Towards a Sustainable Digital Transformation with International Standards

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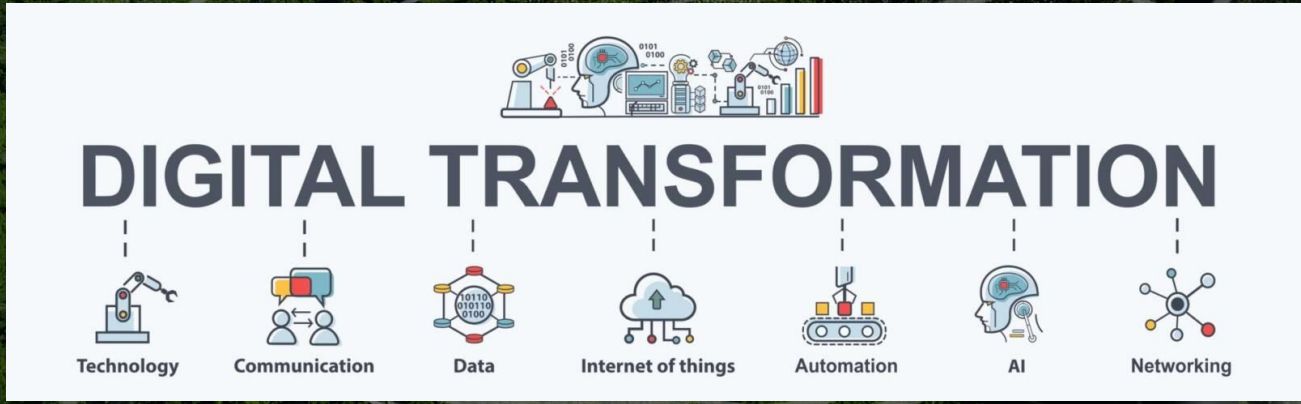
What is Digital Transformation?

Digital transformation is the process of integrating digital technology into all aspects of a sector in order to better connect with people, improve efficiency, and create new opportunities. It is a critical strategy to stay competitive in the digital age.



Why is Digital Transformation Important For Sustainability?

Make our economies circular by closing the loops of material and energy flows

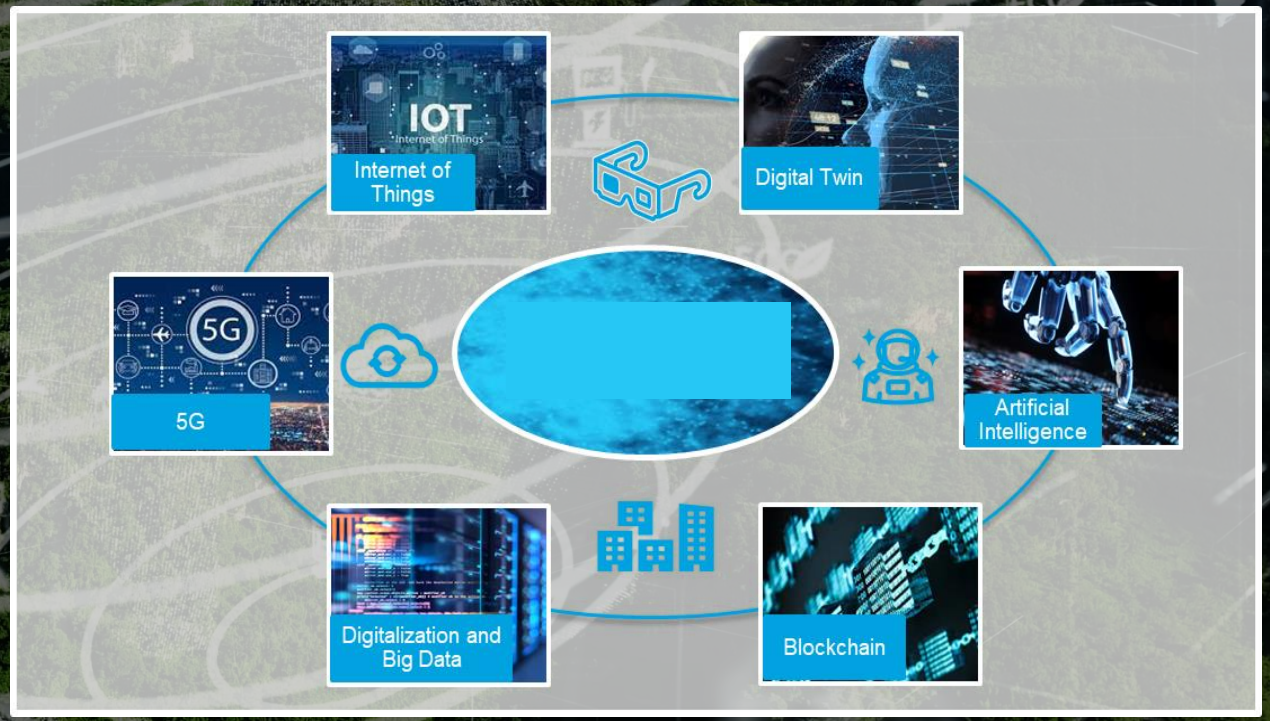
Reduce environmental impacts by optimizing resource use and reducing waste

