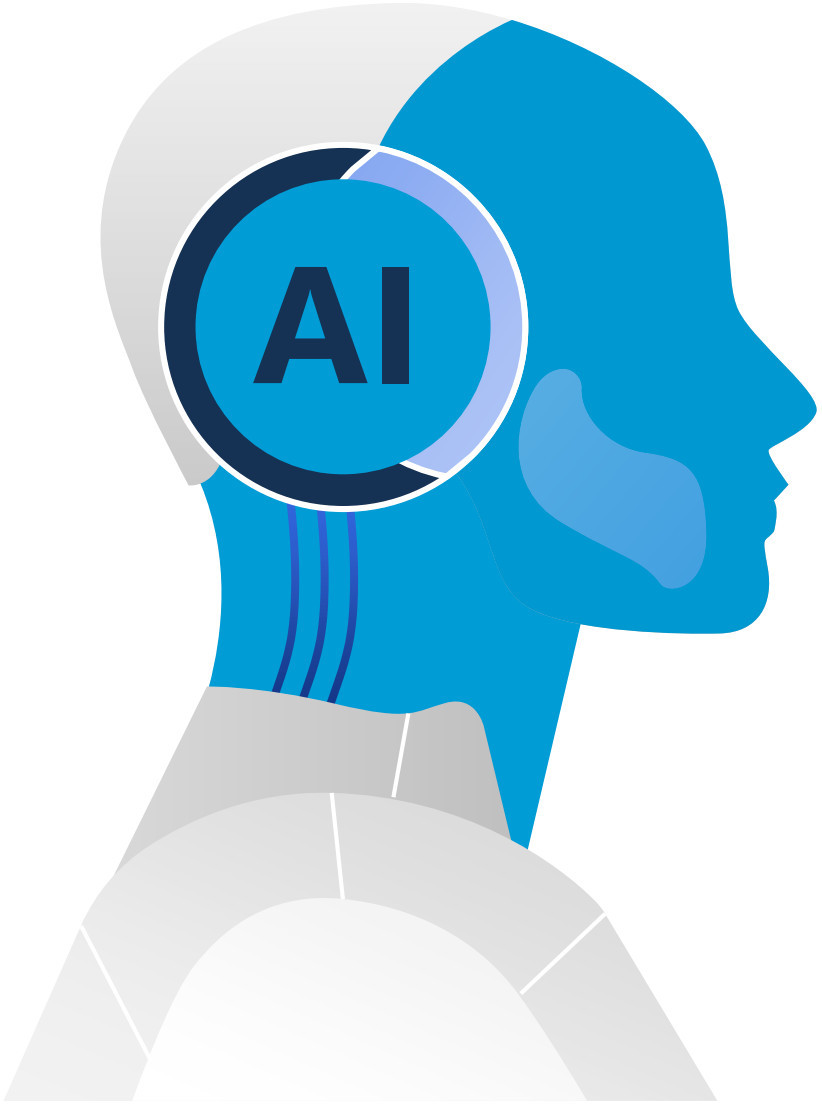
ITU’s Role in Shaping AI and Environmental Sustainability Standards

Dominique Würges
Chair, ITU-T Study Group 5 “Environment, EMF, Climate Action & Circular Economy”

Agenda



01 International Telecommunication Union

02 ITU-T - Standardization activities related to AI

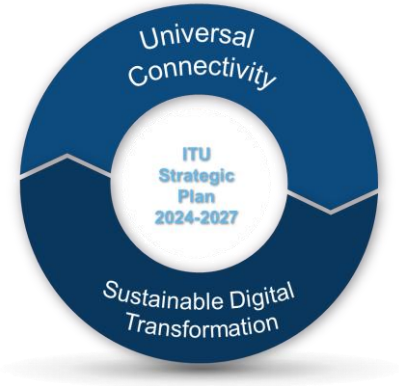
03 ITU’s role in promoting Environmental Sustainability for AI

