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The Furture is Electric :

Global Transmission & Distribution Outlook (2024-2030)

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A $525B+ Opportunity Driven by Global Megatrends

The global T&D market is entering a strong, sustained growth phase, with India emerging as a key engine.

Global Market Expansion

The market is expanding from ~$400B to over **$526B** by the early 2030s.

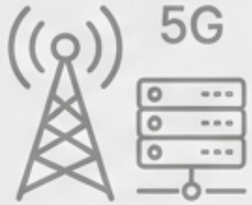
India’s Growth Engine

India’s T&D market is set to **double by 2033**, driven by assertive policy and massive renewable targets.

Primary Drivers

Grid Expansion & Modernization

Renewable Energy Integration



Digital Infrastructure Boom

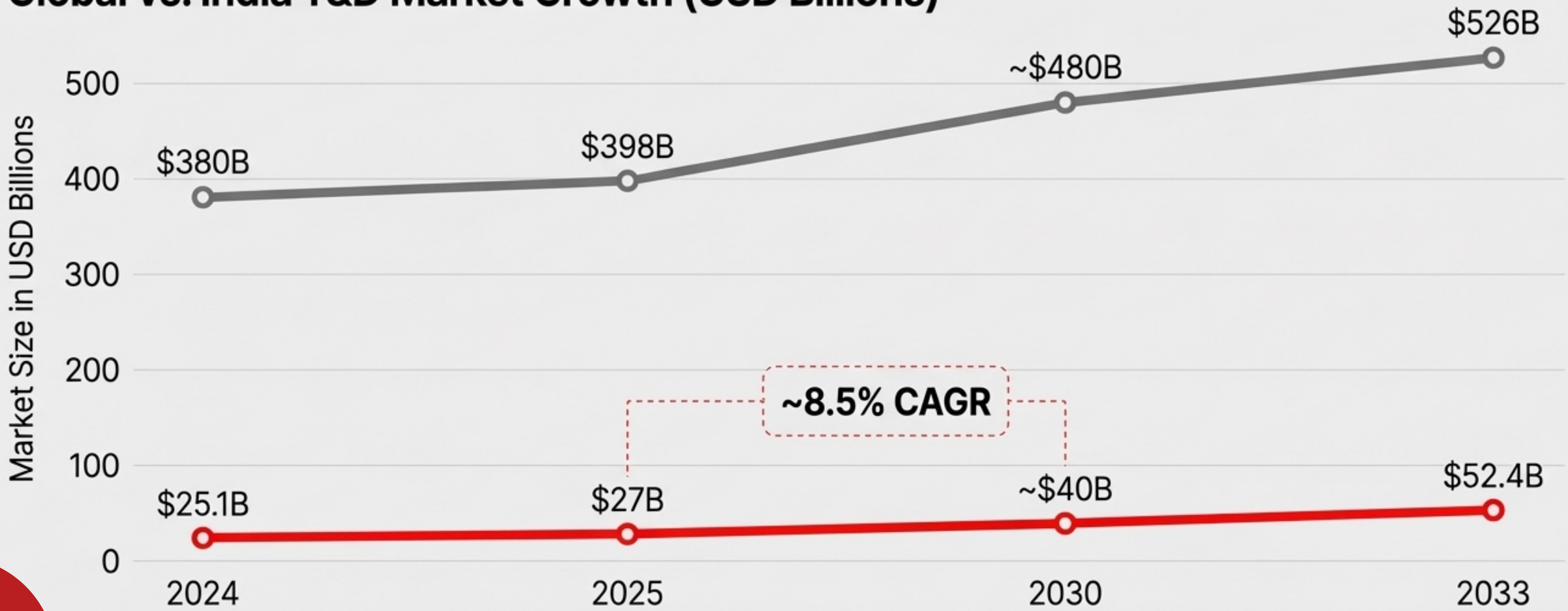
Parallel Growth

Adjacent sectors like telecom towers and high-performance fiber optic cables are adding significant, parallel revenue streams.

Global Scale, Concentrated Growth: Mapping the Market Expansion to 2033

While the global market provides a massive base, India's growth rate significantly outpaces the world average, representing a concentrated opportunity.

Global vs. India T&D Market Growth (USD Billions)

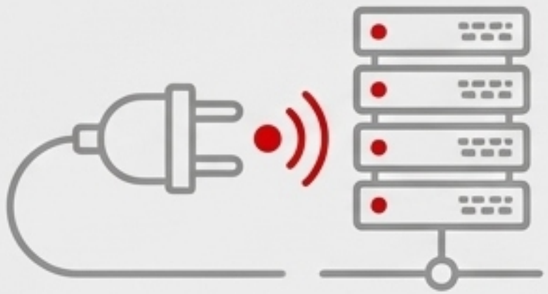


A New Era of Demand Fueled by Electrification and Industrial Growth

A confluence of powerful demand drivers is creating unprecedented, sustained demand for T&D equipment.

Urbanization & Industry

Rising power needs from expanding cities and new industrial corridors are foundational drivers for grid capacity and modernization.