Increase energy efficiency and build a clean energy future

Empower consumers to make more informed decisions about their lifestyles and consumption choices

Help achieve net zero targets

Digital Transformation Important for the SDGs

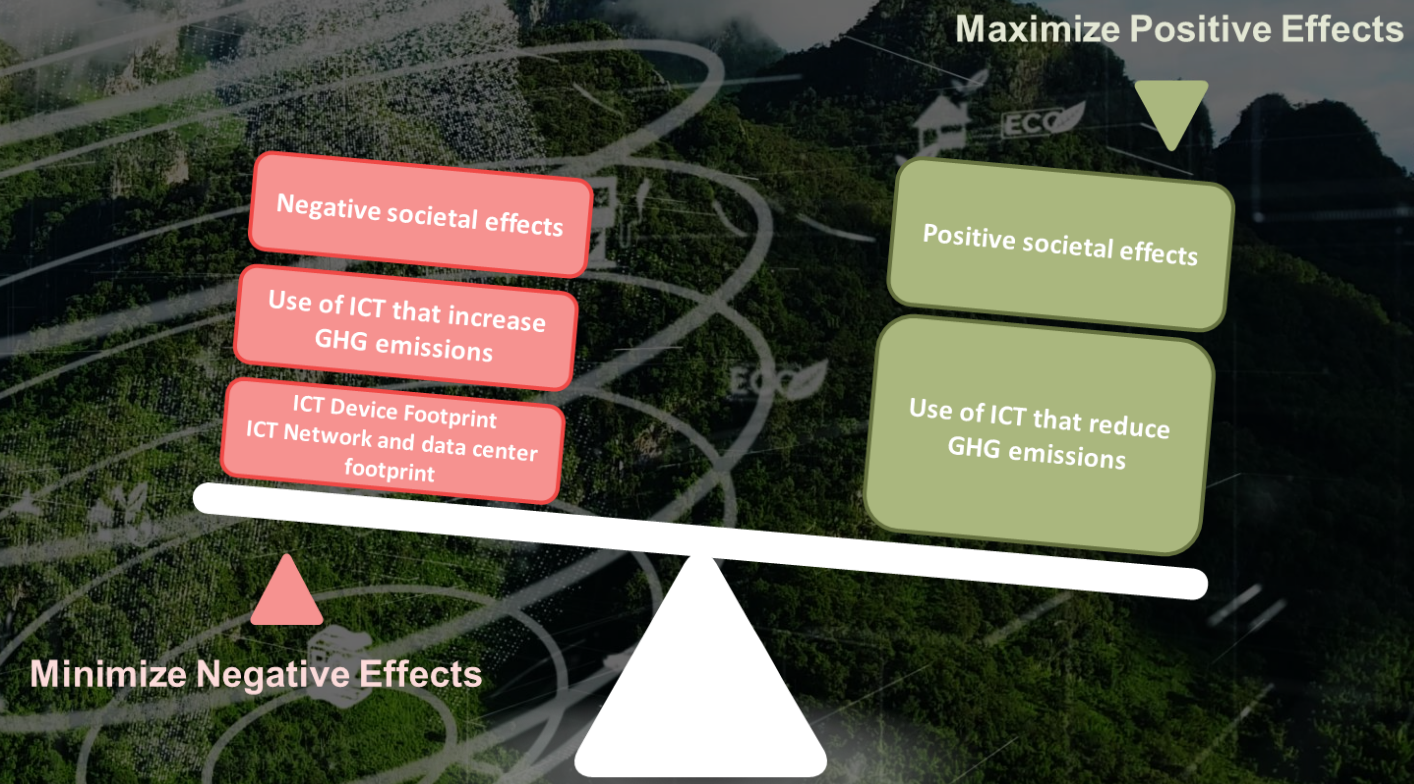


Double-Edge Nature of ICTs

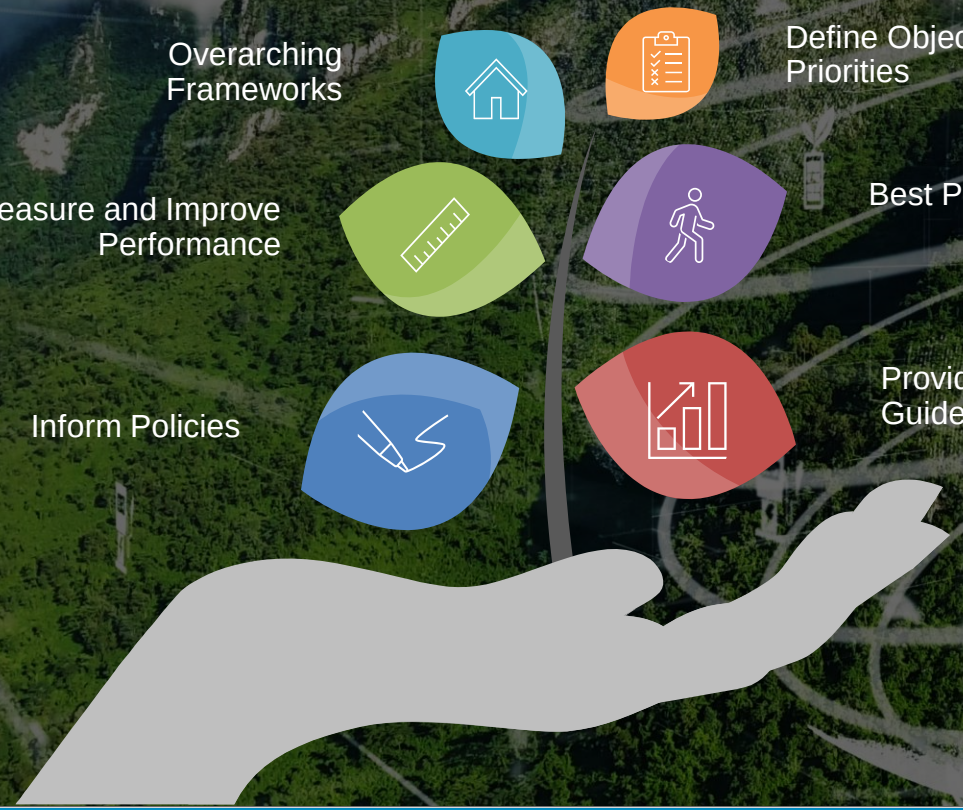
ICT's current share of global greenhouse gas (GHG) emissions at **1.8%–2.8% of global GHG emissions**

HOWEVER

ICTs have the potential to slash global greenhouse gas (GHG) emissions **by 20% by 2030**



How Standards Support Sustainable Transformation



For cities and governments

- Reduce carbon emissions
- Achieve a sustainable digital Transformation
- Improve uptake of green energy
- Achieve targets set in the Paris Agreement and SDGs

For ICT Sector

- Technical guidance to implement green energy solutions
- Provide measurement tools to evaluate progress
- Bring low-cost connectivity to rural areas
- Reach net-zero

International Telecommunication Union (ITU)

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

193 **Member states**

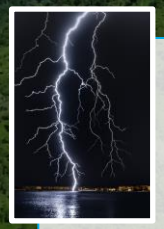
+700 **Companies / organizations**

+160 **Academia members**

