The collaborative path to a Net Zero ICT sector

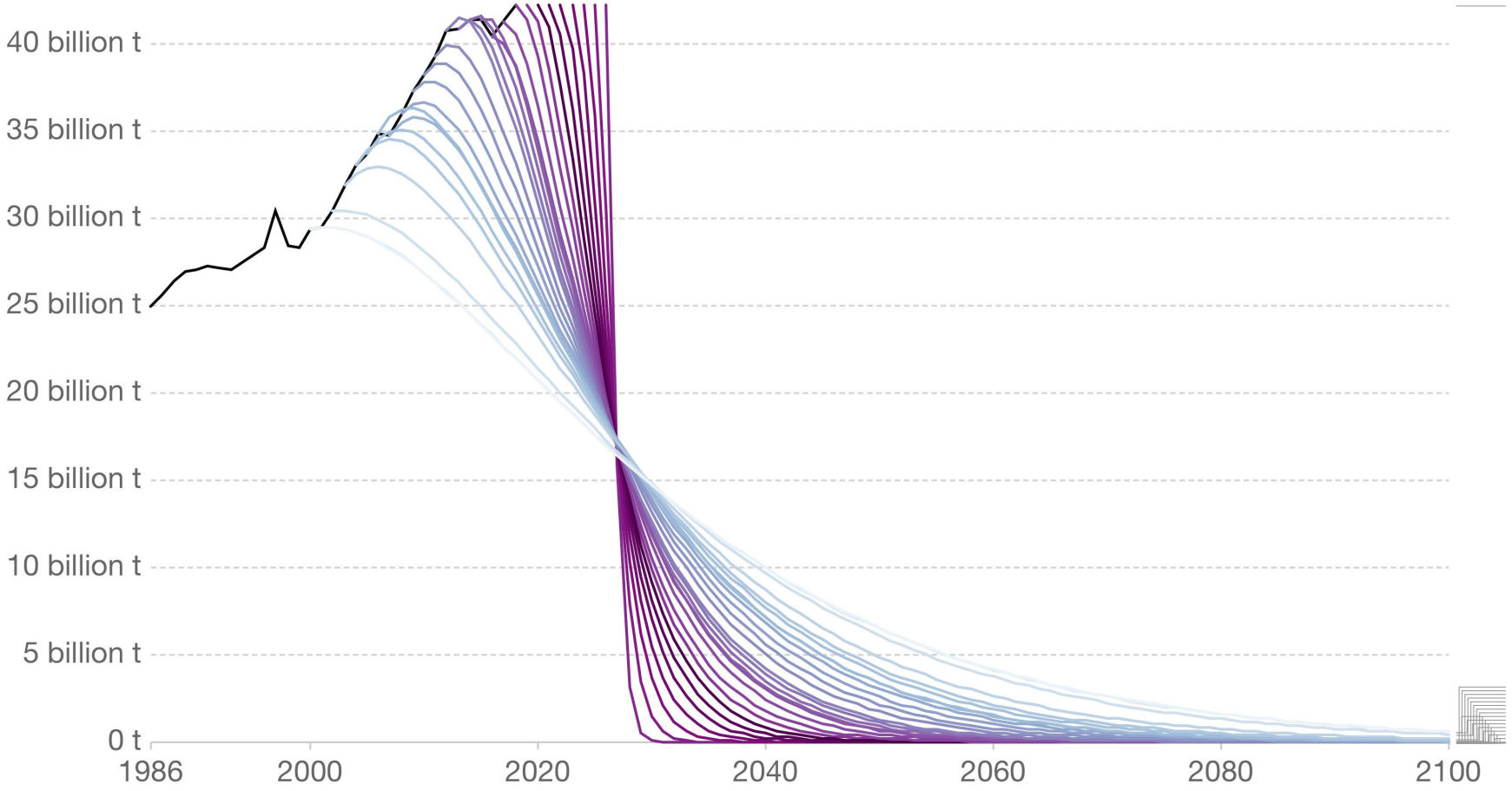
Preventing irreversible climate disruption is the race of our lives, and for our lives.
It is a race that we can and must win
(*A. Guterres*)

ITU Green Standards Week
16 December 2021

Pernilla Bergmark, Principal Researcher, ICT Sustainability Impacts Ericsson Research