New Energy Consumers

Explosive growth from Electric Vehicles (EVs) and Data Centers is creating new, power-intensive consumer classes that demand a more robust and reliable grid.

The Renewable Revolution

Large-scale renewable projects, particularly solar and wind, require massive grid integration, creating demand for high-voltage transmission and advanced substations.

India’s Policy Mandate: 500 GW of Renewables Driving Capex

India's national strategy is hardwired to drive sustained, multi-decade investment in its T&D infrastructure.

The 500 GW Renewable Target

The central policy pillar driving massive grid expansion to evacuate and integrate clean power from solar and wind farms across the nation.

Key Government Initiatives

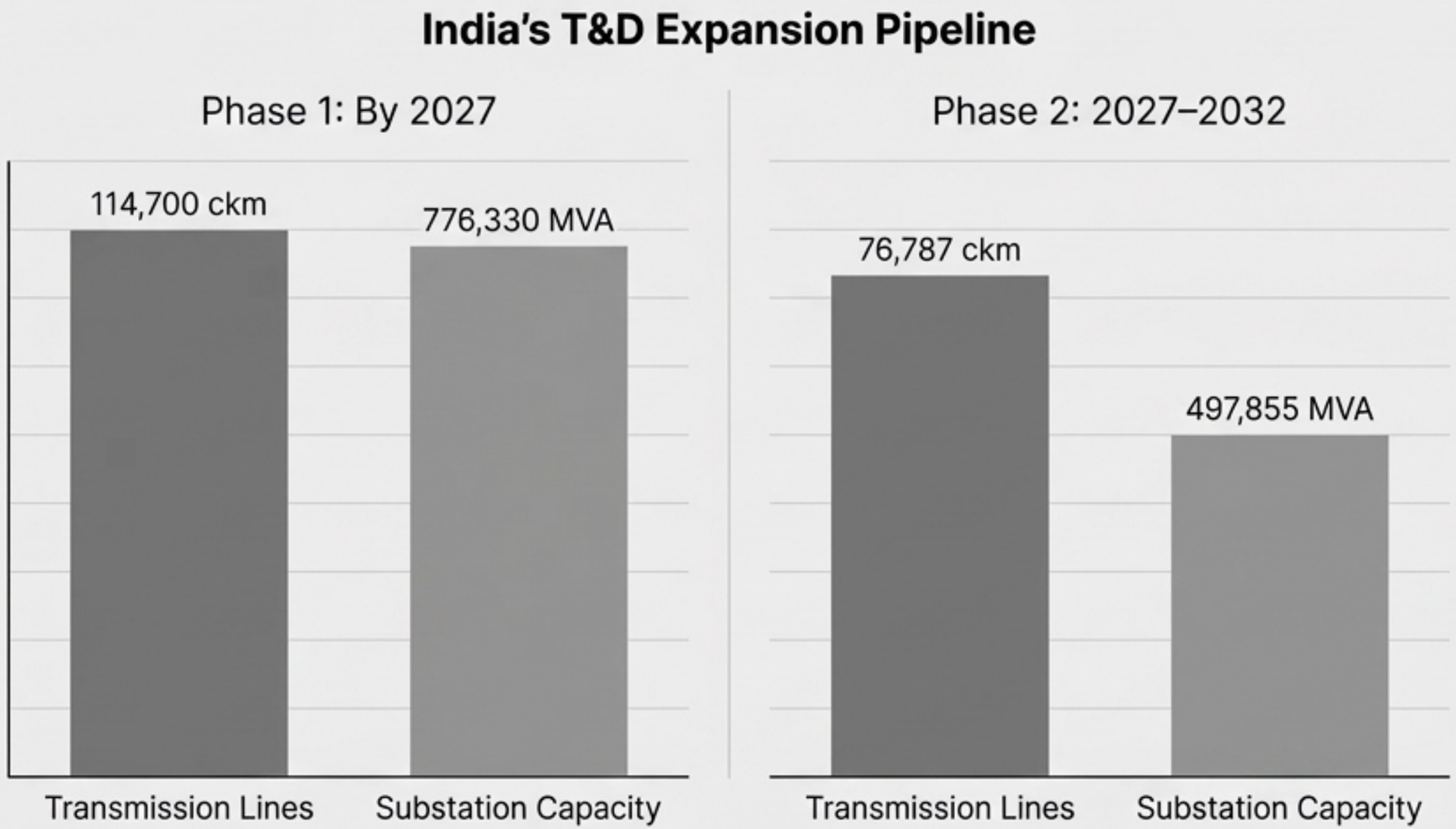
- **Green Energy Corridors:** Dedicated transmission infrastructure for renewable energy zones.
- **Smart Grid Mission:** Modernizing the grid with digital technology for efficiency and reliability.
- **RDSS Reforms:** Improving the financial health and operational efficiency of distribution companies.

