Leveraging Digital technologies and ICT for the Net Zero transition: The role of international standards

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ITU Workshop on
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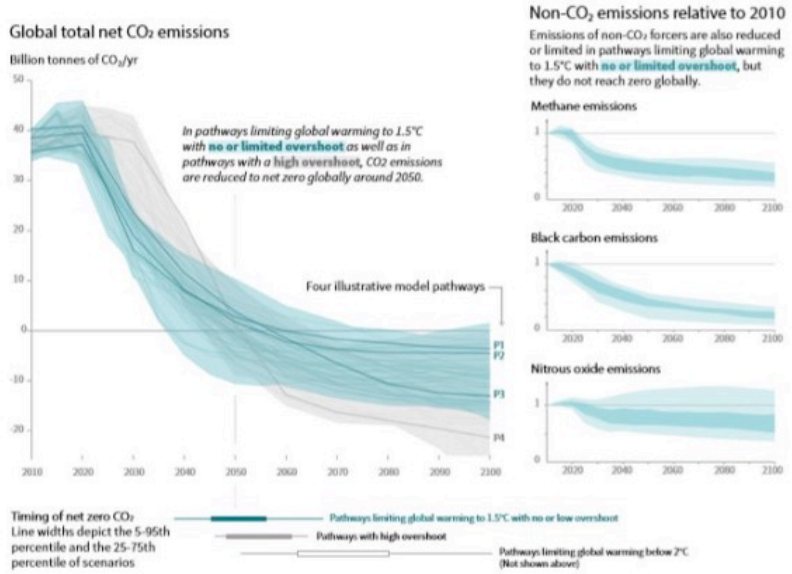
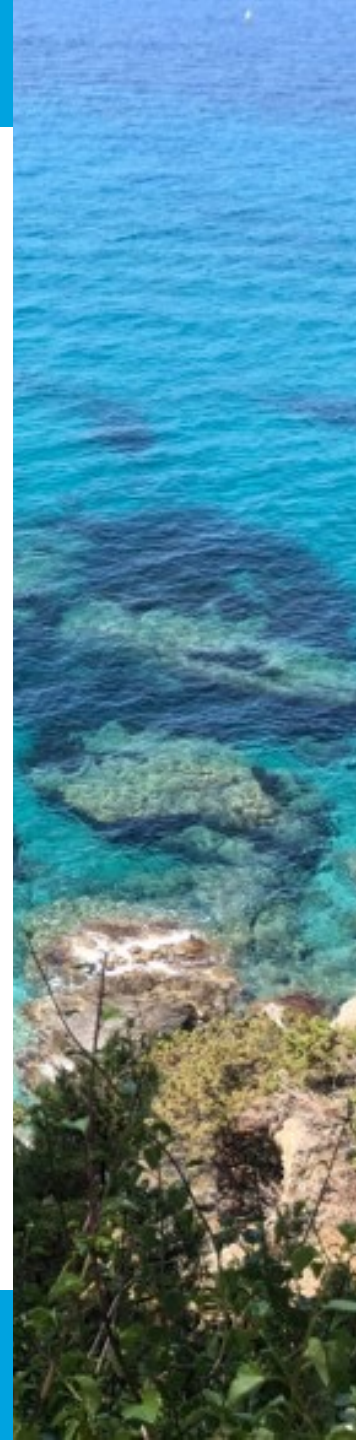
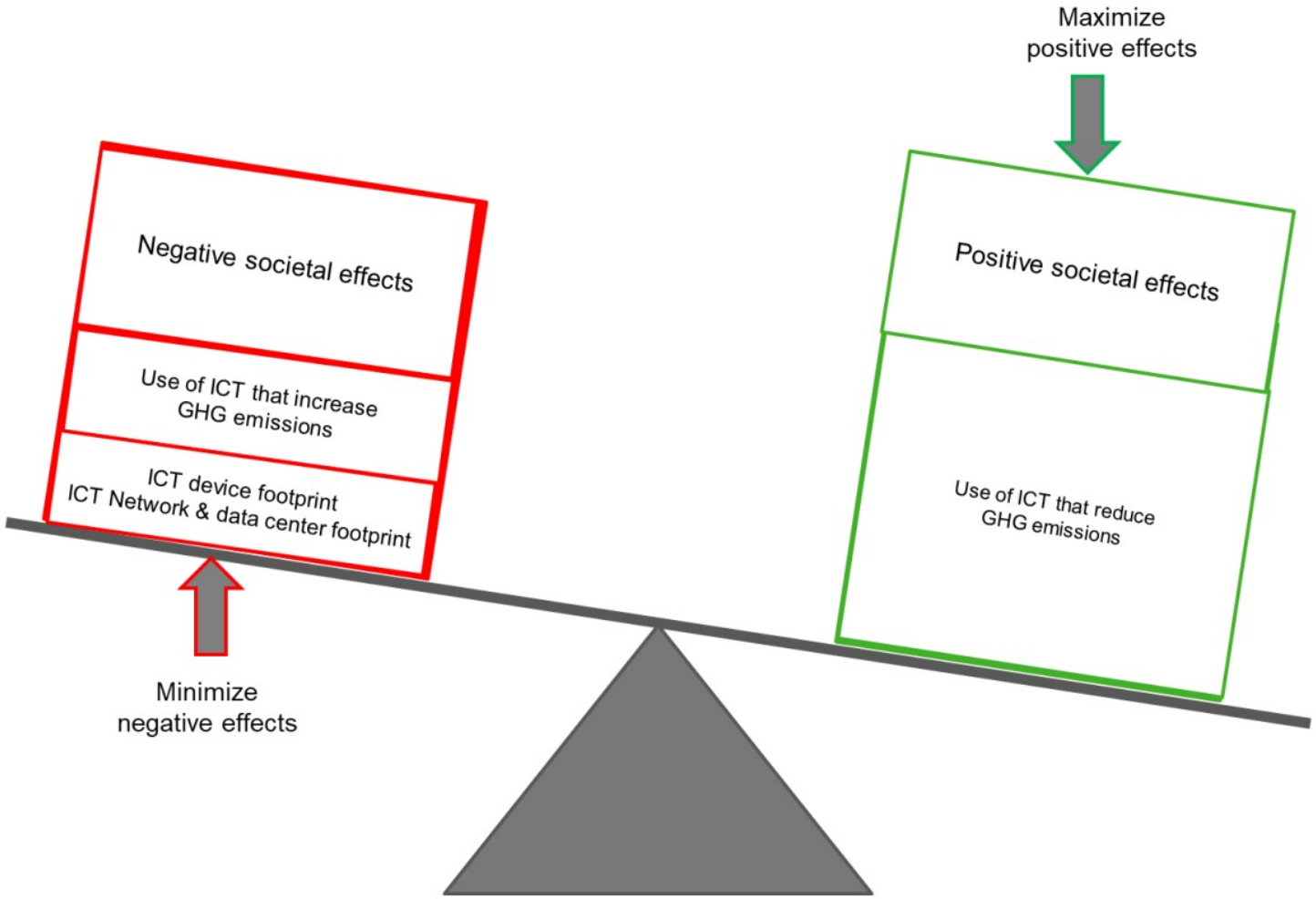
Context : A rapid decrease in GHG emissions is necessary to keep global temperature increase below 1.5°C