ITU's Strategic Plan strives to support **Sustainable Digital Transformation** and **Universal Connectivity**

ITU-T Study Group 5 Standards Development Areas

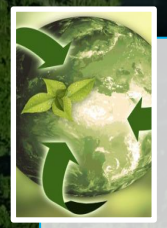
EMF, environment, climate action, sustainable digitalization, and circular economy



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

International Standards on Sustainable Digital Transformation

Sustainable Digital Transformation

E-waste Management

- Standards to help **sustainable e-waste management systems**, **recycling procedures** and move us towards a circular economy.

Circular Economy

- **Designing with circularity and sustainability in mind** avoiding waste and facilitating their recovery and re-use during their end-of-life phase.

Energy Efficiency, Green Network and Data Centres

- Identifying the **environmental and energy efficiency requirements for ICTs** .
- Providing solutions for assessing **environmental performance of green networks and data centres**.

GHG Emissions and ICT Sector

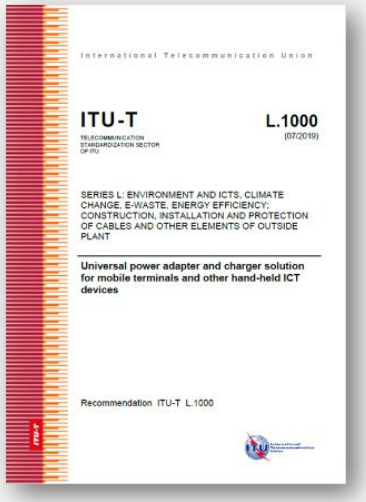
- Providing **trajectories, best practices, and targets** to help the ICT sector move towards **decarbonization and Net Zero emissions**.

