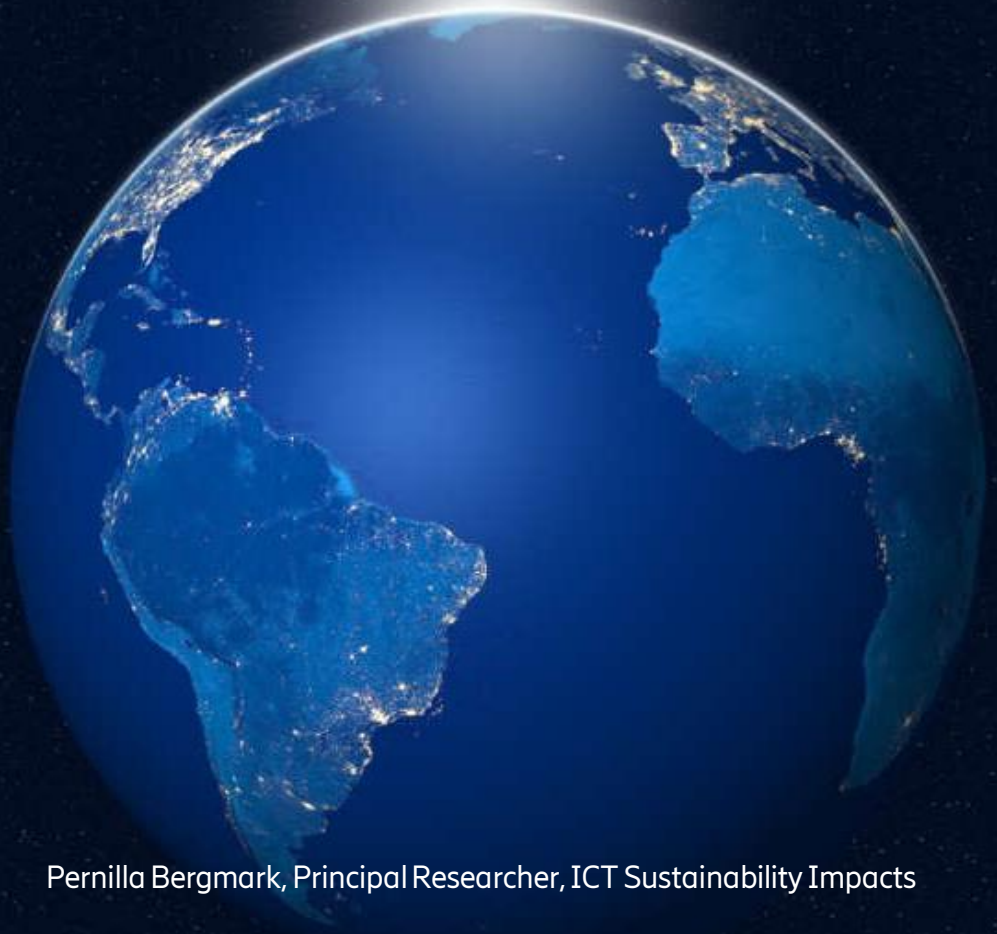
Greening digital companies – some reflections



Report launch

Pernilla Bergmark, Principal Researcher, ICT Sustainability Impacts Ericsson Research

2022-06-23

The merits and insights of the report

Massive data collection effort provided at one plate – a daunting task

Regional differences

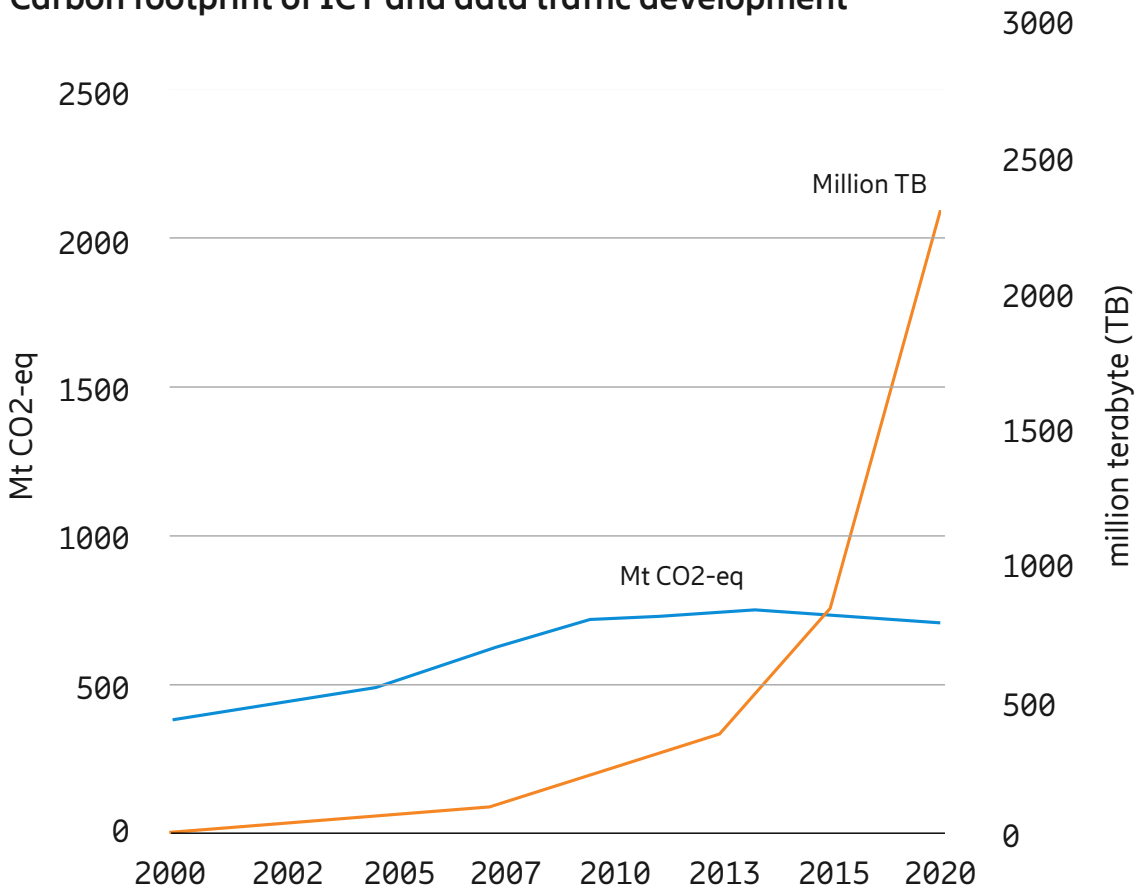
The importance and challenges of procurement of low-carbon electricity

