

Overview of ITU Activities on ICTs, the Environment & Climate Change

Information and Communication Technologies (ICTs), such as satellites, mobile phones or the Internet, are capable of playing a key role in addressing the global challenges of climate change and sustainable development.

By raising awareness of ICT's role in tackling environmental challenges including climate change, ITU is promoting innovative ICT solutions to environmental questions and is developing green ICT standards to support a sustainable future.

ITU-T STUDY GROUP 5

ITU-T is the standardization branch of ITU. In particular, ITU-T Study Group 5 (SG5) offers the ideal **platform for climate change stakeholders** to exchange knowledge and expertise with the aim of identifying policy and standard needs **to support the integration of ICTs in tackling climate change**.

SG5 develops international standards (ITU-T Recommendations) that address ICT's relationship with electromagnetic effects and climate change.

SG5 works through three working groups. They are namely:

- Working Group 1 – Damage prevention and safety
- Working Group 2 – Electromagnetic fields: emission, immunity and human exposure
- **Working Group 3 – ICT and Climate Change**

SG5 has been developing a number of important technical standards and guidelines to assist governments in instituting policy frameworks to use information and communication technologies to tackle climate change.

SG5 has been developing a set of **standardized methodologies to assess the environmental impacts of ICTs**, both in terms of ICT greenhouse gas (GHG) emissions and the emissions savings created through green ICT applications in other industry sectors. The methodologies are being developed in cooperation with over 60 organizations including major ICT private sector organizations, the European Union, the United Nations Framework Convention on Climate Change (UNFCCC) and the United Nations Environmental Programme (UNEP).

- Recommendation ITU-T L.1400 "Overview and general principles of methodologies for assessing the environmental impact of information and communication technologies"
- Recommendation ITU-T L.1410 "Methodology for the assessment of the environmental impact of information and communication technology goods, networks and services"
- Recommendation ITU-T L.1420 "Methodology for energy consumption and greenhouse gas emissions impact assessment of information and communication technologies in organizations"
- Recommendation ITU-T L.1430 "Methodology for assessment of the environmental impact of information and communication technology greenhouse gas and energy projects"

Recommendations ITU-T L.1000 series provide requirements for a **universal charger and a universal power adapter (UPA) solution** compatible with a variety of ICT devices, reducing waste, enabling their reuse, increasing their lifetime and improving convenience to users. The “one-size-fits-all” solution also aims to reduce GHG emissions, energy consumption, demand on raw materials, and e-waste.

- Recommendation ITU-T L.1000 “Universal power adapter and charger solution for mobile terminals and other hand-held ICT devices”
 - ITU-T L.1000 will eliminate an estimated 82,000 tons of redundant chargers and at least 13.6 million tons of CO₂ emissions annually
- Recommendation ITU-T L.1001 “External universal power adapter solutions for stationary information and communication technology devices”
 - ITU-T L.1001 will save an estimated 300,000 tons of e-waste annually and will reduce CO₂ emissions by between 25% and 50%
- Recommendation ITU-T L.1002 “External universal power adapter solutions for portable information and communication technology devices”
- Recommendation ITU-T L.1005 “Test suites for assessment of the universal charger solution”

SG5 is developing “**Green batteries** solution for mobile phones and other hand-held information and communication technology devices”, as in Recommendation ITU-T L.1010.

Within its work on **energy efficiency**, SG5 has developed best practices for **green data centers** to minimize their energy consumption and GHG emissions. The best practices include guidelines on management and planning of data centers; optimum design of data center buildings; selection of ICT equipment; cooling and power equipment; and data center utilization and the monitoring of data centers after construction.

- Recommendation ITU-T L.1300 “Best practices for green data centers”
- Recommendation ITU-T L.1310 “Energy efficiency metrics and measurement methods for telecommunication equipment”
- Recommendation ITU-T L.1320 “Energy efficiency metrics and measurement for power and cooling equipment for telecommunications and data centres”
- Recommendation ITU-T L.1340 “Informative values on the energy efficiency of telecommunication equipment”

SG5 is also developing a **framework for using ICTs in adaptation to the effects of climate change**, as in Recommendation ITU-T L.1500 “Framework for information and communication technologies and adaptation to the effects of climate change”.

