

# Power

NOVEMBER  
2011



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- ❖ Advantage India
- ❖ Market overview and trends
- ❖ Growth drivers
- ❖ Success stories: NTPC, Tata Power
- ❖ Opportunities
- ❖ Useful information

## Advantage India

### Growing demand

- Expansion in industrial activity to boost demand for electricity
- Growing population, and increasing penetration and per-capita usage to provide further impetus

### Opportunities

- Large capacity additions (100 GW) targeted in the 12th and 13th Five-Year Plans
- Ambitious projects, increasing investments across the value chain

FY22

Total demand (TWh): 1915.0

### Advantage India

### Increasing investments

- One of the key sectors attracting FDI inflows into India; inflows recorded a CAGR of 70 per cent during FY06-FY11
- Major investments earmarked by public as well as private companies across the value chain

### Policy support

- Elimination of licensing for various segments; removal of entry barriers
- Cost reduction, rationalisation of tariffs
- Development of Ultra Mega Power Projects (UMPP)

FY07

Total demand (TWh): 690.0

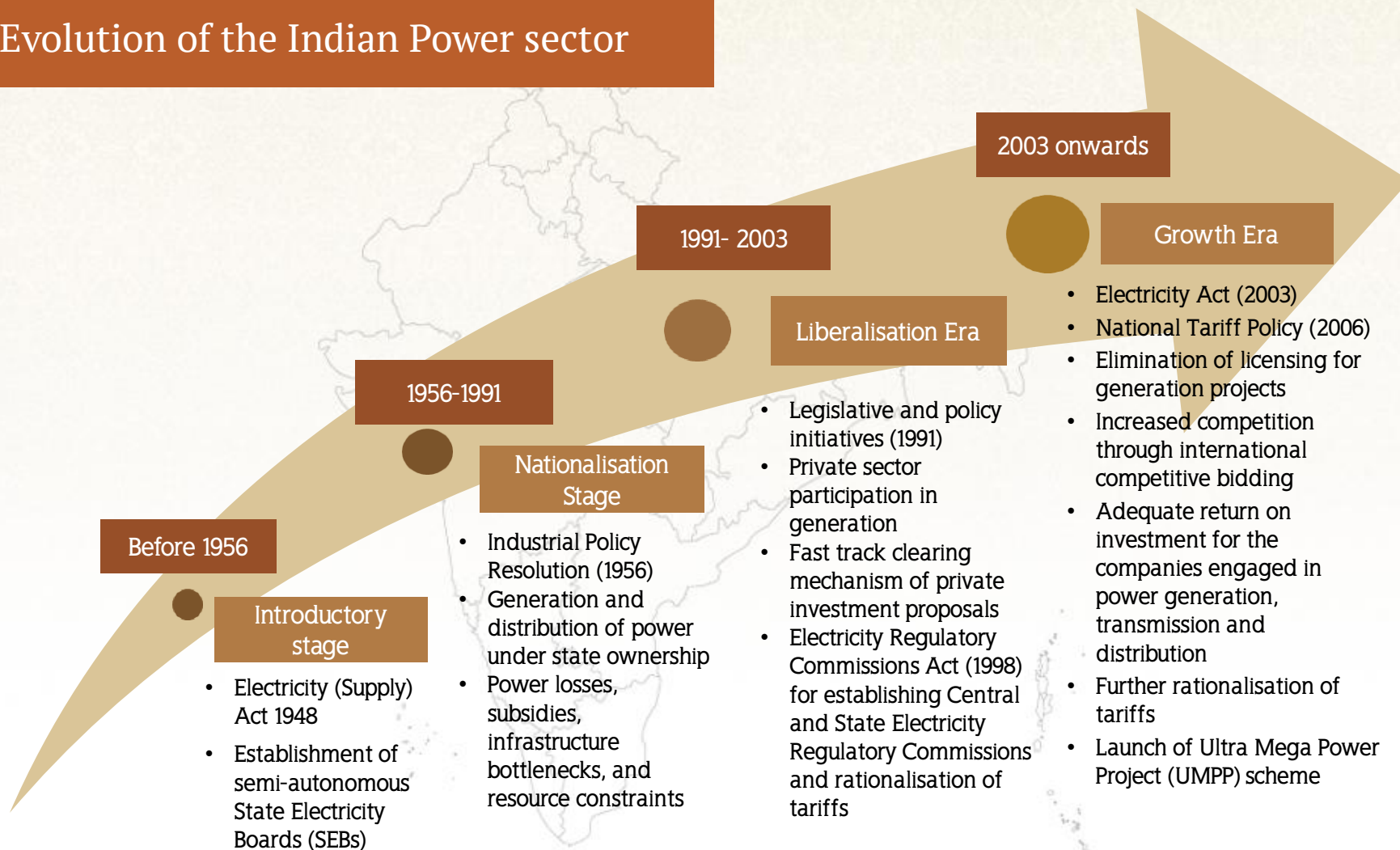
Source: FY22 estimates as per IEA forecasts, Aranca Research

Notes: FDI – Foreign Direct Investment, E- estimates, CAGR- Compound Annual Growth Rate, TWh- terawatt-hour

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## Evolution of the Indian Power sector

