MOTILAL OSWAL

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Utilities

Power sector: At the peak of over capacity

Sanjay Jain (SanjayJain@MotilalOswal.com); +91 22 3982 5412
Dhruv Muchhal (Dhruv.Muchhal@MotilalOswal.com); +91 22 3027 8033

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Price as on July 8th, 2016

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Identifying winners; PWGR, NTPC and JSW Energy are our picks

Indian consumption is expected to grow at 6-7% CAGR over five years

- India's elasticity of electricity consumption with GDP growth is declining due to low share of manufacturing in GDP.
- Per capita consumption growth of electricity tends to peak at USD2000 per capita GDP. India's per capita GDP is already inching towards USD2000 mark. India has perhaps missed the bus of accelerated electricity consumption growth period.
- Although India's specific electricity consumption is low, yet per capita electricity consumption is not low at current level of per capita GDP.
- Energy efficiencies will partially offset demand drivers. UDAY will improve sustainability of DISCOMs.
- Four states are witnessing strong traction in demand, but they together are only 20% of country. But, the consumption growth is decelerating in rest of country and dragging India's growth rates.
- We believe that India's per capita consumption of electricity can increase at 5-6% CAGR assuming that India is able to clock 7-8% GDP growth. Add to this the population growth rates, India's electricity consumption can grow at CAGR of 6-7% over next 5 years.

Financial health of Discoms is likely to improve but, this may not be enough to drive demand

- MoP is doing all the right things to improve the financial health of DISCOMs, in our view.
- There are structural issues that will take longer to resolve. States with low share of industry will find it more challenging to turn around. Access to low cost energy will be equally important.
- Data analysis suggests that there is no correlation between demand growth and financial health of DISCOMs. Improved financial health of DISCOMs may not necessarily derive demand.

Unrealistic demand expectation created overcapacity; it may take 5-6 years to rebalance the market

- All India conventional capacity has increased at CAGR of 11% to 259GW during FY11-FY16 spurred by flurry of private investment expecting unrealistic demand growth.
- Conventional capacity addition is peaking, yet the capacity will grow at CAGR of 3.8% to 301GW during FY16-20E. Capacity addition will fall sharply post FY17E in private sector, but it will pick up in central sector. It will take 5-6 years to rebalance the market.
- Any sign of tightness in market will revive another 20GW of projects where more than 50% of budget is already spent.

Utilities

Power sector at the peak of over capacity

Mr Sanjay Jain

Mr Dhruv Muchhal

Please click here for Video Link

- All India conventional capacity PLF will bottom out in FY17E, but central sector PLF will continue to decline until FY19E because of continued momentum in capacity addition.
- Private sector PLF will be improving from 52% in FY17E to 64% by FY20E as capacity addition drops sharply post FY17E. State's PLF will languish at 40%.
- Share of RE in generation will increase from 4% to 7%. Coal will remain main driver of generation growth but its dependence will keep reducing.

Discoms have signed 41% more PPAs than FY20E peak load; 21-28GW stranded capacity will be vying for 4.7GW of PPAs

- Indian power supply is very comfortable with 259GW of commissioned conventional capacity as on 31st March 2016, while the peak load was only 153GW in FY16. States had 237GW available commissioned capacity with PPAs i.e. 55% more than the peak demand. Approx. 21GW private commissioned capacity was stranded without PPAs.
- Rolling forward to FY20E, the conventional capacity will rise to 301GW after deletion of 6-10GW old capacity, while peak load will increase to 194GW at CAGR of 6%. States will have 273GW available commissioned capacity with PPAs i.e. 41% more than the projected all India peak demand. Approx. 28GW private commissioned capacity may still be stranded without PPAs if states don't sign more PPAs.
- Despite a very comfortable situation at the country level, Gujarat, Andhra Pradesh, Kerala, J&K and few smaller states may need to seek 4.7GWPPAs over next 2-4 years to meet their long term requirements.

Investment in transmission will continue; RE, need for flexibility, arbitrage in variable cost across country will be the drivers

- Investment in RE capacities will keep driving demand for spinning capacities and investment in transmission and sophisticated equipment to maintain quality of electricity.
- Demand centers and sources of energy are polarized. It makes more sense to transmit electricity rather the transporting coal.
- Over investment in long distance transmission is desirable to create flexibility in Grid.
- 16.3 GW of stranded capacity will demand inter region transmission capacity because they can sell power at lower rate than the variable cost of many capacities in demand centers e.g. NR and SR.
- Merchant power market will thrive but it is unlikely to be profitable for couple of years.

Identifying winners: 2 CSPUs and 3 Pvt.; PWGR is top pick; Re-initiate on JSW Energy with BUY

- Post analysis of 50 private companies and 5 central PSUs, we have identified two CPSUs and three private GENCOs as likely outperformer.
- PWGR and NTPC are growing organically with visibility of next 3-5 years of capex and are delivering double digit RoEs. PWGR is our top pick.
- It is prudent to grow inorganically at the peak of over capacity. Among the 50 private companies, we have short listed three names that have strong both

balance sheet and free cash flows. JSW Energy, Tata Power and CESC meet the criteria and are likely outperformer.

- Businesses of Tata Power and CESC are complex as they have exposure to RE, Distribution, coal mining, retail, cricket (IPL), information technology etc.
- We re-initiate coverage on JSW Energy with BUY rating for its simple business model, strong balance sheet, regionally diversified portfolio of assets and strong negotiating power in M&A.

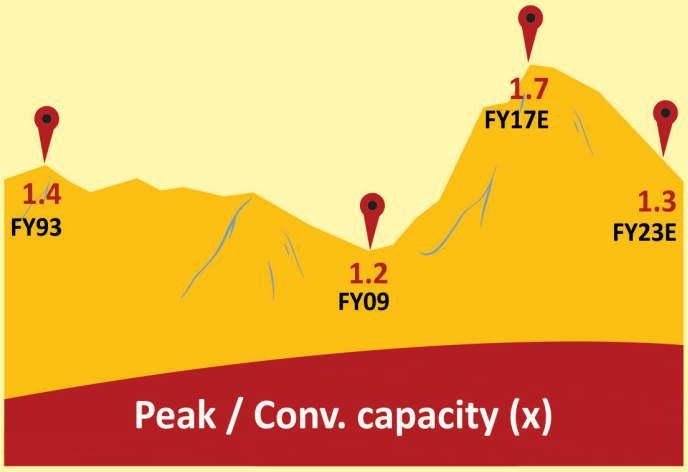
Exhibit 1: Sector valuation table

	Rating	CMP# (INR)	TP Up/(dw) (INR)	%	MCAP (USD M)	EPS			P/E (x)		P/B(x)		RoE (%)	
						FY16E	FY17E	FY18E	FY17E	FY18E	FY17E	FY18E	FY17E	FY18E
Powergrid	Buy	165	205	24	12,994	11.5	14.0	16.3	11.8	10.1	1.7	1.5	15.7	16.1
NTPC	Buy	153	185	21	19,034	12.3	11.5	13.7	13.3	11.2	1.4	1.3	10.8	12.2
JSW Energy	Buy	84	98	17	2,064	8.5	7.0	8.0	12.0	10.5	1.5	1.3	12.9	13.4
Coal India	Buy	312	370	19	29,633	22.6	19.0	23.0	16.4	13.5	5.6	5.4	34.8	40.6