The challenges around scope 3

ICT sector carbon footprint

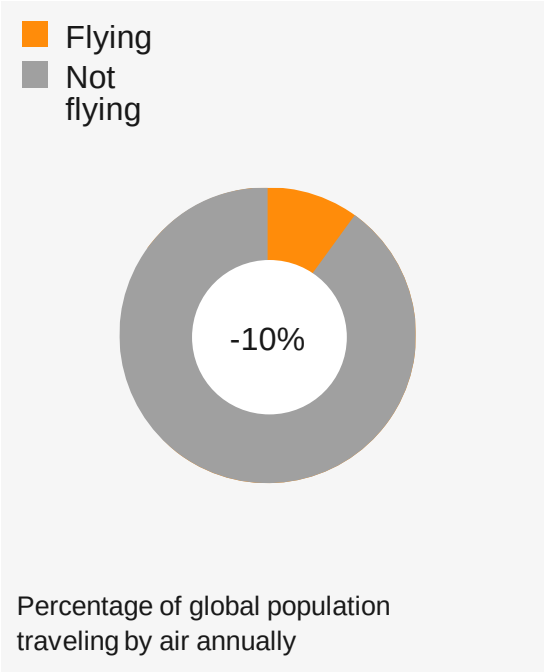
- 1.4% of global carbon emissions (full life cycle)
- Stable despite exponential data traffic growth
- 3.6% of the global electricity consumption (use stage)
- Includes networks, data centers and user devices
- 6% of global economy

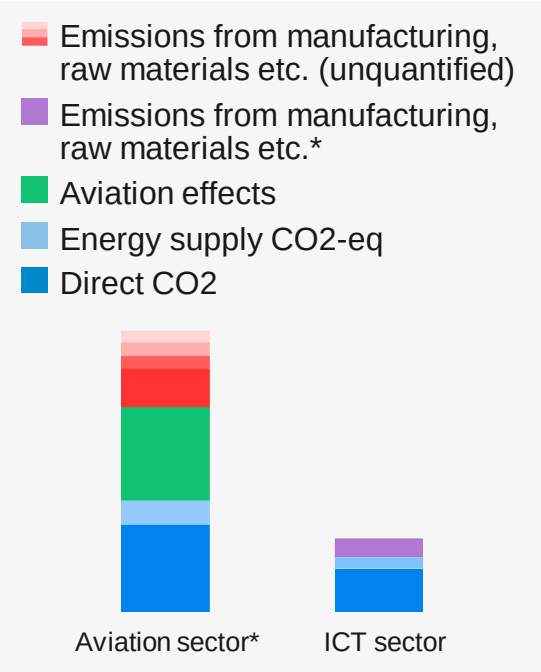
Carbon footprint of ICT and data traffic development

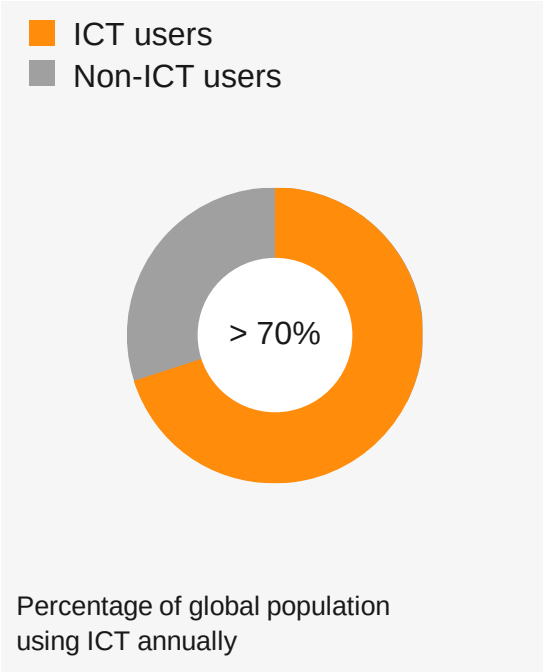


The Energy and Carbon Footprint of the Global ICT and E&M Sectors 2010–2015
Malmodin & Lundén, **Sustainability**, 2018, https://www.mdpi.com/2071-1050/10/9/3027

