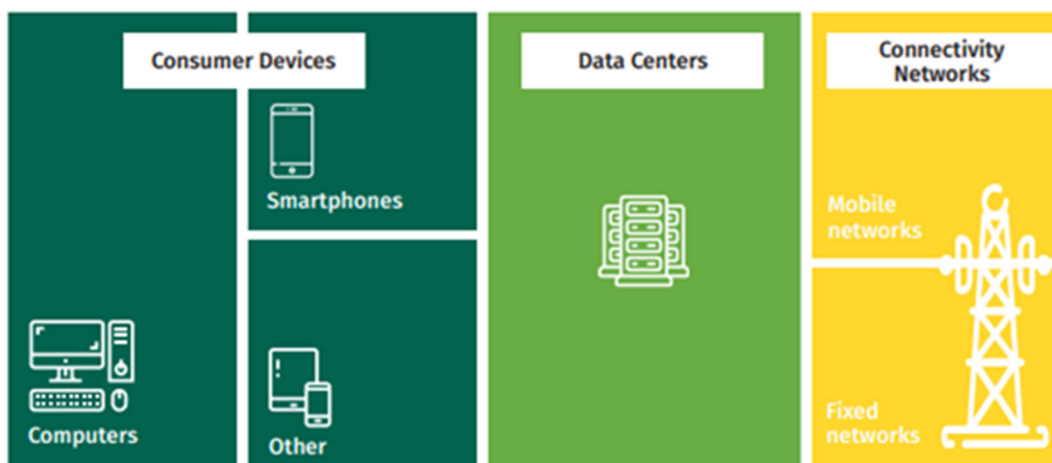


Measuring the Emission & Energy Footprint of the ICT Sector

IMPLICATIONS FOR CLIMATE ACTION

The joint ITU and the World Bank report, [Measuring the Emissions & Energy Footprint of the ICT Sector: Implications for Climate Action](#), brings together data and analysis on the energy and emissions across 30 countries from their telecommunications, connectivity networks, data centers, and consumer devices. Additionally, it addresses the policy and regulatory implications of this data and dives deeper into these issues through country case studies in France, the United Kingdom, Brazil, and Rwanda. Reducing emissions from the rapidly expanding digital sector (figure 1) while



expanding connectivity for those without internet access requires better data on energy usage and emissions within the information and communication technology (ICT) sector.

Figure 1. Key sources of ICT sector GHG emissions.

Key findings:

- The ICT sector emitted an estimated 567 million tCO₂e in 2022, constituting 1.7 per cent of the world's total emissions.
- Electricity consumption within the ICT sector reached an estimated 1,183 TWh in 2022.
- Telecommunications accounted for 23 per cent of ICT sector emissions, while embedded and product use constituted 63 per cent (figure 2). Colocation, cloud, and content data centers contributed 13 per cent to overall emissions.
- Despite a 6.9 per cent increase in ICT sector electricity consumption from 2020 to 2022, emissions remained relatively constant, thanks to cleaner energy sources. To align with global climate objectives, emissions from the broader digital sector must be slashed by nearly half by

2030. The sector is headed in the right direction as a leader in renewable energy adoption, accounting for 60 per cent of renewable power purchases in 2021.

- Operators from the Asia Pacific region dominated, contributing 69 per cent of GHG emissions in 2022, primarily due to heavy reliance on fossil fuels.
- Approximately 2.6 billion people remain offline, necessitating increased infrastructure and devices, potentially escalating energy demand and emissions without targeted interventions.

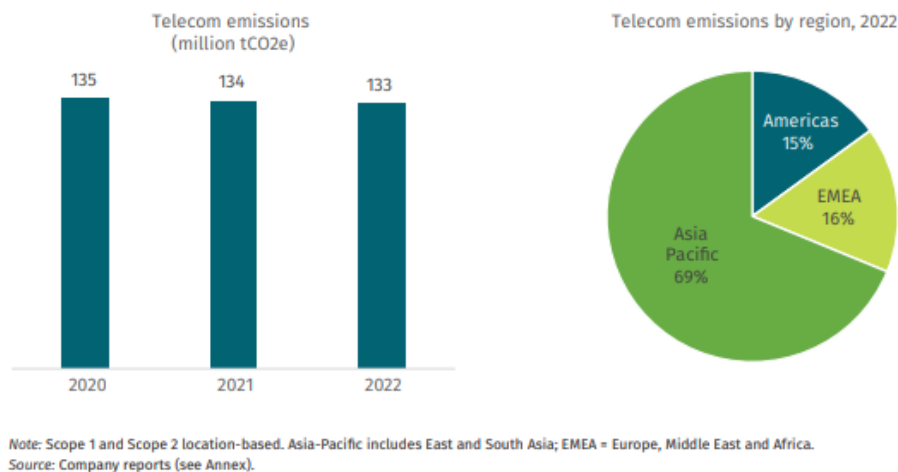


Figure 2. Estimated telecommunication GHG emissions.

Policy and regulatory considerations:

- In contrast to other sectors, reliable ICT emissions data is largely unavailable. High-emitting sectors - such as transport, energy, and forestry - have well-established measurement approaches which inform policy and mitigation efforts. The limited measurement of ICT emissions is a result of historical priorities, data complexities, and comparably lower emissions. However, this situation is changing due to rapid digitalization.
- The report underscores the pivotal role of ICT regulators, for example, France is the only country in the world where the ICT regulator, ARCEP, compiles and disseminates climate data based on obligatory responses from telecom operators. Rwanda, Singapore, Brazil, and the United Kingdom employ different approaches and reporting structures, which can provide a model for other countries to adapt and is further explored in the report through country case studies.
- Governments are urged to recognize the need for transparency in ICT sector emissions to align with national climate targets and monitor progress.
- While technology transitions can enable emissions reductions and increase energy efficiency, these transitions, if not managed carefully, can also cause disruptions to digital services and heighten disparities in inclusion and access. Governments should consider the costs of transitioning, alongside the environmental benefits.
- Collaboration between ICT and energy regulators, exemplified by South Africa's market liberalization and Brazil's direct generation regulation, can promote sustainable energy access and a greener ICT sector.

Achieving the ambitious goals of emissions reduction and global connectivity requires precise data on digital sector energy use and emissions. Comprehensive tracking of subsectors like telecommunications and data centers will help guide effective interventions. The report serves as a

resource for ICT regulators to support comprehensive reporting on climate data and sets out concrete policy recommendations for government entities to introduce pathways and incentives to reduce emissions in the ICT sector.