Manufacturing Incentives

Production-Linked Incentive (PLI) schemes are strategically designed to localize the supply chain for transformers, cables, and other key equipment, fostering domestic manufacturing capabilities.

India’s ₹9.16 Trillion Grid Expansion Plan

The committed project pipeline provides exceptional long-term demand visibility for equipment manufacturers, de-risking investment.



Total Capex
₹9.16 Trillion

A Concentrated Landscape of Global Leaders and Domestic Champions

The T&D manufacturing sector is led by established players where scale, technology, and supply chain control are key differentiators.

Key Market Players

SIEMENS | ABB | GE | CG FIVTL

L&T | adani | Schneider Electric | CG Power

Critical Cost Drivers

High dependency on key raw material inputs dictates operational profitability.

Steel

Copper

Aluminum

Insulation Materials

Primary Competitive Factors

Technological Superiority: Offering advanced, efficient, and reliable products like HVDC systems and smart switchgear.

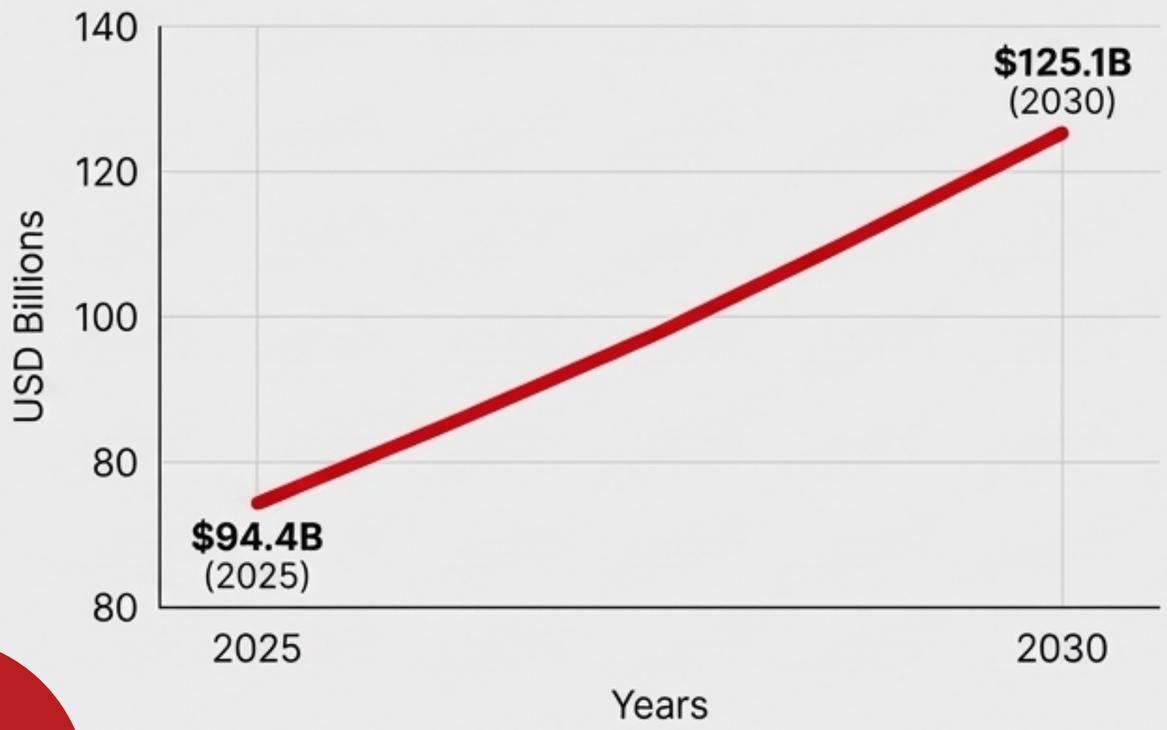
Manufacturing Scale: Achieving economies of scale to manage costs and meet large-volume orders.

Resilient Supply Chains: Securing raw material access and managing logistics to ensure timely project delivery.