2021-12-16

Halving global emissions by 2030 a prerequisite for our net-zero timelines



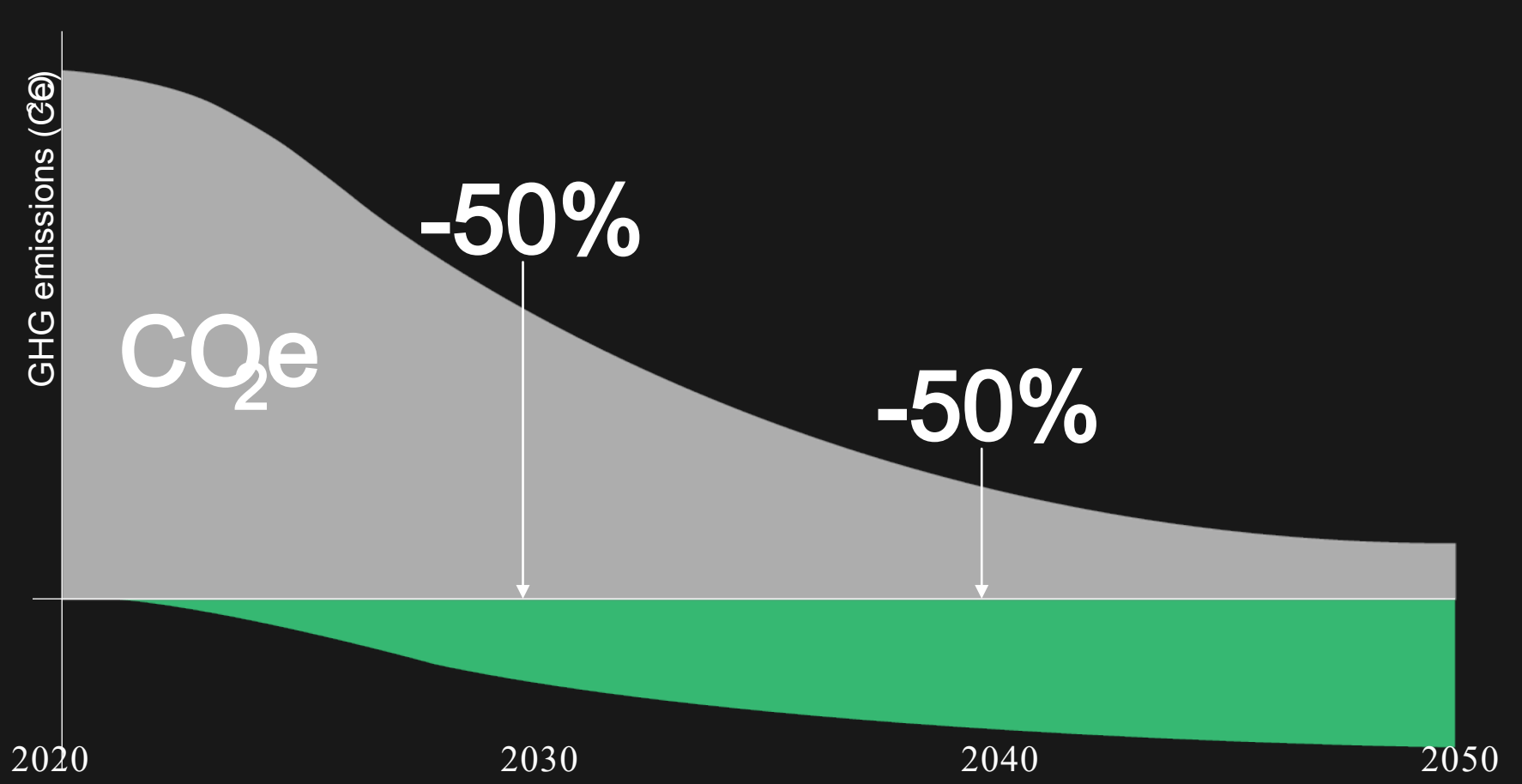
Source: Robbie Andrews (2019); based on Global Carbon Project & IPPC SR15
Note: Carbon budgets are based on a >66% chance of staying below 1.5°C from the IPCC's SR15 Report.
OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY

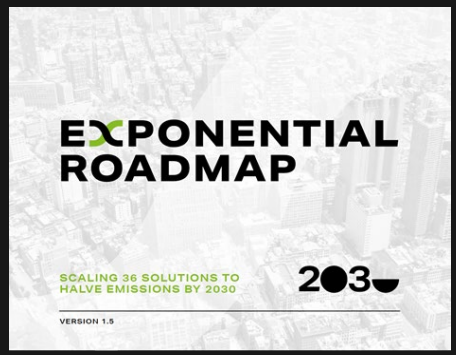
RACE TO ZERO

EXPONENTIAL ROADMAP 203

exponentialroadmap.org

Exponential climate action required now!



