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.

DIGITAL TRANSFORMATION

| Technology | Communication | Data | Internet of things | Automation | AI | Networking |

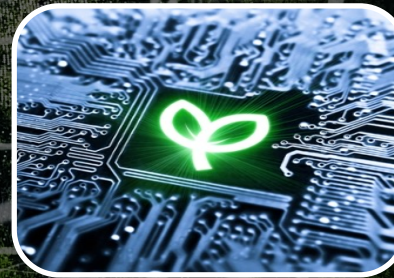# Why is Digital Transformation Important For Sustainability?

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

Reduce environmental impacts by optimizing resource use and reducing waste

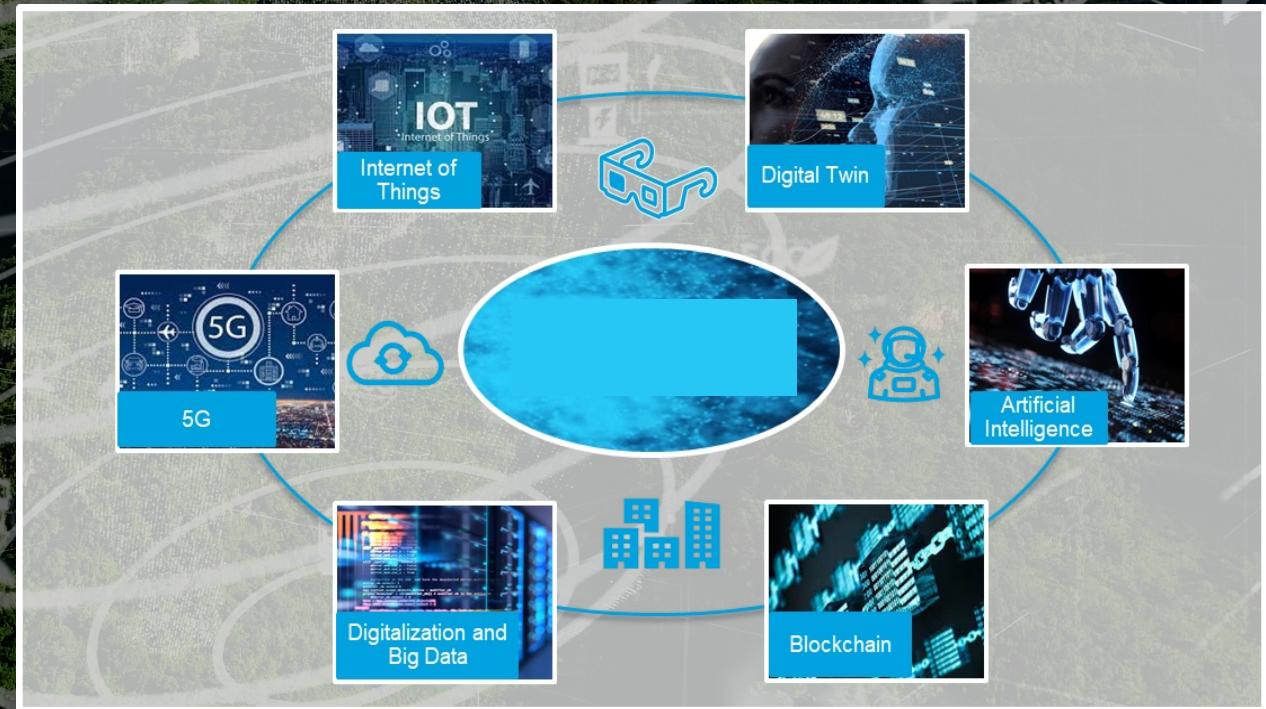Increase energy efficiency and build a clean energy future

