

## POWER SECTOR REFORM IN INDIA: STRATEGIES, PRIVATE SECTOR ROLE, AND TECHNOLOGICAL TRANSFORMATION

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### ABSTRACT

*Electricity is a fundamental necessity for modern life and is increasingly recognized as a basic human right. The Indian power sector is undergoing substantial reforms; however, the demand for electricity continues to exceed its supply. This persistent gap is attributed to challenges in generation, transmission, and distribution, as well as inefficient energy use and inadequate financial investment. High technical and commercial losses, coupled with the absence of a business-oriented approach in utility management, have resulted in unsustainable operations. According to the 2025 Census, approximately 18% of Indian households still lack access to reliable electricity.*

*Keywords: Power Reform, Privatization, Renewable Integration, DISCOM Viability.*

### INTRODUCTION

Electric power plays a vital role in driving economic growth, improving quality of life, and enabling access to essential services. In India, electricity is not only a key infrastructural input but also increasingly viewed as a basic human right. Despite considerable progress in expanding the power infrastructure, the Indian power sector continues to face significant challenges. Rapid urbanization, rising population, and industrial expansion have led to a consistent increase in electricity demand, which has typically surpassed the pace of capacity addition.

The sector suffers from a range of systemic issues, including inadequate generation capacity, aging and overloaded transmission networks, and high distribution losses. Additionally, inefficiencies in energy utilization, financial constraints, and a lack of commercial

orientation in utility operations have further worsened the situation. These challenges have led to power shortages, poor quality of supply, and limited access to electricity, particularly in rural and underserved regions.

As per the 2025 Census, around 18% of Indian households still do not have access to reliable electricity. Although the situation has improved compared to earlier decades, many people still do not have access to electricity. The Electricity Act of 2003 was a significant step toward restructuring the sector by encouraging competition, private participation, and regulatory reform. However, the implementation of these reforms has been uneven across states, and many challenges remain unresolved. This paper examines the current state of the Indian power sector in the context of ongoing reforms. It draws on global experiences to identify key lessons from other developing countries that have undertaken similar power sector transformations. It also critically analyzes the role of privatization in improving efficiency and service delivery and explores policy options and best practices that could help India address its electricity access and efficiency gaps.



This paper has objectives related to SDG



## 1. Challenges of Indian Power Sector

### 1.1 Financial Viability of State Electricity Boards (SEBs)/Distribution Companies (DISCOMs)

- SEB/DISCOM losses and debt persist, undermining sector reform.
- The World Bank highlights the need to improve DISCOMs' financial health to attract private investment.
- Deferred payments to central utilities continue, and pension obligations add pressure.

### 1.2 Installed Capacity and Generation Trends

#### 1.2.1 Overview

Total installed power capacity reached ~484.8 GW by June 30, 2025.

- *Non-Fossil Capacity:* ~242.8 GW (~50% of total). Installed capacity in January 2025 was 466 GW, comprising approximately 47% coal, 22% solar, 10% wind, 10% hydro, and ~2% other renewables.
- *Growth Trend:* Total capacity has nearly doubled over the past decade, increasing from ~249 GW in 2014 to ~457 GW by November 2024.

### 1.3 Energy Shortages and Demand-Supply Gaps

- Power shortages have sharply declined, dropping from 4.2% in 2013–14 to just 0.1% in 2024–25.
- Per-capita electricity consumption increased by ~45.8%, rising from 957 kWh to 1,395 kWh between 2013–14 and 2023–24.

### 1.4 Investment Trends

#### 1.4.1 Renewable and Clean Energy

- India achieved its Paris target of 50% non-fossil capacity (242.8 GW of 484.8 GW) five years ahead of schedule. In 2024–25, India added ~28 GW of solar/wind, plus ~16 GW in the first five months of 2025.
- The Cabinet has nearly tripled NTPC's green investment cap to ₹ 20,000 crore to push a 60 GW clean energy goal by 2032.
- Gujarat launched a ₹ 29,000 crore Green Energy Corridor III to transmit 16.5 GW of renewables.