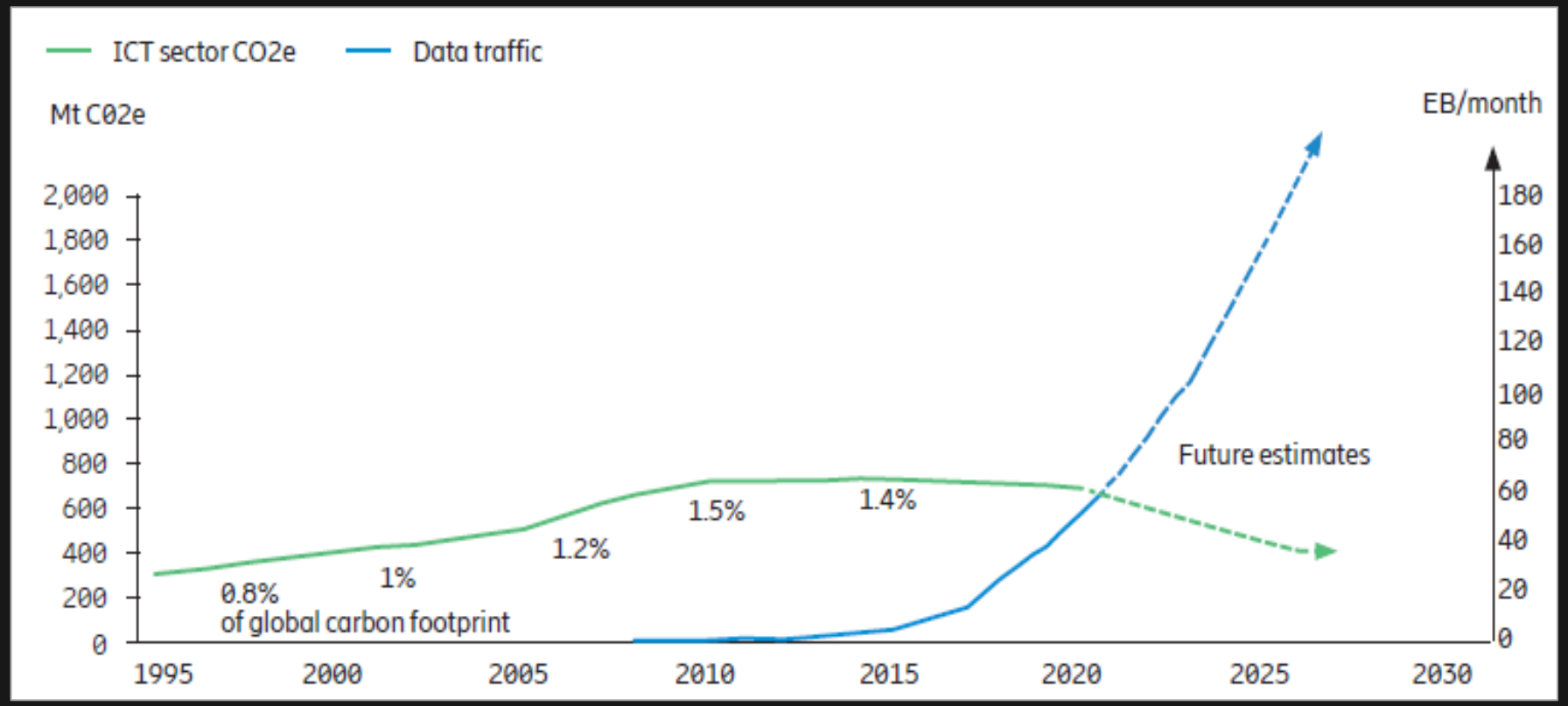


*Source: Exponential Roadmap

The carbon footprint of the ICT sector

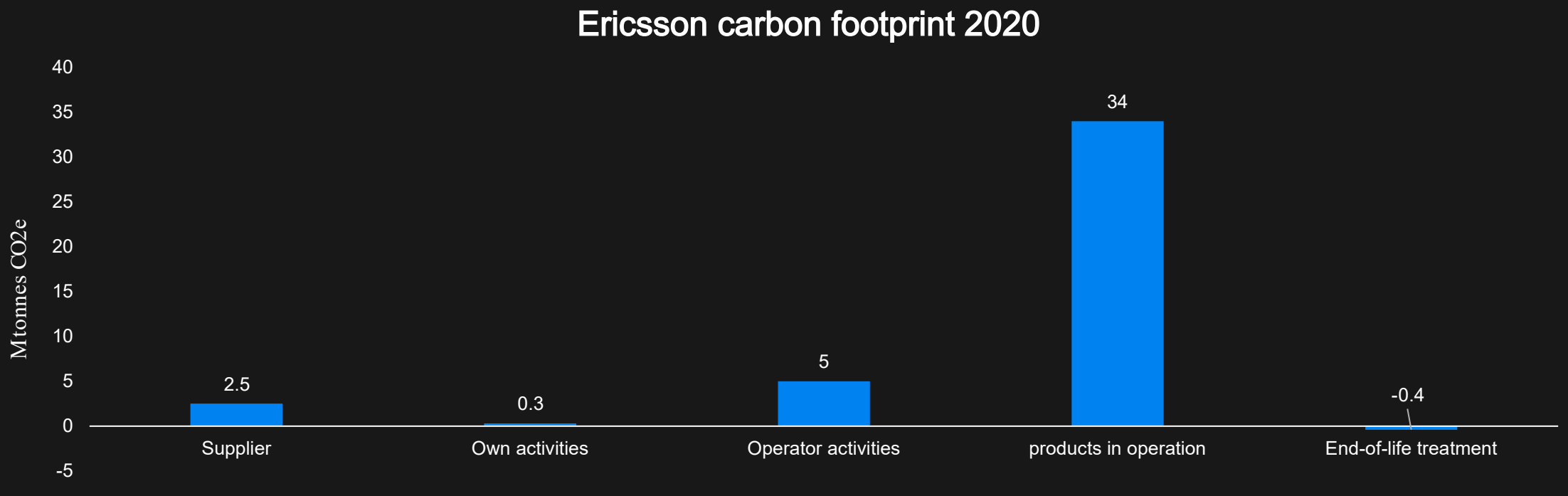
The ICT Industry footprint represents around 1.4 percent of global greenhouse gas emissions (full life cycle), and 3.6 percent of global electricity consumption (operation).

It is also the world's largest purchaser of renewable electricity



Based on: The Energy and Carbon footprint of the global ICT and E&M sectors 2010-2015, Malmodin & Lundén, Sustainability, 2018

The carbon footprint of an ICT provider



350

of E/// high emitting and strategic suppliers shall have 1.5 C aligned climate targets by 2025

CO_2 neutral

for direct operations by 2030

1.5°C SBT