The opportunities of an online working life





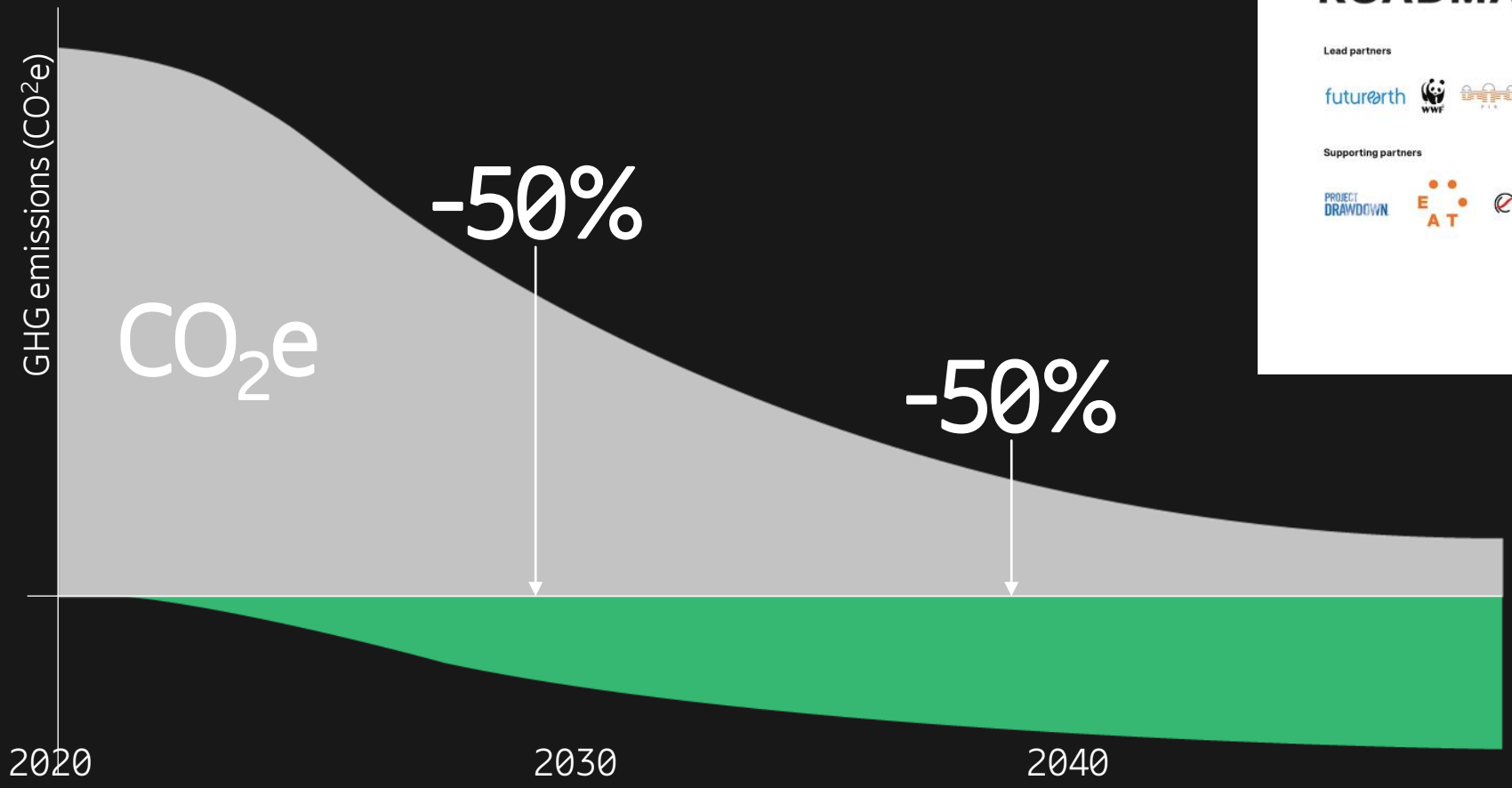


50 years

Using a smartphone for 50 years (including share of networks and data centers) results in lower carbon emissions than fuel used per person on a transatlantic return flight (including aviation effects).

*For the aviation sector, the emissions for fuel production and aviation effects are estimated based on ICCT and IEA figures.

We need to act and scale fast – a collaborative effort



EXPONENTIAL ROADMAP 2030

Lead partners

futureearth · WWF · RISE · Stockholm Resilience Centre, Stockholm University · ERICSSON · M2020 · SITRA · KTH · Internet of Planet

Supporting partners

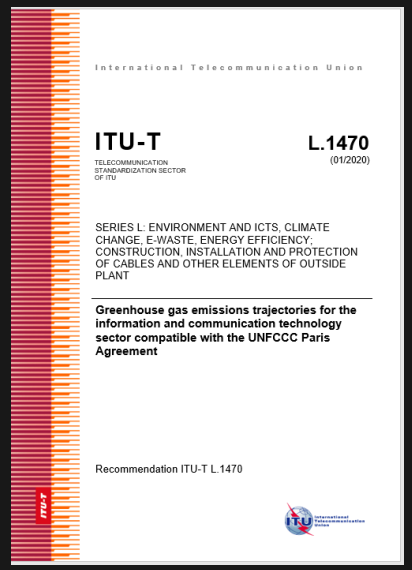
PROJECT DRAWDOWN · EAT · Swedish Energy Agency · Telia Company · ClimateView · Fossil Free Sweden · SCANIA