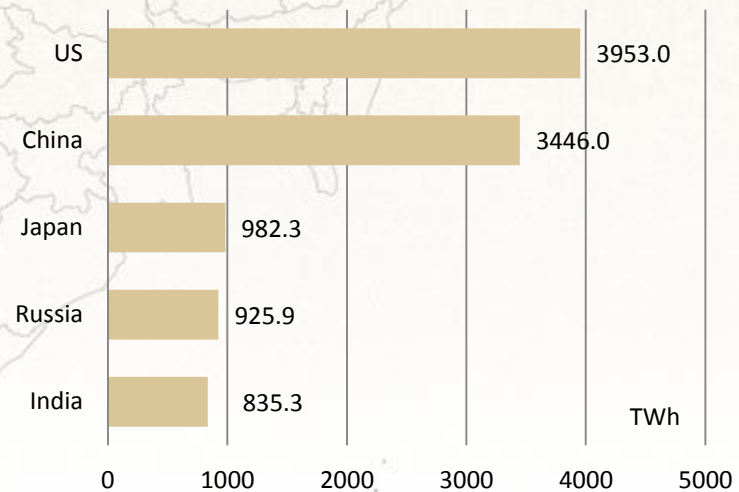


Source: KPMG, Corporate Catalyst India, IFLR, Aranca Research

## Power generation has been growing rapidly ... (1/2)

- India is the fifth largest producer and consumer of electricity in the world after US, China, Japan and Russia
- Electricity production in India (excluding captive generation) stood at 811.1 TWh in FY11

World's leading electricity producers (2009)



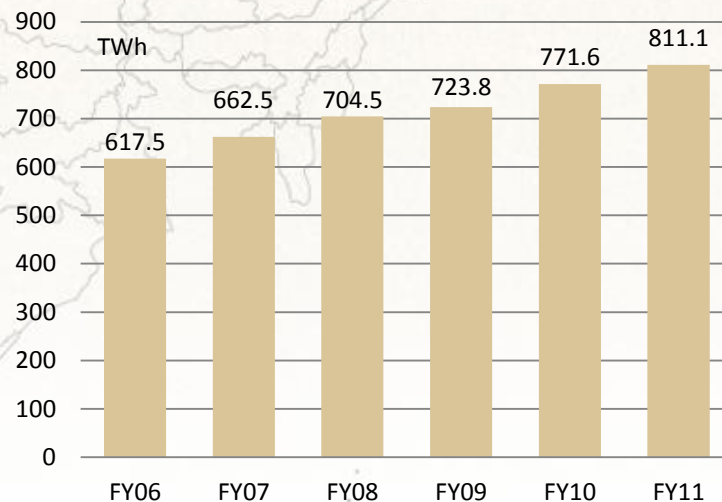
Source: CIA World Factbook, Aranca Research

## Power generation has been growing rapidly ... (2/2)

- In past five years, electricity production has expanded at a CAGR of 5.6 per cent
- Power generation has increased over 100 fold since independence

