



# Human Exposure to Electromagnetic Fields (EMFs)



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“Environment and Climate Change” and  
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# Background



Main ITU conferences:

- **World Telecommunication Standardization Assembly (WTSA)**  
Johannesburg, 2008 and Dubai, 2012
- **World Telecommunication Development Conference (WTDC)**  
Hyderabad, 2010
- **Plenipotentiary Conference 2010 (PP-10)**  
Guadalajara, 2010



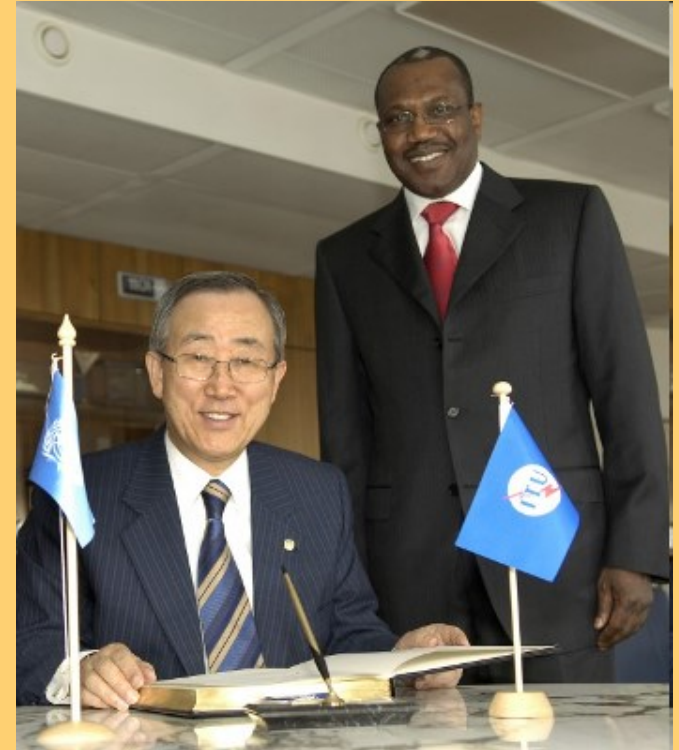


# ITU

- UN specialized agency for ICTs
- unique public/private partnership

## Members:

- **193 Member States**  
(Governments and regulatory bodies)
- **Over 700 Private Sector**  
(Sector Members and Associates)
- **Over 63 Academia**



Mr. Ban Ki-moon, Secretary-General of the United Nations and Dr. H. Touré, Secretary-General of ITU



## ITU-T Mandate

### ITU-T Resolution 72 - "Measurement concerns related to human exposure to electromagnetic fields"

ITU-T Resolution 72 urges ITU to:

- disseminate information related to this topic through organizing workshops and seminars for regulators, operators and any interested stakeholders from developing countries;
- continue to cooperate and collaborate with other organizations working on this topic and to leverage their work, in particular with a view to assisting the developing countries in the establishment of standards and in monitoring compliance with these standards, especially on telecommunication terminals.



## ITU-T Vision

*“The rational solution to citizens’ concerns regarding exposure to EMFs is to ensure that the actions of national regulators and network operators are accompanied to the greatest possible extent by **transparency and communication with citizens.**”*

***Compliance with international standards** and associated reporting mechanisms assures citizens that regulators and network operators have complied with international best practices in deploying base stations, thereby **safeguarding citizens’ health.**”*

**Malcolm Johnson, ITU/TSB Director**

## ITU-T Study Group 5

Lead study group for:

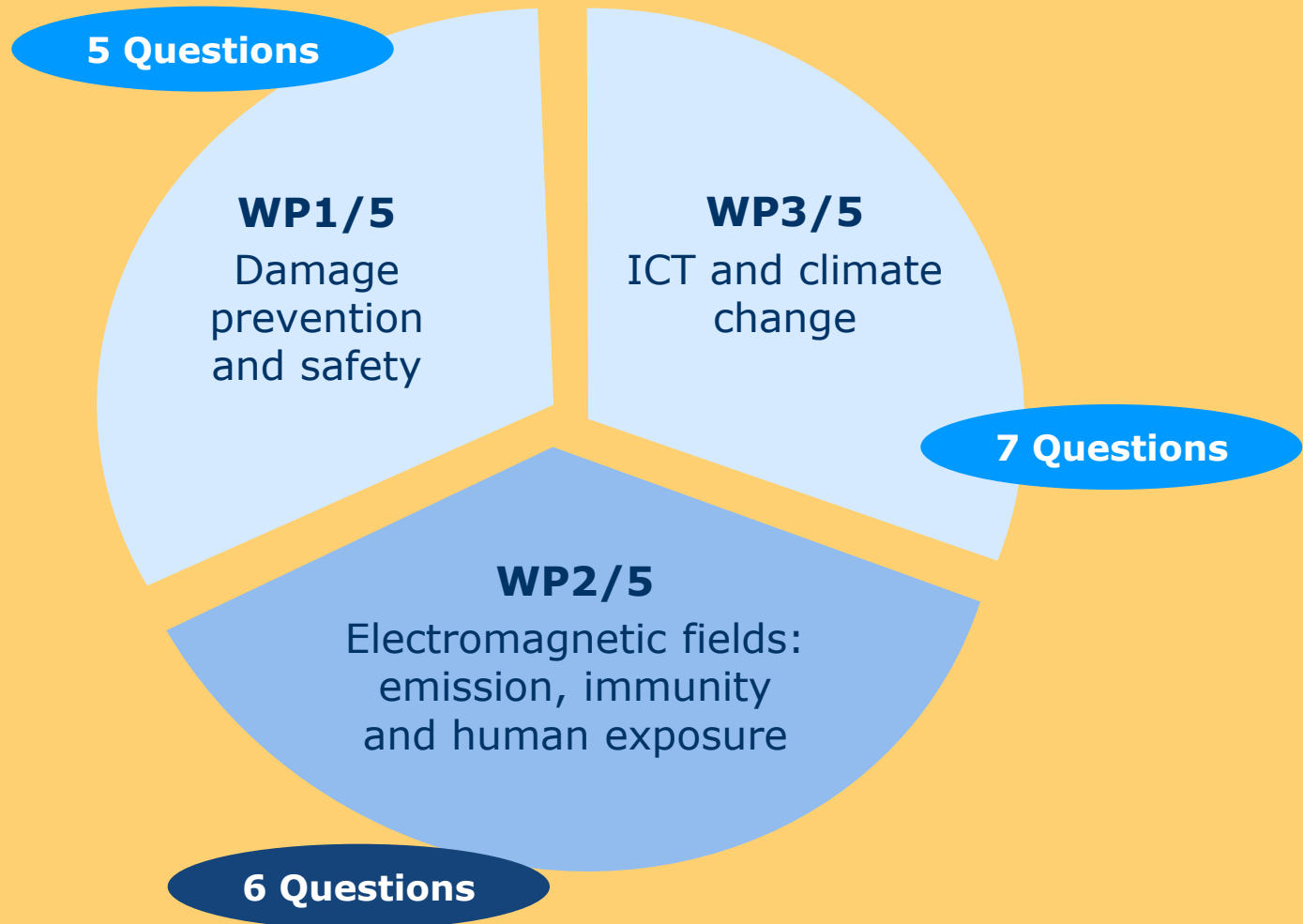
- Environment and climate change
- **Electromagnetic compatibility and electromagnetic effects**





# Structure

ITU-T Study Group 5





# Human exposure to electromagnetic fields (EMFs) due to radio systems and mobile equipment

## Goals

To provide a high level framework for :

- Managing the human exposure to EMFs (regulatory practices).
- Guidelines for the assessment of human exposure exposure based on existing ITU-T Recommendations and standards produced by other standards development organizations (SDOs).

## Ways

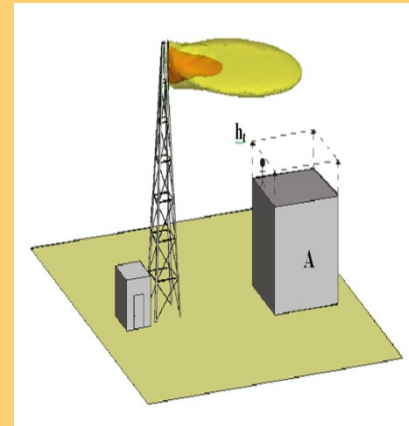
- Measuring techniques
- Procedures
- Numerical modeling for evaluating the electromagnetic field due to telecommunication systems and radio terminals.

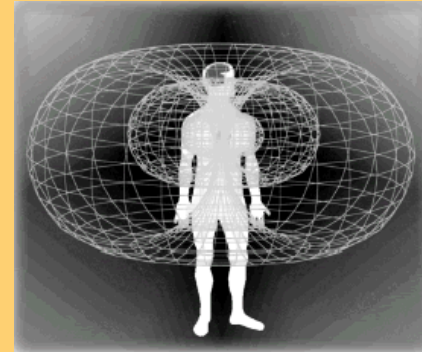




## Main Study Area:

- Real site measurements and modeling of the multiple sources operating on different frequencies and transmitting antennas;
- Determine the validity of electromagnetic field predictions;
- Procedures and guidance on numerical modeling of EMFs in the areas around telecommunication transmitting antennas and various systems;
- Guidance based on existing SAR measuring and calculating procedures, techniques and protocols for evaluating EMF due to ICT equipment;
- Handbook to answer frequently questions about human exposure to EMF.