Reducing 35% in own activities by 2022 from 2016 baseline

1.5°C SBT

35% energy saving in our Ericsson Radio System by 2022 compared to the legacy portfolio in 2016

10X

more efficient 5G portfolio than 4G by 2022 (Baseline 2017)

Reducing the impact of digital networks

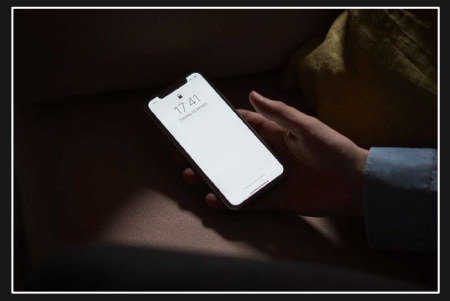
Activate energy-saving software
Build 5G with precision
Intelligent site-infrastructure operation
Prepare the network

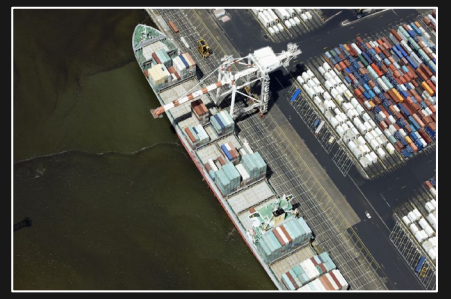
$25 billion
annual energy costs of running mobile networks globally

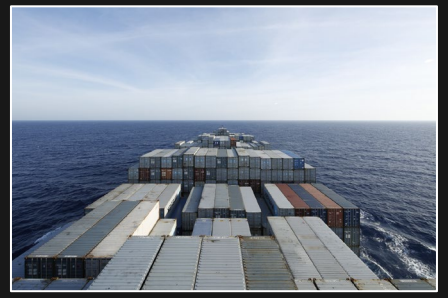
5X
increase in global mobile data traffic by 2025

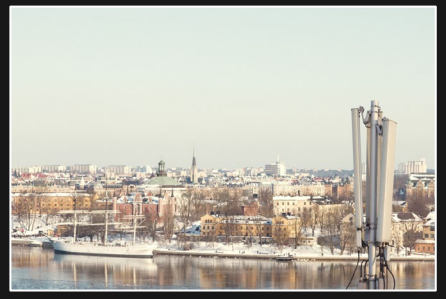
Source: Ericsson Mobility and Breaking the Energy Curve reports

