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| Title: ITU logo | INTERNATIONAL TELECOMMUNICATION UNION**TELECOMMUNICATION STANDARDIZATION SECTOR**STUDY PERIOD 2022-2024 | TSAG-TD333 |
| TSAG |
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| **Source:** | ITU-T Study Group 5 |
| **Title:** | LS/i on ITU-T Study Group 5 Lead Study Group Report [from ITU-T SG5] |
| **LIAISON STATEMENT** |
| **For action to:** | - |
| **For information to:** | TSAG |
| **Approval:** | ITU-T Study Group 5 management team (8 January 2024 by correspondence) |
| **Deadline:** | N/A |
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A new liaison statement has been received from SG5.

This liaison statement follows and the original file can be downloaded from the ITU ftp server at <http://handle.itu.int/11.1002/ls/sp17-sg5-oLS-00116.docx>.

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|  | INTERNATIONAL TELECOMMUNICATION UNION**TELECOMMUNICATIONSTANDARDIZATION SECTOR**STUDY PERIOD 2022-2024 | **SG5-LS116** |
| **STUDY GROUP 5** |
| **Original: English** |
| **Question(s):** | All/5 |  |
| **LIAISON STATEMENT** |
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| **Abstract:** | This liaison statement informs TSAG on SG5 lead roles and gives an update on SG5 activities from January to December 2023. |

# 1 Introduction and highlights

ITU-T Study Group 5 “EMF, environment, climate action, sustainable digitalization, and circular economy” provides a unique platform to tackle critical issues related to electromagnetic fields (EMF), environment, climate action, sustainable digitalization, and circular economy. ITU-T SG5 continues to play a crucial role in addressing various aspects related to environmental sustainability and digital transformation. ITU-T SG5 actively collaborates with other ITU Study Groups, Standard Development Organizations such as ETSI Technical Committee on Environmental Engineering, United Nations Agencies and other entities.

ITU-T Study Group 5 is actively fulfilling its mandate as the lead study group on:

* electromagnetic compatibility, resistibility and lightning protection, soft error caused by particle radiations;
* human exposure to electromagnetic fields;
* circular economy, and e-waste management; and
* ICTs related to the environment, energy efficiency, clean energy, and sustainable digitalization for climate actions.

More information is detailed in Section 4.

From January until December 2023, ITU-T SG5 has organized two meetings and one WP2/5 plenary meeting, as shown in the table below. Furthermore, ITU-T SG5 has contributed to the organization of events and sessions to raise awareness on the role of standards on Environment, Climate Change and Circular Economy.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Meeting, Venue and Date** | **Recommendations consented** | **Documents Agreed** | **New work items agreed** | **Executive Summary** |
| WP2/5 virtual plenary, 9 February 2023 | 1 | 0 | 0 | [Link](https://www.itu.int/en/ITU-T/studygroups/2022-2024/05/Pages/exec-sum-202302.aspx) |
| ITU-T Study Group 5 meeting,Sophia Antipolis, 13-23 June 2023 (jointly with ETSI TC EE) | 11 | 2 | 26 | [Link](https://www.itu.int/en/ITU-T/studygroups/2022-2024/05/Pages/exec-sum-202306.aspx) |
| ITU-T Study Group 5 meeting,Geneva, 13-22 November 2023 | 11 | 2 | 27 | [Link](https://www.itu.int/en/ITU-T/studygroups/2022-2024/05/Pages/exec-sum-202311.aspx) |

# 2 Main achievements

The list of results pertaining to ITU-T SGs Recommendations on electromagnetic compatibility, resistibility and lightning protection, soft error caused by particle radiations, human exposure to electromagnetic fields, circular economy, and e-waste management and ICTs related to the environment, energy efficiency, clean energy, and sustainable digitalization for climate actions, since January 2023, are provided in Annex 1 (status: until 19 December 2023).

The first meeting of ITU-T SG5 last year was held in Sophia Antipolis, France from 13 to 23 June 2023. This meeting was kindly hosted by ETSI, and a joint plenary and joint sessions were held. One important Recommendation consented during the June meeting was Recommendation ITU-T L.1070 “Global digital sustainable product passport opportunities to achieve a circular economy”.

The main highlights concerning the second SG5 meeting (13-22 November 2023) are described in the following text.

