



Green mobile networks: What are they and how can telcos make the transition?

The mobile industry is currently responsible for roughly 0.4% of total global carbon emissions which is approximately **300 million tonnes of carbon dioxide each year**. While this impact is significant, operators in all markets are increasingly focusing their efforts on reducing their environmental impact and prioritising sustainability initiatives.

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Green networks can help telcos to balance seemingly contrasting pressures

Operators may be juggling the seemingly contrasting demands to reduce their environmental impact on one hand, while at the same time supporting increasing data traffic on their networks as usage continues to grow. Global data traffic is expected to **increase by four times in the next three years** and the introduction of 5G and its associated use cases will place further pressure on mobile networks. However, green networks can be a way for operators to manage this tension.

This article explores what green networks are, and how these can be achieved.

What are green networks?

Green networks are those which incorporate energy efficiency and low power consumption by design. The main aim of green networks is to minimise energy consumption while maximising efficiency and optimisation. While the introduction of green networks certainly has an ethical imperative, energy costs currently account for approximately **20-40% telco opex**. Curtailing these costs through the deployment of green mobile networks is as much of an ethical imperative as a business one.

Green networks are also those which minimise the embodied carbon involved in the manufacture, supply and construction of the networks themselves. Networks should be considered in terms of their entire supply chain, in addition to the energy efficiency of their ongoing operations.

Principles for delivering green networks

Green networks can be achieved in the following ways:

- **Energy efficiency infrastructure:** The roll out of 5G standalone (SA) core enables operators to redesign the network and incorporate green principles through all the layers of the network. Decommissioning energy-inefficient legacy equipment and deploying new infrastructure that incorporates recycled components can ensure that new 5G networks have minimal embodied carbon. Furthermore, the passive infrastructure that supports the network, such as air conditioning, security, and uninterrupted power supply, should also be factored in.
- **Taking a holistic view:** While rationalising energy intensive infrastructure during the transition to 5G SA can help to reduce carbon emissions, any equipment rationalisation should be balanced with the lifecycle of the equipment and the associated impact of its decommission. For example, decommissioning old infrastructure can be carbon intensive as it involves transporting labour to the site and equipment off the site, and the associated emissions of breaking down, disposing or recycling old parts. Therefore, it is best to do this when the infrastructure itself is past its useful life.
- **Renewable energy sources:** truly green network would require a network to be powered entirely through renewable energy. Although operators can secure renewable power supply contracts that cover 100% of their energy needs, in practice, in most countries, these networks still rely on fossil fuel power generation

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for some of the time (e.g. on cloudy, windless days and nights). A partial green network would mean that some devices are powered through renewable energy sources.

- **Balancing increased traffic with intelligent networks:** Building and adding more intelligence into network design, through the use of AI and machine learning can enable networks to continuously learn, optimise and develop as they adapt to growth in traffic volumes. This can help networks to self-heal and troubleshoot, allowing networks to do more with less equipment, less human intervention (and the associated emissions of travelling to the repair site) and ultimately fewer carbon emissions.
- **Automation to reduce the need for redundancies:** Improving network automation can help operators to reduce the amount of redundancies that are built into their networks. Whereas older networks tend to build in a certain amount of redundancy as a buffer to anticipated failures, improved, green networks can deploy automation to reduce the amount of surplus hardware and software and ultimately the level of energy intensity.
- **Embed energy efficiency beyond the quick wins:** To become more efficient, these principles must be baked into the fundamental building blocks of an operator and its very culture. For example, coding networks to incorporate automation can have environmental benefits, but only if the code itself is energy efficient by design. By encouraging efficiency in network design, procurement, deployment and operations, operators can reduce not only the energy intensity but also the embedded carbon in their networks.
- **Foster an efficiency mindset:** Operators will accelerate the pace of efficiency when the entire organisation is working towards the same goal. Operators should seek out talent that is focused on, and rewarded for, progress towards green goals. Setting clear KPIs and incentivising the right behaviours and skills can help to ensure efficiency from the bottom up.

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