To support and provide guidance to government, industry, and academia

Key Circular Economy Recommendations

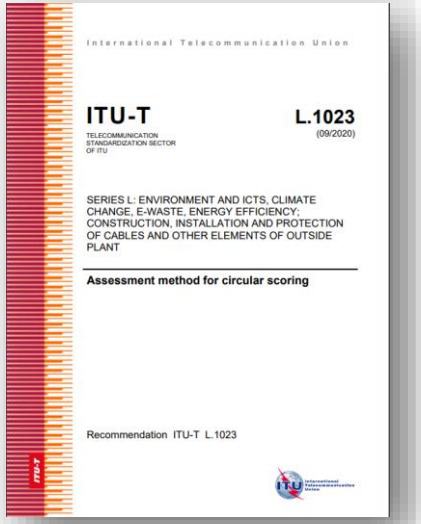
Universal Charger
ITU-T L.1000

Reducing production and disposal of new chargers is estimated to reduce the amount of electronic waste by 980 tonnes yearly



Circular Scoring
ITU-T L.1023

Assessing the circularity of a product is key to increasing resource efficiency and reducing e-waste.

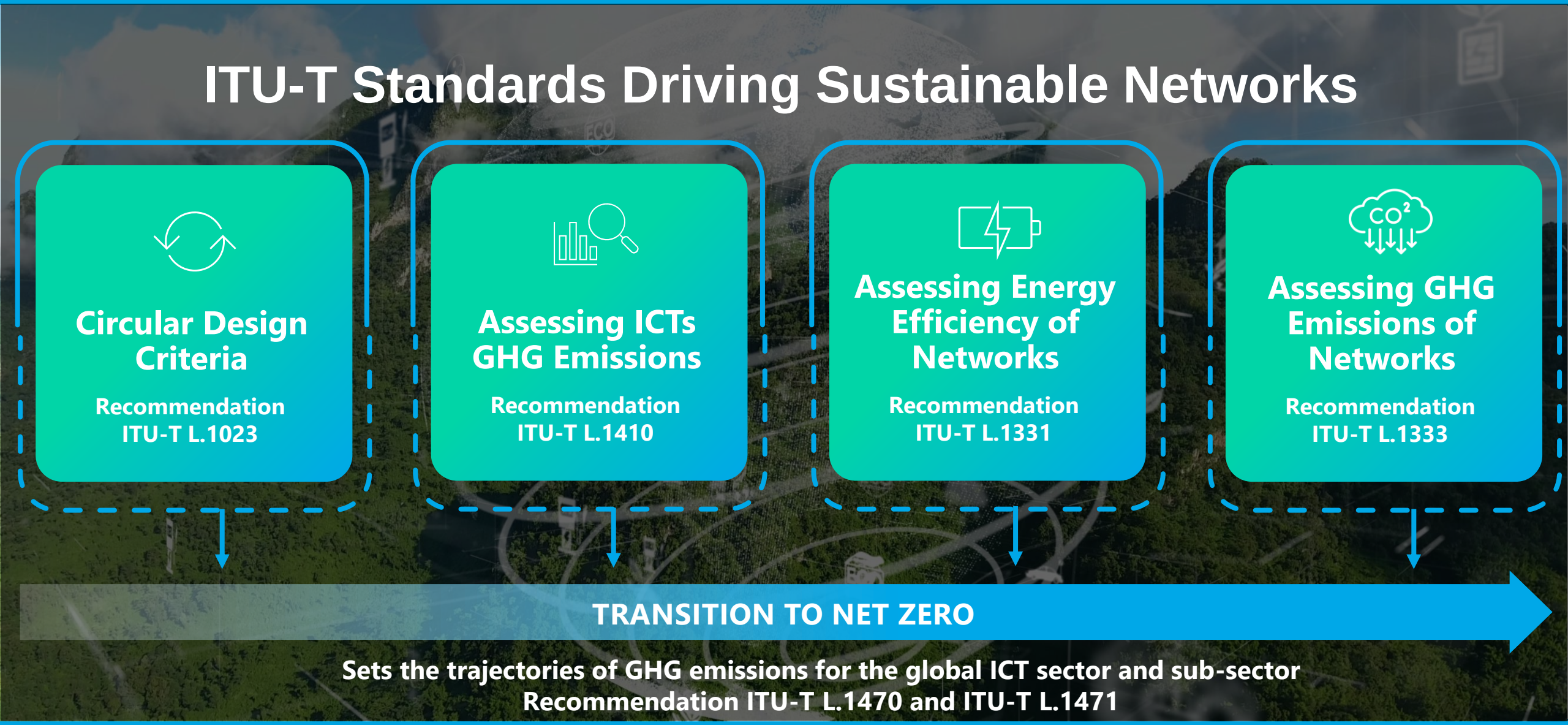


Requirements for a global digital sustainable product passport to achieve a circular economy