**Working Party 1/5** experts consented four revised Recommendations:

* ITU-T K.83 “Monitoring of the electromagnetic field levels”,
* ITU-T K.91 “Guidance for assessment, evaluation and monitoring of human exposure to radio frequency electromagnetic fields”,
* ITU-T K.37 “Low and high frequency EMC mitigation techniques for telecommunication installations and systems – Basic EMC Recommendation”, and
* ITU-T K.38 “Radiated emission test procedure for physically large systems”.

One new Recommendation was consented:

* ITU-T K.154 “Operating telecommunication facilities using lightning strikes data obtained from Lightning Location Systems”.

One Implementer’s guide to ITU-T K.44 was agreed “Guide on the use of the overvoltage resistibility for Recommendations ITU-T K.20, K.21 and K.45”.

Six new work items were established:

* ITU-T K.81 “High-power electromagnetic immunity guide for telecommunication systems”
* ITU-T K.87 “Guide for the application of electromagnetic security requirements – Overview”
* ITU-T K.117 “Primary protector parameters for the surge protection of equipment Ethernet ports”
* ITU-T K.147 “Protection of digital ports connected to balanced pairs of conductors”
* ITU-T K.supple\_tov “Protection of ICT Equipment with DC Power Supply against Transient Overvoltage (TOV)”
* and ITU-T K.emc\_UWB “Electromagnetic compatibility requirements and test methods for Ultra Wide Band equipment”

Under the umbrella of **Working Party 2/5**, two Recommendations were consented:

* ITU-T L.1362 “Power management capabilities of the future energy telecommunication fixed network nodes. Enhanced Interface for power management in Network Function Virtualization (NFV) environments”
* ITU-T L.1307 “Energy Efficiency in Micro Data Centre for Edge Computing”

Twelve new work items were established:

* ITU-T L.MM\_Computing\_power “Computing power efficiency matrix and measurement methodology”
* ITU-T L.Cooling\_DC “Guidelines on the selection of cooling technologies for data centres in multiple scenarios”
* ITU-T L.1310rev “Energy efficiency metrics and measurement methods for telecommunication equipment”
* ITU-T L.1331rev “Assessment of mobile network energy efficiency”
* ITU-T L. L.TR\_TA\_GC “Testing and Assessment method of Green Computing Power”
* ITU-T L.TR\_CR\_BS “Energy Efficiency Classification Criteria of Base Station Sites”
* ITU-T L.TR\_MS\_DS “Measurement methods for energy consumption of the Domain Name System (DNS) in distributed data centres”
* ITU-T L.EnvPerSmarphone “Method for environmental performance scoring of smartphones”
* ITU-T L.Env.TSPC “Resource saving, e-waste reduction and energy saving system methodology using twisted single pair cable”
* ITU-T L.circularCityKPIs “Key performance indicators in circular cities”
* ITU-T L.FrameworkCcArchitecture “Architecture Development Framework for circular city”
* ITU-T L.resBIMS “Resolution method for Building Infrastructure Management Systems (BIMS) in sustainable city”

One Questionnaire was agreed on the best practices for implementing the circular economy.

As for **Working Party 3/5**, experts consented three new Recommendations:

* ITU-T L.1640 “Methodology for dynamic monitoring and analysis of greenhouse gas emissions in city”
* ITU-T L.1508 “Framework for climate change adaptation in coastal cities using ICT and digital technologies”
* ITU-T L.1391 “Specifications of 5G network sharing and co-construction adapting to climate change mitigation”

One new supplement was agreed:

* ITU-T L.Suppl.59 to ITU-T L.1700 series “Low-cost sustainable telecommunication for rural communications in developing countries enabling SIP based voice calling on WLAN/Wi-F”

Nine new work items were established:

* ITU-T L.Env\_DC “Guidelines on Multi-Dimensional Environmental Metrics and Management for Data Centres”
* ITU-T L.CFSP “Guidelines for the assessment of the carbon footprint of Software Products”
* ITU-T L.GHG emissions\_PS “Guidelines for GHG emissions accounting in power systems”
* ITU-T L.Suppl.Mobile\_phone\_LCA “Example of an LCA of a mobile phone fully compliant with L.1410”
* ITU-T L.database countries “Criteria for the development and maintenance of databases on national ICT sector GHG emissions”
* ITU-T L.database EF “Criteria for the development and maintenance of an ITU database on emission factors”
* ITU-T L.ITLB “Application Practices of Intelligent Technology in Lithium-ion Battery Management System for Telecommunication Rooms and Data Centers”
* ITU-T L.HRES\_PD “Hybrid Renewable Energy System for ICT Portable Devices”
* ITU-T L.1206 (rev) “Impact on information and communication technology equipment architecture of multiple AC, −48 VDC or up to 400 VDC power inputs”