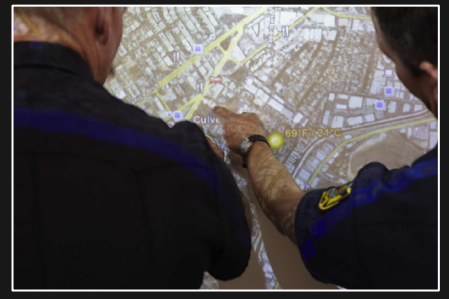
The ICT enablement effect







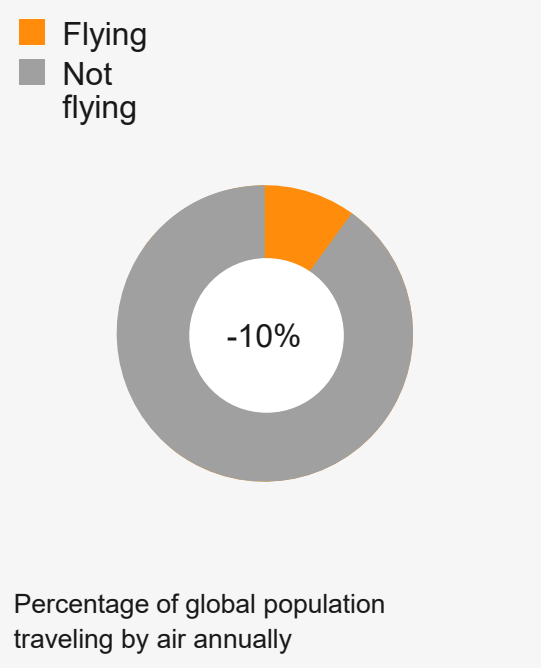


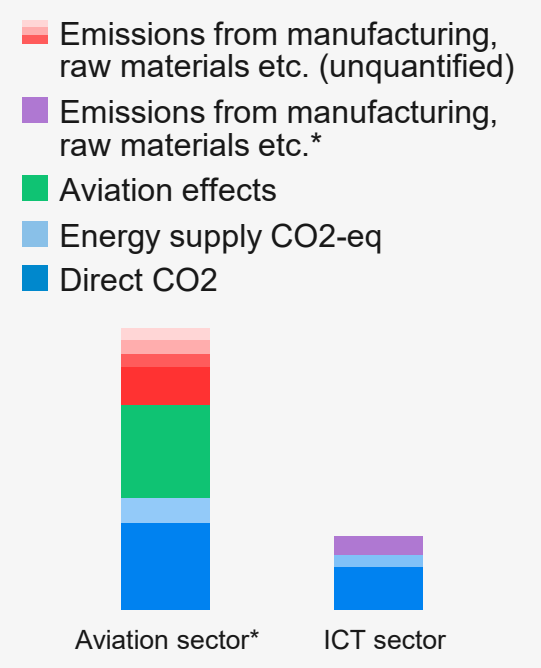


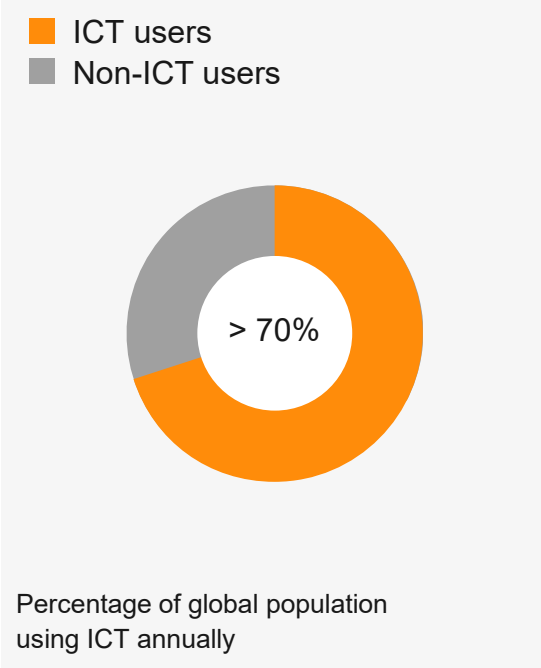
New interlinked technologies provide great opportunities - but also risks

Digital technology	Opportunities	Risks
5G	Materials & energy efficiency Circular flows Knowledge Behavioural changes	Maintaining high-carbon industries and processes Magnifying unsustainable consumption
IoT		
AI, ML, Deep learning		
Digital twin	System optimization	
Blockchain	Transparency & coordination	
Social media, e-commerce	Engagement, nudging, information	Engagament, nudging, desinformation

