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Contribution by Climate Change Coordinator

UPDATE ON ITU-T SG WORK FOCUS ON ARTIFICIAL INTELLIGENCE AND DATABASE ON GHG EMISSIONS

Purpose: Admin () / Information (X) / Discussion () / Proposal ()

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ITU-T SG5 Rapporteur Q9/5

Update on ITU-T SG5 work Focus on Artificial Intelligence and database on GHG emissions

ISCG February 12, 2025

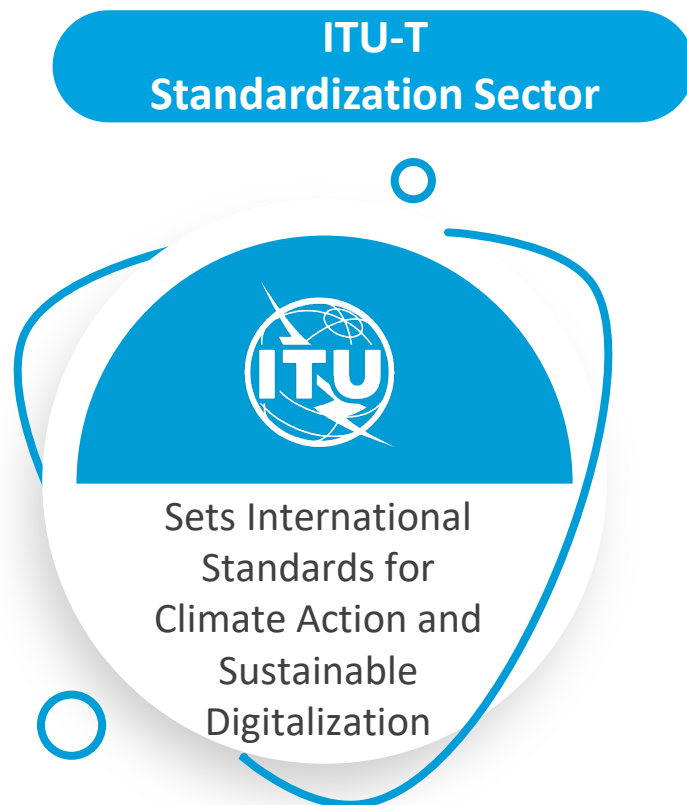
Jean-Manuel Canet, ITU-T SG5 Rapporteur Q9/5