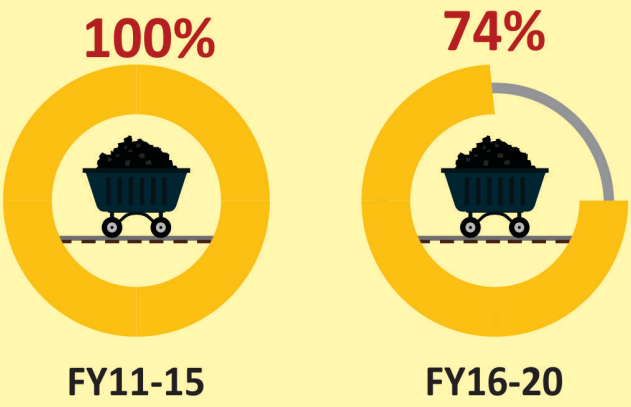
as on July 8th, 2016

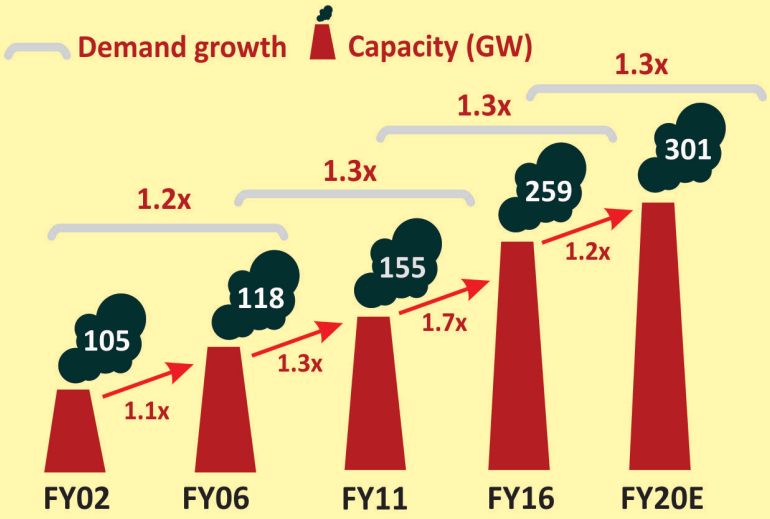
Source: MOSL, Company

Market would balance in 5-6 years

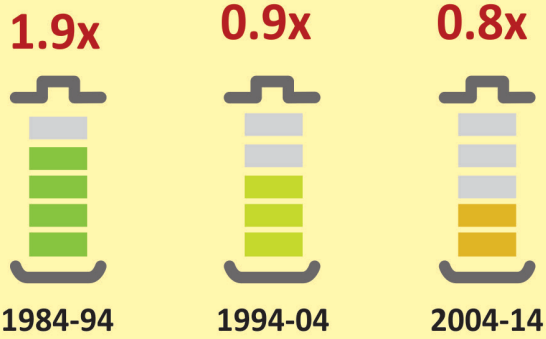


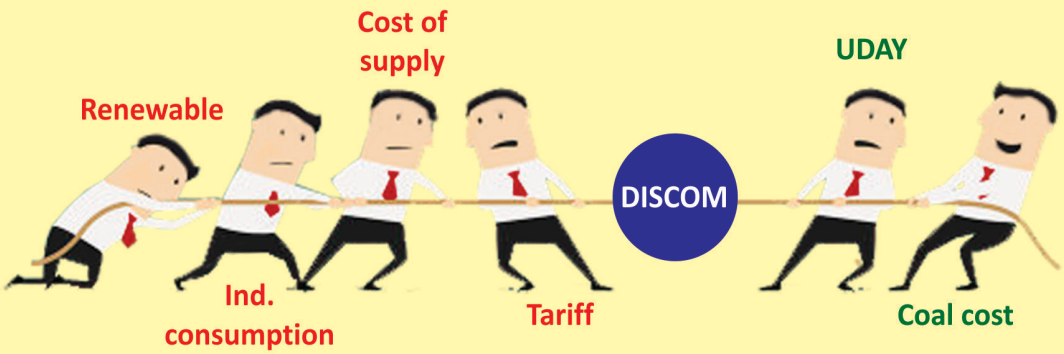
Share of COAL in power generation

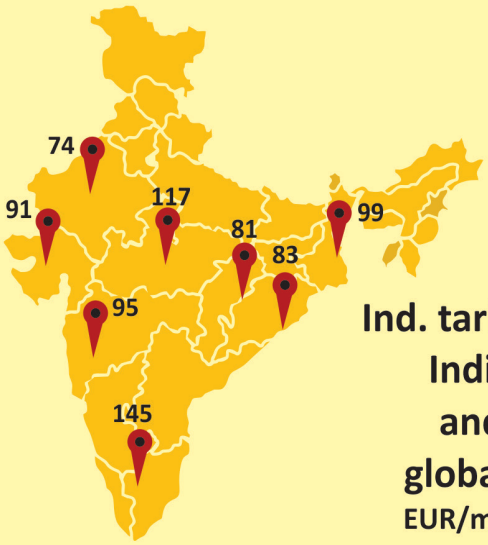




Demand elasticity to GDP declining







Ind. tariffs in India and globally
EUR/mWh

Demand to grow at 6-7% CAGR over five years

Elasticity of consumption is declining w.r.t. GDP growth rates

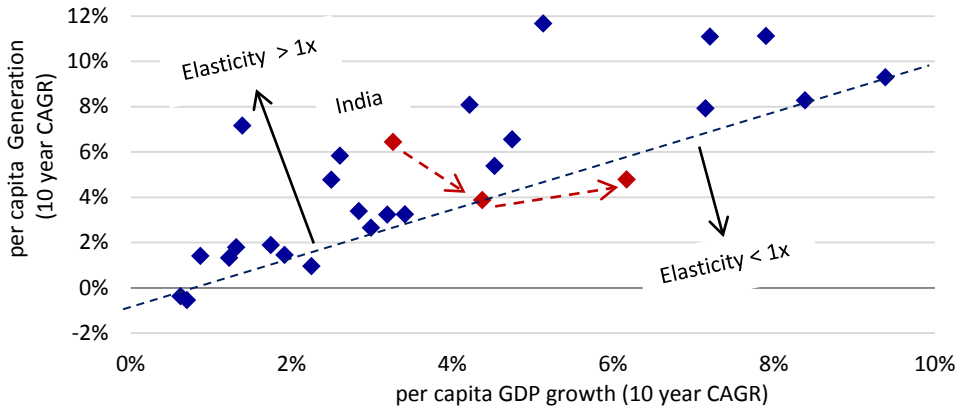
- **India's elasticity of electricity consumption w.r.t. GDP growth is declining due to a low share of manufacturing in GDP.**
- **Per capita consumption growth of electricity tends to peak at USD2,000 per capita GDP. Thus, given that India's per capita GDP is already inching toward the USD2,000 mark, we believe the country has perhaps missed the bus of accelerated electricity consumption growth.**
- **Although India's specific electricity consumption is low, per capita electricity consumption is not low at the current level of per capita GDP.**
- **Energy efficiencies should partially offset demand drivers, in our view. UDAY is likely to improve the sustainability of DISCOMs.**
- **Four states are witnessing strong traction in demand; however, they together account for only 20% of the country's demand. Moreover, consumption growth is decelerating in the rest of India, thereby dragging the country's growth rates.**
- **We believe India's per capita consumption of electricity can increase at a 5-6% CAGR, assuming that the country is able to clock 7-8% GDP growth. Also, given the population growth rates, India's electricity consumption can grow at a CAGR of 6-7% over the next five years.**

India's elasticity of electricity of demand w.r.t. GDP growth is declining…

While most countries clock elasticity of >1 during high GDP growth phases, a reverse trend is observed in India.

Based on our analysis of historical data, we note that the per capita GDP growth rate is the key driver of per capita electricity demand growth in a country. Indian electricity demand growth has been disappointing for the last 20 years, despite acceleration in the GDP growth rate. While per capita GDP CAGR has accelerated from 3.3% over 1984-94 to 4.4% over 1994-2004 and to 6.2% over 2004-14, the generation CAGR has dropped from 6.4% over 1984-94 to 3.9% over 1994-2004, and then slightly increased to 4.8% over 2004-14. While most countries clock elasticity of >1 during high GDP growth phases, a reverse trend is observed in India.

