



# **Indian Power Sector- Performance, Challenges and Opportunities**

**October 8th, 2009**

# CRISIL Infrastructure Advisory

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- **CRISIL is the world's 4<sup>th</sup> largest rating agency and Standard & Poor's is its majority stakeholder**
- **We are a 100 plus strong team comprising Economists, Chartered Accountants, MBA's, Urban Planners and Corporate Finance professionals**
- **We actively operate and track opportunities in Middle East, Africa & Asia**
- **We have a proven ability in successfully executing Infrastructure related transactions in the following domains:**

## Energy & Mining

- Oil & Gas
- Coal
- Metals & Minerals
- Power & Utilities

## Transport & Logistics

- Ports
- Roads
- Aviation
- Warehousing
- Railways
- Supply Chain

## Real Estate & City Services

- Construction
- Water
- Special Economic Zones (SEZ)
- Sanitation
- Urban renewal

## Key Messages

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- Legal framework has successfully evolved to provide business environment conducive to competition
- Private Sector Investment has been witnessed all across the value chain
- However, Actual capacity addition has fallen short of targets consistently
- Accelerated Capacity Addition requirements have thrown up multiple challenges
- The challenges throw up multiple opportunities for international investor participation

## Legal framework has successfully evolved to provide business — environment conducive to competition

### Generation

- De-licensing can lead to much faster implementation
- Freedom to construct, operate and maintain Captive Power Plants
- Only tariffs for sale to regulated utilities under the jurisdiction of appropriate regulators. The tariffs for captives and open access entitled customers can be negotiated.
- Enabling provisions for the development of renewable power generation

### Transmission

- To provide non-discriminatory open access
- Transmission and load dispatch function to be separated to avoid conflict of interests
- Transmission licensees are barred from participating in trading activities

### Distribution

- All future power procurement by distribution licensees is to be on tariff-based bidding basis
- Parallel networks have been allowed to be set up
- Distribution licensees can appoint distribution franchisees
- Consumers with more than 1 MW load will be allowed open access by January 2009
- Tariffs are to be rationalised in a phased manner with transparent subsidy payment requirements

### Trading

- Made a licensed activity
- Encouragement for setting Power Exchanges
- Will encourage merchant power plants to sell power through exchange

## Private Sector Investment has been witnessed all across the value chain

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### Generation:

- **Over 60 GW of capacity addition is already under development**
- **Four Ultra Mega Power Projects (4000 MW each) have been awarded. Two have achieved Financial Close**

### Transmission:

- **The first Independent Power Transmission Company (IPTC) has been awarded through tariff based bids (USD 300 Mn)**
- **Bidding process for more than 17 transmission systems underway.**
- **State-level transmission projects are also to be awarded on competitive bidding basis.**

# Private Sector Investment has been witnessed all across the value chain

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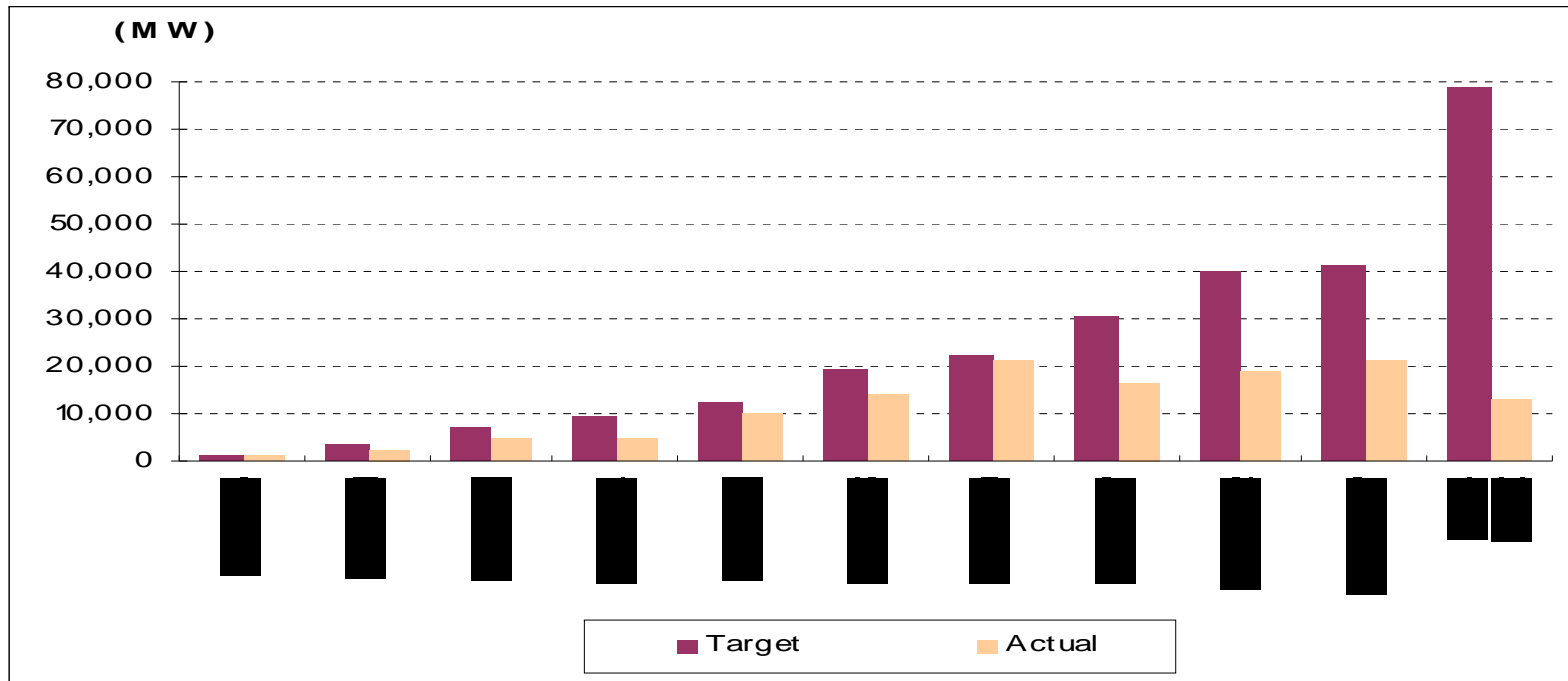
## Distribution:

- **Some state utilities have attained turnaround in operations and financial performance**
- **T&D and commercial losses of utilities have reduced in most states.**
- **The Distribution Franchisee Model, which envisages involving the private sector in improving efficiencies in distribution, has been successfully implemented in various areas in Maharashtra and Madhya Pradesh**

## Trading:

- **The trading market has grown exponentially in the past few years. Today, it accounts for almost 7% of the electricity market.**
- **The power exchange initiative has become a reality and two exchanges are operational in the country**

## Actual capacity addition has fallen short of targets



- Last three plans have seen actual capacity addition almost 50% of the target
- Better performance expected in the XI<sup>th</sup> plan
  - Close to 50000 MW expected
  - More than 60% of the target
- However the shortfall still shows the challenges the sector is facing

## Key challenges

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Generation

~160 GW of capacity requirement  
in next 7 years

Fuel/ Resources

Fuel capacity consistent with generation  
targets of 160 GW in both plans

Transmission

Inter-regional Networks of 50 GW  
to be created

Equipment

Doubling of equipment capacity for both  
generation and transformation

Financing

Financing Requirements of  
USD 25 Bn every year

# Generation – Building a sustained momentum

<b>Status</b>	<ul style="list-style-type: none"><li>▪ The achievement in 11<sup>th</sup> five year plan will surpass precedence but still fall short of targets</li></ul>
<b>Investment Highlights</b>	<ul style="list-style-type: none"><li>▪ Huge Demand Growth</li><li>▪ Multiple sale options</li><li>▪ Improving creditworthiness</li></ul>
<b>Challenges</b>	<ul style="list-style-type: none"><li>▪ Creating ~25 GW of new capacity every year</li><li>▪ Replace old capacity and add spinning reserve</li></ul>
<b>Key Investment Areas</b>	<ul style="list-style-type: none"><li>▪ Thermal Generation- Supercritical tech order of the day</li><li>▪ Hydel Generation: 150 GW potential, only 33 GW exploited so far</li><li>▪ Natural Gas- Indigenous gas finds open up new avenues</li><li>▪ Cleantech</li></ul>

# Fuels – Creating commercial fuel supply projects

<b>Status</b>	<ul style="list-style-type: none"><li>▪ Coal contributes 53% of fuel mix and will grow in short term</li></ul>
<b>Investment Highlights</b>	<ul style="list-style-type: none"><li>▪ 256 BT of coal reserves, 40 BT awarded to private sector</li><li>▪ Natural Gas to provide valuable peaking power</li></ul>
<b>Challenges</b>	<ul style="list-style-type: none"><li>▪ Create 300 MT of additional coal availability</li><li>▪ Diversify fuel mix</li></ul>
<b>Key Investment Areas</b>	<ul style="list-style-type: none"><li>▪ Commercial coal mining</li><li>▪ Natural Gas- NELP VIII</li><li>▪ Logistics and evacuation infrastructure</li></ul>

# Transmission – Inter-regional generation imbalances require transmission highways

<b>Status</b>	<ul style="list-style-type: none"><li>▪ Less than 20 GW of inter-regional Capacity</li></ul>
<b>Investment Highlights</b>	<ul style="list-style-type: none"><li>▪ Independent Power Transmission Company model off the ground</li><li>▪ Annuity Model of development assures returns</li></ul>
<b>Challenges</b>	<ul style="list-style-type: none"><li>▪ Upgrade to &gt; 50 GW inter-regional evacuation</li><li>▪ Creating High Voltage Evacuation Networks</li></ul>
<b>Key Investment Areas</b>	<ul style="list-style-type: none"><li>▪ Inter-regional evacuation IPTC Projects</li><li>▪ Intra-state power transmission projects</li></ul>

## Equipment – Doubling EPC as well as transformation capacity

### Status

- BHEL constitutes 60% to 70% of BTG capacity
- Chinese equipment gaining share

### Investment Highlights

- Domestic manufacturing given policy benefits
- Lower commodity prices are now reflected in competitive EPC prices

### Challenges

- Equipment supply to cater to approximately 25,000 MW of capacity per year

### Key Investment Areas

- Preference for supercritical
- Equipment supply for coal mining
- T&D Equipment
- Balance of Plants

# Financing – Facilitating USD 25 Bn every year

## Status

- Debt Financing primarily INR Term Loans
- Reduced access to foreign debt, higher spreads

## Investment Highlights

- Sound Contractual Framework
- Adequate Payment Security
- High growth leads to better returns

## Challenges

- Debt Funding of USD 18 Bn an year
- Primary Markets gaining momentum, however majority of players find access to equity as difficult

## Key Investment Areas

- FC Loans
- Equipment Credit Finance
- Private Equity at venture, growth and mature stages

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Thank you

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