**3 Plan of work for this study period and towards the next study period and progress**

The list of Recommendations and other texts on electromagnetic compatibility, lightning protection, electromagnetic effects, environment, climate change, energy efficiency, clean energy and circular economy, including e-waste that are currently under development in ITU-T SG5, can be found at: <https://www.itu.int/ITU-T/workprog/wp_search.aspx?sg=5>.

ITU-T SG5 is planning its last meeting before WTSA-24 from 17 to 21 June 2024. At this meeting, the group expects to fulfil its mandate of this study period.

ITU-T Study Group 5 Regional Groups for Africa, Arab Region and Latin America are also planning to meet in 2024.

**4 SG5 as Lead Study Group on electromagnetic compatibility, resistibility and lightning protection, soft error caused by particle radiations, human exposure to electromagnetic fields, circular economy, and e-waste management and ICTs related to the environment, energy efficiency, clean energy, and sustainable digitalization for climate actions**

**4.1 Electrical protection, reliability, safety and security systems**

The phenomena and protection for reliability, safety and security of ICT systems are studied by Question 1/5. The reliability of the infrastructure is essential for the stability of society. The purpose of this Question is to produce new or revised Recommendations or Supplements regarding the protection of telecommunication systems and facilities against the effects of nearby lightning strikes, disturbances from nearby electric power systems, and the security of unintended emissions or intended electromagnetic interference.

Q1/5 is currently working on five work items. See [here](https://www.itu.int/ITU-T/workprog/wp_search.aspx?isn_sp=8265&isn_sg=8268&isn_qu=8294&isn_status=-1,8,1&details=0&field=acdefghijo).

**4.2 Protecting equipment and devices against lightning and other electrical events**

The specification of resistibility and safety applied to telecommunications equipment and infrastructure against lightning and other phenomena is studied by Question 2/5. The purpose of this Question is to produce new or revised Recommendations or Supplements regarding the resistibility of ICT equipment, and also specifications, test methods and principles of application for protective components and assemblies.

Q2/5 is currently working on eight work items. See [here](https://www.itu.int/ITU-T/workprog/wp_search.aspx?isn_sp=8265&isn_sg=8268&isn_qu=8295&isn_status=-1,8,1&details=0&field=acdefghijo).

**4.3 Human exposure to electromagnetic fields (EMFs) due to digital technologies**

The EMF aspect of ICTs and digital technologies is studied by Question 3/5. The purpose of this Question is to develop international standards and guidelines relating to the assessment of human exposure to electromagnetic fields (EMF) produced by ICT installations and devices, including cellular phones and base stations. This concerns the construction, maintenance and use of radiocommunication installations, and the proper use of devices and information on factors affecting exposure from transmitting stations and mobile devices in order to assure compliance with RF EMF limits. These Recommendations and guidelines should provide the appropriate support to countries in establishing national regulations concerning the assessment and compliance of RF EMF exposure. The Question will also develop standards, technical papers and methodologies for compliance with exposure limits of the general public and workers to electromagnetic fields.

Q3/5 is currently working on seven work items. See [here](https://www.itu.int/ITU-T/workprog/wp_search.aspx?isn_sp=8265&isn_sg=8268&isn_qu=8296&isn_status=-1,8,1&details=0&field=acdefghijo).

**4.4 Electromagnetic compatibility (EMC) aspects in ICT environment**

The EMC aspects in the ICT environment are studied by Question 4/5. The electromagnetic environment is changing rapidly through the development and installation of new types of electric/electronic equipment and evolving the telecommunication infrastructure. This Question aims to establish the EMC requirements, including emission and immunity requirements for ICT equipment, and countermeasures for facilities to reduce electromagnetic compatibility issues and maintain a controlled electromagnetic environment for ICT systems and services.

