Indian Power Utilities

TAMASO MA JYOTIRGAMAYA…
from darkness unto light…

Mansingh Deshmukh
Deepali Gautam

June 6, 2008

Contents

Indian Power Sector - Dreams vs. Reality

- **International Energy Agency**
  - Forecasts electricity demand for India at 1167TWhrs (by 2030), which is ~15% of the global demand of 7785TWhrs (World Energy Outlook, 2006.)
- **World Energy Council**
  - Projects that India's primary energy demand growth will average at 5-6% p.a. till 2050. (Energy Scenario 2050).
- **Planning Commission**
  - Projects a rosy picture with peak electricity demand of 592GW at 8% GDP growth and 733GW at 9% GDP growth (Integrated Energy Policy 2032).

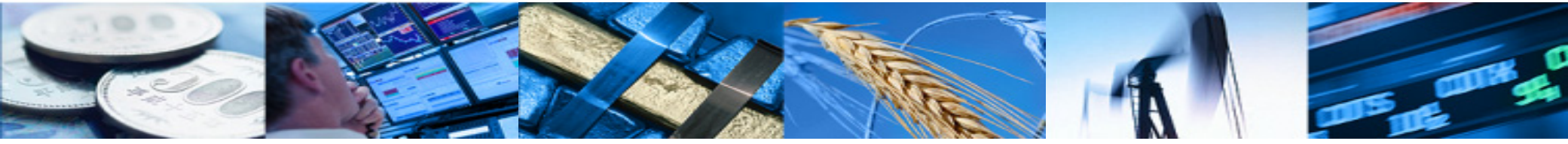
Can India meet this demand?

Or, will the past be repeated?

What does this hold for industry majors?

What are the trends in recent times that will help meet this target?

- These are some of the issues we have tried to address in the following report.
  - We have covered the evolution of the sector to provide better understanding of present developments.
  - We have covered the regulations already in place and the ones under implementation and their impact on the sector.
  - We have touched upon the fuel security and infrastructure bottlenecks.
  - And, finally, we provide our best assessment of the demand-supply scenario for the next five years.



India’s standing in the Global Power Market

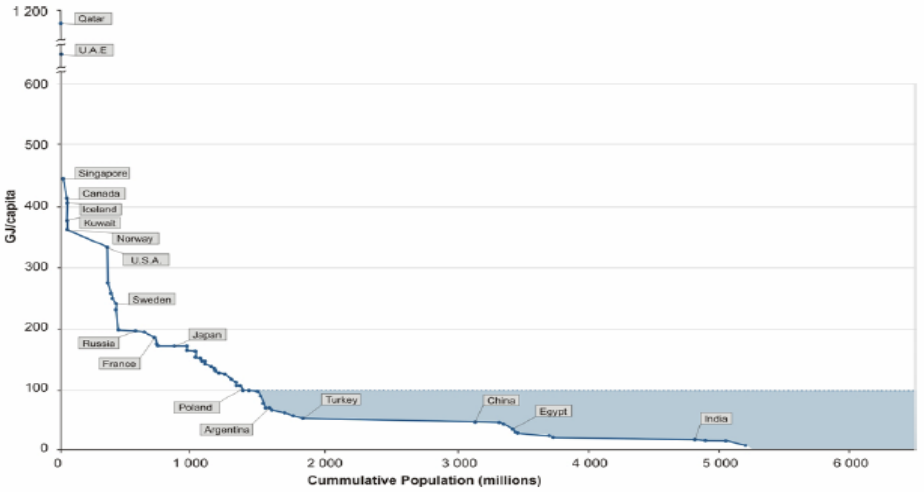
Growing confidence amongst global think-tanks

Positioning on the Global Energy Scale

Optimistic WEC outlook

INDIAN POWER UTILITIES

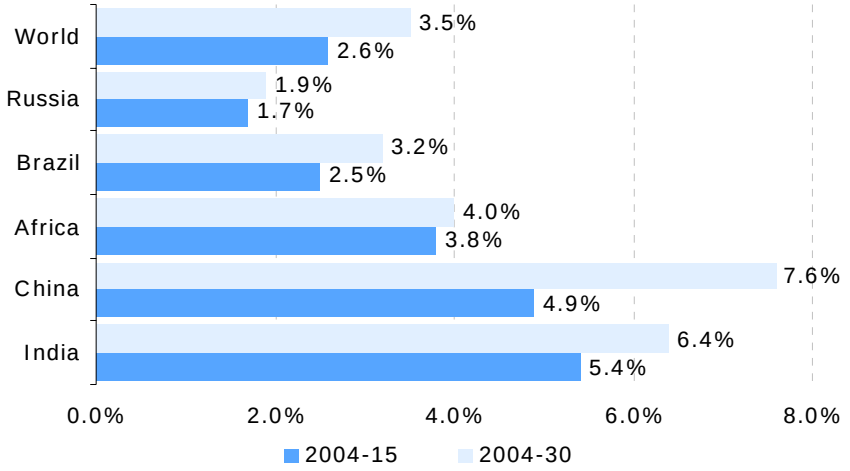
Per capita energy consumption as a function of the country's population



- Though China is expected to witness de-acceleration in population growth towards 2050, the WEC Report highlights that population growth in India will continue at 1.1% p.a.
- The Report highlights higher economic growth for India, exceeding that of China, from 2035 onwards.
- Primary energy growth for Asia is projected to grow at 2-3% p.a. up to 2050, while China & India is expected to account for almost 60% of this growth. Coal, followed by oil and gas, would be the primary sources of fuel.

- Both India and China are placed far below the minimum standards set by the World Energy Council (WEC) of 100GJ/per capita.
- The WEC report states that almost 2bn (~33%) of the total 6bn of the world's population lives in a condition of nearly zero power consumption.
- China & India together account for a major portion of this zero power consumption, after Africa and certain Latin American countries.
- Both China & India are undergoing rapid economic growth, which would significantly improve this scenario.

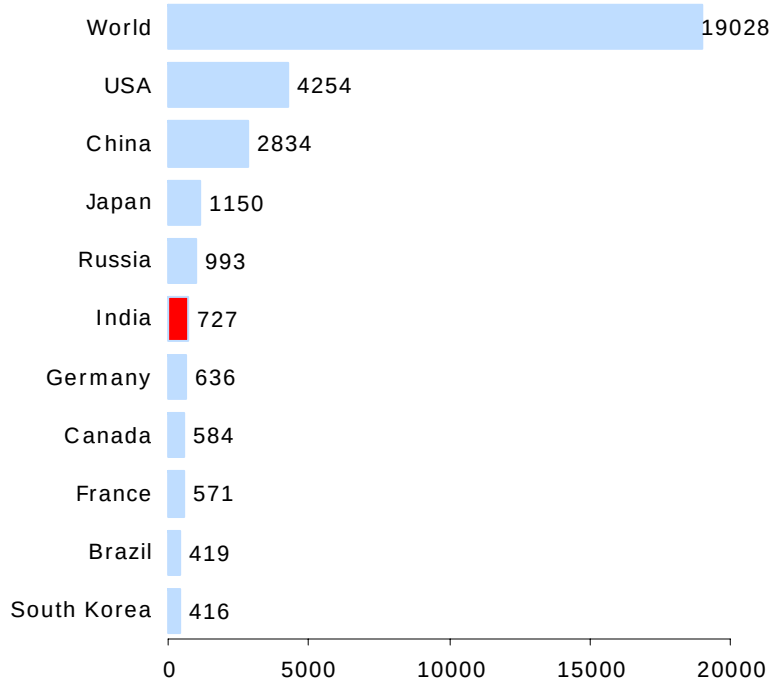
WEC - Country-wise electricity demand growth 2004-30



Source: World Energy Council, International Energy Agency, Planning Commission, MF Global India Research

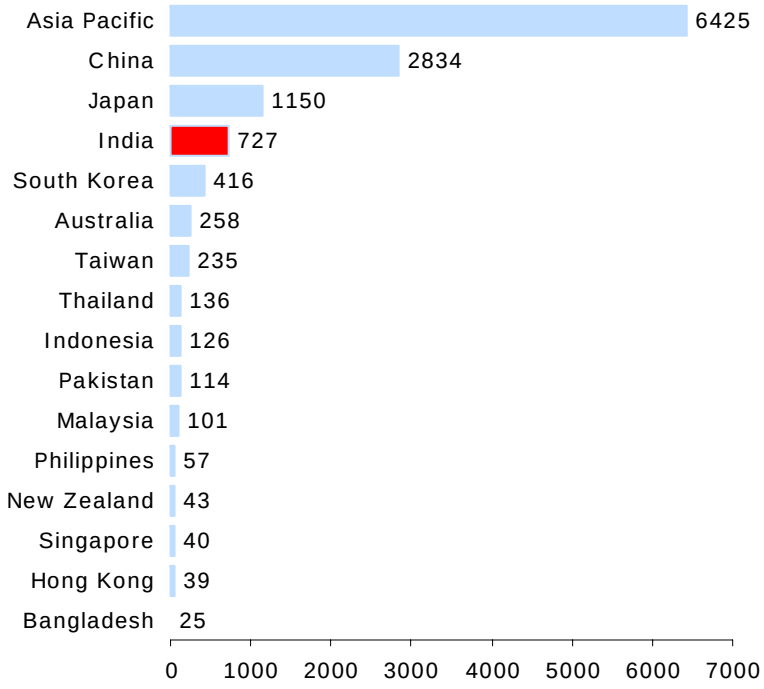
Global peer comparison
A long way to go

India ranks fifth amongst global peers



- On a world basis, India ranks as the fifth largest power-consuming country with a total share of 3.8% of the world power consumption of 19027.7 TeraWHrs.
- US still ranks first, accounting for 22.4%, while China ranks second and accounts for 14.9% of the world power consumption.

India ranks third amongst its Asian peers



- Amongst the Asia Pacific countries, China ranks first and accounts for almost 44.1% of the power consumption, followed by Japan at 17.9%.
- While India ranks the third largest, it accounts for 11.3% of the power consumption in the region. On a per capita basis, India still lags far behind, both the world as well as the Asia-Pacific average.

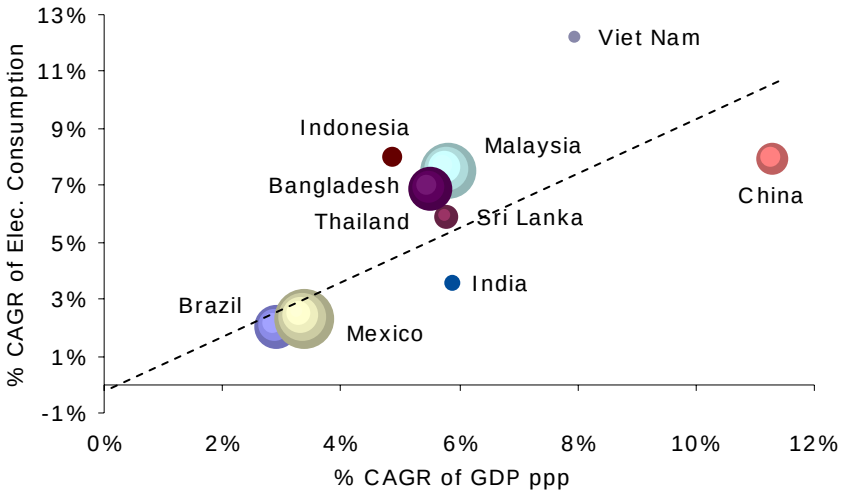
Source: International Energy Agency, MF Global India Research

Per capita GDP to power consumption

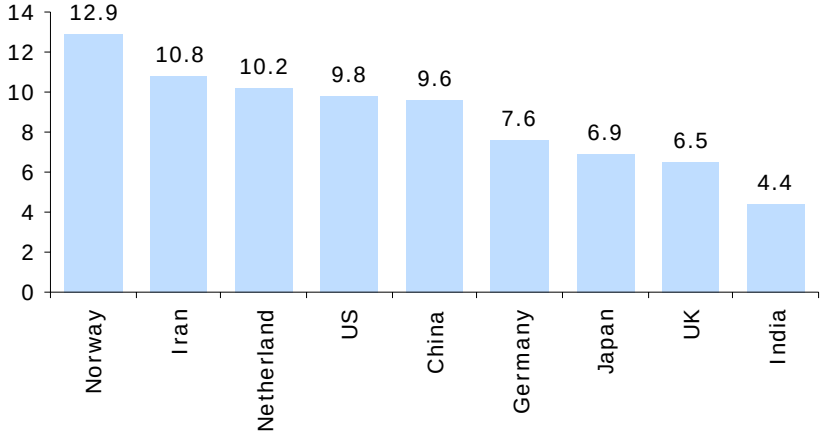
The direction is clear

- A study of per capita power consumption and its correlation to per capita GDP, amongst Asia-Pacific countries, shows both China and India below the regression trend line.
- This could be attributed to the higher population size and population density compared to its peers. Due to this, most of the common utility-based power consumption is used more efficiently.
- We expect India to closely follow China's path on this chart, resulting in higher growth in per capita power consumption with an increasing per capita GDP growth.

Both India & China below the world average trend line



Energy efficiency (MJ/USD GNP) – more efficient amongst global peers



- The chart shows the lowest million joules to US$ of GNP for India at 4.4 as against 9.6 for China, primarily showing higher energy efficiency.
- We believe that the higher share of services in the total economy output and the continuing high share of labour in manufacturing partially contributes to this.
- Superior energy-efficient technology implementation amongst industry will also contribute to this.

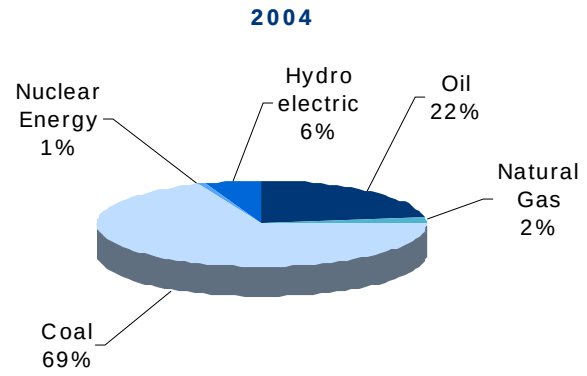
MF Global

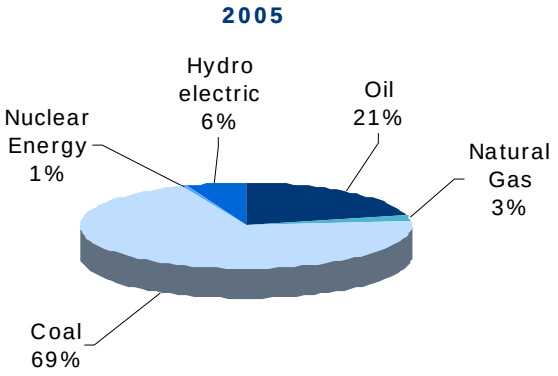
Source: World Energy Council, International Energy Agency, MF Global India Research

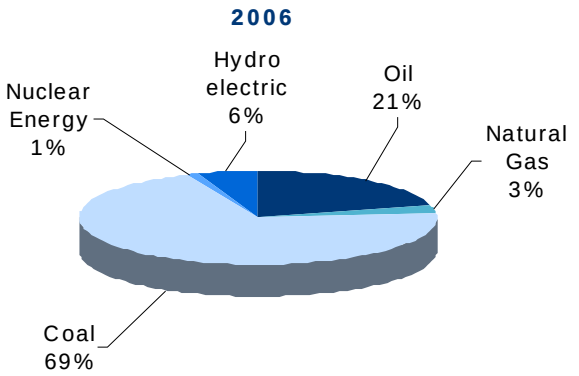
India & China Energy Mix

Coal is predominant in both

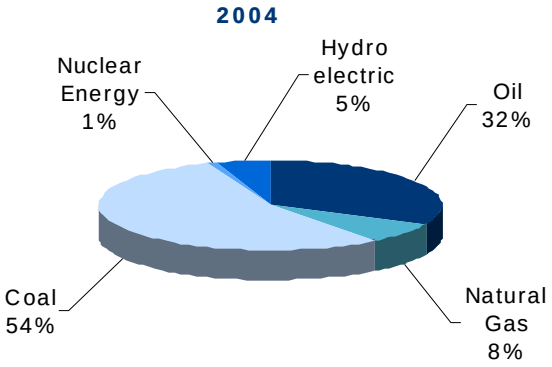
CHINA

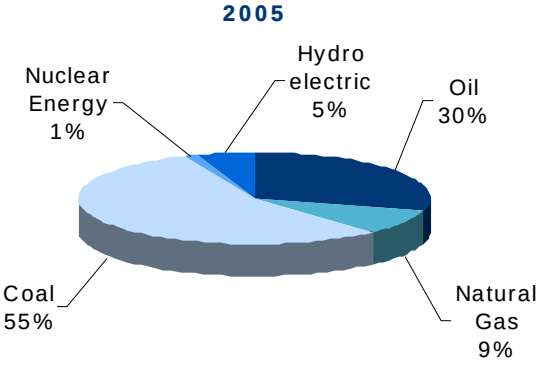


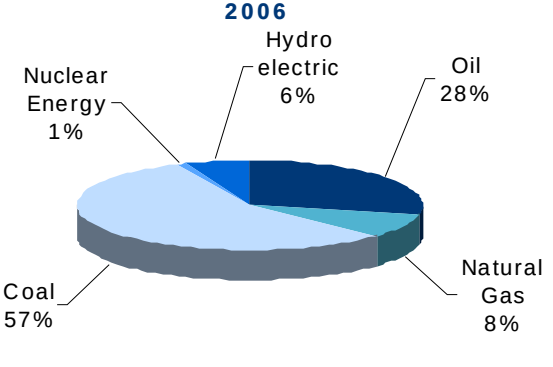




INDIA



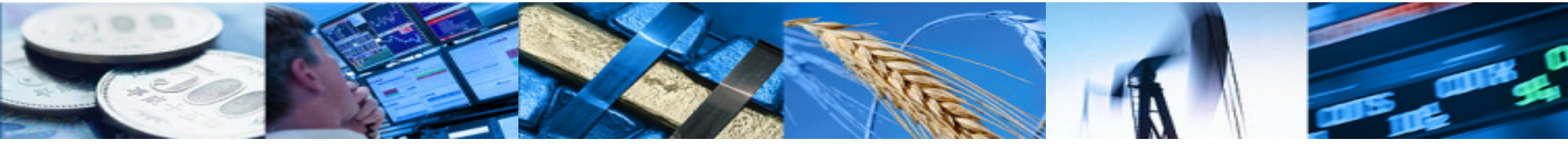




- Coal continues to play an important role in the energy mix for both India and China, the fast-growing economies in Asia.
- India enjoys the third largest coal reserves in the world, followed by new found gas reserves as a potential source of energy.
- Development of these coal reserves would be the major challenge for the country.
- Quality of coal, availability of transport infrastructure (rail, ports) would pose the second major challenge.

MF Global

Source: International Energy Agency, MF Global India Research



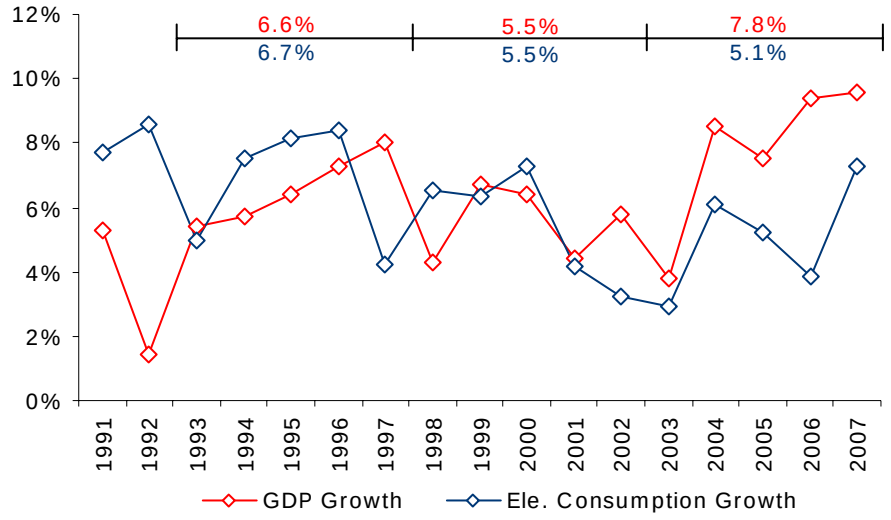
Economic Growth & Demand-Supply equation

It's no more a matter of choice, but a compulsion

Factors of Growth

GDP & Power, a case for close correlation

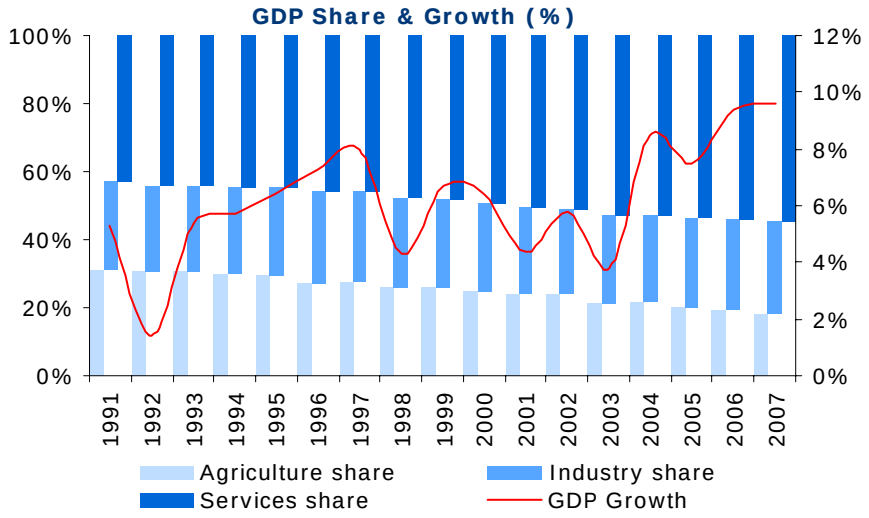
15-year Electricity Consumption Growth is in sync with annual GDP growth



- Services are already at 54% of the total GDP. A robust growth in industry, on the back of an infrastructure and capex cycle, would improve industrial consumption of power.
- Rising personal income and a widespread demand for domestic-use electric gadgets would lead to additional growth in the urban and semi-urban domestic power consumption.

- A recent slowdown in the five-year average growth in electricity consumption at 5.1% is on account of improving efficiency and the higher share of services in the overall growth of the economy.
- With a sustained GDP growth of 8%+, we are confident of electricity consumption growth at 6.3%+ levels.

Rising Services Sector – Improving Per capita contribution



Source: Planning Commission, Ministry of Power, MF Global India Research

GDP & Power
An element of compulsive growth

- The Integrated Energy Policy has highlighted that elasticity of electricity generation w.r.t. GDP has come down from 1.3x (for the period between 1980-81 to 2003-04) to 1.06x (for the period between 1990-91 to 2003-04).
- Elasticity is further expected to fall to 0.95x by the end of the XIth Plan period, 0.85x by the end of the XIIIth Plan and down to 0.78x by the end of the XVth Plan.
- The projected electricity requirement as per the Integrated Energy Policy is as given below;

Plan Name	Plan Period	Total Energy Requirement (BUs) @ GDP Growth Rate		Energy Requirement at Bus Bar (in BUs) @ GDP Growth Rate		Projected Peak Demand (in GW) @ GDP Growth Rate		Installed Capacity Required (in GW) @ GDP Growth Rate	
		8%	9%	8%	9%	8%	9%	8%	9%
	2003-04	633	633	592	592	89	89	131	131
End Xth Plan	2006-07	761	774	712	724	107	109	153	155
End XIth Plan	2011-12	1097	1167	1026	1091	158	168	220	233
End XIIth Plan	2016-17	1524	1687	1425	1577	226	250	306	337
End XIIIth Plan	2021-22	2118	2438	1980	2280	323	372	425	488
End XIVth Plan	2026-27	2866	3423	2680	3201	437	522	575	685
End XVth Plan	2031-32	3880	4806	3628	4493	592	733	778	960
25 yrs % CAGR		6.7%	7.6%	6.7%	7.6%	7.1%	7.9%	6.7%	7.6%

Auxiliary consumption considered constant at 6.5%

Lower growth in installed capacity of 7.6% CAGR as against 7.9% CAGR for projected peak demand is on account of improved effective PLF from 67.9% in 2003-04 to 76.1% in 2031-32

Our assessment of demand & supply for the XIth Plan is given in the following page.

Source: Planning Commission, MF Global India Research

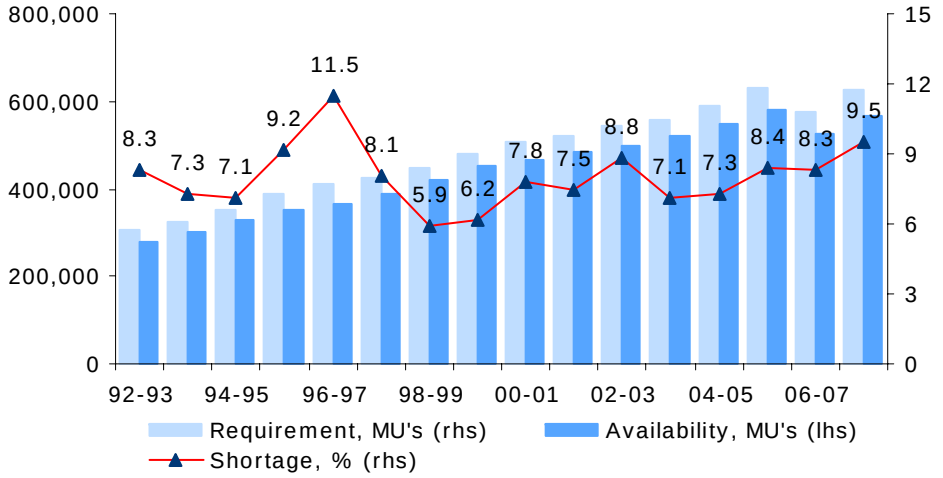
Demand, Supply & Shortage

Could this be a never ending story?

- Even though power availability has witnessed a 4.8% CAGR over the last fifteen years, 2.7% over the past five years, power requirement has witnessed a higher CAGR of 4.9% and 2.9% in the same period.

- Energy shortage has thus remained fairly constant in the 7.1%-9.5% range and touched a high of 11.5% in 1996-97. In the last ten years, the power shortage has increased from a low of 5.9% in 1998-99 to 9.5% in 2007-08.

Demand, supply and energy shortage trend 1993-2007



- This shortage is partially due to generating capacity constraints, but we cannot ignore that a significant 30% of the total supply has been lost due to transmission and distribution (T&D) losses and also, power has not been generated due to the lack of fuel availability, as seen from the trends for PLF and T&D losses.

- Also, the energy requirement does not provide the full picture of power demand. In some of the states, the average power supply is as low as 10–12 hours for industrial consumers, while it is 6–7 hours for domestic and agriculture consumers. Even though we are confident of robust growth in power generation and thus, availability, we believe that this energy shortage will continue for at least another two Plan periods, while we foresee a significant reduction in peak shortage on account of augmented transmission infrastructure.