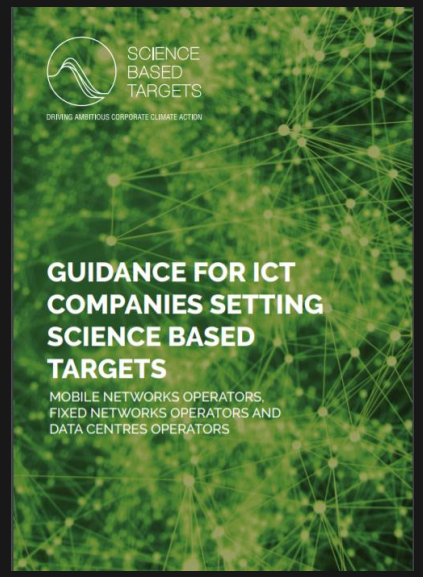
GHG emissions

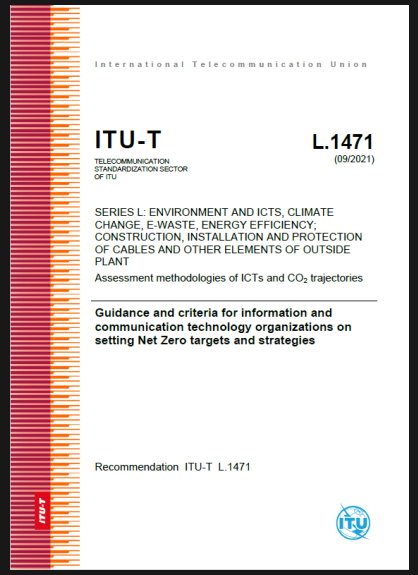
Nature-based sinks

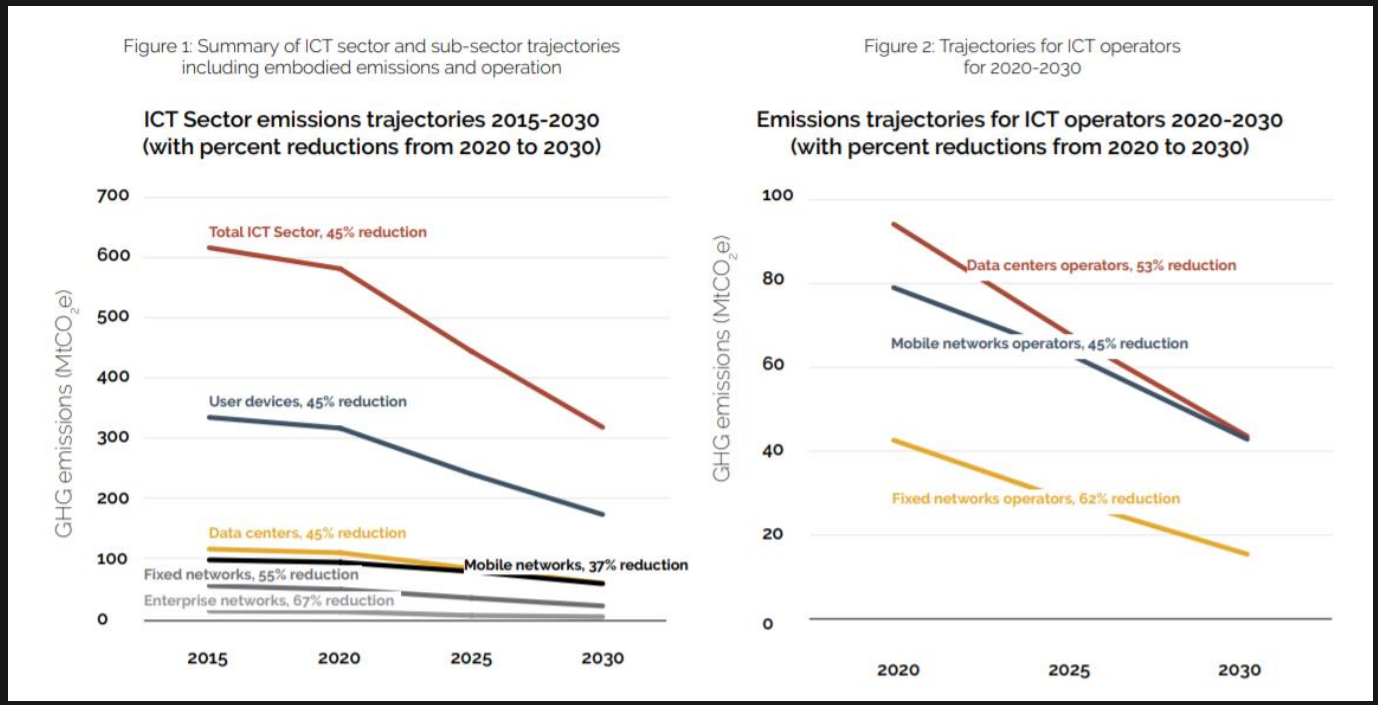
*Source: Exponential Roadmap

1.5C aligned trajectories for the ICT sector towards Net Zero



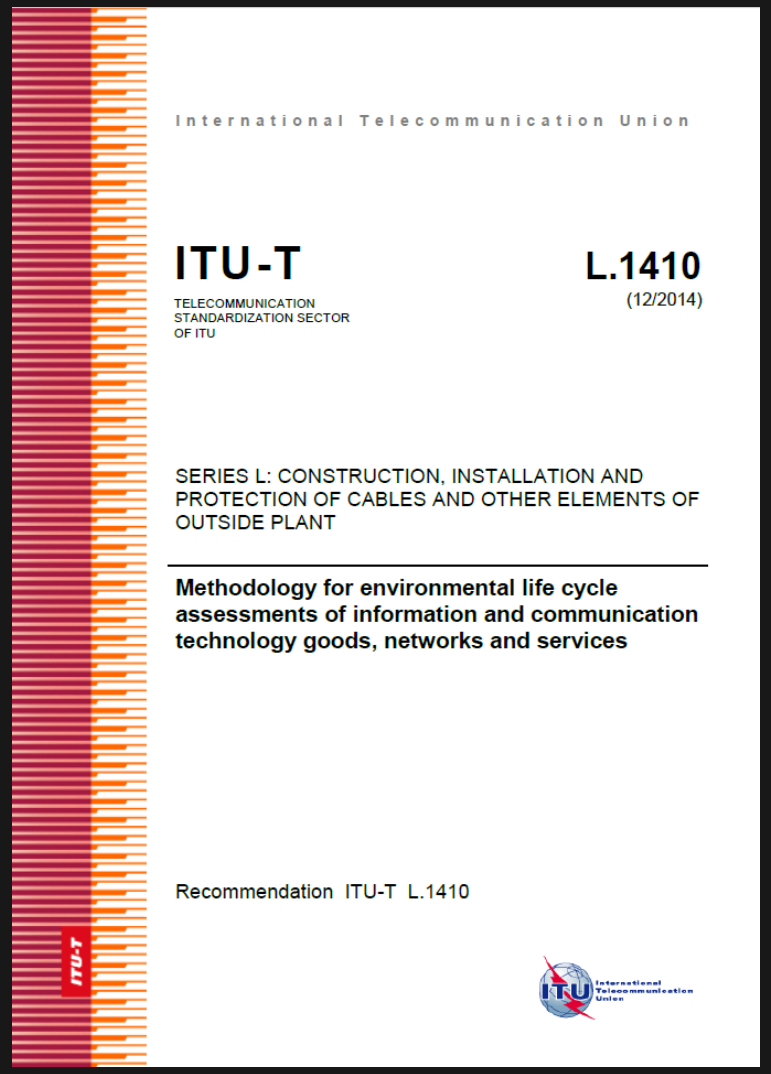


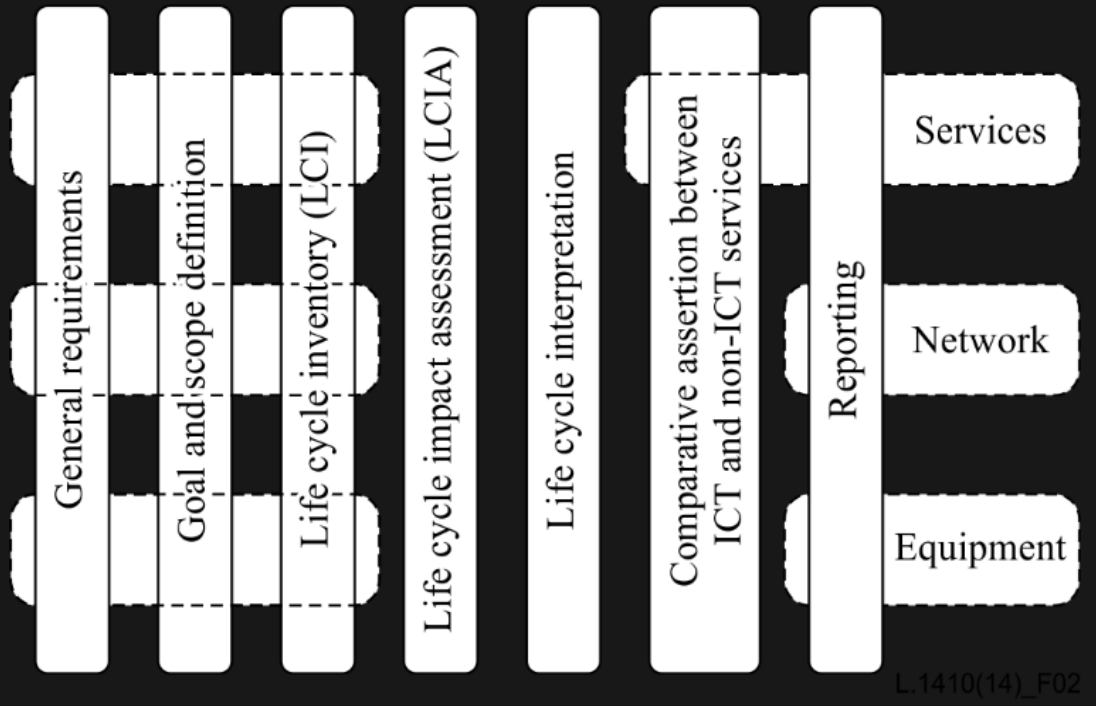




https://www.itu.int/rec/T-REC-L.1470