The opportunities of an online working life





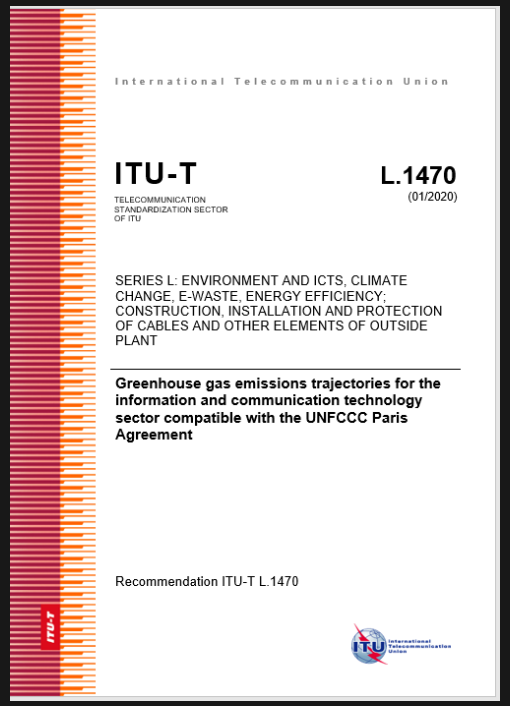


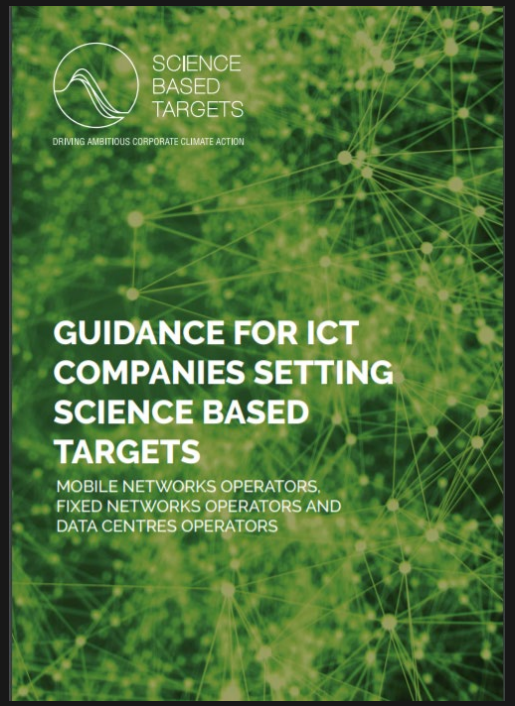
50 years

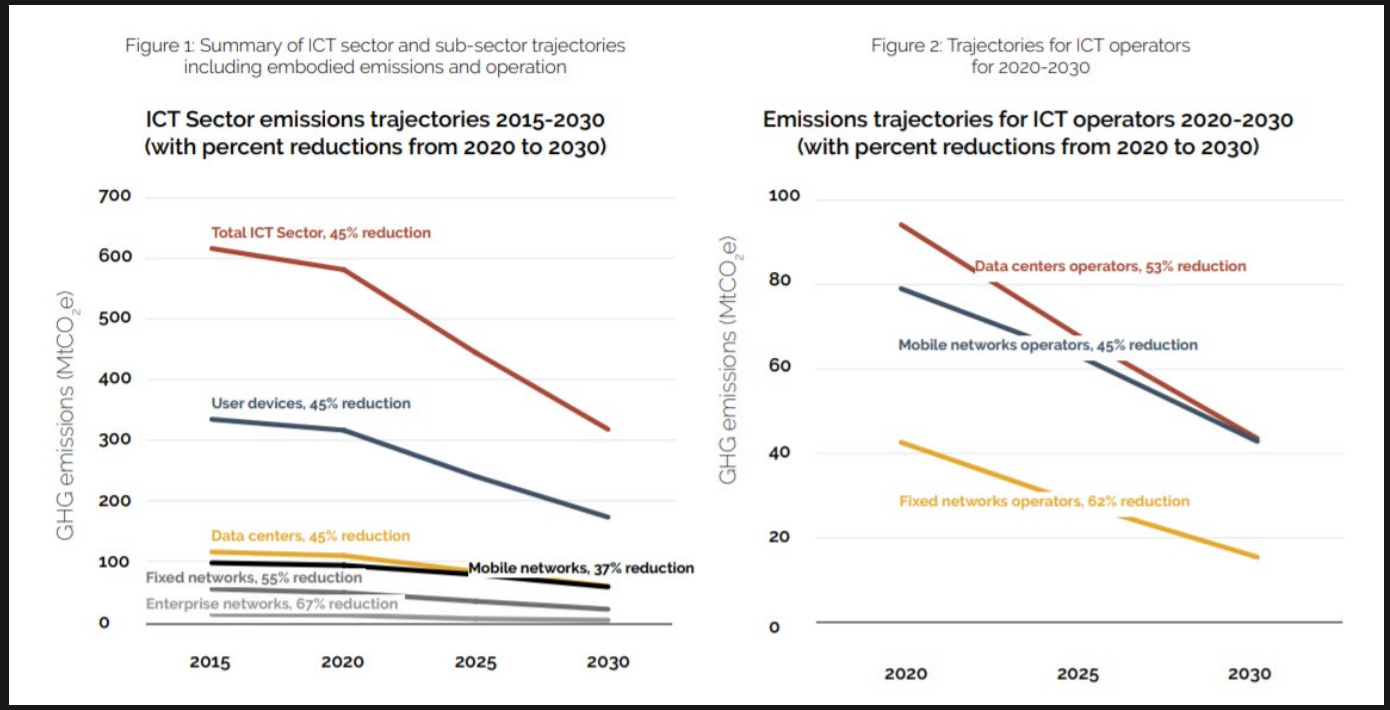
Using a smartphone for 50 years (including share of networks and data centers) results in lower carbon emissions than fuel used per person on a transatlantic return flight (including aviation effects).