- ICT industry to reduce its greenhouse gas emissions by 45 per cent by 2030, stated the ITU in 2020



The Double-Edge Nature of ICTs



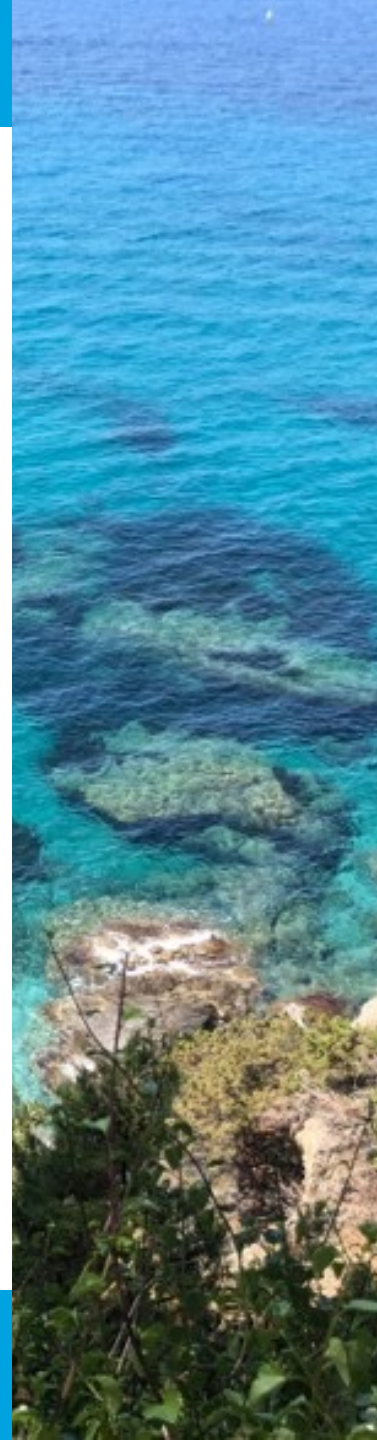
Source : Bergmark, Coroama, Kamiya, Masanet 2021