https://www.itu.int/ITU-T/recommendations/rec.aspx?rec=14318
https://www.itu.int/rec/T-REC-L.Sup38-202010-I
https://sciencebasedtargets.org/sectors/ict

L.1410: footprints and enabling effects





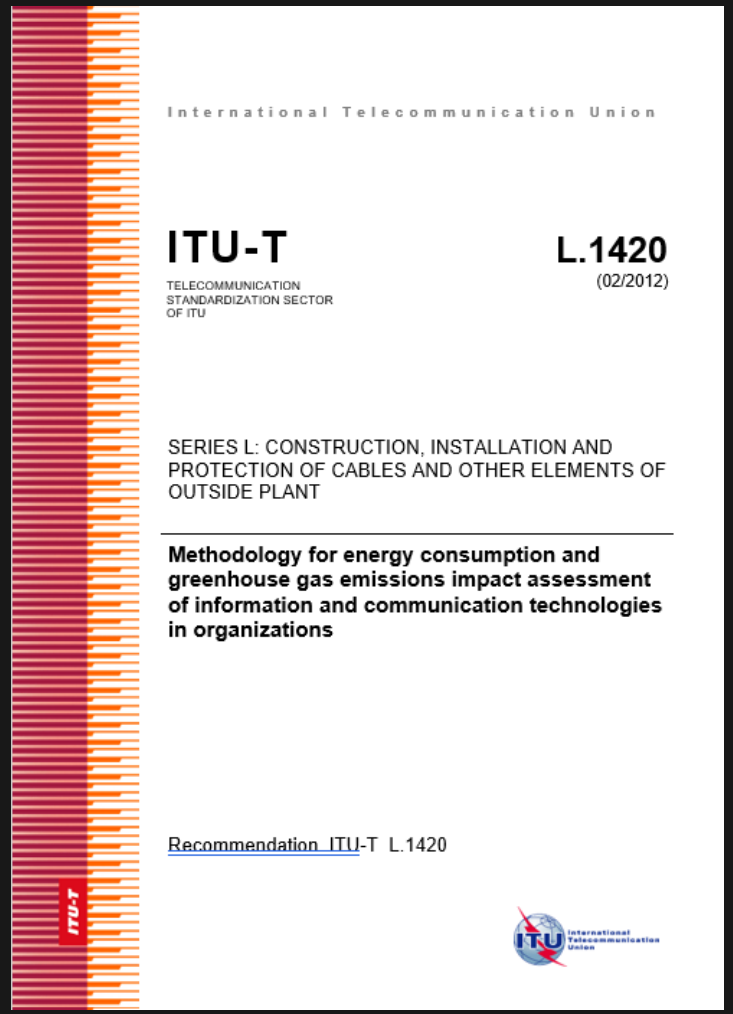
Part I:

ICT life cycle assessment: framework and guidance for assessing goods, networks and services.

