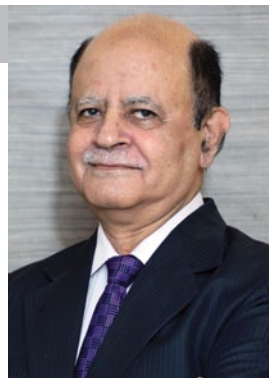LT GEN DR SP KOCHHAR

POWERING A
GREENER FUTURE WITH
SUSTAINABLE GROWTH

India's telecom sector is aligning 5G expansion with sustainability, adopting green energy, AI, and e-waste solutions for a cleaner digital future.

Over the last couple of years, the world has undergone a massive digital transformation. This change not only marks a shift towards a more digitally connected society but also a more sustainable one. Across industries, there has been a growing awareness of the adverse environmental impact that rapid technological transformation has had and the need for urgent action.

As a crucial and ever-evolving sector, the global telecom industry is shifting towards sustainable practices to develop more sustainable and environmentally friendly telecom networks.

The industry's emissions are primarily due to energy consumption from network equipment, such as base stations and data centres, the use of diesel generators for backup power, and the increasing energy demands of newer technologies like 5G. According to Nokia's MBiT Report 2025, pan-India monthly 5G traffic surged threefold (year-over-year) to reach 7.6 EB in 2024.

This surge in data traffic has led to major investments in telecom, resulting in widespread infrastructure upgrades across the country and catapulting India to the forefront of global telecom infrastructure innovations.

Since its launch, 5G has pushed the country's telecom infrastructure to an unprecedented scale, with over 4.69 lakh 5G base stations installed in record time, powering over 25 crore 5G users in the country. As the infrastructure scales, it poses a challenge for the industry's sustainability

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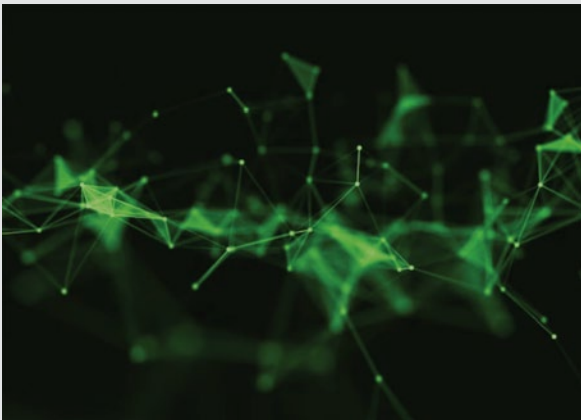
IN BRIEF

- India's 5G surge has raised energy demands, prompting telcos to embrace sustainable practices to cut emissions and optimise networks.

- Operators are adopting ESG frameworks, AI-led optimisation, and energy-efficient cooling in data centres to meet sustainability goals.

- Airtel, Jio, and Vodafone Idea have set ambitious net-zero targets, aiming to slash GHG emissions across Scopes 1, 2, and 3 by 2035–2050.

- India generated 3.8 million metric tonnes of e-waste in FY24, driving telcos to strengthen recycling and disposal efforts.

- Policies such as the 2022 E-Waste Rules and EPR mandates are encouraging manufacturers and telcos to adopt more responsible waste practices.

- Industry collaboration and smart regulation will be critical in balancing digital expansion with climate commitments and resource limitations.

goals. In these times of enhancing connectivity and environmental goals, the Indian telecom industry has intensified its focus on sustainable innovation.

TELCOS' EFFORTS FOR GREENER NETWORKS

Recognising the urgent need for action and the importance of building more sustainable networks, Indian telecom companies are increasingly implementing Environmental, Social and Governance (ESG) strategies and initiating green initiatives. They are actively pursuing net-zero emissions targets, aiming to reduce their carbon footprint and address the environmental impact of their operations.

Data centres, often described as the unseen backbone of the digital world, consume substantial amounts of energy due to the extensive server farms they house, which demand constant cooling to operate efficiently. To address this, telecom companies in India are adopting a range of strategies aimed at enhancing data centre efficiency and reducing energy consumption. One key approach includes the use of advanced cooling technologies, such as air-side economisers and high-efficiency cooling fluids, to optimise temperature control and lower their environmental impact.