The Question is closely in collaboration with ITU-R SG1, SG5 and SG6, ITU-T SG9, IEC ACEC (Advisory Committee on Electromagnetic Compatibility), IEC CISPR and SC77B.

Q4/5 is currently working on four work items. See [here](https://www.itu.int/ITU-T/workprog/wp_search.aspx?isn_sp=8265&isn_sg=8268&isn_qu=8297&isn_status=-1,8,1&details=0&field=acdefghijo).

**4.5 Environmental efficiency of digital technologies**

The environmental performance and efficiency aspects of digital and frontier technologies are studied under Question 6/5. These technologies are capable of unlocking the next level of efficiency for the public and manufacturing sector, while accelerating progress on the SDGs. However, the environmental performance of digital and frontier technologies themselves is often overlooked. This Question identifies the environmental efficiency requirements of digital and frontier technologies, including their water, materials, and energy efficiency. It focuses on studying technical solutions, enhancements, metrics, key performance indicators and related accurate measurement methods, and reference values for different type of technologies.

Q6/5 is currently working on 25 work items. See [here](https://www.itu.int/ITU-T/workprog/wp_search.aspx?isn_sp=8265&isn_sg=8268&isn_qu=8298&isn_status=-1,8,1&details=0&field=acdefghijo).

**4.6 E-waste, circular economy, and sustainable supply chain management**

The e-waste challenge and the potential of the circular economy to facilitate sustainability in ICTs and add new values to supply chain management is studied by Question 7/5. This Question seeks to address the e-waste challenge by identifying the environmental requirements of digital technologies, including IoT, end-user equipment and ICT infrastructures or installations, based on the circular economy principles and improving the supply chain management.

Q7/5 is currently working on 15 work items. See [here](https://www.itu.int/ITU-T/workprog/wp_search.aspx?isn_sp=8265&isn_sg=8268&isn_qu=8299&isn_status=-1,8,1&details=0&field=acdefghijo).

**4.7 Guides and terminology on environment**

The activities on the development of Guides and terminology on environment and climate change are studied by Question 8/5. Q8/5 is tasked with: working on all terms, definitions, abbreviations, letter symbols and schematic symbols used in the ITU-T Study Group 5 Recommendations, Supplements, Handbooks and Directives; harmonizing with terminology used by other parties outside of ITU-T Study Group 5; and liaising with other bodies regarding terminology used in the Study Group 5 Recommendations, among others.

Q8/5 works closely with ITU-T Standardization Committee for Vocabulary (SCV).

Q8/5 is currently working on one work item. See [here](https://www.itu.int/ITU-T/workprog/wp_search.aspx?isn_sp=8265&isn_sg=8268&isn_qu=8300&isn_status=-1,8,1&details=0&field=acdefghijo).

**4.8 Climate change and assessment of digital technologies in the framework of the Sustainable Development Goals (SDGs) and the Paris Agreement**

Question 9/5 aims to develop assessment methodologies and guidance that allow objective, transparent and practical assessments of the sustainability impacts of digital technologies, including information and communication technologies (ICTs), artificial intelligence and 5G, in order to align their developmental trajectories with the Paris Agreement and the United Nations Sustainable Development Agenda. This Question also aims to study how environmental assessments may be used in the frame of broader sustainable development assessments, including economic, environmental and social assessments.

Q9/5 is currently working on 27 work items. See [here](https://www.itu.int/ITU-T/workprog/wp_search.aspx?isn_sp=8265&isn_sg=8268&isn_qu=8301&isn_status=-1,8,1&details=0&field=acdefghijo).

**4.9 Climate change mitigation and smart energy solutions**

The use of ICTs and smart technologies to improve the efficiency of energy management systems and reduce carbon emissions is being studied by Question 11/5. This Question aims to develop standards, guidance, Supplements and/or Technical Reports to create a smart energy system using ICT and digital technologies such as artificial intelligence, apply smart energy solutions to achieve a low-carbon economy, and develop effective and efficient ICT and digital technologies-based solutions for energy management and energy saving solutions.

Q11/5 is currently working on 14 work items. See [here](https://www.itu.int/ITU-T/workprog/wp_search.aspx?isn_sp=8265&isn_sg=8268&isn_qu=8302&isn_status=-1,8,1&details=0&field=acdefghijo).