This framework identifies and defines the basis for development of the other specific standards on the use of ICTs to adapt to the effects of climate change in countries and in cities, and to build resilient ICT infrastructure.

The group also raises awareness of ICT’s role in tackling climate change and assists in the development of “green ICT” strategies by organizing dedicated symposia, workshops, training and capacity-building activities. SG5 additionally develops reports on issues related to ICTs, the

environment and climate change to facilitate the exchange of technological knowledge, to assess countries' experiences with emerging sustainable technologies, and to support public and private-sector efforts in moving towards a greener, more resource-efficient global economy. The next meeting will take place in Kochi, India from 8 to 19 December 2014.

For additional information, please visit the [SG5 webpage](#).

NEW GREEN ICT STANDARDS DATABASE

Green ICT standards and supplement development by ITU-T Study Group 5 are available on an online dynamic [database](#).

FOCUS GROUP ON SMART SUSTAINABLE CITIES (FG SSC)

The Focus Group on Smart Sustainable Cities (FG SSC) has been established in February 2013 to assess the standardization requirements of cities aiming to boost their social, economic and environmental sustainability through the integration of information and communication technologies (ICTs) in their infrastructures and operations. The FG-SSC acts as an open platform for smart-city stakeholders - such as municipalities; academic and research institutes; non-governmental organizations (NGOs); and ICT organizations, industry forums and consortia - to exchange knowledge in the interests of identifying the standardized frameworks needed to support the integration of ICT services in smart cities. The [Terms of Reference](#) of the FG-SSC are available on the FG SSC webpage.

The FG SSC held its first meeting in Turin, Italy, on 8 May 2013, its second meeting in Madrid, Spain, on 17 September 2013, its third meeting in Lima, Peru, on 6 December 2013, its fourth meeting in Geneva, Switzerland, on 5-6 March 2014 and its fifth meeting in Genoa, Italy on 19-20 June 2014. FG SSC meetings are free and open to all interested parties.

At its fifth meeting in June 2014, the FG SSC **agreed** on the **definition of Smart Sustainable City** which reads as follows:

"A smart sustainable city is an innovative city that uses information and communication technologies (ICTs) and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social and environmental aspects".

Furthermore, the following **technical reports** are being developed by over 80 international experts including representatives from UNFCCC, European Union, UNESCO, etc:

1. Roadmap for SSC (including Technical Specifications for a Smart Sustainable City)
2. Technical Report on Overview of SSC and the Role of ICT
3. Technical Report on Definitions and Attributes of a Smart Sustainable City
4. Technical Report on Smart Sustainable Cities Infrastructure

5. Technical Report of Smart Buildings for Smart Sustainable Cities
6. Technical Report of Smart Water Management for Smart Sustainable Cities
7. Technical Report on ICT Infrastructure for Climate Change Adaptation in Cities
8. Technical Report on EMF Considerations in Smart Sustainable Cities
9. Technical Report on Integrated Management for Smart Sustainable Cities
10. Technical Report on Standardization Activities and Gaps for SSC and Suggestions to SG5
11. Technical Report on KPIs Definitions for Smart Sustainable Cities
12. Technical Report on KPIs Metrics Evaluation
13. Technical Report on Smart Sustainable Cities Stakeholders
14. Technical Report on Cybersecurity, Data Protection and Cyber-resilience in Smart Sustainable Cities
15. Technical Report on Anonymization Infrastructure and Open Data for Smart Sustainable Cities
16. Technical Report on Assessment of Energy and GHG from ICT in Cities

The draft technical reports can be found on the [FG SSC document area](#).

The next meeting of the FG SSC will be held from 13 to 16 October 2014 in Geneva, Switzerland. For additional information, please visit the [FG SSC webpage](#).