Note: CAGR- Compound Annual Growth Rate

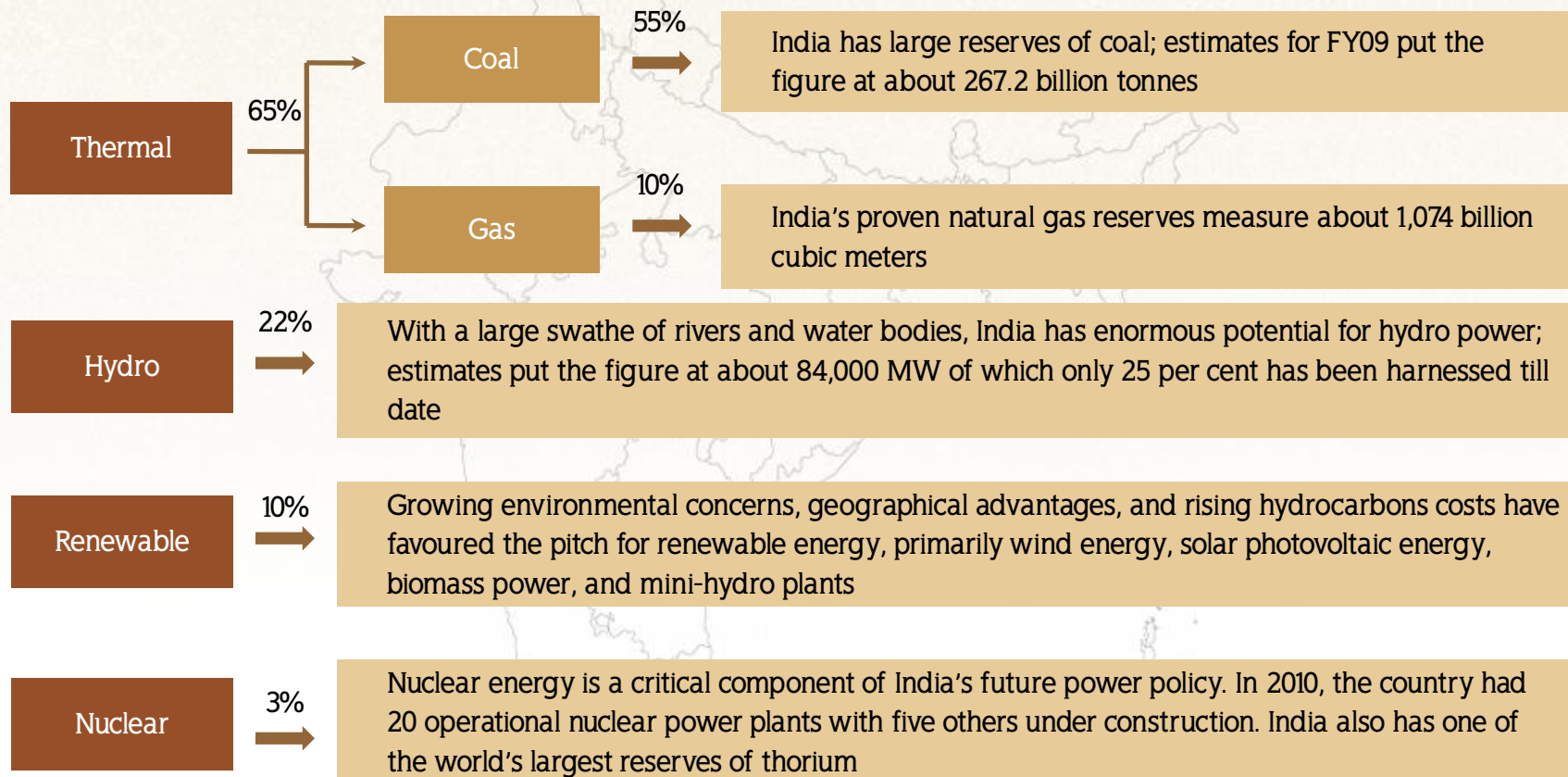
### Electricity production in India



Source: Central Electricity Authority (CEA),  
Aranca Research

Notes: FY – Indian financial year (April-March),  
TWh – Terra Watt hour

## Sources of power with shares in total installed capacity

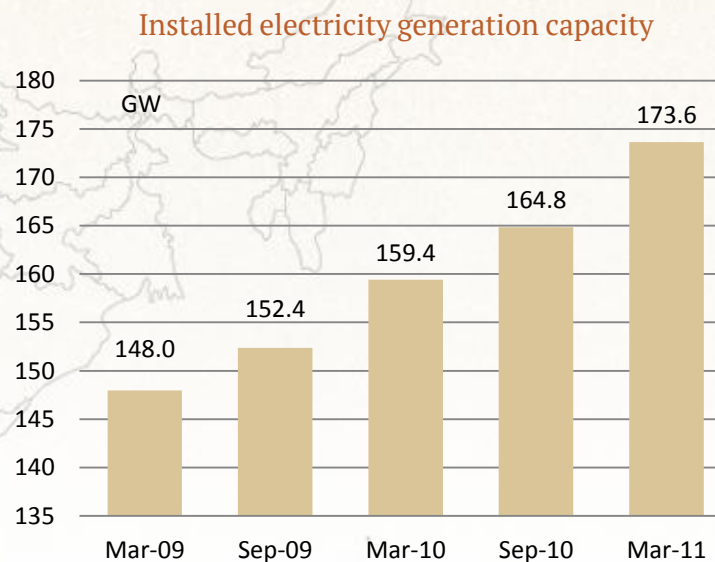


Source: Ministry of Coal, NHPC, The Hindu, Corporate Catalyst India, Aranca Research  
Notes: MW- megawatt

## Generation capacity has been increasing at a healthy pace ... (1/2)

- India's installed power generation capacity was 173.6 GW at the end of FY11
- Installed capacity increased at a CAGR of 8 per cent over the past two financial years

Notes: FY – Indian financial year (April-March),  
GW- gigawatt  
CAGR- Compound Annual Growth Rate



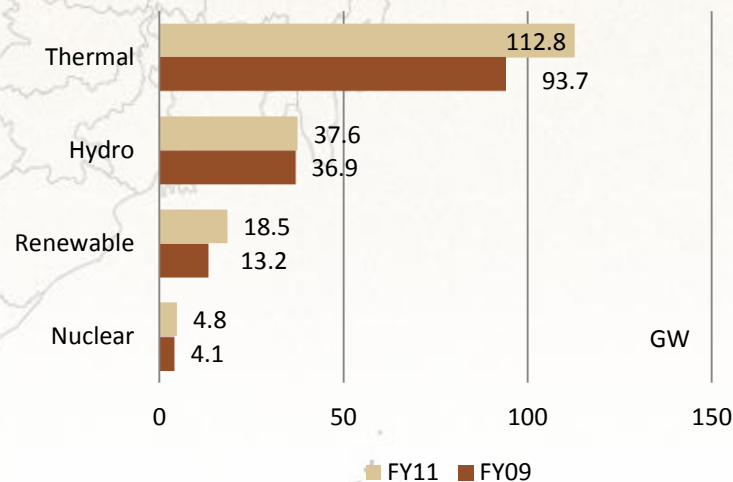
Source: Central Electricity Authority (CEA),  
Aranca Research

## Generation capacity has been increasing at a healthy pace ... (2/2)

- Among the different sources, installed capacity over FY09-FY11 expanded at a CAGR of--
  - 9.7 per cent for thermal power
  - 18.3 per cent for renewable energy, the fastest among all the sources






Notes: FY – Indian financial year (April-March),  
GW- gigawatt  
CAGR- Compound Annual Growth Rate

Comparison of installed capacity (FY09 and FY11)



Source: Central Electricity Authority (CEA),  
Aranca Research






## Key players in the power sector ... (1/2)

Company	Business description
	<ul style="list-style-type: none"> <li>• NTPC is India's largest power producer and the sixth-largest thermal power producer in the world</li> <li>• It has also diversified into hydro-power, coal mining, power equipment manufacturing, oil and gas exploration, power trading, and distribution</li> </ul>
	<ul style="list-style-type: none"> <li>• Tata Power, India's largest private power company, pioneered power generation in India nine decades ago</li> <li>• It has a presence in all the segments across the value chain</li> </ul>
	<ul style="list-style-type: none"> <li>• The company has a portfolio of over 35,000 MW of power generation capacity, both operational as well as under development</li> </ul>
	<ul style="list-style-type: none"> <li>• CESC Limited is a vertically integrated player engaged in coal mining, and generation and distribution of power</li> </ul>
	<ul style="list-style-type: none"> <li>• NHPC is the largest hydro power utility in India with an installed capacity of 5295MW and has drawn up a massive capacity expansion plan of adding 6697 MW up to the year 2017</li> </ul>

\*This list is indicative.