**4.10 Adaptation to climate change through sustainable and resilient digital technologies**

The use of sustainable and resilient ICTs and digital technologies to adapt to the effects of climate change is being studied by Question 12/5. This Question looks to support the development of energy efficiency ICT architectures, add energy-saving features to ICTs equipment and applications, improve air-flow controlling technology, cooling technology and renewable energy systems, and more. It also recognizes the lack of adequate broadband infrastructure in rural areas. Question 12/5 aims to develop Recommendations, Supplements and/or Technical Reports that support the deployment of digital technologies in accelerating climate adaptation actions. Particular emphasis has been placed on expanding the capacity of rural communities and areas to build and maintain climate-resilient ICT infrastructures.

Q12/5 is currently working on four work items. See [here](https://www.itu.int/ITU-T/workprog/wp_search.aspx?isn_sp=8265&isn_sg=8268&isn_qu=8303&isn_status=-1,8,1&details=0&field=acdefghijo).

**4.11 Building circular and sustainable cities and communities**

The building of circular and sustainable cities and communities is being studied by Question 13/5. This Question aims to develop Recommendations, Supplements and/or Technical Reports identifying requirements and providing guidance, innovative frameworks and tools that support the transition to a circular city.

Q13/5 is currently working on four work items. See [here](https://www.itu.int/ITU-T/workprog/wp_search.aspx?isn_sp=8265&isn_sg=8268&isn_qu=8304&isn_status=-1,8,1&details=0&field=acdefghijo).

**5 Collaboration with other SGs and external organizations**

ITU-T SG5 collaborates with several ITU Study Groups, SDOs, UN Agencies and other organizations to strengthen the work on environment, climate action and circular economy. Details for each Working Party are described in the following paragraphs. ITU-T SG5 representatives also participate in the ITU Intersectoral Coordination and provide updates of its activities.

WP1/5 maintains collaboration with ITU-T SG15 on conformance and interoperability, IEC TC81 and CENELEC TC 81X on lightning protection, IEC TC 108 on safety (especially on remote power feeding), IEEE PES SPDC, IEC SC 37A and 37B on surge protective devices, IEC SC 77B on high frequency transients, and ETSI ERM on lightning protection, CIGRÉ, CIRED and UIC on power frequency interference, IEC TC 64 on safety (protection against electric shock), and IEEE PES SPDC on surge protective devices.

It also maintains collaboration with ITU-T SG9, ITU-R WP1A, WP1C, WP4A, WP4C, WP5A, WP5B, WP5C, WP5D, WP6A and IEC TC 77 on EMC issues; with ITU-D, WHO, ICNRIP and IEC TC106 on topics on assessment of human exposure to electromagnetic fields (RF EMF); with ITU-T SG17 and IEC SC77C on topics on security of telecommunication and information systems concerning the electromagnetic environment. WP1/5 also collaborates with ITU-T SG12, IEC TC47 and IEC TC 107 for studies on soft error by particle radiations. Additionally, WP1/5 exchanges information with IEC SC77B, SC77C, TC106 and CISPR through liaisons with IEC ACEC. WP1/5 also maintains collaboration with CISPR/I.

WP2/5 and WP3/5 maintains close collaboration with ETSI TC EE, ITU-T SG11; ITU-T SG2; FAO, CEN-CENELEC (SABE)and the World Bank on ICTs and adaptation to the effects of climate change topics; with IEC SEG4 on advance and low impact power feeding solutions and with 3GPP; ATIS; CCSA; CEDARE; ETNO; ETSI TC ATTM, FG AI4H; FG ML5G; FG NET2030; FG-VM; ISO; IEC; IEEE; CEN/CLC/JTC 10; IEC SyC LVDC; JCA-IMT2020; JCA-IoT; JCA-ML and SC&C; ITU-T Study Groups, SCV, ISO TC323, CEN/CENELEC/ETSI SF-SSCC “Circular Economy” on e-waste management, energy efficiency, circular economy and other green ICT standard topics.

WP2/5 and WP3/5 collaborate with ITU-D SG2 on aspects related to Environment, Climate Change and Circular Economy and with ITU-R Study Groups on topics related to energy efficiency and GHG emissions of broadcasting services.

WP2/5 has also collaborated with ISO/TMBG/CCCC “Climate Change Coordination Committee (CCCC)”. Additionally, WP2/5 exchanges information with ISO TC 207, CEN/CLC environmental TC, IEC SyC Smart Cities through liaisons with IEC ACEA.