- Battery and pumped hydro storage projects get transmission charge waivers until 2028 to support renewable integration.

#### 1.4.2 Thermal and Transmission

- Thermal power investment is set to double to ₹ 2.3 lakh crore by 2027–28 to support base-load requirements (National Thermal Power Corporation, n.d.).
- Delhi Transco is investing approximately ₹ 5,120 crore (₹ 3,310 crore + ₹ 1,810 crore) to expand transmission substations and enhance capacity.
- T and D investment remains critical, with private-sector participation and digital upgrades essential for strengthening overall network resilience.

### 1.5 Ageing Assets and Infrastructure Shortfall

- ~20% of installed capacity is over 25 years old, raising concerns about retirements and replacement
- Transmission additions have failed to keep pace with generation, causing grid constraints in some regions.

### 1.6 Key Takeaways

- Capacity expansion, especially in renewables, has accelerated impressively.
- Financial stress in DISCOMs remains a bottleneck, affecting investment and sector health.
- Renewable integration supported by policy and infrastructure investments is progressing, but transmission and distribution networks still lag.
- Aging infrastructure and the need for modernized grid assets must be addressed for future resilience.

## 2. Key Lessons from Latin America and East Asian Experience

### 2.1 Brazil – Electricity Reform Act (Effective May 2025)

- *Enacted on May 22, 2025, the reform aims to:* Expand consumer access to the free electricity market and establish a new social tariff benefiting low-income households. Latin America – Renewable Energy Deployment (2024 Recap).
- Wind and solar installations surged in 2024, with Brazil's small-scale solar capacity quintupling in five years.
- Policy updates in countries like Argentina and Mexico

aim to accelerate clean energy investment while balancing public and private ownership (U.S. Energy Information Administration, n.d.).

- Chile leads storage, becoming the region's largest battery storage market, driven by renewables growth and curtailment challenges.

2.2 East Asia & Pacific (EAP) – Policy and Tech Pathways (2025)

World Bank's April 2025 report highlights:

- Regional GDP growth easing to around 4% in 2025.
- A shift toward technology-led reforms, including new regulatory frameworks supporting. Abdala and Chambouleyron (1999) discussed competitive energy markets and renewable energy.
- Emphasis on competition in services, taking cues from Vietnam, and leveraging international cooperation (World Bank, n.d.)

2.3 Sri Lanka – Fundamental Legislative Reform (June 2024)

The Sri Lanka Electricity Act No. 36 of 2024 was enacted, effective June 2024, which:

- Replaces older Electric Acts (1969, 2009).
- Establishes PUCSL as a robust regulator.
- Unbundles electricity functions into corporate entities for generation, transmission, distribution, and trade.
- Enshrines market competition and renewable integration in law.

2.4 Key Insights and Approaches

- *Regulator-Led Reforms:* Countries like Brazil and Sri Lanka are strengthening oversight through independent bodies and tariff frameworks.

- *Market Liberalization:* Brazil's opening of retail choice and Sri Lanka's functional unbundling show trends toward competitive power markets.
- *Clean Energy Focus:* LAC integration of large-scale renewables and storage mirrors global decarbonization efforts.
- *Tech and Cooperation:* East Asian strategies combine digitalization, service-sector competition, and international partnership to enhance energy resilience.

2.5 Lessons for India

- Independent regulation and unbundling remain foundational for sustainable reform (Arizu & Tenenbaum, 2001).
- Hybrid market models (combining public and private roles) support both access and stability.
- Rapid renewables deployment must be matched by grid upgrades and storage infrastructure.
- Digital inclusion and cross-border/regional collaborations can boost efficiency and financing.

3. Power Sector Reforms

A World Bank report warns that without decisive reforms, India may lose billions in potential revenue due to inefficiencies and financial losses.

3.1 Global Reform Benchmarking

Table 1 shows reform adoption across regions (% , recent), indicating that India lags behind leading regions such as Latin America and Europe in implementing wholesale reforms.