MF Global

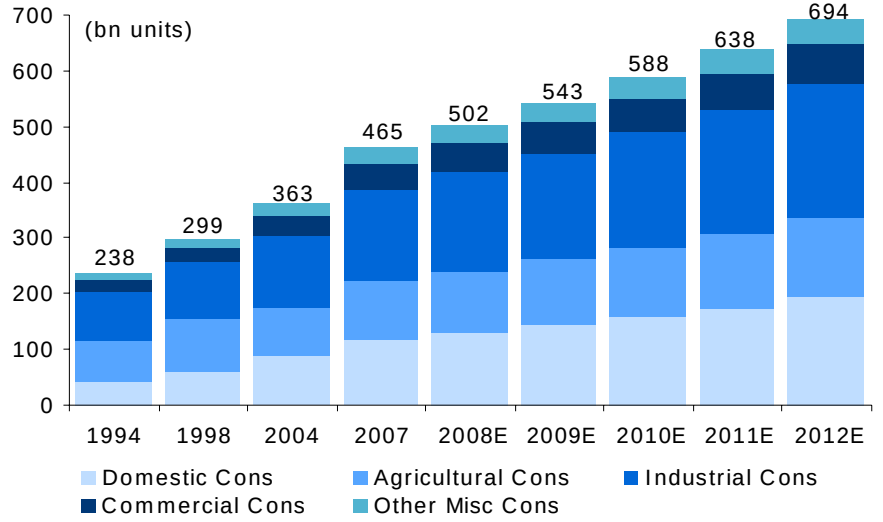
Source: Ministry of Power, MF Global India Research

Demand dynamics

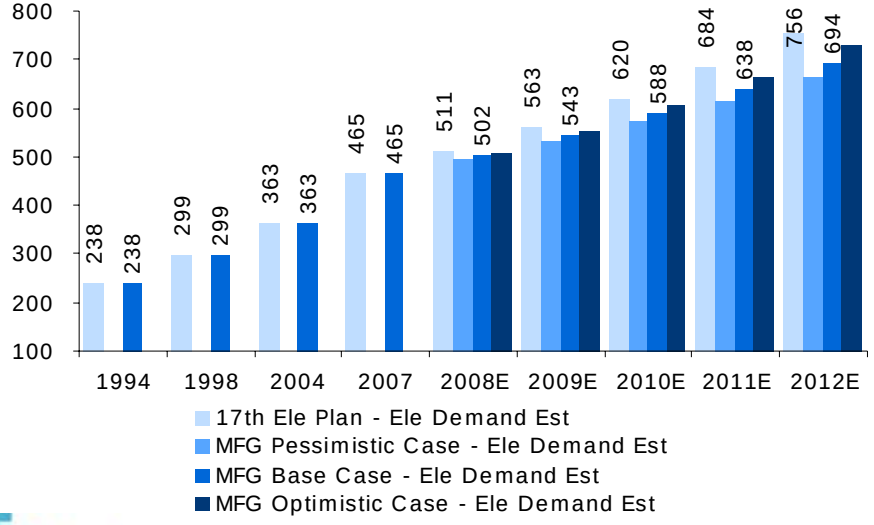
Factor of availability and affordability

- Power demand is rising with the Xth Plan CAGR of 7.0% as against the 5.3% CAGR for the past 13 years (between 1994-07).
- Industry has been the major consumer, with ~35.6% share of total consumption and is followed by domestic users (~25.8%) and agriculture (~22.4%).
- The 17th EPC Report estimates highest CAGR of 13% for the domestic segment, followed by 10.6% CAGR for the commercial segment and 9.5% and 9.2% for Industrial and Other Miscellaneous and Utilities segment, respectively. Overall growth is at 10.2% CAGR.

Electricity Demand estimate in BUs - five major Consumption Groups



Consumption demand estimate (BUs)



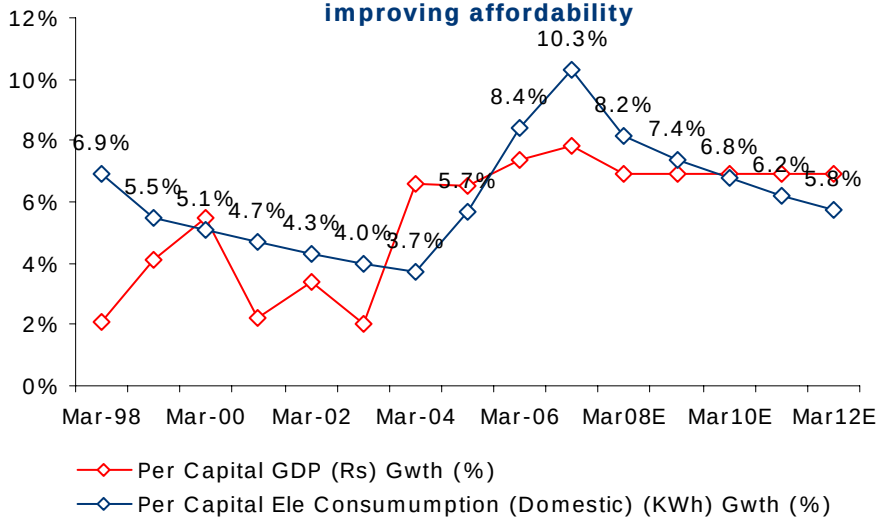
- We are positive on the overall higher GDP growth in the economy and focussed government policy initiatives towards Power For All by 2012.
- Growth in industry on the back of a continued upswing in the capex cycle and higher demand for industrial goods (on account of rising per capita disposable income of past services) lead economic growth.
- As a conservative estimate, we expect power consumption to grow at a 8.4% CAGR to touch 694BUs (2012) as against 756BUs projected by the 17th EPC Report.

Source: Central Electricity Authority, Ministry of Power, MF Global India Research

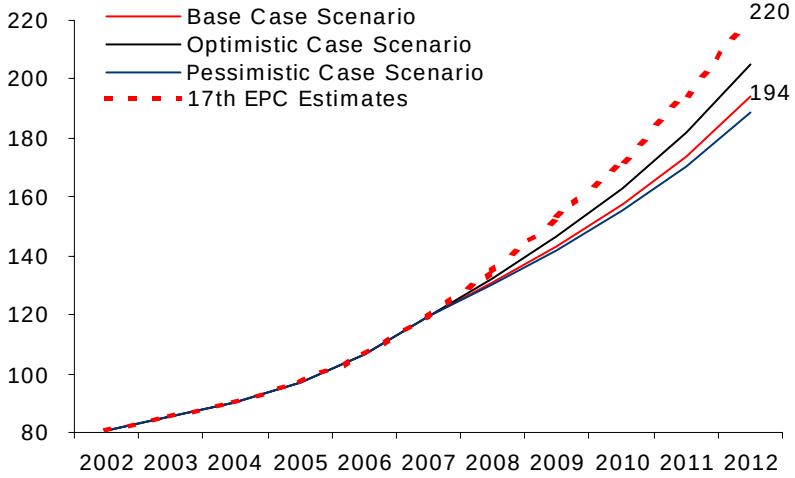
Domestic Demand
A product of rising income

- Domestic consumption is in sync with per capita GDP as seen from the data for the past 13 years-a strong correlation of 0.9947.
- XIth 5-year Plan annual GDP growth estimate of 8.5% and our 5-year population CAGR of 1.5%, per capita GDP is estimated to grow at a higher rate of 6.9% as against the 13-year CAGR of 4.8% up to 2007.
- Going by the global trend, we expect that the per capita GDP-to-per capita energy Multiplier would improve, resulting in higher 5-year CAGR in electricity consumption at 10.2% as against 8.1% (13-year CAGR).

Domestic consumption demand growth – Story of improving affordability



Domestic Electricity Consumption (in Bn units) – 17th EPC Report & MF Global Estimate



- Our domestic demand estimates continue to be lower than that of the Ministry of Power estimates (17th EPC Report) at 194BUs as against 220BUs. Our lower estimates account for the expected slowdown from global imbalance in the near term.
- A quicker recovery in the global slowdown could cause a pick-up in domestic electricity consumption, but this figure would still continue to be below the MOP estimate. Our optimistic estimates target this figure at 205BUs (5-year CAGR of 11.4%) as against the 17th EPC estimate of 13%.

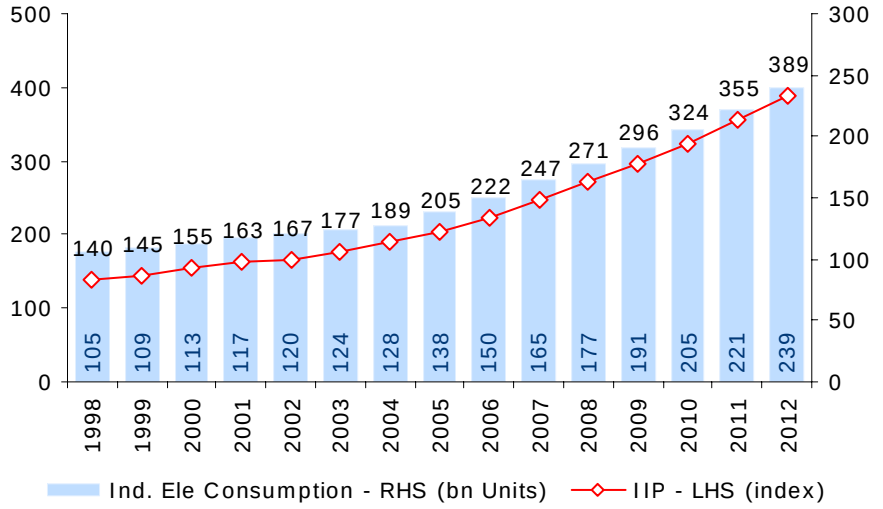
Source: Central Electricity Authority, Ministry of Power, MF Global India Research

Industrial Demand

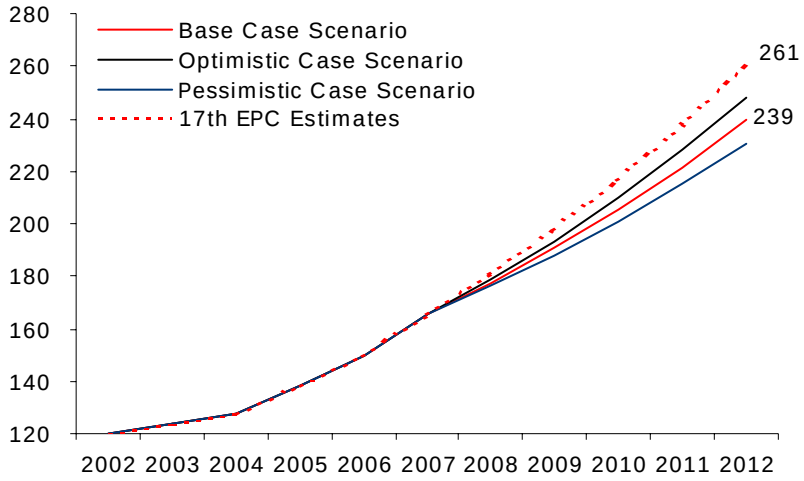
The up-cycle continues

- Industry is the largest consumer of electricity and highly correlates to the IIP index– A strong correlation of 0.9891.
- The correlation between the IIP index and GDP-Ind has been also high at 0.9929.
- With the GDP-Ind targeted to grow at 9.5% CAGR over the next 5 years, we project industrial electricity consumption will grow at a 5-year CAGR of 7.7% in the XIth Plan.

Industrial Consumption – intrinsic growth lead by Infrastructure & Capital Goods



Industrial Ele. Cons. (BUs) 17th EPC & MF Global Estimates



- Our industrial electricity demand estimate of 239BUs (base case) is lower than MOP estimates (17th EPC Report) at 261BUs. This lower estimate accounts for the increasing efficiency due to more value-added products and energy management techniques.
- Our optimistic estimates target industrial electricity demand at 248BUs (5-year CAGR of 8.5%) as against the 17th EPC estimate of 9.5%.

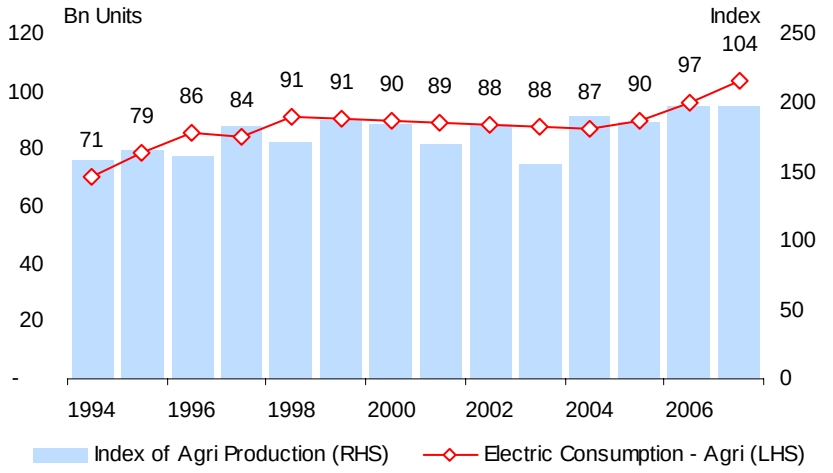
Source: Central Electricity Authority, Ministry of Power, MF Global India Research

Agriculture Demand

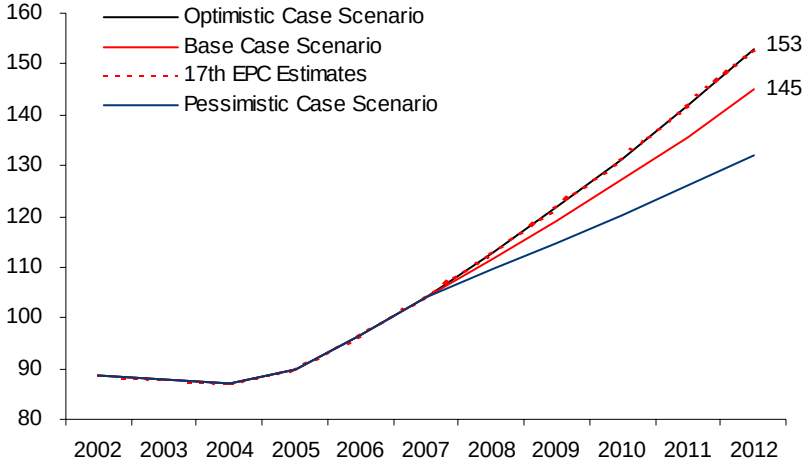
A product of increasing government priority

- Agriculture is the third largest consuming segment of electricity. The electricity consumption trend in this segment has been inconstant in the past. One of the major reasons for this has been the irregular load staggering policy and the impact of elections.
- With increased government focus on agriculture, the inclusion of the rural sector in the overall GDP growth, and improving transmission infrastructure, we expect an improvement in the timing of supply.
- The 17th EPC Report projects an 8.0% CAGR in agricultural electricity consumption.

Loose correlation – Agriculture Electric Consumption to Agriculture Production Index



Industrial Electricity Consumption (BUs)
17th EPC & MF Global Estimates



- We expect electricity consumption for the agriculture segment (base case) to grow at 6.7% CAGR to 145BUs (2012) as against 104BUs (2007).This base case scenario assumes GDP-Agriculture to grow at a CAGR of 3.5%.
- Policy initiatives, like the APDR scheme, and metering agricultural electricity consumption, would make SEBs more accountable. Our optimistic estimate coincides with the 17th EPC Report estimate of 8% CAGR in agricultural electricity consumption.

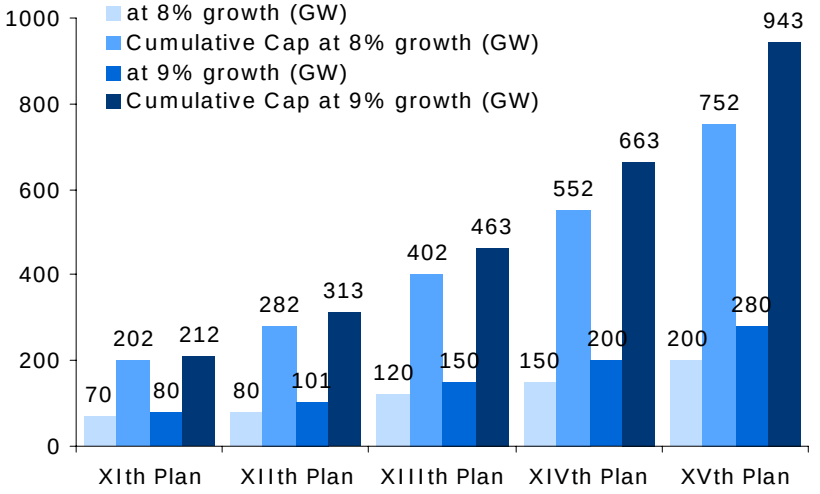
Source: Central Electricity Authority, Ministry of Power, MF Global India Research

Supply Scenario

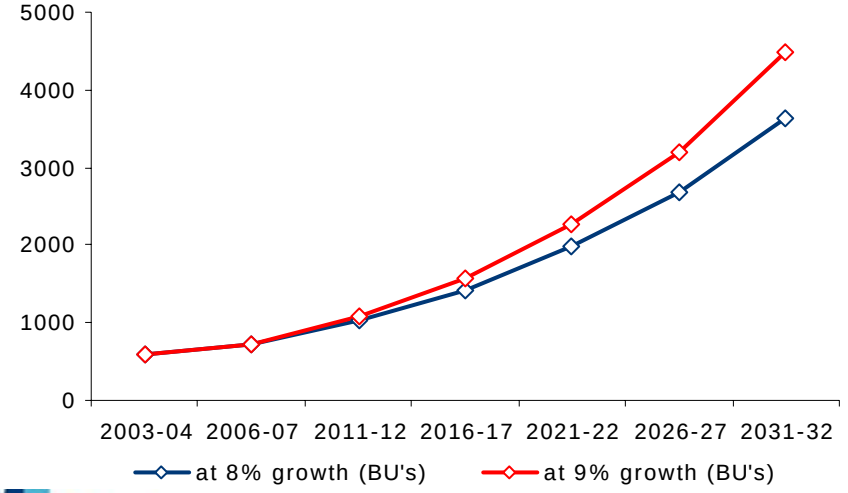
Catching up, but still a long way to go

- The XIth Plan document and the Integrated Energy Policy has stressed on the importance of energy (electricity) in order to maintain the government's ambitious GDP growth target.
- Effective projected capacity addition is targeted at 7.2% and 8.2% CAGR under the 2-GDP growth scenario (8% and 9%, respectively).
- For the XIth Plan, the MOP has targeted 78.57GW in capacity addition, while IEP targets 70GW. We have clear visibility for 50GW as on end of 2007. We expect that the private power companies could contribute an additional 8-10GW, which is not considered in the government's estimates.

Ambitious capacity expansion planned for the next 25 years



Effective generating capacity (BUs)



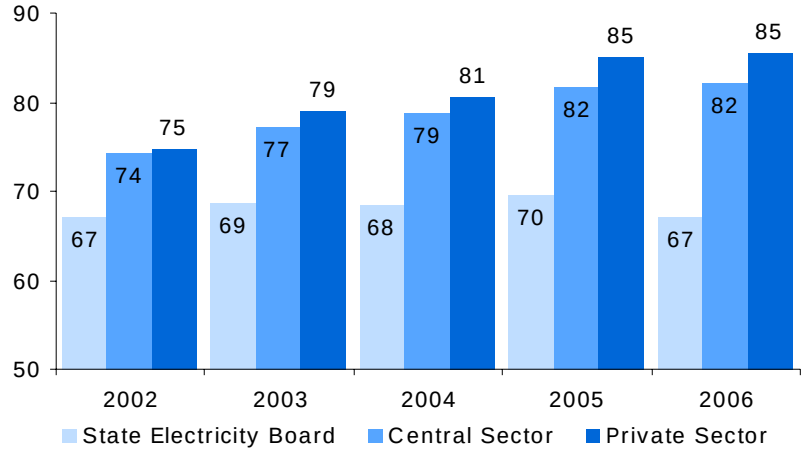
- Effective generating capacity addition in terms of billion KWhrs is targeted to register a growth of 6.7% (for GDP growth at 8%) and 7.6% (for GDP growth at 9%).
- Going by past experience, limitation of transmission network, T&D losses, and demand-supply mismatch have always led to actual availability at the load end being much below the installed generating capacity. For example, the actual availability for 2003-04 was at 519.4BUs as against technical capacity of 592BUs, while it was at 527BUs (actual availability) as against 711 BUs (technical capacity) for 2006-07.

Source: Central Electricity Authority, Ministry of Power, MF Global India Research

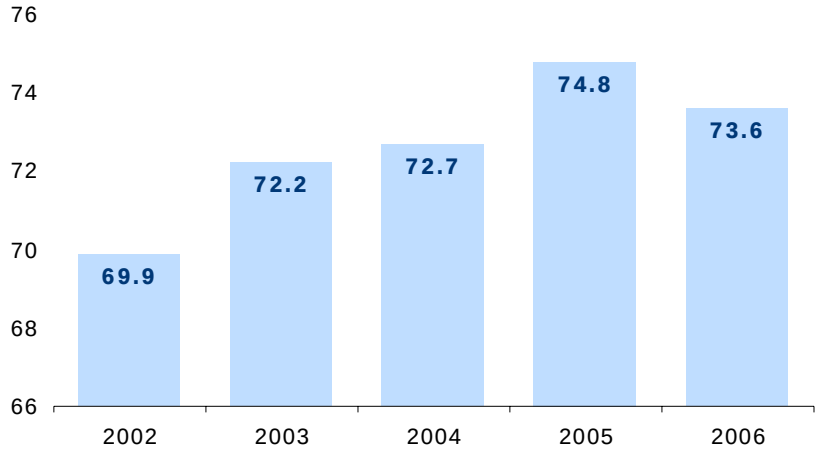
Improving Thermal PLF
Provides additional supply

- PLF for the central and private sector has been showing signs of improvement in the recent past.
- With improving inter- and intra-regional transmission infrastructure, as projected for the XIth Plan period, and better load management through NLDC, we expect significant improvement in PLF over the next five years.
- Improvement in the availability of coal through imports and increased captive coal mining would also increase PLF for thermal power plants.

Generating asset-wise trends in Thermal PLF (%)



All-India Thermal PLF (%)



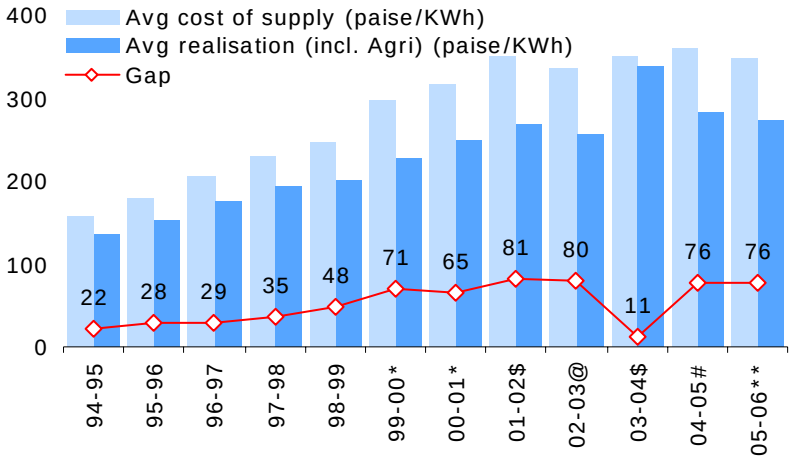
- We project that All-India PLF will improve from the current 73.6% for FY06 to almost 79% by the end of the XIth Plan period (FY12), and to 83% by the end of the XIIth Plan period (FY17).
- Additional PLF could also come from commercialisation of UMPP from the XIIth Plan period onwards and short-term utilisation of thermal power plants from sales on the Energy Exchange.

Source: Central Electricity Authority, Ministry of Power, MF Global India Research

Improving financial health of SEBs

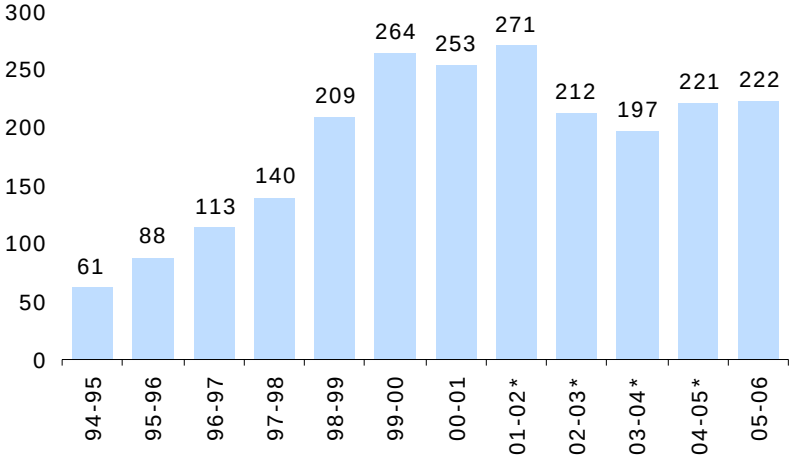
- SEBs still account for the majority share of total power distribution in the country. It is the pricing policy of these SEBs that would define the future financial health of this sector.
- Except for the year 2003-04, the gap between average cost of power supply and average sales realisation has been on the rise from 22 paise/unit in 1994-95 to 76 paise/unit in 2005-06.
- Reforms at the SEB level would liberate these distributing companies from the state government's interference in power pricing. An increase in power procured through competitive tariffs would reduce this gap.

Average Cost of Power & average tariff (paise/unit)



** For 14 SEBs $ For 14SEBs@ For 9 SEBs # For19 States (32 Utilities)*
*** For18 States(20 Utilities)*

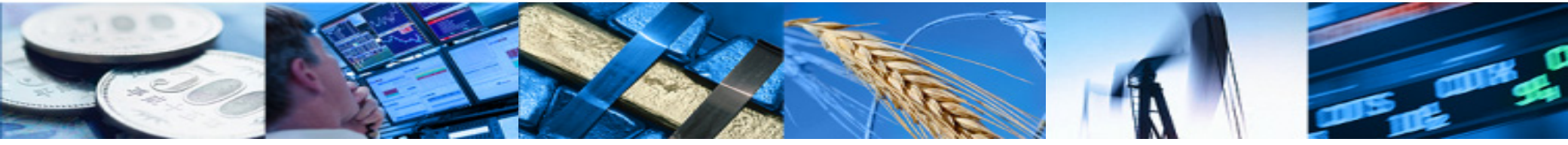
AT&C losses of all SEBs (Rs bn)



- AT&C losses have been another major factor for the poor health of the sector. All-India AT&C losses have touched Rs 222.5billion (2006).
- We expect that the modified APDRP programme would ease the pressure due to technical losses. There is an increasing recognition (amongst SEBs and the State Government) of the ill effects of power theft and this would make the collection process more stringent.

MF Global

Source: Central Electricity Authority, Ministry of Power, MF Global India Research

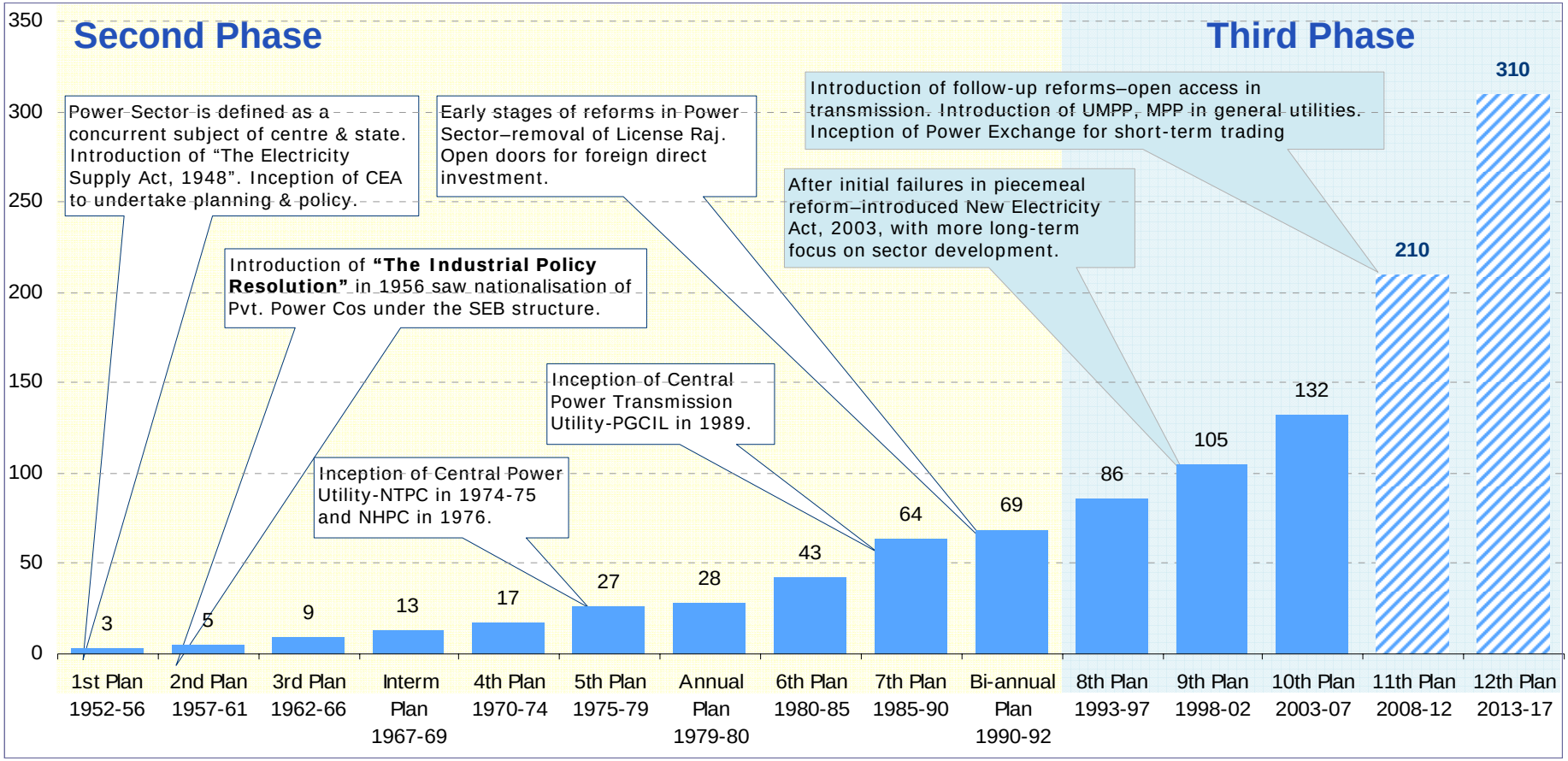


Evolving Industry Structure, Reforms & Politics

With its house finally in order, the business environment is just ripe for growth

Evolution of Power Sector

Third phase gathers pace



We believe that the power sector stands at an inflection point as the Electricity Act, 2003 is already in place and follow-up reforms will provide a more holistic approach in the planning process. The third phase, which started from 1991, would finally gather added momentum for growth. We expect that policy/reforms initiatives, on the distribution front, would further boost growth in the power sector.

