

POWER TRANSMISSION IN INDIA 2019

Trends and Developments, Outlook and Projections

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The country's power transmission sector has witnessed unprecedented growth in the past five years, with line length and transformer capacity growing at an average annual growth rate of 6.5 per cent and 9.6 per cent, respectively. Further, both operational and financial performances of the transmission utilities have witnessed an improvement in the past few years. Going forward, an estimated Rs 2.6 trillion investment is required in the transmission sector to meet future peak load, which is expected to reach 234 GW by 2021-22. The private sector is expected to play an important role in achieving the country's grid expansion targets as competitive bidding gains momentum at both interstate and intra-state levels. Several grid expansion programmes such as the GEC and cross-border links are underway to expand the physical grid infrastructure. Further, transmission utilities, at the central and state level, are expected to invest significantly in new technologies to make grids more reliable, resilient, secure and smart. The sector is also expected to immensely benefit from major policy reforms including the Electricity Act amendments and the Tariff Policy amendments.

Executive Summary

SECTION I: MARKET TRENDS AND DEVELOPMENTS

1. Sector Size and Growth

- ❖ Growth in Transmission Line Length
- ❖ Growth in Transmission Transformer Capacity
- ❖ Trends in Substation Additions
- ❖ Growth in Inter-regional Transfer Capacity
- ❖ Growth in Transmission against Generation Capacity
- ❖ Growth in Total Transfer Capability
- ❖ Trends in Network Reliability
- ❖ Trends in Sector Investments
- ❖ Key Issues and Challenges

2. Recent Developments

- ❖ Constitution of National Committee on Transmission
- ❖ Competition in Intra-state Transmission
- ❖ Smart Grid Projects Update
- ❖ Cyber Security Initiatives for Power Infrastructure
- ❖ Impact of EV Penetration on Grid Operators and Transcos
- ❖ Waiver of ISTS Charges for Solar and Wind Projects Commissioned till March 2022
- ❖ Implications of Energy Storage on Grid Reliability
- ❖ Utilisation of Transmission Assets for Telecom
- ❖ Consolidation Moves/M&A Deals
- ❖ New Players and Developers
- ❖ Key Loans and Financing Deals

3. Policy and Regulatory Initiatives

- ❖ Electricity Act (Amendment) Bill
- ❖ Re-Designing Ancillary Services Mechanism
- ❖ Reverse Auction and E-bidding for Transmission - The Experience so Far
- ❖ Draft SDB for Intra-state Transmission Projects
- ❖ Planning, Coordination and Development of Economic and Efficient Inter-State Transmission System Regulations
- ❖ Draft Regulations on Terms & Conditions for Tariff for the Period 2019-24
- ❖ Other Key Amendments and Draft Regulations

4. Private Sector Participation

- ❖ The Experience so Far
- ❖ Tariff-based Competitive Bidding (TBCB)
 - Status of Projects Awarded so Far (Interstate and Intra-state)
 - Projects under Bidding (Interstate and Intra-state)
 - New Project Pipeline (Interstate and Intra-state)
- ❖ Other Private Participation Models (PPP, JV, etc)
- ❖ Key Issues and Concerns

5. Transmission Tariffs

- ❖ Point of Connection Methodology and Charges
- ❖ Interstate Transmission Tariffs
- ❖ Intra-state Transmission Tariffs

SECTION II: OUTLOOK AND PROJECTIONS (TILL 2023-24)

6. Network Growth and Investments

- ❖ Projected Line Length Additions
- ❖ Projected Transformer Capacity Additions
- ❖ Projected Additions to Substations
- ❖ Expansion in Inter-regional Transfer Capacity
- ❖ Investment Projections
- ❖ TBCB Opportunities at Inter-state and Intra-state Levels
- ❖ Key Issues and Concerns
- ❖ Future Outlook

7. Project Pipeline

- ❖ Overall Pipeline
- ❖ Inter-state Projects
 - Line Length (by voltage and utility)
 - Transformer Capacity (by voltage and utility)
- ❖ Intra-state Projects
 - By Line Length (by voltage and utility)
 - By Transformer Capacity (by voltage and utility)

8. Equipment Requirements

- ❖ Growth Drivers
- ❖ Projected Demand for Equipment
 - Towers
 - Conductors
 - Power Transformers
 - Switchgears
 - Reactive Power Equipment

SECTION III: FINANCIAL AND OPERATIONAL PERFORMANCE OF TRANSCOS**9. Analysis of Operational Performance**