Exhibit 2: Elasticity of electricity demand growth and GDP growth rate

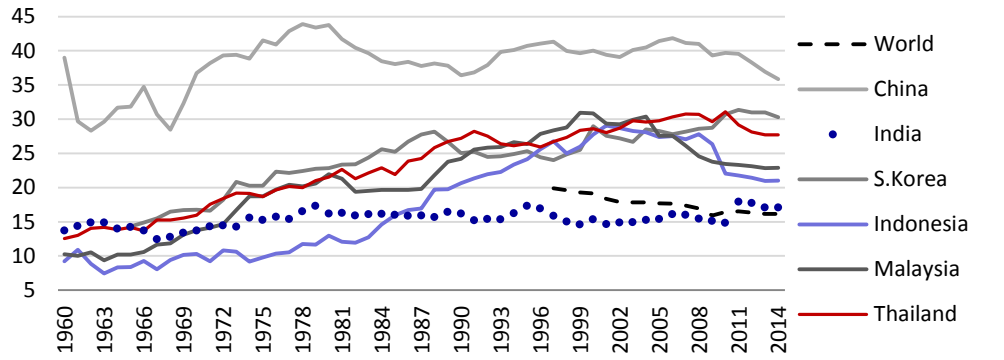


Note: Three decades data for India (red), world, USA, Japan, S. Korea, Malaysia, China, Indonesia and Thailand Source: MOSL, Company

Declining elasticity of demand due to low share of manufacturing in GDP

One of the key reasons for the declining elasticity of demand w.r.t. GDP growth is that manufacturing has a very low share in India's GDP, unlike most other fast-growing nations which rely heavily on manufacturing to sustain their growth rates.

Exhibit 3: Share of manufacturing remains low in India, unlike most other countries (%)



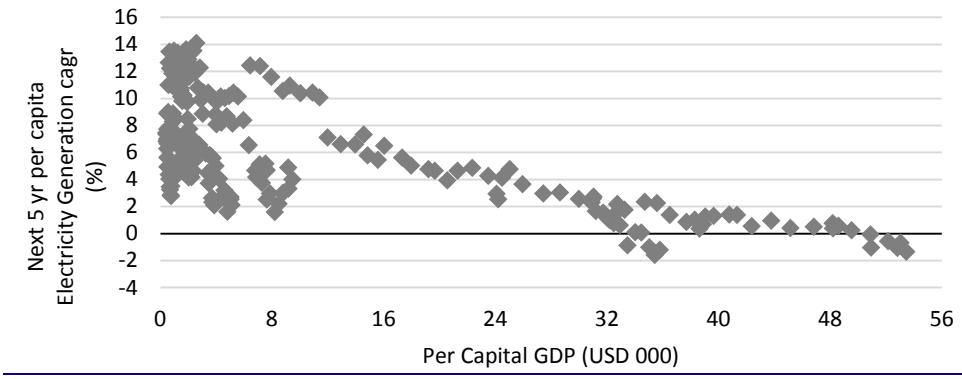
Source: MOSL

Per capita consumption growth of electricity tends to peak at USD2,000 per capita GDP

We also note that demand for electricity tends to slow down in ensuing five years after industrial activities peak and a country achieves certain per capita GDP. In fact, the US and Japan are now witnessing a fall in per capita consumption of electricity driven by efficiencies and peaking of industrial activities.

Electricity demand growth starts to slow-down after reaching a particular per capita GDP

Exhibit 4: Per capital demand CAGR v/s per capita GDP

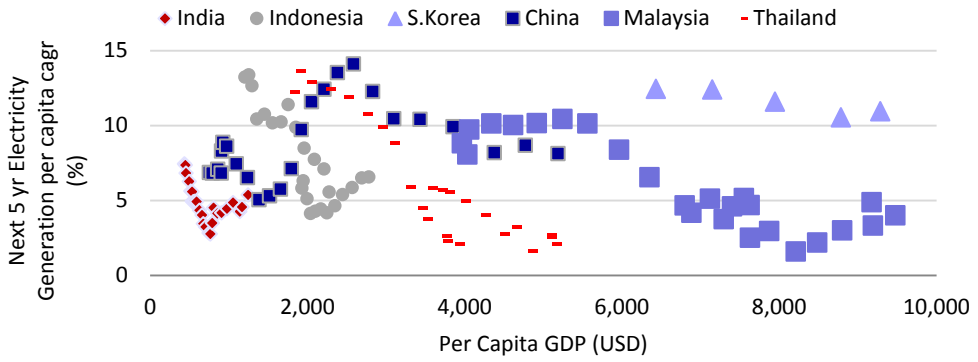


Source: MOSL

A closer look at the data with lower per capita GDP also reveals a similar trend. Most countries (e.g. Thailand, S. Korea, Malaysia and Indonesia) witnessed slower demand growth in ensuing five years after they achieved USD2,000 per capita GDP. China is the only outlier because the share of manufacturing in its GDP too is an outlier. However, we note that China is witnessing slower demand growth after its per capita GDP crossed the USD2,600 mark. India's per capita GDP is not very far from the USD2,000 mark.

India's per capita GDP is not very far from the USD2,000 mark. We thus believe that India has perhaps missed the bus of accelerated demand growth period.

Exhibit 5: Growth rates slow down after a point



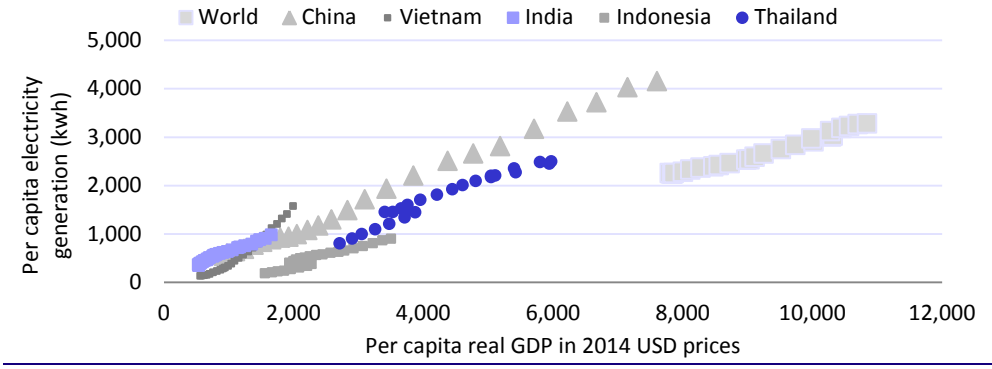
Source: MOSL

India's per capita electricity consumption is not low at current level of per capita GDP

It is often said that India's absolute per capita consumption of electricity is very low compared to developed countries or the world average. Although this implies that the potential for growth is huge, India is struggling with the growth rates and its trajectory of absolute per capita consumption is not very different from other countries.

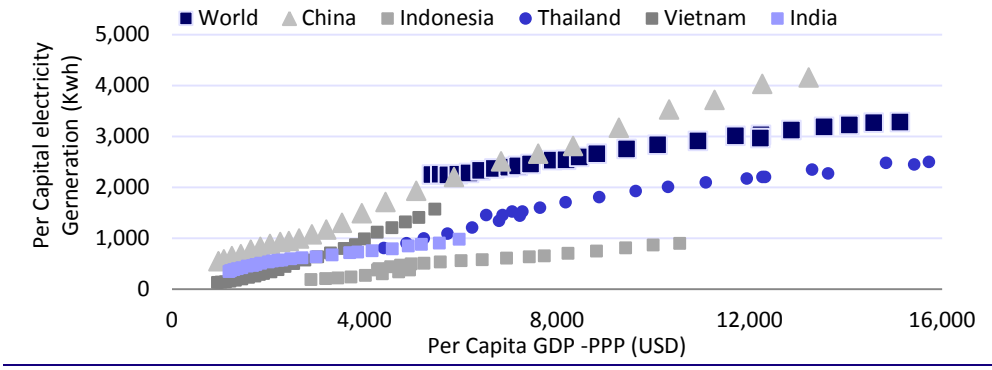
India is not an outlier.