Source: Company websites, News articles, Aranca Research

## Key players in the power sector ... (2/2)

Company	Business description
	<ul style="list-style-type: none"> <li>• Power Finance Corporation Limited (PFC ) is an NBFC engaged in financing and development activities within the Indian power sector</li> <li>• Major products and services include project term loans, lease financing, direct discounting of bills, short-term loans and consultancy services</li> </ul>
	<ul style="list-style-type: none"> <li>• Adani Power is the largest private thermal power producer in India with total generation capacity of 2640 MW</li> <li>• It has a presence in power generation, power transmission, and solar power</li> </ul>
	<ul style="list-style-type: none"> <li>• Power Grid Corporation of India Limited (PGCIL) is the single largest transmission utility in India and is responsible for planning, co-ordination, supervision and control over inter-state transmission systems</li> </ul>
	<ul style="list-style-type: none"> <li>• Damodar Valley Corporation is engaged in power generation, distribution and transmission of electric power, irrigation, and flood control</li> </ul>
	<ul style="list-style-type: none"> <li>• SJVN Limited is the second largest hydro power company in India</li> <li>• The company plans to diversify into wind power projects soon</li> </ul>

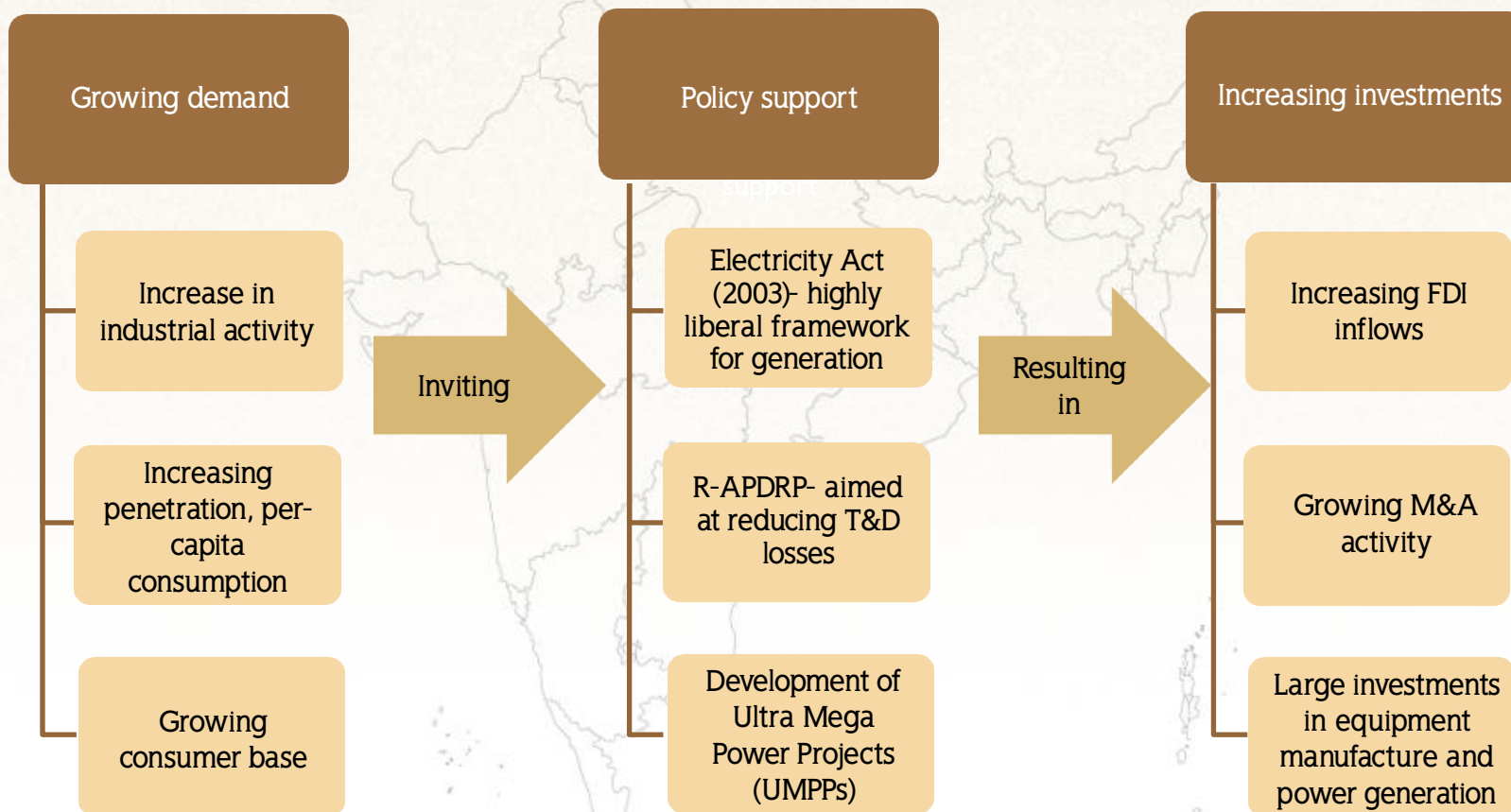
\*This list is indicative.

