

# Energy-Efficient Telecom Networks Market Forecasts to 2032 - Global Analysis By Component (Hardware, Software and Services), Network Type, Sustainability Focus, End User and By Geography

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## Abstracts

According to Statistics MRC, the Global Energy-Efficient Telecom Networks Market is accounted for \$213.00 million in 2025 and is expected to reach \$573.53 million by 2032 growing at a CAGR of 15.2% during the forecast period. Energy-Efficient Telecom Networks refer to communication infrastructures designed to deliver voice, data, and multimedia services while minimizing energy consumption and environmental impact. These networks optimize power usage across network elements such as base stations, data centers, transmission equipment, and end-user devices through advanced technologies like energy-aware hardware, intelligent network management, virtualization, and AI-driven traffic optimization. Energy-efficient telecom networks also incorporate renewable energy sources, sleep modes, and dynamic resource allocation to reduce operational costs and carbon emissions. By improving energy performance without compromising service quality, reliability, or scalability, they support sustainable digital connectivity and long-term growth of the global telecommunications ecosystem.

### Market Dynamics:

Driver:

Rising energy-efficient network infrastructure demand

Growing data traffic from 5G IoT and cloud services is pushing companies to adopt greener technologies that reduce power consumption. Energy-efficient base stations fiber networks and optimized cooling systems are becoming critical to lower operational

costs. Governments and regulators are encouraging telecom providers to integrate renewable energy and eco-friendly designs into their infrastructure. As sustainability becomes a competitive differentiator operators are prioritizing energy efficiency in long-term strategies. Rising demand for energy-efficient networks is propelling growth in Energy-Efficient Telecom markets worldwide.

#### Restraint:

##### High upfront green infrastructure costs

High upfront green infrastructure costs discourage smaller operators from adopting eco-friendly technologies despite long-term savings. Investments in renewable-powered sites advanced cooling systems and energy-efficient hardware require significant capital. Integration with legacy networks adds complexity and increases financial burden. In emerging markets where capital expenditure is tightly controlled adoption rates may be slower. High initial costs remain a barrier that restrains widespread adoption of Energy-Efficient Telecom Networks.

#### Opportunity:

##### Expansion of renewable-powered telecom sites

Telecom providers are increasingly expanding renewable-powered sites to reduce carbon footprints and meet sustainability targets. Solar-powered base stations wind-driven towers and hybrid energy systems are gaining traction across regions. These solutions reduce dependency on fossil fuels and improve resilience in off-grid or rural areas. As governments incentivize renewable adoption telecom operators are scaling investments in green infrastructure. Expansion of renewable-powered sites is fostering significant opportunities for Energy-Efficient Telecom Networks.

#### Threat:

##### Rapid technology obsolescence risks

Rapid technology changes in telecom infrastructure increase the risk of obsolescence. Rapid technology obsolescence risks discourage operators from committing to long-term investments in sustainable systems. Frequent upgrades in 5G hardware and evolving standards create uncertainty in asset lifecycles. Companies face challenges in balancing sustainability goals with the need for continuous modernization. Smaller

operators may delay adoption due to fear of stranded investments. Obsolescence risks are restraining confidence and threatening consistent growth in Energy-Efficient Telecom Networks.

### **Covid-19 Impact:**

The Covid-19 pandemic had a mixed impact on Energy-Efficient Telecom Networks. On one hand operators faced budget constraints and deferred green infrastructure projects. On the other hand surging demand for connectivity remote work and digital services highlighted the need for resilient energy-efficient networks. Telecom providers accelerated adoption of renewable-powered sites to ensure continuity during supply chain disruptions. The pandemic reinforced the importance of sustainability in telecom strategies.

The wireless networks segment is expected to be the largest during the forecast period

The wireless networks segment is expected to account for the largest market share during the forecast period driven by rising demand for energy-efficient base stations and sustainable 5G deployments. Wireless networks consume significant energy and operators are prioritizing eco-friendly designs to reduce costs. Integration of renewable energy sources into wireless infrastructure is strengthening adoption. Demand for sustainable wireless solutions is rising across urban and rural deployments. As operators modernize wireless infrastructure energy-efficient networks are accelerating growth in the market.

The carbon-neutral infrastructure segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the carbon-neutral infrastructure segment is predicted to witness the highest growth rate supported by global commitments to net-zero emissions and investment in renewable-powered telecom sites. Operators are deploying solar wind and hybrid energy systems to achieve carbon neutrality. Carbon-neutral designs reduce environmental impact while improving operational resilience. Governments and regulators are incentivizing carbon-neutral initiatives across telecom providers. As sustainability targets intensify carbon-neutral infrastructure is propelling expansion in the Energy-Efficient Telecom Networks market.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share driven by advanced telecom infrastructure strong regulatory frameworks and early adoption of renewable-powered sites by operators. The presence of leading technology providers and mature sustainability programs supports large-scale deployments. Regulatory emphasis on energy efficiency and carbon reduction drives investment in green telecom solutions. High demand for resilient and eco-friendly networks reinforces steady utilization of sustainable infrastructure. North America's mature telecom ecosystem is fostering sustained growth in the market.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR fueled by rapid industrialization expanding mobile subscriber base and government-led initiatives to accelerate renewable adoption in telecom. Countries such as China India and Southeast Asia are investing heavily in Energy-Efficient Telecom infrastructure. Rising demand for 5G connectivity and smart city projects strengthens adoption of energy-efficient networks. Local operators are deploying renewable-powered sites to meet growing digital needs. Asia Pacific's industrial growth and sustainability commitments are propelling the market.

Key players in the market

Some of the key players in Energy-Efficient Telecom Networks Market include Ericsson AB, Nokia Corporation, Huawei Technologies Co., Ltd., Cisco Systems, Inc., Juniper Networks, Inc., ZTE Corporation, NEC Corporation, Fujitsu Limited, Siemens AG, Schneider Electric SE, ABB Ltd., Hewlett Packard Enterprise (HPE), Dell Technologies, Inc., IBM Corporation and Capgemini SE.

### **Key Developments:**

In March 2024, Nokia launched its "New Energy" service portfolio at MWC Barcelona, designed to help operators cut network energy costs by up to 30% through AI-powered software and hardware upgrades. The suite includes tools for optimizing RAN sleep modes and implementing liquid cooling systems.

In February 2024, Ericsson and Vodafone expanded their European collaboration to deploy advanced, energy-efficient 5G Massive MIMO technology across 11 markets, directly targeting network energy consumption reduction.

**Components Covered:**

Hardware

Software

Services

**Network Types Covered:**

Wireless Networks

Fixed-Line Networks

Data Centers & Cloud Infrastructure

Satellite Networks

Other Network Types

**Sustainability Focuses Covered:**

Energy Efficiency Solutions

Carbon-Neutral Infrastructure

Circular Economy Practices

Other Sustainability Focuses

**End Users Covered:**

Telecom Operators

Internet Service Providers (ISPs)

Enterprises

Government & Public Sector

Smart Cities & Urban Infrastructure

Other End Users

Regions Covered:

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

**What our report offers:**

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)

- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

### **Free Customization Offerings:**

All the customers of this report will be entitled to receive one of the following free customization options:

#### Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

#### Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

#### Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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