Exhibit 6: Generation v/s GDP at 2014 prices



Source: MOSL

Exhibit 7: Generation v/s GDP on purchasing power parity basis



Source: MOSL

After analyzing 30 years of historical data for major countries in the world, we conclude that India is unlikely to witness a natural tailwind that can accelerate demand growth. The drivers have to be found back home.

Initiatives to improve efficiencies will partly erode demand growth

Let us have a look at domestic factors. The Indian government's focus on providing "24x7" electricity to all is likely to boost demand from domestic and commercial consumers at an accelerated rate. However, initiatives to improve energy efficiencies will partly erode demand growth, in our view.

LED lights can erode 20GW of potential demand.

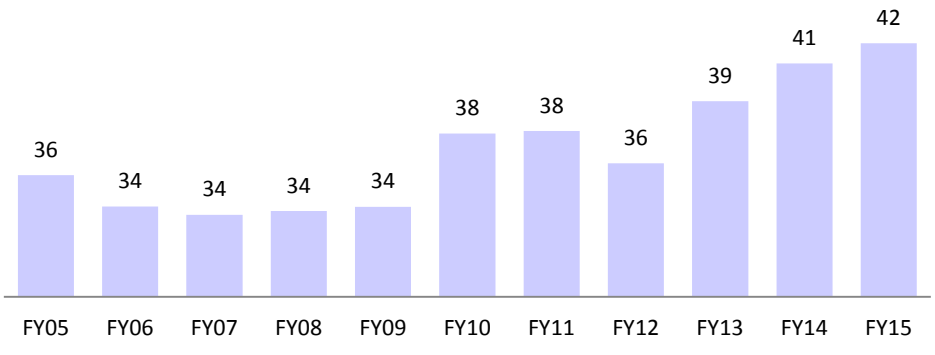
- Emphasis on highly energy efficient LED lights can erode 20GW of potential demand over time. Over 100m LED bulbs are already distributed under the UJALA scheme. LED lights are 50-90% more energy efficient.
- The MoP has recently launched a scheme to replace pumps used by farmers with energy-efficient/solar pumps free of cost. These pumps offer convenience as they can be operated remotely with mobile phones. They also help lessen wastage of electricity, as well as reduce wear and tear of pumps, and deterioration of soil. The cost of pumps will be funded from the savings of subsidies given to farmers. Through this scheme, the government will also have more accurate information about electricity consumption in farming, thereby helping reduce power leakage and pilferage.

If pilferages are plugged, we can see some demand erosion.

- Under UDAY, states have committed to reduce T&D losses substantially, which will plug pilferage and partially erode demand.
- The biggest driver of demand is the industry, which is gradually getting less dependent on DISCOMs. The tariff structure is inverted in India – bulk consumers (like industry and offices) are charged the highest, while small consumers are charged the least. The actual cost of delivery is high in retailing than selling it to bulk consumers. Tariffs are so high for the industry that doing business is becoming unviable. Most of the energy-intensive industries do not depend on grid, but instead set up captive power plants.

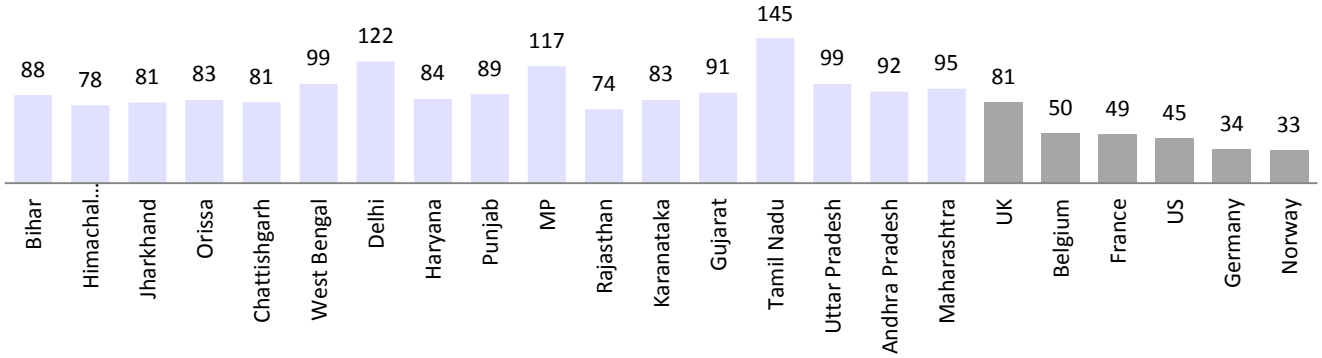
Industry reliance on CPP is increasing…

Exhibit 8: Share of CPPs in electricity consumption by industries (%)



Source: MOSL, CEA

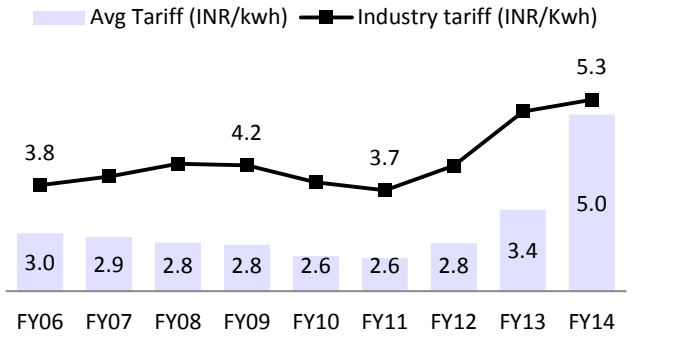
Exhibit 9: Industrial Tariff (EUR/MWH)



Source: MOSL, CEA

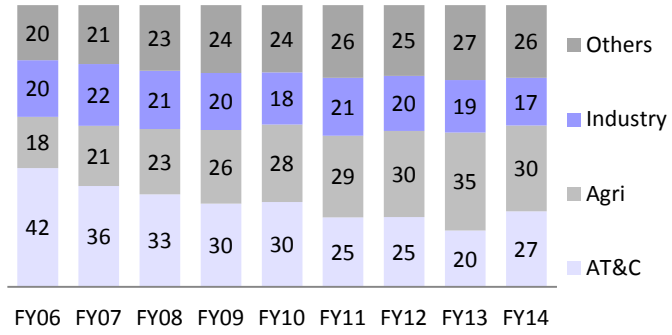
Industry's demand from grid has grown at a slower pace. After raising tariffs, some of the states have seen the share of industry in the consumption basket decline.

