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Pioneering Sustainability in Telecommunications for a Greener Future

Discover how telecom companies can shift towards sustainability, unlocking significant business opportunities in the telecommunications sector

By Ahmed Soliman

Introducing
Ahmed Soliman

With over two decades of experience in the technology industry, Ahmed has developed a multifaceted skill set that spans engineering services, product management, management consulting, and business development. He has assisted customers across various industries worldwide, particularly in Europe, the Middle East, and Africa, in achieving technological innovation and fulfilling digital transformation mandates. Ahmed holds a bachelor's degree in electronics and communications engineering and an MBA from Alliance Manchester Business School. Currently, he leads the TMT vertical in Europe for Intellias.

> **Telecommunications, the bedrock of global connectivity, now faces a critical juncture: sustainability. Beyond its far-reaching connections, the industry stands at the forefront of change, with an urgent call to embrace eco-friendly practices for a better world**

The environmental impact of telecom operations has never been more apparent. From energy consumption to electronic waste, the industry is grappling with its environmental footprint. However, within this challenge lies an opportunity—a chance to redefine the industry's purpose and unlock a wealth of business prospects through sustainability.

This white paper navigates the evolving telecommunications landscape as the industry strides towards a greener future. From understanding environmental implications to uncovering untapped business potential, we explore how telecom companies can spearhead change, not just for the planet but for their own prosperity.

Telecom's role in
environmental responsibility

The telecom industry is immense, with cell towers, data centers, and millions of kilometers of fiber-optic cables circling the globe. This infrastructure requires an enormous amount of energy to function, resulting in a substantial carbon footprint.

Consider this: data centres alone account for about 1% of the world's electricity use, and a BCG report states that the telecom industry produces about 3% to 4% of the world's CO_2 emissions, which is twice as much as the civil aviation industry. It's a sizeable share for an industry that many of us may not directly associate with environmental concerns.

Furthermore, rapid device turnover in the telecom sector contributes to electronic waste. Outdated cell phones, modems, and routers often end up in landfills, creating an environmental challenge.

As the world grapples with the consequences of climate change and environmental degradation, sustainability has become a global priority. The telecom industry's role in addressing these concerns is increasingly vital. Telcos don't merely facilitate connections; they're potential drivers of positive change.

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>
> *BCG REPORT*

The green imperative

Why do telcos prioritize sustainability?

Major telecom companies are committed to reaching net carbon neutrality by 2050—a goal endorsed by the GSMA, which has set specific targets for 2030 including cutting energy use per unit of traffic by over 70% and sourcing 100% of electricity from renewable sources.

In Europe, some leading telecom companies have already achieved net carbon neutrality by reducing emissions and investing in carbon offset measures.

There are several compelling reasons driving this change.

A blend of customer preferences, regulatory mandates, and the financial impact of sustainability initiatives is steering telecom companies towards a greener future. But it's not just about doing good; going green is increasingly becoming a sound business strategy.

Business benefits

Prioritizing sustainability isn't just about saving the planet. It's also about securing a strong foothold in the market. Studies show that consumers, now more than ever, prefer businesses that demonstrate environmental responsibility. In fact, over 90% of consumers are likely to switch to a brand associated with a good cause, such as sustainability. This loyalty towards environmentally conscious brands directly impacts a company's bottom line.

Regulatory pressures

Regulations and policies are evolving, placing increasing pressure on companies to operate sustainably. Non-compliance can result in substantial financial penalties. Governments and international bodies are enforcing stricter environmental standards, encouraging telecom companies to proactively address their carbon footprint and environmental impact.

The European Union's revised Circular Economy Action Plan aims to ensure that all mobile phones sold in the EU market are sustainable by 2030. This includes reducing their environmental impact and enhancing their longevity.

Financial implications

The financial implications of sustainability initiatives are noteworthy. It's not just about avoiding fines; it's also about lowering costs. For instance, by reducing energy consumption and switching to renewable sources, telecom companies are not only cutting their environmental impact but also their operational costs. In fact, for every $1 invested in energy efficiency, telecom companies can yield up to $4 in operating cost savings.