Source: Ministry of Power, MF Global India Research

Evolution of the Power Sector

The second phase of the India story

- The evolution of the Indian power sector can be broadly classified under three time periods; Pre Independence Era (1897-1947), Post Independence Era (1947-1991), and New Post Reform Era (1991 onwards), with some intermediate periods of specific policy initiatives.
- **Pre-Independence Era:** Dates back to the setting up of the first hydro plant at Darjeeling in 1897, followed by the thermal stem generation plant in 1898. This era was marked by the emergence of load centric, fully integrated, private power companies, guided by The Electricity Act, 1910. With the First and Second World War, the rapid growth in industrial products led to rapid urbanisation/industrialisation, and thus, growth in power demand.
- **Post-Independence Era:** This era could be traced from Indian Independence in 1947 to the start of the reforms process in early 1991. This phase started with the new Electricity Supply Act, 1948, followed by the Industrial Policy Resolution of 1956, which led to the nationalisation of private power companies under the State Electricity Board (SEBs). The power sector, in the Constitution of India, was defined as a concurrent subject, with the Central Electricity Authority (CEA) playing the nodal role of planning and policy formulation. SEBs, formed as vertically integrated generation/transmission/distribution utilities, undertook state level regulatory functions. The early part of this era (1948-1969) could be called the **"Era of Consolidation and Nationalisation".**
- These early experiments failed to augment power capacity, mainly due to the changing political climate of state populism, leading to the SEBs' poor financial health and lack of technical capabilities. This led to the second era of **"State Populism & Creeping Centralisation"** (1979-1989), which was marked with the emergence of central power utilities (CPUs), that is, NTPC in 1975, NHPC in 1976, and Power Grid (PGCIL) in 1989.

Evolution of the Power Sector

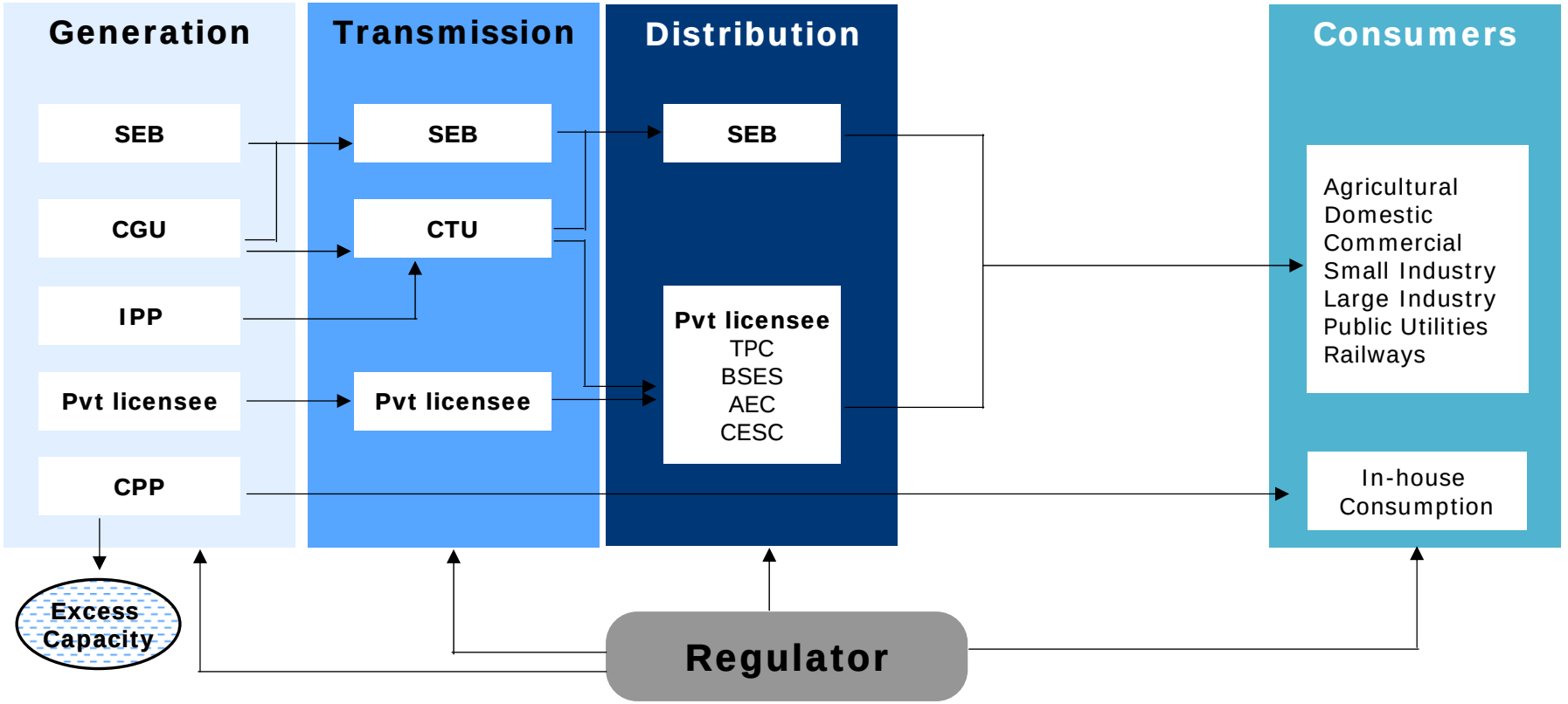
The third phase of the India story

- With coalition governments taking deep root in central politics, SEBs started functioning as extended arms of the State Ministry, leading to gross misappropriation of revenue and poor financial health. The impact of this was felt on the books of CPUs, with huge accumulated receivables and poor reinvestment surpluses.
- **New Reform Phase:** The 1991 reforms started as an economic compulsion for all political parties, and the power sector emerged as one of the early beneficiaries of these changes. Policy makers, for the first time, recognised the need for power capacity augmentation for sustainable economic growth.
- However, the limited experience of the Indian planners in power sector reforms, the recognised capital constraints, and the lack of private participation were the reasons for the poor state of the power sector. This led to the initiatives of de-licensing and private and foreign direct investment, with the introduction of independent power producers. This **"Era of the Independent Power Producer"** lasted till major failures, like the Enron debacle, and some other domestic IPPs coming to an end on the drawing board itself. Policy makers soon recognised the need for all-round reforms measures, encompassing various power utilities, through the Electricity Regulatory Commission.
- This gave rise to the second era, **"The Era of Regulatory Commissions",** and was marked by the ERC Policy in 1998 and extended up to The Electricity Act, 2003. The most important feature of this era was that, for the first time, a futuristic approach was applied to the planning process. As part of this approach, the XIth Plan would witness some major increments in power capacity, since Independence, and other parameters also started showing signs of improvement. The next round would be marked with reforms in the transmission and distribution segments.

We are confident that the third phase will bring in significant change, with both interest and ideology, already present amongst market players. This is akin to the material changes brought about in the 1950s.

Rigid Industry Structure before 2003

On the verge of extinction

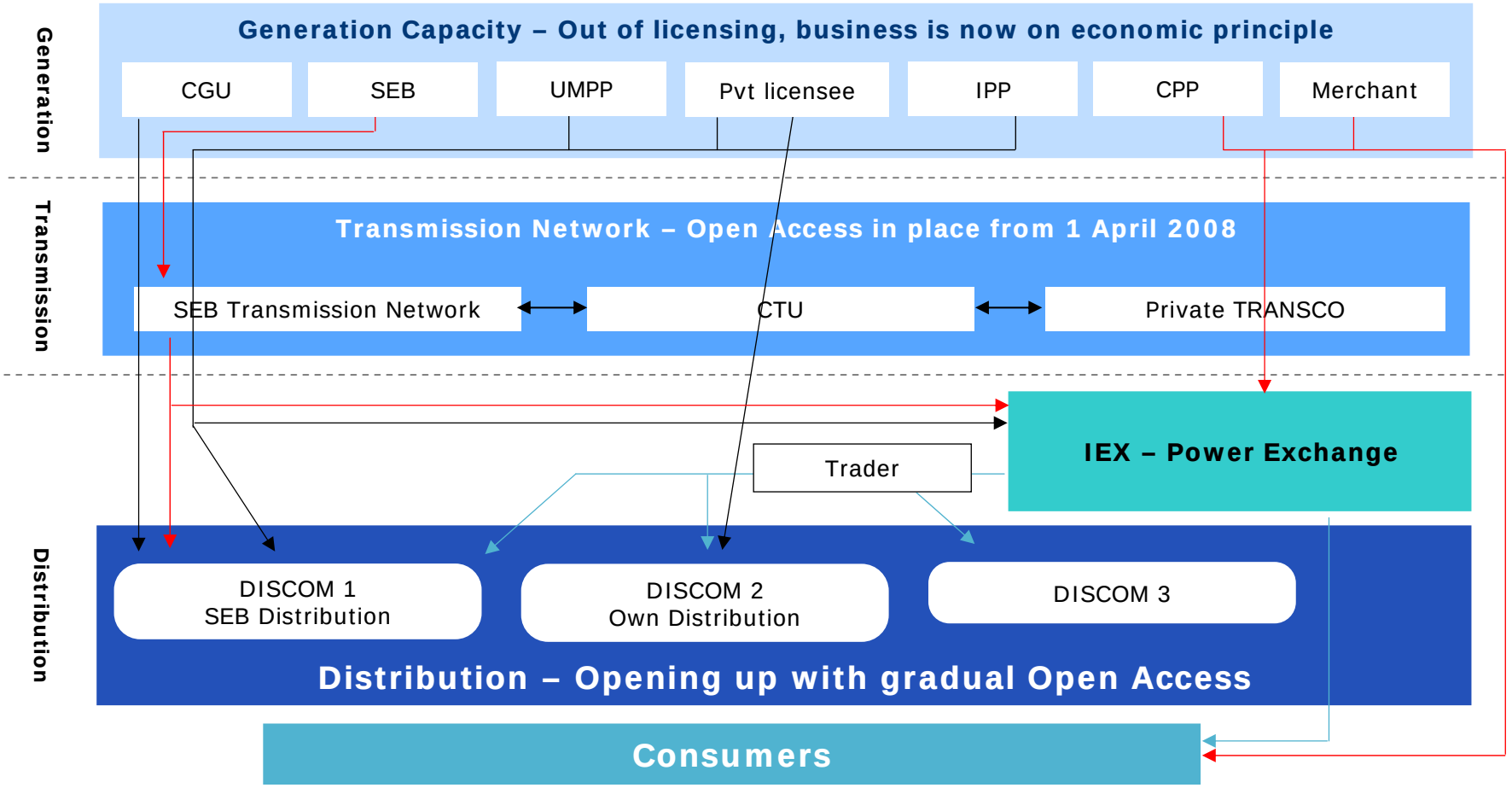


- Pre-2003, the rigid industry structure resulted in inefficient under-utilisation of generation, transmission and distribution assets.
- Regulatory and local political interference resulted in un-economic business practices and huge under-recoveries.

CGU – Central Generation Utilities
CTU – Central Transmission Utilities
SEB – State Electricity Board
TPC – Tata Power Company
CESC – Calcutta Ele. Supply Co.
AEC – Ahemdabad Electric Co.
BSES – Bombay Suburban Electric Supply

Evolving Structure

Marked by competition, flexibility and consumer choice



We believe that the evolving industry structure provides adequate room of competition, flexibility and consumer choice, three primary factors for industry turnaround. We are confident that efficiency improvement and the Open Market Policy would increase investment surplus for the sector.

Recent Policy initiatives

Providing a lucrative business environment

Business	Specific Operational Areas	Status	Impacts & Implications
Generation	Competitive tariffs	Policy in place	Public sector utilities are exempted from this, would come under the preview from 2011. Existing private power plants are restricted to 50% expansion under non-competitive tariff.
	Ultra Mega Power Projects (UMPP)	Policy in place	Multi-state, competitive tariff, pit-head/imported coal-based projects will enjoy maximum PLF and would act as base-load plants. Would reduce the average cost of power. (Sasan Rs 1.19/unit). 36GW of capacity identified under UMPP, three projects already awarded and under implementation.
	Hydro Power Plant (HPP)	Implemented from Dec-2007	Improvement in generation mix would act as peak-load plants. Financial viability improved through permitting 40% of the commercial capacity sales under merchant basis.
	Captive Power Plants (CPP)	Part of other Policy	Connectivity through Open Access and market access, through an Energy Exchange, would fix the Demand-Supply mismatch. Expected to pool in ~10GW of Power Supply Capacity.
	Merchant Power Plants (MPP)	Part of other Policy	Scope limited to 15% of thermal generating capacity, loosely connected through short-term transmission contracts and business routed through Energy Exchange & the bilateral route.
	Renewable	Policy in place	Compulsory power purchase to the tune of 5% from renewable sources to reduce pressure on coal and fossil fuels and fulfill the environmental management objective.
Transmission	Open Access	Implemented from Jan-2008	Improved clarity in policy procedures for providing connectivity for short-term power exchange. New tariff guidelines provided transparency and motivated the process of planning in DISCOMS
	Private TRANSCO	Already in place	MoP identified 11 projects under this route. Tala Transmission (PPP between Tata Power & PGCIL) has been the first such project.
Distribution	Open Access	To be Implemented ~ 2009	Would provide faster implementation of Distribution Sector Privatisation and Competition.
	Parallel Licensing - Competition	To be Implemented ~ 2010	Improve competition by providing choice to consumer just like we experienced in the telecom sector through introduction of multiple operators.
	Cross Subsidies	No clear timeline defined yet	Would de-politicize SEB operations. Power business for all (Central, State and Private Sector) would truly operate on business and economic principles.

For the first time, we see signs of this sector emerging from the clutches of false political ideologies. Reforms in the distribution sector would complete this process. We are confident that the power sector would emerge as a vibrant player in the 'India Economic Growth Story'.

Politics of Reforms

Compulsion of appeasing vote banks diminishing

Period	Political Climate/Consensus	Power Sector Reforms & Growth	Guiding Policy Initiatives	Comments/Remarks
1947-51 Up to Mid-60s	The Nehruvian face of Economic Policy - Industry & Infrastructure (Temples of Modern India) became primary growth drivers in this period.	Electricity defined as a concurrent subject. Development primarily was a part of government planning	Electricity (Supply) Act, 1948	Formation of CEA (to undertake planning) and various SEBs, to do the business of Generation /Transmission & Distribution.
Mid 60s to 1980	Central politics started feeling the heat of Regional Parties. Planning process -increasing focus on the Rural & Agricultural Segment.	Scarcity of man & money felt across SEBs. Emerging need for Central Power Utilities for augmentation of generating capacity. Funding sought through Multi-National Dev. Fin. Institutions	Amendment to ESA, 1948. Advent of Power Purchase; Fuel Supply Agreement.	This triggered the formation of NTPC in 1976; NHPC in 1978 and NPCIL in 1979. But, the focus still remained on generation only.
1980s	Early phase of Reforms-lack of clarity on the course of action. Subsidies continued to pose pressure on developmental finances.	The need for CTUs was recognised. Felt pressure for reforms from Multi-national Development Financial Institutions.	Concept of pooling & early stages of regional transmission infrastructure.	This triggered the formation of PGCIL in 1989
1990s	The crisis led to Political consensus for Economic Reforms, abolition of License Raj and Divestment of Public Sector Undertaking. Private Sector permitted entry in Infrastructure & Banking Sector	Power Sector was the first amongst Infrastructure sector to witness need for reforms-Scarcity of investment was recognised as the primary constrain for sector development.	Opening of sector to private & foreign direct investment. Policy for IIP.	While scarcity of investment was recognised as primary hurdle for growth. Lack of clarity on fuel linkages; land acquisition and ensuring payment guarantee from SEBs remained major constraints for development
Start of the 21st Century	Early success of Economic Reforms– brought about broad consensus even amongst Regional Political Parties. coalition politics emerged as the trend of the day	Economic growth, well above the Hindu rate of Growth (3.5%), on a sustainable basis, infrastructure (Power) was recognised as the major obstacle in the path of growth. Need felt for a new Electricity Act.	Electricity Act 2003-set out more realistic holistic reform measures with a clear road map for continuation of policies.	

- We are confident that the reforms process will continue, this time with the immediate trigger expected from the advent of power trading and privatisation of State Distribution Circles. Infusion of new players like; Power Trader, Merchant Power Plants, Integration of Captive Power Producers, would only make the sector more dynamic and vibrant to take on future demand of higher economic growth.
- The considered appointment of Jairam Ramesh (noted bureaucrat with experience in the Power Ministry) as the MoS–Power, is a positive development for the sector.

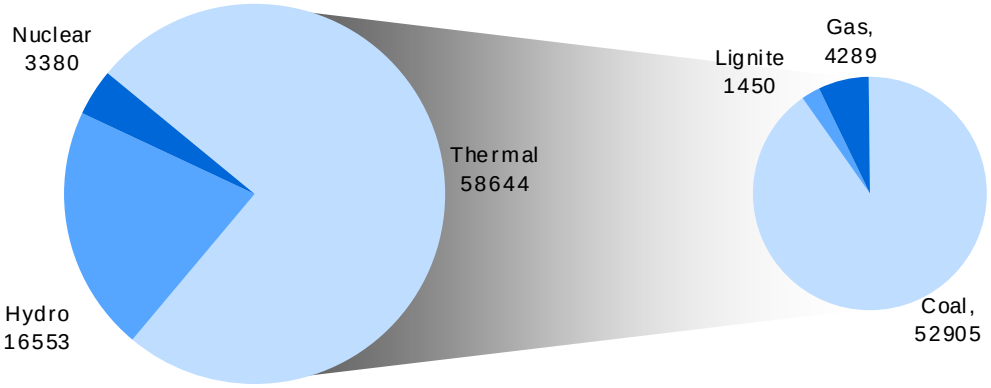
Fuel availability and cost paradigm

Lack of futuristic planning could play spoil sport

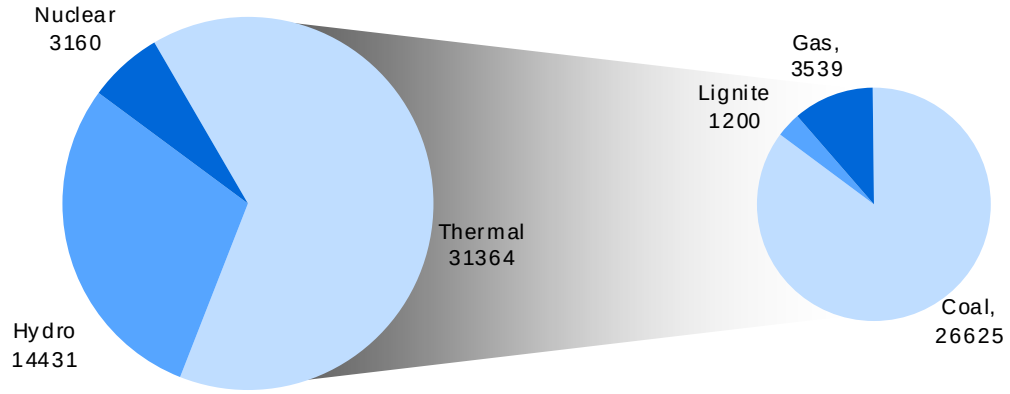
Generation fuel mix

Points towards continuing reliance on coal

Total Capacity Addition targeted for XIth Plan



Total Capacity under construction from XIth Plan

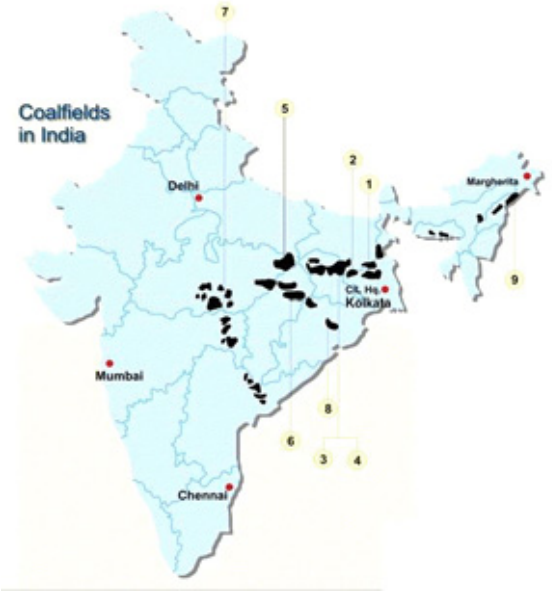


- Of the total targeted capacity addition for the XIth Plan (78,577MW), 75% (58,644MW) is thermal based.
- Of this, coal accounts for a major share at 52,905MW (~90%), followed by gas at 4,289MW (~7.3%) and lignite at 1,450MW.
- Of the targeted 78,577MW, 48,955MW is already under various stages of construction and expected to be operational by the end of the XIth Plan.
- Of these projects under implementation, coal-based plants account for ~85% (26,625MW), followed by ~11% (3,539MW) gas plants.
- If only the projects under construction at the moment become operational, ~140MT of additional coal would be required and an additional 12MMSCMD of gas would also be required.
- Thus, the additional coal and gas requirement accounts for the major challenge for the future PAF of new capacity.

Source: Central Electricity Authority, Ministry of Power, MF Global India Research

Concentrated Coal Reserves

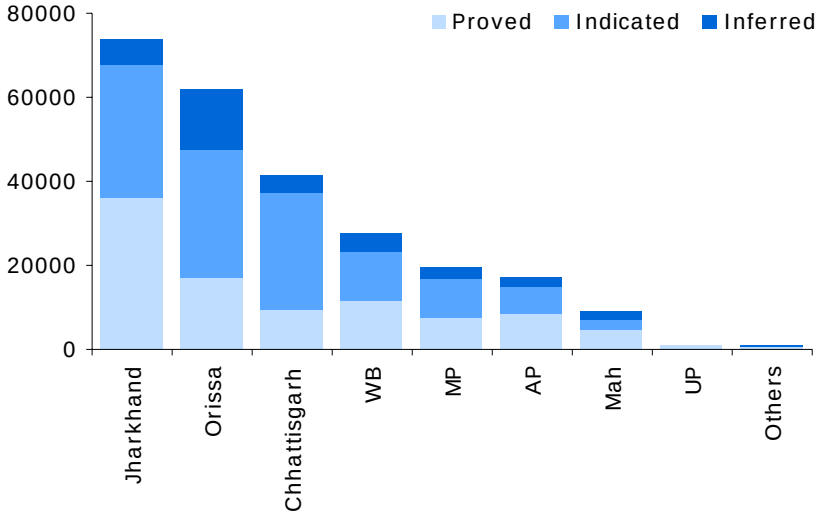
Limits widespread capacity augmentation



1. Eastern Coalfields Ltd. (1975) – 112 Mines
   Production – 33.41 mn tons – 46 mn tons (2012)
2. Bharat Coking Coal Ltd. (1973) – 80 Mines
   Production – 25.20 mn tons – 30 mn tons (2012)
3. Central Coalfields Ltd. (1975) – 63 Mines
   Production – 44.00 mn tons – 78 mn tons (2012)
5. Northern Coalfields Ltd. (1956) – 06 Mines
   Production – 58.00 mn tons – 70 mn tons (2012)
6. South Eastern Coalfields Ltd. (1956) – 97 Mines
   Production – 91.50 mn tons – 111 mn tons (2012)
7. Western Coalfields Ltd. (1975) – 80 Mines
   Production – 42.40 mn tons – 44.5 mn tons (2012)
8. Mahanadi Coalfields Ltd. (1992) – 23 Mines
   Production – 88.00 mn tons – 137 mn tons (2012)
9. North Eastern Coalfields Ltd. – 07 Mines
   Production – 2 mn tons – 3.5 mn tons (2012)

- India ranks third in terms of total coal reserves at 253Bn tons production at 384.5mn tons.
- 81% of the coal reserves are concentrated in four states of Jharkhand, Orissa, Chattisghar and West Bengal, while the Eastern, Northern and Western Region account for ~70% of new coal-based thermal generation capacity.
- Lack of infrastructure and poor State GDP (lower human development index) for these states could act as a major hindrance in developing production capacity from these states.

State-wise Coal Reserves (mn tons)



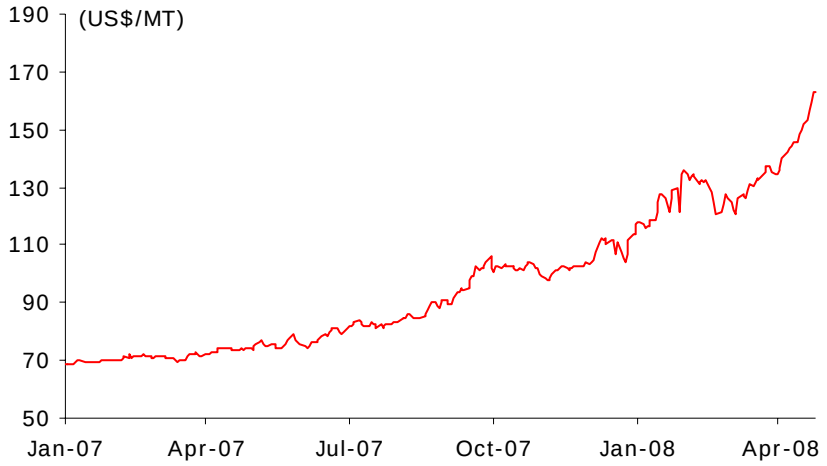
Source: Ministry of Power, Ministry of Coal, MF Global India Research

Dilemma of choice

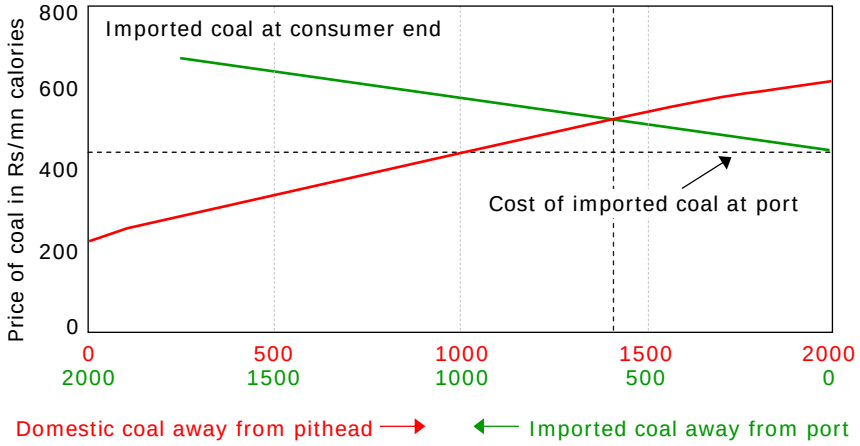
Price volatility has turned decision making tough

- Australia, Indonesia and South Africa account for almost 80% of world coal supply. Indonesia witnessed huge interest from global power and energy majors in developing new coal mines in the country.
- International coal prices have shown the sharpest price rise in the recent 2 years (~76%). Major factors are the increasing pressure on coal production and supply infrastructure, along with disruption due to natural calamities.
- Increasing production in Indonesia could also lead to an increased pressure on infrastructure at ports in Indonesia and keep prices hard.