Paolo Gemma, ITU-T SG5 WP2/5 Chair

Reyna Ubeda, ITU-T SG5 Engineer



ITU-T Study Group 5

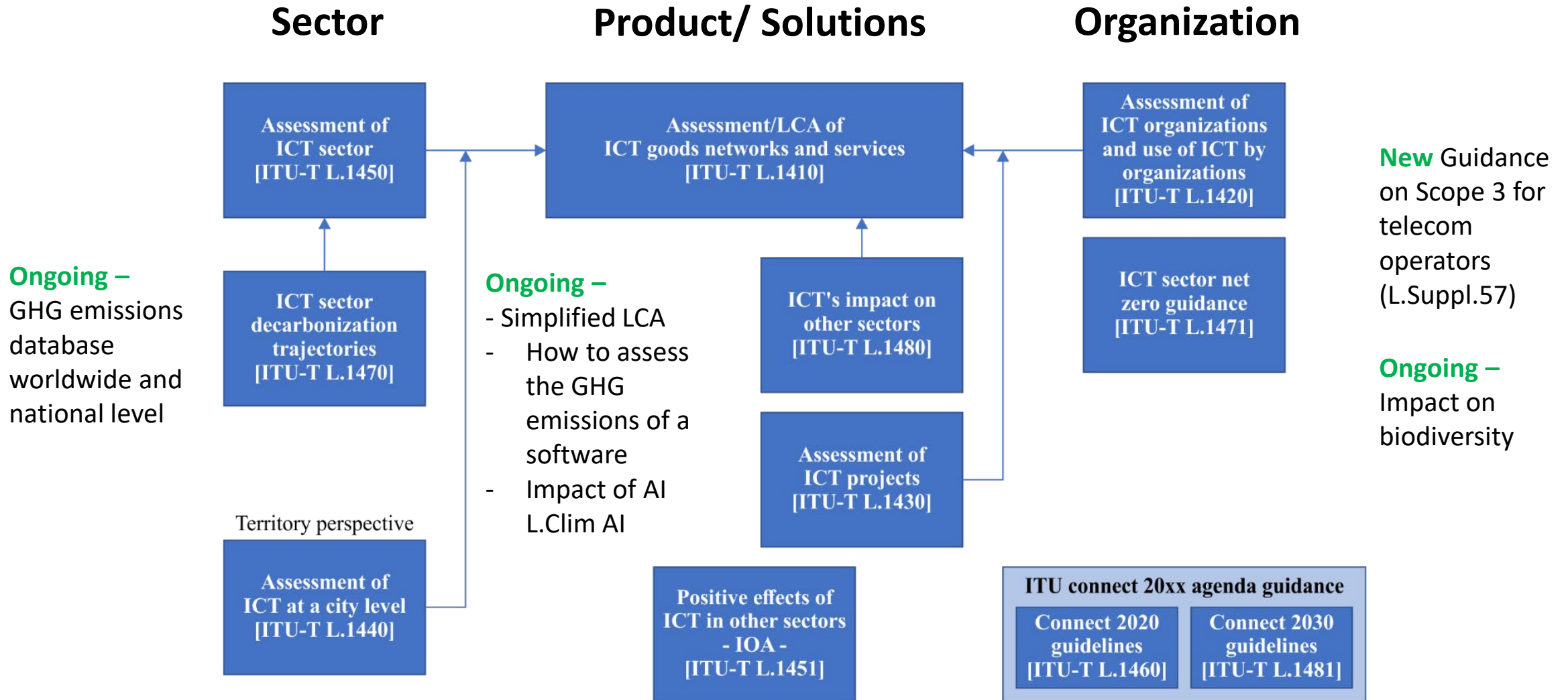


ITU-T Study Group 5

Environment, EMF, climate action,
and circular economy

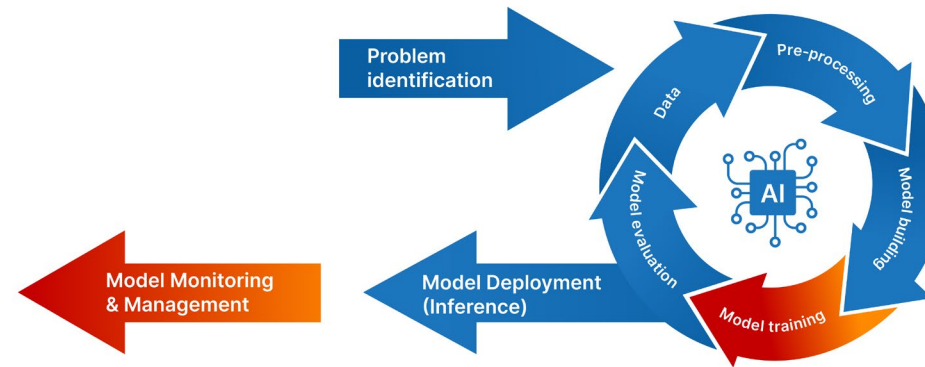
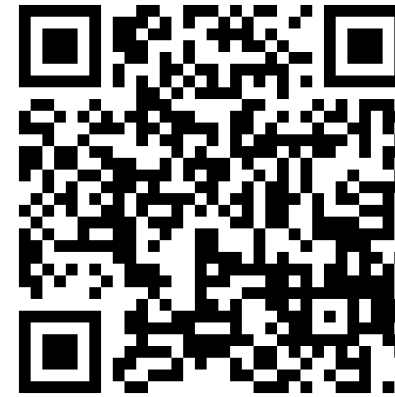
- Electromagnetic compatibility, resistibility and lightning protection
- Soft error caused by particle radiations
- Human exposure to electromagnetic fields
- Circular economy and e-waste management
- ICTs related to the environment, energy efficiency, clean energy and sustainable digitalization for climate actions

The ITU-T L.14xx series Recommendations towards the Net Zero transition



AI and the environment

This report addresses the intersection of AI and environmental sustainability, emphasizing the importance of international standards in guiding the ICT industry.



Lifecycle of Artificial Intelligence

Ongoing standard work
How to calculate the GHG emissions and Energy efficiency of AI

Dedicated standardization group on environmental efficiency

ITU-T Study Group 5
Environment, EMF, Climate Action and Circular Economy

- Circular economy and e-waste management
- Environmentally sustainable data centres
- ICTs related to the environment, energy efficiency, clean energy and sustainable digitalization for climate action

Call to action: Support the current ongoing work

L.FCC

Energy consumption management and optimization platform Framework for cloud computing

●○○

L.TR_TA_GC

Testing and Assessment method of Green Computing Power

○○●

L.Env_DC

Guidelines on Multi-Dimensional Environmental Metrics and Management for Data Centres