Part II:

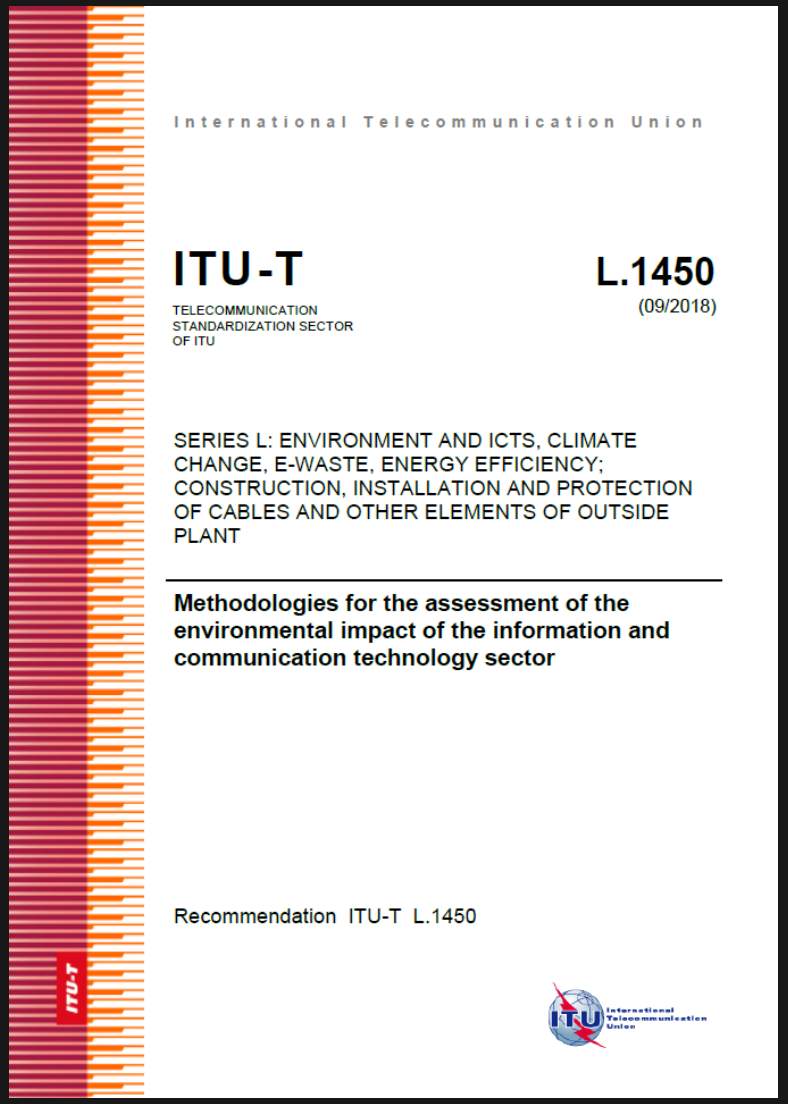
Comparative analysis between an ICT product system and a reference product system: framework and guidance.

L.1420: Organizational carbon footprint

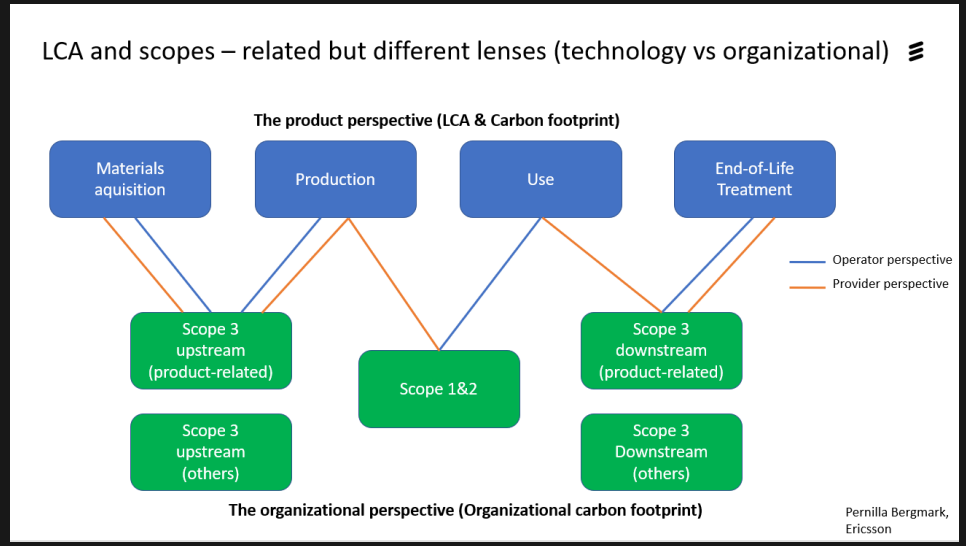


- Company carbon footprint reporting
- Aligned with GHG protocol and ISO 14064-2
- Embodied emissions (part of scope 3) based on LCA/estimates
- Current edition from 2012 – revision ongoing
- Will consider current work of GSMA
- Scope 3 a key challenge

L.1450: ICT sector footprint



- Basis for decarbonization trajectories
- A basis for moving towards a consented understanding of ICT impacts
- Of interest to policy makers
- Taking a different perspective than the ITU/WBA report by focusing on the deliverables of the sector
- Complemeting perspectives



Halving all sectors by 2030 – an ICT opportunity

ENERGY SUPPLY: Support for grid balancing & predictions

INDUSTRY: High precision manufacturing & reverse logistics

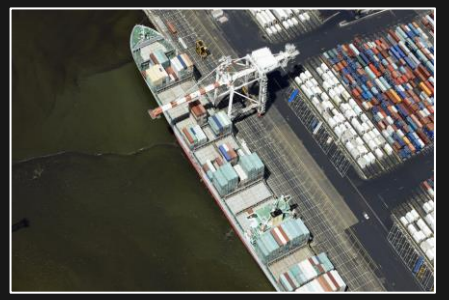
BUILDINGS & CITIES: Space utilization & co-optimization

