ITU-T Study Group 5's Work to Shape Smart Sustainable Cities

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ITU-T Study Group 5

Mandate

Lead study group for:

- environment and climate change;
- electromagnetic compatibility and electromagnetic effects.

ITU-T Study Group 5

Regional presence

Study Group 5 Regional Group for the **Americas**

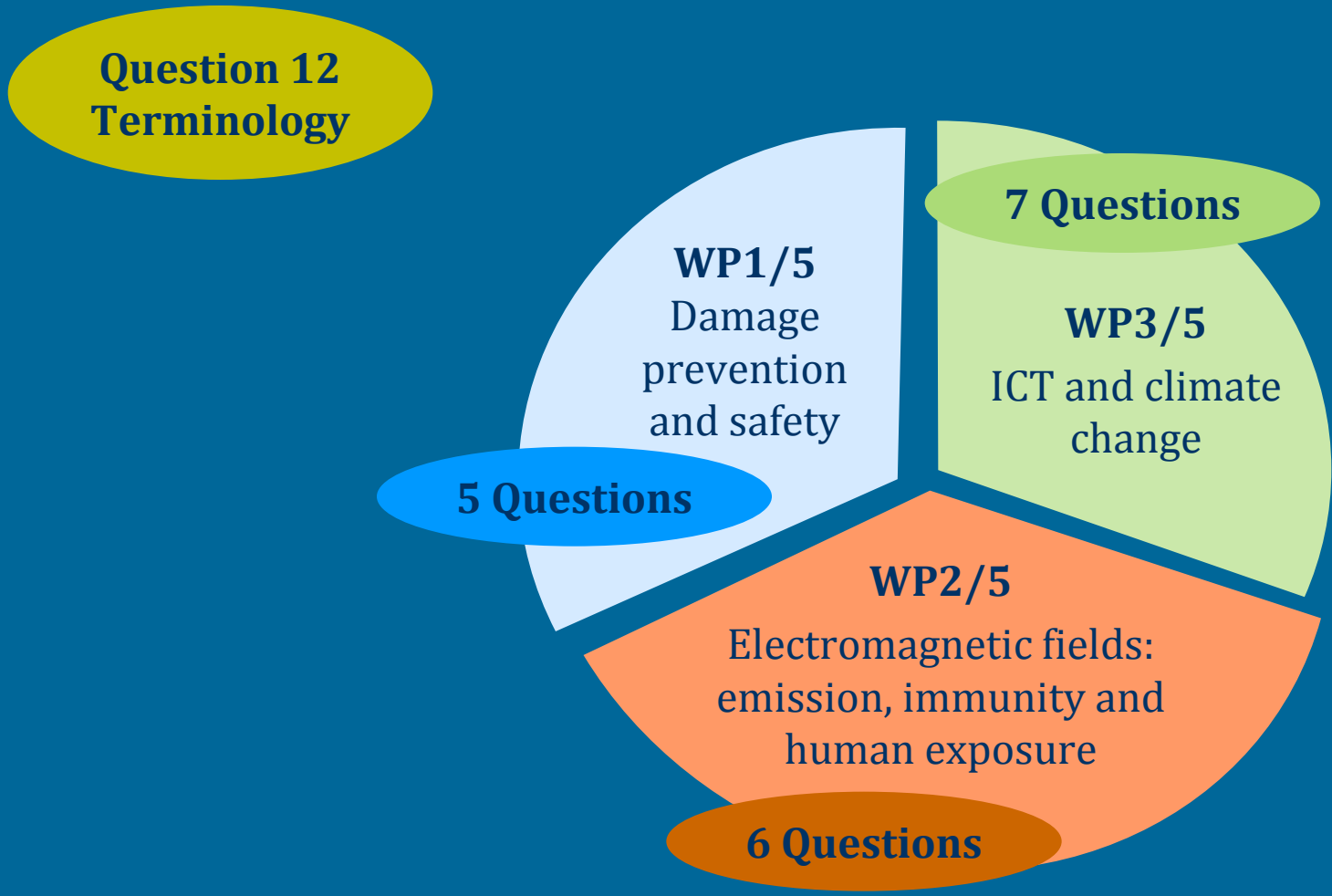
Study Group 5 Regional Group for **Asia and the Pacific**