Additionally, WP2/5 and WP3/5 collaborate closely with GSMA, GESI, SBTi and IEA on the topics related to GHG emissions trajectories for the ICT sector and Scope 3 emissions. Furthermore, the group is collaborating closely with AIOTI on topics related to the enablement aspects of ICT and digital technologies. ITU-T SG5 collaborates and cooperates with the Basel Convention and UNIDO on e-waste management.

ITU-T SG5 is member of the Advisory Board of the European Green Digital Coalition. Additionally, there is active collaboration with CODES and OnePlanet Network on the impact initiative of Digital for Circular Economy (D4CE).

As example of the close collaboration with ETSI TC EE, the Study Group 5 meeting from 13 to 23 June 2023 was held in ETSI headquarters in Sophia Antipolis, France. Joint sessions and a joint plenary between ITU-T SG5 and ETSI TC EE were held.

**6 ITU-T Study Group 5 Regional Groups**

ITU-T Study Group 5 has the following Regional Groups:

* [SG5 Regional Group for the Africa Region](https://www.itu.int/en/itu-t/regionalgroups/sg05-afr/Pages/default.aspx) met in Kampala, Uganda, from 15 to 17 May 2023, at the kind invitation of the Uganda Communications Commission (UCC). The meeting took place under the umbrella of the [Sustainable Digital Transformation Week for Africa Region 2023](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/sg05rg/sdtw/Pages/default.aspx).

Burkina Faso has confirmed its willingness to host the 2024 meeting of the ITU-T SG5 Regional Group for Africa. The Ministry of “Digital Transition, Post and Electronic Communications” officially communicated this intention in a letter to the Director of the Telecommunication Standardisation Bureau.

* [SG5 Regional Group for the Arab Region](https://www.itu.int/en/itu-t/regionalgroups/sg05-arb/Pages/default.aspx) is planning to meet in 2024.
* [SG5 Regional Group for Latin America](https://www.itu.int/en/itu-t/regionalgroups/sg05-latam/Pages/default.aspx) is planning to meet in 2024.
* [SG5 Regional Group for Asia and the Pacific](https://www.itu.int/en/itu-t/regionalgroups/sg05-ap/Pages/default.aspx) has met twice:
	+ Virtually, on 25 May 2023.
	+ In Bangkok, Thailand, from 11–12 September 2023. The meeting was collocated with the ITU-T SG3 Regional Group for Asia and Oceania (SG3RG-AO) and the [ITU Asia and the Pacific Regional Development Forum 2023 (RDF 2023 (ASP)](https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Pages/Events/2023/RDF%20ASP%2023/Regional-Development-Forum-for-Asia-and-the-Pacific.aspx).

**7 ITU-T Study Group 5 preparation for WTSA-24**

At the SG5 meeting held from 13 to 23 June 2023, it was decided to create an Ad Hoc Group on SG5 WTSA-24 preparation. This Ad Hoc Group is working on the following tasks:

* Preparing the revised Terms of Reference of the SG5 Questions.
* Preparing the SG5 revised Mandate (WTSA - Resolution 2).
* Considering the discussion from TSAG on restructuring, WTSA-24 preparation, and providing appropriate guidance to ITU-T SG5.

The Co-Conveners of this Group are:

* Mr Daniel Dianat (daniel.dianat@ericsson.com)
* Ms Qi Shuguang (qishuguang@caict.ac.cn)

This Ad Hoc Group will continue its work until the next meeting of SG5, planned for June 2024.

As part of the first results of the Ad Hoc Group, experts considered the importance that the aspects related to EMC, lightning protection and EMF are kept in ITU-T SG5 given the relevant of this work to environmental sustainability and climate action.

**8 Focus Group on “Environmental Efficiency for Artificial Intelligence and other Emerging Technologies” (FG-AI4EE)**

The final meeting of the FG-AI4EE was held from 1 to 2 December 2022, in Ålesund, Norway. The meeting was preceded by a one-day interactive [ITU Workshop on Environmental efficiency for Artificial Intelligence and emerging technologies](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/2022/1130/Pages/default.aspx) on 30 November 2022. The FG-AI4EE developed a total of 15 Technical Reports and five Technical Specifications.