- Requirements of reporting key aspects related to circularity and transparency of an ICT or digital technology product in digital format.
- Facilitate and automate comparison of different ICT products based on circularity aspects.
- Facilitate preparation and reuse in the second-hand market and the reverse supply chain.
- Help manufacturers, governments, users to implement voluntary reporting and monitoring mechanisms to assess these qualities

ETSI

ITU-T Standards Driving Sustainable Networks



Circular Design Criteria

Recommendation
ITU-T L.1023

Assessing ICTs GHG Emissions

Recommendation
ITU-T L.1410

Assessing Energy Efficiency of Networks

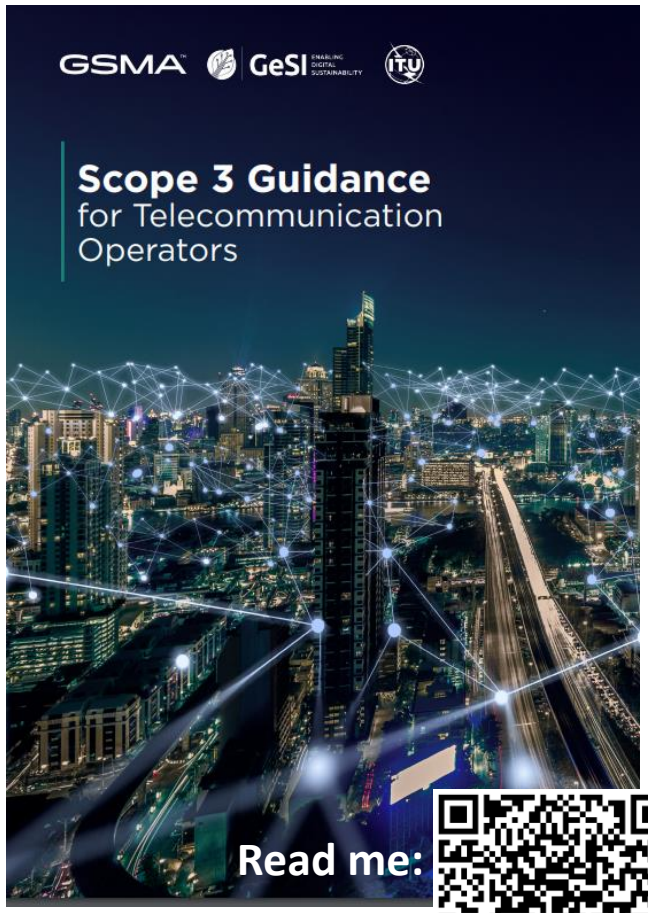
Recommendation
ITU-T L.1331

Assessing GHG Emissions of Networks

Recommendation
ITU-T L.1333

TRANSITION TO NET ZERO

Sets the trajectories of GHG emissions for the global ICT sector and sub-sector
Recommendation ITU-T L.1470 and ITU-T L.1471



Scope 3 emissions are the indirect emissions from telecommunication operators value chain, including their supply chain and products used by customers.

Scope 3 emissions cover a wide range of economic activities that are divided into 15 Categories.

Estimating Scope 3 emissions is difficult since this refers to emission sources outside a company's direct control.

The document establishes guidance to harmonize methods for telecommunication operators to assess and report their Scope 3 Greenhouse Gas (GHG) emissions, and to increase coverage and transparency.

Climate Change Mitigation and Smart Energy solutions

- ITU-T L.1380 “Smart energy solution for telecom sites”
- ITU-T L.1381 “Smart energy solution for data centres”
- ITU-T L.1382 “Smart energy solution for telecommunication rooms”
- ITU-T L.1383 “Smart energy solutions for city and home applications”
- **ITU-T L.SE_MI** “Smart energy solution for manufacturing Industry”

ITU-T Standards Driving Sustainable Procurement

Recommendation ITU-T L.1061Circular Public Procurement of ICTs

Study Group 5 Key Topics: EMC, Lightning Protection, EMF

Protection, Reliability, Safety and Security

- **ITU-T K.120** “Lightning protection and earthing of a miniature base station”
- **ITU-T K.134** “Protection of small-size telecommunication installations with poor earthing conditions”
- **ITU-T K.151** “Electrical safety and lightning protection of medium voltage input and up to ±400 VDC output power system in ICT data centres and telecommunication centres”