○○●

L.IEDL

Energy saving strategy for deep learning computing

●○○

L.MM_Computing_power

Computing power efficiency matrix and measurement methodology

○○●

L.CFSP

Guidelines for the assessment of the carbon footprint of Software products

○○●

L.ClimAI:

Guidelines for Assessing the Impact of Artificial Intelligence on Environment

L.S_AI:

Recommendation for the design of Environmentally Sustainable AI-based and XR-based Systems

L.DLEE:

Deep Learning Computing Energy Efficiency Evaluation Framework and Metrics

Standardization scope of ITU-T L.ClimAI

In cooperation with



Guidelines for Assessing the Impact of Artificial Intelligence on Greenhouse gas emissions

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



Based on **ITU-T L.1410** (LCA) and **ITU-T L.1480** (enabling effect) applying the methods for AI systems



Comparative assessment
1) AI technology compared to not using AI or
2) comparing impact of two AI systems



Full life cycle of AI systems



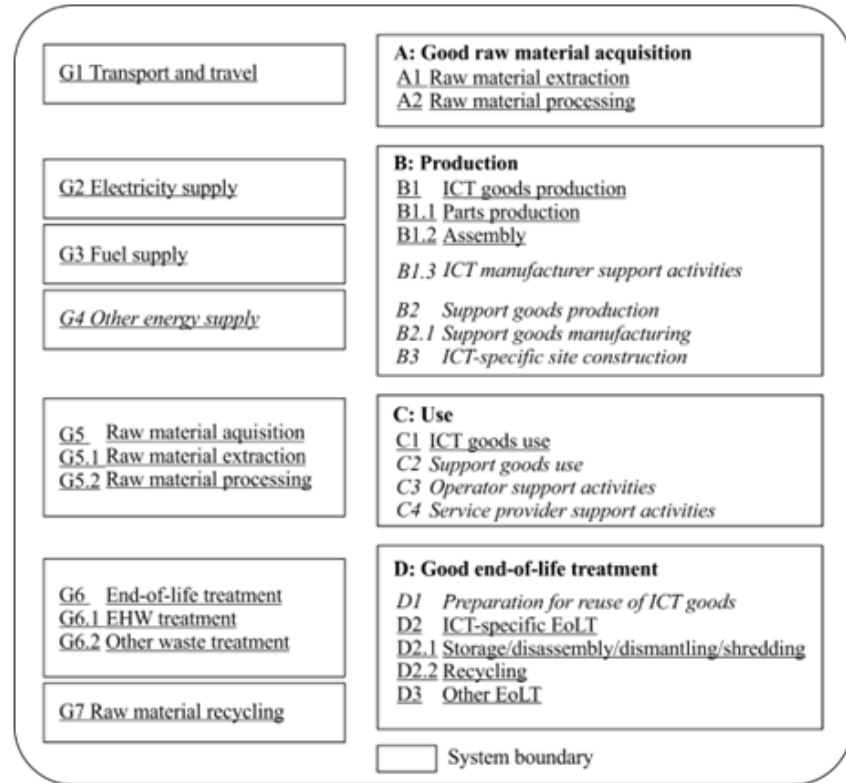
L.1410 "Methodology for environmental life cycle assessments of information and communication technology goods, networks and services"

L.1480 "Enabling the Net Zero transition: Assessing how the use of information and communication technology solutions impact greenhouse gas emissions of other sectors"

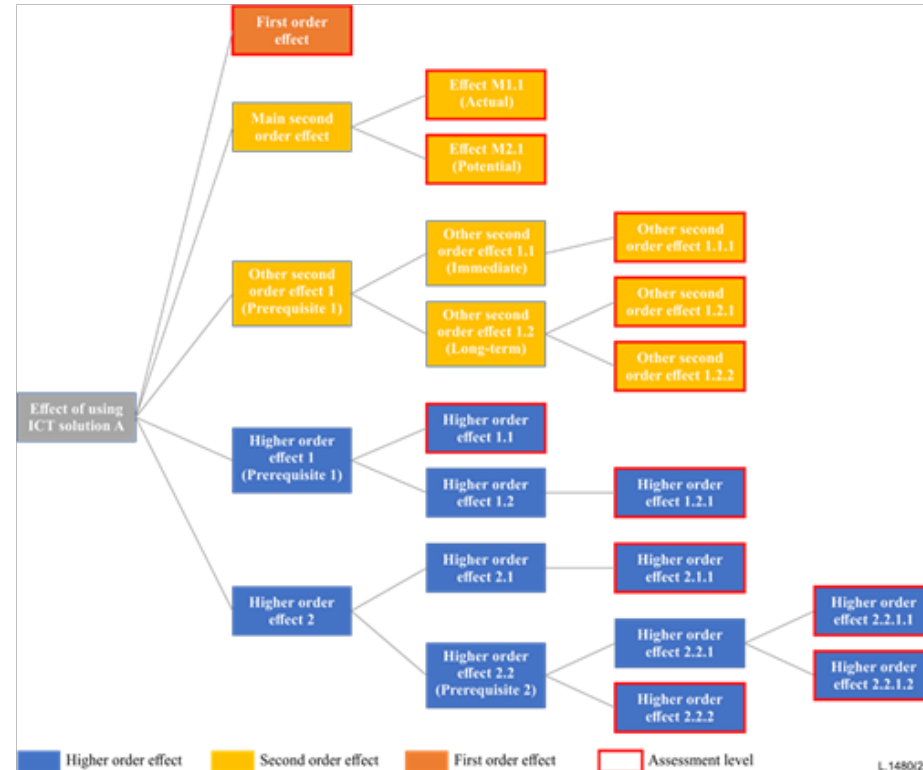
Applying existing methods for AI systems