Source: Company websites, News articles, Aranca Research  
Notes: NBFC: Non-banking financial company

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## Strong demand and policy support driving investments



Source: Corporate Catalyst India, Ministry of Power, Aranca Research

Notes: FDI- Foreign Direct Investment, M&A- Merger and Acquisition,

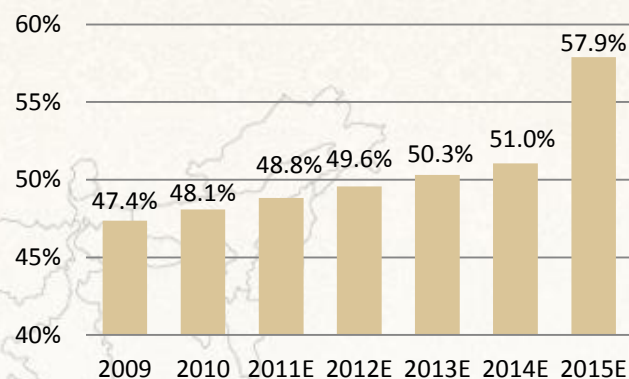
R-APDRP- Restructured Accelerated Power Development and Reform Programme,

T&D – Transmission and Distribution

## Industrial expansion and strong GDP growth to boost power demand

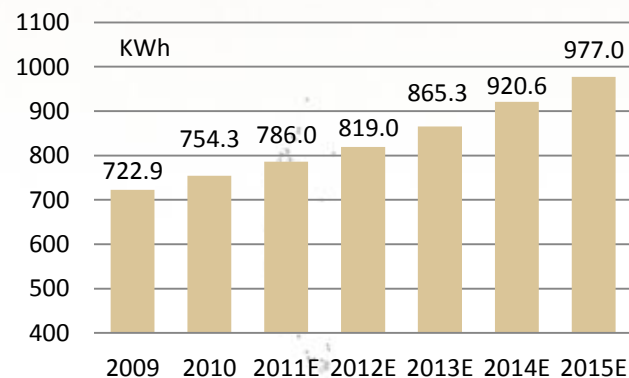
- Multiple drivers (industrial expansion, growing per-capita incomes) are leading to growth in power demand; this is set to continue over the coming years as well –
  - During FY10-FY15, GDP growth is likely to average 8.0-8.5 percent
  - India is set to become a global manufacturing hub with investments across the value chain
- 82GW worth of generation capacity is set to be added during FY11-FY15; future investments will benefit from strong demand fundamentals, policy support, and increasing government focus on infrastructure

### Share of industry in electricity consumption



Source: Estimates as per BMI India power report Q3 2011, Aranca Research

### Per-capita electricity consumption



Source: Estimates as per BMI India power report Q3 2011, Aranca Research

## Policy support aiding growth in the sector

### Electricity Act, 2003

- Elimination of licensing for electricity generation projects
- Increased competition through international competitive bidding
- Demarcation of transmission as a separate activity
- Greater participation of the private sector

### National Tariff Policy, 2006

- Adequate return on investment to the companies engaged in power generation, transmission and distribution
- Uniform guidelines to SERCs for fixing tariffs
- Assured electricity to consumers at reasonable and competitive rates

### Ultra Mega Power Projects (UMPP)

- Launch of Ultra Mega Power Project (UMPP) scheme through tariff based competitive bidding
- Ease of land possession, provision of fuel, water and necessary clearances for enhancing investor confidence

### R-APDRP

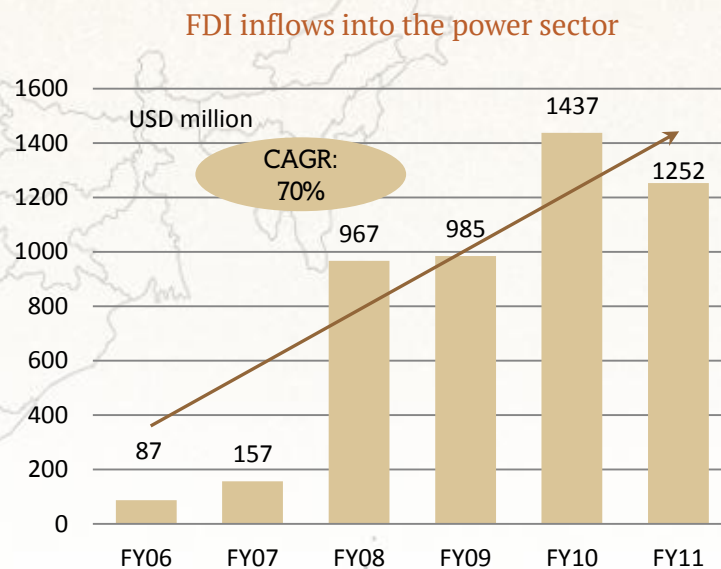
- Restructured Accelerated Power Development and Reform Programme
- Linking disbursement of central government funds (to states) with actual reduction in transmission and distribution losses

*Source:* KPMG, CRISIL, Ministry of Power, Aranca Research

Notes: R- APDRP- Restructured Accelerated Power Development and Reform Programme, SERC- State Electricity Regulatory Commission

## Increasing investments: FDI inflows and key deals ... (1/2)

- Power is one of the key sectors attracting FDI inflows into India
- During FY06-FY11, FDI inflows into the sector increased from USD87 million to USD1,252 million



Source : Department of Industrial Policy and Promotion,  
Aranca Research

## Increasing investments: FDI inflows and key deals ... (2/2)

- The sector has witnessed a total of 35 M&A deals since 2010
- Morgan Stanley Infrastructure Fund's investment in Asian Genco Pvt Ltd was the largest PE transaction in the Indian power sector

Notes: FDI - Foreign Direct Investment, PE- Private Equity

Mergers and Acquisitions (M&A)			
Acquirer	Target	Deal date	Deal value (USD million)
Athena Capital Partners LLP	SPS Ispat and Power Ltd	08 <sup>th</sup> Jul 2011	67.6
India Infrastructure Fund	Caparo Energy (India) Ltd	17 <sup>th</sup> Jun 2011	78.5
Warburg Pincus India Pvt Ltd	Diligent Power Pvt Ltd	11 <sup>th</sup> May 2011	150.0
Blackstone Group LP	Moser Baer Projects Pvt Ltd	18 <sup>th</sup> Aug 2010	300.0
Morgan Stanley Infrastructure	Asian Genco Pvt Ltd	18 <sup>th</sup> Mar 2010	425.0

