FIFTY SHADES OF GREEN

Telcos are adopting green strategies to cut energy costs, reduce carbon footprints, and improve efficiency, aiming to turn thin margins into positive profits

BY PRATIMA HARIGUNANI

If a sector is guessed to be responsible for up to 2% of global carbon emissions, if network usage tends to account for three-quarters of a telco's energy consumption, and if green methods can help in 15–30% total energy cost savings possible, then opening the 'green playbook' is also a way to turn the 'red' line of thin profits and thick competition into a 'black' one.

Telcos are waking up to that reality. They are considering everything—from fundamental overhauls and tactical tools to new tower designs, copper-to-fibre shifts, regulatory tick-boxes, and even more software—as they realise that turning the green page has both a cost (regulatory, expense, and branding) and a reward (efficiency, reputation, and savings).

WHERE DO TELCOS TURN WHITE?

Energy and phasing out of copper in favour of fibre are two areas that present many unlocked possibilities in this transformation.

A recent McKinsey analysis, 'The growing imperative of energy optimisation for telco networks', indicates that recent energy price hikes have hit the telecommunications sector hard. Energy spending was already a significant cost factor for telecom operators, up to 5% of revenue. Still, large operators have recently seen their energy

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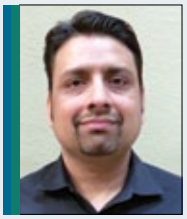

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MANISH MANGAL
CTO, Telecom & Global Business Head, Network Services, Tech Mahindra

IN BRIEF

- **Green methods for savings:** Green methods can save 15-30% energy costs, helping telcos turn thin profit margins into positive ones.
- **Energy overhaul:** Telcos are exploring energy-efficient tactics, including tower redesigns and copper-to-fibre transitions.
- **Energy price impact:** Rising energy prices have significantly increased telcos' costs, with energy spending surpassing sales growth by 50%.
- **Outage statistics:** Telco data centres saw an increase in outages from 21% (2016-2023) to 30% in 2023, stressing the need for better energy strategies.
- **Low adoption of energy tools:** Only 20% of telcos use self-optimising networks, and a mere 3% have implemented digital twins for energy efficiency.
- **Global sustainability efforts:** Telecom operators worldwide are adopting sustainable practices, with notable examples like Elisa and Singtel leading the way.

cost increases surpass sales growth by more than 50%. Mobile- and fixed-network consumption makes up over 75% of telcos' total energy consumption. More burden is expected to be added when site densification to support new wireless technologies such as 5G (and eventually 6G) will gain pace.

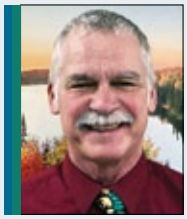
Also, the right energy sources and plan have a big strategic role, especially when considering factors like latency, outages and service uptime that telcos have to count.

Uptime Institute has an outage tracking database wherein telco data centres averaged 21% of the outages from 2016 to 2023 and 30% in 2023. "The data indicate that telco outages have increased as a percentage of overall data centre outages over the past several years. However, the input does not provide a strong statistical basis to reach conclusions. Cooling was only identified as the cause of 6% of the outages recorded in 2023. Again, an adequate sample size is insufficient to draw statistically valid conclusions. Still, the order of impact is largely the same from 2016 to 2023," says Jay Dietrich, Research Director – Sustainability, Uptime Institute.

So, a lot more needs to be done and fast.

The McKinsey report states that 53% of respondents indicate that their use of real-time energy monitoring tools, such as smart meters or DC probes, is limited or non-existent. Not just that, merely 20% of survey respondents pointed out that they used self-optimising networks in the last three years, and only 3% used digital twins. Of those who use Radio Access Network equipment power-saving features, 37% said they did so without monitoring impact or optimising parameters. Only a third evinced plans to upgrade their existing brownfield footprint. Even passive equipment updates have happened on a small scale.

The growth in mobile traffic (forecast at more than 20% per year until 2030) will necessitate more



"Telco data centre outages jumped from 21% in 2016 to 30% in 2023, indicating an increasing percentage of telco-related disruptions."

JAY DIETRICH
Research Director – Sustainability, Uptime Institute.

smart and green decisions on electricity usage and procurement.

Of course, not all are hopeless or clueless.

FLICKING THE 'GREEN' SWITCH

The telecom sector has pledged to achieve net zero by 2050, making changes on several fronts, even though the pace is ridden with delay and hesitation. Good templates are emerging, though.

Take the case of Finnish mobile network operator Elisa, which converted its lithium-ion battery capacity into a virtual power plant. Its system stores energy from wind, solar, or local hydroelectric plants and rolls it back onto the grid when supply levels fall.

There is also the example of Singaporean operator Singtel, which has, since 2015, spent USD 111.4 million in various initiatives to tackle climate change (like the use of renewable sources for electricity needs, deployment of solar panels at its facilities, and use of Artificial Intelligence and Machine Learning to optimise the energy used by its network. Also, Telefónica reduced CO2 emissions in its operations (Scopes 1 and 2) by more than 80% by introducing more efficient technologies and using renewable energies in 100% of its facilities in Europe, Brazil, Chile and Peru.