Exhibit 10: Rajasthan raised industry rapidly during FY11-14



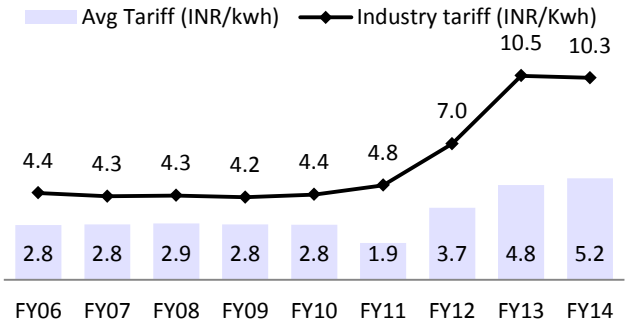
Source: MOSL, PFC

Exhibit 11: Industry's share in consumption declined (%)



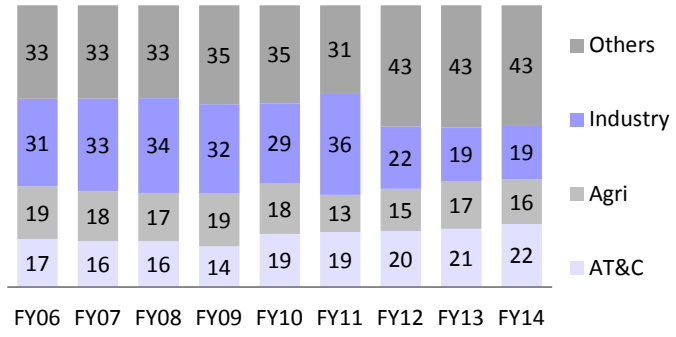
Source: MOSL, PFC

Exhibit 12: TN raised industry rapidly during FY11-14



Source: MOSL, PFC

Exhibit 13: Industry's share in consumption declined (%)



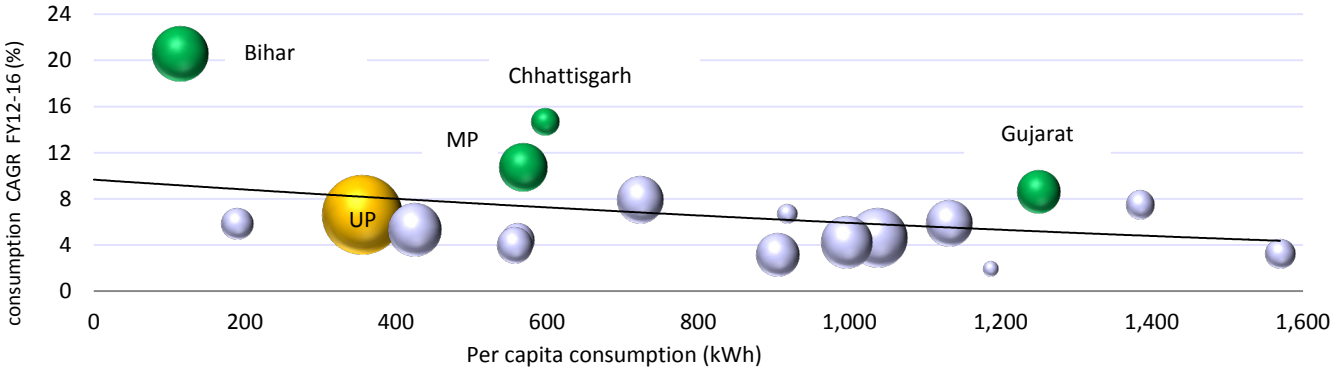
Source: MOSL, PFC

Consumption growth accelerating in four states, but slowing in rest of India

As the supply of electricity is improving and the focus of state politics is shifting toward development, we note that electricity consumption over the past four years has started growing faster in only four states (Bihar, Chhattisgarh, MP and Gujarat), which together account for only 20% of consumption. However, consumption in rest of the country is slowing.

We need to watch UP more closely as it has the potential to make a mark in consumption due to its (1) high population base and (2) 8.5% share in the country's consumption. There is lot of work being done to improve the transmission and distribution infrastructure in the state, while supply of electricity is improving. Specific consumption is low, which means it has the potential to grow faster as supply improves.

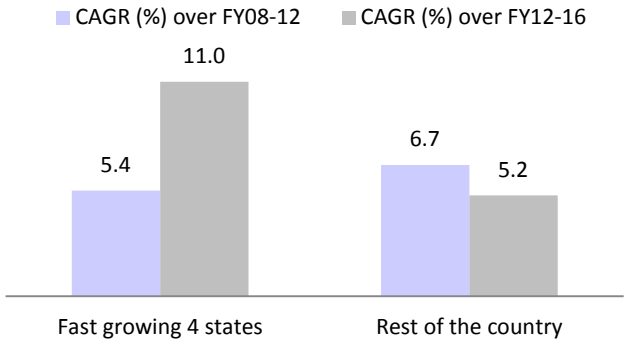
Exhibit 14: Four states have seen acceleration in demand over the last four years



Note: Size of bubble indicates population of the state

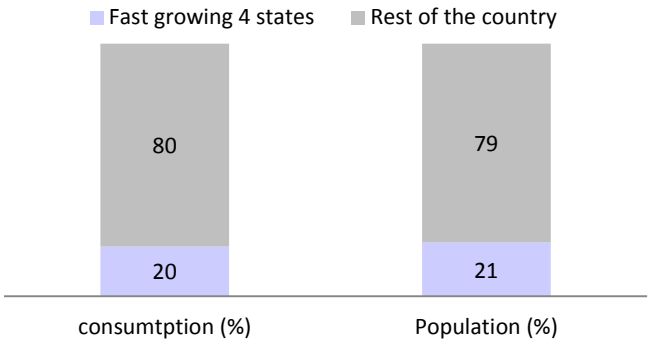
Source: MOSL, PFC

Exhibit 15: Four states growing faster, but rest are slowing



Source: MOSL, PFC, CEA

Exhibit 16: 80:20 rule applies



Source: MOSL, PFC, CEA

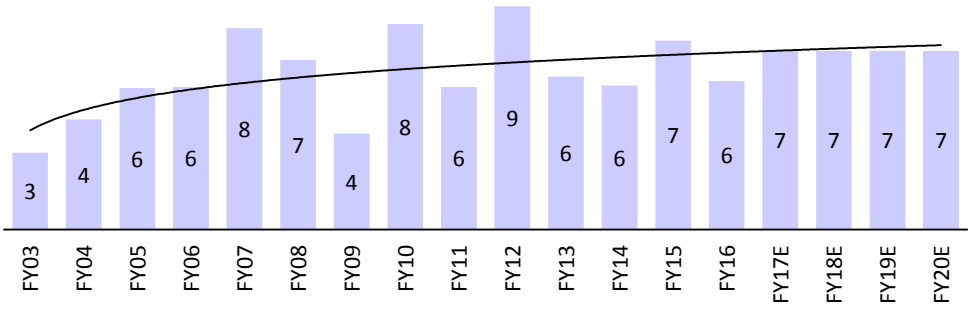
Therefore, we believe that there is no breakthrough trend that can change the trajectory of India's demand growth, despite measures undertaken under UDAY. However, we strongly believe that UDAY will be able to improve the sustainability of DISCOMs. In the absence of UDAY, consumption growth would have instead decelerated.

India's electricity consumption can grow at 6-7% CAGR

We believe that India's per capita consumption of electricity could increase at a 5-6% CAGR, assuming that the country is able to clock 7-8% GDP growth. Also, given the population growth rate, we believe India's electricity consumption could grow at a CAGR of 6-7% over the next five years.

We expect consumption to grow at a CAGR of 7% over FY16-20E.

Exhibit 17: All India electricity consumption growth (%)



Source: MOSL

Financial health of DISCOMs likely to improve

But this may not be enough to drive demand

- **The MoP is taking the right steps to improve the financial health of DISCOMs, in our view.**
- **However, there are structural issues, which we believe will take longer to resolve. States with a low share of industry will find it more challenging to turn around. Access to low-cost energy will be equally important.**
- **Our data analysis suggests that there is no correlation between demand growth and financial health of DISCOMs, as improved financial health of the latter may not necessarily drive demand.**

MoP moving in the right direction

There is a clear roadmap for debt reduction, AT&C loss reduction, and timely tariff revisions.