**9 Other activities**

**9.1 Events on Environment, Climate Change and Circular Economy**

The following sessions and workshops were organized:

* [Workshop on “Accelerating Circular and sustainable Public Procurement of ICT”](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/2023/0214/Pages/default.aspx), Virtual, 14 February 2023.
* [WSIS Session on Enabling the Net Zero Transition – Harnessing ICT solutions to reduce GHG emissions](https://www.itu.int/net4/wsis/forum/2023/Agenda/Session/241), Geneva, 17 March 2023.
* [Episode #23: STI Forum Side event on Building the pathway to sustainable digital transformation](https://www.itu.int/cities/standards4dt/ep23), Virtual, 2 May 2023.
* [Sustainable Digital Transformation Week for Africa Region 2023](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/sg05rg/sdtw/Pages/default.aspx), 15-19 May 2023.
* [WSIS virtual event: Embracing Biodiversity – How the ICT sector can go beyond COP 15](https://www.itu.int/net4/wsis/forum/2023/Agenda/Session/515), 22 May 2023.
* [WSIS virtual event: Sustainable Batteries - The building blocks of a circular economy](https://www.itu.int/net4/wsis/forum/2023/Agenda/Session/494), 26 May 2023.
* Global Symposium for Regulators – [Session 8: Going Green with the Digital Transformation](https://www.itu.int/itu-d/meetings/gsr-23/programme/programme-overview/session-details?sessionid=16), 8 June 2023.
* Workshop on [“Shaping a Sustainable and Digital Future - Pathway towards the Green Standards Week”](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/2023/0615/Pages/default.aspx), Virtual, 15 June 2023.
* Workshop on “[Reducing your carbon footprint – A guide to Scope 3 GHG reporting for telecommunication operators](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/2023/0711/Pages/default.aspx)”, Virtual, 11 July 2023.
* Workshop on “[Working together towards a better future – A guide to Scope 3 emissions reporting](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/2023/0914/Pages/default.aspx)”, Virtual, 14 September 2023 (morning and afternoon session).
* Workshop on “[the Role of ICTs in Standards on Circular Economy and GHG Emissions Reduction](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/2023/1107/Pages/default.aspx)”, Virtual, 9 November 2023.

During COP28, ITU launched the [Green Digital Action](https://www.itu.int/initiatives/green-digital-action-atcop28/) to enhance collaboration, fast-track industry-wide commitments to addressing climate challenges, and put digital solutions at the forefront of climate action. The GDA involved over 40 partners, including industry associations, UN agencies, governments and businesses.

The collective contribution led to a rich Green Digital Action [programme](https://www.itu.int/initiatives/green-digital-action-atcop28/programme/) at COP28, and the efforts resulted in nine concrete [commitments/outcomes](https://www.itu.int/initiatives/green-digital-action-atcop28/about/outcomes/) across four thematic pillars – ICT industry GHG emissions, standards, e-waste and Early Warnings for All.

ITU-T and ITU-T SG5 participated and contributed in COP28 and the Green Digital Action through a broad range of activities, including:

* **Leverage ICT's positive impacts on the climate** (2 December 2023)
* **Reducing ICT sector GHG emissions** (3 December 2023)
* **From commitment to action: Implementing standards for a sustainable future** (4 December 2023)
* **The WSC's session on International Standards for sustainable digital tech** (4 December 2023)
* **Climate classroom – “Digital Solutions for Climate Action”** (6 December 2023)
* **Climate classroom – “Greening Data Centres”**(11 December 2023)

Annex 1

**Achievements of ITU-T Study Group 5 on electromagnetic compatibility, resistibility and lightning protection, soft error caused by particle radiations, human exposure to electromagnetic fields, circular economy, and e-waste management and ICTs related to the environment, energy efficiency, clean energy, and sustainable digitalization for climate actions
(status from January to December 2023)**

* 1. **WP1/5 – EMC, lightning protection, EMF**
		1. **Recommendations approved**

| **SG** | **No** | **Title** |
| --- | --- | --- |
| 5 | K.143 | Guidance on safety relating to the use of surge protective devices and surge protective components in telecommunication terminal equipment |
| 5 | K.60 | Emission levels and test methods for wireline telecommunication networks to minimize electromagnetic disturbance of radio services |
| 5 | K.93 | Immunity of home network devices to electromagnetic disturbances |
| 5 | K.153 | Guidance on Determining the Compliance Boundaries (the exclusion zone) of radio transmitter installations |

