 2-2.5 per cent of global greenhouse gas (GHG) emissions. These percentages are likely to grow as ICTs become more widely available. At the same time, ICTs can be a major linchpin in efforts to combat climate change; they can serve as a potent, cross-cutting tool to limit and ultimately reduce GHG emissions across economic and social sectors, in particular by the introduction and development of more energy efficient devices, applications and networks, as well as their environmentally sound disposal. ITU will work closely with its membership to lead

efforts to achieve a climate neutral ICT industry.

Developing an effective response to climate change calls for action in virtually all of the ITU's fields of competence. An integrated approach is essential to address the range of technological, scientific, policy, organizational, economic and social issues involved. Within the UN system, ITU has unique competence in the ICT sector, making its work relevant to nearly all aspects of developing a system-wide approach to this issue. ITU can contribute to nearly all of the main pillars of work under the Bali framework for negotiations, i.e. science and data monitoring, adaptation, mitigation and technology. At the same time, ITU is reaching out to its membership to assist them in combating climate change and adapting to it, and will engage more fully with other organizations active in these efforts.

II. ITU GLOBAL STRATEGIES AND PROGRAMMES RELATED TO CLIMATE CHANGE

1. Climate Neutral ITU

In its own activities, ITU is pioneering the use of ICTs to reduce emissions through paperless meetings, virtual conferencing, and tele-working and will share its expertise with other institutions in optimizing the use of ICTs as an integral component of energy-efficient work methods. ITU is raising public awareness to illustrate the impacts of climate change and the relevance of its work in the field of ICTs to address this issue.

2. Monitoring Climate Change

As the steward of the global framework for spectrum, ITU will provide for the necessary radio-frequency spectrum and orbit resources to foster the operation without interference of radiocommunication systems, including satellites used for climate monitoring and control, weather forecasting, remote sensing and disaster prediction and detection.

3. ICT as a clean technology

As the preeminent global body for standardization in the field of ICTs, ITU is working to limit and ultimately reduce

greenhouse gas (GHG) emissions and foster sustainable development, in particular by promoting the use of more energy efficient devices and networks and the development of technical standards (Recommendations) to limit and reduce the power requirements of ICT equipment and services. Work also focuses on the mitigation of climate change in other industries-including the automotive sector-using ICTs.

4. Adaptation and Mitigation

As a core function of its development mission, ITU is assisting Member States in the use of ICTs for e-environment and sustainable development and to adapt to and mitigate the effects of climate change, including the use of emergency telecommunications and alerting systems for disaster relief.

Some specific activities and initiatives of the ITU related to climate change are presented in the table below.

Activity/ Initiative	Brief Information
<p>Study Report on “ICTs for e- Environment- Guidelines for Developing Countries, with Focus on Climate Change”</p>	<p>The Telecommunication Development Sector of ITU launched this study report intended to strengthen the capacity of developing countries to mitigate and adapt to environmental change, including climate change, through the use of ICTs.</p> <p>Although ICTs require energy resources, they also offer a number of opportunities to advance global environmental research, planning and action. This includes monitoring and protecting the environment, as well as mitigation of and adaptation to climate change. The report also looks extensively at the use of ICTs in many different aspects of work on the environment, including environmental observation, analysis, planning, management and protection, mitigation and capacity building.</p> <p>In order to assess the adoptability of selected ICT applications for environmental management in developing countries in general, the report proposes a ranking system with parameters such as (a) environmental scope, (b) technology, (c) transferability, and (d) impact.</p> <p>Furthermore, the ICTs for e-Environment report considers over 150 ICT applications in one of its annexes, including the name of the ICT applications, description, area of work, sponsor, region, active dates, and relevant web references.</p> <p>The report is available at http://www.itu.int/ITU-D/cyb/app/docs/itu-icts-for-e-environment.pdf</p>
<p>“ITU and Climate Change” Report</p>	<p>In April 2008, ITU published its report “ITU and Climate Change”, which presents ITU’s vision and objectives in the area of ICTs and climate change, as well as information on planned ITU events on this topic for 2008 and 2009.</p> <p>ITU activities on climate change are oriented around three main objectives.</p>

	<ol style="list-style-type: none"> 1) Develop a knowledge base and repository on the relation between ICTs and climate change; 2) Demonstrate strategic leadership on ICTs and climate change; and 3) Promote a global understanding of the relation between ICTs and climate change. <p>This report is available online at http://www.itu.int/themes/climate/docs/report-itu-climate.pdf</p>
<p>ITU Symposia on ICTs and Climate Change</p>	<p>ITU organized two Symposia on ICTs and Climate Change. The first was held in Kyoto, Japan 15-16 April 2008, hosted by MIC Japan, and the second was held in London, UK, on 17-18 June, hosted by BT.</p> <p>These symposia brought together key specialists in the field, from top decision-makers to engineers, designers, planners, government officials, regulators, standards experts and others.</p> <p>To provide a framework for both symposia, ITU developed a background report on ICTs and climate change, available online at http://www.itu.int/dms_pub/itu-t/oth/06/0F/T060F0000070001PDFE.pdf</p> <p>Further information on presentations, meeting summaries and the outcomes of the symposia is available online at http://www.itu.int/ITU-T/worksem/climatechange/</p>
	<p>ITU-R assists member states in the development and operation of different systems involved in climate monitoring, weather and disaster prediction, detection and relief such as:</p> <ul style="list-style-type: none"> · weather satellites that track the progress of hurricanes and typhoons and weather radars for tracking tornadoes, thunderstorms, and the effluent from volcanoes and major forest fires; · radio-based meteorological aid systems that collect and