04 Ongoing ITU-T SG5 standardization work

International Telecommunication Union

Promoting global collaboration for a connected world

The International Telecommunication Union (ITU) is the United Nations specialized agency for information and communication technologies (ICTs)



194 Member States

+1000 Companies, universities, research institutes and international organisations

New Resolution 101 on “Standardization activities of the ITU Telecommunication Standardization Sector on artificial intelligence technologies in support of telecommunications/information and communication technologies”

Key highlights

AI as an enabler for the ICT sector for Universal Connectivity and achieving the SDGs

International AI standardization and implementation esp. in developing countries

Considering:

- that the development and many use cases of AI technologies can be a key enabler for telecommunications/ICTs to contribute to universal sustainable digital connectivity and to achieve the SDGs;

Resolves:

- to continue work on applying AI to telecommunications/ICTs when developing ITU T Recommendations, guidelines, best practices and assessment procedures to enhance the efficiency and capabilities of AI-enabled telecommunications/ICTs;

Instructs:

- to support AI for Good by finding AI uses for SDGs, fostering international AI standardization, and guiding developing countries on implementing AI standards in telecommunications/ICTs;
- to provide technical guidance, in particular to developing countries, on implementing international standards on AI in telecommunications/ICTs.

Key fundable areas

AI for Good
and its Regional
Programming

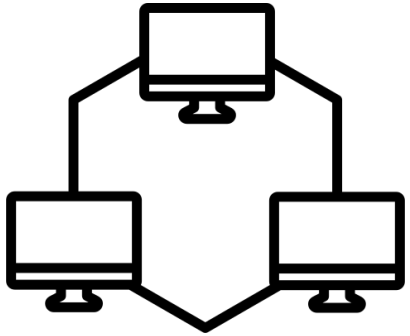
Projects, Challenges, and
Competitions

Research, Surveys,
Reports and Policy
Guidance

Standards, Initiatives &
Best Practices

Capacity-building &
Inclusivity in AI

In-kind resources and
pledges

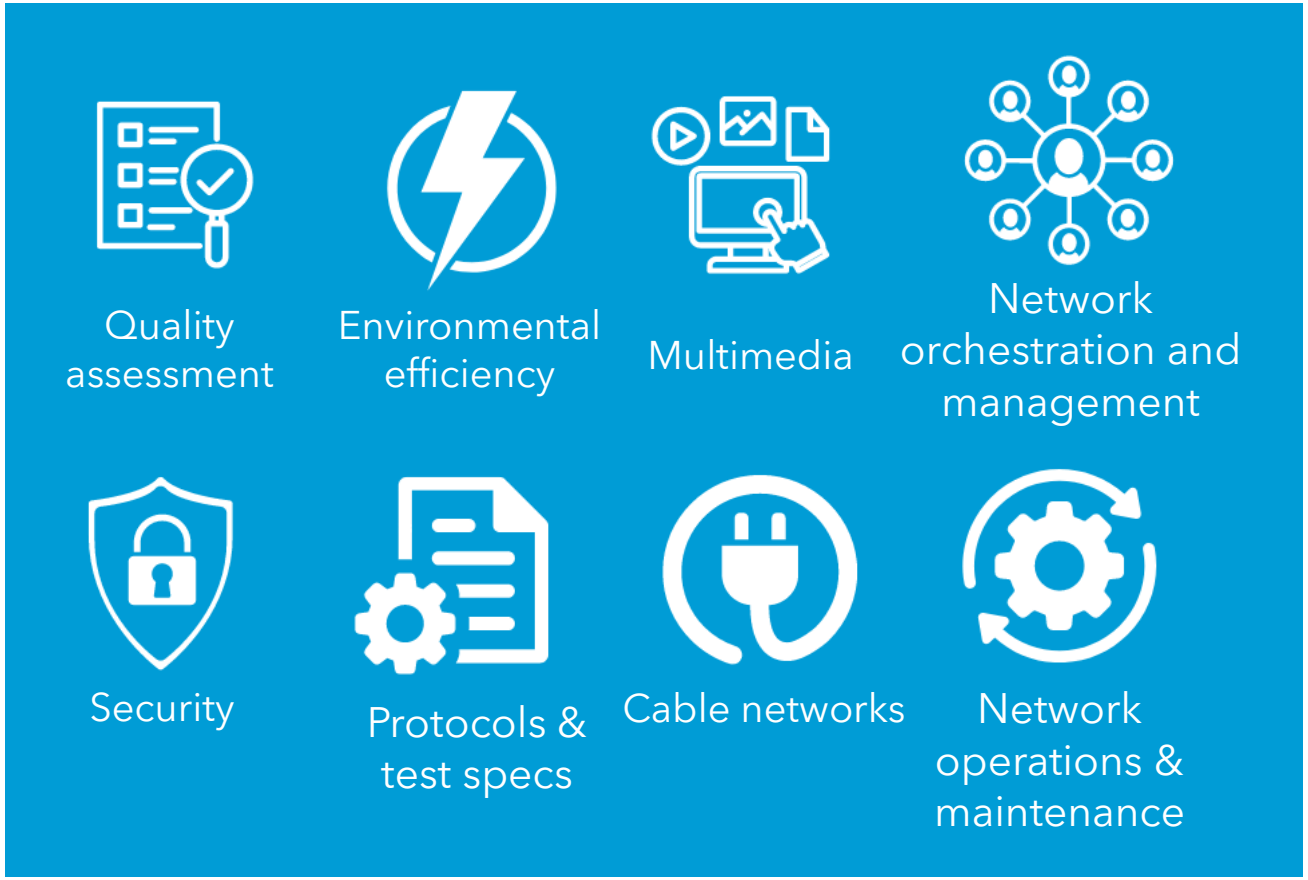


SME AI pipeline identifier

ITU AI Consensus-based Voluntary standards

+220

AI standards published or under development



Including standard frameworks to **integrate AI/ML in networks**, standard **terms and definitions**, standards to **evaluate AI/ML** models and their results, standards for **data handling**

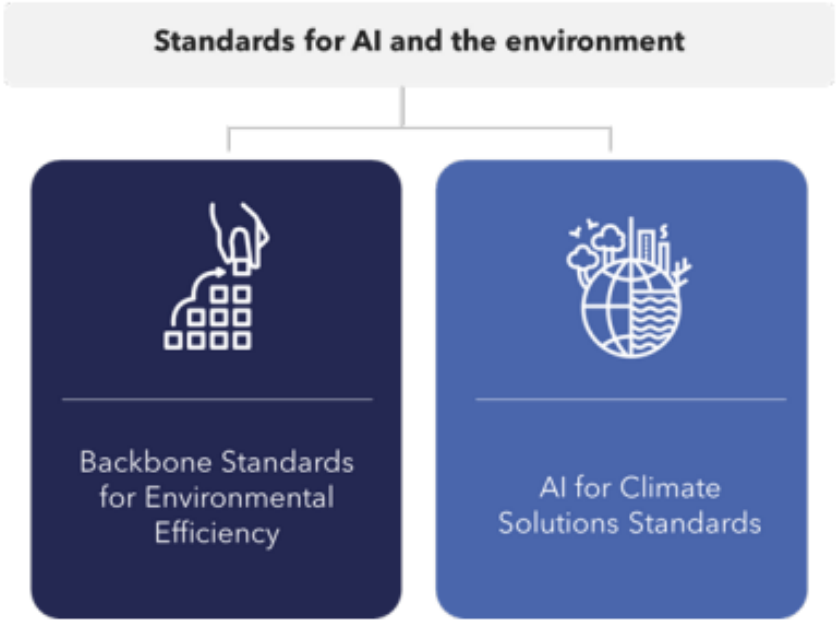
Partnerships laying groundwork for new standards on **AI for health** ITU, WHO, WIPO), **natural disaster management** (ITU, WMO, UNEP), and **digital agriculture** (ITU and FAO), **Human rights and standards** OHCHR

ITU's Role in Promoting Environmental Sustainability for AI and Emerging Technologies