Source: Thomson One Banker, Economic Times, Aranca Research

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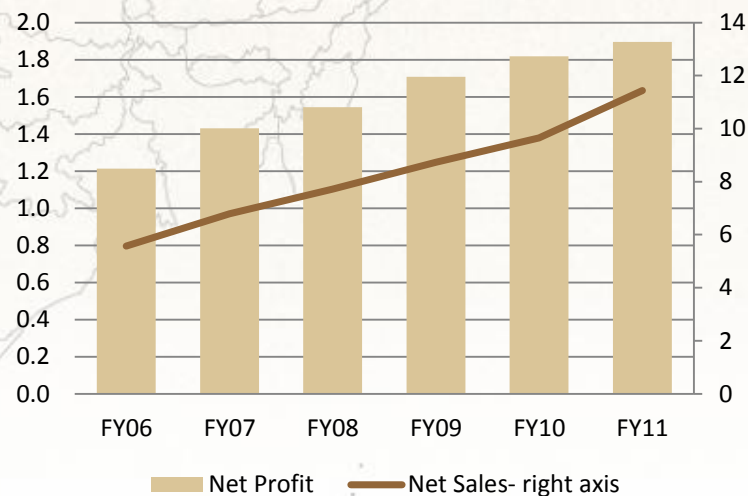
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## NTPC: A public sector success ... (1/2)

- During FY06–11, NTPC’s revenues increased at a CAGR of 15 per cent; CAGR in profits was 9 per cent
- NTPC accounts for 17.8 per cent of total capacity, but contributes 27.4 per cent of total power generation
- The company has an installed capacity of 34,854 MW; projects worth more than 14,000 MW are underway

Notes: NTPC – National Thermal Power Corporation, Aranca Research

Top line and bottom line (USD billion)



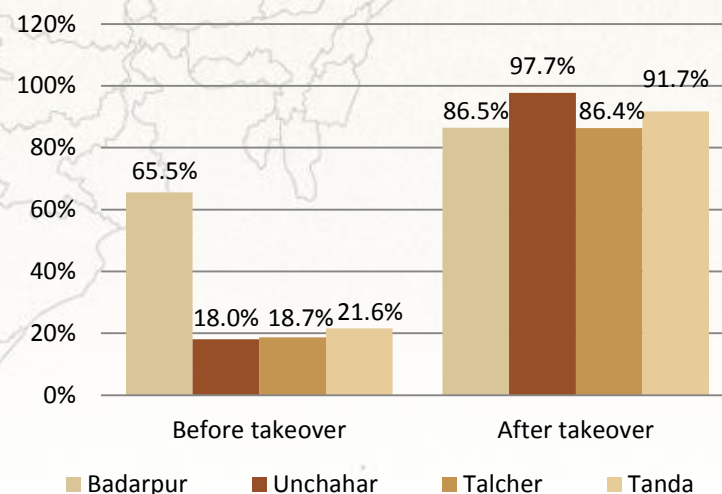
Source: NTPC website, annual reports, Economic Times, Aranca Research

## NTPC: A public sector success ... (2/2)

- NTPC has taken over and successfully turned around a number of sub-optimally performing stations
- High operational efficiency (indicated by plant load factor and availability factor) is NTPC's trademark
- It is a pioneer in high-efficiency supercritical and ultra supercritical coal-based power plants in India

Notes: NTPC – National Thermal Power Corporation, Aranca Research  
PLF - Plant load factor, After Takeover- figures for FY08

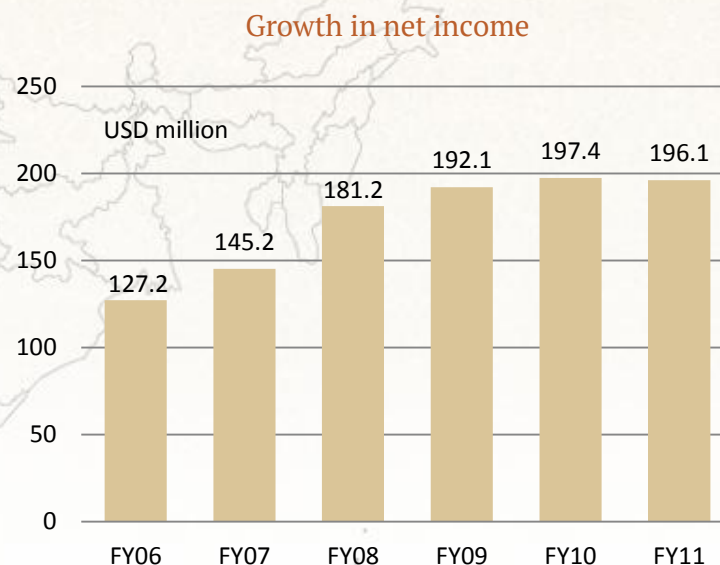
Impact of NTPC takeover of sub-optimal plants (PLF)



Source: NTPC website, Annual Reports, Economic Times, Aranca Research

## Tata Power: Forging ahead in the private sector ... (1/2)

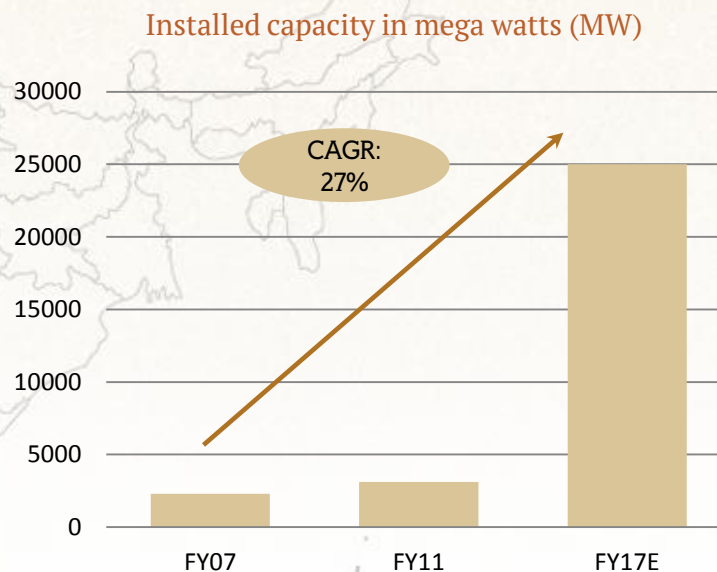
- During FY06-FY11, Tata Power's profits increased at a CAGR of 9 per cent
- The company is developing the first 4000 MW Ultra Mega Power Project at Mundra (Gujarat) based on super-critical technology
- It has the largest installed capacity for wind power