Study Group 5 Regional Group for the **Arab Region**

Study Group 5 Regional Group for **Africa**

ITU-T Study Group 5

Structure



ITU-T Study Group 5

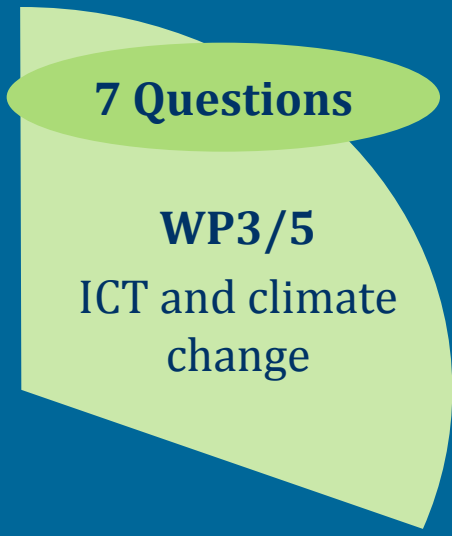
Tasks and objectives

- Studying ICT environmental aspects of **electromagnetic phenomena** and **climate change** and protection of telecommunication networks and equipment from interference and lightning.
- Studies related to **electromagnetic compatibility** (EMC), to safety and to health effects connected with electromagnetic fields produced by telecommunication installations and devices, including cellular phones.
- Studies on **methodologies** for assessing the environmental impact of ICT, publishing guidelines for using ICTs in an eco-friendly way, tackling **e-waste** issues, and **energy efficiency** of the power feeding system.
- Studies on how to use ICT to help countries and the ICT sector to **adapt to the effects of environmental challenges**, including climate change.
- It is also identifying the needs for more consistent and standardised **eco-friendly practices for the ICT sector** (e.g. labelling, procurement practices, eco-rating schemes for mobile phones).

Working Party 3/5: ICT and climate change

Work areas:

- Q13/5 - Environmental impact reduction including e-waste
- Q14/5 - Setting up a low cost sustainable telecommunication infrastructure for rural communications in developing countries
- Q15/5 - ICTs and adaptation to the effects of climate change
- Q16/5 - Leveraging and enhancing the ICT Environmental sustainability
- Q17/5 - Energy efficiency for the ICT sector and harmonization of environmental standards
- Q18/5 - Methodologies for the assessment of environmental impact of ICT
- Q19/5 - Power feeding systems



Question 13/5

Environmental impact reduction including e-waste

Brief description

- Study the safety and environmental performance associated with ICTs, including the avoidance of hazardous materials and final disposal;
- Ensure that ICTs cause minimum; environmental and health impact
- Minimize and mitigate the effect of e-waste.

Main tasks

- Motivate ITU members to share experiences and spread knowledge related to environmental sustainability aspects;
- Determine processes to minimize the environmental impact;
- Study solutions to mitigate e-waste (UCS/CPS, rare metals, battery, conflict material…).

Question 14/5

Setting up a low cost sustainable telecommunication infrastructure for rural communications in developing countries

Brief description

- Setting up a low cost sustainable telecommunication infrastructure for rural communications in developing countries;
- Existing systems do not meet challenges in developing countries and are not mass deployed in rural area;
- A suitable set of system requirements should be developed addressing the identified rural challenges.

Main tasks

- Develop guidance on addressing challenges of setting up sustainable telecommunication infrastructure in rural areas of developing nations;
- Develop system requirements, emphasizing energy efficient systems;
- Take into consideration power requirements given that deployment of telecommunication systems in areas without access to electricity grid;
- Taking into consideration the need for resilient mobile networks in all countries for disaster situations (e.g. hurricane, tropical storm, etc.).

Question 15/5

ICTs and adaptation to the effects of climate change

Brief description

- Studying how ICTs can be effective in enabling countries to better adapt to climate change;
- Studying how the telecommunications infrastructure and associated ICT can be resilient to the effects of climate change;
- Producing recommendations;
- Collecting, sharing and disseminating information and best practices.

Main tasks

- Establishing requirements via questionnaires and analysis;
- Seeking cooperation with various expert groups and Task forces;
- Encouraging the sharing of use cases in ICT and climate change;
- Encouraging ICT industry involvement in climate change adaptation.

Question 16/5

Leveraging and enhancing the ICT Environmental sustainability

Brief description

- Complement ITU-T Recommendations that allow organizations to estimate their environmental impacts with further guidance:
  - ✓ Eco-specifications and eco-rating guidance,
  - ✓ Labelling programme,
  - ✓ Clarification on the use of emission factors.