International coal prices hardening (US$/mn ton)



Effective cost of Coal (Rs/mn calories) with increasing distance



- Most of the domestic coal falls under the E&F Grade (approximately, 3500 Kcal/Kg) as against imported coal of at least 6000 Kcal/Kg.
- The chart shows imported coal at 600kms from the port costs the same as coal procured 1400kms from domestic mines.
- The relation has been tilting in favour of domestic coal as international prices of coal have turned into a sharp uptrend.
- Captive mining could be a solution, but these mine developments are at a preliminary stage.

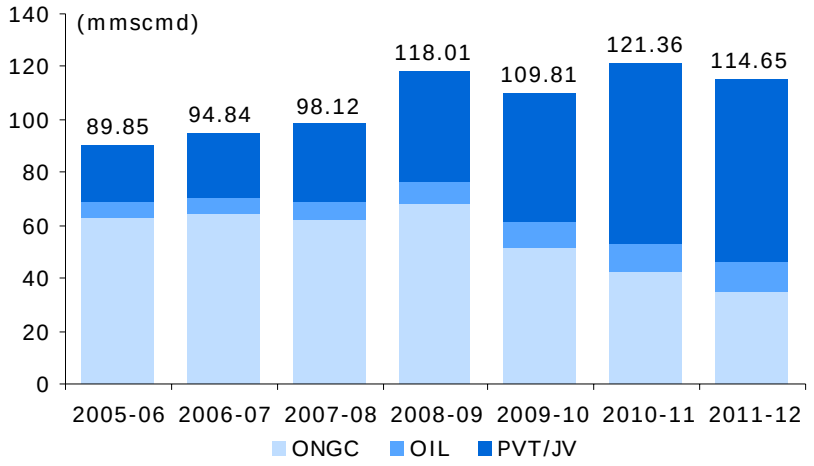
MF Global

Source:

Gas availability
Continues under pressure

- Increasing supply from private O&G exploration companies would help maintain the domestic gas availability around 120mmscmd levels.
- New gas finds from ONGC and GSPC eastern offshore basins would start from the end of the XIth Plan or the beginning of the XIIth Plan only. We cannot assess the exact quantity of this gas production.
- Additional NG supply would be from imported LNG with a current regasification capacity of 10mmtpa and an additional capacity of 17.5mmtpa expected to come up in the next 4-5 years. This would entail an additional gas supply of 90-105mmscmd.

Trends in Natural Gas Supply in the XIIth Plan



Total LNG Terminal Existing & Proposed

Location	Company	Capacity (mmtpa)
Dahej	Petronet LNG	5.0
Dahej Expansion	Petronet LNG	2.5
Kochi	Petronet LNG	5.0
Shell Hazira	Shell	2.5
Dabhol	RGPL	5.0
Mangalore	ONGC	5.0
Ennor	IOC	2.5
Total		**27.5**

- The major concern though has been procuring LNG supply on a long-term basis. As of now, Petronet LNG sources 6.25mmtpa from RasGas of Qatar, while Shell procures its LNG on a spot basis and works out to a very expensive proposition.
- Rising crude prices have already started putting pressure on LNG and NG prices, both in the spot market as well as the long-term contract market. This would place pressure on NG as the preferred fuel source. Delay in the IPI gas pipeline is making matters worse.

Source: Ministry of Oil & Gas, MF Global India Research

Conclusion

- With GDP poised to grow at above 7.5% p.a. in the near future and targeted to touch a double-digit growth rate, power consumption growth has emerged as an imperative as it could pose a major hindrance to this target.

- With the government policy initiatives relieving some of these concerns, we are confident of the growth prospects in the industry.

- **We are positive on the outlook for the Indian power sector for the next five years, with major public utilities, as well as efficient private power companies, emerging as major gainers from this growth story.**

- **On a conservative basis, we estimate the sector to grow at least at 7% p.a.** Private power utilities would witness higher growth in the near term on account of lower base, while large public utilities would enjoy a larger pie of new capacity on account of stronger balance sheets.

- Major challenges to sector growth would be:
  - Inadequate transmission capacity augmentation;
  - Shortage in fuel (both coal and gas) supply, both for existing and new power plants,
  - Slowdown in reforms and privatisation of the power distribution business.

Investment Summary

- We are positive on the Indian power sector, with the strong conviction of continuation of reforms initiated with the Electricity Act, 2003, and improved investment interest from diverse classes of investors. Our positive sentiments play on the back of four broad factors that would trigger positive investor sentiments in the Indian power sector:
  - Continuation of reforms.
  - Government commitment towards competitive tariff fixation and termination of cross subsidies.
  - Improved confidence from new capacity addition (public and private power companies).
  - Active primary market in the power sector IPOs.

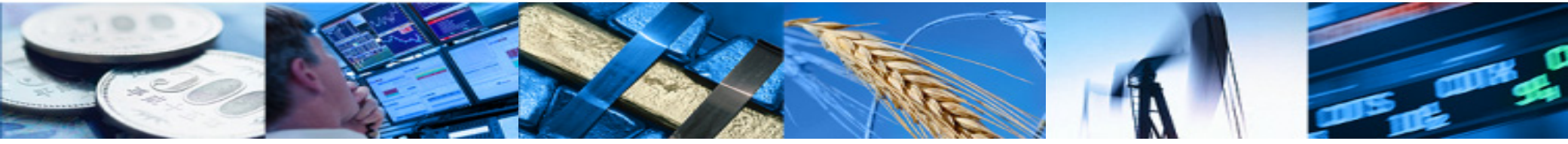
- **NTPC:** A market leader with over 30% market share. Undertakes capacity expansion plans of 21.6GW, ~74% of its existing capacity. Proven project execution skills. Under-leveraged balance sheet to protect from equity dilution. We thus initiate coverage on NTPC with a 12-month DCF-based price target of Rs 220, an upside of ~32% and a BUY rating.

- **Tata Power:** Oldest private sector utility. Robust generating capacity augmentation of 5.96GW,~250% of its existing capacity. Integrating backward and forward: Owns a stake in coal mines; expanding in distribution (both retail and bulk); venturing into transmission. Plans to manage logistics by owning a shipping company. Own coal mine would hedge against fluctuating coal prices. An under-leveraged balance sheet avoids dilution. We initiate coverage on Tata Power with a 12-month SOTP-based price target of Rs 1560, an upside of ~24% and a BUY rating.

Relative Valuations

Year	PER	PEG	PBR	PCF	EV/EBIDTA	EV/EBIT	EV/NOPLAT	EV/OPFCF	EV/Sales	EV/IC
NTPC										
FY2007	20.0	1.1	2.8	25.3	15.2	19.3	26.4	-344.6	4.6	3.3
FY2008E	18.7	2.7	2.6	14.9	13.7	17.5	23.5	113.6	4.1	3.0
FY2009E	16.8	1.4	2.4	16.3	11.9	15.3	20.5	260.5	3.6	2.6
FY2010E	15.3	1.6	2.2	14.0	10.1	13.6	17.9	784.4	3.2	2.3
FY2011E	14.3	2.2	2.1	12.0	9.0	12.5	16.2	-55.5	2.9	2.1
FY2012E	12.9	1.2	1.9	9.1	7.7	11.2	14.3	-62.6	2.6	1.8
Tata Power										
FY2007	35.7	1.6	4.6	71.5	40.0	70.5	34.3	-76.7	6.0	6.3
FY2008E	47.5	(1.9)	4.3	48.3	31.5	48.0	37.7	-33.1	5.3	4.9
FY2009E	46.2	17.0	3.5	85.9	27.3	47.1	31.6	-7.6	5.2	3.6
FY2010E	58.0	(2.9)	3.3	70.3	25.8	52.4	28.4	-7.6	5.3	2.7
FY2011E	113.4	(2.3)	3.2	52.9	24.8	69.1	26.0	-16.3	5.4	2.2
FY2012E	33.8	0.1	3.0	59.2	15.1	28.0	16.6	-403.4	4.1	2.0

Source: Company, MF Global India Research Estimates



Power Companies section

NTPC – *Powering the India growth story… (Buy)*

- (CMP Rs 167 / MCap US$ 32bn / Target Price Rs 220

Tata Power – *Renewed vigour at 102! (Buy)*

- (CMP Rs 1257 / MCap US$ 6bn / Target Price Rs 1562)

POWER

Analyst: Mansingh Deshmukh / Associate: Deepali Gautam
mansingh.deshmukh@mfglobal.in (+9122 6667 9759)

INITIATING COVERAGE

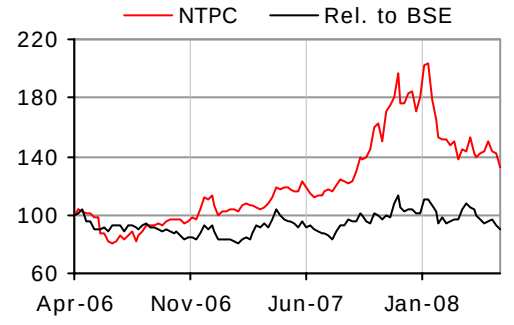
June 6, 2008

NTPC Ltd (NATP IN / NTPC BO)

BUY

Powering the India growth story...

CMP Rs 167
Target Rs 220 (+32%)



Investment Rationale

- NTPC enjoys the leadership position in the Indian power story and is evolving as an integrated power player. The company already commands ~30% of the domestic thermal generation capacity, and plans to augment its capacity in the Hydro and Renewable spaces, with the Nuclear segment as a long-term plan.
- With an increase in the scale of its operations, the management has quickly evolved to meet the need for its future fuel security and has already taken steps towards vertical integration through the acquisition of coal mines in the country. Long-term supply agreements for new domestic gas finds, and an equity interest in the LNG business, like RGPPL, would improve fuel sourcing for its gas plants.
- NTPC's top-line growth is predominantly based on expansion of its generating assets, and its bottom line would sustain growth through an additional impetus from efficiency improvement (higher PAF for Gas and Critical Coal Plants). NTPC has embarked on new business initiatives to diversify risk, and the management has given a clear indication of evolving in changing times.
- In these times of huge capacity expansion programmes, the very fact that NTPC enjoys a significantly under-leveraged balance sheet, with all the equity contribution met through existing networth and internal accruals, is a major positive for shareholders. Well-proven project execution skills at NTPC ward off any major risk due to project delay.

Risks

- Passing through a rampant capex phase, any project delay could adversely impact its revenue flow and thus create a short-term additional financial burden.
- The public utility image of the company has often discounted the stock below its fair value.

Valuation

- Given the drastic structural change in the Indian power industry, we are confident that NTPC, given its scale and the various projects on hand, would be the major beneficiary in these changing times. **We recommend a BUY on the stock with a 12-month DCF-based price target of Rs 240 per share.**

Company data	
O/S shares :	8245mn
Market cap (Rs) :	1374bn
Market cap (USD) :	32bn
52 - wk Hi/Lo (Rs) :	291 / 149
Avg. daily vol. (3mth) :	9.8mn
Face Value (Rs) :	10

Share holding pattern, %	
Promoters :	89.5
FII / NRI :	5.2
FI / MF :	1.9
Non Pro. Corp. Holdings :	1.0
Public & Others :	2.5

Y/E Mar, Rs bn	FY08E	FY09E	FY10E
Net Sales	369.0	416.6	472.2
PAT	73.4	82.0	89.9
EBIDTA mrg, %	29.9	30.7	32.0
PAT mrg, %	19.9	19.7	19.0
ROE, %	14.5	14.9	15.1
EPS, Rs	8.9	9.9	10.9
PER, x	18.7	16.8	15.3

Investment Overview

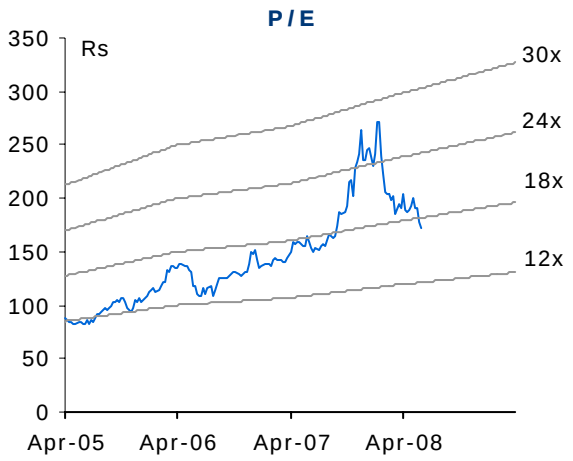
Sustainable competitive advantage	Dominant industry status, robust expansion plans and with merchant power capacity in scope and strong execution capabilities. Backward integration in fuel sourcing adds to its competitive advantage.
Financial structure	Its low gearing ratio, along with sustainable, steady internal accruals, provides ample room for funding its expansion program. We do not foresee any equity dilution at this stage.
Shareholder value creation	Strong RoE amongst industry players. It pays promising dividends as well.
Earnings visibility	Top-line growth of 13.6% (5-year CAGR) fairly percolates down to a net profit growth of 8.6% (5-year CAGR) and 9.1% (3-year CAGR) even in these times of huge capex programmes (capacity addition programme of 20.7GW upto 2012).
Valuation	At the CMP of Rs 167, the stock trades at 15.3x earnings for FY10 EPS of Rs 10.9 and a P/B of 2.2x. The stock would continue to enjoy premium valuation for its industry status, and regional & fuel diversity.
MF Global vs. consensus	We are on the higher side of the industry consensus, both in terms of our earnings estimates and targets.
Future event triggers	Project-related news and future fuel sourcing. Increasing autonomy on account of the reform policy.
Expected price momentum	We look forward to an upside of ~ 32% over the next 12 months.

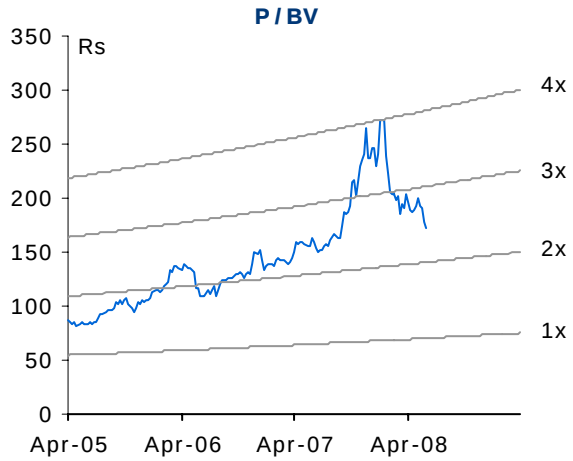
Valuation Summary

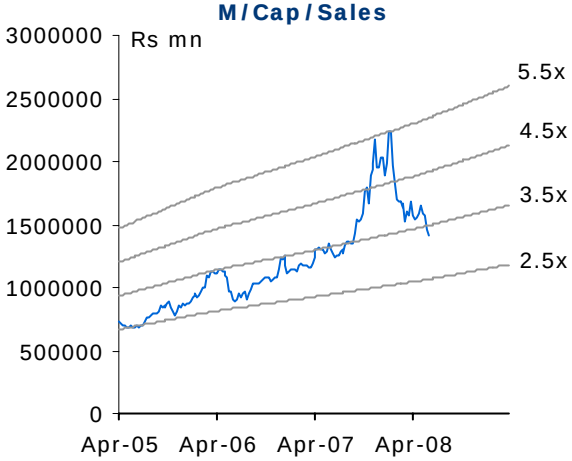
Y/E Mar, Rs mn	FY2006	FY2007	FY2008E	FY2009E	FY2010E
Net Sales	266,288	324,979	368,999	416,557	472,183
Growth, %	18.4	22.0	13.5	12.9	13.4
Core EBIDTA	76,660	99,637	112,064	129,874	152,922
EBIDTA margins, %	29.3	30.0	29.9	30.7	32.0
Net profit	58,202	68,647	73,353	82,001	89,893
Net profit margin, %	21.9	21.1	19.9	19.7	19.0
EPS, Rs	7.1	8.3	8.9	9.9	10.9
EPS Growth, %	0.2	17.9	6.9	11.8	9.6
PER, x	23.6	20.0	18.7	16.8	15.3
EV/EBIDTA, x	19.1	15.2	13.7	11.9	10.1
EV/Net Sales, x	5.6	4.6	4.1	3.6	3.2
Price/Book Value, x	3.1	2.8	2.6	2.4	2.2
ROIC, %	13.5	13.3	13.0	13.2	13.2
ROE, %	13.4	14.7	14.5	14.9	15.1
Dividend Yield, %	1.7	1.9	2.1	2.4	2.7

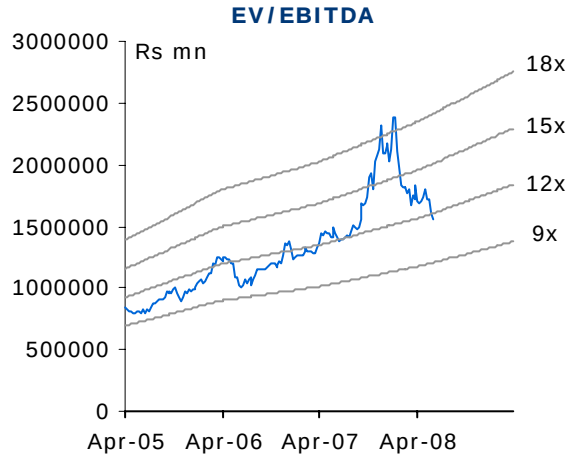
Source: Company, MF Global India Research Estimates

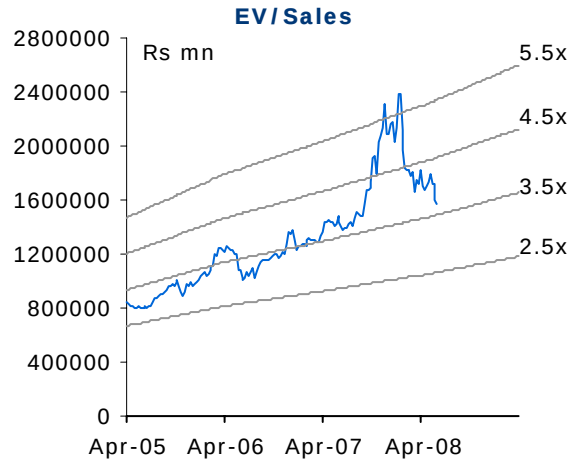
Absolute rolling Valuation band charts











- The valuation multiple would capture both the dominant industry status and the robust capacity expansion, in the wake of intrinsic demand growth for power in India.
- Lower project implementation risk in these times of huge capacity expansion for NTPC. Also, payment risks from SEBs are no longer there and has further improved investor interest in these stocks.

MF Global

Source: Company, MF Global India Research

Key risks

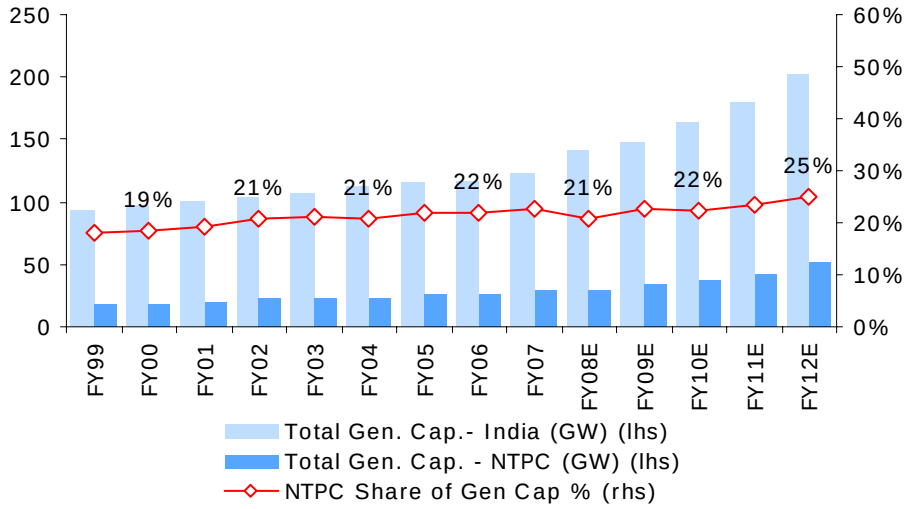
	Our Comments
• NTPC has undertaken a huge capex programme (22.6GW in the XIth Plan and ~25GW in the XIIth Plan), which majorly contributes to our revenue estimate and valuation model. Any delay in the project schedule and thus, cash flow, could adversely impact our estimates and our price target.	Going by the good track record of on-time project execution skills at NTPC, the possibility of execution delay due to management inefficiency is minimal. However, we cannot ignore any force majeure circumstances that may delay projects
• We expect an improvement in gas availability to some extent from FY09 onwards due to new supply from the KG basin in the second half of FY09. Any delay in this could adversely impact our estimates for the coming year	As we expect a major portion of this benefit to accrue only in FY10, the impact would be minimal
• Also, project completion and commissioning is subject to availability of transmission network. Given the huge generation capacity expansion under way, any delay in completion of the associated transmission line could delay the project and also the revenue flow.	Even though the transmission and generation projects are carried out by different organisations, commissioning fates are planned and rescheduled in advance, according to the progress of work
• Other fuel concerns continue as almost 81% of the new capacity is coal-based and captive mine development is still in the preliminary stages. With only ~13% of its coal requirement ensured through these mines, it leaves ample room for risk due to under performance of plants.	The management at NTPC has been prudent and has already contemplated the situation, and plans to acquire an additional fuel source within and outside the country. Diversification of plants to new sources would also reduce dependence on coal as fuel

Lighthouse of India

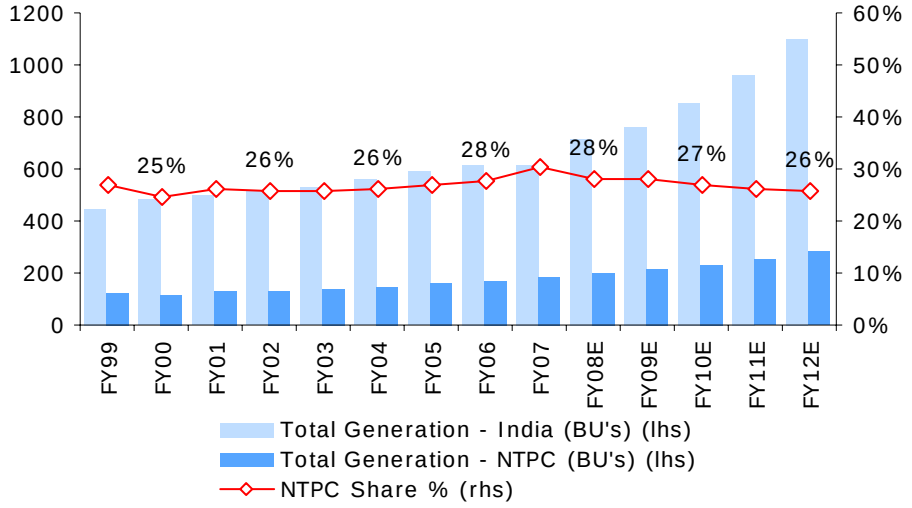
Leadership status continues with the XIth Plan, at least

- NTPC enjoys a leadership position, being the largest generating company in the country with ~20.8% (29.14GW) of total generating capacity for India (140.36GW FY08E).
- The XIth Plan targeted capex and the schedule of project completion continues to maintain this leadership position with NTPC's share increasing to 25.1% (50.744GW by FY12E) as against the targeted and scheduled capacity for India (202.15GW in FY12E).

Maintaining a strong hold in the Indian Power Sector



Pressure on generation market share



- In terms of generation, NTPC outperforms its installed capacity share, ~28.2% (200.9BUs in FY08E), as against an all-India estimate of 713 BUs. This is mainly on account of higher PLF of NTPC plants.
- Overall efficiency improvement through new *transmission capacity and efficient load management* would improve power generation for India.
- We expect NTPC to maintain its leadership with a share of 25.3% (277.5BUs in FY12E) as against India's total generation estimate of 1098BUs for FY12E.

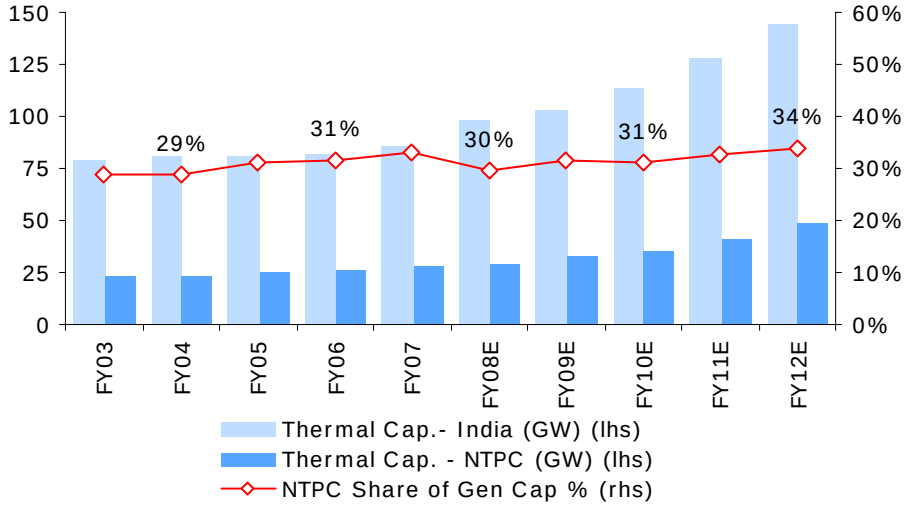
Source: Company, MF Global India Research Estimates

Torchbearer amongst Thermal Plants

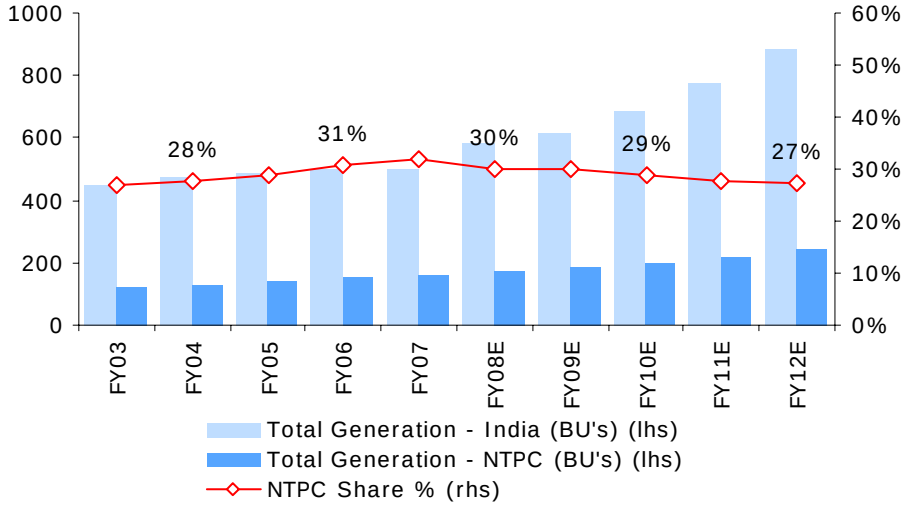
Base-load plant for India

- Incorporated in 1975, NTPC has primarily been the central thermal utility of India. The company enjoys a 30% share in the total thermal capacity in the country as of FY07.
- Given the strong project management and technical skills at NTPC, we foresee NTPC gaining a higher share in India's thermal capacity to touch 34% by FY12.
- 91.5% of the additional capacity (20.7GW) will be from thermal generation plants.

Dominant player amongst Thermal Generating Cos...



Operational efficiency improves across the industry...