Based on ITU-T L.1410 and L.1480

In cooperation with **ETSI** 



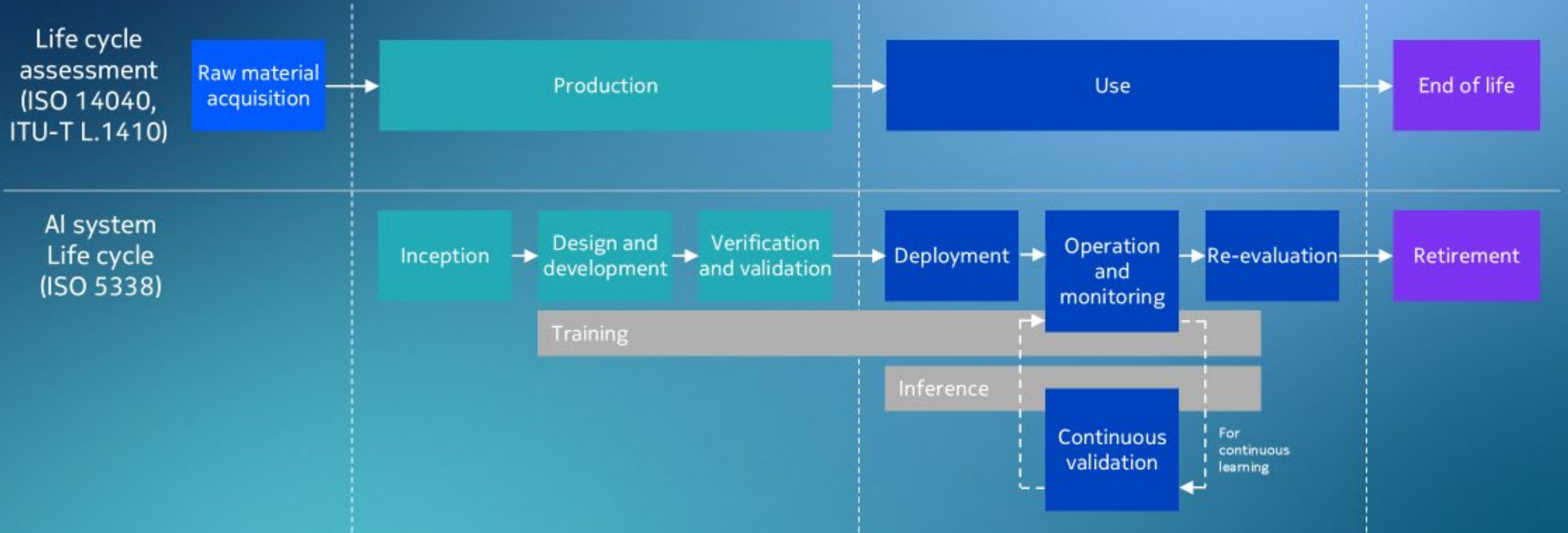
Full life cycle
Covering all life cycle stages in LCA