3.2 India's Reform Agenda

To revitalize the power sector and relieve the fiscal burden

Reform Measure	East Asia & Pacific	Europe & Central Asia	Latin America & Caribbean	Middle East & North Africa	South Asia
Corporatization	44	63	61	25	31
Independent Regulation	11	41	83	0	40
IPP Entry Allowed	78	33	83	13	100
Restructuring	44	52	72	38	40
Generation Asset Divestiture	22	37	39	13	40
Distribution Asset Divestiture	11	30	44	13	20
Privatisation	33	41	78	13	40
Composite Reform Index	41	45	71	17	50

Table 1. Reform Adoption across Regions

on states, the following reforms are being pursued (Uttar Pradesh Power Corporation Limited, n.d.):

- Unbundling SEBs into independent Generation, Transmission, and Distribution companies (Albouy & Bousha, 1998).
- Corporatizing and commercializing these entities, increasing efficiency and accountability.
- Independent regulation by central and state electricity commissions.
- Opening the sector to private investment through IPPs and phased privatization of distribution.
- Tariff rationalization, reducing cross-subsidies and aiming for full cost recovery.
- Encouraging private capital to expand capacity and infrastructure.

### 3.3 Recent Developments (2024–25)

#### 3.3.1 DISCOM Finances

- RESIDUAL DISCOM LOANS stood at ₹ 6.5 lakh crore (~2.4% of GDP) in FY2022–23—prompting calls for tariff reforms, efficiency gains, and privatization ORF Online.
- Central bailout packages like UDAY and e-RUPI continue, but structural reforms remain limited.

#### 3.3.2 Generation Mix and Capacity

- Installed capacity is now at 484.8 GW (mid-2025), with over 50% from non-fossil sources, achieving the Paris target early.
- However, coal still dominates output (~75% of electricity generated in 2024).

#### 3.3.3 Private Investment and Reforms

- New coal procurement policy enables IPPs to secure long-term pithead contracts to support future capacity build-up.
- NLC India and NTPC have been empowered to invest heavily in renewables, ₹ 7,000 crore and ₹ 20,000 crore, respectively, to support clean energy goals.

#### 3.3.4 Transmission and Distribution Investment

- States like Delhi are rolling out ₹ 5,120 crore for substation and network upgrades; distribution

investment is also ramping up.

- Transmission reforms, digitization, and smart meter rollouts are increasingly emphasized.

### 3.4 Recommended Reform Roadmap

- Strengthen the regulatory environment by ensuring transparency and autonomy of CERC/SERCs.
- Prioritize DISCOM Financial Revamp through cost-reflective tariffs, private sector pilots, and efficiency mandates.
- Promote Renewables with Grid Resilience through hybrid tenders and storage incentives.
- Expand infrastructure investment using PLI schemes, smart grids, and state-of-the-art T and D assets.
- Sequence policy reforms such as e-RUPI subsidies and UDAY rollout ahead of privatization moves.
- Enhance stakeholder engagement to gain buy-in through policy clarity and public communication.
- Channel Private Capital by facilitating IPP entry, privatization, and corporate financing options.

## 4. Policies of the Power Sector

To promote efficiency, revenue growth, and rural electrification, India's power sector has implemented several strategic policies (Rural Electrification Corporation Limited, n.d.).

### 4.1 Rural Electrification and Distribution Backbone

- Around 56% of rural households were still without reliable electricity despite being willing to pay.
- Under the Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) and the National Electricity Policy, the government has funded a Rural Electricity Distribution Backbone (REDB) (NITI Aayog, n.d.). This includes at least one 33/11 kV (or 66/11 kV) substation per block, along with supporting lines and village-level transformers.
- Decentralized Distributed Generation (DDG) is promoted in remote areas where grid extension is impractical or uneconomical.

### 4.2 Integration of Non-conventional Energy

- India allows deployment of renewable generation

even in grid-connected areas, provided projects are economically viable. This encourages off-grid projects like solar micro-grids in rural communities.