Main tasks

- Develop Recommendations on a methodology to assess the added value of an eco-rating programme;
- Investigate what are the principles, benefits, drawbacks underlying the creation of a worldwide database containing key indicators and/or emission factors.

Question 17/5

Energy Efficiency for the ICT sector and harmonization of environmental standards

Brief description

- Definition of measurement methods, metrics/KPI and reference values for different technologies;
- Sharing of best practices for ICT's energy efficiency enhancements;
- Analysis of the most energy efficient architectures and solutions in support of smart grids;
- Complement and harmonize ICT and environmental standards developed by other ITU Study Groups and Standardization Bodies.

Main tasks

- Develop Recommendations in the in the field of energy efficiency;
- Develop best practices and best reference cases;
- Provide and maintain an overview of key mitigation technologies;
- Coordinate with other ITU Study Groups and other bodies on a regular basis to ensure closest alignment.

Question 18/5

Methodologies for the assessment of environmental impact of ICT

Brief description

- Develop common methodologies that allow objective, transparent and practical assessments of ICT environmental impacts, at :
  - goods, networks and services level,
  - organizations level,
  - projects level,
  - cities level and
  - countries level.

Main tasks

- Further develop / finalize Recommendations L.methodology ICT in cities and L.methodology ICT in countries;
- Revise existing Recommendations L.1410 and L.1420.

Question 19/5

Power feeding systems

Brief description

- With internet, more ICT equipment (routers, servers, switches) with higher rack power density (tens of kW);
- Unified power interface such as the higher voltage DC replacing Telecom DC 48V and AC UPS for higher efficiency and reliability;
- Other advantages: smaller cable and lighter weight, flexibility, better life cycle : less use of materials, less CO2 emission in manufacturing and use, …
- Simple use of renewable energy (PV, wind, biofuels) and storage for smartgrid.

Main tasks

Recommendations:

- Specifications of the power feeding system (DC, other ?);
- System configuration, architecture, and cable distribution;
- Methodologies for evaluating performance of feeding systems and their environmental impact.

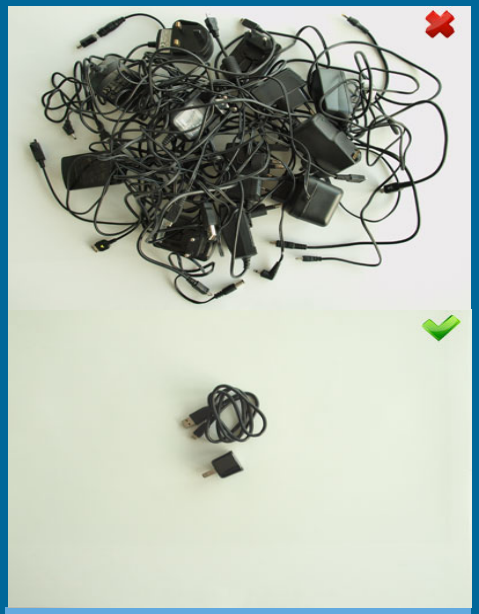
Studies:

- Enabling use of renewable and alternative energy sources;
- Coordination of these sources and DC interface.

Some examples of ITU-T Study Group 5's Work to Shape Smart Sustainable Cities

Highlights on deliverables

E-waste



One adapter size fits all

Recycling rare metals in ICT products

Green batteries

Highlights on deliverables

Climate change adaptation

- **New Recommendation ITU-T L.1500** - Framework for information and communication technologies (ICTs) and adaptation to the effects of climate change (*consented*)

  - ✓ **Recommendation ITU-T L.1501** - on how countries can utilize ICTs to adapt to the effects of climate change (*consented*)
  - ✓ **Recommendation ITU-T L.Infrastructure_Adaptation** - on adapting the ICT infrastructure to the effects of climate change (*under development*)
  - ✓ **Recommendation ITU-T L.Cities_Adaptation** - on how ICTs can help cities to adapt to the effects of climate change (*under development*)

Highlights on deliverables

Best practices for green data centres

Recommendation ITU-T L.1300rev

- Best practices related to optimum design and construction;
- Efficient use and management of data centres, taking into account both power and cooling equipment.