We see Mr. Piyush Goyal as a dynamic power minister. After engaging with various stakeholders in about 1,000 meetings, the MoP has come out with a comprehensive scheme called "UDAY" to clean up the malaise in the system. There is a clear roadmap for debt reduction, AT&C loss reduction, and timely tariff revisions to reduce the revenue gap (ARG) between average cost of supply (ACS) and average revenue on subsidy received basis (ARR). The MoP is also undertaking steps to bring about supply-side efficiencies, e.g. swapping of coal linkages to reduce transportation costs, improving quality of coal and substituting imports by improving domestic supply of coal. All of this will reduce ACS. There is a focus on energy efficiency in consumption. LED bulbs are being promoted aggressively, which we believe brings a two-fold advantage: saving of 93% energy in lighting, which in turn (1) flattens of load curve and (2) reduces the pressure on grid. Among recent initiatives, energy-efficient pumps are being promoted, which will have SIM cards so that they can be operated remotely by farmers to save energy. Investment in distribution is being pursued aggressively to reduce power leakage and theft, and to provide 24x7 electricity. Round-the-clock electricity will reduce dependence on diesel generators, and thus reduce oil imports and bring lucrative customers to grid. Thus, we believe the MoP is moving in the right direction in terms of improving the financial health of DISCOMs.

UDAY has right mix of carrots and sticks for it to succeed

- DISCOM liabilities (INR4.8t) can shift to state – 50% in FY16 and 25% in FY17.
- Rest 25% liabilities can be converted to state-guaranteed bonds – lower interest rate (base +0.1%).
- Incremental losses post FY17 will be taken over by states (5%/10%/25%/50% in FY18/19/20/21).
- States will issue non-SLR (including SDL) bonds, which will not be counted in the states' fiscal deficit for FY16 and FY17.
- DISCOMs will be obligated to reduce AT&C losses from 22% to 15% and bridge the gap between ACS and ARR.
- **Handholding** through additional grant under DDUGJY, IPDS, PSDF. Increased supply of cheaper domestic coal, coal linkage rationalization, liberal coal swaps from inefficient to efficient plants, coal price rationalization based on GCV, supply of washed and crushed coal, and faster completion of transmission lines.

- **Sticks:** Non-performance will result in forfeiting of benefits under DDUGJY (INR756b) and IPDS (INR326b). Banks will not be allowed to fund losses.

17 states are joining: expect 50% reduction in losses

- 17 states together account for 80% of all DISCOMs' losses (after receiving subsidies).
- 17 UDAY states accounted for 75% of INR4.3t debt in FY14.
- There will be reduction in interest cost of INR219b.
- Thus, the losses will reduce by 45% for these states
- TN still remains outside UDAY, which accounts for 92% of losses for the remaining states.
- Key lies in execution of T&D investment by states; things have started to move in the right direction.

Exhibit 18: Interest cost savings to reduce 45% losses for participating DISCOMs (INR b)

S.N.		Commercial loss on subs recd basis	Debt	Interest cost	Int. Savings	Net loss recasted
	MoU signed	**(397)**	**2,153**	**207**	**165**	**(231)**
1	Uttarakhand	3	14	1	1	4
2	Punjab	3	208	24	20	23
3	Gujarat	1	65	6	5	6
4	Bihar	(3)	40	4	3	(0)
5	Chattishgarh	(6)	24	2	1	(5)
6	Jharkhand	(15)	130	6	5	(10)
7	J&K	(24)	NM	NM	0	(24)
8	Haryana	(31)	302	26	20	(11)
9	Rajasthan	(156)	786	86	70	(87)
10	Uttar Pradhesh	(167)	584	52	40	(127)
	Formally agreed to join	**(90)**	**1,070**	**76**	**53**	**(37)**
1	Goa	(0)	1	0	0	0
2	Himachal Pradesh	(1)	64	6	4	3
3	Maharashtra	(3)	240	29	24	21
4	Odisha	(3)	56	3	2	(2)
5	Karnataka	(5)	114	11	2	(4)
6	Andhra Pradesh	(14)	286	18	14	(0)
7	Madhya Pradesh	(64)	310	10	8	(56)
	Total	**(487)**	**3,223**	**284**	**219**	**(268)**
	Non-UDAY states	(154)				(154)
	All States	(641)	4,300			(422)

Source: MOSL, PFC

There are many structural issues which will take longer to resolve

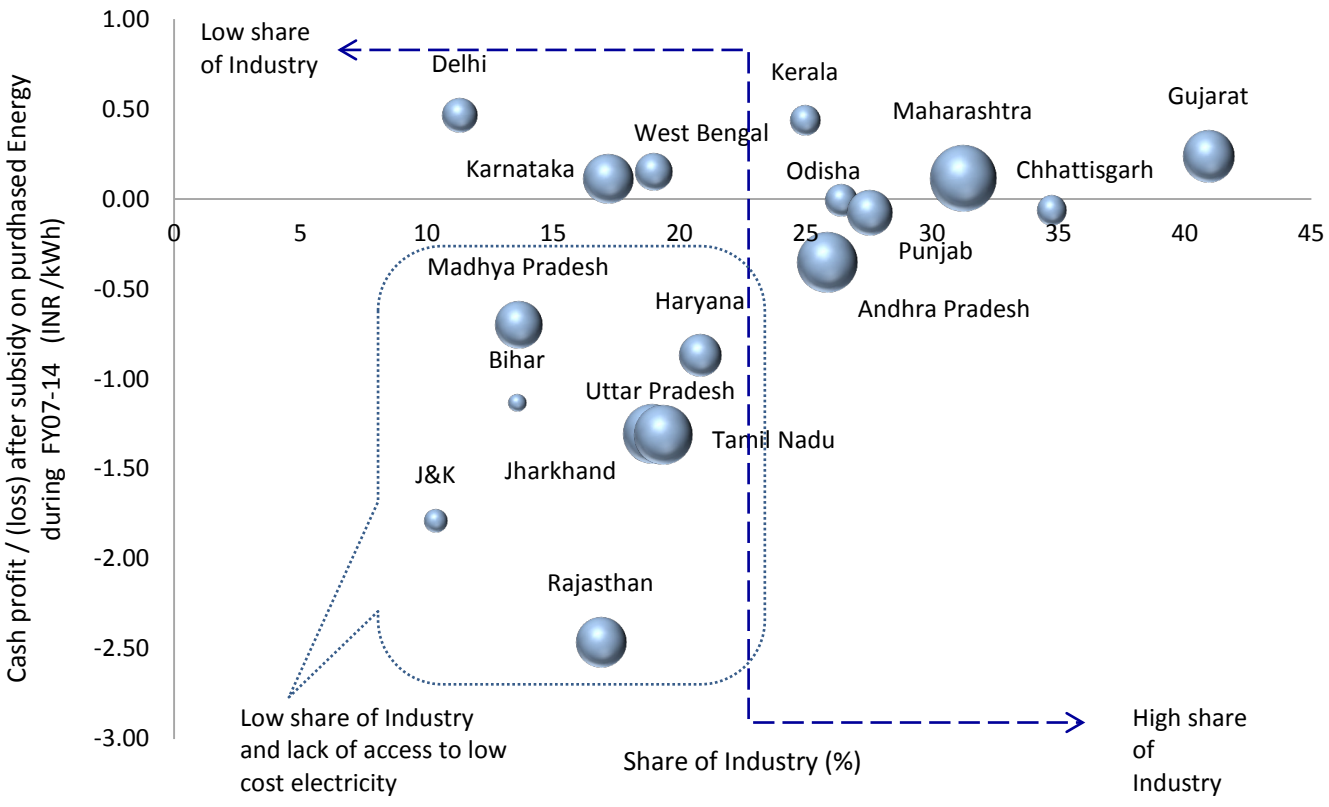
We believe efforts of the MoP are likely to yield positive results in restoring the financial health of DISCOMs. We need to watch out if that will drive demand for electricity. There are certain structural issues with states which will take longer to resolve. Over the past 10 years, we have seen the focus of discussions shifting from shortage of capacity, to shortage of coal to shortage of funds as key impediments to demand growth. But many structural issues are still less understood.

