



# ENABLING THE CLIMATE TRANSITION

## Network improvements with 5G

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Possibly the largest emissions challenge that faces the Telecommunications industry is the need to design eco-friendly and inexpensive networks to allow for exponentially greater flows of information. In recent years, improvements in energy efficiency across the entire value chain through new networks like 4G and fibre have surprised positively. According to ETNO, between 2010 and 2018, there was an increase in data carried by networks by 1100%, but a reduction in associated carbon emissions by 40% and only a 6% increase in electricity consumption.<sup>1</sup> New developments like 5G are expected to be 90% more energy efficient for consumers per Mbps of data than legacy 4G. Telefonica reports that FTTH (fibre-to-the-home) is 85% more energy efficient and less material-intensive than copper technology.

5G, in combination with fibre and other communications technologies, will be the key infrastructure for the digital age. It has the potential to unlock major gains in green technologies with applications for smart buildings, smart cities and smart agriculture. Its ability to support artificial intelligence, robotics, internet of things, remote control and virtual reality will allow for innovation in a wide range of industries and economic sectors.

Due to these enhanced capabilities, the data traffic is expected to grow even more exponentially over the next decade.<sup>2</sup> Despite its energy efficiency at the level of a user, a typical 5G base station consumes up to twice or more the power than a 4G base station. And energy costs can grow even more at higher frequencies, due to a need for more antennas and a denser layer of small cells. Next generation computing facilities needed to support local processing and new IoT services will also add to overall network power usage. According to a joint study released by InterDigital, a mobile and video technology research and development company, and ABI Research in November 2020, the 5G ecosystem will see a 160% increase in power requirements by 2030, vs 2020 levels.<sup>3</sup> In this scenario, it will be even more imperative that the sector as a whole moves towards renewable energy – not only in its own operations but in the entire value chain.

- (1) <https://etno.eu/downloads/reports/the%20state%20of%20digital%20communications%202021.pdf>
- (2) <https://www.fiercewireless.com/tech/5g-base-stations-use-a-lot-more-energy-than-4g-base-stations-says-mtn>
- (3) <https://www.datacenter-forum.com/datacenter-forum/5g-will-prompt-energy-consumption-to-grow-by-staggering-160-in-10-years>

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