Lightning Protection

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EMF

- **ITU-T K.44** “Resistibility tests for telecommunication equipment exposed to overvoltages and overcurrents - Basic Recommendation”
- **ITU-T K.91,** “Guidance for assessment, evaluation and monitoring of human exposure to radio frequency electromagnetic fields”

Electromagnetic Compatibility

- **ITU-T K.136** “Electromagnetic compatibility requirements for radio telecommunication equipment”
- **ITU-T K.137** “Electromagnetic compatibility requirements and measurement methods for wireline telecommunication network equipment”

Study Group 5 Key Topics: Towards a Sustainable Digital Transformation

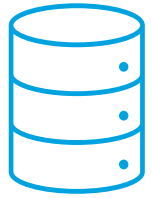
Environmental efficiency of digital technologies

- **ITU-T L.1317** “Guidelines on energy efficient blockchain systems”
- **ITU-T L.1331** “Assessment of mobile network energy efficiency”
- **ITU-T L.1333** “Carbon data intensity for network energy performance monitoring”

Power feeding and energy storage

- **ITU-T L.1210** “Sustainable power-feeding solutions for 5G networks”
- **ITU-T L.1221** “Innovative energy storage technology for stationary use - Part 2: Battery”
- **ITU-T L.1210** “Sustainable power-feeding solutions for
- 5G networks”

Sustainable Data Centres



- **ITU-T L.1302** “Assessment of energy efficiency on infrastructure in data centres and telecom centres”
- **TU-T L.1304** “Procurement Criteria for Sustainable Data Centres”
- **ITU-T L.1305** “Data centre infrastructure management system based on big data and artificial intelligence technology”

Study Group 5 Key Topics: Towards a Sustainable Digital Transformation

Sustainable buildings

- **ITU-T L.1370** “Sustainable and intelligent building services”
- **ITU-T L.1371** “A methodology for assessing and scoring the sustainability performance of office buildings”

Sustainable management of E-waste and Supply Chain

- **ITU-T L.1015** “Criteria for evaluation of the environmental impact of mobile phones”
- **ITU-T L.1035** “Sustainable Management of Batteries”
- **ITU-T L.1060** “General principles for the green supply chain management of information and communication technology manufacturing industry”

Circular Economy

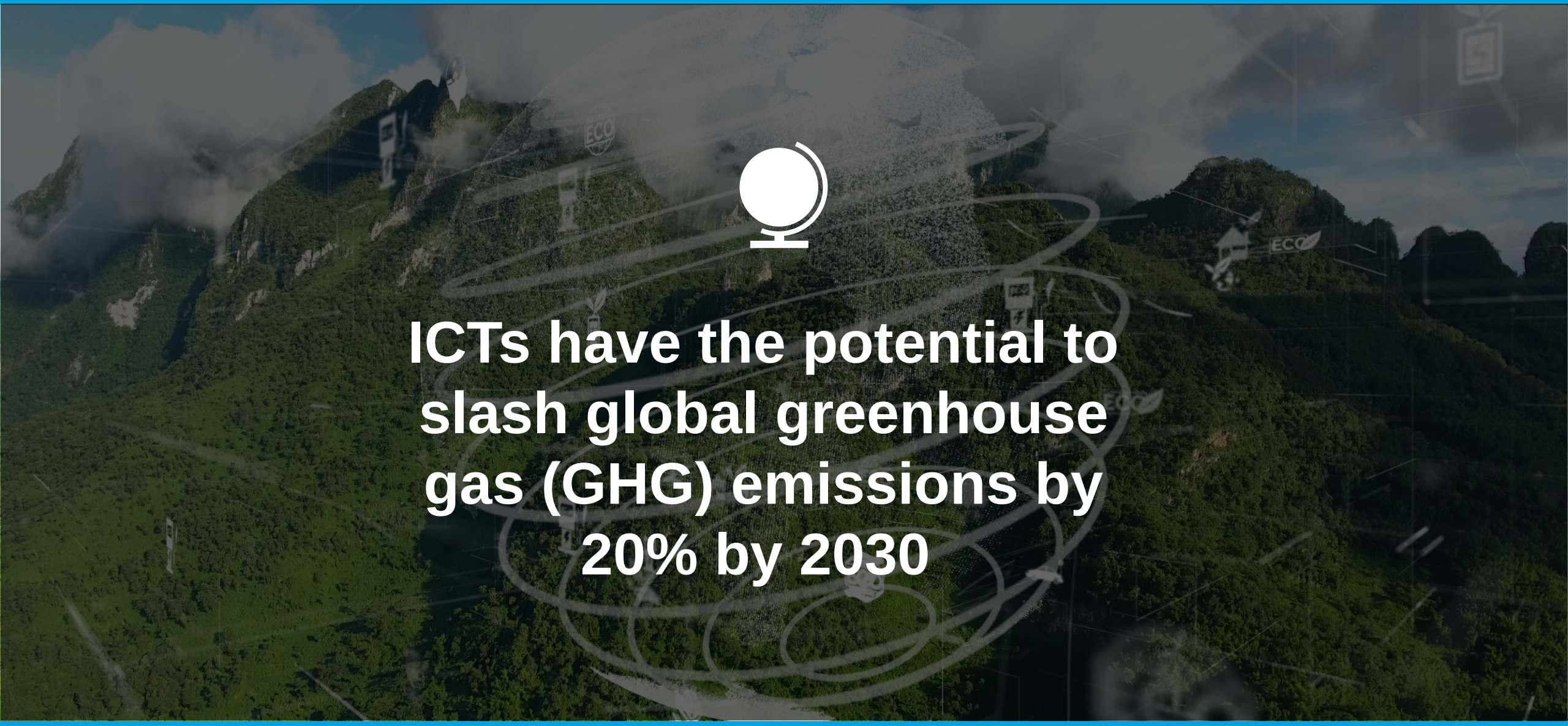
- **ITU-T L.1000** Universal power adapter and charger solution for mobile terminals and other hand-held ICT devices
- **ITU-T L.1022** “Circular Economy: Definitions and concepts for material efficiency for Information and Communication Technology” (tentative)
- **ITU-T L.1023** “Assessment method for circular scoring”