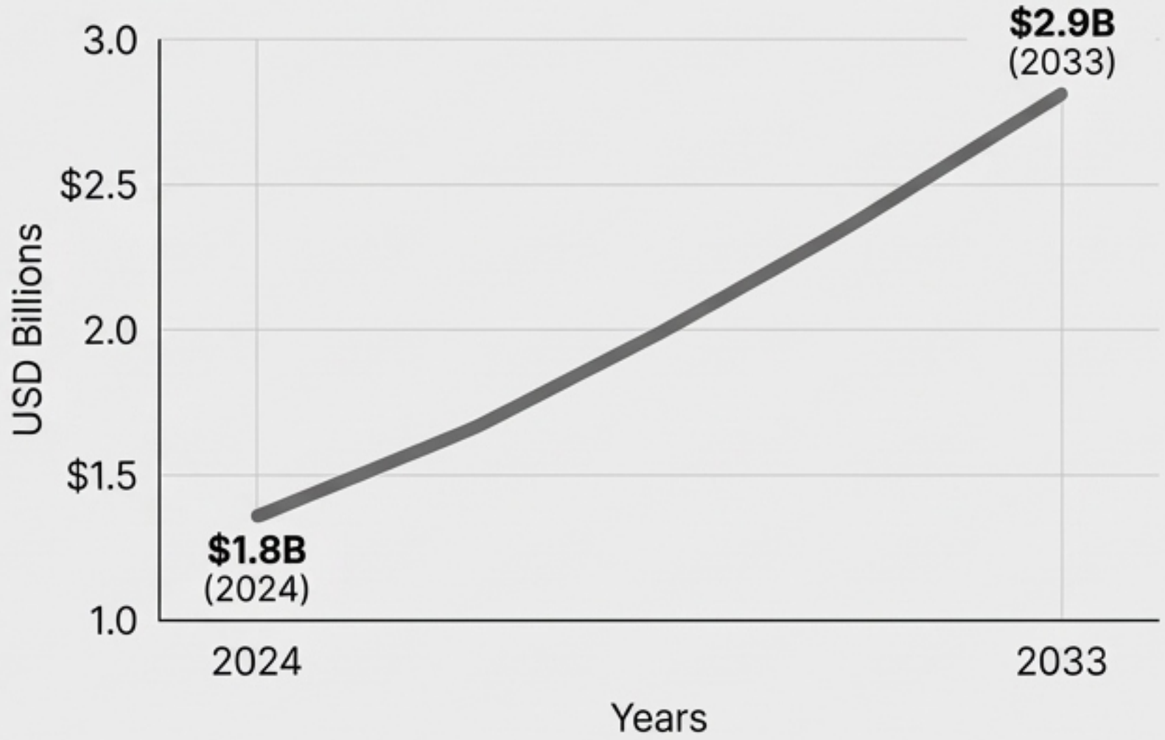
The Parallel Engine: 5G and Fiberization Fueling Infrastructure Demand

The global rollout of next-gen telecom networks is creating a significant, parallel demand stream for towers, cables, and related hardware.

Global Tower Market Growth



India Fiber Market Growth



Evolving Business Models in a Connected World

Sector consolidation, the rise of shared infrastructure, and relentless connectivity demand are reshaping the telecom tower and fiber business.

Section 1.
Market Consolidation

Large, specialized Tower Companies (TowerCos) are dominating the market through strategic acquisitions, achieving significant operational scale and efficiency.

Section 2.
Connectivity Demand Drivers

Relentless demand is driven by two key forces:

- **Urban Density:** Requiring vast networks of small cells and micro-towers for 5G coverage.
- **Rural Expansion:** Pushing fiber-to-the-home (FTTH) rollouts to connect underserved communities.

Section 3.
Rise of Shared Infrastructure

The growing trend of multi-operator towers and emerging power-telecom partnerships is unlocking new efficiencies by sharing physical assets for smart grid and IoT rollouts.

The Green Imperative: Building a More Sustainable and Resilient Grid

Sustainability is no longer optional; it's a core driver of investment and technological innovation across the T&D value chain.

83%

of India’s 2024 power-sector spending is on renewables, storage, and grids.

Technology Shift

Phasing out potent SF_6 greenhouse gas for clean-air alternatives and a focus on developing ultra-efficient, low-loss transformers.

Circular Economy

Emphasis on using recycled materials like copper and aluminum, and implementing end-to-end life-cycle management for towers and cables.

Grid Resilience

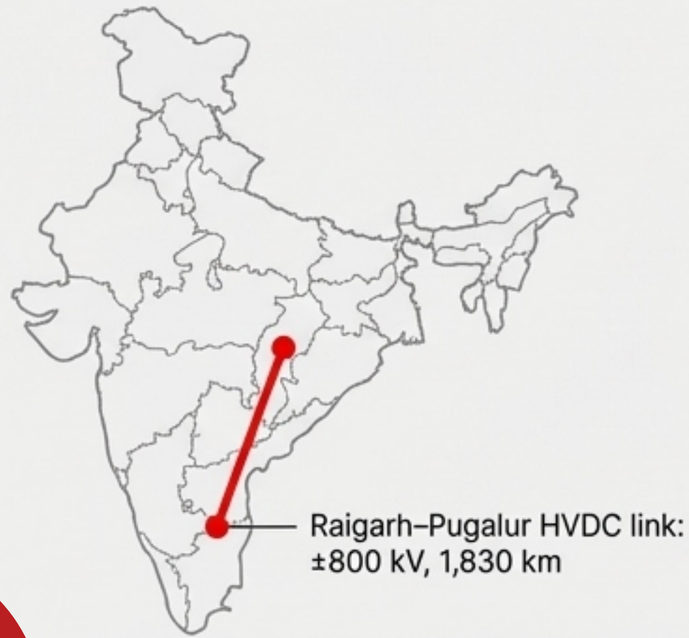
Renewables and digital technology are enabling smarter, self-healing grids that significantly reduce energy losses and outage times.

Next-Gen Tech: Transmitting More Power, More Intelligently

HVDC technology is critical for connecting distant renewables, while smart grids are fundamentally enhancing grid reliability and control.