Additionally, the Indian telecom companies are increasingly leveraging AI solutions to optimise network performance and enhance operational efficiency. Through AI-driven analytics, telecom operators can predict network congestion, automate maintenance and dynamically allocate resources, leading to improved service quality and reduced energy consumption. These intelligent systems help in real-time decision-making, enabling faster responses to network issues while supporting the industry's broader goals of sustainability and digital transformation.

Telcos in India have also introduced focused measures in their quest to build greener networks. Bharti Airtel, for instance, has pledged to cut its absolute Scope 1 and 2 greenhouse gas (GHG) emissions by 50.2% by FY2031, using FY2021 as the base year, and aims to achieve net-zero emissions by 2050. It has also committed to reducing absolute Scope 3 emissions by 42% within the same timeframe.

> India has emerged as the world's third-largest generator of e-waste, after China and the USA, with 3.8 million metric tonnes produced in FY24.

Meanwhile, Reliance Jio has set its sights on becoming a net-zero company by 2035 and has earned an 'A-' leadership rating from CDP for its transparency and performance across climate change, forests and water security categories. Similarly, Vodafone Idea (VI) is advancing its sustainability efforts with a strong emphasis on improving energy efficiency and cutting emissions.

Prioritising sustainability is essential not only to minimise the industry's carbon emissions but also to tap into potential cost savings. A McKinsey report highlights that decarbonisation measures can help companies cut energy expenses by 15–30%.

ADDRESSING THE GROWING E-WASTE CHALLENGE

Besides emissions, another growing concern for the sector is managing the mounting challenge of electronic waste. India has emerged as the world's third-largest generator of e-waste, after China and the USA, with 3.8 million metric tonnes produced in FY24. Given that the electronic devices market has grown significantly since then, this percentage could have only increased. However, to address the challenge, India has made significant strides in promoting green telecom through early policy frameworks and industry initiatives.

The Telecom Regulatory Authority of India laid the foundation with the 2011 guidelines, encouraging the use of renewable energy, and introduced the Green Passport certification for energy-efficient telecom equipment. The E-Waste (Management) Rules 2022 specifically aim to introduce environment-friendly processing technologies to help formalise the e-waste management sector. It mandates that the manufacturers of electrical and electronic equipment are responsible for meeting recycling targets through registered recyclers.

The norms also encourage the reuse through the generation of refurbishing certificates and include provisions for the generation of digital extended producer responsibility (EPR) certificates. The Ministry of Environment & Forest has also introduced the EPR regime, which holds electronic manufacturers responsible throughout their lifecycle.

In response to these mandates, telecom service providers in India have adopted several e-waste management practices to reduce the environmental impact of the outdated electronic equipment. They are actively pursuing strategies to dispose of and responsibly recycle the e-waste. For example, Reliance Jio has partnered with The Pegasus, an authorised e-waste recycler, to facilitate end-of-life disposal of devices for both the company and its customers.

Vodafone Idea has also taken significant steps to manage e-waste responsibly. Airtel has adopted a comprehensive strategy to trace the e-waste generated through network upgrades and capacity expansions, ensuring that it is handled and recycled in compliance with the Waste Electrical and Electronic Equipment (WEEE) guidelines. These are a few among the several initiatives adopted by industry players in India.

BUILDING A SUSTAINABLE DIGITAL ECOSYSTEM

The telecom industry in India is at a pivotal point where digital growth must go hand-in-hand with environmental responsibility. Through strategic ESG initiatives, energy-efficient technologies, AI-driven optimisation and responsible e-waste management, telecom players are actively addressing the sector's environmental challenges.

While substantial progress has been made, sustained collaboration between industry leaders, policymakers and consumers will be essential to achieving a truly green telecom ecosystem. By embracing sustainability today, Indian telecom companies are not only securing a better future but also setting a global example for responsible growth. ♻

The author is a decorated military veteran who retired as Signal Officer-in-Chief, the head of the Indian Army's ICT division. He was also the first CEO of the Telecom Sector Skill Council and is the Director General of the Cellular Operators Association of India (COAI).

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