How ITU Supports Climate Action

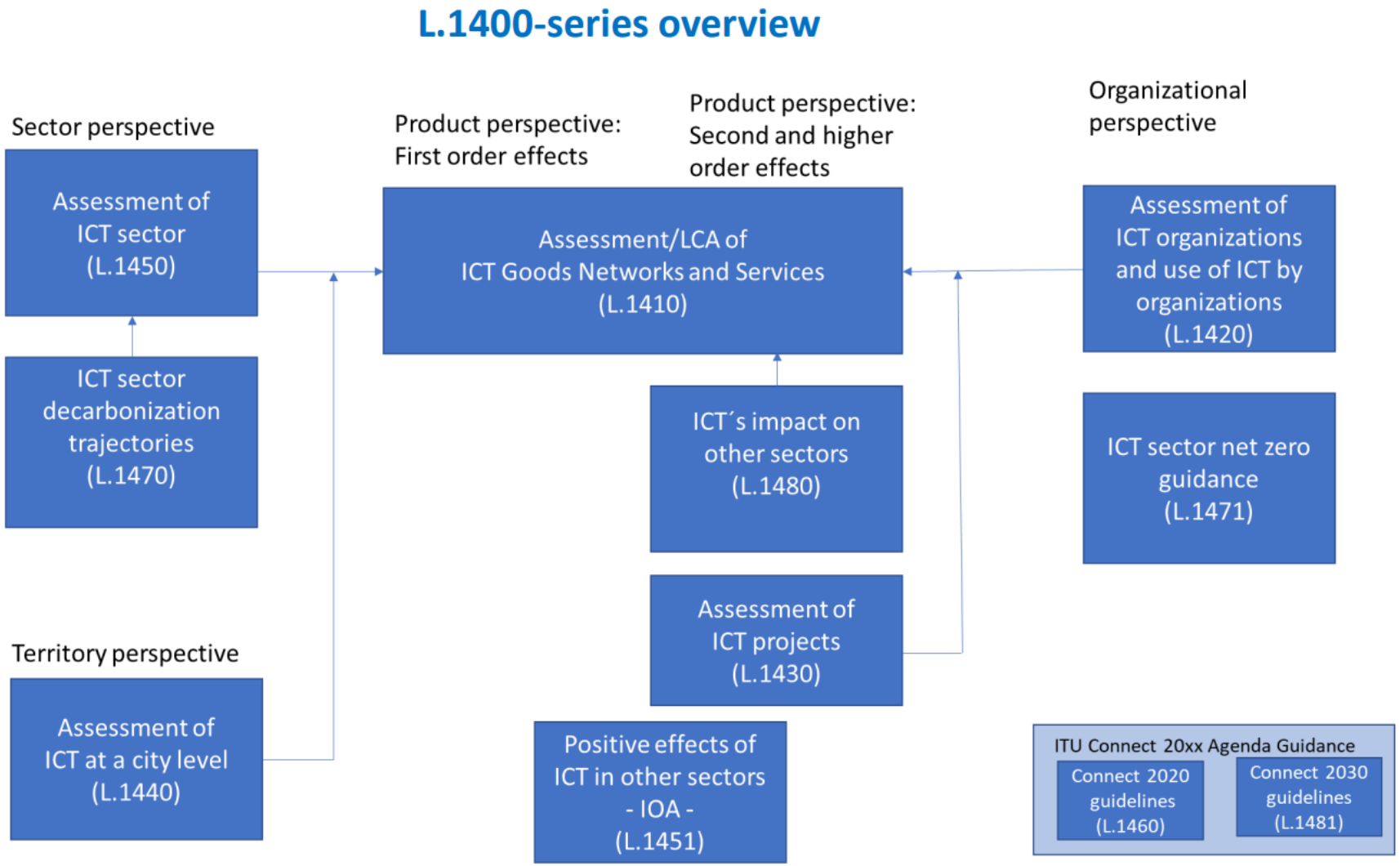
ITU:
International Telecommunication Union – the UN specialized agency for ICTs

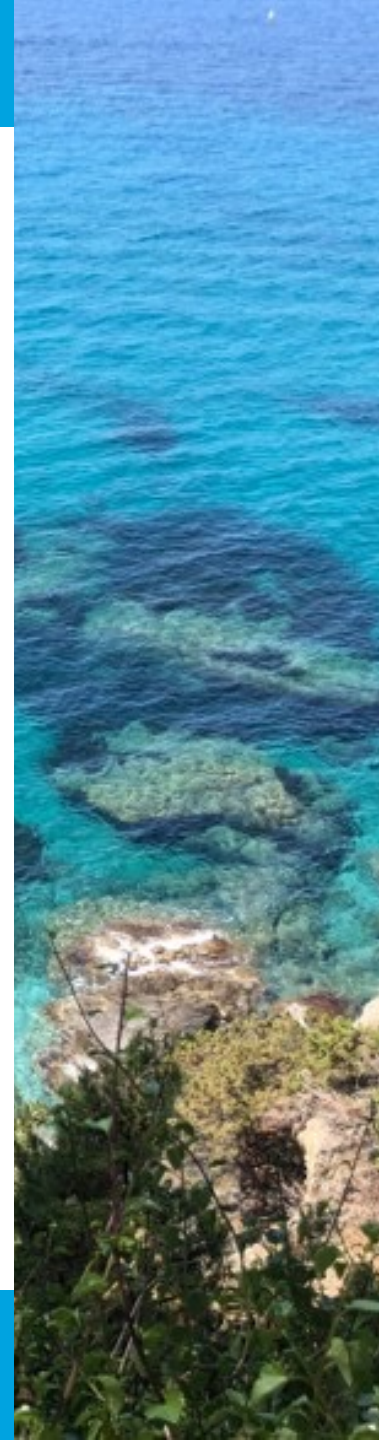
ITU-T Study Group 5:
EMF, environment, climate action, sustainable digitalization, and circular economy