Towards sustainability

8 strategies for the telecom industry

In the pursuit of environmental sustainability, telecommunications companies must align their objectives with a low-carbon economy. This means embracing eight fundamental steps to not only diminish environmental impact but also augment overall business value.

1 Constructing the value proposition

Telecommunications companies should reorient their perception of sustainability, shifting from viewing it as a mere cost to recognizing it as a value-generating opportunity. Initiatives like enhancing energy efficiency can lead to a substantial reduction of up to 40% in network operating costs. Studies indicate that consumers— particularly among younger demographics—are willing to pay a 10% premium for sustainable telecom products, showcasing considerable pricing power. Concentrating on sustainability not only resonates with customers but also cultivates loyalty, ultimately enhancing market valuation.

2 Analysing the baseline

The foundation for establishing benchmarks and aiding customers lies in comprehending current emissions and circular practices. This involves a thorough examination of business-to-business products to predict how each solution mitigates carbon emissions. Practical measures, such as data centre consolidation and collaborative ventures with private and public cloud providers, significantly contribute to reducing emissions.

3 Identifying strategic levers

Recognizing the mechanics that contribute to the baseline emissions is essential. Telecommunications companies can employ emission reduction levers, including optimizing energy consumption in data centres and applying digital innovation to reduce carbon intensity. This encompasses exerting pressure on providers for sustainable device design and advocating for the refurbishment or recycling of valuable rare earth elements.

4 Establishing ambitious targets

Armed with a value proposition and an understanding of their baseline emissions and improvement levers, telecommunications companies should set actionable targets for each stage in the value chain. This involves introducing new key performance indicators (KPIs) for procurement and setting specific targets for reducing emissions in various business units.

5 Executing the plan and instituting governance

Ambitious targets must materialize into actionable plans with clearly defined responsibilities across business units. Integrating sustainability targets into financial planning and establishing comprehensive implementation roadmaps, overseen by stringent corporate-level governance, is indispensable. This governance, extending beyond sustainability departments, involves top management in oversight to ensure the company's unwavering commitment to sustainability. Practical measures like adopting software-defined infrastructure play a crucial role in achieving these targets.

6 Putting AI to work

Redefining sustainability via infrastructure modernization: Modernizing infrastructure involves transitioning from traditional hardware-centric setups to more energy-efficient solutions. Adopting technologies like network functions virtualisation (NFV) and software-defined networking (SDN) allows telcos to optimize energy use by dynamically allocating resources based on demand, reducing the overall environmental impact. For example, Telstra, a primary Australian telecom provider, focuses on infrastructure modernization to adapt to the needs of 5G and enhance overall network performance. This includes adopting cloud-native principles and technologies for more efficient resource use.

7 Reshaping operations with app modernization

App modernization plays a pivotal role in making the telecom sector more sustainable by enhancing efficiency, reducing resource consumption, and embracing environmentally friendly practices. For example, a leading European operator has embraced app modernization to enhance its digital services. By adopting cloud-native technologies and microservices architectures, Telefónica aims to improve agility, reduce costs, and offer innovative services to customers.

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❝ *AI enhances the efficiency of cooling systems in data centres by adjusting temperatures based on real-time conditions, reducing overall energy consumption*

Leading the change
Sustainable success stories in telecom

In the realm of telecom, companies are leading the charge in embracing sustainability. Here are three standout examples of telcos that are championing sustainability and redefining industry standards.

vodafone

Vodafone stands out for its unwavering dedication to telco sustainability. Aiming for net-zero carbon emissions by 2040, the company has already cut direct emissions by 92% in three years by shifting to renewable power. Its recent Carbon Reduction Plan report highlights a substantial drop from 86,360 to 7,154 tons in yearly emissions from its operations.