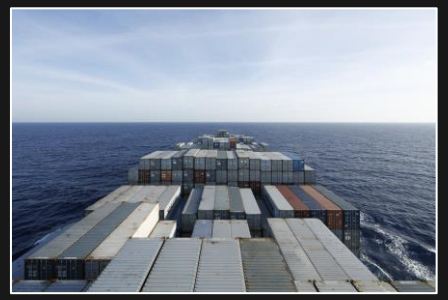
TRANSPORT: Usership models, route planning & virtual presence

FOOD CONSUMPTION: Matching supply & demand, awareness

NATURE BASED SOLUTIONS: Protect & predict with precision

The ICT enablement effect





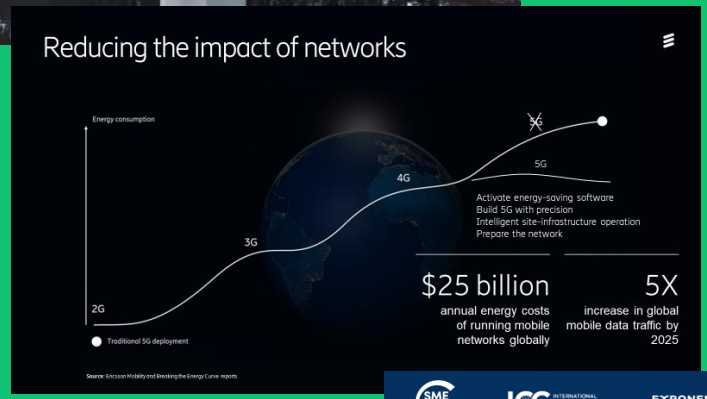
Ongoing ITU standardization – expected publication during 2022

How can we reduce ICT carbon footprint?

Go renewable – in all parts of the supply chain

Build systems in a smart way – and phase out old equipments

Collaborate within and across value chains



The ICT & Mobile action table – adressing all stakeholders

.5. ICT AND MOBILE ACTION TABLE

Nexus	By 2021	By 2025	By 2030	By 2040
1. Policymakers (national, subnational, local levels)	• Publish COVID recovery plans addressing the role of digital in delivering zero-carbon economic growth • Announce Just Transition policies to	• 'Digital first' approach for meetings within public sector has been maintained post-COVID, and promoted across all sectors	• Enable rollout everywhere of high-speed broadband, e.g. 'full fiber' and 5G for more efficient connectivity • Digital divide reduced in developed and developing world in both urban and rural areas, and equally for women and men	
2. Financial Institutions	• The role of Finance is principally related to reallocation of financial capital in favour of [illegible] clean tech innovation within these sectors. Finance will also be required for the funding of new business opportu[illegible] in other sectors and to clarify what constitutes green finance in these cases, taking a critical stance on what is truly climate positive and voting against climate negative strategies and plans. Finance also has an important role to play in digital inclusion, to recognise the business opportunities in connecting the unconnected.			
3. Technology Providers and Innovators	• Innovate to continue delivering large operational efficiency improvements in products and systems, e.g. 6G and Wifi 6	• Launch business models to decarbonize communication, automation and intelligence • Business models for end-user device electricity consumption, e.g. incentives for consumers to purchase RE • Standards in place which makes energy efficiency a key priority of any emerging [illegible]nology and its commissioning		
4. Business and Service Providers	• Companies commit at scale to Race To Zero by the 2040s and disclose their emissions data as well as climate-related risks and opportunities • Companies commit and publish their	• ICT sector secures 50% of electricity [illegible] decarbonized and renewable sources • Mobile sector secures 40% of electricity from decarbonized & renewable sources • Supply chain companies commit at scale to [illegible]	• Implement full connectivity in all industries [illegible]ement in products with a decarbonized and [illegible] • Mobile sector secures 70% of electricity from decarbonized and renewable sources • Leading sector operators become net generators of RE	• Sector becomes net generator of RE
5. Civil Society	• Industry collaboration on early-warning services for extreme weather events, e.g. fires or floods. • ICT and Mobile employees' campaign for acceleration of sector decarbonization	• Consumers and employees drive acceleration of circular business models	[illegible] vehicle fleets run	
	• Companies initiate decommissioning of older generation technologies to accelerate efficiency gains • Promote access to climate action best	• Promote and support initiatives that data volumes, with only limited or no[illegible] increases in power consumption • Maximize the use of best energy efficiency		

Four time horizons

- 2021
- 2025
- 2030
- 2045

Five group of actors

- Policymakers at all scales
- Financial institutions
- Tech providers and innovators
- Business and service providers
- Civil society

https://unfccc.int/sites/default/files/resource/ActionTable_Industry_2.1.pdf (page 140++)

Future opportunities

Investigate opportunities for alignment on sector boundaries and categorization together with ITU-T

More details on sources

More clear distinction between carbon neutrality and net-zero

More clear distinction on reductions and compensations in target analysis

Leverage insights on diverse reporting format as input to standardization especially for company reporting

Leverage experiences of data collection to establish an ITU database on ICT carbon footprint

Closer collaboration with ITU-T SG5

Ericsson.com/technology-for-climate-action

Reducing the impact of networks

Activate energy-saving software
Build 5G with precision
Intelligent site-infrastructure operation
Prepare the network

$25 billion

annual energy costs of running mobile networks globally

5X

increase in global mobile data traffic by 2025

Source: Ericsson Mobility and Breaking the Energy Curve reports

Summary

Prepare the network
Modernize the network with the latest technology and replace old equipment to realize new business opportunities and energy savings.

Activate energy-saving software
Initiate the energy-saving features already available in Ericsson Radio Access Network. Adding machine learning will bring further savings.

Build 5G with precision
Have the right equipment in the right place. Optimize network performance on the new 5G frequencies while keeping capex and opex within limits.