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

1.5C aligned trajectories for the ICT sector

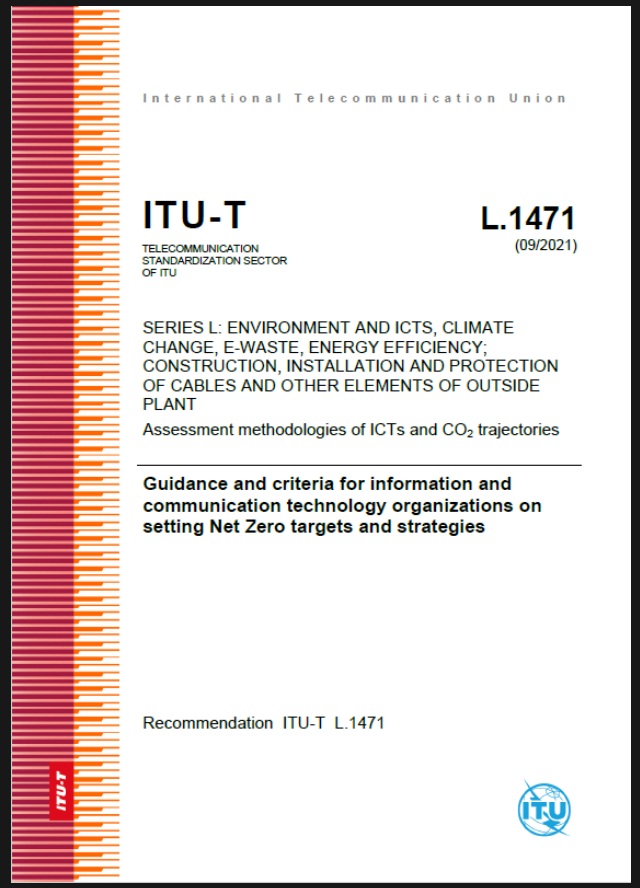






https://www.itu.int/rec/T-REC-L.1470
https://www.itu.int/ITU-T/recommendations/rec.aspx?rec=14318
https://www.itu.int/rec/T-REC-L.Sup38-202010-I
https://sciencebasedtargets.org/sectors/ict

Defining Net Zero for ICT organisations



Based on

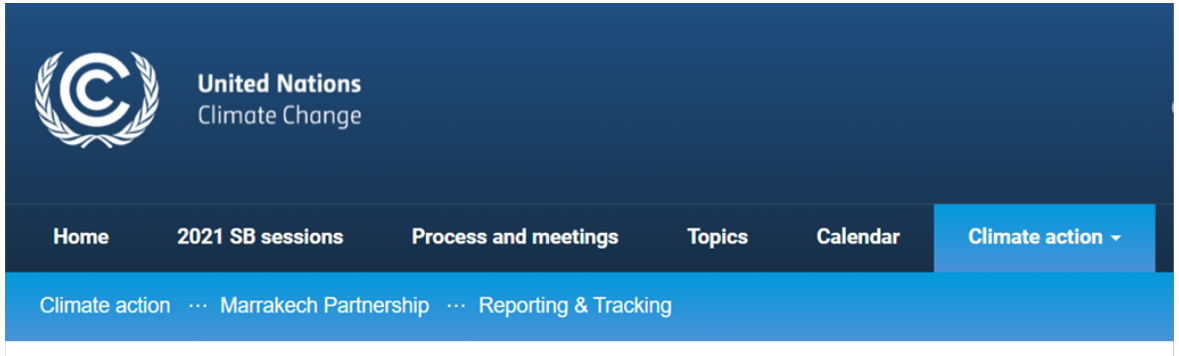
- SBTi
- UNFCCC Race to Zero
- UNFCCC Carbon Neutral Now
- Net Zero Initiative