ITU-T
Standardization Sector

ITU-T Study Group 5

Environment, EMF, climate action and circular economy



E-waste and circular economy

Power feeding and energy storage

Energy Efficiency and assessment and monitoring of the network

Environmental efficiency of data centres

Assessment of GHG emissions

Artificial Intelligence and the environment

International standards are guiding the ICT industry to address the environmental sustainability of AI

Lifecycle of Artificial Intelligence Systems

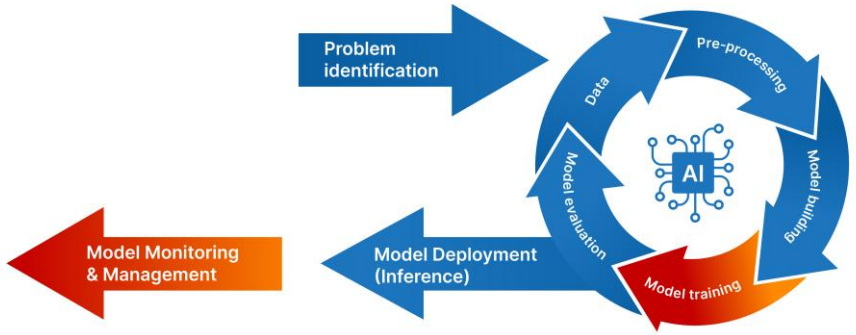
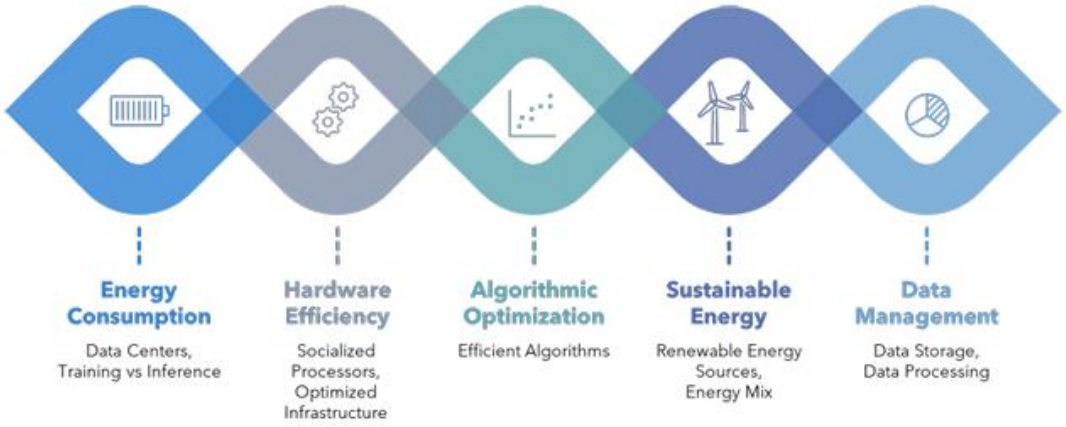
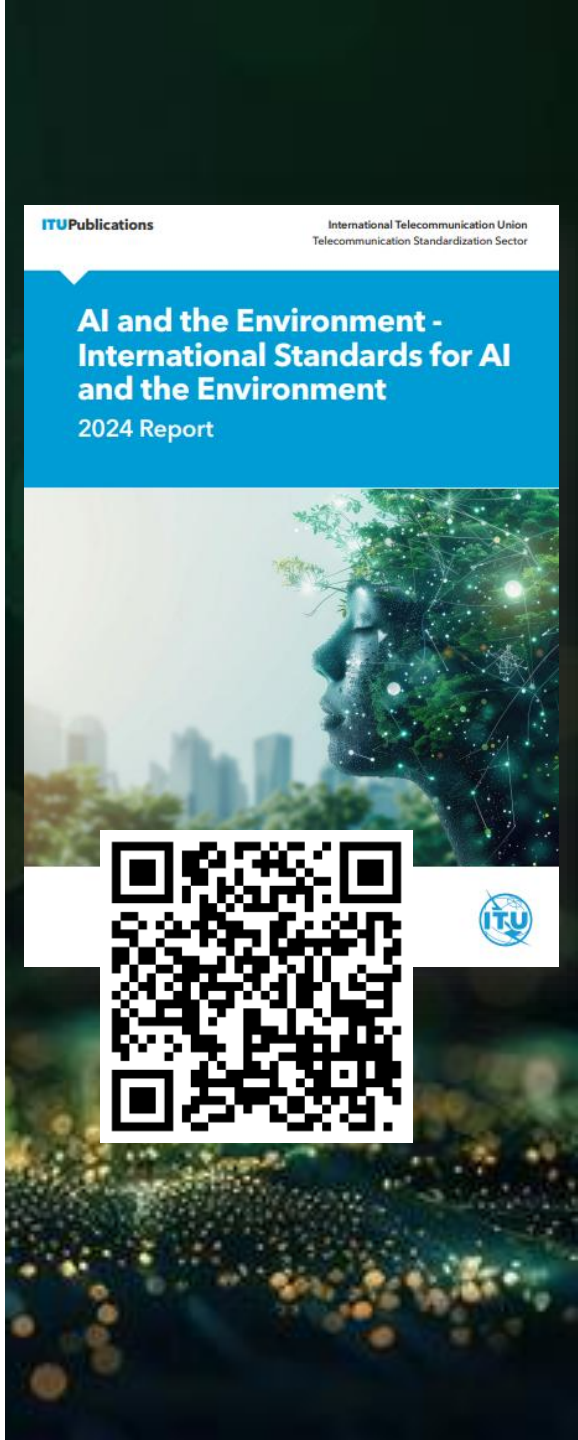