EVENTS

ITU is organizing events to raise awareness of the role of ICTs with regards to the environment and climate change.

Upcoming events

- [Forum on “Sustainable smart cities: from vision to reality”](#)
13 (morning) October 2014, Geneva, Switzerland
- [6th meeting of the Focus Group on Smart Sustainable Cities \(FG-SSC\)](#)
13 (afternoon)-16 October 2014, Geneva, Switzerland
- [4th ITU Green Standards Week](#)
22-26 September 2014, Beijing, China
 - 22 September 2014: Forum on “[Green ICT for a sustainable resource efficient economy](#)”
 - 23 September 2014: Forum on “[E-waste: the inconvenient truth](#)”
 - 24 September 2014: High-Level Forum on “[Setting the vision for smart sustainable cities](#)”
 - 25 September 2014: Forum on “[Using EMF to achieve the smartest sustainable city](#)”
 - 26 September 2014: Regional meeting of [ITU-T Study Group 5 Regional Group for Asia and the Pacific](#) (SG5 RG-AP)

- [ITU NBTC Training for Asia-Pacific Region](#)

29 September – 2 October 2014, Bangkok, Thailand

For additional information, please visit the ITU Symposia and Events on ICTs, the Environment and Climate Change [webpage](#).

PUBLICATIONS

As part of its research activities, ITU contributes to increase the body of knowledge in the area of ICTs, the environment and climate change.

Two new reports were released in 2014:

- **ITU/UNESCO/UNFCCC Report on Resilient pathways: the adaptation of the ICT sector to climate change – April 2014**

The main objective of this report is to explore the impacts of climate change on the ICT sector and the potential for adaptation, while emphasizing the need for resilient pathways of action, enabling environments and new standards to foster the sector's approach to adaptation.

- **ITU/UNESCO Report on Partnering for solutions: ICTs in Smart Water Management – March 2014**

Though economic growth, climate change and rising populations highly influence the availability of global water resources, strategic incorporation of ICTs in SWM can mitigate some of these challenges. Such achievements, however, are unattainable without proper stakeholder involvement and buy-in. The principal intention of this report is to go further and emphasize how ICTs can overcome some of the challenges faced in the water sector when there is proper stakeholder involvement.

Other key publications include:

- **Climate Change Adaptation, Mitigation and Information & Communications Technologies (ICTs): the Case of Ghana**

This report focuses on exploring an increasingly important question: "How can developing countries effectively integrate ICT tools within climate change adaptation and mitigation strategies?" The contribution of this report is two-fold. It presents the potential of ICTs towards adaptation and mitigation through the concrete case of Ghana, illustrating the challenges and opportunities faced by developing countries in this field.

- **The case of Korea: the quantification of GHG reduction effects achieved by ICTs**

The purpose of this report is to demonstrate the potential GHG reductions by ICT services, estimate the reduced volume of GHG, and identify major ICT GHG reduction enablers in Korea. This report follows the methodology described in ITU-T Recommendation L.1410 and comprises a review of more than 30 ICT services through a literature study and global benchmarking.

- **Toolkit on Environmental Sustainability for the ICT Sector**

The Toolkit on Environmental Sustainability for the ICT sector is an ITU-T initiative which provides plenty of detailed support on how ICT companies can build sustainability into the operations and management of their organizations, through the practical application of international standards and guidelines.

All ITU reports on ICTs, the environment and climate change are available for download by click [here](#).

GLOBAL PORTAL ON ICTs, ENVIRONMENT AND CLIMATE CHANGE – launched in February 2014

The new [ITU Global Portal on ICTs, the Environment and Climate Change](#) offers an index to external resources relevant to ITU's areas of action in the "green ICT" field (such as climate change adaptation and mitigation, e-waste, smart sustainable cities and conflict minerals) supplying a wealth of information to those interested in learning more about how ICTs are being leveraged to boost environmental sustainability.