### Main Tasks:

- Develop Recommendations for the telecommunication sector;
- Work on activities specified in Resolutions;
- Collaboration with other standardization bodies (IEC, CENELEC, WHO) in order to avoid duplication of work;
- Maintenance and enhancement of the existing Recommendations.

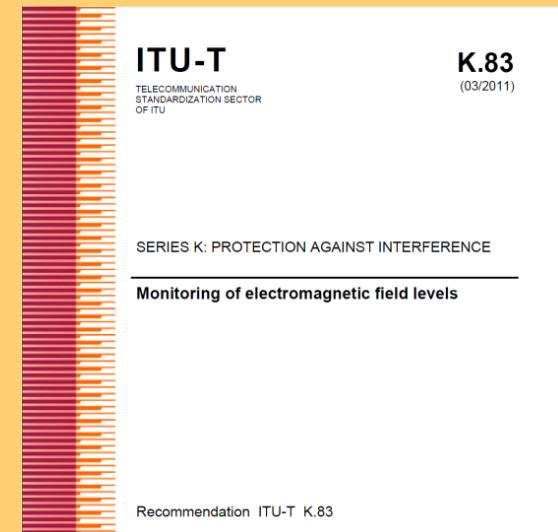




## Question 7/5

### Examples of deliverables:

- **ITU-T K.91** - Guidance for assessment, evaluation and monitoring of the human exposure to radio frequency electromagnetic fields
- **ITU-T K.83** - Monitoring of the electromagnetic field levels
- **ITU-T K.70** - Mitigation techniques to limit human exposure to EMF's within vicinity of radiocommunication stations
- **ITU-T K.52** - Guidance on complying with limits for human exposure to electromagnetic fields
- **ITU-T K.61** - Guidance to measurement and numerical prediction of electromagnetic fields for compliance with human exposure limits for telecommunication installation
- **Handbook** on human exposure to EMF



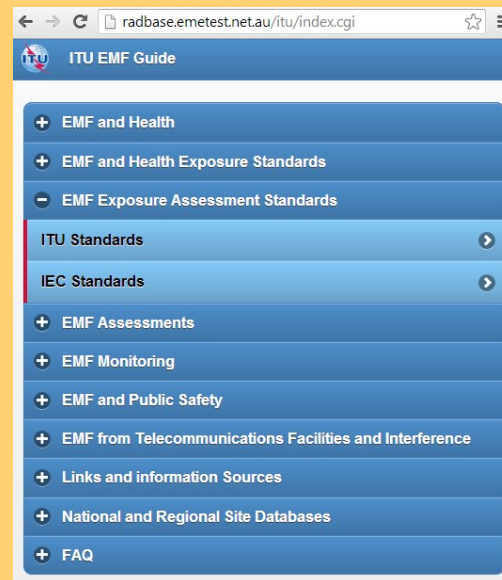


**Objective:** answer the common questions on EMF asked by the public, and to address related concerns;

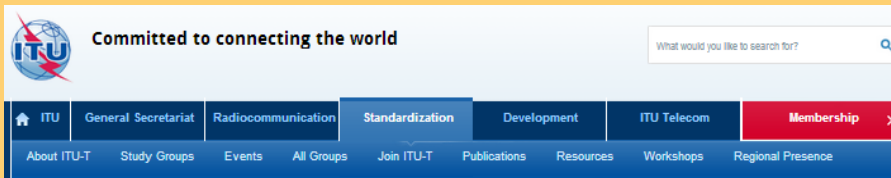
**Provide education and information:** promote EMF information and education resources suitable for all communities, stakeholders and governments;

**Support clarification of the science:** referencing the WHO and other stakeholders providing information most useful in helping clarify scientific uncertainties e.g. in the areas of RF technology, infrastructure implementation, usage, and consequential EMF exposure.

## EMF Guide (Handbook):



EMF Guide will be online and designed for smart phones, tablets and desktop



## ITU-T activities on human exposure to electromagnetic fields (EMFs) due to radio systems and mobile equipment

YOU ARE HERE HOME > ITU-T > ITU-T ACTIVITIES ON HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS (EMFs)

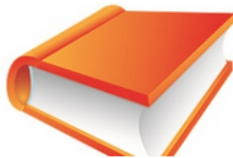
### HIGHLIGHTS



ITU is organizing a workshop on "With ICT's everywhere - How safe is EMF in Latin America?" on 10 December 2013 in Lima, Peru.