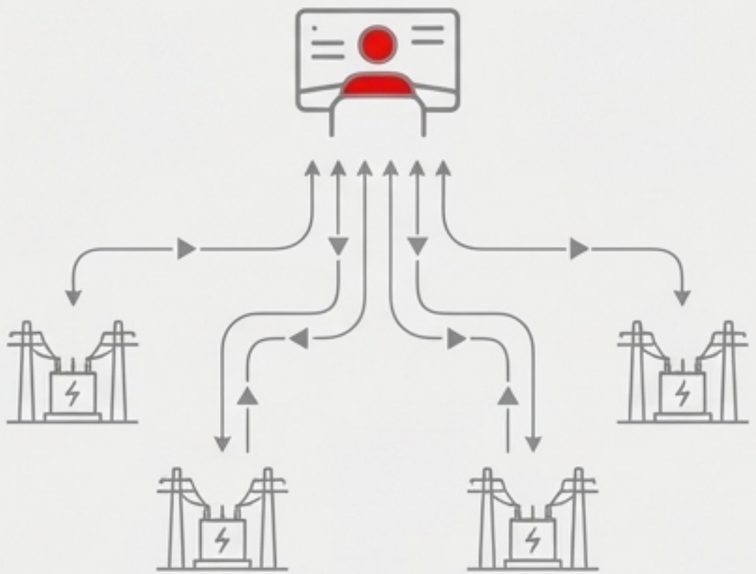
Section 1. HVDC/UHV Expansion

Essential for long-distance, low-loss transmission to connect remote renewable energy hubs to population centers. This drives demand for advanced breakers and transformers.



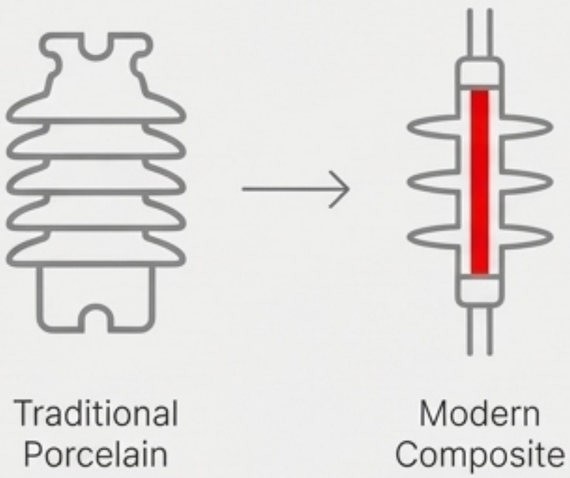
Section 2. Smart Grid Adoption

The industry is shifting towards digital substations and SCADA-integrated switchgear, enabling real-time automation, predictive maintenance, and granular control over the grid.



Section 3. Advanced Materials

Composite and polymer insulators are increasingly replacing traditional porcelain and glass. This shift offers better durability, significantly lower weight, and reduced lifelong maintenance costs.

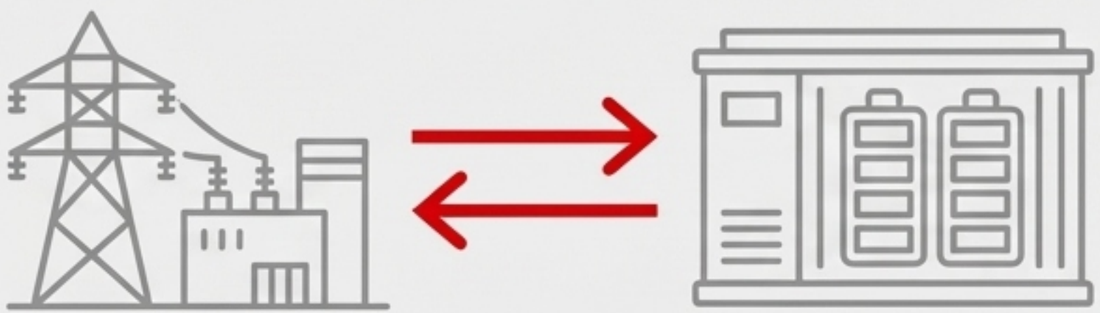


Integrating Energy Storage and Unleashing the Power of Data

The integration of grid-scale battery storage and the explosive growth of 5G-driven data are creating entirely new demand verticals for T&D equipment.