Some key principles (simplified)

- Net zero is a future state achieved by reductions of own value chain emissions
- The residual to be neutralized like-for-like removals
- Disclosure is key
- Climate solutions are important but additional
- Climate investments are additional

https://www.itu.int/rec/T -REC-L.1471

UNFCCC Climate Action Pathways



A roadmap to help Parties and non-Party stakeholders alike to identify actions needed by 2021, 2025, 2030 and 2040 as steps to get to the 2050 vision

Thematic areas:
Energy- Human Settlements – Industry
Land Use - Oceans and Coastal Zones –
Transport - Water

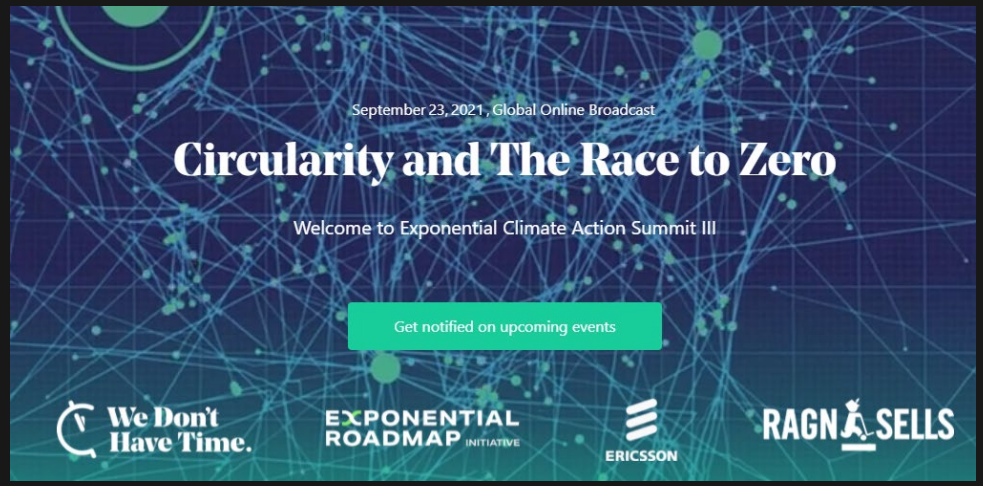
2050 vision and summary
Action Table

Heavy Industry
- Aluminium
- Cement and Concrete
- Chemicals
- Metals & Mining
- Plastics
- Steel

Light Industry
- Fashion
- Consumer Goods
- Retail
- ICT & Mobile

https://unfccc.int/climate-action/marrakech-partnership/reporting-and-tracking/climate_action_pathways

Exponential Roadmap Initiative – the impact track



Key takeaways

The ICT sector can and must roughly halve its emissions by 2030 from a baseline representing 1,4% of global emissions
1.5C aligned trajectories exist

Great opportunities to help other sectors move towards Net Zero – but depend on HOW we use technology

The collaborative approach
- 1.5C business playbook
- 15C Supply chain leaders
- SME Climate hub

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It is a race that we can and must win
(*A. Guterres*)

UNFCCC Climate Action Pathways gives specific guidance to policymakers, financial institutions, tech providers, innovators, service providers and civil society
2021/2025/2030/2045

https://www.ericsson.com/en/about-us/sustainability-and-corporate-responsibility/sustainability-metrics/sustainability-research

"*Beyond COP26 - Accelerating Net-Zero Through a Sustainable Digital Transformation Sustainable Digital Transformation.*"

You will be speaking in **Session 2: Maximizing the benefits of digital transformation through achieving net-zero**

Objectives: *While the **accelerated digital transformation has brought on new opportunity for development, their environmental impacts** are often neglected in the discussion. This session will shed light on **how the ICT sector can play a key role in advancing sustainability in digital transformation by improving efficiency of ICTs** and reaching net-zero within the sector.*
Link to the programme page: https://www.itu.int/en/ITU-T/Workshops-and-Seminars/gsw/202112/Pages/day-03.aspx

Opportunities in all sectors examples

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 & Mobile action table

.5. ICT AND MOBILE ACTION TABLE

Nexus | Energy | Human settlements | Industry | Land use | Water

	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] and its commissioning	• Implement full connectivity in all industries [illegible] in products with a decarbonized and [illegible]	
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]	• 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 • Companies initiate decommissioning of older generation technologies to accelerate efficiency gains • Promote access to climate action best	• Consumers and employees drive acceleration of circular business models • 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++)