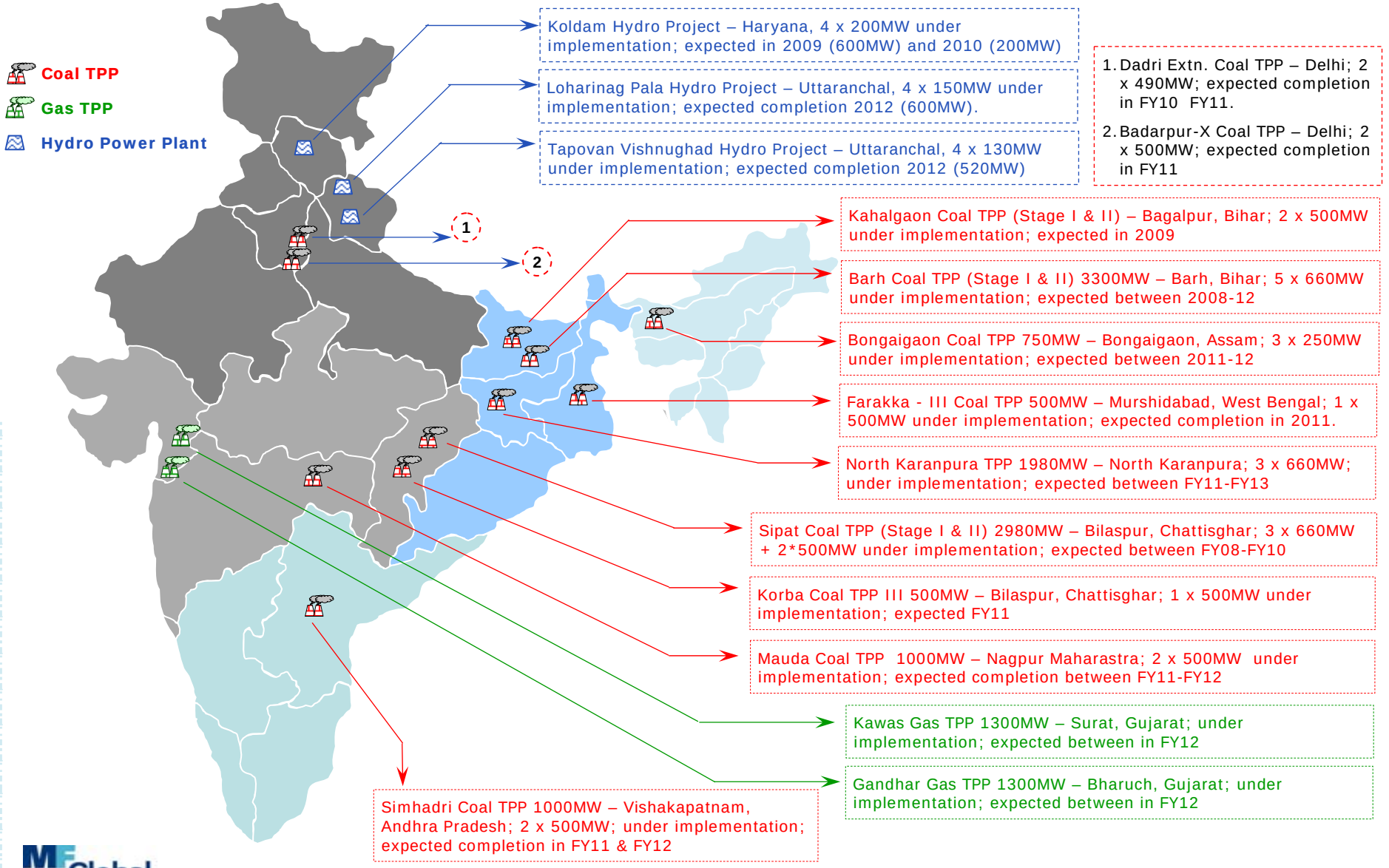
- Even though we consider effective PLF for NTPC plants to continue in the range of ~80%, improvement in the average PLF for thermal plants in the country would bring down NTPC's share in total thermal generation down to 27.4% in FY12E as against 32% in FY07.
- We expect this to improve in the following years on account of well-developed power transmission infrastructure (EHV transmission highways) and higher demand growth, leading to higher PLF.

MF Global

Source: Company, MF Global India Research Estimates

Regional diversity

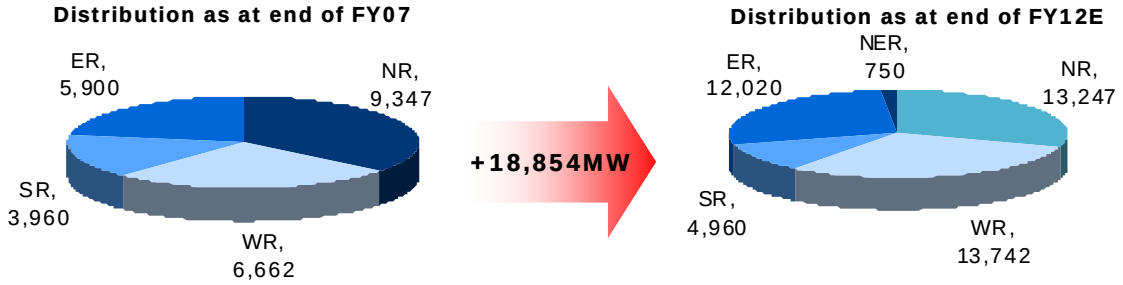
Makes it an ideal bet amongst Power stocks



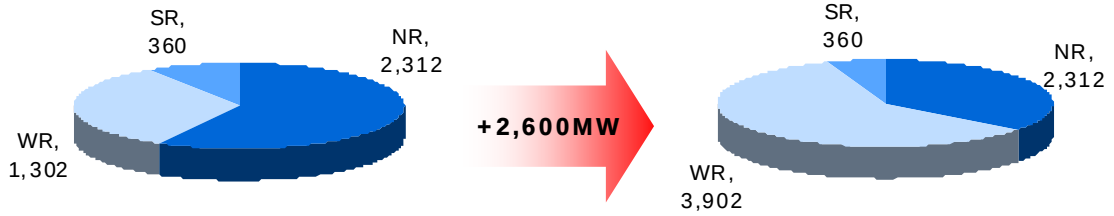
Source: MF Global India Research

Regional diversity

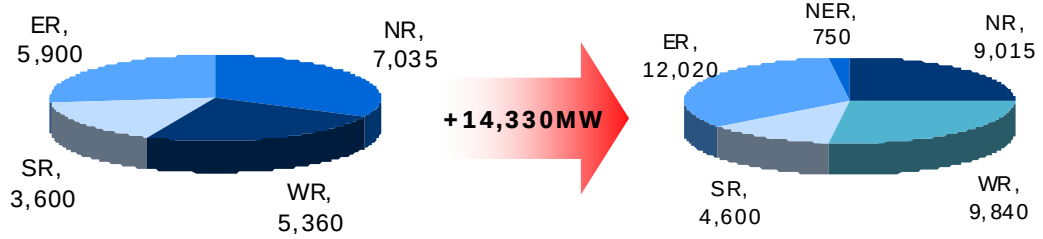
Trends in total capacity expansion, on a regional basis, for 100%-owned plants



Trends in gas-based TPP new capacity, on a regional basis, for 100%-owned plants



Trends in coal-based TPP new capacity, on a regional basis, for 100%-owned plants



- Even though, at first glance, the concentration seems to be building in WR and ER, a CAGR growth of ~15% for both, followed by ~7.2% for NR and just 4.6% for SR, we cannot ignore NTPC's entry in the promising NER for the first time.
- A further break-up reveals a well-thought out approach with WR showing 24% in gas-based TPP capacity. This goes in line with the accumulation of new gas resources in the WR, both through the domestic and imported LNG route.
- In coal-based TPP, a higher concentration is seen in ER as new captive coal mines improve fuel and expanding transmission capacity provides load connectivity.

Source: Company, MF Global India Research

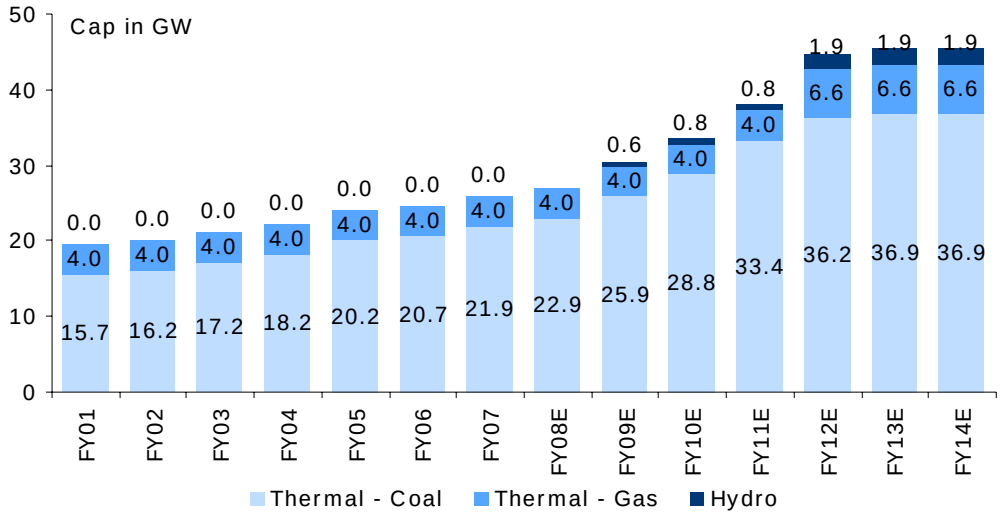
Diversification continues

Plant & fuel mix improves business economics

- Management at NTPC has taken a conscious decision to diversify its generation mix to thermal, hydro and renewable power. Even within the thermal space, as visibility for gas availability becomes clearer, NTPC plans for capacity augmentation by 2600MW in FY12.

- With the time required to commission gas-based power plants as low as 30 months, we expect some more capacity addition plans to be announced in the coming years.

Evolving Generation Mix – Coal Gas & Hydro



- With the power sector in the country developing further, NTPC too would have to earn new projects through the competitive bidding route (expected from 2011). We expect the government to give a free hand to NTPC to add some peak load plants to its generation basket. Peak load plants work on the lines of merchant power plants and its operational efficiency and efficient load management skills could provide robust profit margins.

- The management is also considering the addition of a nuclear power plant to its portfolio, but given the slow progress on the Indo-US Nuclear Treaty, we expect this to be a time-consuming process with any development possible in the XIIth Plan period only.

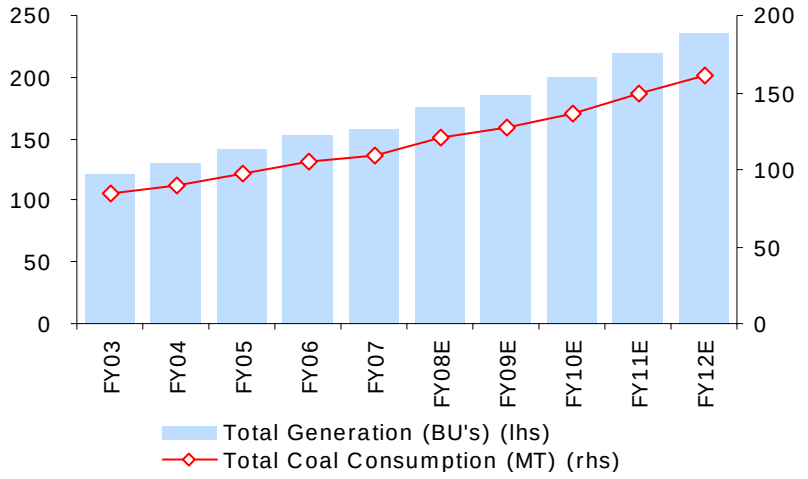
Source: Company, MF Global India Research Estimates

Fuel Security
Major challenge ahead

COAL

- With coal-based TPP accounting for 85% of the current generation capacity and 81% of the expanded capacity by FY12, availability of coal becomes a major challenge for NTPC. NTPC sources its coal requirement through an FSA signed with Coal India and its subsidiaries.
- We estimate the total coal requirement for NTPC to show a 5-year CAGR growth of 8%. With NTPC enjoying a complete pass-through of fuel prices under a long-term PPA, timely availability of coal could be the only major concern.
- Management at NTPC had taken a prudent decision to acquire coal blocks and develop them (as given in the table below).

Trends in Coal consumption to Generation



Coal blocks allotted to NTPC

Name of Coal Block	Mine Cap (MnT)	Developer	Commissioning year
Brahmini	1900	NTPC+Coal India	NA
Pakrih Barwadhi	1436	NTPC	2009
Talaipalli	965	NTPC	2012
Chichro Patsimal	356	NTPC+Coal India	NA
Chatti Bariatu-II, Karanpura	354	NTPC	NA
Dulanga	260	NTPC	2011
Chatti Bariatu, Karanpura	243	NTPC	2010
Kerandari, Karanpura	228	NTPC	2010
Chatteasal, Singrauli	150	NTPC	NA
Total	**5892**		

- Work on the Pakrih Barwadhi block is already on and we expect it to be operational from 2Q09 with the first year's production to touch 3million tonnes.
- Capacity would be further augmented to 15million tonnes by the end of the XIIth Plan period, and would account for ~ 14% of the total coal requirement in FY17E at 85% PLF.
- This strategy would make NTPC a fully integrated power sector major amongst domestic power companies.

Source: Company, MF Global India Research Estimates

Fuel Security

Major challenge ahead... (Contd.)

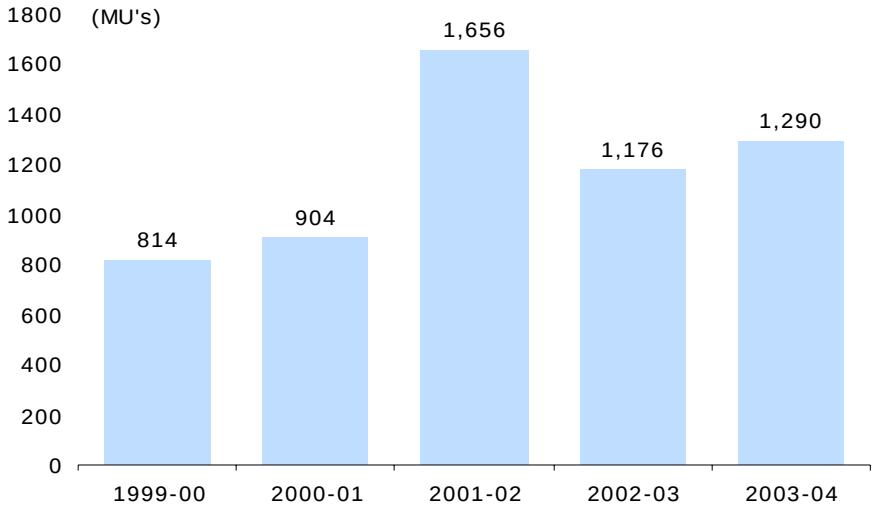
Coal Block	Loacation	Total Res. (mt)	Rate of Production (mtpa) 2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2023-24	Full Capa. (mtpa)
Pakri Barwadi	Jharkhand	1436	2.1	4.17	5.5	8	9.06	10	10.5	11.5	12.5	15	15
Kerandari	Jharkhand	229			0.5	1.5	2.5	4	4.6	5.2	6	6	6
Chatti Baraitu	Jharkhand	243		0.5	1.5	3	4	4.5	5	7	7	7	7
Dulanga	Orissa	260			0.5	1	2.2	2.8	3.4	4	4.6	5	5
Talaipalli	Chattisgarh	965				2	3	4.5	6	8	10	15	15
Brahmini	Chattisgarh	1900											
Chichro-patsimal	Orissa	356											
		5389	**2.1**	**4.67**	**8**	**15.5**	**20.76**	**25.8**	**29.5**	**35.7**	**40.1**	**48**	**48**

- We expect captive coal mining (excluding the Brahmini and Chichro coal blocks) to provide 20.76million tonnes of coal by the end of the Eleventh Plan period, and it would account for ~ 13% of its total coal requirement at 85% PLF. This capacity would increase to 40.1million tonnes by the end of the XIIth Plan period and 48million tonnes by 2024.

NATURAL GAS

- After coal, gas accounts for the second major fuel concern for NTPC. According to the latest operational data available, NTPC has 1290 MUs in generation loss for FY04 due to non-availability of NG. The latest data is not available, but the scenario has not changed much.
- With new NG capacity to come under production from FY09 onwards, we expect some improvement for NTPC. The management is also contemplating the sourcing of NG from Nigeria on a long-term LNG contract.

Trends in Generation for NTPC Gas plants

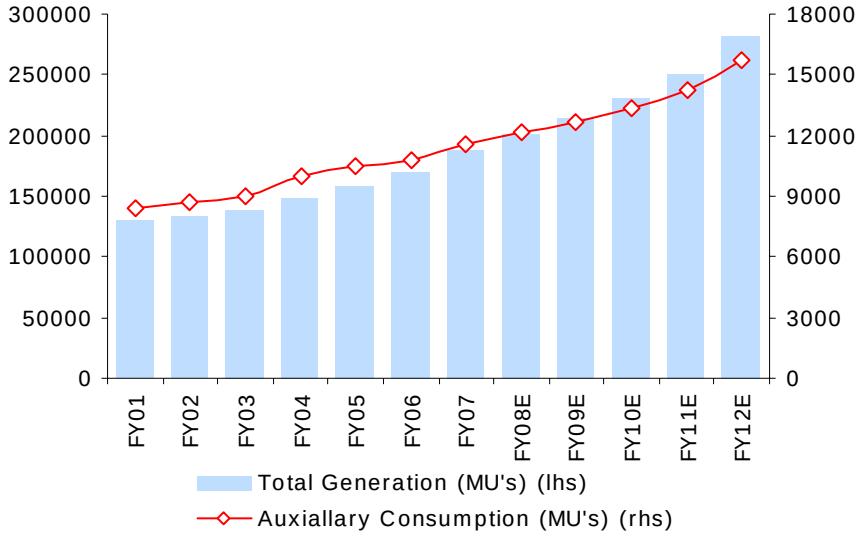


Source: Company, MF Global India Research Estimates

Improving Efficiency
The mark of a leader

- Auxiliary consumption is one of the major operational burdens in the total calculation of plant revenue and tariff rates from a particular plant.
- NTPC, with its prudent quality improvement efforts, has been showing continuous performance on this front with efficiency improvement leading to its auxiliary consumption steadily coming down.
- We project auxiliary consumption to go down to 5.6% levels by FY12 as against 6.2% posted for FY07.

Reducing trends in auxiliary consumption ...



NTPC's Station-wise Gas requirement vis-à-vis shortfall during 2007-08 (Apr'07-Jan'08)

Plant (MMSCMD)	Gas Req. at 90% PLF	Gas Availability			Gas Shortfall for 90% PLF
		APM Gas	Spot RLNG	Total Gas	
Anta	1.99	1.29	0.14	1.43	0.56
Auraiya	3.15	2.1	0.31	2.41	0.74
Dadri	3.94	2.31	0.27	2.58	1.36
Faridabad	2.04	1.25	0.13	1.38	0.66
Kawas	3.11	0.38	1.46	1.84	1.27
Gandhar	3.12	1.76	0.45	2.21	0.91
NTPC Total	**17.35**	**9.09**	**2.76**	**11.85**	**5.5**

- Another major drag for NTPC's performance has been lower PAF for its gas-based TPP.
- Lower gas availability from domestic and imported LNG gas has hindered its overall PAF. Shortfall for FY08 (Apr-Jan) has been at 5.5 mmscmd.
- We project that domestic availability would improve PAF for NTPC's gas-based TPP to ~80% by FY12 as against ~ 64% in FY07 on the back of improving domestic gas and sourcing from Nigeria.

MF Global

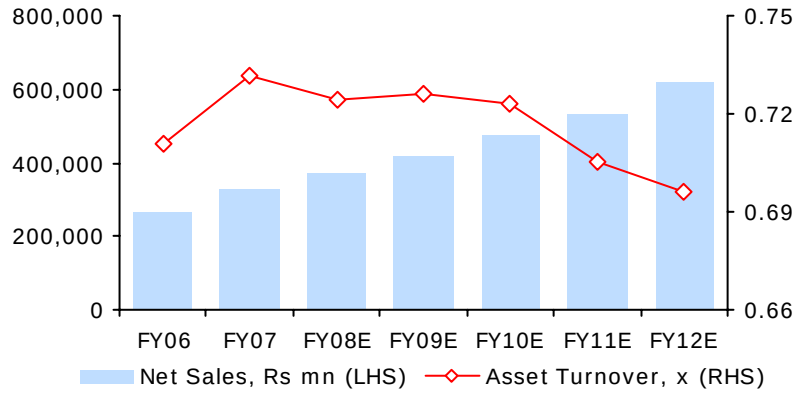
Source: Company, MF Global India Research Estimates

Key Assumptions

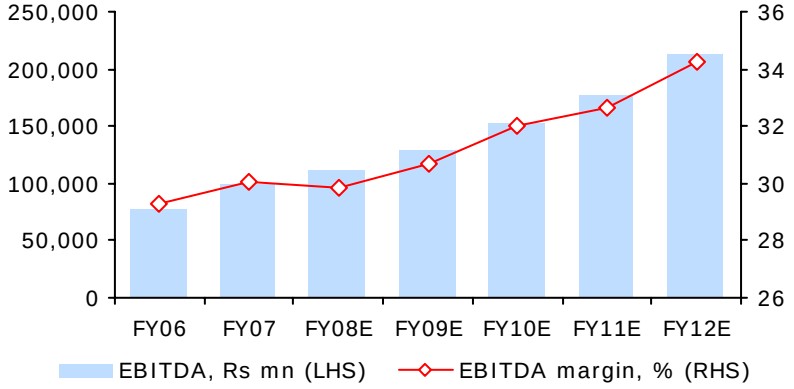
	FY07	FY08E	FY09E	FY10E	FY11E	FY12E	FY13E
Total Installed Capacity (MW)	28,144	29,144	33,224	36,394	42,454	50,744	51,654
New Capacity Addition (MW)		1,000	4,080	3,170	6,060	8,290	910
Total Generation (MUs)	**188,140**	**200,897**	**213,556**	**230,146**	**250,681**	**281,082**	**297,206**
Generation from Old Plants (MUs)	181,528	193,998	195,756	198,088	200,197	202,305	203,942
Generation from New Plants (MUs)	-	6,899	17,800	32,058	50,484	78,777	93,264
Auxillary Consumption (MUs)	11,610	12,116	12,613	13,328	14,254	15,715	16,364
Net Power Sold (MUs)	**176,530**	**188,781**	**200,944**	**216,818**	**236,427**	**265,367**	**280,842**
Effective Tariff rates (Rs./KWhrs)	2	2	2	2	2	2	2
Growth in Tariff rates (%)		*6.0%*	*6.0%*	*5.0%*	*4.0%*	*3.5%*	*3.5%*
Gross Revenue (Rs mn)	**329,359**	**373,332**	**421,239**	**477,239**	**541,206**	**628,707**	**688,653**
Fuel Consumption							
Total Coal Consumption (MT)	109	121	128	137	151	163	164
Total Gas Consumed (MMSCMD)	10.6	11.5	12.0	12.8	13.1	17.8	22.7
Employee (`000)	24	25	27	29	31	34	35
Capital Expenditure (Rs mn)		**61,574**	**115,766**	**183,279**	**264,081**	**245,526**	**26,953**

Source: Company, MF Global India Research Estimates

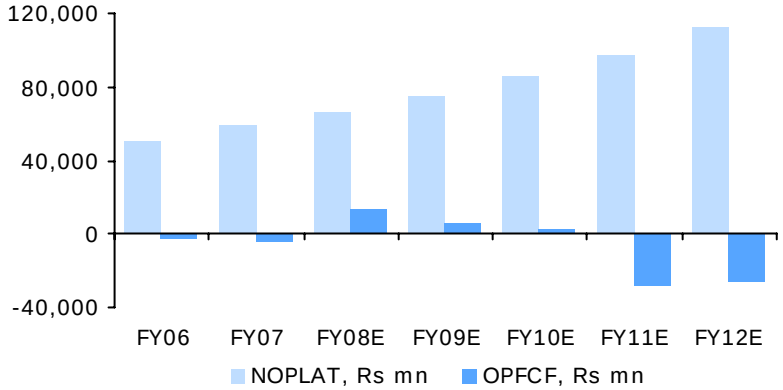
Financial Performance



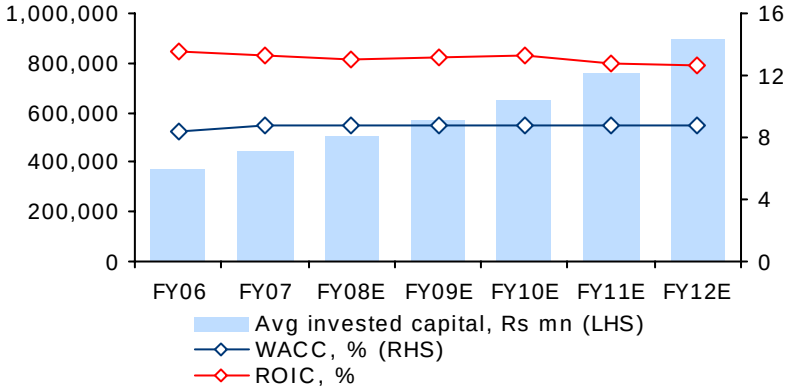
- Net sales expected to grow at a CAGR of 14%, both on account of volume growth and steady growth in tariffs.



- EBIDTA to grow at higher rate of ~16.5% CAGR on account of improved efficiency and steady increase in PLF.



- Although NOPLAT will grow at ~13.7% CAGR, we expect free cashflow to show negative on account of capex for the XIIth Plan.



- A well-spread out capex programme ensures returns ratio above WACC.

NTPC Ltd

MF Global

Source: Company, MF Global India Research Estimates

DCF calculation

	FY08E	FY09E	FY10E	FY11E	FY12E	FY13E	FY14E	FY15E	FY16E	FY17E	....	FY22E
PBIT	**115,422**	**126,880**	**138,509**	**148,425**	**165,587**	**185,457**	**207,712**	**232,637**	**260,554**	**291,820**		**436,511**
Tax on PBIT	(26,547)	(44,408)	(48,478)	(51,949)	(57,955)	(40,801)	(45,697)	(51,180)	(57,322)	(64,200)		(96,032)
NOPLAT	88,875	82,472	90,031	96,476	107,631	144,656	162,015	181,457	203,232	227,620		340,479
Add: Depreciation	23,884	29,038	38,702	48,243	66,625	75,286	85,073	96,132	108,630	122,752		156,666
Add: Non-cash expenses	4,791	3,906	3,541	3,101	2,826							
Gross Cash Flow	**117,550**	**115,416**	**132,274**	**147,820**	**177,082**	**219,942**	**247,088**	**277,589**	**311,862**	**350,371**		**497,144**
Change in WC	5,000	(261)	4,865	8,106	2,835	3,261	3,750	4,312	4,959	5,703		11,471
Less: Capex	(61,574)	(109,978)	(174,115)	(250,877)	(233,250)	(116,625)	(93,300)	(74,640)	(59,712)	(47,770)		(3,891)
Less: Investments	8,943	(16,446)	(21,297)	(26,146)	(20,958)	(16,766)	(13,413)	(10,730)	(8,584)	(6,868)		(7,582)
Free Cash Flow	**69,918**	**(11,268)**	**(58,273)**	**(121,098)**	**(74,291)**	**89,812**	**144,125**	**196,531**	**248,524**	**301,437**		**497,142**
Discounting Factor	1.00	1.08	1.19	1.30	1.43	1.57	1.72	1.89	2.08	2.28		3.64
Present Value of FCF	**69,918**	**(10,440)**	**(49,171)**	**(93,064)**	**(51,984)**	**57,235**	**83,650**	**103,886**	**119,614**	**132,131**		**136,511**

Valuation based on DCF Earnings Method	
Value of operations	1,083,165
PV of Terminal Value	697,483
Total Entity Value	1,780,648
Less: Debt as estimated FY08E	269,497
Add: Cash estimated FY08E	137,441
Add: Book Value of investment as on FY08E	169,886
Equity value	1,818,477
DCF value/share	**220**

Assumptions	
Risk Free Return	8.0%
Market Premium	6.5%
Beta	0.6500
Cost of Equity	12.2%
Interest rate	7.7%
Corporate Tax Rate	34.0%
Post Tax Cost of Debt	5.1%
Gearing Ratio	0.3
WACC	**9.8%**
Terminal Growth Rate	4.2%

Sensitivity Analysis

Terminal growth rate	WACC				
	8.0%	9.0%	9.8%	10.0%	11.0%
3.5%	330	250	210	200	170
4.0%	350	260	220	210	170
4.2%	360	270	**220**	210	170
5.0%	410	290	240	220	180
5.5%	460	310	250	230	190

- Our DCF is based on a three-stage model with the second stage at a constant growth and third stage reducing down to 6% by FY22

The terminal growth rate of 4.2% is taken based on the long-term (1951-2006) average GDP growth (net of inflation) and adjusting to the energy to GDP efficiency factor of 0.85 (which is obtained from the Energy Vision document of the GoI.