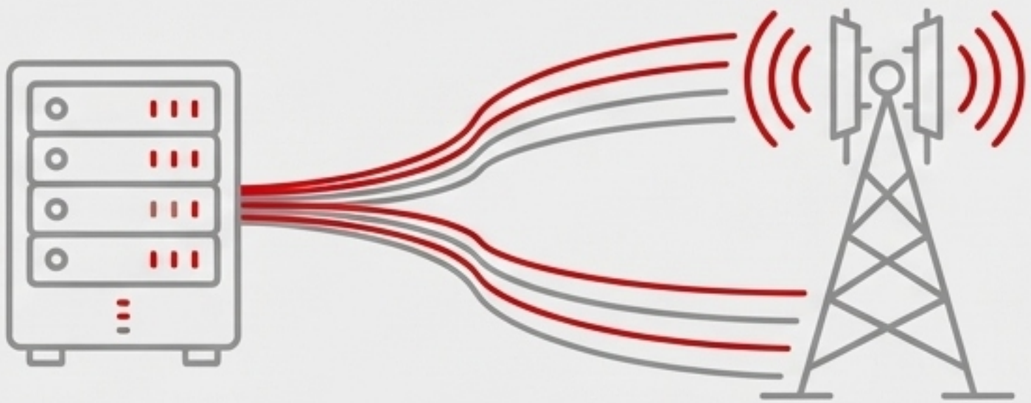
Energy Storage Integration

The integration of Battery Energy Storage Systems (BESS) at substations is creating demand for new bidirectional transformers, advanced power electronics, and sophisticated charging interfaces to ensure grid stability.



5G & Data Center Boom

India's data center capacity is projected to **double by 2026**, driving massive demand for high-density, bend-insensitive fiber and specialized micro-cables for reliable, high-speed connectivity.



Shifting Business Models Toward Localization and Collaboration

The industry is fundamentally moving towards local manufacturing, strategic cross-sector partnerships, and new service-based operational models.

Manufacturing Localization

The impact of “Make in India” and Production-Linked Incentive (PLI) schemes is driving significant investment in domestic production, building a robust local supply chain and enhancing export capabilities.

Strategic Partnerships

The rise of power-telecom collaborations to share physical infrastructure is creating new synergies for smart grid, IoT, and 5G applications, optimizing asset utilization and reducing costs.

Operational Evolution

Leading firms are adopting Industry 4.0 in manufacturing, utilizing AI for predictive maintenance, and engaging in Public-Private Partnership (PPP) models to execute large-scale infrastructure projects.

A Bullish Global Forecast: Strong, Sustained Revenue Growth

Key global equipment markets are projected to see steady, profitable growth through 2030 and beyond, underpinned by secular trends.

Power Transformers

Market growing from ~$30.4B (2025) to

~$41.6B

by 2030.

6.5% CAGR

Switchgear Market

Forecast to reach a global market size of

~$152B

by 2030.

Telecom Cable Market

Expanding from ~$52B (2024) to

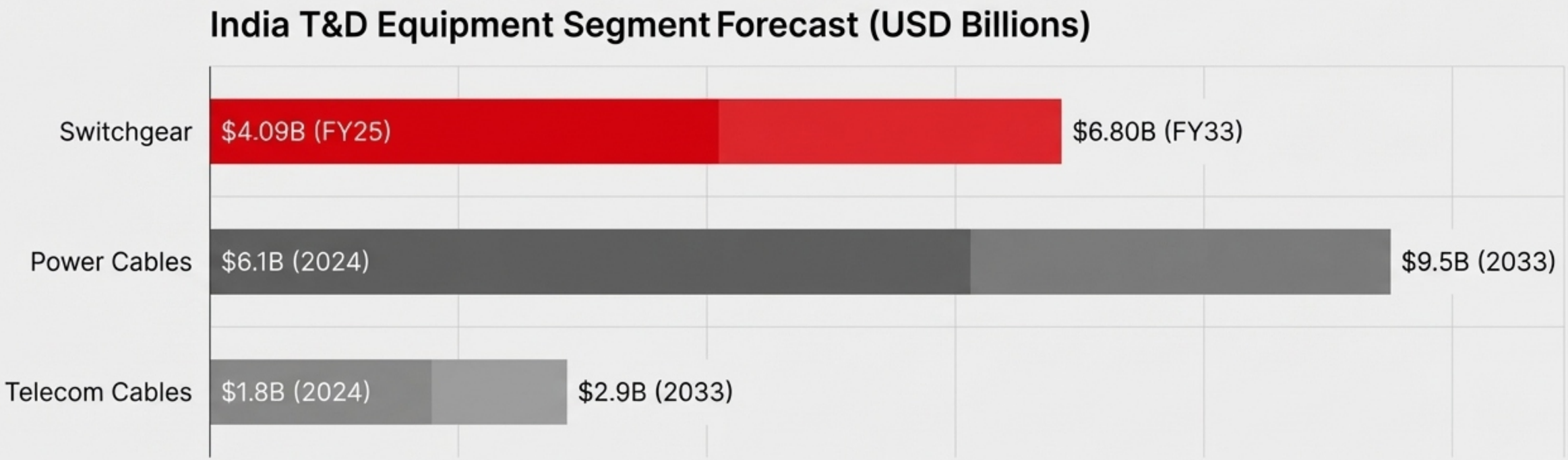
~$75B

by 2035.

Pinpointing High-Growth Segments in the Indian Market

Specific equipment segments within India are poised for robust, high-single-digit annual growth, driven by sustained domestic capex.