Empower consumers to make more informed decisions about their lifestyles and consumption choices
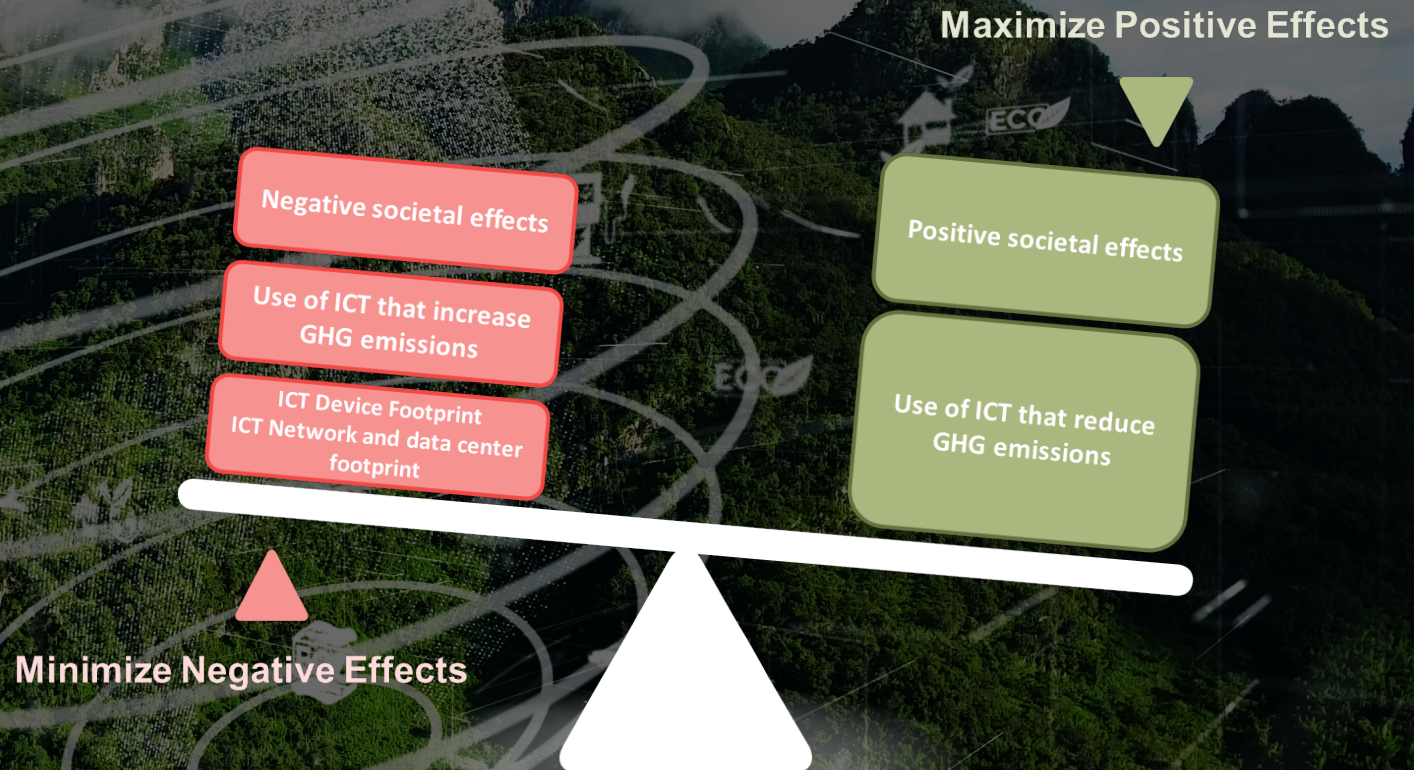
Help achieve net zero targets

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**

Maximize Positive Effects

Negative societal effects

Use of ICT that increase GHG emissions

ICT Device Footprint
ICT Network and data center footprint

Positive societal effects

Use of ICT that reduce GHG emissions

Minimize Negative Effects

How Standards Support Sustainable Transformation

Overarching Frameworks

Define Objectives and Priorities

Measure and Improve Performance

Best Practices

Inform Policies

Provide Specific Guidelines

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

MOSCOW
GENEVA (HQ)
NEW YORK
BRIDGETOWN
CAIRO
DAKAR
BANGKOK
TEGUCIGALPA
ADDIS ABABA
YAOUNDE
JAKARTA
BRASILIA
HARARE
SANTIAGO

+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

ITU-T Standards Driving Sustainable Procurement

Sustainable Procurement

- Drive SDGs
- Reduce E-Waste
- Future Proofing
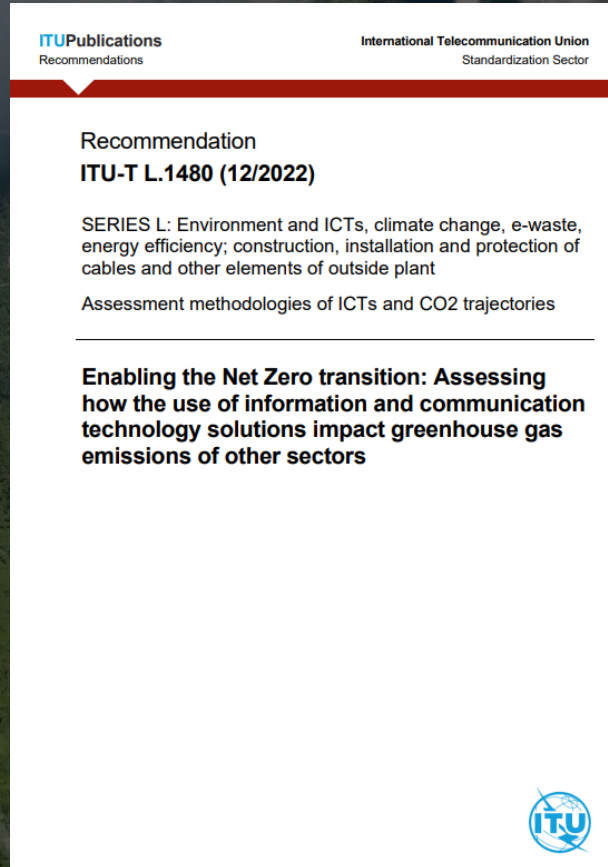- Support shift to Net Zero
- Increased Recyclability