FG-AI4EE: Focus Group on Environmental Efficiency for Artificial Intelligence & other Emerging Technologies

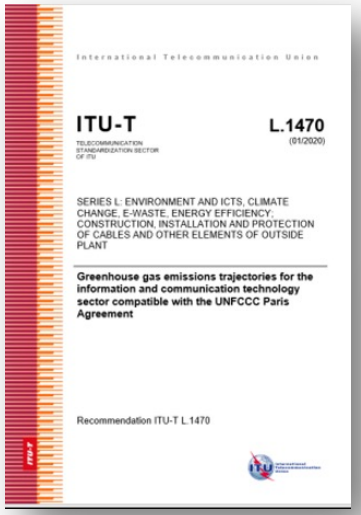


Enabling the Net Zero Transition





Setting 1.5°C Trajectories for the ICT sector



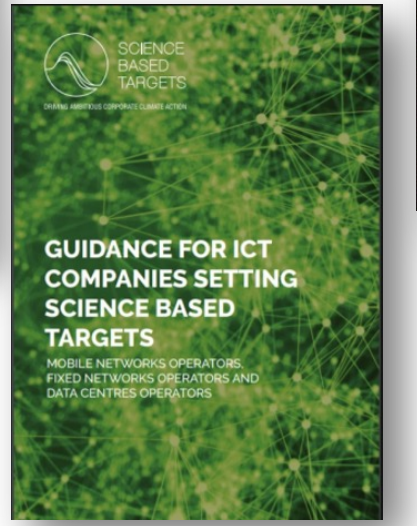
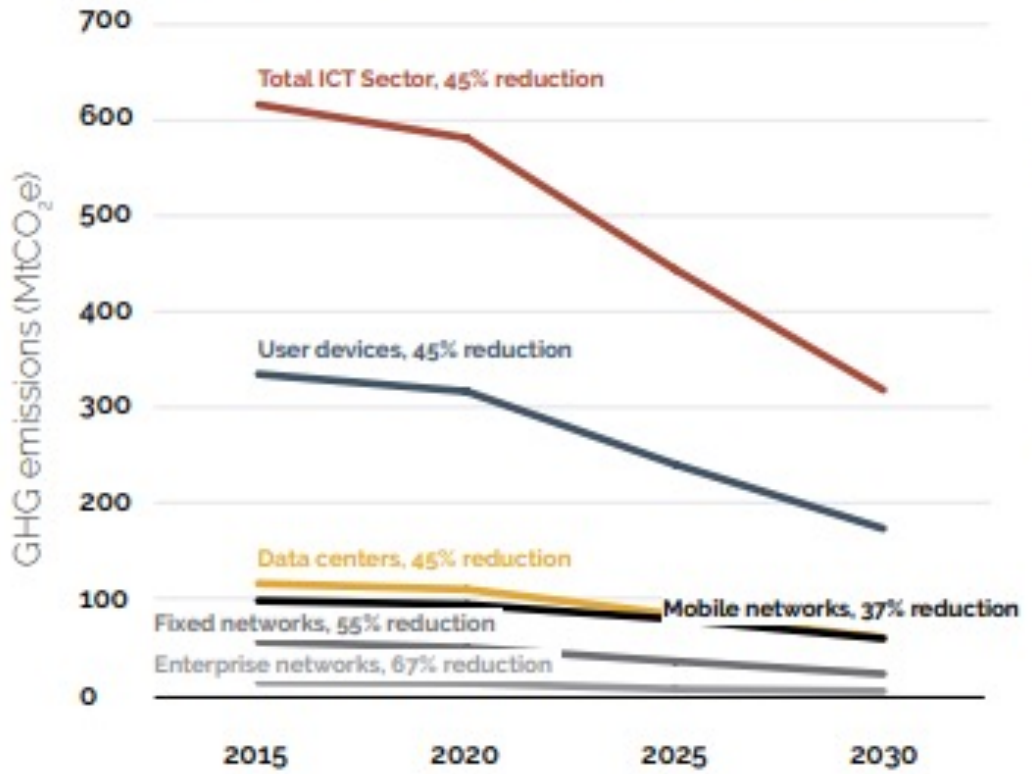
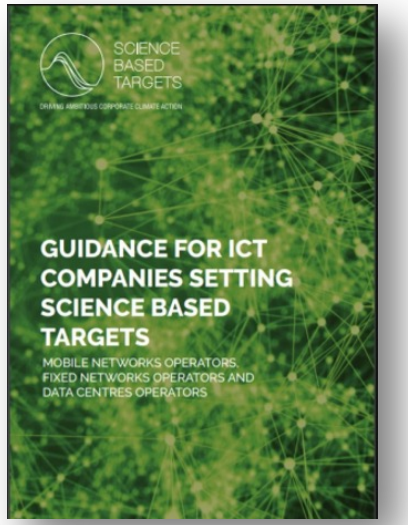