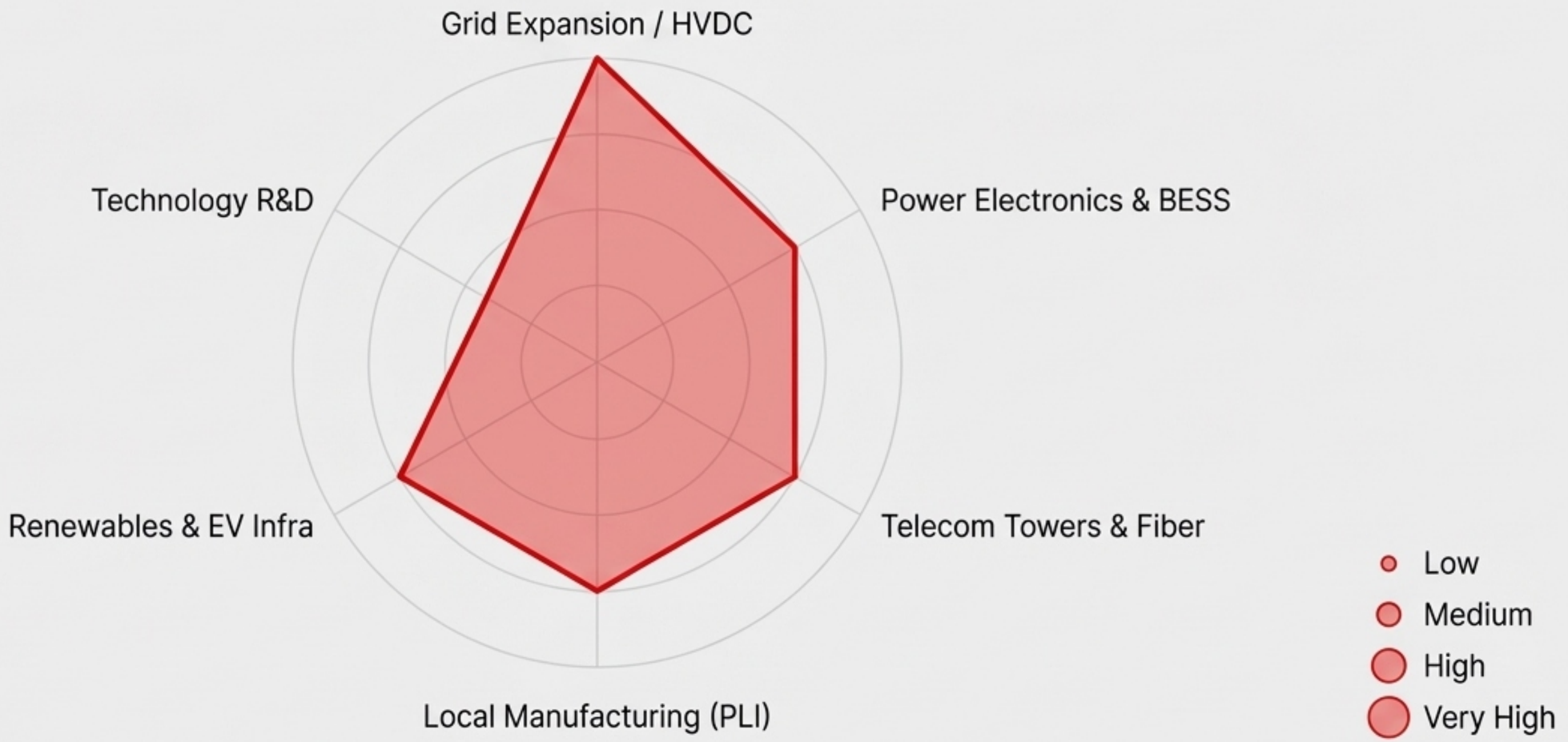
Indian T&D equipment market forecast to grow at 8–9% annually.



Mapping the Investment Hotspots for a Future-Ready Grid

Capital is strategically flowing into grid modernization, power electronics, local manufacturing, and telecom infrastructure.

Investment Intensity by Area



Navigating the Headwinds: Acknowledging Critical Industry Risks

While the outlook is strong, success requires disciplined navigation of financial, supply chain, and regulatory challenges.

Utility Financial Stress

Cumulative losses of ~$75B and significant payment delays from distribution companies pose persistent credit and cash-flow risks for equipment suppliers.

Commodity Volatility

Margin pressure from sharp, unpredictable fluctuations in the prices of steel, copper, and aluminum requires sophisticated hedging and procurement strategies.

Regulatory & Execution

Project delays stemming from right-of-way issues, shifting environmental norms like SF_6 reduction mandates, and policy shifts can impact timelines and costs.

Geopolitical & Macro Factors

Global supply chain disruptions, currency volatility, and evolving trade barriers introduce external risks that can impact project financing and material availability.

The Playbook for Success: Four Strategic Imperatives for T&D Leaders

Winning in this market hinges on technology leadership, operational scale, strategic partnerships, and deep alignment with sustainability goals.