Climate Actions towards Net Zero

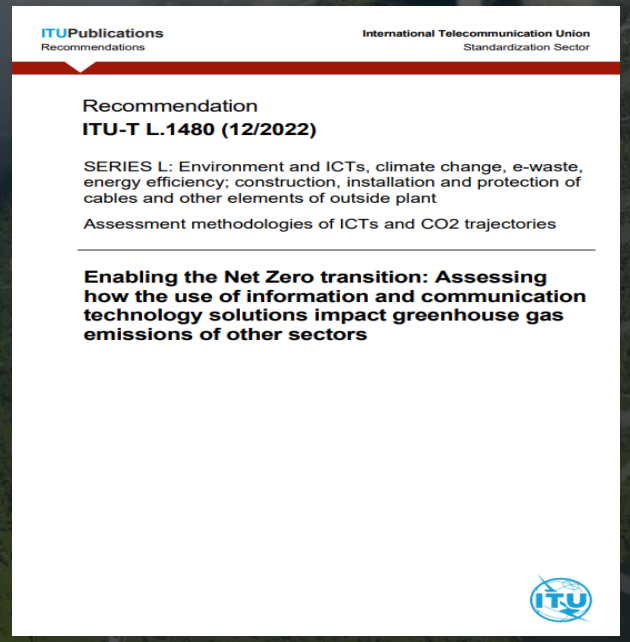
- **ITU-T L.1450** “Methodologies for the assessment of the environmental impact of the ICT sector”
- **ITU-T L.1470** “GHG trajectories for the ICT sector compatible with the UNFCCC Paris Agreement”
- **ITU-T L.1471** “Guidance and criteria for ICT organizations on setting Net Zero targets and strategies”

Circular and sustainable cities and communities

ITU-T L.Suppl. 46: “Definitions and Recent Trends in Circular Cities”


ICTs have the potential to slash global greenhouse gas (GHG) emissions by 20% by 2030

Enabling the Net Zero transition


ITUPublications
Recommendations

International Telecommunication Union
Standardization Sector

Recommendation
ITU-T L.1480 (12/2022)

SERIES L: Environment and ICTs, climate change, e-waste, energy efficiency; construction, installation and protection of cables and other elements of outside plant

