New Research Report

COAL-BASED POWER GENERATION IN INDIA 2019

Trends, Developments, Future Role and Market Outlook

- Report (PDF)
- Data-set (Excel)

India Infrastructure Research

India's reliance on coal as the dominant source of power generation continues, with it accounting for about 75 per cent of the total generation in 2017-18. Despite India's climate change commitments and the rapid development of renewables that have put coal in a less favourable position, coal remains critical in meeting the base load. At the same time, coal has an additional role of balancing power in view of intermittent renewable energy. Meanwhile, the tightened emission norms have had implications for the entire coal-based fleet and will continue to be one of the key themes driving the segment over the next few years. However, the segment faces multiple challenges including slow capacity addition, shortages in coal supply, lack of power purchase agreements, and the rising number of stressed assets. Recent regulatory interventions have attempted to address some of these issues and provide the necessary boost to the segment. These include introduction of a pilot scheme for the procurement of aggregate medium term power, setting up of a high-level committee to address the issues of stressed assets, opening up of commercial coal mining, considering a revision of some PPAs and allowing pass through a costs of implementation of emission control technologies as off-takers. With the government's strong determination to resolve the issue of stressed assets and improve coal supply to power plants, coal is likely to occupy a significant share in future power generation in the country.

Executive Summary

SECTION I: MARKET OVERVIEW AND RECENT DEVELOPMENTS

1. Size and Growth
   - Source-wise All India Installed Capacity and Generation
   - Growth in Coal-based Installed Capacity
   - Analysis of Existing Capacity
     - By Sector
     - Location
     - Size of Units
     - Type of Coal
   - Trends in Generation
   - Trends in PLF

2. Recent Policy and Regulatory Initiatives
   - Draft CERC (Terms and Conditions of Tariff) Regulations, 2019
   - Methodology for the Rationalisation of Coal Linkages for IPPs
   - Recommendations of the High Level Empowered Committee
   - Pilot scheme for procurement of aggregate-medium term power (Phase I and II updates)
   - MoP directives on tariff pass-through
   - CERC's change-in-law ruling for emission control equipment installation
   - Ruling on Compensatory Tariff
   - Draft Rules for Captive Power Plants
   - Update on SHAKTI
   - Update on Retirement of Old Units
   - Commercial Coal Mining
   - Captive Coal Block Update

3. Stressed Assets and Financing: Current Status and Resolution Strategies
   - Stressed Coal-based Projects
   - Key Reasons Causing Stress
   - Measures/Schemes to Revive Stressed Assets
   - Recent Acquisitions
   - Deals under Discussions
   - Current Stance of Lenders
   - Expected Haircuts by Banks
   - Buyers of Stressed Assets
   - Workable Solutions for the Future
   - Key Issues and Challenges

4. Flexible Operations: Strategies, Impact and Challenges
   - Need for Flexibility
   - Load Pattern Analysis and Forecast
   - Flexible Generation Options for Coal-based Plants
   - Equipment Modifications to Enhance Flexibility
   - Cost Implications
   - The Experience So Far
   - Key Issues and Challenges
   - Future Outlook

5. Emissions Control: Current Status, Timelines and Costs
   - Trends in Emissions from Coal-based Plants
   - Overview of Environmental Standards
   - Current level of Compliance (including SOx, NOx, SPM, fly-ash utilisation)
   - Key Identified Technologies
   - Progress in Implementation (FGD and ESP)
   - Impact on Cost of Generation and Tariffs
   - Issues and Challenges

6. Impact of Renewables and Role in Load Balancing
   - Current status of Renewable Electricity Generation
   - Impact on Grid and System Operations
   - Impact on Coal-based Power Generation
   - Cost Comparison: Coal versus Renewables
   - Projected Renewable Capacity Additions
   - Projected Fuel Mix
   - Future Load Generation Scenario
   - Role of Coal-based Plants in Grid Balancing
   - Technical and Non-technical barriers in Load Balancing

SECTION II: PLANT PROFILE AND OPERATING PERFORMANCE

7. Analysis of Operational Plants
   - Size of Plants and Units
   - State-wise and Sector-wise profile
   - Subcritical and Supercritical Units
   - Age of Units
   - Boiler and Turbine Makes
   - PLF Trends
   - Plant Availability
   - Heat Rate Trend
   - Auxiliary Consumption trends
   - Specific Coal Consumption

8. Renovation and Modernisation (R&M)
   - Age profile of Thermal Units
   - Key Drivers
   - The Experience So Far
   - Current R&M Projects
   - R&M Programme: 2017-22
   - Potential Candidates for R&M
   - Potential Candidate Plants for Closure
   - Issues and Challenges