- ❖ Transmission Line Length
- ❖ Transformer Capacity
- ❖ Number of Substations
- ❖ Transmission Losses
- ❖ System Availability

10. Analysis of Financial Performance

- ❖ Trends in Utility-wise Revenues
- ❖ Trends in Utility-wise Expenditure
- ❖ Trends in Utility-wise Net Profit
- ❖ Trends in O&M Costs
- ❖ Trends in Capital Expenditure
- ❖ Debt/Equity Ratio

SECTION IV: KEY PROGRAMMES AND FOCUS AREAS**11. Renewable Energy Integration Projects**

- ❖ Projected Renewable Energy Capacity Addition
- ❖ Challenges in Grid Integration of Renewable Energy
- ❖ Green Energy Corridor (GEC) Projects I and II
- ❖ Renewable Energy Management Centres

12. Cross-Border Interconnections

- ❖ Existing Interconnections
 - India-Bangladesh
 - India-Nepal
 - India-Bhutan
- ❖ Ongoing Interconnection Projects
- ❖ Interconnections under Planning
- ❖ Issues and Challenges

13. Indian Railway's Plans for Transmission System Development

- ❖ Overview of 41k Initiative
- ❖ Planned Additions in Transmission Network
- ❖ Progress so Far
- ❖ Issues and Challenges

14. Progress on Donor Agency-aided Projects

- ❖ World Bank-funded Projects
- ❖ ADB-funded Projects
- ❖ Other Donor-funded Projects

SECTION V: TRANSMISSION UTILITY PROFILES**15. Central Transmission Utilities**

- ❖ Power Grid Corporation of India Limited
- ❖ Damodar Valley Corporation
- ❖ Bhakra Beas Management Board

16. State Transmission Utilities

- ❖ Gujarat Energy Transmission Corporation Limited
- ❖ Maharashtra State Electricity Transmission Company Limited
- ❖ Karnataka Power Transmission Corporation Limited
- ❖ Rajasthan Rajya Vidyut Prasaran Nigam Limited
- ❖ Madhya Pradesh Power Transmission Company Limited
- ❖ Uttar Pradesh Power Transmission Corporation Limited
- ❖ Tamil Nadu Transmission Corporation Limited
- ❖ Transmission Corporation of Andhra Pradesh Limited
- ❖ Transmission Corporation of Telangana Limited
- ❖ Haryana Vidyut Prasaran Nigam Limited
- ❖ Orissa Power Transmission Corporation Limited
- ❖ West Bengal State Electricity Transmission Company Limited
- ❖ Punjab State Transmission Corporation Limited
- ❖ Chhattisgarh State Power Transmission Company Limited
- ❖ Kerala State Electricity Board Limited
- ❖ Bihar State Power Transmission Company Limited
- ❖ Assam Electricity Grid Corporation Limited
- ❖ Himachal Pradesh Power Transmission Corporation Limited
- ❖ Jharkhand Urja Sancharan Nigam Limited
- ❖ Jammu and Kashmir Power Development Department
- ❖ Power Transmission Corporation of Uttarakhand Limited
- ❖ Meghalaya Power Transmission Corporation Limited
- ❖ Delhi Transco Limited
- ❖ Tripura State Electricity Corporation Limited

17. Private Transmission Companies

- ❖ Sterlite Power Transmission Limited
- ❖ Adani Transmission Limited
- ❖ Reliance Power Transmission Limited
- ❖ Essel Infraprojects Limited
- ❖ Kalpataru Power Transmission Limited
- ❖ Essar Power Transmission Company Limited
- ❖ L&T Infrastructure Projects Limited
- ❖ Techno Electric & Engineering Company Limited
- ❖ KEC International Limited
- ❖ Other companies

Each profile will provide data and analysis on the following:

- Growth in transmission network and capacity (2013-18)
- Performance indicators (2013-18)
- Key financials (2013-18)
- Expected growth in transmission network and capacity (till 2023-24)
- Planned capital expenditure (till 2023-24)
- Contact details

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Sumita Kanjilal
 Information Products
 India Infrastructure Publishing Pvt. Ltd.
 B-17, Qutab Institutional Area, New Delhi - 110016, India
 Tel: +91-11-46560421, 41034600, 41034601; Fax: +91-11-26531196
 Mobile: +91-9958299609
 Email: sumita.kanjilal@indiainfrastructure.com