Figure 3: Key Factors of the environmental efficiency of AI systems





Backbone AI standards for Environmental Efficiency

Product level

- ITU-T L1300: Describes best practices aimed at reducing the negative impact of data centres on the climate.
- ITU-T L1310: Energy efficiency metrics and measurement methods for telecommunication equipment
- ITU-T L1320: Energy efficiency metrics and measurement for power and cooling telecom and data centres equipment
- ITU-T L1023: Assessment method for circularity performance scoring
- ITU-T L1070: Global digital sustainable product passport opportunities to achieve a circular economy
- ITU-T L1071: A model for digital product passport information on sustainability and circularity

Site Level

- ITU-T L1350: Energy efficiency metrics of a base station site
- ITU-T L1351: Energy efficiency measurement methodology for base station sites

Network Level

- ITU-T L1331: Assessment of mobile network energy efficiency
- ITU-T L1332: Total network infrastructure energy efficiency metrics
- ITU-T L1333: Carbon data intensity for network energy performance monitoring

Environmental efficiency standards for AI

AI for Climate Solution Standards

5G

ITU-T L1390: Energy saving technologies and best practices for 5G RAN equipment

GHG Emissions

ITU-T L1480: Enabling the Net Zero transition: Assessing how the use of ICT solutions impact GHG emissions of other sectors

Data Centers

ITU-T L.1305: Data centre infrastructure management system based on big data and artificial intelligence technology

Ongoing ITU-T SG5 standardization work

Environmental Impact

- L.EnvAI – AI environmental impact
- L.CFSP – Carbon footprint of software

Data Centres

- L.MM&BP_DC – Decarbonization methodologies

Energy & GHG Emissions

- L.GHG emissions (power systems, base stations, data centres, industrial parks)

Sustainable AI & Computing

- L.S_AI – Sustainable AI/XR systems
- L.DLEE – Deep learning energy efficiency
- L.MM_Computing_power – Computing power efficiency

Standardization scope of ITU-T L.EnvAI

Guidelines for Assessing the Environmental Impact of AI systems

Holistic framework for evaluating the environmental impact of AI, covering **direct and indirect impacts**, **assessment** and **mitigation** strategies

Based on:

- ITU-T L.1410: Methodology for environmental LCA of ICT goods, networks and services
- ITU-T L.1480: Enabling the Net Zero transition – Assessing how the use of ICT solutions impacts GHG emissions of other sectors

Full life cycle of AI systems

Comparative assessment

- AI technology compared to not using AI
- Impact comparison of two AI systems

AI for Good Global Summit

Room V

Workshop

Navigating the intersect of AI, environment and energy for a sustainable future

09:00 - 17:30 CEST

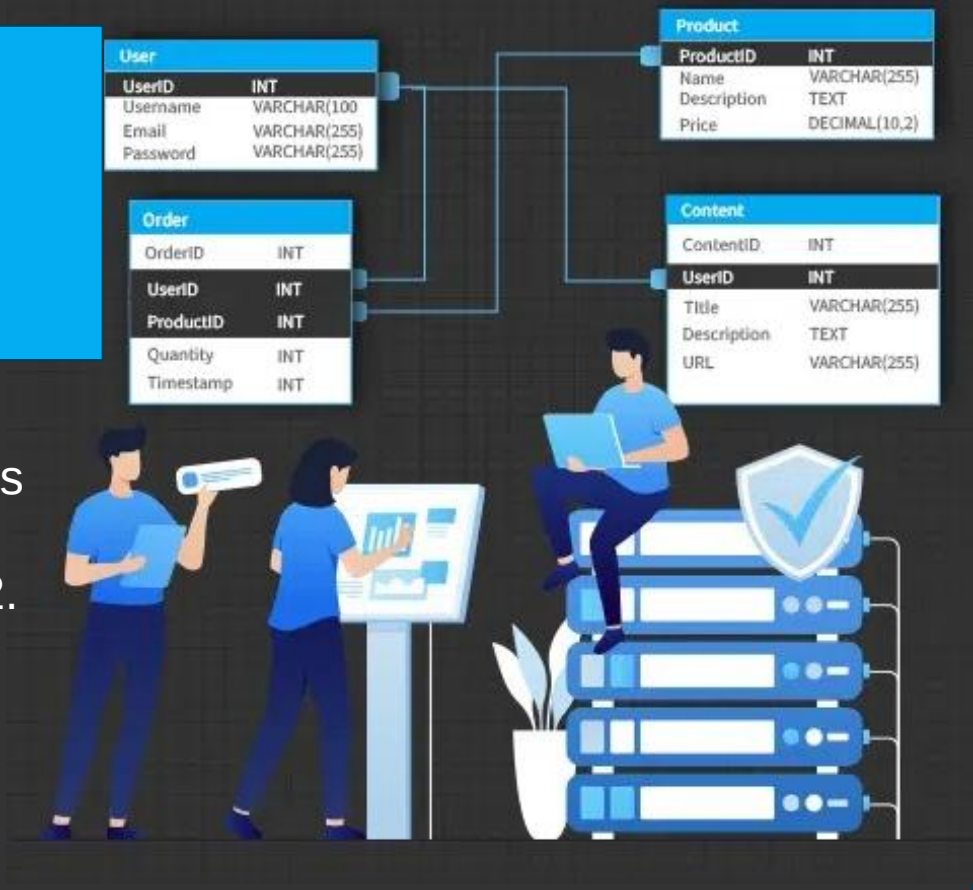
10 July 2025

50+ UN PARTNERS

ITU

Join the pilot project

Implementation of
ITU-T L.1472 - Requirements for the creation of a database on energy consumption and GHG emissions of the ICT sector



- Play a key role in shaping the future ITU database on GHG emissions and energy consumption.
- Help test the feasibility of collecting the data outlined in ITU-T L.1472.
- Contribute to the ITU standardization process.
- Support the Green Digital Action (GDA) initiative's commitments for UNFCCC COP 30.

Contact us

environmentalstandards@itu.int

Dates of the next ITU-T SG5 meeting and upcoming events

- **ITU-T Study Group 5**, Geneva, 29 October – 6 November 2025
- **AI4Good**, Geneva, 7-10 July 2026

Thank you!

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SG5: Environment, climate change and circular economy