Work of the
ITU
Radiocommunications Sector
(ITU-R) related to
promoting ICT as
a clean technology,
and monitoring
climate change

process weather data;
· different radiocommunication systems (satellite and terrestrial) used for dissemination of information concerning different natural and man-made disasters.

Recent ITU-R activities on climate change include:

- The World Radiocommunication Conference 2007 (WRC-07), which allocated additional spectrum for meteorological-satellite service and initiated studies on the use spectrum for new applications employed for environmental studies relevant to climate change monitoring. The results will be reported to WRC-11, where ITU Members will take decisions concerning the required spectrum allocation for these systems/applications and conditions for successful operation.
- The WRC-07 also adopted Resolution 647 (WRC-07) “Spectrum management guidelines for emergency and disaster relief radiocommunication” to support mitigating negative effects of natural disasters initiated by climate change in the future. The Resolution requests ITU-R to establish a database of currently available frequencies for use in emergency situations.
- ITU, together with the World Meteorological Organization, developed the technical basis including international standards (ITU-R Recommendations) for Global Climate Observing System (GCOS) and continues studies for further improvement of radio-based remote sensing systems (satellite and terrestrial) for environment monitoring and climate change forecasting. The GCOS is the main source of information used for the forecasting of climate change and improving preparedness of different regions and countries for adaptation for climate change.
- ITU-R Study Group 7 (Science services) in cooperation with the World Meteorological Organization (WMO)

produced the WMO/ITU Handbook Use of Radio Spectrum for Meteorology providing information on development and a proper use radiocommunication systems and radio-based technologies for environment observation, climate control, weather forecasting and natural and man-made disaster prediction, detection and mitigation.

- ITU-R and WMO are also developing a new ITU/WMO Handbook (provisional title Use Of Radio Spectrum For Weather, Water And Climate Monitoring And Prediction), which will provide specialists a description of the systems used for climate control. The report will also include recent information on weather and the environment of use to the general public, through references to international and national meteorological agencies and organizations.
- Volume 4 of ITU-R “Land Mobile Handbook (including Wireless Access)”, examines Intelligent Transport Systems. This Handbook describes the use of radio technologies for minimizing transportation distances and cost with the positive effect on environment and on the use of cars as an environment monitoring tool to measure air temperature, humidity, precipitation, with data sent through wireless links for weather forecasting and climate control. For more information see <http://www.itu.int/publ/R-HDB-49-2006/en>.

For more information, please check: <http://www.itu.int/ITU-R/index.asp?category=information&rlink=climate-change&lang=en>

ITU provides assistance on disaster communications/emergency telecommunications to ITU Member States while paying special attention to the needs of least developed countries and Small Island Developing States that are the most vulnerable to the effects of climate change and global warming.

Work of the
ITU Development
Sector (ITU-D)
related to
assistance in
disaster
preparedness
and early
warning

Recent ITU-D activities on climate change include:

- During 2007-2008, ITU-R provided direct assistance to Thailand, Maldives, Sri Lanka, and Philippines.
- At the regional level, ITU-R conducted a training workshop on the Role of Telecommunications/ICT in Disaster Mitigation in Bandung, Indonesia, in 2007. It also organized the “Global Forum on Effective Use of Telecommunications/ICT for Disaster Management: Saving Lives”, which took place in Geneva, Switzerland, in December 2007. For further information on ITU-R workshops see <http://web/ITU-D/emergencytelecoms/events.html>.
- ITU-D Study Group 2 (Development and management of telecommunication services and networks and ICT applications), and ITU-R SG 7 are developing a special report on the utilization of ICTs for disaster management and active and passive space-based systems as they apply to disaster prediction, detection and mitigation, with the purpose to facilitate the use of these applications in developing countries.
- ITU is also engaged with Member States within the framework of the ITU-D Study Groups, namely on Question 22/2: Utilization of ICT for disaster management, resources, and active and passive space-based sensing systems as they apply to disaster and emergency relief situations and aims at providing Administrations with information on the establishment or modernization of national or regional disaster management systems and plans.
- ITU also supports Member States in the design of National Emergency Telecommunications Plans (NETPs) and developed Standard Operating Procedures (SOPs) on the application and use of ICT for early warning, response/relief, and reconstruction.?