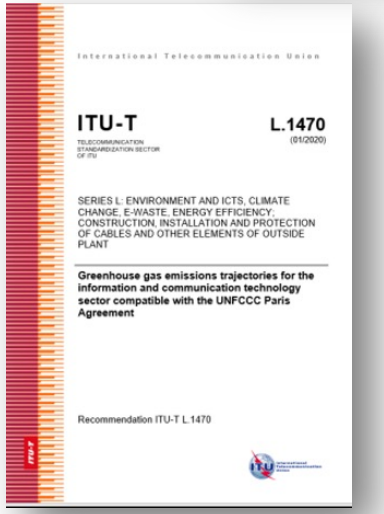
Figure 1: Summary of ICT sector and sub-sector trajectories including embodied emissions and operation



Several steps to decarbonize ICT activities

1. Assess baseline
2. Set medium term and long-term targets
3. Elaborate a reduction plan
4. Implement it / adjust it





Reduce emissions sufficiently quickly : some examples

CATEGORIES:

OPERATING ENERGY-EFFICIENT NETWORK

1. Multiple power saving features
2. Alternative energy supply
3. Consolidation and virtualization
4. Free cooling and location optimization

EFFICIENCY IN BUILDINGS AND SERVICES

5. Monitoring solutions for efficient buildings
6. Focus on energy conservation measures
7. Alternative mobility concepts
8. Videoconferencing and audioconferencing

ALTERNATIVE ENERGY

9. Self-production of renewable energies
10. Purchasing renewable energy the certificate of origin and PPA
11. Energy supply innovation

APPLICATION OF THE CIRCULAR ECONOMY PRINCIPLES

12. Eco-design of products and services
13. Reuse of network equipment
14. Optimizing the life cycle and end-of-life of customer products and services
15. Selling repairable products

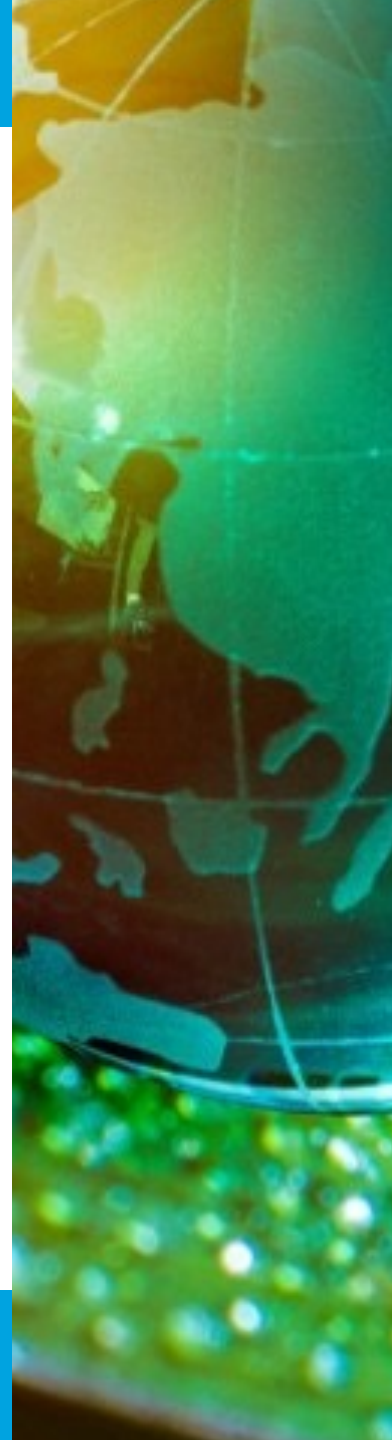
L.1470(20)_F16

How to use ICT to reduce other sectors' emissions

Scope of the L.1480 standard to come:

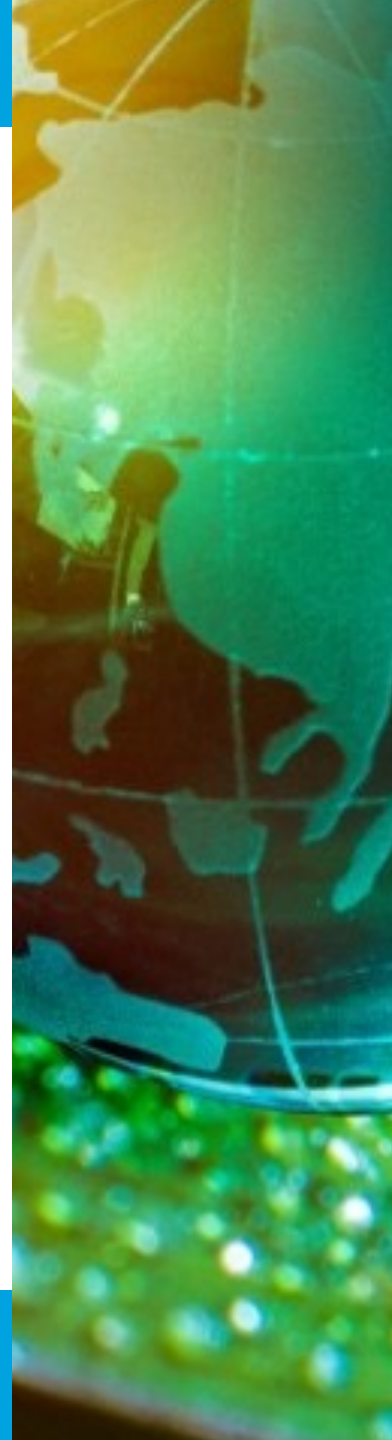
to assess ICT impacts on GHG emissions of other sectors

L.1480 will provide a structured methodological approach, that aims to improve consistency, transparency and comprehensiveness of assessments of how the use of ICT solutions **impact GHG emissions over time**.



Examples of ICT Solutions

Sector	Solution	Mechanism
Industry	As-a-service & sharing solutions	Optimization and/or substitution
	Circularity	Optimization
	Production efficiency	Optimization
Buildings	Intelligent building energy and resource management	Optimization
	Optimised use and sharing of buildings	Optimization and/or substitution
Transport	Virtual meetings	Substitution
	Remote work	Substitution
	Route optimization	Optimization
	Fleet management & logistics	Optimization

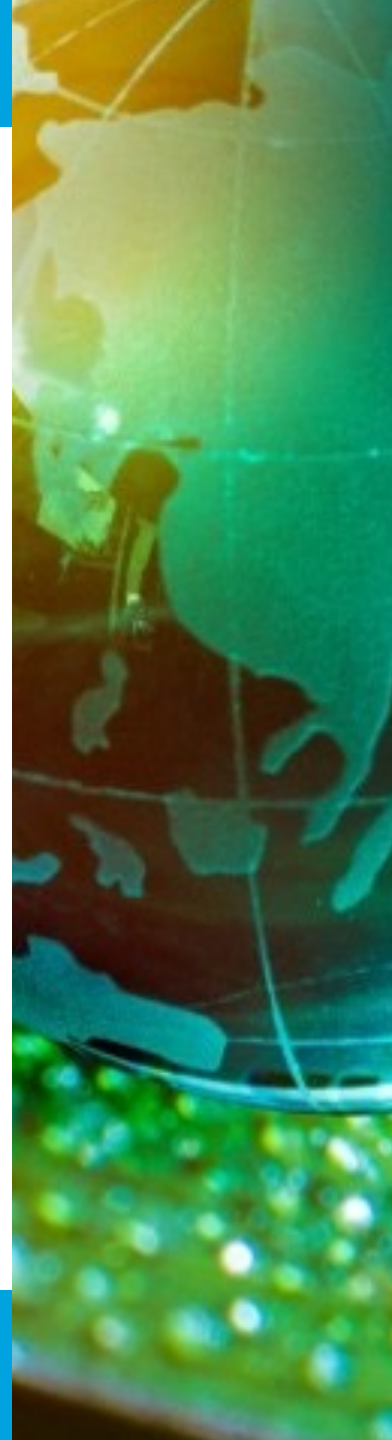


ITU-T L.1480 applications

Assessment of one or several solutions:

- implemented in a **specific context by the user** of an ICT solution
- implemented at **different scales**, including at an organizational level, at a city level, at a country level or at worldwide level
- assessed **from the perspective of an ICT organization** contributing to the ICT solution(s)

…while **considering also higher order effects**.



Key definitions

First order effect

- Direct environmental effects associated with physical existence

Second order effect

- The indirect impact created by the use and application of ICTs.

Higher order effect

- The indirect effects other than first and second order effects occurring through changes in consumption patterns, lifestyles and value systems.

Net second order effect

- The resulting second order effect after accounting for the emissions due to the first order effects of the ICT solution

Rebound

- Increases in consumption due to environmental efficiency interventions that can occur through a price reduction or other mechanism including behavioural responses.