1. Adopt Advanced Technology

Invest decisively in R&D and production of SF_6-free equipment, smart grid solutions, and Industry 4.0 manufacturing processes to create a distinct competitive advantage.

2. Align with Renewables & Resilience

Customize product portfolios for the specific demand of solar and wind integration, and develop solutions that contribute to overall grid-hardening and climate resilience.

3. Localize Operations & Build Scale

Aggressively leverage PLI incentives and domestic demand to build cost-competitive local capacity, creating a robust base for both the Indian market and global exports.

4. Build Strategic Partnerships

Collaborate across the power, telecom, and government ecosystems to gain early access to large-scale projects and co-develop integrated infrastructure solutions.

The T&D Outlook: Four Key Conclusions

A market in a strong, de-risked growth cycle, driven by the twin engines of renewables and telecom, where technology and sustainability are the new currencies of competition.

1. A Sustained Growth Cycle is Underway

The global and Indian markets are on a clear, long-term upward trajectory, driven by fundamental infrastructure needs.

2. Renewables & Telecom are the Twin Engines

These two sectors are the primary fuel for demand and grid expansion, creating a multi-decade super-cycle for equipment.

3. Technology & Sustainability are Key Differentiators

Adoption of advanced, green technologies is no longer a niche but is now core to market leadership and competitive advantage.

4. Policy Provides Unprecedented Visibility

Strong government backing, especially India's ~$109B grid investment plan, significantiy de-risks long-term capital planning and investment.

The Future Grid is Being Built Today

Success will be defined by the convergence of technology leadership, manufacturing scale, and unwavering alignment with sustainability.

Thank you.

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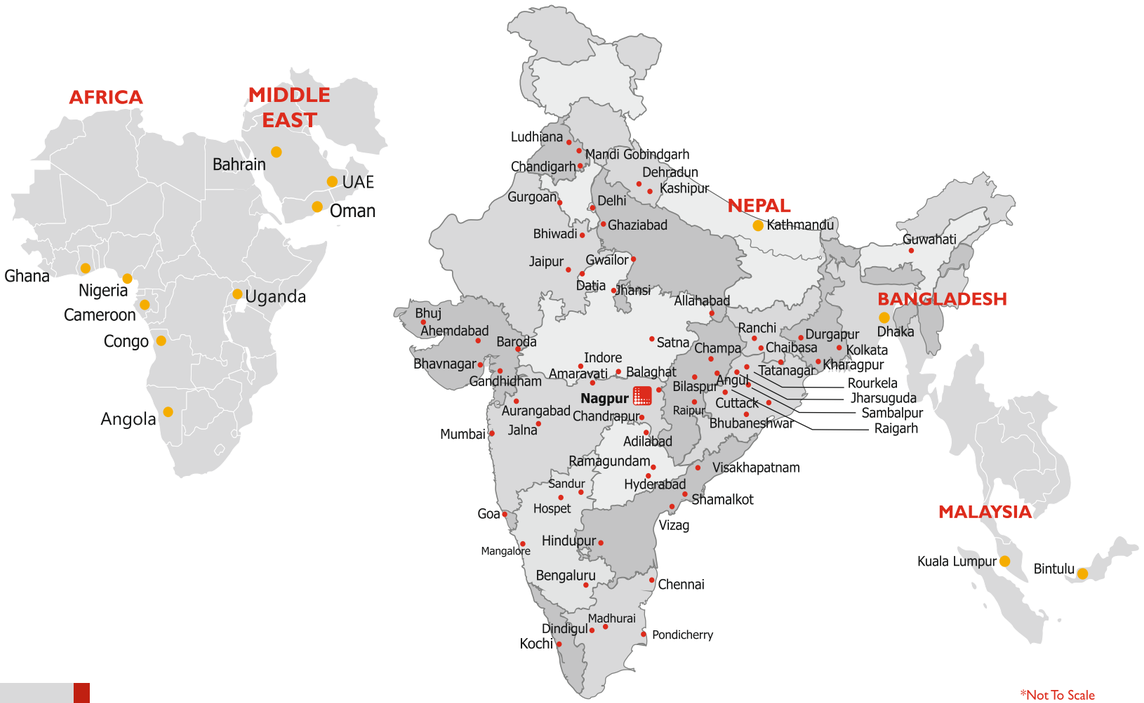

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14/4 I.T. Park ,Opp. VNIT

Lighthouse
Since 1987

Lighthouse
Info Systems Pvt. Ltd.

Regd Office & DTA Unit
14/4, IT Park, Gayatri
Nagar, Nagpur-440022 (India)

SEZ EoU Unit
Plot 8R, Mihan SEZ, Khapri,
Nagpur - 441108, India

PBX : +91 8600004931, 8600004932
+91 9890168703, 8600068765

mktg@lighthouseindia.com
www.lighthouseindia.com
www.lighthouseerp.com
www.lighthousecrm.com
www.lighthousehrm.com
www.b2bsangam..com