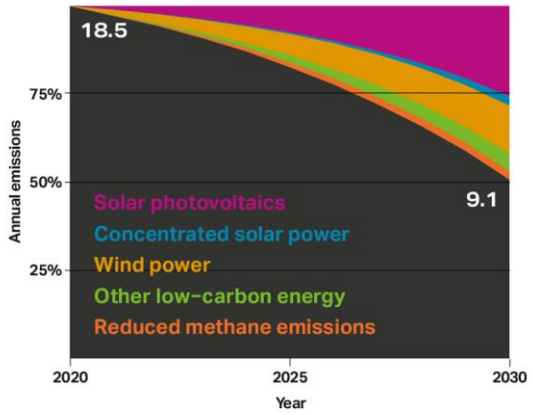
Operate site infrastructure intelligently
Use AI to operate site infrastructure proactively. Enable predictive maintenance and no-touch problem-solving to reduce site energy costs, site visits and outages.

30%
Ericsson Radio System can lower energy consumption by about 30% in like-for-like modernization.

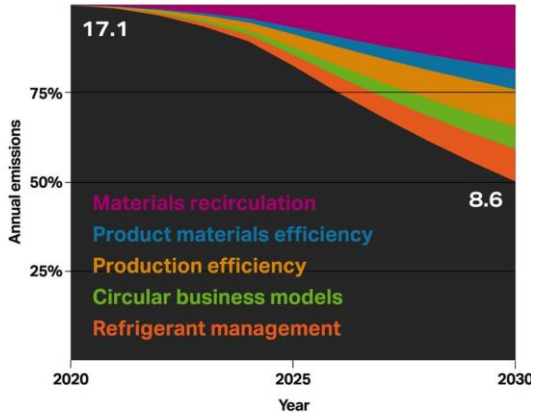
>50%
Passive elements supporting the RAN could represent over 50% of overall site power consumption.

Halving carbon emissions by 2030

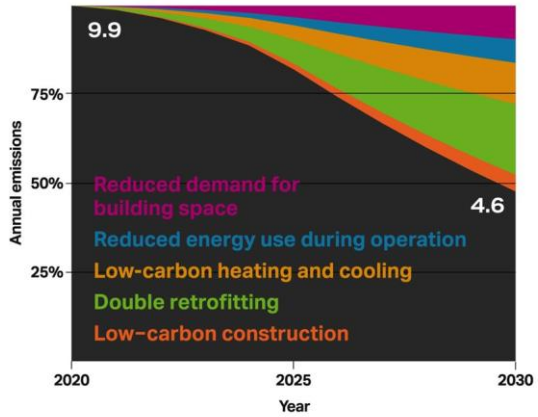
ENERGY SUPPLY



INDUSTRY

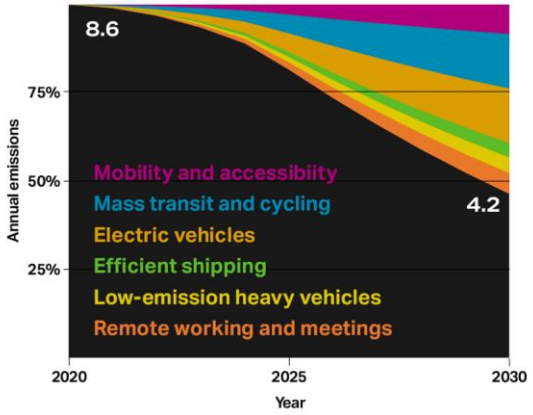


BUILDINGS

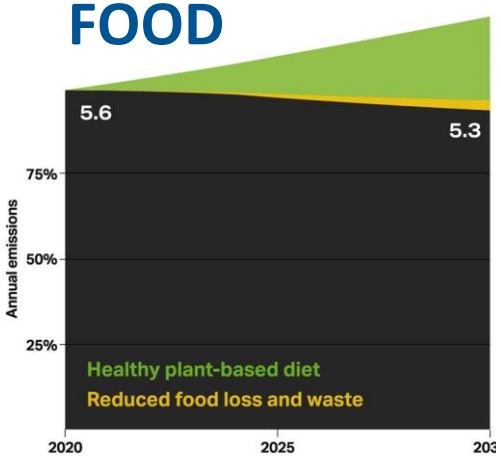


EXPONENTIAL ROADMAP 203

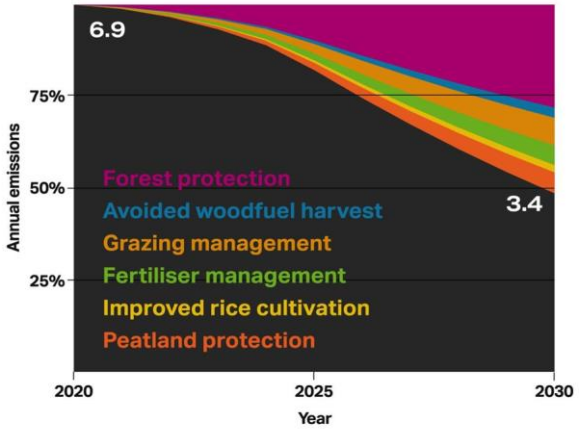
TRANSPORT



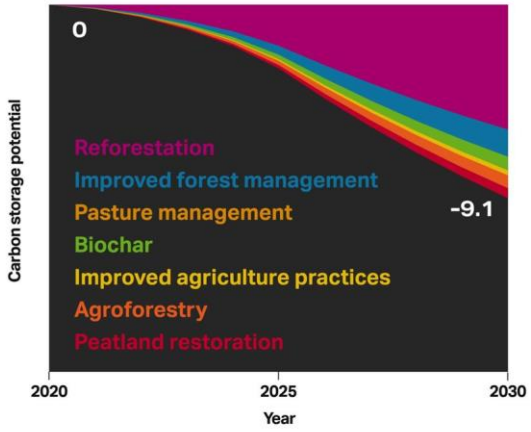
FOOD

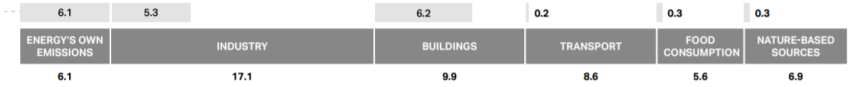


NATURE SOURCES



NATURE SINKS





www.exponentialroadmap.org