Source: Company, MF Global India Research Estimates

Valuation

- Our 12-month DCF-based price target works out to Rs 220 per share, providing for an upside of ~32% from the CMP of Rs 167 per share.

- **Our valuation does not provide**
  - Any additional valuation for the 9 captive coal blocks (estimated coal reserves of 5.9 Bn Tonnes) allotted to NTPC, which are at various stages of development.
  - All investments, either in subsidiaries or joint ventures, and other holdings in GOI bonds, are valued at book value of investment in the balance-sheet and have not provided for any additional multiple.
  - NTPC holds an oil & gas block, allotted to it under NELP-V, which is in the development stage. We have not done any valuation for the potential reserves from this block.

Financials

Income Statement

Y/E Mar, Rs mn	FY06	FY07	FY08E	FY09E	FY10E
Net sales	**266,288**	**324,979**	**368,999**	**416,557**	**472,183**
Growth, %	*18*	*22*	*14*	*13*	*13*
Other income	30,005	30,012	27,242	26,044	24,290
Total income	296,293	354,991	396,240	442,602	496,473
Operating expenses	-190,080	-225,950	-257,603	-287,433	-320,122
EBITDA	**76,660**	**99,637**	**112,064**	**129,874**	**152,922**
Growth, %	*19.0*	*25.1*	*12.9*	*16.0*	*18.4*
Margin, %	*29.3*	*30.0*	*29.9*	*30.7*	*32.0*
Depreciation	-20,477	-20,754	-23,884	-29,038	-38,702
EBIT	**56,183**	**78,883**	**88,181**	**100,836**	**114,219**
Growth, %	*25.1*	*33.6*	*12.3*	*14.4*	*14.0*
Margin, %	*21.6*	*23.6*	*23.4*	*23.7*	*23.8*
Interest paid	-20,101	-19,821	-19,854	-20,040	-21,381
Pre-tax profit	**66,087**	**89,074**	**95,568**	**106,840**	**117,128**
Tax provided	-7,885	-20,427	-22,215	-24,840	-27,235
Profit after tax	**58,202**	**68,647**	**73,353**	**82,001**	**89,893**
Net Profit	**58,202**	**68,647**	**73,353**	**82,001**	**89,893**
MF Net profit	**58,202**	**68,647**	**73,353**	**82,001**	**89,893**
Growth, %	*0.2*	*17.9*	*6.9*	*11.8*	*9.6*
EOI: Gains/(Losses)	0	0	0	0	0
Unadj. shares (m)	8,246	8,246	8,246	8,246	8,246
Wtd avg shares (m)	8,246	8,246	8,246	8,246	8,246

Balance Sheet

Y/E Mar, Rs mn	FY06	FY07	FY08E	FY09E	FY10E
Cash & bank	84,714	133,146	137,441	132,896	139,333
Marketable sec. at cost	0	0	0	0	0
Debtors	8,678	12,523	13,163	13,910	14,693
Inventory	23,629	25,435	29,583	33,758	39,751
Loans & advances	65,760	88,160	72,165	75,242	77,521
Other current assets	0	0	0	0	0
Total current assets	182,781	259,264	252,351	255,806	271,298
Investments	185,768	151,258	160,200	143,754	122,457
Gross fixed assets	460,396	507,273	568,847	684,613	867,893
Less: Depreciation	-229,501	-250,792	-275,548	-305,961	-346,925
Add: Capital WIP	136,340	168,392	206,663	190,707	127,548
Net fixed assets	367,235	424,873	499,962	569,359	648,515
Non-current assets	0	0	0	0	0
Total assets	**752,339**	**855,662**	**922,199**	**978,605**	**1,051,956**
Current liabilities	54,105	62,859	71,033	75,849	77,532
Provisions	32,833	44,841	48,394	51,839	54,345
Total current liabilities	86,938	107,700	119,426	127,687	131,876
Non-current liabilities	215,814	261,994	276,064	279,601	300,885
Total liabilities	302,752	369,694	395,491	407,289	432,762
Paid-up capital	82,455	82,455	82,455	82,455	82,455
Reserves & surplus	367,132	403,513	444,253	488,862	536,739
Shareholders' equity	449,587	485,968	526,708	571,317	619,194
Total equity & liab.	**752,339**	**855,662**	**922,199**	**978,605**	**1,051,956**

MF Global

Source: Company, MF Global India Research Estimates

Financials

Cash Flow

Y/E Mar, Rs mn	FY06	FY07	FY08E	FY09E	FY10E
Pre-tax profit	66,087	89,074	95,568	106,840	117,128
Depreciation	20,477	20,754	23,884	29,038	38,702
Chg in working capital	-19,183	-17,138	19,381	-3,184	-7,371
Total tax paid	5,350	-8,419	-19,219	-22,443	-25,743
Other operating activities	0	0	0	0	0
CF from opg act.	**72,731**	**84,271**	**119,614**	**110,251**	**122,716**
Capital expenditure	-65,305	-78,392	-98,973	-98,435	-117,858
Chg in investments	20,638	34,511	-8,943	16,446	21,297
Chg in marketable securities	0	0	0	0	0
Other investing activities	0	0	0	0	0
CF from invest act.	**-50,219**	**-48,429**	**-107,915**	**-81,989**	**-96,561**
Free cash flow	22,513	35,842	11,699	28,262	26,155
Equity raised/(repaid)	-53	0	0	0	0
Debt raised/(repaid)	31,095	42,871	24,653	3,537	21,284
Dividend (incl. tax)	-29,624	-30,281	-32,057	-36,344	-41,002
Other financing activities	0	0	0	0	0
CF from finan act.	**1,418**	**12,590**	**-7,403**	**-32,807**	**-19,718**
Net chg in cash	23,931	48,432	4,295	-4,545	6,437

Per-share data

Y/E Mar, Rs mn	FY06	FY07	FY08E	FY09E	FY10E
MF EPS (INR)	7.1	8.3	8.9	9.9	10.9
Growth, %	*0.2*	*17.9*	*6.9*	*11.8*	*9.6*
Book NAV/share (INR)	54.5	58.9	63.9	69.3	75.1
FDEPS (INR)	7.1	8.3	8.9	9.9	10.9
CEPS (INR)	9.5	10.8	11.8	13.5	15.6
CFPS (INR)	5.2	6.6	11.2	10.2	11.9
DPS (INR)	2.8	3.2	3.5	4.0	4.5

Ratios

Y/E Mar	FY06	FY07	FY08E	FY09E	FY10E
Return on assets (%)	9.9	10.1	9.7	10.0	10.2
Return on equity (%)	13.4	14.7	14.5	14.9	15.1
ROIC (%)	13.5	13.3	13.0	13.2	13.2
RoIC/Cost of capital (x)	1.6	1.5	1.5	1.5	1.5
RoIC - Cost of capital (%)	5.1	4.5	4.2	4.5	4.5
ROCE (%)	11.2	11.5	11.1	11.5	11.7
Cost of capital (%)	8.4	8.8	8.8	8.7	8.7
RoCE - Cost of capital (%)	2.8	2.7	2.3	2.7	3.0
Total debt/Equity (%)	44.9	50.4	51.2	47.8	47.5
Net debt/Equity (%)	26.1	23.0	25.1	24.5	25.0
Asset turnover (x)	0.7	0.7	0.7	0.7	0.7
Sales/Total assets (x)	0.4	0.4	0.4	0.4	0.5
Sales/Net FA (x)	0.8	0.8	0.8	0.8	0.8
Working capital/Sales (x)	0.0	0.1	(0.0)	(0.0)	0.0
Fixed capital/Sales (x)	0.9	0.8	0.8	0.9	1.1
Receivable days	11.9	14.1	13.0	12.2	11.4
Inventory days	32.4	28.6	29.3	29.6	30.7
Payable days	94.3	87.6	84.5	77.9	68.1
Current ratio (x)	2.1	2.4	2.1	2.0	2.1
Quick ratio (x)	1.8	2.2	1.9	1.7	1.8
Interest cover (x)	2.8	4.0	4.4	5.0	5.3
Dividend cover (x)	2.5	2.6	2.6	2.5	2.4
PER (x)	23.6	20.0	18.7	16.8	15.3
PEG (x) - y-o-y growth	103.9	1.1	2.7	1.4	1.6
Price/Book (x)	3.1	2.8	2.6	2.4	2.2
Yield (%)	1.7	1.9	2.1	2.4	2.7
EV/Net sales (x)	5.6	4.6	4.1	3.6	3.2
EV/EBITDA (x)	19.1	15.2	13.7	11.9	10.1
EV/EBIT (x)	25.9	19.3	17.5	15.3	13.6
EV/NOPLAT (x)	30.1	26.4	23.5	20.5	17.9
EV/CE	2.2	2.0	1.9	1.8	1.7
EV/IC (x)	4.0	3.3	3.0	2.6	2.3

MF Global

Source: Company, MF Global India Research Estimates

INITIATING COVERAGE

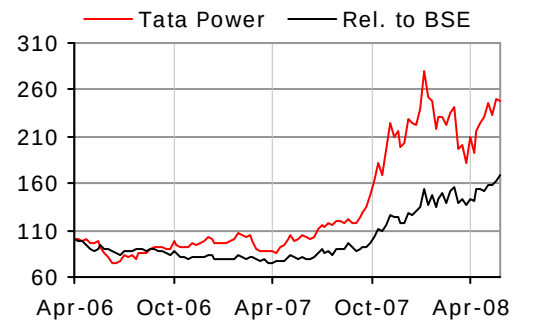
June 6, 2008

Tata Power (TPWR IN / TTPW.BO)

BUY

Renewed vigour at 102!

CMP Rs 1257
Target Rs 1562 (+24%)



Investment Rationale

- Positive initiatives include: (1) Robust generating capacity augmentation of 5.96GW; (2) Acquisition of 30% stake in PT Bumi mines in Indonesia, which, in turn, enjoy CCOW license till 2021, extendable beyond 2021; (3) 10.5 mtpa coal off-take agreement ensures fuel security; (4) Proven operational efficiencies in NDPL distribution, and (5) Diversification in transmission business through the Tala project.
- Despite seeking approvals for equity dilution to meet its capex requirement on hand, we expect that its internal accruals would be sufficient to meet immediate capex needs. A strong investment book could provide support to meet additional capex needs over and above the projects on hand. Lower gearing (at 30% FY08E is projected to touch 62% in FY11E) continues to provide room for additional fund-raising activity.
- The strategy of the company has been to balance a mixture of organic and inorganic initiatives to maintain its growth momentum and within that, a judicious mix of diverse business assets, that is, CPPs/UMPPs/IPPs/distribution-linked plants, with diverse fuel mix, such as thermal, coal, gas, diesel, flue gas and renewables, while keeping the door open for additional hydro projects.

Risks

- Company-specific risks include under-utilisation of generating assets, project execution delays, 2.75mtpa of coal supply still exposed to price variations. Effect of the international fuel price variation would pose an additional pressure on earnings and thus affect valuation estimates.
- Industry-specific risks include uneconomical regulatory changes, slowdown in the reform process and negative investor sentiment towards the sector in specific or equity in general.

Valuation

- On an SOTP basis, we value the stock at Rs 1635 per share, breaking the parts into: (1) Mumbai licensee area, (2) Generation assets under subsidiaries, (3) New Delhi Power Ltd., (4) Powerlinks Transmission Ltd., (5) Investments in PT Bumi coal mines, (6) Per share value of liquid and other investments.

Company data	
O/S shares :	221mn
Market cap (Rs) :	277bn
Market cap (USD) :	6bn
52 - wk Hi/Lo (Rs) :	1641 / 566
Avg. daily vol. (3mth) :	715,699
Face Value (Rs) :	10

Share holding pattern, %	
Promoters :	33.4
FII / NRI :	21.5
FI / MF :	26.0
Non Pro. Corp. Holdings :	0.9
Public & Others :	18.2

Y/E Mar, Rs bn	FY08E	FY09E	FY10E
Net Sales	51.1	58.5	66.6
PAT	6.2	6.4	5.1
EBIDTA mrg, %	16.8	19.0	20.6
PAT mrg, %	12.2	10.9	7.6
ROE, %	10.1	8.3	5.8
EPS, Rs	26.5	27.2	21.7
PER, x	47.5	46.2	58.0

Investment Overview

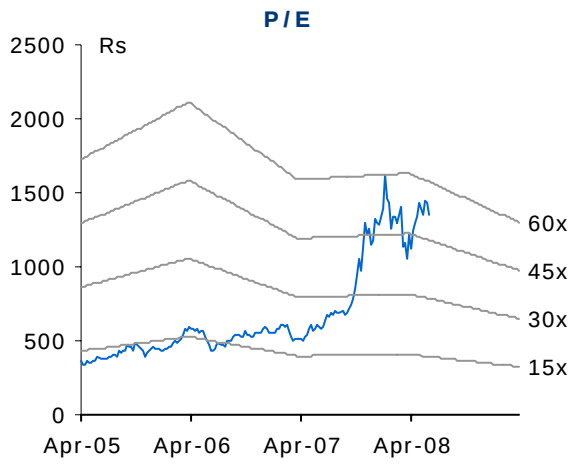
Sustainable competitive advantage	Robust project schedule, with proven execution skills, depreciated Mumbai assets, and an under-leveraged balance sheet.
Financial structure	Stable revenue model on account of the regulated tariff structure in core business. Low gearing ratio (estimated at 30% FY08 and projected to rise as high as 62% in FY11) still provides ample room for fund raising.
Shareholder value creation	Capacity expansion met through near-zero additional dilution provides scope for per share value enhancement.
Earnings visibility	Low-risk regulated revenue flow from existing business, along with a healthy mix of new business revenue from: (1) regulated UMPPs/IPPs, and (2) high-growth oriented CPPs/MPPs provide strong earnings growth visibility.
Valuation	At the CMP of Rs 1257, the stock trades at 46.2x earnings for FY09E EPS of Rs 27.2 and P/B of 3.5x.
MF Global vs. consensus	Both our revenue estimates and price target are in line with industry consensus.
Future event triggers	Progress on projects under implementation, announcement in terms of additional coal to meet the shortfall of 2.75mtpa.
Expected price momentum	We look forward to an upside of ~24% over the next 12 months.

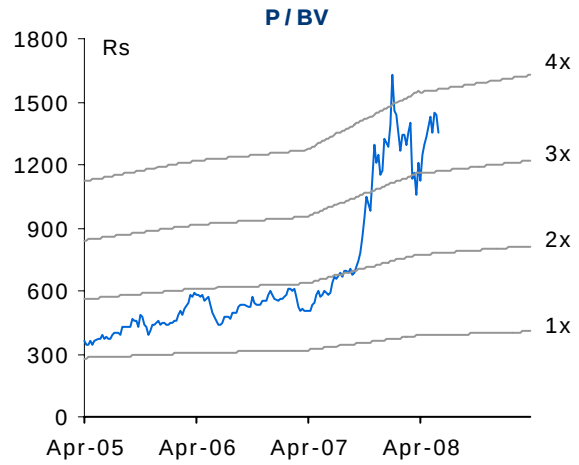
Valuation Summary

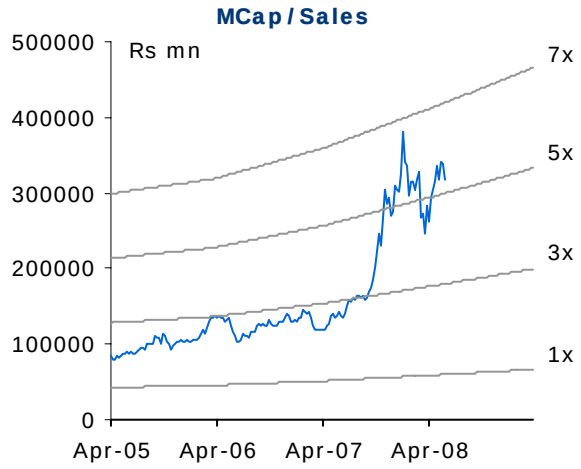
Y/E Mar, Rs mn	FY2006	FY2007	FY2008	FY2009E	FY2010E
Net Sales	42,668	45,555	51,119	58,531	66,566
Growth, %	18.2	6.8	12.2	14.5	13.7
Core EBIDTA	8,055	6,793	8,586	11,103	13,702
EBIDTA margins, %	18.9	14.9	16.8	19.0	20.6
Net profit	5,672	6,968	6,217	6,386	5,089
Net profit margin, %	13.3	15.3	12.2	10.9	7.6
EPS, Rs	28.7	35.2	26.5	27.2	21.7
EPS Growth, %	3.2	22.9	(24.8)	2.7	(20.3)
PER, x	43.9	35.7	47.5	46.2	58.0
EV/EBIDTA, x	33.1	40.0	31.5	27.3	25.8
EV/Net Sales, x	6.2	6.0	5.3	5.2	5.3
Price/Book Value, x	5.0	4.6	4.3	3.5	3.3
ROIC, %	11.6	10.5	8.3	6.2	4.1
ROE, %	11.9	13.4	10.1	8.3	5.8
Dividend Yield, %	0.7	0.8	0.6	0.6	0.5

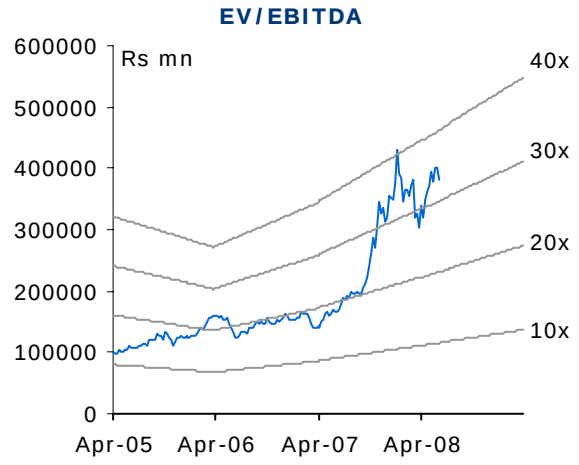
Source: Company, MF Global India Research Estimates

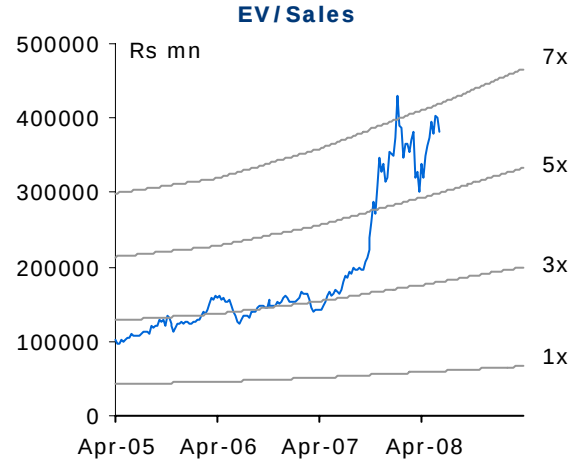
Absolute rolling Valuation band charts











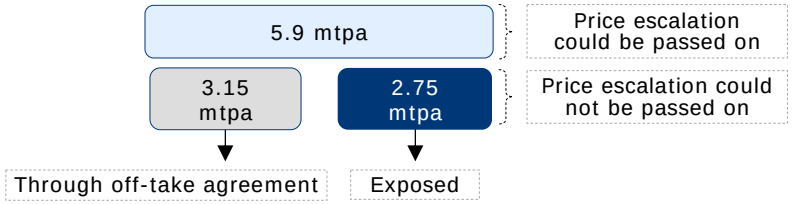
- Recent interest in the sector has pushed the stock price to a new zone.
- We expect the stock to enjoy this investor interest on continued news flow on various ongoing project developments and a new IPO in the sector, which is expected to hit the market in FY09.

Source: MF Global India Research

Key risks

- We recognise that galloping fuel prices would be a major concern for future revenue and earnings estimates.

Mundra UMPP coal supply arrangement



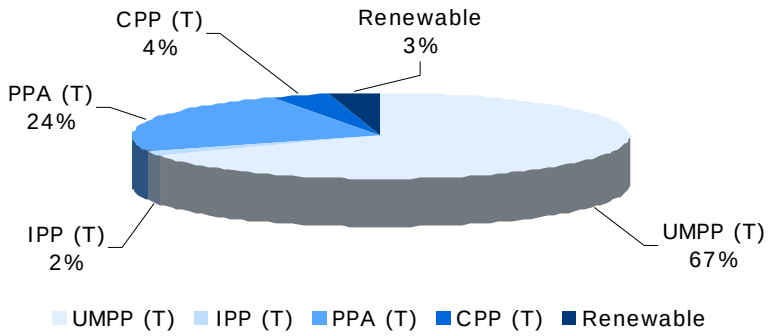
- TPC's shipping venture is likely to pose a pressure on cash flow and thus, earnings.
- Slow developments in the land acquisition policy act as a road block for project development.
- Risk due to uneconomical regulatory policy implementations.
- Currency fluctuations

Our Comments

- Despite the off take agreement, 2.75mtpa coal supply for Mundra UMPP remains exposed to coal price fluctuations. However, the company is scouting for coal mines in Indonesia. Details on "Flow chart-coal arrangement "
- The shipping venture is a potential burden on TPC's cash flow. Also, TPC has limited operational experience in this business. On the other hand, the business provides ample scope for business synergy.
- Excluding the UMPP/CPP and certain IPP projects, any new projects, like Shahapur, would continue to be exposed to hiccups in land acquisition for timely project completion and at times, projects could even be shelved off.
- With over three-fourths of the total generating capacity in FY13E continuing to be regulated, any un-economical policy change poses a risk for our revenue and earnings estimates.
- As 50% of the imported coal requirement of the Mundra project is indexed, any adverse exchange rate fluctuation would impact fuel costs and thus, earnings potential of the project.

Management strategy
Ideal mix of integration and fuel/regional diversification

Diversification of forthcoming generating assets across business types



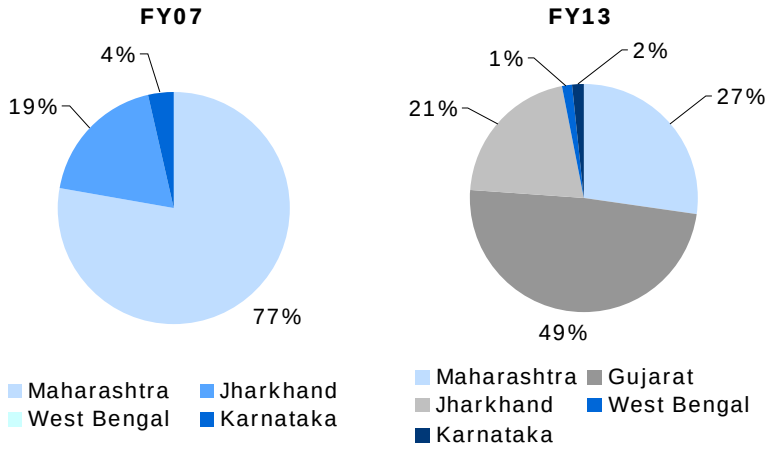
Upcoming Project	Generating Cap (MW)	% Share
Mundra UMPP	4000	68.0%
Maithon PPA	**1050**	**17.8%**
Trombay	350	6.0%
IEL CPP	240	4.0%
Hoogley IPP	120	2.0%
Gujarat WPP (Jamnagar)	50.4	0.8%
Karnataka WPP (Gadag)	50.4	0.8%
Maharashtra Wind PP	33.2	0.5%

160 MW (~15%) could be Merchant

- The western region witnesses the highest deficit, and TPC's management has been prudent in commissioning almost 76% of its incremental capacity in this region. This is followed by the major fuel sourcing and well-connected eastern region with 22% of the capacity planned in this region.
- We believe that this would act both as a major revenue driver as well as diversify the risk through a wider market coverage.

- Management at TPC has strategically planned its business diversification to encompass all evolving business models in the Indian power sector. The emerging asset structure shows a diverse picture with PPAs, UMPPs, IPPs, CPPs, distribution licensee-linked plants and along with a decent share of merchant capacity in it.
- We believe that this would improve earnings visibility and protect it from any negative policy developments for a particular model.

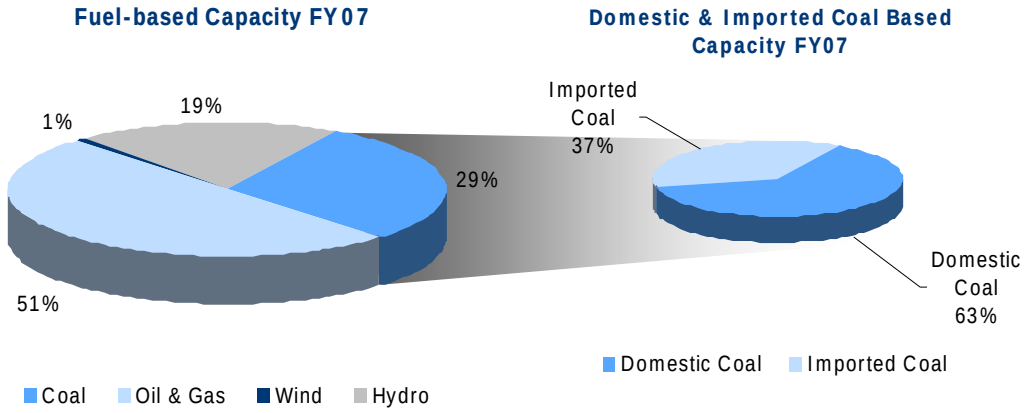
Diversification of generating assets across geographies

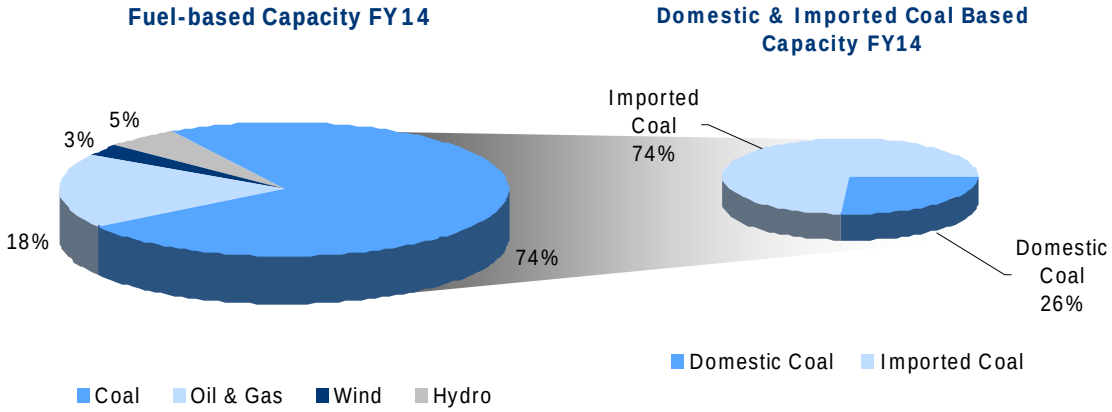


MF Global

Source: Company, MF Global India Research

Management strategy (Contd.)