ITU-T L.1480 assessment perspectives

Three different time perspectives covered.

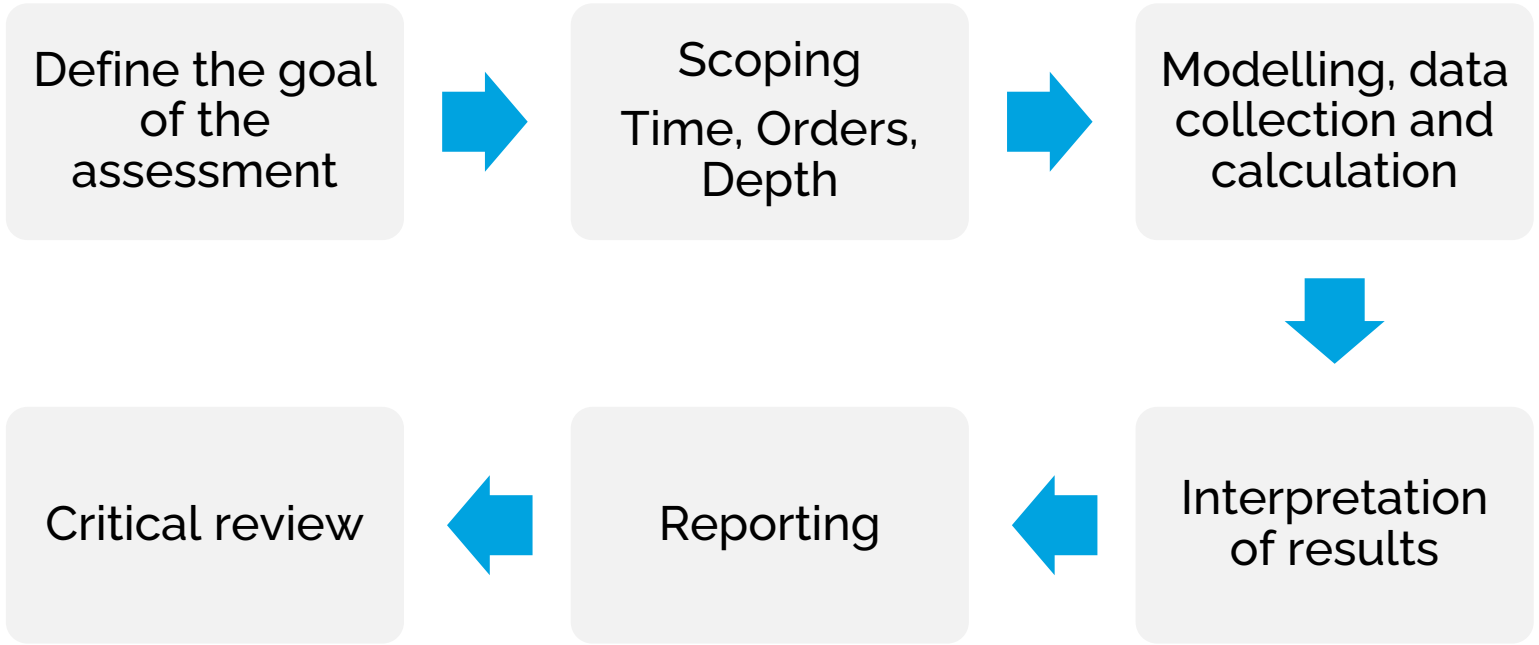
Ex-ante Mid-way Ex-post

Ex-ante, i.e. a prospective assessment taking place before the operation period of the ICT solution(s) assessed

Mid-way, i.e. an assessment of a present situation during the operational life of ICT solution(s)

Ex-post, i.e. a retrospective assessment that takes place after the assessed operation period of the ICT solution(s).