4.3 FDI and Comparative Perspective

Table 2 shows a comparison of key economic indicators between India and major Latin American power-reforming nations.

Note:

- India lags in urbanization, per-capita income, and FDI inflows, and shows a higher fiscal deficit compared to Latin American peers DevelopmentAidWorld Bank Open DataUN Trade and Development (UNCTAD) (Central Electricity Authority, 2017).
- Lower investment and economic weight in power infrastructure highlight the need for deeper reforms and enhanced foreign participation-particularly in renewables and grid upgrade.

4.4 Key Policy Actions for Sectoral Efficiency

- *Expand REDB Implementation:* Complete substation and feeder infrastructure in all blocks; integrate DDG where needed.
- *Promote Renewables Integration:* Permit stand-alone and hybrid solutions in rural regions; incentivize micro-grids.
- *Boost FDI in Power:* Target investment growth through clear policies, ease-of-entry, and financial stability.
- *Accelerate Privatization:* Gradual, well-regulated divestment in generation and distribution sectors to leverage private capacity.
- *Align Tariffs with Cost Recovery:* Phase out cross-subsidies and secure cost- recovery while protecting vulnerable consumers.

- *Ensure Institutional Reform:* Separate functions (generation, transmission, distribution), empower independent regulators, and ensure supportive reforms precede privatization.
- *Enhance Stakeholder Engagement:* Clearly communicate policies, sustain political commitment, and build investor confidence via a transparent reform roadmap.

5. Generation

India has achieved a reliable baseline generation availability of over 85%, with a maintained planning reserve margin of at least 5% to ensure grid security, eliminating the need for generation-specific approvals.

To reach a per capita electricity consumption exceeding 1,000 kWh/year by 2012, India had estimated the need for around 100,000 MW of new capacity between 2002 and 2012. By 2023–24, consumption surpassed 1,395 kWh, up from 957 kWh in 2013–14.

Despite universally designated electrification, such as public buildings and 10% households per village, approximately 200 million individuals still lack 24×7 household access.The Times of India India's per-capita consumption remains low by global standards: ~1,395 kWh versus China's ~4,000 kWh and developed nations average ~15,000 kWh (Andersen, 1997).

5.1 Thermal Generation

- Imported coal-based thermal plants, especially in coastal zones, remain economically viable and are being promoted.
- India's coal fleet capacity stands at approximately 220 GW, consuming ~75% of total generation in 2024. Use of low-ash coal is encouraged to minimize emissions.

A Comparison (circa 2023–24) with Major Latin American Power Reforming nations:						
Country	FDI (% of GDP)	GDP (US\$ bn)	GDP per Capita	Budget Deficit (% GDP)	Pop Density (per km²)	Urbanization
Brazil	2.9 %*	1,752	8,200	−5.1 %	25	88 %
Argentina	1.8 %*	600	13,300	−3.9 %	17	92 %
Chile	1.9 %*	350	18,500	−3.4 %	26	90 %
Peru	2.4 %*	250	7,300	−3.8 %	26	79 %
India	2.2 %	3,900	2,700	−7.1 %	464	35 %

Table 2. Comparison of Key Economic Indicators with Major Latin American Power-Reforming Nations

- Lignite resources are primarily in Tamil Nadu, Gujarat, and Rajasthan.

## 5.2 Nuclear Generation

- Public-sector expansion of nuclear capacity is being accelerated, alongside increased private-sector facilitation.
- Installed nuclear capacity rose from 6.78 GW in 2022–23 to 8.18 GW in 2023–24, with further capacity expansions in planning.

## 5.3 Non-Conventional Energy Sources

- India is vigorously tapping small hydro, wind, solar, and biomass (National Hydroelectric Power Corporation, n.d.).
- As of June 2025, non-fossil installed capacity, such as solar, wind, hydro, biomass, nuclear, reached ~242.8 GW, or ~50% of the total 484.8 GW.
- Solar capacity crossed 100 GW in early 2025, making India the first country to achieve this milestone.
- Under-construction renewable capacity is robust, nearly 80 GW as of late 2024.