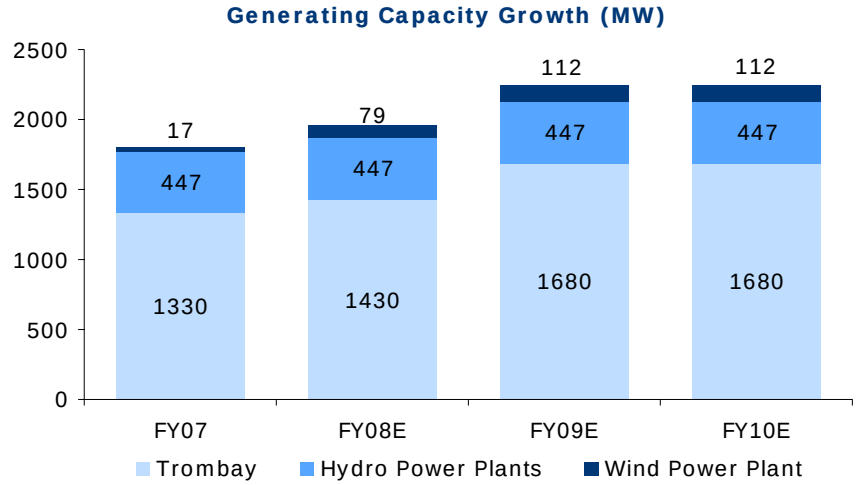


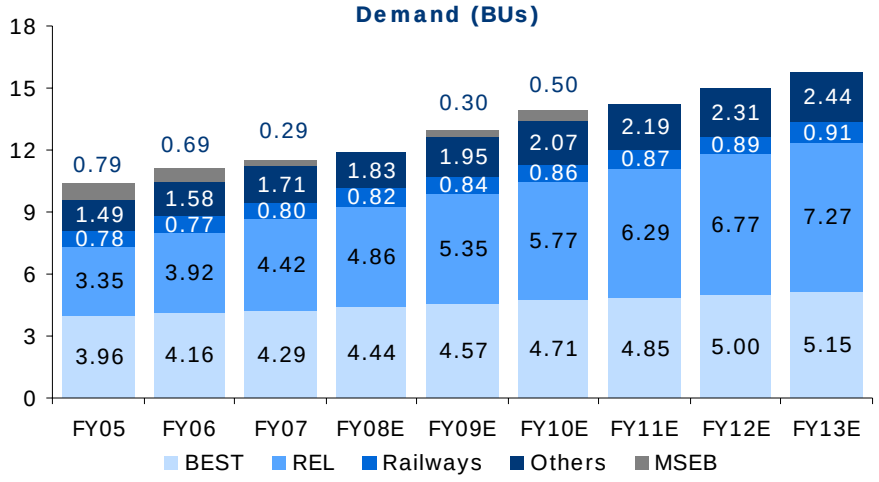
- Currently, oil & gas accounts for over 51% of the total generating mix for Tata Power, followed by coal at 29%.
- Of this, domestic coal accounts for a major portion (63%) of the total, while the imported coal is mainly to meet the requirement of the Mumbai region and is completely covered against any international price fluctuations (as part of the Mumbai LA ARR).
- In the evolving scenario, coal plays a predominant role as 74% of generation capacity is coal based. Also, a clear focus is seen on expanding the share of renewables from 1% to 3%.
- Of the total coal requirement, an increased share of imported coal is also visible (mainly Mundra UMPP) and would be exposed to international price fluctuations as only 50% of the fuel price is indexed under the Mundra UMPP project.

Mumbai LA Business

Opportunity from open access in distribution

- Scheduled capacity augmentation for Mumbai LA from 1794MW in FY07 to 2239MW in FY09E.
- We project that the Mumbai licensee region's unit sales will witness a 5-year CAGR of~5.7% (as against 5.57% for the period between FY04-07) for the period FY08-13E, proportionate revenue CAGR of ~10.9% for the same period (as against 3.9% in FY04-07).
- Lower revenue growth, in the past, has been on account of under-recoveries in fuel price increases and we expect this to be recovered in the coming years.





- The EA2003 has clearly outlined the roadmap for distribution open access and TPC already owns the distribution license for Mumbai. But, the pending litigation, initiated by its rivals, has till now restricted TPC's expansion of distribution business for Mumbai LA.
- With open access for transmission already implemented from Jan'08, we expect distribution to follow suit, though with a delay of a year or two.
- This would open up a strong growth opportunity for TPC's Mumbai LA business.

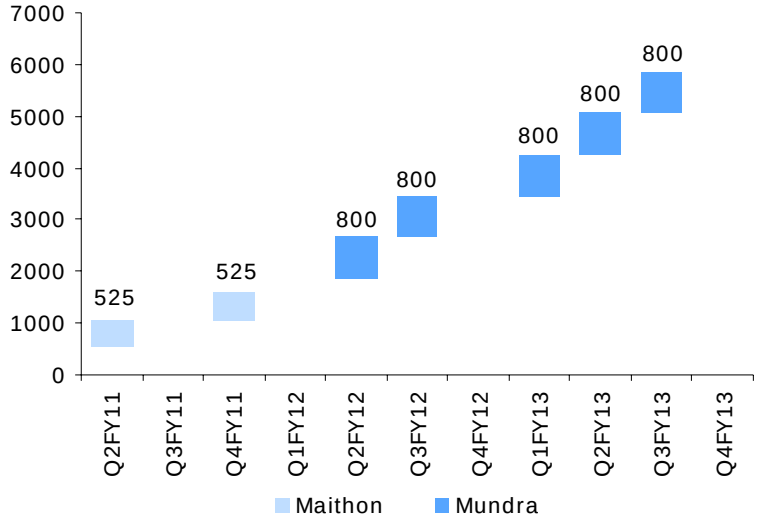
Source: Company, MF Global India Research Estimates

Expanding Generating Assets

Major revenue driver for the next 5 years

- **Mundra UMPP,** with a generation capacity of 4000MW, constitutes around 67% of the total expansion plan.
- The project has an annual coal requirement of 11.8mtpa. With the off-take agreement of 10.5mtpa (±20%), the company has 100% fuel linkage. However, it is exposed to the fuel price fluctuations for 2.75mtpa.
- As per the UMPP guidelines, Mundra UMPP has PPAs with the states of Gujarat, Maharashtra, Punjab, Haryana & Rajasthan, and connectivity to the grid is already guaranteed.

Expected commissioning schedule of Mundra & Maithon



- **Maithon PPA,** is a 76:24 JV between Tata Power & DVC. The plant has a generation capacity of 1050MW, and would contribute 18% to the company's expansion plans.
- The plant will require approx. 3.8mtpa of domestic coal, which will be entirely sourced from the BCCL mine.
- PPAs have already been signed with DVC for the supply of 300MW, with the West Bengal State Electricity Board to supply 100MW and NDPL to supply 300MW. For the remaining 350MW, talks are on with the electricity boards of the states of Punjab and Karnataka.
- Both these projects provide a lot of strength and visibility to TPC's expansion plans.

MF Global

Source: Company, MF Global India Research

Strategic diversification
To yield positive results

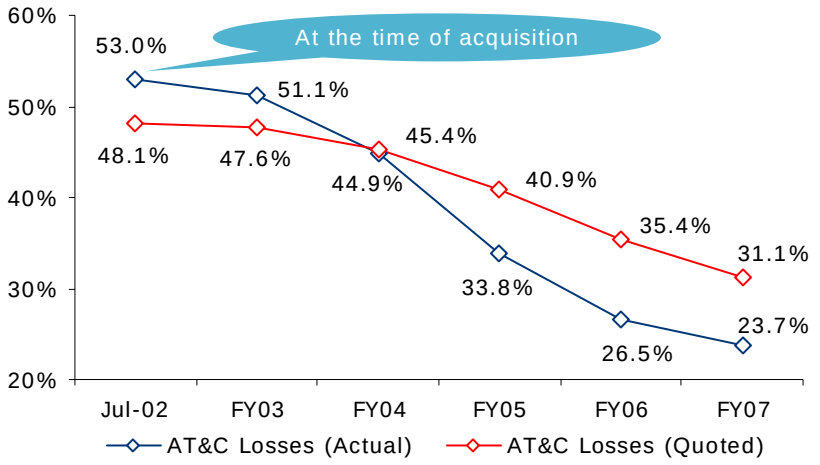
New Delhi Power Ltd. (NDPL)

- An established player in retail distribution, NDPL has been an ideal case study of the efficiency of the private sector in the distribution business.
- AT&C losses have halved after TPC acquired NDPL in FY03,well surpassing standards set by DERC. **AT&C losses are expected to go further down to ~17% by FY11E.**
- With the Common Wealth Games due in 2010, generation demand is projected to witness strong growth in the coming years and TPC is already augmenting its generating asset capacity (Maithon) to support this higher demand.
- We expect a constant increase in free cash flows of NDPL, considering improving revenues and low capital expenditure.

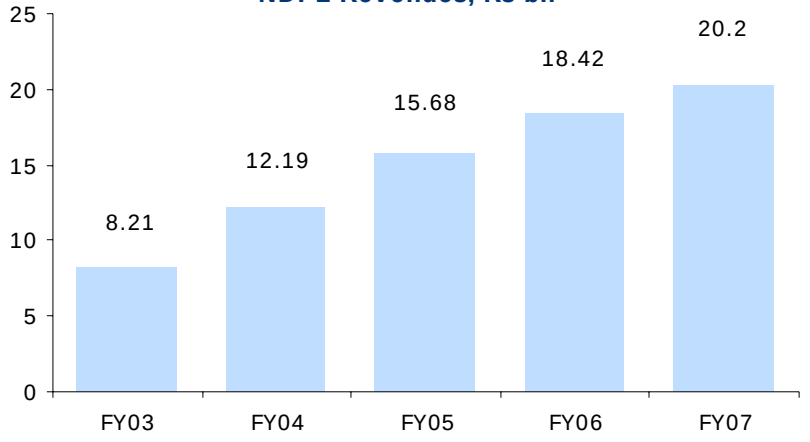
Powerlinks Transmission Ltd. (PTL)

- Powerlinks Transmission Ltd. is a 49:51 joint venture between PGCIL & TPC. The project involved laying a transmission line from Siliguri (West Bengal) to Mandola (UP), that is, 2342ckt kms, and was completed ahead of schedule.
- The estimated RoE for the project is around 15.5%. Just like NDPL, PTL also provides Tata Power with growing free cash flow.
- These two arms of Tata Power would serve as cash-cows for its forthcoming capital projects.

AT&C Losses of NDPL: Actual Vs. Target



NDPL Revenues, Rs bn

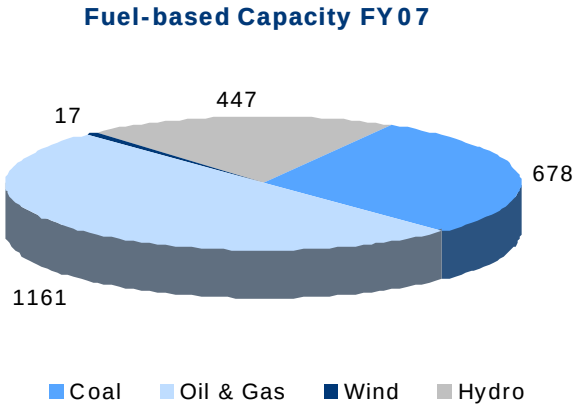


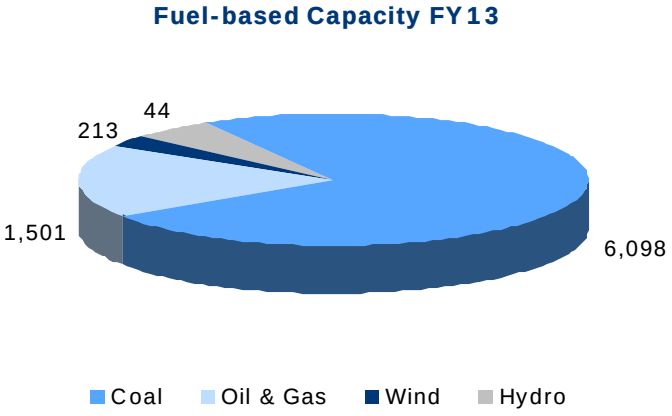
Source: Company, MF Global India Research

Fuel Security

Priority area of action for management

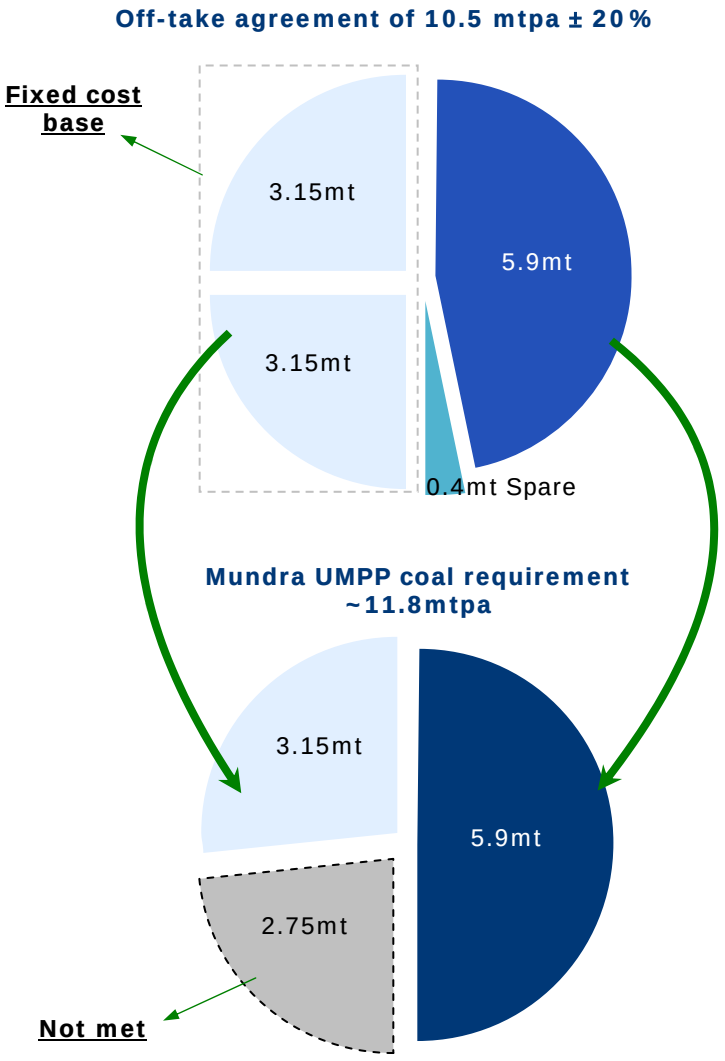
- 40% (678MW) of TPC's total capacity was coal based as at end FY07. This is projected to touch 77% (6098MW) by FY13.
- Clubbing the Mundra & Trombay units together, by FY13, Tata Power would require around 13.5mn tonnes of imported coal per annum. Other plants like Jojobera, Maithon and parts of Trombay would have a domestic coal requirement of around 6mtpa by the same time.
- Tata Power has signed an off-take agreement for 10.5mtpa (±20%), starting from FY09, with one of the Indonesian mines it has acquired, with a calorific value of 5350kcal. The off-take agreement would cater to the requirements of the Mundra UMPP and Trombay plants. The company also intends to use the coal for the Shahapur project. However, the company has not furnished commissioning details of the project as it is still pursuing land acquisition. The off-take agreement could be better understood with the help of the chart on the next page.
- Recently, TPC also acquired two captive mines, Mandakini and Tubed, in India while it has signed an FSA with Mahanadi Coal Blocks and BCCL.





Source: Company, MF Global India Research Estimates

Flow chart coal arrangement



- Off-take agreements entitle TPC to buy 10.5mn tonnes of coal (±20%). 50% of this is quantity (assuming it to be 6.3mn tonnes, considering the company's increasing coal requirement) fixed price (FP) while the rest is indexed/variable.
- Half of the FP quantity under the off-take agreement, 3.15mtpa, is dedicated towards Mundra, which requires 5.9mtpa of FP coal. Thus, it leaves 2.75mtpa FP coal requirement unmet. The remaining half of FP quantity could serve other plants' requirements like Trombay, Shahpur and other projects in pipeline.
- 5.9mtpa of the total indexed/variable quantity would cater to Mundra, while the remaining 0.4mtpa could be supplied to other plants.
- The company also has an existing contract with other Indonesian mines for around 3mtpa of coal, which would expire in FY09 and can be extended further.

Source: MF Global India Research

Stake in Indonesian Mines

- TPC acquired a 30% stake in two major coal mining Indonesian companies; PT Kaltim Prima Coal (KPC) & PT Arutmin Indonesia, paying a consideration of US$ 1.1bn. The coal mining companies are almost fully owned by PT Bumi Resource Tbk.
- These two mines produced 50.7mn tonnes of coal in 2007 *(as per PT Bumi's annual report)* with the production scheduled to be expanded to 100million tonnes by 2011.
- By FY13, the imported coal requirement (including the projects under implementation) would be around 13.8mtpa, most of which can be met through the off-take agreement. However, if we consider the projects in the pipeline also, the total requirement of imported coal shoots up to 21.25mtpa by FY13. In such a scenario, ownership in coal companies comes in handy for TPC.
- In addition, the investments add great value to the company's valuation, considering the huge coal reserves of the mines and their quality.

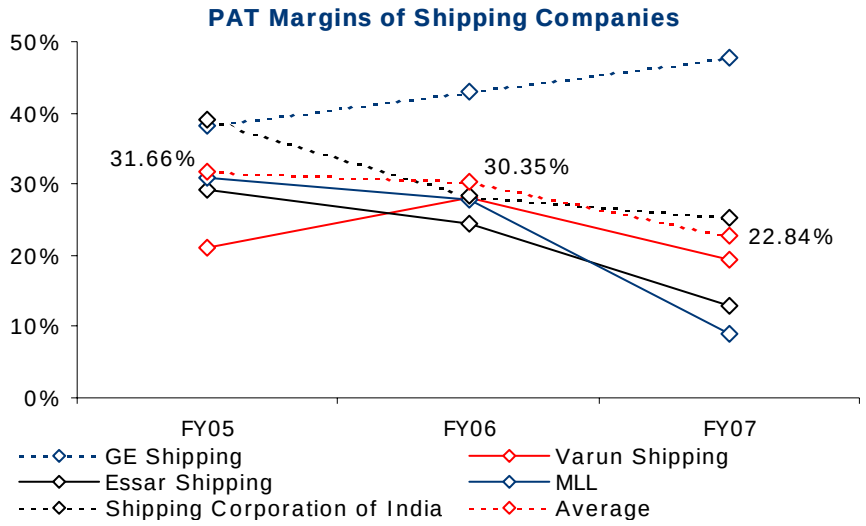
Total Imported Coal Requirement by FY13E

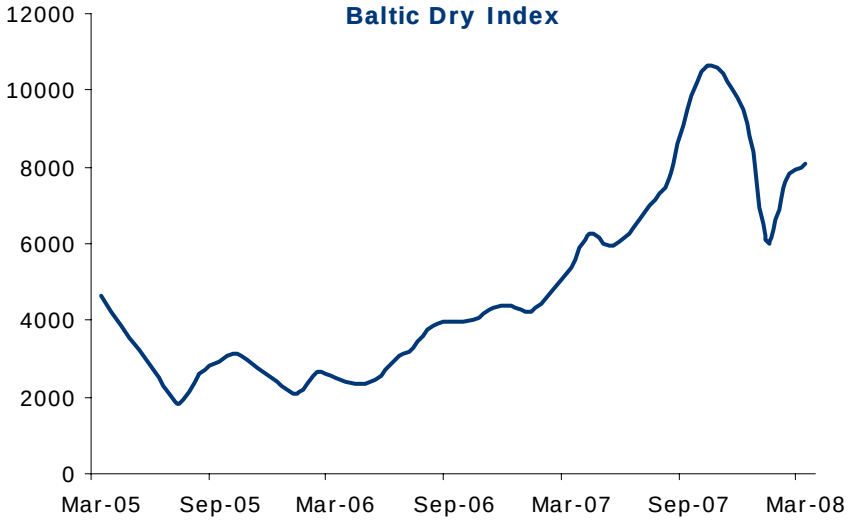
Projects	Coal Req (mtpa)
Coastal Maharashtra (imported coal)	7.35
Additional Coal required of projects in pipeline	**18.55**
Mundra UMPP (imported coal)	11.79
Trombay Unit#5, Unit#8	2.11
Imported coal required for projects under implementation	**13.90**
Total Import coal requirement	**21.25**

Source: Company, MF Global India Research

Shipping Venture
Managing logistics

- TPC Asia, a 100%-owned subsidiary of TPC Ltd., would manage logistics for TPC.
- To transport around 21mtpa, TPC Asia is expected to have a fleet size of 8-9 ships (cape-sized vessels) by FY11, as both owned and long-term charters.
- TPC Asia is strategically aligned with the company's expansion plans and thereby, its coal requirement, effectively minimising the effect of escalating freight costs.
- On an average, shipping companies have a PAT margin of 20-25%, taking into effect the rising ship operating expenses. TPC Asia, being a 100%-owned subsidiary, would save TPC's costs to that extent.
- In the bargain, TPC would witness heavy cash outflow on acquiring ships as well as on paying annual rentals.





Source: Company, MF Global India Research

Key Assumptions

Parameters	FY04	FY05	FY06	FY07	FY08E	FY09E	FY10E	FY11E	FY12E	FY13E	FY14E
Generation- Plant-wise (MU)											
Trombay	9,038	9,511	9,185	9,180	9,834	11,647	12,804	13,245	13,281	13,540	13,540
Hydro Power Plants	1,336	1,439	2,024	2,138	2,160	1,997	1,762	1,468	1,443	2,024	2,138
Wind Power Plants	32	29	27	29	76	226	324	347	347	360	360
Belgaum*	242	244	135	189	178	196	196	196	196	196	196
Jojobera	1,793	1,950	2,375	2,731	2,816	2,809	2,809	2,809	2,816	2,809	2,809
Mundra	0	0	0	0	0	0	0	0	5,661	23,478	31,536
Haldia	0	0	0	0	0	256	788	788	788	791	788
	12,441	**13,173**	**13,746**	**14,267**	**15,064**	**17,131**	**18,683**	**18,853**	**24,532**	**43,198**	**51,367**
Purchases (MU)	44	85	590	842	603	0	0	153	882	876	1,510
Less: T&D Losses	673	688	719	685	724	815	856	850	835	867	873
Total Units for sale	11,812	12,570	13,617	14,424	14,943	16,316	17,827	18,156	24,579	43,207	52,004
Sales- Region-wise (MU)											
Mumbai region	9,777	10,376	11,107	11,504	11,949	13,002	13,902	14,208	14,963	15,765	16,507
Ex-Mumbai Region	2,035	2,194	2,510	2,920	2,994	3,314	3,925	3,948	9,616	27,442	35,497
Total Sales	11,812	12,570	13,617	14,424	14,943	16,316	17,827	18,156	24,579	43,207	52,004
Tariffs (Rs/kwh)											
Mumbai region	3.4	2.9	3.3	3.2	3.5	3.7	3.9	4.0	4.2	4.3	4.4
Ex-Mumbai Region	2.7	2.6	2.4	2.8	2.9	3.1	3.2	3.3	3.4	3.6	3.7
Plant-wise Capital Expenditure (Rs mn)											
Trombay	0	525	2,824	5,131	4,081	1,599	0	0	0	0	0
Wind Power Plants	0	0	3,430	3,626	2,068	675	0	0	0	0	0
Mundra	0	0	0	0	15,130	41,140	56,270	40,290	14,960	2,210	0
Haldia	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**525**	**6,254**	**8,757**	**21,279**	**43,414**	**56,270**	**40,290**	**14,960**	**2,210**	**0**
Strategic Investments (TPC's share only) (Rs mn)											
IEL	0	0	0	0	741	3,803	3,853	1,482	0	0	0
Maithon	0	109	437	759	727	364	69	0	0	0	0
Total	**0**	**109**	**437**	**759**	**1,467**	**4,167**	**3,922**	**1,482**	**0**	**0**	**0**

Source: Company, MF Global India Research Estimates

DCF calculation

	FY08E	FY09E	FY10E	FY11E	FY12E	FY13E	FY14E	FY15E	FY16E	FY17E	....	FY27E
PBIT	**5,633**	**6,436**	**6,757**	**5,522**	**13,878**	**22,574**	**29,414**	**32,356**	**35,322**	**38,265**		**61,695**
NOPLAT	**4,929**	**5,599**	**5,844**	**4,749**	**11,866**	**19,188**	**24,855**	**27,502**	**30,023**	**32,525**		**52,441**
Add: Depreciation	2953	4668	6946	9873	11800	12031	11556	11903	12200	12444		15170
Add: Non-cash expenses	0	0	0	0	0	0	0	0	0	0		0
Gross Cash Flow	7,882	10,267	12,790	14,622	23,666	31,219	36,411	39,405	42,224	44,970		67,611
Change in WC	909	3,032	2,621	1,328	9,427	13,167	11,051	4,423	4,347	4,191		4,000
Less: Capex	(22,654)	(43,723)	(56,270)	(40,290)	(14,960)	(2,210)	(1,209)	(1,209)	(1,209)	(1,209)		(1,209)
Less: Investments	792	(4,168)	(3,922)	(1,482)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)		(1,000)
Free Cash Flow	**(13,071)**	**(34,592)**	**(44,781)**	**(25,822)**	**17,133**	**41,176**	**45,253**	**41,619**	**44,361**	**46,951**		**69,402**
Discounting Factor	1.00	1.10	1.23	1.38	1.55	1.74	1.95	2.19	2.45	2.76		3.91
Present Value of FCF	**(13,071)**	**(31,476)**	**(36,317)**	**(18,664)**	**11,050**	**23,642**	**23,157**	**18,982**	**18,074**	**17,010**		**17,760**

Valuation based on DCF Earnings Method	
Value of operations	170,063
PV of Terminal Value	57,643
Total Entity Value	227,706
Less: Debt as estimated FY08E	(30,108)
Add: Cash estimated FY08E	8,415
Add: Book Value of investment as on FY08E	14,749
Equity value	220,762
DCF value/share	**950.0**

Assumptions	
Risk Free Return	8.0%
Market Premium	6.5%
Beta	1.1981
Cost of Equity	15.8%
Interest rate	5.9%
Corporate Tax Rate	34.0%
Post Tax Cost of Debt	3.9%
Gearing Ratio	0.3
WACC	**12.2%**
Terminal Growth Rate	4.0%

Sensitivity to change in WACC & Terminal Growth rate

Terminal growth rate	WACC				
	10%	11%	12.2%	13.0%	14.0%
2.0%	1,320	1,100	890	780	660
3.0%	1,380	1,140	920	800	680
4.0%	1,460	1,190	**950**	820	690
5.0%	1,570	1,250	980	850	710
6.0%	1,740	1,340	1,030	880	730

The terminal growth rate of 4.2% is taken based on the long-term (1951-2006) average GDP growth (net of inflation) and adjusting to the energy to GDP efficiency factor of 0.85 (which is obtained from the Energy Vision document of the GoI).

Source: Company, MF Global India Research Estimates

DCF calculation – NDPL

	FY07	FY08E	FY09E	FY10E	FY11E	FY12E	FY13E	FY14E	FY15E	FY16E
PBIT	**1,294**	**1,332**	**1,411**	**1,672**	**1,942**	**2,136**	**2,324**	**2,501**	**2,661**	**2,799**
Tax on PBIT	25	20	14	28	54	75	95	114	131	147
NOPLAT	**1,269**	**2,362**	**2,587**	**2,752**	**2,831**	**3,001**	**3,159**	**3,301**	**3,425**	**3,527**
Add: Depreciation	411	1,113	1,403	1,588	1,719	1,833	1,924	1,997	2,055	2,102
Gross Cash Flow	1,680	3,475	3,991	4,341	4,551	4,834	5,083	5,298	5,480	5,629
Change in WC		1,674	743	25	186	60	181	163	142	118
Less: Capex	2,857	4,703	2,863	2,068	1,897	1,518	1,214	971	777	622
Free Cash Flow	**(1,177)**	**(2,901)**	**385**	**2,247**	**2,468**	**3,256**	**3,687**	**4,163**	**4,560**	**4,889**
Discounting Factor	1.0	1.0	1.1	1.2	1.3	1.4	1.5	1.7	1.8	2.0
Present Value of FCF	**(1,177)**	**(2,901)**	**358**	**1,914**	**1,925**	**2,326**	**2,411**	**2,493**	**2,500**	**2,455**

Assumption	
Risk Free Return	8.0%
Market Premium	6.5%
Beta	1
Cost of Equity	14.5%
Interest rate	9.2%
Corporate Tax Rate	34.0%
Post Tax Cost of Debt	6.1%
Gearing Ratio	0.63
WACC	**9.2%**
Terminal Growth Rate	3.5%

Valuation based on DCF Earnings Method	
Value of operations	13,480
PV of Terminal Value	22,331
Total Entity Value	35,811
Less: Debt as estimated FY08E	12,413
Equity value	23,398
DCF value/share	118.1
TPC's share (@ 49%)	**57.9**

Tata Power

Source: Company, MF Global India Research Estimates

Valuations - SOTP

Business Unit Name	Value (Rs/share)	
Tata Power Company Core Business	**950.0**	3-stage DCF, assumption as provided in report
Other Generation Projects under Subsidiaries	**54.0**	
Maithon Power Compant Ltd.	44.0	Valued at 25% discount to Book Value (TPC's share: 74%)
Industrial Energy Ltd.	10.0	Valued at 25% discount to Book Value (TPC's share: 74%)
Other Non-generation Projects under subsidiaries	**77.9**	
NDPL	57.9	2-stage DCF (for TPC's share of 51%), assumption as provided in report
Powerlinks Transmission Ltd.	20.0	Valued at 1.25x Book Value (TPC's share of 51%)
Strategic Investments	**436.0**	
Indonesian Coal Mines	436.0	Valued at 45% discount to Total Reserve calculated in Net Realised Value in Rs/share, (TPC's share of 30%)
Investments	**44.0**	
Total	**1562.0**	

Note:

- Revenue estimates for TPC's core business includes incremental revenue from the Trombay Generation Plant (350MW); Mundra UMPP (4000MW) and Wind Power Plants (95.2MW).
- Both Maithon & IEL projects are valued at Rs 55million per MW of project cost and 70% debt.
- TPC's stake (30%) in the Indonesian coal mines is valued at a 45% discount on the value of the probable (1100MT at around US$ 14.6 per ton) and residual coal (5600 MT at around US$ 0.8 per ton) reserves. Assuming an exchange rate of Rs 39/US$ 1 and considering a US$ 950mn loan, we arrived at a per share value of Rs 436.