Increasing domestic and agriculture tariff is the only option, which is highly price sensitive.

Less industrialized states will find it more challenging to turn around

One of the key reasons behind the poor financial health of DISCOMs is the low share of industry in the consumption basket, which are the key providers of cross subsidy. Some states have raised industry tariff at such a pace that they have driven the industry out of those states. In Tamil Nadu, the industry tariff is up 130%, while the share of industry in the consumption basket has dropped from 31% in FY06 to 19% in FY14. On the other hand, financially well-managed Maharashtra has maintained the industry share in consumption at 31%, while Gujarat has increased the share of industry from 29% in FY06 to 41% in FY14. Industry tariff was up 81% in Maharashtra and just 51% in Gujarat during the same period. There is a similar story across most of the loss-making states. This is not to say that high AT&C losses, low tariff do not contribute to financial stress. What we are trying to say is that even after achieving targeted AT&C losses, DISCOMs may not necessarily stop making losses. Increasing tariff is going to help, but we need to be cognizant of the fact that demand is highly price sensitive. Industry tariffs are already too high in most of the states. A bulk consumer like Indian Railways is gradually substituting expensive power from DISCOMs with cheaper power from private producers. Industry is increasingly becoming dependent upon captive power for its survival. Some states have already started working on reducing tariff for industry to save them from extinction. Increasing domestic and agriculture tariff is the only option, which is highly price sensitive. Therefore, the states with a low share of industry will find it more challenging to turn around.

Exhibit 19: DISCOMs profitability and share of sales to industries

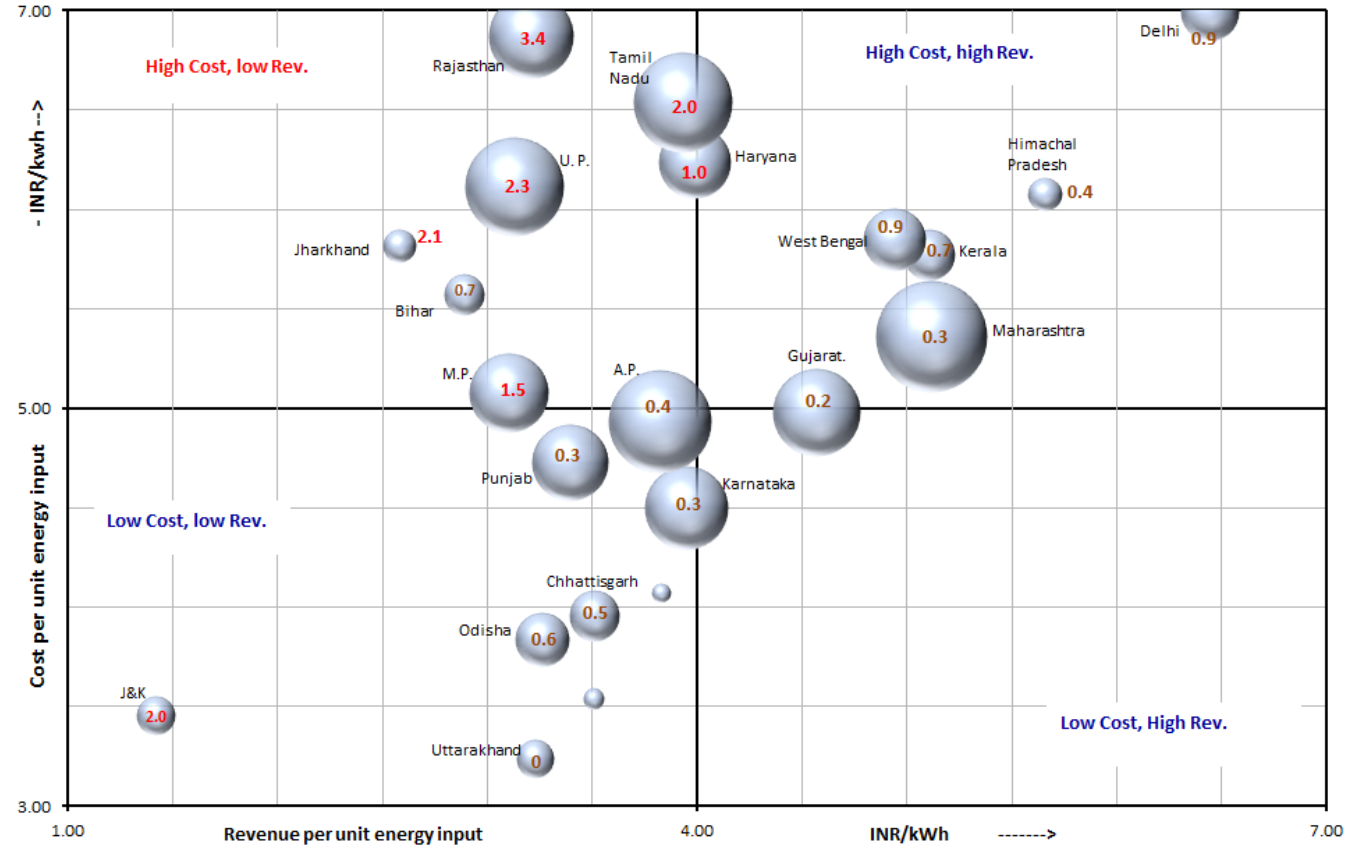


Source: MOSL, PFC

On analyzing the data in Exhibit 19, we note that there are few states (e.g. Delhi, Karnataka and West Bengal) which have a low share of industry, but are still profitable. On detailed analysis of these three states, we note that there are state-specific reasons.

- Delhi is fully urban and is able to charge high rates to its customers.
- Karnataka's ACS is low because it has a high share of hydro power in the supply basket.
- West Bengal has been able to charge high rates to its customers, although ACS is high. The combined share of AT&C loss and Agri is 35% in West Bengal, which is among the lowest in India. Agriculture has just 3% share. West Bengal is among the few states in India which charge a high INR3/kwh to agriculture.

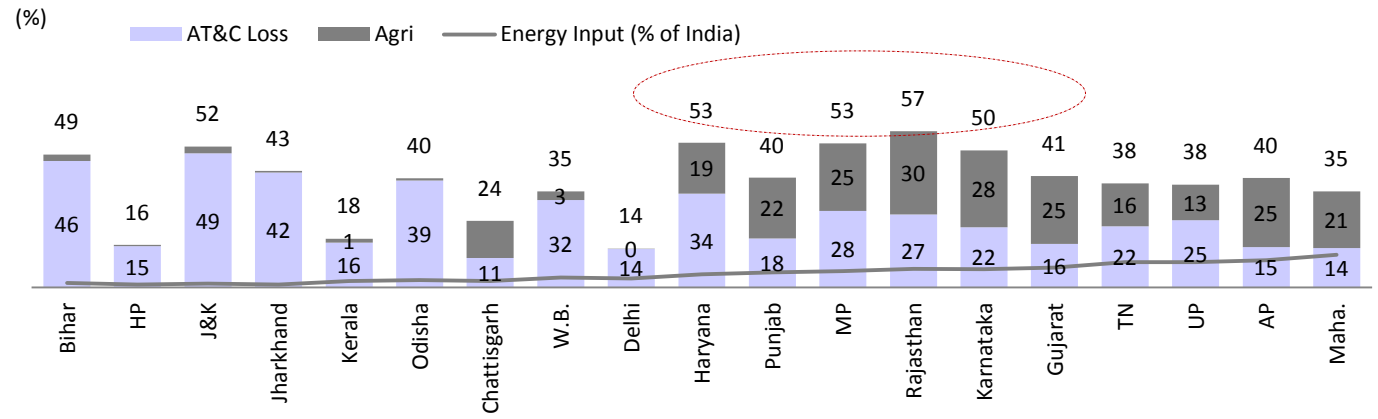
Exhibit 20: Cost of supply (ACS), Revenue (ARR), and the revenue gap