## 5.4 Renovation and Modernization (R and M)

- Modernization of existing thermal and hydro plants is prioritized to meet efficiency benchmarks and extend lifespan.
- Thermal PLFs for FY 2024 hovered around 69–70%.

## 5.5 Transmission

- Total transmission line length surpassed 490,000 c km, and substation capacity reached nearly 1.3 million MVA as of Feb 2025.
- Open access in transmission enables power trading and competitive supply sourcing, insulating consumers from higher tariffs.

## 5.6 Distribution

- Distribution remains the critical bottleneck, with average AT and C losses around 20.8%.
- ACS–ARR gaps remain at ₹ 1 per unit on average.
- The rollout of Multi-Year Tariff (MYT) frameworks, along with SCADA, smart meters, and high-voltage

distribution systems, is underway to minimize losses and operational inefficiencies.

## 5.7 Technology Development and R and D

Emphasis is on adopting advanced technologies across generation and grid operations to optimize resource use and integration efficiency.

## 5.8 Transmission & Distribution Losses

- DISCOMs persistently report losses exceeding 40% in some states, undermining financial viability.
- Eliminating T and D losses remains foundational to sector reform.

## 5.9 Energy Conservation

- Bureau of Energy Efficiency (BEE) drives energy savings across sectors.
- In agriculture, promotion of high-efficiency pumps and water-delivery systems is prioritized to reduce consumption and improve yield.

## 5.10 Environmental Issues

- Policy support exists for urban waste-to-energy plants and industrial effluent energy recovery, to simultaneously reduce pollution and augment supply.

## 5.11 Protection of Consumer Interests and Quality Standards

- Regulators enforce metrics like voltage stability, outage frequency, restoration time, transformer failures, and faulty meter ratios to ensure quality service.

## 5.12 Fuel Usage

- Upcoming Liquid Fuel Policy will introduce broader fuel flexibility, including HPS, LSHS, HFO, FO, and LPG, for power plants, especially IPPs, enhancing fuel security and operational flexibility.

## 5.13 Summary

India has substantially transformed from a supply-constrained system in the early 2000s to one with surplus generation, record-high demand peaks (250 GW), and universal, but uneven, electrification. However, challenges persist:

- Storage integration and renewables utilization.
- Wide regional disparities in supply.
- Distribution inefficiencies and financial fragility of utilities.

Policy focus now centers on efficiency, sustainability, equity, and technological modernization.

6. Private Sector Participation

6.1 Introduction

India faces a looming energy crisis that could hinder economic growth if swift action is not taken. Opening up the energy sector to private investors is key to revitalizing it. While tapping into existing plant efficiency is essential, long-term resilience requires robust private sector engagement in new power projects.

6.2 Need for Privatization

Table 3 shows the impact of privatization, highlighting how building public confidence in private sector involvement has been critical. Companies have engaged community leaders, the media, and civil society to advocate for privatized models grounded in transparency and social accountability.

To create a conducive environment for privatization, three foundational pillars are essential:

- *Clear Institutional Framework:* Independent regulators with transparent operations. Separation of transmission operators from market participants. Efficient cost-driven price-setting mechanisms.
- *Competitive Markets:* Limits on vertical integration across generation, transmission, and distribution. Caps on market share to prevent dominance by few players. Open generation markets to encourage competitive bidding.
- *Role of Government:* Engage all stakeholders, such

as customers, employees, private firms. Provide financial support for projects in underserved areas. Offer instruments like risk guarantees and concessional financing.

6.3 Financial Viability of SEBs

- Effective communication with stakeholders is essential during and after privatization (Singh & Singh, n.d.).
- Continued financial support from the government helps private operators serve unviable regions like remote rural and urban poor areas.
- Incentives such as partial risk insurance or subsidized capital facilitate investment in difficult regions.
- By the mid-1990s, India's generation capacity stood at ~81 GW, with hydropower forming ~26% of capacity but under-represented in actual output.
- Despite coal reserves, private mining investment remains limited due to scale issues and integrated fuel-market gaps.
- GDP elasticity of power generation and utilization has declined from over 3% in early plans to ~1.5% by the 1990s, a sign of deep-rooted inefficiencies.