Source: Company, MF Global India Research

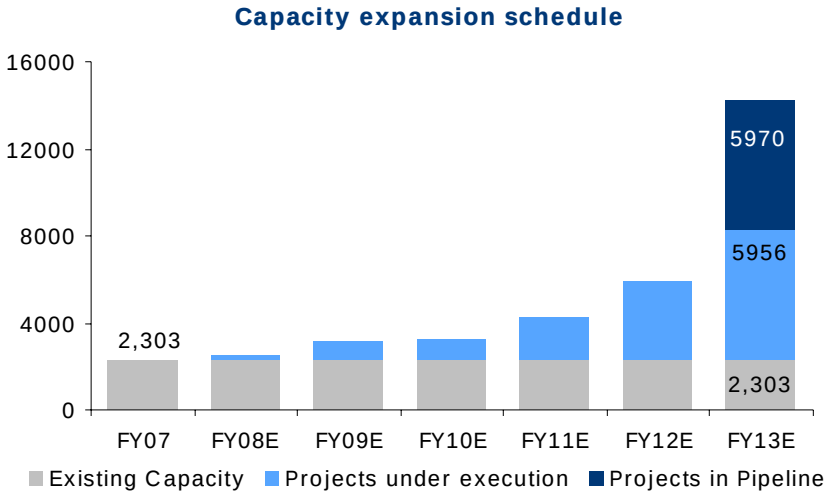
Key subsidiaries and JV

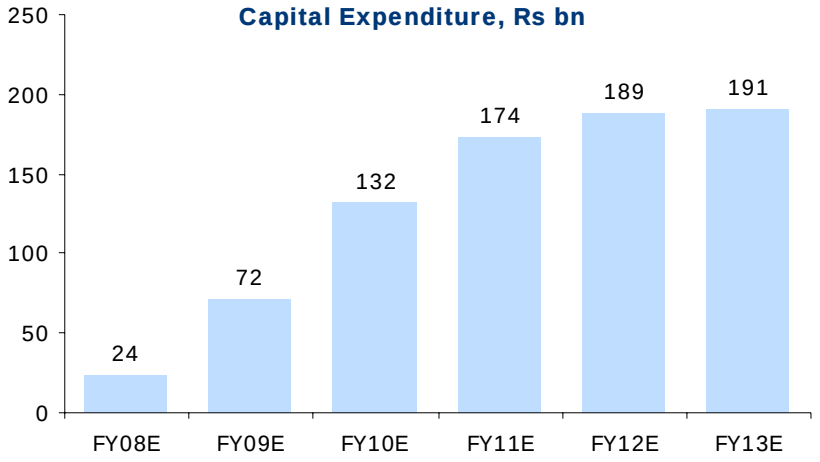
Companies	Stake (%)	Remarks
Powerlinks Transmission Limited (PTL)	51%	JV with Power Grid Corporation for operations and maintaining the transmission link
North Delhi Power Limited (NDPL)	49%	JV with Govt. of Delhi for distribution license to supply electricity in Delhi
Tata Power Trading Company Limited	100%	Engaged in the business of trading
Maithon Power Limited	74%	JV with Damodar Valley Corporation SPV for implementing the 1050mw JV
Industrial Energy Limited (IEL)	74%	JV with Tata Steel for all future captive plants
Coastal Gujarat Private Limited	100%	SPV for implementing the 4000mw UMPP at Mundra, Gujarat
PT Arutmin & PT Kaltim	30%	Indonesia coal mining companies

Source: Company, MF Global India Research

Funding of the projects

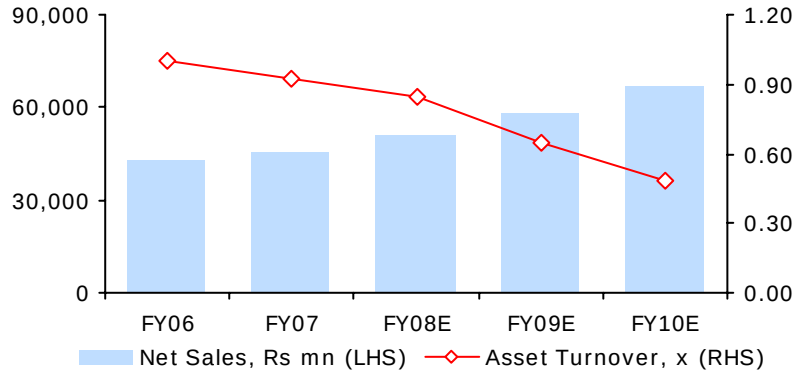
- For a capacity expansion of 5.9GW, TPC required a total capital expenditure of Rs 255bn, spread across projects through FY13. However, capital expenditure yet to be incurred during FY08-13 is Rs 230bn. The company has another 6.67GW capacity in the pipeline.
- Projects that come under 100 % ownership of TPC, would have a capital expenditure of Rs 195bn during FY08-13, wherein Mundra UMPP has a 94% share.
- Projects that are under various subsidiaries include the Maithon power plant and IEL captive units. TPC's share of expenditure for these projects stand at Rs 12.3bn (FY08-13), which is only 22% of the actual cost of the project.
- Due to the high leverage that power projects enjoy and the ownership structure of TPC's forthcoming projects, the company would not require any dilution of equity.
- Raising debt is not a concern as financial closure for bigger projects is in place.
- In a scenario where the projects in the pipeline, another 6.67GW, also start, an additional Rs 275bn would be required. The Coastal Maharashtra project has a fair chance of getting started and would require around Rs 100bn.



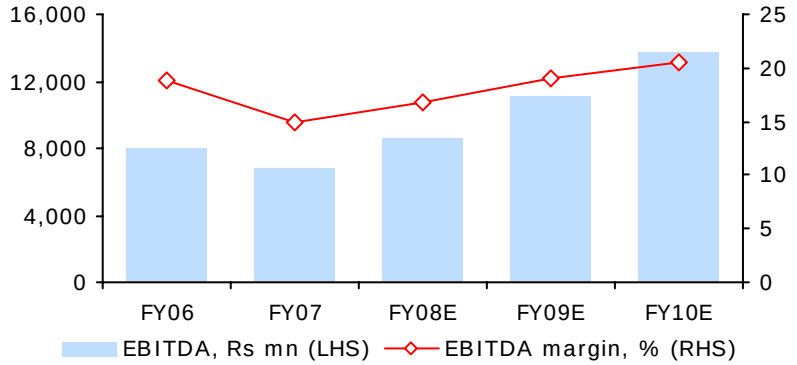


Source: Company, MF Global India Research Estimates

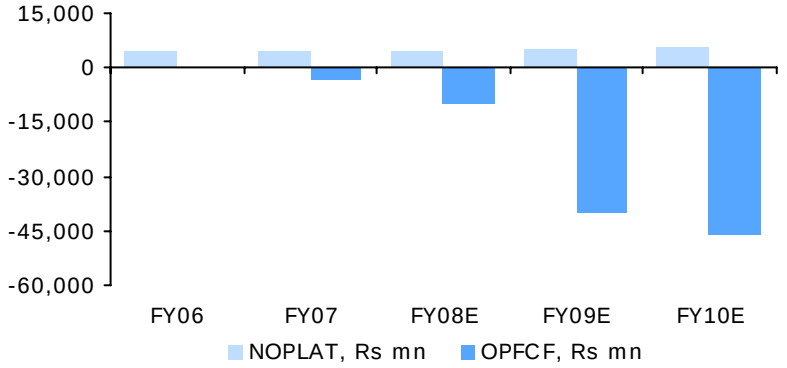
Financial Performance



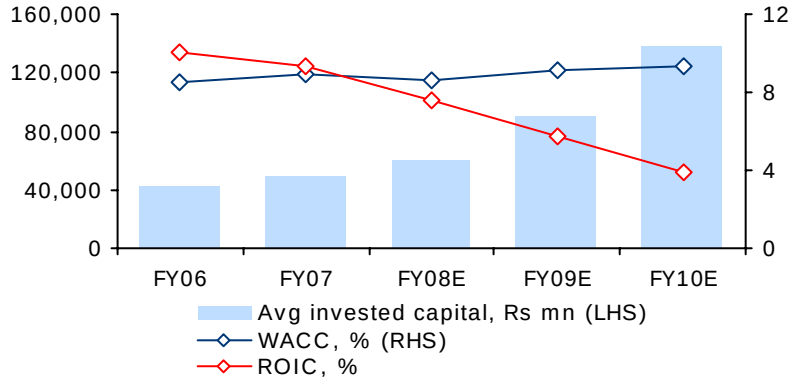
- The asset turnover ratio will keep falling till the additional capacity becomes operational.



- EBITDA margins to improve as power purchase cost reduces, as Mumbai LA generation capacity increases.



- Operating free cash flow would remain negative due to capex.



- The sharp drop in return ratio is on account of major capacities lined up during FY11-12.

Source: Company, MF Global India Research Estimates

Financials

Income Statement

Y/E Mar, Rs mn	FY06	FY07	FY08E	FY09E	FY10E
Net sales	**42,668**	**45,555**	**51,119**	**58,531**	**66,566**
Growth, %	*18*	*7*	*12*	*14*	*14*
Other income	3,856	3,909	3,977	4,585	5,218
Total income	46,524	49,464	55,096	63,116	71,785
Operating expenses	-36,987	-39,892	-43,847	-48,939	-54,566
EBITDA	**8,055**	**6,793**	**8,586**	**11,103**	**13,702**
Growth, %	*(12.6)*	*(15.7)*	*26.4*	*29.3*	*23.4*
Margin, %	*18.9*	*14.9*	*16.8*	*19.0*	*20.6*
Depreciation	-2,783	-2,946	-2,953	-4,668	-6,946
EBIT	**5,271**	**3,847**	**5,633**	**6,436**	**6,757**
Growth, %	*(6.2)*	*(27.0)*	*46.4*	*14.3*	*5.0*
Margin, %	*12.4*	*8.4*	*11.0*	*11.0*	*10.2*
Interest paid	-1,653	-1,895	-1,977	-3,129	-5,631
Pre-tax profit	**7,474**	**5,860**	**7,633**	**7,892**	**6,344**
Tax provided	-1,369	1,108	-1,416	-1,506	-1,255
Profit after tax	**6,105**	**6,968**	**6,217**	**6,386**	**5,089**
Net Profit	**6,105**	**6,968**	**6,217**	**6,386**	**5,089**
MF Net profit	**5,672**	**6,968**	**6,217**	**6,386**	**5,089**
Growth, %	*3.2*	*22.9*	*(10.8)*	*2.7*	*(20.3)*
EOI: Gains/(Losses)	0	0	0	0	0
Unadj. shares (m)	198	198	218	232	235
Wtd avg shares (m)	198	198	235	235	235

Balance Sheet

Y/E Mar, Rs mn	FY06	FY07	FY08E	FY09E	FY10E
Cash & bank	9,906	13,677	8,415	20,694	12,248
Marketable securities at cost	0	0	0	0	0
Debtors	10,582	14,782	16,664	19,246	21,696
Inventory	4,423	3,964	4,166	4,770	5,424
Loans & advances	4,639	7,704	7,865	9,607	11,606
Other current assets	181	290	290	290	290
Total current assets	29,730	40,418	37,400	54,607	51,264
Investments	30,506	31,642	33,350	37,518	41,439
Gross fixed assets	59,247	62,297	81,796	121,112	174,436
Less: Depreciation	-29,217	-31,994	-34,947	-39,614	-46,560
Add: Capital WIP	2,118	7,811	4,569	11,734	14,725
Net fixed assets	32,148	38,114	51,417	93,232	142,601
Non-current assets	0	0	0	0	0
Total assets	**96,162**	**114,233**	**123,727**	**186,917**	**236,864**
Current liabilities	7,318	11,257	12,592	14,489	16,970
Provisions	5,892	6,316	6,316	6,316	6,316
Total current liabilities	13,210	17,573	18,908	20,805	23,286
Non-current liabilities	33,304	42,148	35,865	80,828	123,189
Total liabilities	46,515	59,721	54,774	101,632	146,475
Paid-up capital	1,979	1,979	2,181	2,316	2,348
Reserves & surplus	47,823	52,594	66,834	83,030	88,103
Shareholders' equity	49,647	54,512	68,953	85,284	90,389
Total equity & liabilities	**96,162**	**114,233**	**123,727**	**186,917**	**236,864**

MF Global

Source: Company, MF Global India Research Estimates

Financials

Cash Flow

Y/E Mar, Rs mn	FY06	FY07	FY08E	FY09E	FY10E
Pre-tax profit	7,474	5,860	7,633	7,892	6,344
Depreciation	2,783	2,946	2,953	4,668	6,946
Chg in working capital	-4,248	-2,748	973	-3,032	-2,621
Total tax paid	-1,644	1,326	-1,473	-1,506	-1,255
Other operating activities	0	0	0	0	0
CF from opg. act.	**4,366**	**7,385**	**10,086**	**8,021**	**9,414**
Capital expenditure	-2,470	-8,911	-16,257	-46,482	-56,315
Chg in investments	1,656	-1,137	-1,708	-4,168	-3,922
Chg in marketable securities	0	0	0	0	0
Other investing activities	0	0	0	0	0
CF from invest. act.	**-1,563**	**-10,491**	**-15,465**	**-50,650**	**-60,236**
Free cash flow	2,803	-3,106	-5,379	-42,629	-50,822
Equity raised/(repaid)	431	389	10,415	12,191	1,837
Debt raised/(repaid)	-1,050	8,783	-6,226	44,962	42,361
Dividend (incl. tax)	-1,721	-2,004	-3,844	-2,017	-1,592
Other financing activities	-353	-291	-228	-228	-228
CF from finan. a.	**-2,693**	**6,878**	**117**	**54,907**	**42,377**
Net chg in cash	110	3,772	-5,262	12,279	-8,445

Per-share data

Y/E Mar, Rs mn	FY06	FY07	FY08E	FY09E	FY10E
MF EPS (INR)	28.7	35.2	26.5	27.2	21.7
Growth, %	*3.2*	*22.9*	*(24.8)*	*2.7*	*(20.3)*
Book NAV/share (INR)	250.8	275.4	293.7	363.3	385.0
FDEPS (INR)	28.7	35.2	26.5	27.2	21.7
CEPS (INR)	40.1	50.1	39.1	47.1	51.3
CFPS (INR)	5.2	17.6	26.0	14.6	17.9
DPS (INR)	8.5	9.5	7.1	7.3	5.8

Ratios

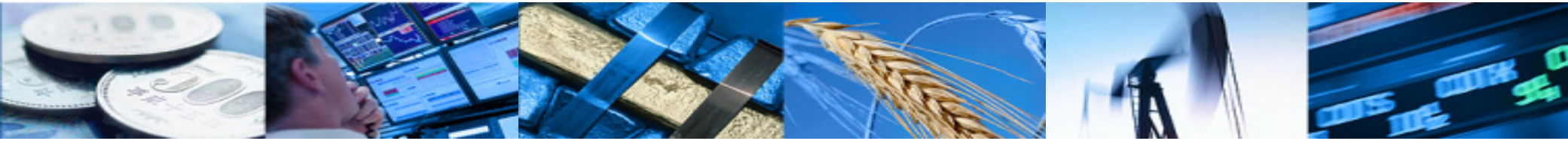
Y/E Mar	FY06	FY07	FY08E	FY09E	FY10E
Return on assets (%)	7.6	7.8	6.3	5.4	4.1
Return on equity (%)	11.9	13.4	10.1	8.3	5.8
ROIC (%)	11.6	10.5	8.3	6.2	4.1
RoIC/Cost of capital (x)	1.4	1.2	1.0	0.7	0.4
RoIC - Cost of capital (%)	3.1	1.6	(0.3)	(3.0)	(5.3)
ROCE (%)	8.4	8.7	7.0	5.9	4.4
Cost of capital (%)	8.6	9.0	8.7	9.1	9.4
RoCE - Cost of capital (%)	(0.2)	(0.3)	(1.6)	(3.2)	(4.9)
Total debt/Equity (%)	55.5	66.7	43.7	88.0	129.9
Net debt/Equity (%)	35.5	41.6	31.5	63.8	116.4
Asset turnover (x)	1.2	1.1	0.9	0.7	0.5
Sales/Total assets (x)	0.5	0.4	0.4	0.4	0.3
Sales/Net FA (x)	1.3	1.3	1.1	0.8	0.6
Working capital/Sales (x)	0.3	0.3	0.3	0.3	0.3
Fixed capital/Sales (x)	-	-	-	-	-
Receivable days	90.5	118.4	119.0	120.0	119.0
Inventory days	37.8	31.8	29.7	29.7	29.7
Payable days	55.8	81.7	83.0	85.0	90.0
Current ratio (x)	3.3	3.1	3.0	3.8	3.0
Quick ratio (x)	2.8	2.8	2.6	3.4	2.7
Interest cover (x)	3.2	2.0	2.8	2.1	1.2
Dividend cover (x)	3.4	3.7	3.7	3.7	3.7
PER (x)	43.9	35.7	47.5	46.2	58.0
PEG (x) - y-o-y growth	13.5	1.6	(1.9)	17.0	(2.9)
Price/Book (x)	5.0	4.6	4.3	3.5	3.3
Yield (%)	0.7	0.8	0.6	0.6	0.5
EV/Net sales (x)	6.2	6.0	5.3	5.2	5.3
EV/EBITDA (x)	33.1	40.0	31.5	27.3	25.8
EV/EBIT (x)	50.5	70.5	48.0	47.1	52.4
EV/NOPLAT (x)	39.8	34.3	37.7	31.6	28.4
EV/CE	3.1	2.7	2.4	1.8	1.6
EV/IC (x)	7.2	6.3	4.9	3.6	2.7

MF Global

Source: Company, MF Global India Research Estimates

Abbreviation

Abbreviation	Expanded
APRDP	Accelerated Power Reform Development Programme
ARDP	Agriculture & Rural Development Programme
BOOT	Built, Own Operate Transfer
BU	Billion Units
CCOW	Coal Contract of Work
DERC	Delhi Electricity Regulatory Commission
DISCOM	Distribution Company
EA 2003	Electricity Act, 2003
EHV	Extra High Voltage
ER	Eastern Region
HVDC	High Voltage Direct Current
IEP	Integrated Energy Policy
IPP	Independent Power Producers
KG Basin	Krishna Godavari Basin
LNG	Liquified Natural Gas
MTPA	Million Ton Per Annum
NDPL	New Delhi Power Limited
NER	North-Eastern Region
NG	Natural Gas
NLDC	National Load Dispatch Centre
NTPC	National Thermal Power Company
PGCIL	Power Grid Corporation of India Limited
PPA	Power Purchase Agreement
PTL	Powerlinks Transmission Ltd.
RGPPL	Ratnagiri Gas & Power Private Limited
SEB	State Electricity Board
SOTP	Sum of the Parts
TPC	Tata Power Company
TPP	Thermal Power Plant
UMPP	Ultra Mega Power Plant
WEC	World Energy Council
WR	Western Region



THANK YOU

Disclosures and Disclaimers

MF Global Sify Securities India Pvt. Ltd. has three independent equity research groups: Institutional Equities, Institutional Equities Derivatives and Private Client Group. This report has been prepared by Institutional Equities. The views and opinions expressed in this document may or may not match or may be contrary at times with the views, estimates, rating, target price of the other equity research groups of MF Global Sify Securities India Pvt. Ltd.

This report is issued by MF Global Sify Securities India Pvt. Limited regulated by SEBI. MF Global Sify Securities India Pvt. Ltd. is a subsidiary of MF Global Overseas Ltd. References to "MFGSSIPL" or "Firm" in this report shall mean MF Global Sify Securities India Pvt. Limited unless otherwise stated. The report was prepared and distributed by MFGSSIPL for information purposes only. The report should not be construed as solicitation nor as offering advice for the purposes of the purchase or sale of any security, investment or derivative. The information and opinions contained in the Report were considered by MFGSSIPL to be valid when published. The report also contains information provided to MFGSSIPL by third parties. The source of such information will usually be disclosed in the report. Whilst MFGSSIPL has taken all reasonable steps to ensure that this information is correct, MFGSSIPL does not offer any warranty as to the accuracy or completeness of such information. Any person placing reliance on the report to undertake trading does so entirely at his or her own risk and MFGSSIPL does not accept any liability as a result. Securities and Derivatives markets may be subject to rapid and unexpected price movements and past performance is not necessarily a guide to future performance.

This Document is for private circulation and for information purposes only. It does not have regard to the specific investment objectives, financial situation and the particular needs of any specific person who may receive this report. Investors should seek financial advice regarding the appropriateness of investing in any securities or investment strategies discussed or recommended in this report and should understand that statements regarding future prospects may not be realized. In no circumstances it be used or considered as an offer to sell or a solicitation of any offer to buy or sell the Securities mentioned in it. We and our affiliates, officers, directors, and employees world wide, including persons involved in the preparation or issuance of this material may; (a) from time to time, have long or short positions in, and buy or sell the securities thereof, of company (ies) mentioned herein or (b) be engaged in any other transaction involving such securities and earn brokerage or other compensation or act as a market maker in the financial instruments of the company (ies) discussed herein or act as advisor or lender / borrower to such company(ies) or have other potential conflict of interest with respect to any recommendation and related information and opinions. The same persons may have acted upon the information contained here. The information contained in the research reports may have been taken from trade and statistical services and other sources, which we believe are reliable. MF Global Sify Securities India Pvt. Ltd. or any of its group companies do not guarantee that such information is accurate or complete and it should not be relied upon as such. Any opinions expressed reflect judgments at this date and are subject to change without notice

Important. These disclosures and disclaimers must be read in conjunction with the research report of which it forms part. Receipt and use of the research report is subject to all aspects of these disclosures and disclaimers. Additional information about the issuers and securities discussed in this research report is available on request.

Certifications: The research analyst(s) who prepared this research report hereby certifies that the views expressed in this research report accurately reflect the research analyst's personal views about all of the subject issuers and/or securities, that the analyst have no known conflict of interest and no part of the research analyst's compensation was, is or will be, directly or indirectly, related to the specific views or recommendations contained in this research report.

Independence: MF Global Sify Securities India P. Ltd. has not had an investment banking relationship with, and has not received any compensation for investment banking services from, the subject issuers in the past twelve (12) months, and the Firm does not anticipate receiving or intend to seek compensation for investment banking services from the subject issuers in the next three (3) months. The Firm is not a market maker in the securities mentioned in this research report, although it or its affiliates may hold either long or short positions in such securities.

Suitability and Risks: This research report is for informational purposes only and is not tailored to the specific investment objectives, financial situation or particular requirements of any individual recipient hereof. Certain securities may give rise to substantial risks and may not be suitable for certain investors. Each investor must make its own determination as to the appropriateness of any securities referred to in this research report based upon the legal, tax and accounting considerations applicable to such investor and its own investment objectives or strategy, its financial situation and its investing experience. The value of any security may be positively or adversely affected by changes in foreign exchange or interest rates, as well as by other financial, economic or political factors. Past performance is not necessarily indicative of future performance or results.

Sources, Completeness and Accuracy: The material herein is based upon information obtained from sources that the Firm and the research analyst believe to be reliable, but neither the Firm nor the research analyst represents or guarantees that the information contained herein is accurate or complete and it should not be relied upon as such. Opinions expressed herein are current opinions as of the date appearing on this material and are subject to change without notice.

Furthermore, the Firm is under no obligation to update or keep the information current.

Caution: Risk of loss in trading in can be substantial. You should carefully consider whether trading is appropriate for you in light of your experience, objectives, financial resources and other relevant circumstances.

MF Global Sify Securities India Pvt. Limited.
2nd Floor, C-Block, Modern Centre, Mahalaxmi, Mumbai-400 011

MF GLOBAL INDIA INSTITUTIONAL EQUITIES TEAM

Sajid Khalid	Head – Institutional Cash Equities	91-22-6667 9972	sajid.khalid@mfglobal.in
Jignesh Shah	Head – Equity Derivatives	91-22-6667 9735	jignesh.shah@mfglobal.in
Equity Research			
Ambrish Mishra	Automobiles & Auto Component	91-22-6667 9758	ambrish.mishra@mfglobal.in
Anjali Verma	Economist	91-22-6667 9969	anjali.verma@mfglobal.in
Dipesh Sohani	Real Estate & Auto Ancillaries	91-22-6667 9965	dipesh.sohani@mfglobal.in
Kapil Bagaria	Midcap	91-22-6667 9987	kapil.bagaria@mfglobal.in
Kartik Mehta	Pharmaceuticals	91-22-6667 9973	kartik.mehta@mfglobal.in
Manish Agarwalla	Banking	91-22-6667 9962	manish.agarwalla@mfglobal.in
Mansingh Deshmukh	Power	91-22-6667 9759	mansingh.deshmukh@mfglobal.in
Naveen Kulkarni	Telecom	91-22-6655 1477	naveen.kulkarni@mfglobal.in
Nimesh Mistry	IT Services	91-22-6667 9768	nimesh.mistry@mfglobal.in
Pallav Agarwal	Metals	91-22-2302 1819	pallav.agarwal@mfglobal.in
Ritwik Rai	Media	91-22-6667 9766	ritwik.rai@mfglobal.in
Vaibhav Agarwal	Cement	91-22-6667 9967	vaibhav.agarwal@mfglobal.in
Aravind Manickam	Research Associate	91-22-6667 9992	aravind.manickam@mfglobal.in
Avishek Agarwal	Research Associate	91-22-6667 9986	avishek.agarwal@mfglobal.in
Chaturya Tipnis	Research Associate	91-22-6667 9764	chaturya.tipnis@mfglobal.in
Deepali Gautam	Research Associate	91-22-6667 9974	deepali.gautam@mfglobal.in
Kunal Motishaw	Research Associate	91-22-6667 9996	kunal.motishaw@mfglobal.in
Prachi Kulkarni	Research Associate	91-22-6667 9966	prachi.kulkarni@mfglobal.in
Shubhangi Agrawal	Research Associate	91-22-6667 9964	shubhangi.agrawal@mfglobal.in
Rupesh Sonawale	Asst. Database Analyst	91-22-6667 9769	rupesh.sonawale@mfglobal.in
Ganesh Deorukhkar	Production	91-22-6667 9756	ganesh.deorukhkar@mfglobal.in
Roshni Kalloor	Editor	91-22-6667 9762	roshni.kalloor@mfglobal.in
Institutional Cash Equity Sales			
Subramanyam Ravisankar	Equity Sales	91-22-6667 9991	s.ravisankar@mfglobal.in
Kinshuk Tiwari	Equity Sales	91-22-6655 1476	kinshuk.tiwari@mfglobal.in
Pankaj Chandak	Equity Sales	91-22-6667 9990	pankaj.chandak@mfglobal.in
Institutional Cash Equity Sales Trading			
Chetan Savla	Sales Trader	91-22-6667 9749	chetan.savla@mfglobal.in
Kartik Broker	Sales Trader	91-22-6667 9747	kartik.broker@mfglobal.in
Rajesh Ashar	Sales Trader	91-22-6667 9746	rajesh.ashar@mfglobal.in
Institutional Cash Equity Dealing			
Chetan Babaria	Dealer	91-22-6667 9748	chetan.babaria@mfglobal.in
Mayur Shah	Dealer	91-22-6667 9748	mayur.shah@mfglobal.in
Sagar Shah	Dealer	91-22-6677 9748	sagar.shah@mfglobal.in

www.mfglobal.in