SECTION III: COAL SUPPLY, PRICES AND OUTLOOK

9. Coal Demand and Supply Scenario
   - Coal Production and Demand
   - Coal Demand from Thermal Power Plants
   - Captive Coal Production
   - Trends in Coal Imports
   - Availability of Coal with Power Plants
   - Projections for Coal Demand and Supply

10. Trends in Coal Procurement
    - Source Comparison
    - Linkage Volume and Trends
    - E-auction Volume and Trends
    - Captive Volume and Trends
    - Imported Volume and Trends

11. Coal Prices
    - Domestic Coal Prices
    - E-Auction Prices
    - Global Price Trend
    - Pricing Outlook

12. Coal Quality
    - Need for Coal Washing
    - Benefits of using Washed coal
    - Existing Coal Washing Capacity
    - Upcoming Coal Washing Capacity
    - Issues and Challenges

13. Coal Transportation
    - Share of various Modes of Coal Transportation
    - Trends in Rail Freight Costs (including impact on cost of power generation)
    - Trends in Indian Railways' Coal Loading
    - Rail projects for Coal Evacuation
    - Ports Capacity for Handling Coal
    - Upcoming Railways and Ports Capacity
    - Key Issues and Challenges

SECTION IV: COSTS AND TARIFFS

14. Tariff and Prices
    - Factors affecting Tariffs
    - Tariff Trends
    - Tariff Trends in PPAs
    - Tariff Discovered under Case 1 and 2 Bids
    - Short-term Power Prices
    - E-bidding under DEEP

15. Generation Costs
    - Factors Affecting Cost of Generation
    - Trends in Generation Costs (Variable as well as fixed)
    - State-wise Marginal Costs
    - Cost Comparison with other Fuels Options
    - Cost Comparison: New versus Old Plants
    - Trends in Other Costs (O&M, Depreciation)
    - Future Outlook

SECTION V: MARKET OUTLOOK AND OPPORTUNITIES

16. New Project Pipeline
    - Analysis of Capacity under Construction
        - By Ownership
        - By Expected CoD
        - By Size
        - By Location
    - Current Status of Capacity under Construction
    - Delayed Projects
    - Time and Cost Overruns in Upcoming Projects
    - Stalled/Cancelled Projects
    - Issues and Concerns

17. Future Outlook and Projections (till 2024-25)
    - Outlook for Power Demand
    - Capacity Addition Projections
    - Fuel Supply
    - Capacity Utilisation and PLFs
    - Generation Tariffs
    - Stressed Assets
    - Emission Norms Compliance
    - Power Procurement Outlook

18. Market Opportunities for Technology/Equipment Providers
    - BTG and BoP Equipment
    - FGD Systems
    - ESP Upgradation
    - Water Management Systems
    - Control and Instrumentation (C&I) Systems

SECTION VI: PROFILES OF COAL-BASED POWER PRODUCERS

19. Central Sector Players
    - NTPC Limited
    - Damodar Valley Corporation
    - NLC India Limited

20. State Sector
    - Maharashtra State Power Generation Company Limited
    - Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited
    - Rajasthan Vidyut Utpadan Nigam Limited
    - Tamil Nadu Generation and Distribution Corporation Limited
    - West Bengal Power Development Corporation Limited
    - Karnataka Power Corporation Limited
    - Madhya Pradesh Power Generating Company Limited
    - Gujarat State Electricity Corporation Limited
    - Chhattisgarh State Power Generation Company Limited
    - Telangana State Power Generation Corporation Limited
    - Andhra Pradesh Power Generation Corporation Limited
    - Haryana Power Generation Corporation Limited
    - Singareni Collieries Company Limited

21. Private Sector
    - Adani Power Limited
    - Tata Power Company Limited
    - Reliance Power Limited
    - JSW Energy Limited
    - Jindal Power Limited
    - Essar Power Limited
    - GMR Energy Limited
    - RattanIndia Power Limited
    - Lanco Infratech Limited
    - CLP India Private Limited
    - GVK Energy Limited
    - Nabha Power Limited
    - Vedanta Limited
    - Bajaj Energy Limited
    - ACB (India) Limited
    - Jaiprakash Power Ventures Limited
    - DB Power Limited
    - KSK Energy Venture Limited
    - Hindustan Powerprojects
    - CESC Limited
    - Sembcorp Energy India Limited
    - Others

Each of the profiles will cover information on current capacity, upcoming projects, operating performance and financial performance.

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