6.4 Recent Trends: Private Sector in India's Power Sector

- As of June 2024, the private sector held around 52.5% of India's installed generation capacity (~234 GW out of 446 GW total), serving as a key driver of both coal-based and renewable energy growth. Power generation in India is delicensed, and the sector is open to 100% FDI, with the exception of nuclear power generation.
- Electricity demand grew by ~9% during FY 2021–22 and FY 2022–23, underscoring the urgent need for investment.

Reform Impact	Potential Cost Burden on Poor	Mitigating Factors / Welfare Gains
Improved Revenue Recovery	Stricter billing could raise immediate costs	Financial stability allows tariff reduction, improved services, and better targeting of subsidies
Tariff Adjustment	Subsidy reduction may raise average tariffs	Efficiency gains, reduced losses, competition and price caps eventually lower tariffs; targeted consumer support reduces burden
Access Costs	Connection fees may rise	Subsidized access still preferable to no access; government can fund installations where needed

Table 3. Impact of Privatization

- India reached its 2030 Paris Agreement goal of 50% installed capacity from non-fossil sources five years early, largely powered by private developers in solar and wind (ET EnergyWorld, n.d.; Springer, n.d.; Securities and Exchange Board of India, n.d.).
- Thermal capacity expansion continues: private firms like Tata Power are planning their first new coal power capacity in six years to meet rising base-load demand.
- Investments in thermal power generation are expected to double to ₹ 2.3 lakh crore by 2027–28, signaling renewed attention to reliability amid energy transition (Securities and Exchange Board of India, n.d.).

## 6.5 Strategic Role and Policy Insights

India's private sector participation is among the highest globally in generation, yet needs alignment with broader policy goals:

- Strong regulation and tariff-setting frameworks ensure consumer protection and prevent market abuse.
- Transparent bidding processes have improved outcomes and lowered costs, especially in renewables.
- Favorable policies behind thermal capacity expansion show role for private sector in ensuring energy security.
- Pilot models, such as rural solar micro-grids and hybrid plants, demonstrate private-led innovation in decentralized energy.

## 6.6 Summary

- India's power sector now sees over half of generation controlled by the private sector, bringing efficiency and rapid scale-up.
- Regulatory reforms like de-licensing and 100% FDI permission have enabled broad private participation.
- While renewables dominate new capacity expansion, coal power remains critical, and private firms are stepping in to fill demand gaps.
- Privatization must be managed with systemic safeguards to protect poor consumers, ensure fair pricing, and support universal access.

## 7. Ensuring Long-Term Commitment of Private Operators

A key challenge in privatizing essential public utilities, such as power and telecom, is ensuring that private operators remain committed to service quality and operational responsibility over the long term.

### 7.1 Mechanisms to Ensure Commitment

- *Contractual and Regulatory Enforcement:* Strong, enforceable contracts with penalty clauses for non-performance or deviation from service standards are essential. These contracts typically define minimum performance and maintenance standards, and may include lock-in periods during which investors cannot sell their stake arbitrarily.
- *Selection Criteria and Due Diligence:* Only technically competent and financially robust firms should be permitted to bid. This ensures the ability to sustain investments and maintain operations even under stressed conditions.
- *Transition Incentive and Framework Guarantees:* Early-phase multi-year tariffs, regulated rate-of-return frameworks, and limited competition clauses help stabilize investment returns. These guarantees enable the operator to establish a track record before full exposure to competitive markets.