Vodafone is prioritizing clean and renewable energy sources across its facilities, covering offices, retail spaces, data centres, and network infrastructure. Notably, the company achieved a milestone in July 2021 by powering its entire European operations with renewable energy, a result of sustained investment in solar and wind farms and collaborations with energy partners. Initiatives such as installing 720 solar panels at a UK site and introducing a self-powering mobile mast with a wind turbine, solar panels, and battery storage showcase Vodafone's commitment to sustainable practices. The company is also embracing electric vehicles and enhancing environmental, social, and governance (ESG) reporting to address indirect emissions throughout its value chain, emphasizing a holistic approach to achieving a greener future.

Vodafone's commitment to sustainability sets a benchmark for the industry, positioning Vodafone as a leader in the field and resonating with environmentally conscious customers.

Telefónica

Telefónica leads the way in telecom sustainability, committing 3.3% of its capex (about €275 million annually) to environmental initiatives. This includes investing in digital solutions and energy-efficient telecom networks as part of the company's broader commitment to sustainability.

With a target of achieving net-zero emissions by 2030, Telefónica has already made strides, reducing scope 1 (direct emissions that are owned or controlled by a company) and scope 2 CO_2 emissions (scope 2 and 3 indirect emissions arise as a result of the company's activities) by 80% in 2022 compared to 2015 and achieving a 45% reduction in scope 1, 2, and 3 emissions since 2015. The company aims for using 100% renewable electricity globally by 2030 and becoming zero-waste. Telefónica's noteworthy projects include the installation of renewable energy plants in Brazil and obtaining certifications for renewable electricity consumption in several countries. Telefónica is also actively managing its network lifecycle, investing in energy efficiency and operating 485 base stations with self-generated electricity.

∩OKIA

Nokia's People & Planet 2022 sustainability report not only envisions a greener future but lays out a tangible roadmap to achieve it. Acknowledging the transformative power of technology, Nokia has outlined a strategy that involves taking real steps like industrial digitalization, security enhancements, and addressing the digital divide.

Nokia's commitment goes beyond rhetoric. The company has surpassed its renewable energy targets, reaching 63% renewable energy consumption across global facilities. Nokia has actively reduced greenhouse gas emissions in product power consumption and achieved recognition as a market leader in private wireless solutions. Nokia's focus on security includes the establishment of an Advanced Security Testing and Research (ASTaR) lab and a robust three-tiered data privacy approach. Bridging the digital divide involves concrete actions, such as connecting schools in challenging rural areas and empowering local entrepreneurs through the Smartpur digital village ecosystem program in India. These practical steps underscore Nokia's dedication to not just talk about sustainability but to actively pioneer a tech-driven, environmentally responsible future.

Telco strategies for
Driving sustainability across industries

Telecom companies can also play a pivotal role in enhancing other industries on their way to a greener future.

From empowering farmers with precise data for resource optimization to reshaping the landscape of private wireless networks, telcos' initiatives are not merely technological marvels but strategic responses to the urgent demands of both the planet and a growing population.

For example, Nokia's WING solution is significantly impacting India, where the Vodafone Foundation is using it to empower 50,000 soy and cotton farmers across 100 locations. Equipped with 400 sensors spanning 100,000 hectares, the smart agriculture-as-a-service initiative employs soil probes, weather stations, insect traps, and crop cameras to collect data analysed by a cloud-based app. Over 20 operators worldwide, including China Mobile, AT&T, and TIM Brazil, leverage Nokia's WING for similar sustainable initiatives.

Furthermore, Nokia is reshaping industries through private wireless networks, demonstrating its transformative potential in Austria and the Baltic Sea. Teaming up with Siemens and A1 Telekom in Austria, Nokia deployed a private wireless solution using renewables and microgrids, reducing dependence on grid power at a Vienna campus and minimizing carbon emissions. In the Baltic Sea, Nokia's Drone Networks are revolutionizing environmental monitoring by using drones powered by private wireless networks to detect algae patterns and warn about toxic algae growth due to rising water temperatures.