Six steps to assess an ICT solution

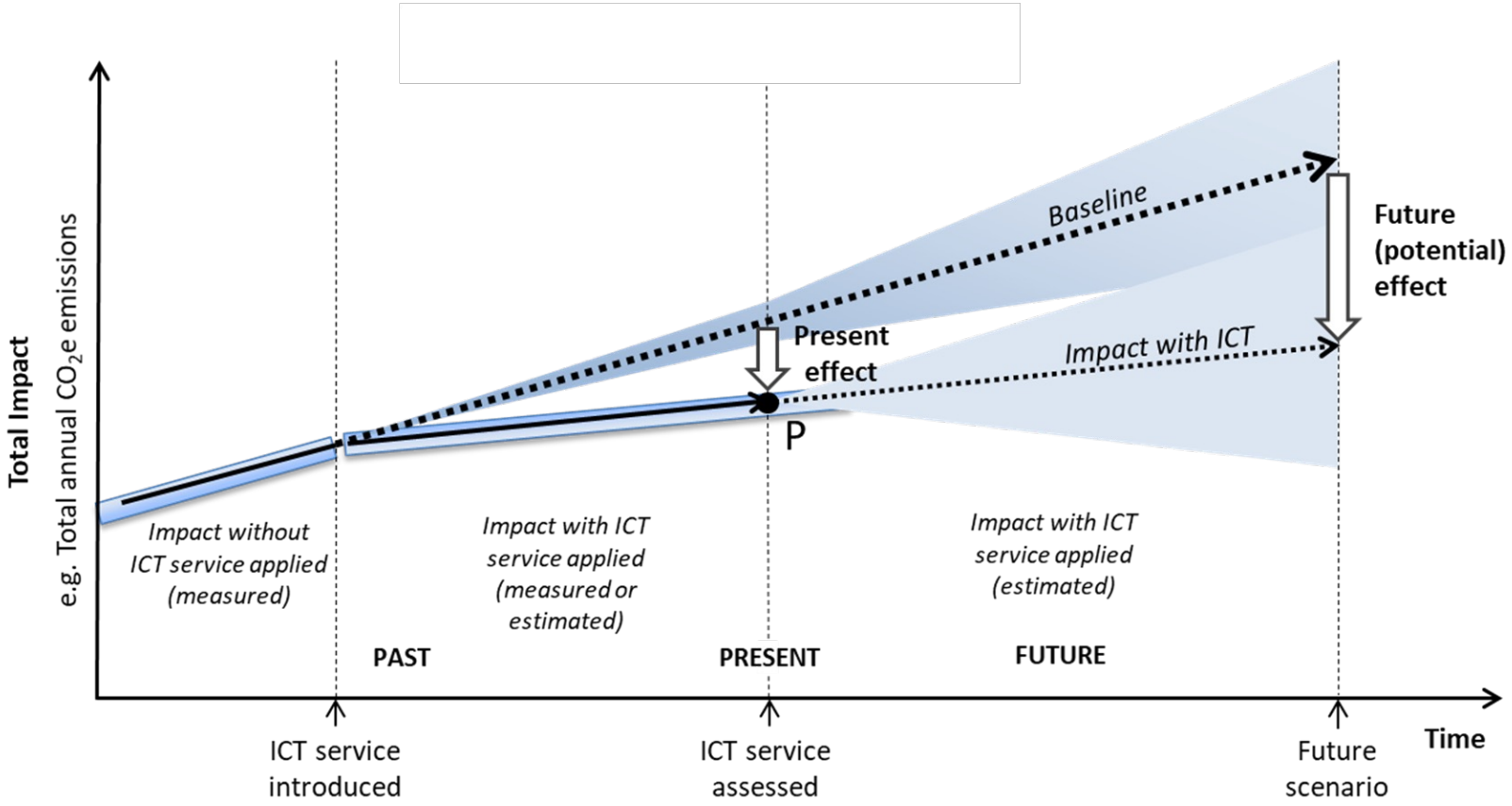


An example: Assessing the impacts of a virtual event

Depths of assessments

Three depths of assessment			
Sector	TIER 1	TIER 2	TIER 3
Full life cycle	YES	YES	YES
Higher order effects	Assess	Identify	(Identify)
Data	As specific as possible	As specific as possible	Screening
Context	Assess	Identify	(Identify)

Calculating the effect – a hypothetical comparison



Source: *A Methodology for Assessing the Environmental Effects Induced by ICT Services – Part I: Single Services*. (Coroamă & Bergmark et al, ICT4S2020)

Main take Aways

1

ICT, unlike many other products and services, distinguishes itself by its double-edged nature, contributing both to environmental loads and emissions reduction opportunities.

2

The ITU-T Study Group 5 has developed a series of Recommendations to assess the environmental impact of ICT, including:

L.1470 on 1.5°C GHG trajectories

L.1471 on Net Zero for ICT sector organizations

3

The Recommendation ITU-T L.1480 provides a methodology to comprehensively assess the impacts of ICT solutions in other sectors and enable the net zero transition.

Additional resources

- ITU climate change: https://www.itu.int/en/ITU-T/climatechange/Pages/default.aspx
- ITU-T Study Group 5: EMF, environment, climate action, sustainable digitalization, and circular economy
- ITU-T L. 1480 Enabling the Net Zero transition: Assessing how the use of ICT solutions impacts GHG emissions of other sectors
- ITU-T L.1470 Greenhouse gas emissions trajectories for the information and communication technology sector compatible with the UNFCCC Paris Agreement
- L.Suppl.37 Guidance to operators of mobile networks, fixed networks and data centres on setting 1.5°C aligned targets compliant with Recommendation ITU-T L.1470
- L.Suppl.38 ITU-T L.1470 - Guidance to information and communication technology manufacturers on setting 1.5°C aligned targets compliant with Recommendation ITU-T L.1470
- ITU-T L.1471 Guidance and criteria for information and communication technology organizations on setting Net Zero targets and strategies

Thank you very much!