Source: Company website, annual reports, Economic Times, Aranca Research

## Tata Power: Forging ahead in the private sector ... (2/2)

- The company estimates its installed capacity to grow eight-fold in the next six years (CAGR of 27 per cent from FY07 and 41 per cent from FY11)
- Recognising the enormous potential in renewable energy, the company intends to increase the share of renewable sources to 25 per cent of its total generating capacity



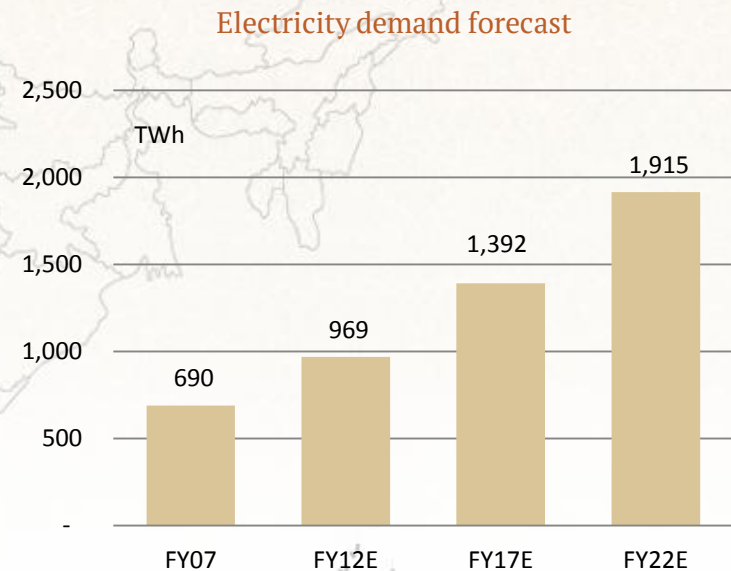
*Source:* Company website, FY17 estimate as per press release, 15th July 2011

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## Power generation: Overall fundamentals will remain strong ... (1/2)

- Demand for electricity is expected to grow at a CAGR of 7 per cent over FY07-FY22 to 1,915 TWh
- Current production levels are not enough to meet demand; annual demand outstrips supply by 7-12 per cent



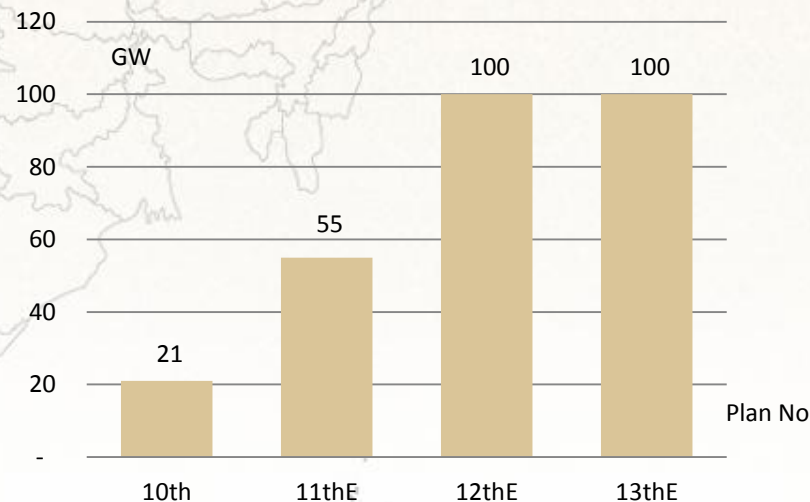
Source: International Energy Agency (IEA), demand estimates based on IEA forecasts, Aranca Research

## Power generation: Overall fundamentals will remain strong ... (2/2)

- The government has targeted capacity addition of 100,000 MW each in the 12th Plan (2012-17) and 13th Plan (2017-22)
- The focus is on promotion of hydro, renewable and gas-based projects, and adoption of clean coal technology