More >

### ITU-T RECOMMENDATIONS ON EMF



This webpage provides references to the latest ITU-T Recommendations on EMF issues.

More >

### ITU-T STUDY GROUP 5



ITU-T Study Group 5 (SG5) is the lead study group on ICT environmental aspects of electromagnetic phenomena and climate change. Next meeting will take place on 2-13 December in Lima, Peru.

More >

### EMF ESTIMATOR SOFTWARE



EMF Estimator is a software application that implements the methodology described in ITU-T K.70 to calculate the cumulative radio frequency exposure levels in the vicinity of transmitting antennas.

More >

### HIGHLIGHTS

- Flyer
- News, May
- Outcome of Human Exp. (EMFs): Q. [ES] new
- Outcome of Human Exp. (EMFs): T. [ES] new
- Executive Study Group January -

### QUICK LINKS

- ITU-T Study Climate Ch
- Focus Group (FG-SSC)
- Focus Group (FG-SWM)
- Joint Coord Climate Ch
- ITU-T Study Africa (SG)
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# Human exposure to electromagnetic fields



## ITU-T activities on human exposure to electromagnetic fields (EMFs) due to radio systems and mobile equipment

The World Telecommunication Standardization Assembly (WTSA-12) held in Dubai, 20-29 November 2012, approved Resolution 72: Measurement concerns related to human exposure to electromagnetic fields.

Within the Telecommunication Standardization Sector (ITU-T) of the International Telecommunication Union (ITU), ITU-T Study Group 5 (SG5) is the lead study group on ICT environmental aspects of electromagnetic phenomena and climate change.

SG5's Working Party 2 studies EMF issues under Question 7/6: "human exposure to electromagnetic fields (EMFs) due to radio systems and mobile equipment". The resulting international standards (ITU-T Recommendations) provide high-level frameworks for the management of human exposure to EMFs emitted by telecommunication equipment (best-practice regulatory guidelines), and also offer guidelines for the assessment of human exposure based on existing ITU-T Recommendations and standards produced by other standards development organizations (SDOs).

To achieve these goals, Question 7/6 looks at measuring techniques, procedures and numerical models for evaluating the electromagnetic fields stemming from telecommunication systems and radio terminals.



### Key outcomes of SG5 EMF work include, inter alia:

#### EMF Handbook

A new EMF handbook or web-based technical information paper including the option of an EMF information application is being developed.

EMF Estimator Software: Updates to Recommendation ITU-T K.70 "Mitigation techniques to limit human exposure to EMFs in the vicinity of radiocommunication stations"

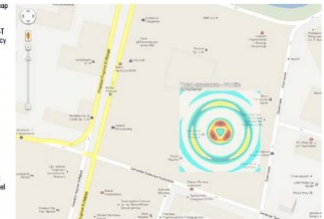
EMF Estimator - Exposure plot overlaid on a map

EMF Estimator is a software application that implements the methodology described in ITU-T K.70 to calculate the cumulative radio frequency exposure levels in the vicinity of transmitting antennas.

EMF Estimator also contains the library of the radiation patterns of transmitting antennas for a wide range of radio communication and broadcast services.

A typical application for EMF estimator would be the calculation of EMF levels in a local community from a cellular base station or community broadcast service.

New features of the EMF Estimator software include options to import antenna patterns directly from manufacturers' websites, as well as an option to present results of exposure level evaluations overlaid on a Google map.





# Shaping the Global Agenda

## Workshop on Human Exposure to Electromagnetic Fields (Turin, 9 May 2013)

- Outcome document: **Turin Call to Action**
- Compliance with harmonized EMF Standards and addressing public concern regarding human exposure to electromagnetic fields (EMF) and possible health effects

## Raising Awareness in Latin America:

- Workshop on Human Exposure to Electromagnetic Fields (Quito, Ecuador, 14 August 2013)
- Workshop on "With ICT's everywhere - How safe is EMF in Latin America?" (Lima, Peru, 10 December 2013)

The way Forward

**Collaboration** among stakeholders (such as ITU, WHO...) is key!



## Links and Additional Information

- ITU-T/SG5 "Environment & Climate Change"  
[itu.int/ITU-T/studygroups/com05/](http://itu.int/ITU-T/studygroups/com05/)
- ITU-T/SG5 Series K Recommendations (free of charge)  
[itu.int/ITU-T/recommendations/index\\_sg.aspx?sg=5](http://itu.int/ITU-T/recommendations/index_sg.aspx?sg=5)
- ITU-T and EMF  
[itu.int/ITU-T/emf](http://itu.int/ITU-T/emf)



**Thank YOU**  
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