Consequence tree
for first order, second order, and
higher order effects

The environmental sustainability impact of AI

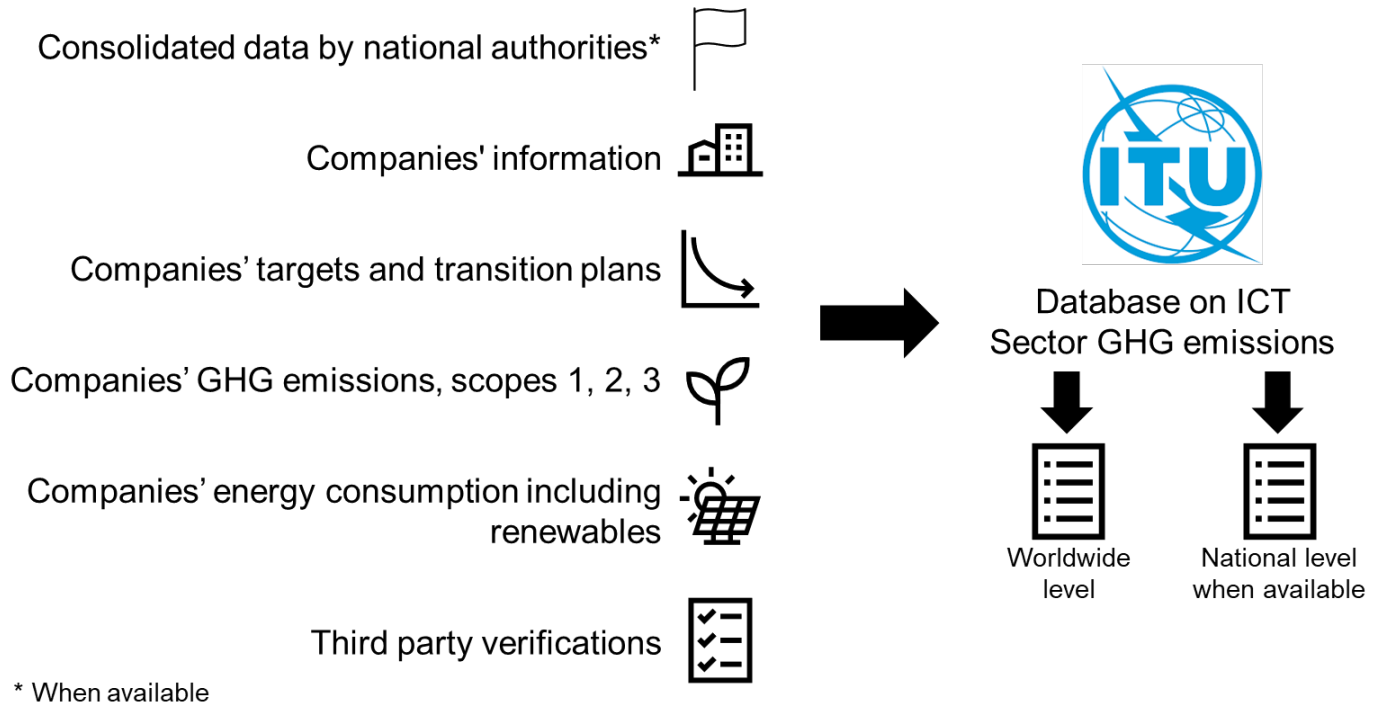
Mapping from Nokia



Source: Figure 4 in Nokia WP 'A transparent and standards-based way to assess the environmental impact of AI systems', <https://onestore.nokia.com/asset/214115>

The draft ITU-T Recommendation L.1472 provides required contents of the future ITU database on energy consumption and ICT sector GHG emissions at worldwide and national level.

- *Data for 200 companies is already available based on two ITU BDT reports. This data was displayed in a dashboard during COP 29.*
- *In addition, participants in the ITU Green Digital Action GHG emissions Pillar are encouraged to participate in a pilot phase testing data collection relatively to the full contents expected as required in L.1472*



Update on ITU-T SG5 work, Focus on the database on GHG emissions and energy consumption

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

First step: priority data collection

Table A.1: Data categories, sources and applicability, basic approach, priority data collection

Data type	Purpose	Who					Type of data			
		Telecom operator	Data center operators	Network goods provider	End-user goods provider	Other ICT actors	<u>Worldwide organization footprint</u>	National emissions from the organization when available	Database based on CDP reporting or sector member data collection	Preferred Primary data source
Electricity and renewable energy (GWh)										
Total energy consumption, of which:	Basic data	X	X	X	X	X	X	X	X	Public company data*
Total electricity consumption, of which:	Basic data	X	X	X	X	X	X	X	X	Public company data*
Renewable electricity consumption, of which:	Basic data	X	X	X	X	X	X	X	X	Public company data*
Own renewable electricity generated consumption	Basic data	X	X	X	X	X	X	X	X	Public company data*
Electricity with Guarantees of origin	Basic data	X	X	X	X	X	X	X	X	Public company data*
Purchase contracts (PPA)	Basic data	X	X	X	X	X	X	X	X	Public company data*

Call to Action

Help us to pilot this standard and understand which data your country and organization can collect



Thank you!



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Website

[SG5: Environment, climate
change and circular economy](#)