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ICT's carbon footprint continuing to decrease

Extract from the Ericsson Mobility Report

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Electricity in the use stage of ICT continues to grow by about 2–3 percent per year, but the share of renewable energy has almost doubled in three years, leading to a slight decrease in greenhouse gas (GHG) emissions.

The ICT sector consists of three main parts: networks, data centers and user devices such as smartphones and computers. These parts consume electricity in the use stage, which leads to GHG emissions. For the full carbon footprint, the embodied GHG emissions related to materials, production and transport also need to be factored in.

ICT sector development to 2023

Data reported by 160 of the largest ICT companies shows an increase in electricity usage in 2023. Most of the increase is related to a few very large companies. Encouragingly, the same 160 companies show a slight decline in reported GHG emissions.

Total electricity consumption at use stage in the ICT sector was estimated to be about 1,000 TWh globally in 2023, up from about 940 TWh in 2020. However, the total estimated GHG emissions for the entire lifecycle has decreased to about 750 million metric tons (Mt) of carbon dioxide equivalents (CO₂e) in 2023, from about 780 Mt of CO₂e in 2020.^{1,2} The decrease in reported emissions in 2023 compared to 2020 relates to both an increased share of renewables during operations and less fossil fuels in electricity production in general.

Since Ericsson's first ICT sector-wide study in 2007, the number of mobile and fixed subscriptions has increased about 2.5 times, smartphone subscriptions about 40 times, and total data traffic as much as 80 times. Still, the total carbon footprint has only increased 1.2 times.

The average GHG emissions per mobile and fixed subscription – including all networks, data centers, and user devices – has on average decreased, and is currently about 70 kg of CO₂e per year.

Looking forward to 2030

In a forecast spanning until 2030, it is anticipated that electricity consumption will continue to rise gradually in all areas of ICT. The carbon footprint of the sector is forecast to decrease by 2030 as a result of an increased share of renewable energy, used by networks and data centers as well as generally in the global electricity grid, which will reduce GHG emissions from device usage and production. However, current trends do not point to reaching the global target of halving emissions by 2030, which means the ICT industry needs to continue its work to further reduce emissions.

Figure 31: ICT sector development 2007–2023 and forecast to 2030

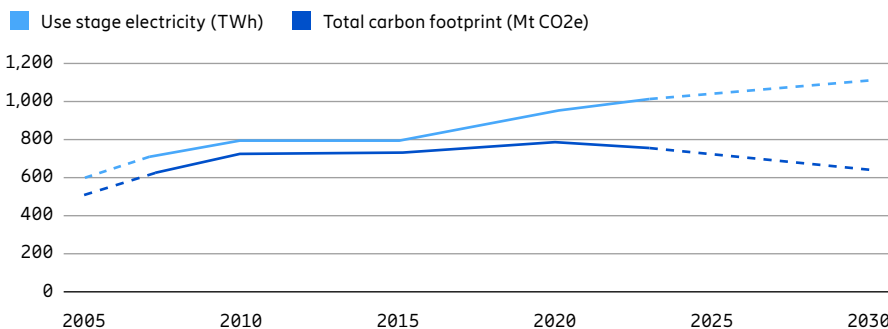
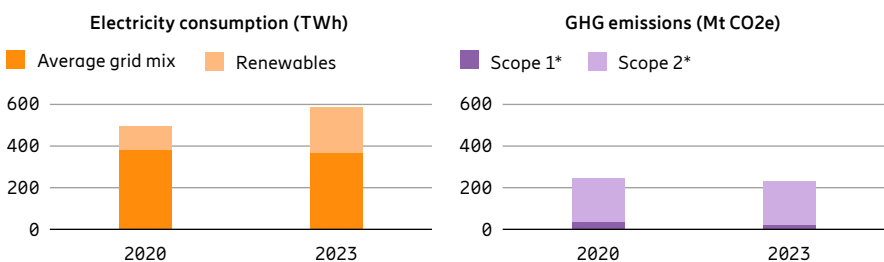


Figure 32: Reported data for 160 of the largest ICT companies in 2020 and 2023



ICT sector

The ICT sector is defined here as including data centers, mobile and fixed networks, user devices such as PCs, monitors, phones, tablets, customer premises equipment (CPE) such as routers and modems. Payment terminals, surveillance cameras, smart meters, smart home devices and other Internet of Things (IoT) and machine-to-machine (M2M) communication modules are also included.

Note: These 160 companies cover about 75 percent of all mobile and fixed network subscriptions, 75 percent of ICT manufacturers revenues and over 90 percent of internet data traffic.

*Scope 1 emissions are direct GHG emissions from owned or controlled sources. Scope 2 emissions are indirect GHG emissions from the generation of purchased energy.

¹ICT Sector Electricity Consumption and Greenhouse Gas Emissions – 2020 Outcome” (April 2024).

²Assessing embodied carbon emissions of communication user devices by combining approaches” (September 2023).

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