Additionally, Nokia's initiatives in Israel, deploying sensors for real-time environmental data reporting, and in Peru's Minera Las Bambas, the world's ninth-largest copper mine, showcase the company's commitment to sustainability in various sectors.

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Telco approaches to
e-waste management

Telcos are addressing the challenge of electronic waste, and Vodafone stands out with its commitment to a circular economy.

Through its internal asset marketplace launched in 2020, Vodafone facilitates repurposing of excess stock and decommissioned hardware among its extensive operator network.

Intending to reuse, resell, or recycle 100% of its network waste by 2025, the company has already achieved a remarkable 95% recovery and recycling rate. Vodafone claimed that, through its internal asset marketplace, the company decreased its CO_2 emissions by 2,500 tonnes and achieved total savings of €10.8 million. Plans are underway to extend similar solutions to partner markets and operators, highlighting a strategic commitment to a circular economy.

Other prominent British telcos, such as Virgin Media O2, are also investing in circular economy initiatives. With a target to enable consumers to perform 10 million circular actions (actions like recycling devices and donating old equipment) by 2025 in total. The company's Tech Lending Community Fund further supports purchasing refurbished devices for vulnerable groups via different granting programs.

Meanwhile, Telia Company, a Swedish telco operator, is actively pursuing a circularity strategy, aiming for zero waste in its operations by 2030. In 2021, over 70% of the network waste generated by Telia was either reused or recycled, emphasizing the industry's need for concrete plans and collaborations to effectively tackle e-waste challenges.

❝ *The company's Tech Lending Community Fund further supports purchasing refurbished devices for vulnerable groups via different granting programs*

Building a
sustainable tomorrow

The journey towards sustainability in the telecom industry is not just an option—it's a necessity. From reducing carbon footprints to adopting renewable energy sources, telcos like Vodafone and Telefónica have set the bar high.

Their commitment to sustainable software, renewable energy, and supply chain improvements has not only reduced environmental impact but has also differentiated them in the market, setting an example for the industry.
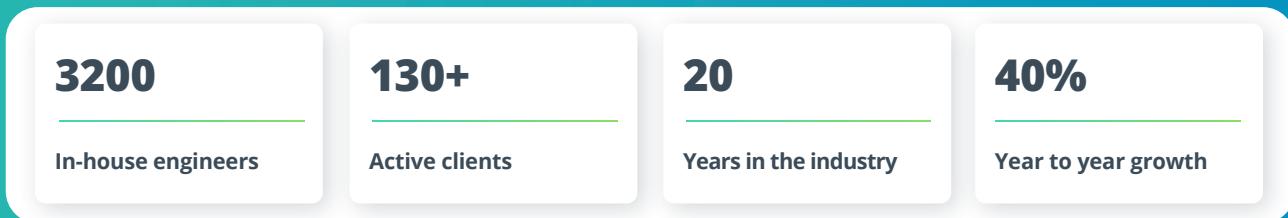
But this isn't the end; it's just the beginning. Leaders are making a call to action for the entire telecom industry by adopting sustainable innovations. The seeds of sustainability have been sown, and it's time to cultivate a future where every company, big or small, resonates with the urgency of sustainable operations. By further embracing innovative, eco-friendly practices, the industry can collectively move towards a future where sustainability is not secondary but a cornerstone of its operations.

66 *In this pivotal moment, embark on a journey towards a greener, more responsible telecom landscape, where sustainability isn't just a goal— it's the only way forward*

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Quick facts

3200

In-house engineers

130+

Active clients

20

Years in the industry

40%

Year to year growth

Telecoms competence

Network cloudfication and orchestration

Cognitive systems and analytics

Telecom digital services

IoT solution implementation

Support system modernization (BSS/OSS)

VoIP solutions engineering

Primary services

Cloud services

Big Data Analytics

Machine learning and AI

Internet of Things

UI/UX

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