	<ul style="list-style-type: none"> · Concerning Partnerships, ITU works with other UN agencies, including OCHA, WHO, FAO, WFP and UNHCR, under the United Nations Working Group on Emergency Telecommunications. The goal of this Working Group is to develop Minimum Operating Procedures for disaster relief and other measures in response to climate change and disasters. · ITU, jointly with UNEP, also supports the Global e-Sustainability Initiative (GeSI), a global partnership of major players of the ICT sector that promotes technologies for sustainable development.
<p>Work of the ITU Standardization Sector (ITU-T) related to ICT standards and climate change</p>	<p>At the recent ITU Symposium on ICTs and Climate Change in Kyoto and London, ITU-T was tasked with the development of an internationally agreed standard methodology to measure the impact of ICTs on climate change, both in terms of the direct emission of greenhouse gases, and the savings that can be generated in other sectors of industry through the application of ICTs.</p> <p>ITU-T activities on the ICTs and climate change area include:</p> <ul style="list-style-type: none"> · ITU has an activity underway to review the energy efficiency of its existing standards and is developing a checklist to ensure that future standards take account of their energy consumption and impact in GHG emissions. · ITU-T's Technology Watch Briefing Reports #1 addressed the topic of ICTs and Climate Change published in December 2007 which derived above two symposia Kyoto and London; URL is http://www.itu.int/dms_pub/itu-t/oth/23/01/T23010000030001MSWE.doc. This report showed how ICTs contribute to global warming, but also how they can mitigate its effects by reducing greenhouse gas emissions in other sectors of the economy such as travel. ICTs can also assist in monitoring climate change

and in adapting to the changes it will bring. Other publications in the same series of reports covered related topics such as “Remote collaboration tools”, “High-performance video-conferencing”, “Intelligent Transport Systems”, and “Next-Generation Networks (NGNs) and energy efficiency”. More reports are in the pipeline. See <http://www.itu.int/ITU-T/techwatch>

- ITU-T established a Focus Group on ICTs and Climate Change in July 2008. The Group is tasked to develop an internationally agreed standard methodology to measure the impact of ICTs on climate change, both in terms of the direct emission of greenhouse gases, and the savings that can be generated in other sectors of industry through the application of ICTs. The Group is also studying the reduction of ICT’s own emissions over their entire lifecycle (direct impact), the mitigation that follows through the adoption of ICTs in other relevant sectors (indirect impact), and the monitoring of relevant climate parameters.” Both governments and the private sector are involved in this work. More information is available online at <http://www.itu.int/ITU-T/focusgroups/climate/>
- ITU-T Study Group 2 (Operational aspects of service provision, networks and performance) is working on the standardization of call priority in emergency situations (e.g., Recommendation E.106 on the International Emergency Preference System for disaster relief). One of the outcomes of this work is the assignment of a special E.164 country code (888) to the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) for the purpose of facilitating the provision of an international system of naming and addressing for terminals involved in disaster relief activities. Work has started for the coordination of the assignment of channel numbers for cell

broadcast alert messages in mobile networks. ITU-T, under the leadership of SG 2, coordinates the Partnership Coordination Panel on Telecommunications for Disaster Relief (PCP-TDR).

- ITU-T Study Group 6 (Outside plant and related indoor installations) is considering, inter alia, environmental and safety procedures for outside plant, including the recycling copper and optical cables materials.
- ITU-T Study Group 15 (Optical and other transport network infrastructures) is preparing a technical paper (“Energy-saving checklist for standardization activities”) investigating ways to reduce the power consumption of telecommunications equipment. The widespread availability of broadband access is facilitating the wider use of telecommuting. The paper is expected to be adopted at the Feb 2008 meeting, where a series of tutorials on energy-saving will be held, from 13-15 February. SG15 has also pioneered the use of questionnaire surveys as a prompt to standards-developers for increasing energy-efficiency. For more information, please check <http://www.itu.int/ITU-T/studygroups/com15/tutorials/power.html>
- ITU-T Study Group 16 (Multimedia terminals, systems and applications) is of particular importance in terms of standards for remote collaboration, such as the H series of ITU-T Recommendations on audiovisual and multimedia systems, including video-conferencing, which provide a means for people to collaborate at a distance without needing to travel.
- ITU-T Study Group 17 (Security, languages and telecommunications software) has developed a new Recommendation X.1303, jointly with OASIS, which provides the basis for a common alerting protocol for use

	<p>in advance of impending threats, such as tsunamis, typhoons or earthquakes.</p> <ul style="list-style-type: none"> · ITU-T activity on 'Green ITS (Intelligent Transport System) - with fully networked car' which brings a great contribution in conjunction with vehicle gateway platform and user cases of ITS- for service requirements. · ITU-T developed a website on climate change, available at http://www.itu.int/ITU-T/climatechange/. The site includes information related to ICT as a clean technology, adaptation and mitigation, e-environment and e-sustainability, as well as internal and external relevant resources and links, such as the use of ICTs for environmental protection and the environmentally safe disposal of e-waste.
<p>ITU-Staff Members' Initiative for Recycling</p>	<p>ITU staff members formed the group Green@ITU in July 2008 to "encourage ITU staff members to become more aware of their environment and to propose eco-friendly habits for adoption in the workspace with a view to reducing day-to-day waste".</p>

* This ITU and CC material is a survey paper on ITU CC which was collaborated by ITU-T, R and D sectors.

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