**1.1.2 Informative texts agreed**

| **SG** | **No** | **Title** |
| --- | --- | --- |
| 5 | K.Suppl.32  | Case studies of radio frequency-electromagnetic field (RF-EMF) assessment |
| 5 | K.44Imp to Recommendations ITU-T K.20, K.21 and K.45 | Guide on the use of the overvoltage resistibility for Recommendations ITU-T K.20, K.21 and K.45 |

**1.1.3 Deleted Recommendations**

|  |  |  |
| --- | --- | --- |
| SG | No. | Title |
| 5 | K.43 | Immunity requirements for telecommunication network equipment |
| 5 | K.48 | EMC requirements for telecommunication equipment – Product family Recommendation |
| 5 | K.88 | EMC requirements for next generation network equipment |

**1.1.4 Recommendation consented (in AAP Last Call)**

| **SG** | **No** | **Title** |
| --- | --- | --- |
| 5 | K.83 | Monitoring of the electromagnetic field levels |
| 5 | K.91 | Guidance for assessment, evaluation and monitoring of human exposure to radio frequency electromagnetic fields |
| 5 | K.37 | Low and high frequency EMC mitigation techniques for telecommunication installations and systems – Basic EMC Recommendation |
| 5 | K.38 | Radiated emission test procedure for physically large systems |
| 5 | K.154 | Operating telecommunication facilities using lightning strikes data obtained from Lightning Location Systems |

**1.2 WP2/5 – Environmental efficiency, e-waste, circularity, and sustainable ICT networks**

**1.2.1 Recommendations approved**

| **SG** | **No** | **Title** |
| --- | --- | --- |
| 5 | L.1023 | Assessment method for circular scoring |
| 5 | L.1326 | Requirements and use cases of liquid cooling solutions and high energy efficiency solutions for 5G BBU in Centralized-RAN mode |
| 5 | L.1027 | Assessment of material efficiency of ICT network infrastructure goods (circular economy) part 5- server and data storage product disassembly and disassembly instruction” |
| 5 | L.1070 | Global digital sustainable product passport opportunities to achieve a circular economy |
| 5 | L.1631 | Reference model of firefighting infrastructure management system for buildings in sustainable cities |

**1.2.2 Questionnaire agreed**

| **SG** | **Title** |
| --- | --- |
| 5 | Questionnaire on the best practices for implementing the circular economy |

**1.2.3 Recommendations consented (in AAP Last Call)**

| **SG** | **No** | **Title** |
| --- | --- | --- |
| 5 | L.1362 | Power management capabilities of the future energy telecommunication fixed network nodes. Enhanced Interface for power management in Network Function Virtualization (NFV) environments |
| 5 | L.1031 | Guideline for the development of an e-waste management system and achieving the e waste targets of the Connect 2030 Agenda |
| 5 | L.1307 | Energy Efficiency in Micro Data Centre for Edge Computing |

**1.3 WP3/5 – Climate change, adaptation, mitigation, and net-zero emissions**

**1.3.1 Recommendations approved**

| **SG** | **No** | **Title** |
| --- | --- | --- |
| 5 | L.1471 | Guidance and criteria for information and communication technology organizations on setting Net Zero targets and strategies |
| 5 | L.1241 | Methodologies for evaluating the functionality and performance of power supply unit configured for servers |

**1.3.2 Informative texts agreed**

| **SG** | **No** | **Title** |
| --- | --- | --- |
| 5 | L.Suppl.57 | Guidance for assessment of Scope 3 emissions for operators |
| 5 | L.Suppl.59 to ITU‑T L.1700 series | Low-cost sustainable telecommunication for rural communications in developing countries enabling SIP based voice calling on WLAN/Wi-Fi |

**1.3.3 Recommendations consented (in AAP Last Call)**

| **SG** | **No** | **Title** |
| --- | --- | --- |
| 5 | L.1640 | Methodology for dynamic monitoring and analysis of greenhouse gas emissions in city |
| 5 | L.1508 | Framework for climate change adaptation in coastal cities using ICT and digital technologies |
| 5 | L.1391 | Specifications of 5G network sharing and co-construction adapting to climate change mitigation |

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