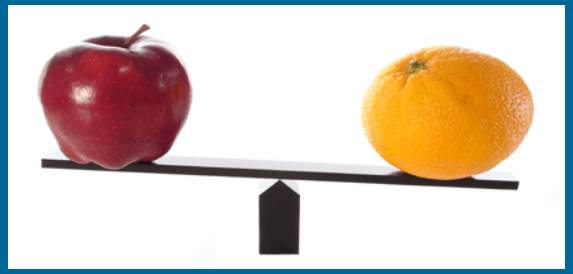
For example, applying best practices to cooling could reduce the energy consumption of a typical data centre by more than 50%.

Highlights on deliverables

Energy efficiency measurement

Recommendation ITU-T L.1310rev

- Metrics and measurement methods defined for broadband wireline/wireless equipment and small networking devices
- These metrics allow for comparisons of equipment within the same class (e.g. equipment using the same technologies)



Highlights on deliverables

Common set of methodologies for the environmental assessment of ICT

- Without, it will be impossible to provide meaningful comparisons
- Helps to establish the business case to go green
- Developed in cooperation with UNFCCC, ETSI, EC and over 40 other organizations, etc..

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GENERAL

ITU, ETSI align ICT environmental impact standards

Friday 30 May 2014 | 09:22 CET | News

The International Telecommunication Union (ITU) and European Telecommunication Standardisation Institute (ETSI) have agreed a standardised way to assess the direct environmental impact of ICT goods, networks and services, as well as their indirect impact on greenhouse gas emissions of non-ICT industry sectors. The jointly developed specification has been created in acknowledgement of the importance of providing industry with tools to provide a lifecycle assessment of the environmental impact of its activities. It was partly driven by a need to avoid a proliferation of methodologies which would cause confusion to the industry.

The Methodology for Environmental Life Cycle Assessment (LCA) of ICT goods, networks and services, known as ITU-T L.1410 in ITU-T and ES 203 199 in ETSI, has achieved first-stage approval in the two organisations. The new standard is a technically aligned text of previously approved standards from the ITU and ETSI. A significant improvement to the new text is clearer examples of how the methodology should be applied, a feature that was added following feedback from the European Commission trial of the various methodologies, including ITU-T Recommendation L.1410 and former ETSI TS 103 199. This new standard is just one of the various standards planned to be developed in joint activities by the two bodies in the next 2 to 3 years.

Highlights on deliverables

Methodologies for cities, countries and organizations

- **Recommendation ITU-T L.1400** provides general principles
- **Recommendation ITU-T L.1410** complements ISO 14040 and ISO 14044 for Life Cycle Analysis of ICT Goods, Networks and Services
- **Recommendation ITU-T L.1420** complements ISO 14064-1 and GHG Protocol for the assessment of the impact of organizations from the ICT sector and the impact of ICT in all organizations
- ITU-T L.1410 and ITU-T L.1420 have been successfully tested in the framework of the European Commission ICT pilots
- ITU-T L.1410 is currently being revised jointly with ETSI to take into account other feedback
- **Recommendation ITU-T L.1430** focuses on the impact of ICT projects
- **Recommendations L.ICT in cities** and **L.ICT in countries** are under development

Highlights on deliverables

Power feeding systems

Recommendation ITU-T L.1200 specifies direct current power feeding with interface direct current 260V to 400V at the power input to ICT equipment which can offer many potential benefits:

- simple power chain
- low maintenance
- modularity and power scalability
- high reliability
- high energy efficiency (gain of 5 to 20% energy consumption compared to different existing best in class powering solutions)
- low cost at same performance level

Importance of global standards

- **Promote a sound management of natural resources** – use less, cut e-waste, increase recycling, improve ICT products life-clycle
- **Improve the environmental performance of organizations and promote sustainability** – measure and cut GHG emissions, reduce energy consumption, improve energy efficiency, reduce energy costs
- **Reduce environmental risks and combat climate change** – monitor, mitigate and adapt to climate change, strengthen resilience of ICT infrastructure to climate change, improve disaster risk management capabilities

Work with us!

Importance of global standards

- **Drive competitiveness,** for individual businesses and world economy
- **Lower prices**
- Reduce technical barriers
- Foster **interoperability**
- Manufacturers, network operators and consumers benefit
- **Reduce** negative **impacts** on the **environment**
- **Build the city we want!**

Work with us!

Additional information

- **ITU-T/SG5 "Environment & Climate Change"**
  itu.int/go/tsg5
- **ITU-T and Climate Change**
  itu.int/go/ITU-T/climate

THANK YOU!

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