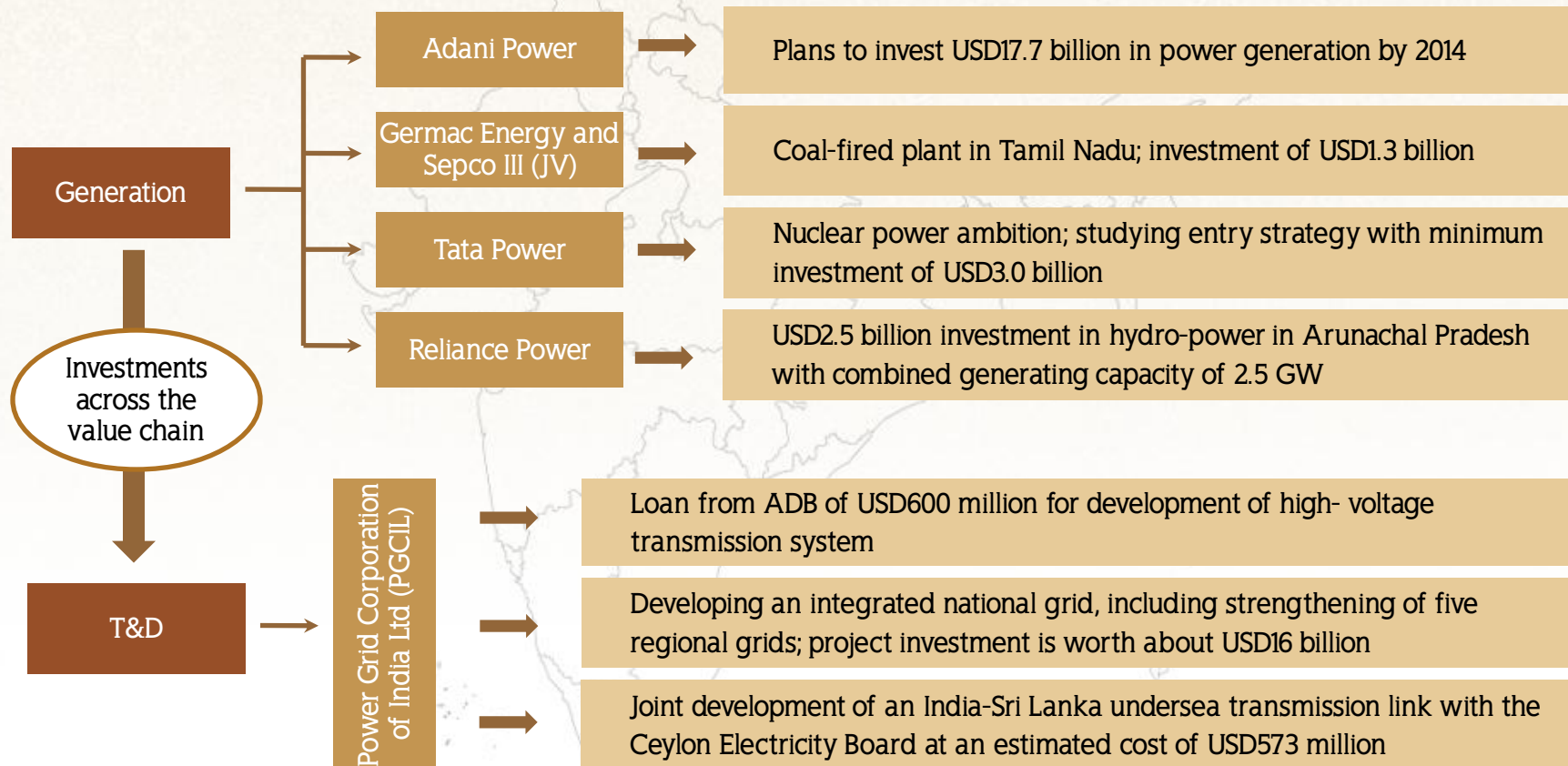
Notes: FY – Indian financial year (April-March), GW- gigawatt  
CAGR- Compound Annual Growth Rate, TWh- terawatt-hour,  
E- estimates

Addition to generation capacity under Five Year Plans



Source: Business Standard, capacity addition estimates by Central Electricity Authority (CEA), Aranca Research

## Current trends point to opportunities across the value chain



Source: BMI India power report Q3 2011, Aranca Research

Notes: JV – Joint venture, T&D – Transmission and distribution, GW- gigawatt

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## Industry Associations ... (1/2)

### **Council of Power Utilities**

A-2/158, Janakpuri, New Delhi-110058, India

Tel : 91 11 25618472, 45652708

Fax : 25611622

E-mail : [cvjvarma@gmail.com](mailto:cvjvarma@gmail.com), [cvjv1933@yahoo.com](mailto:cvjv1933@yahoo.com)

Web site: [www.indiapower.org](http://www.indiapower.org)

### **Hydro Power Association (India)**

Flat no 6, Green Park Apartment, Shriram Society, Warje, Pune -  
411058, Maharashtra, India

Tel: 91 20 25233338

E-mail: [hypaindia@gmail.com](mailto:hypaindia@gmail.com), [president@hpaindia.org](mailto:president@hpaindia.org),  
[secretary@hpaindia.org](mailto:secretary@hpaindia.org)

Website: <http://hpaindia.org/>

### **Bureau of Energy Efficiency (BEE)**

Ministry of Power, 4th Floor, SEWA Bhawan, R. K.Puram, New Delhi  
– 110066, India

Tel: 91 11 26179699

Fax: 91 11 26178352

E-mail: [webmanager-bee@nic.in](mailto:webmanager-bee@nic.in)

Website: <http://www.beeindia.in/>

## Industry Associations ... (2/2)

### Indian Wind Energy Association (INWEA)

PHD House, 3rd Floor, Opp. Asian Games Village, August Kranti

Marg, New Delhi-110016, India

Tel : 91 11 26523042

E-mail : [manish@inwea.org](mailto:manish@inwea.org)

Web site: <http://www.inwea.org/>



## Glossary ... (1/2)

- **CAGR:** Compound Annual Growth Rate
- **FDI:** Foreign Direct Investment
- **FY:** Indian Financial Year (April to March)
  - So FY10 implies April 2009 to March 2010
- **GW:** gigawatt
- **M&A:** Merger and Acquisition
- **MW:** Megawatt
- **NBFC:** Non-Banking Financial Company
- **PE:** Private Equity
- **PLF:** Plant Load Factor
- **R&D:** Research and Development

## Glossary ... (2/2)

- **R-APDRP:** Restructured Accelerated Power Development and Reform Programme
- **T&D:** Transmission and Distribution
- **TWh:** terawatt-hour
- **USD:** US Dollar
  - Conversion rate used: USD1= INR48
- Wherever applicable, numbers have been rounded off to the nearest whole number

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