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

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

ITU

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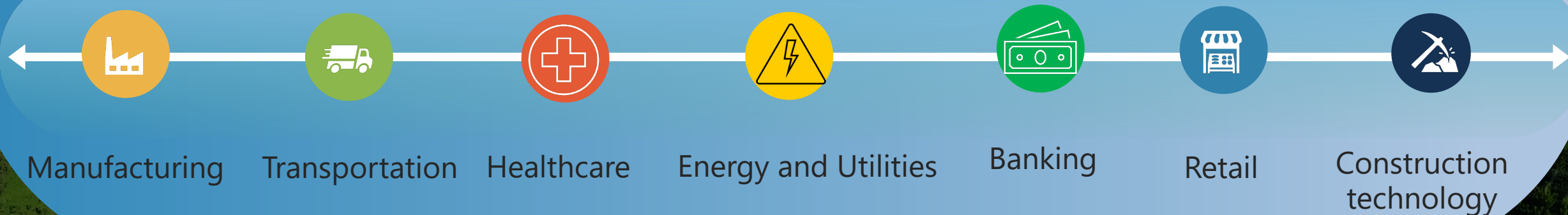- Being used by the European Green Digital Coalition

Six steps to assess an ICT solution

Define the goal of the assessment → Scoping Time, Orders, Depth → Modelling, data collection and calculation ↓

Critical review ← Reporting ← Interpretation of results

Example: Assessing the impact of a virtual event

Digital solutions Enabling the Net Zero transition in the vertical industry

ICTs and Digital Technologies solutions

Manufacturing   Transportation   Healthcare   Energy and Utilities   Banking   Retail   Construction technology
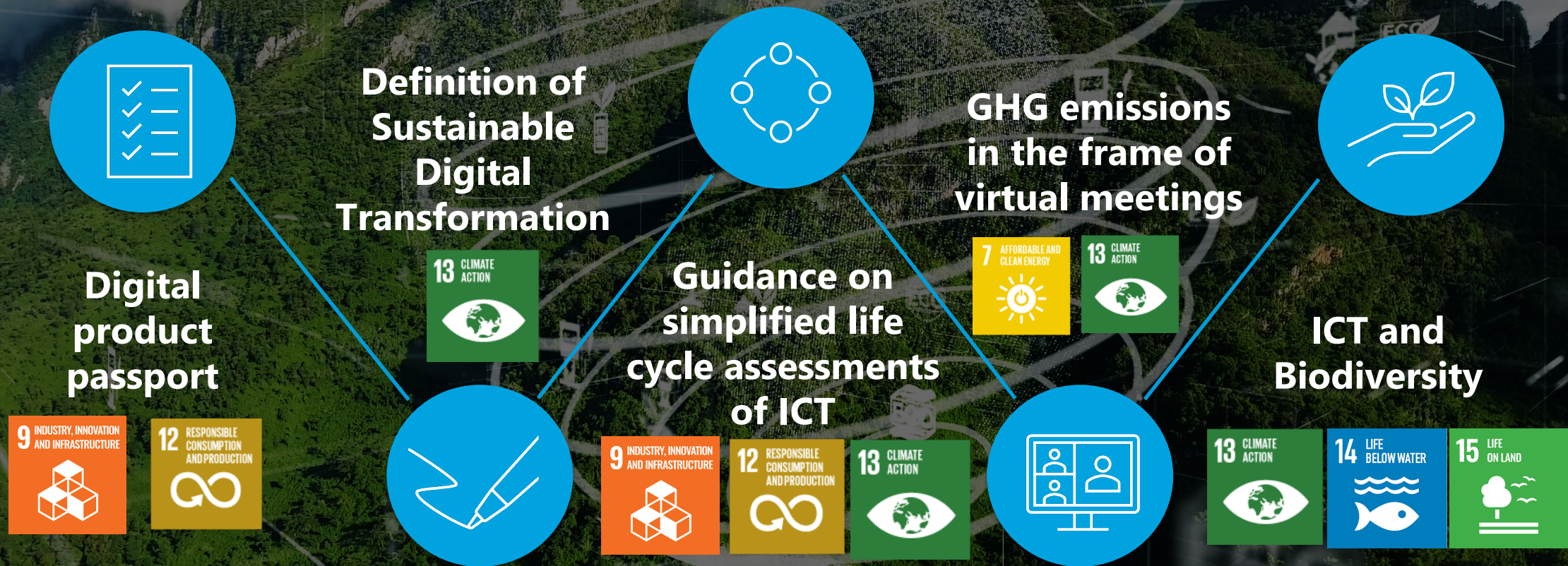
Thank you!

Questions? Interested in learning more?
Let us know!

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SG5: Environment, climate
change and circular economy

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

- **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"

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"

Sustainable Data Centres

- **ITU-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"

Smart Energy Solutions

- **ITU-T L.1380:** Telecom Sites
- **ITU-T L.1381:** Data Centre
- **ITU-T L.1382:** Telecommunication Room
- **ITU-T L.1383:** City and home applications

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"