Assessment methodologies of ICTs and CO2 trajectories

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

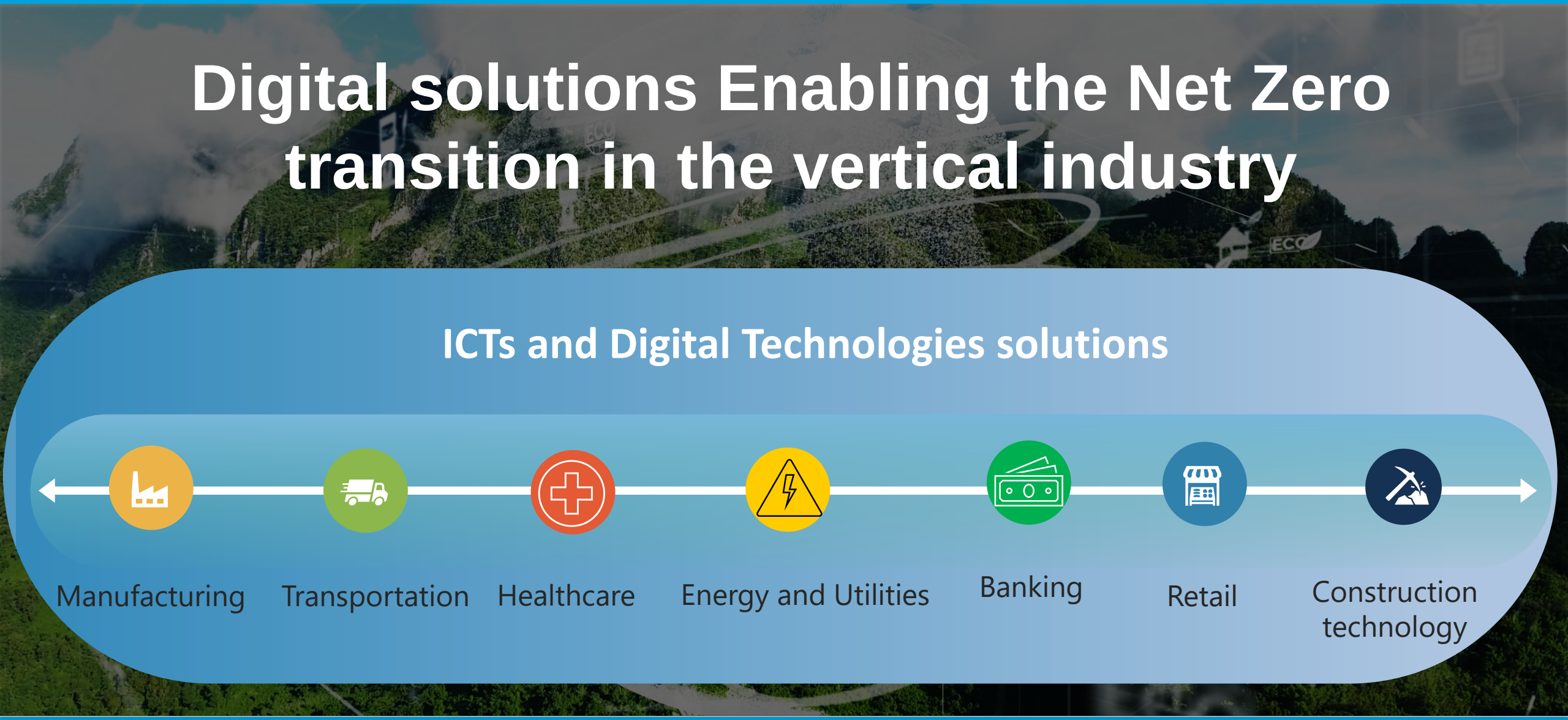
- Provides a methodology on **how to assess ICT and digital technologies solutions impact GHG emissions**
- Being used by the European Green Digital Coalition

Six steps to assess an ICT solution

Example: Assessing the impact of a virtual event

ITU-T L.NZ_Indicator & BP "Enablement indicator of information and communication technologies to other sectors and best practices to achieve Net Zero goal"

Digital solutions Enabling the Net Zero transition in the vertical industry



Strengthening Collaboration and Implementation of Standards

Collaboration with other SDOs

ETSI ISO IEC

Collaboration Across UN Agencies

World Health Organization

UNFCCC

UNECE

UNIDO

UN environment programme

BASEL CONVENTION

unitar

Collaboration with other Organizations

step solving the e-waste problem

cep circular electronics partnership

GSMA

GeSI ENABLING DIGITAL SUSTAINABILITY

CODES COALITION FOR DIGITAL ENVIRONMENTAL SUSTAINABILITY

ITU

Supporting SDGs through Areas of Ongoing Work

Digital product passport

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Definition of Sustainable Digital Transformation

13 CLIMATE ACTION

Guidance on simplified life cycle assessments of ICT

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

GHG emissions in the frame of virtual meetings

7 AFFORDABLE AND CLEAN ENERGY

13 CLIMATE ACTION

ICT and Biodiversity

13 CLIMATE ACTION

14 LIFE BELOW WATER

15 LIFE ON LAND

Thank you!

Questions? Interested in learning more?
Let us know!

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Website

SG5: Environment, climate change and circular economy