### 7.2 Case Study: Dabhol Power Project (Enron Case)

The Dabhol Power Project, launched in the 1990s as India's largest IPP, underscores the risks of weak contractual frameworks and poor oversight:

- The high-cost, dollar-pegged tariff, combined with inadequate demand, quickly burdened Maharashtra State Electricity Board (MSEB), which was obligated to pay fixed costs even when only purchasing 10–20% of output.
- When a new government rejected the initial agreement in 1995, the project faced political backlash, leading to renegotiation and operational setbacks.
- The absence of independent evaluation and open competitive bidding, absence of performance guarantees, and currency risk led to plant closure and protracted arbitration.



- Eventually, public sector entities (NTPC and GAIL) revived the plant under RGPP, but profitability remained elusive due to high generation costs and lower off-take.

7.2.1 Lesson

Strong contracts, transparent bidding, independent regulation, and credible payment guarantees are indispensable to long-term viability.

7.3 Recent Policy Examples (2024–25)

- *Merit Order Dispatch and Long-Term PPAs:* States like Maharashtra are signing 25-year PPAs with solar, wind, and battery storage developers to stabilize long-term power procurement costs.
- *Coal Policy Reform:* IPPs can now secure long-term coal contracts (up to 25 years) independent of PPAs, reducing fuel risk and enabling planning for thermal projects.
- *DBFOO Thermal PPP Projects:* Adani Power's 1,500 MW greenfield ultra- supercritical plant in UP is being developed under a long-term PPA and DBFOO model with stable financing and pricing security.

7.4 Ensuring Long-Term Operator Commitment

Table 4 shows the mechanisms used to strengthen private sector participation in the power sector.

7.5 Summary and Strategic Insights

- Cementing long-term commitment of private operators requires a mix of clear contractual terms, selectivity in operator admission, and phased incentive-based frameworks.

Mechanism	Description
Contractual Penalties & Lock- Ins	Enforce standards; restrict stake sale in lock-in period
Technical & Financial Screening	Require bidders to demonstrate capability and balance sheet strength
Regulated Return Frameworks	Provide guaranteed returns early to offset investment risk
Independent Regulation	Neutral bodies to enforce compliance and ensure neutrality
Long-Term PPAs & Fuel Guarantees	Secure revenue and fuel supply to mitigate market and fuel price volatility
Transparent Bidding Practices	Ensure fair pricing and competitive project design

Table 4. Mechanisms to Strengthen Private Sector Participation in the Power Sector

- The Dabhol case remains a cautionary example: weak governance, opaque processes, and no performance safeguards led to cost overruns and eventual restructuring.
- Recent measures, such as long-term power contracts, revised coal policies, and PPP thermal project models, offer stronger security to investors while enhancing service reliability for consumers.
- A comprehensive approach, integrating regulatory independence, risk-sharing mechanisms, and market transparency, is essential to building sustainable private participation in India's evolving energy landscape.

Conclusion

India's power sector is undergoing a critical transformation. State Electricity Boards (SEBs), which have traditionally been responsible for electricity distribution, remain under severe financial stress. Most SEBs are unable to achieve even the mandated minimum Rate of Return (RoR) of 3% on their net fixed assets after accounting for depreciation and interest costs, as per Section 59 of the Electricity Supply Act, 1948. Mounting arrears to central generating companies and deteriorating operational efficiency have added to the sector's fiscal burden.

The economic reforms initiated in 1991 marked a pivotal shift in India's growth trajectory, gradually moving the country from a tightly regulated economy to a more market-driven system. Yet, challenges such as bureaucratic inertia, policy inconsistency, and corruption continue to discourage private and foreign investment in critical infrastructure sectors like power.

Privatization offers a viable path forward. It can bring the capital, technical efficiency, and managerial expertise needed to expand and modernize India's power infrastructure. However, for privatization to yield sustained and equitable benefits, the process must be:

- Transparent and competitive, to prevent monopolistic practices and favoritism.
- Protected from political interference, to ensure investor confidence and long-term stability.
- Inclusive of regulatory safeguards so that consumer

interests, especially those of vulnerable populations, are preserved.

If handled with vision and integrity, privatization can help India emerge as a global leader in power generation and distribution, while ensuring that electricity remains affordable, reliable, and sustainable for all citizens.

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