As Dhirender Mishra, Associate Vice President, Growth Advisory, Aranca, observes, Indian telcos are in the early stages of their sustainability journey. "Many have begun adopting green telecom networks focusing on energy-efficient operations, carbon emission reductions, and renewable energy sources. Additionally, companies are implementing strategies to optimise data centre operations and minimise their energy footprint. For example, Reliance Jio has 16,000 sites running on solar power and aims to achieve 'net zero' by 2035, while Bharti Airtel plans to achieve net zero by 2050, in alignment with the GSM Association's industry deadline."

Manish Mangal, Chief Technology Officer, Telecom and Global Business Head, Network Services, Tech Mahindra, affirms that telecom players are increasingly becoming green-conscious, recognising the importance of sustainability for the environment and business efficiency.

"Telecom companies are expected to significantly reduce their carbon footprint by leveraging renewable energy sources and improving operational efficiency. Switching from copper to fibre optic cables and next-generation radio units, which use comparatively less energy, further enhances their green credentials. This shift is not altruistic; it aligns with the global push towards sustainability, helping telcos cut costs, meet regulatory requirements, and appeal to eco-conscious consumers and investors. Investing in smart grid technology and energy-efficient infrastructure supports these goals."

Fibreisation is also making great inroads—and for a reason. Fibre networks' energy consumption per connection is 70–80% lower than copper's.

"Fibre optic networks consume significantly less energy than traditional copper networks, and similarly, the advanced radio network utilises much less power with intelligent power management techniques, reducing carbon emissions. Softwerisation, or the shift towards software-based network management, enhances operational efficiency and allows for dynamic energy management, reducing overall power consumption. Additionally, using software-defined networking and network function virtualisation minimises the reliance on custom hardware, thereby cutting down energy usage and e-waste," explains Mangal.

In a new global ranking, 'A List 2023 ranking,' non-profit organisation the Carbon Disclosure Project has recognised over 20 telecom network operators' transparency efforts on climate change. Top names here were BT Group, Deutsche Telekom, Elisa, Proximus,

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Swisscom, Tele2, Telecom Italia, Telefónica, Telekom Austria and Vodafone Group.

Compliance is a big factor driving this shift towards new tools and alternatives. As per the KPMG ESG Maturity Index 2023, when asked about the benefits of having ESG Data assured, greater market share came at 56%, improved profitability at 54%, stronger reputation at 47% and reduced costs at 44%.

Technology and telecommunications formed 22% of leaders in this index, while real estate and infrastructure were in the range of 32–33% (leaders in the research are those that have achieved an average Index score of 64.8 on a scale of 0–100). What is encouraging to note is that 54% and 47% of Chief Executive Officers (CEOs) and board members look beyond just compliance and see gaining greater market share as a potential benefit, like attracting like-minded customers and investors seeking to align their values with their choices. Other benefits also came up, like customer satisfaction (46%), greater innovation (49%), and decreased costs (44%).

The latest KPMG CEO Outlook also shows that 55% of technology and telecommunication company CEOs believe ESG programmes improve their company's financial performance. Mangal shares more examples of what is already happening. "Our data centres utilise advanced cooling technologies powered by renewable energy sources. We have developed green data centres, providing sustainable solutions and significant benefits to our clients, including up to 15% CAPEX savings over three years, a 10% year-on-year productivity improvement, and a reduction in incident tickets due to proactive maintenance and management practices."

Natural cooling can also reduce energy use by up to 30%. Additionally, renewable energy sources and green certifications for data centres amplify these sustainability benefits. These measures help telcos meet their environmental goals and translate into lower operational costs and improved service reliability, aligning economic benefits with ecological responsibility.

As Mangal elucidates, Tech Mahindra emphasises green software engineering practices and energy-efficient network solutions. "We have also integrated Internet of Things-based energy management systems that significantly cut energy use across our operations. We have been proactive in digitalising our services, reducing the need for physical infrastructure, and lowering the carbon footprint."

There is a lot of scope for writing new capex plans with green ink. CRISIL has, however, noted that Capex intensity in India averaged about 28% over the past three fiscals and is expected to come down to about 19% by next fiscal year as most players have completed their 5G roll-outs. It is expected that network capex for fibreisation of telecom towers and setting up of base transceiver stations and small cells for the augmentation of networks will continue, albeit at a slower pace.

Telcos have started walking the green shift seriously, but it will not be without surprises and struggles. Mishra points out that the challenges limiting telcos' progress toward sustainability include a limited supply of renewable power, inadequate infrastructure for deploying green technologies, and a lack of supportive policies and incentives.

"By focusing on supportive policies, collaborative initiatives, innovation, and awareness, the telecom industry can pave the way for a greener, more sustainable future." As Mangal reminds us, being green-conscious is beneficial for the environment and critical for maintaining a competitive edge in the market.

Something that cannot happen by being yellow-livered.

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