Note: Size of the bubbles is representative of the state's relative electricity consumption. The numbers in the bubble indicate the Revenue Gap (INR/kWh)

Source: MOSL, PFC

Exhibit 21: Combined AT&C loss and Agri consumption are better indicators of malaise



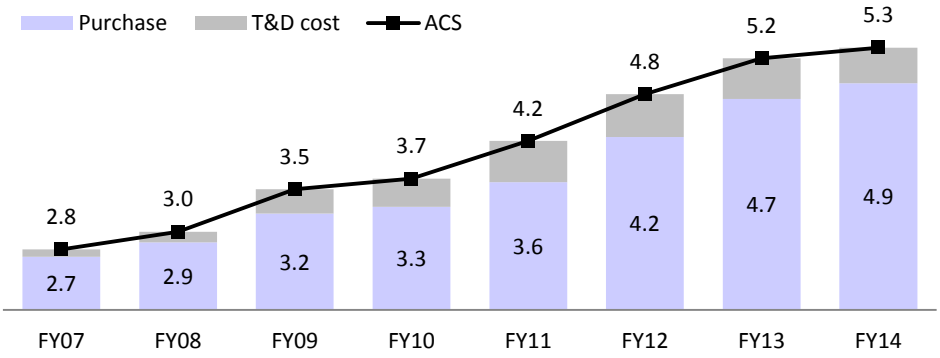
Source: MOSL, PFC

Access to low-cost energy is equally important

Inflationary pressures

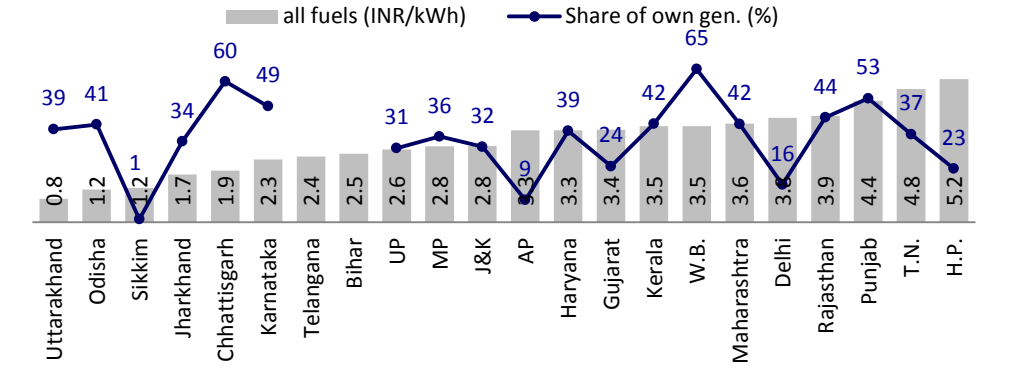
Improved domestic supply, better quality and swapping of linkage are helping reduce variable cost for coal-based power plants. However, there are other inflationary pressures that DISCOMs have to face. Environmental cess on coal has increased dramatically over the past few years from nil to INR400/t. DISCOMs have signed too many PPAs, as discussed later in the report. Fixed portion of ACS is increasing because specific fixed cost of a new project is higher and average PLF is declining due to over-commitment of PPAs/capacities. ACS has nearly doubled over FY07-FY14 due to an increase in variable, fixed, transmission and distribution costs.

Exhibit 22: ACS has nearly doubled in seven years (INR/kWh)



Source: MOSL, PFC

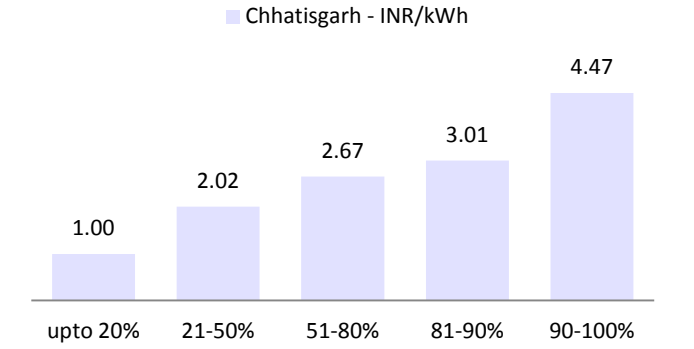
Exhibit 23: Cost of power varies from one state to another



Source: MOSL, PFC, CEA

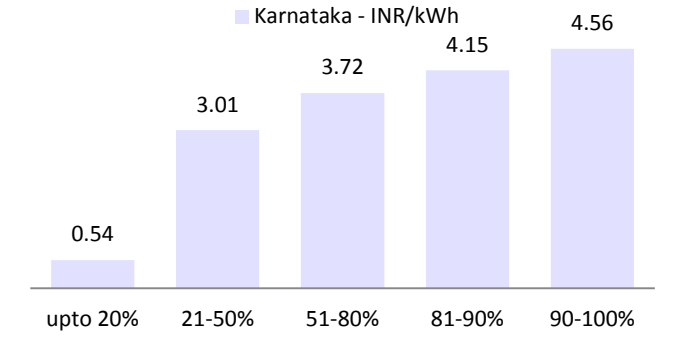
Chhattisgarh and Karnataka get 50% of power below INR2/kwh and INR3/kwh.

Exhibit 24: Chhattisgarh power purchase cost-curve



Source: MOSL, CEA

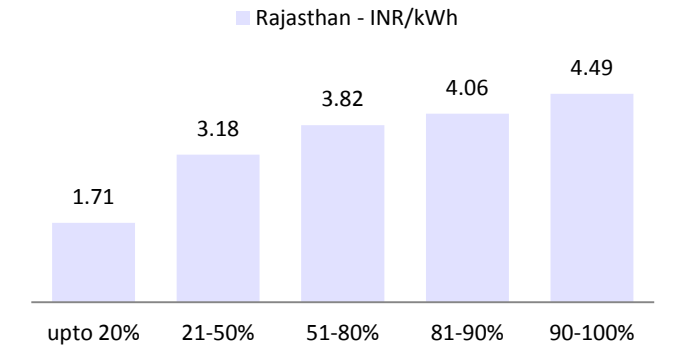
Exhibit 25: Karnataka power purchase cost-curve



Source: MOSL, CEA

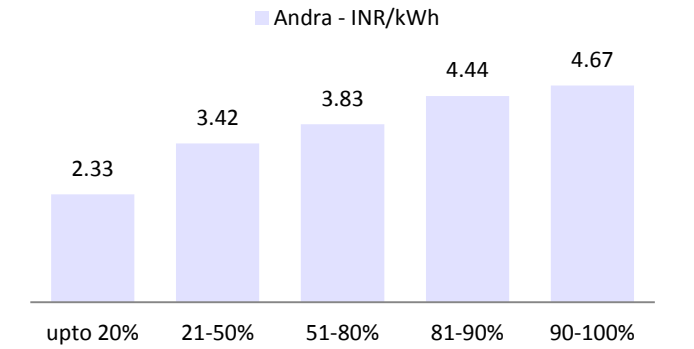
While, Rajasthan and AP pay more than INR3/kwh for 80% of energy purchases.

Exhibit 26: Rajasthan power purchase cost-curve



Source: MOSL, PFC

Exhibit 27: Andhra Pradesh power purchase cost-curve



Source: MOSL, PFC

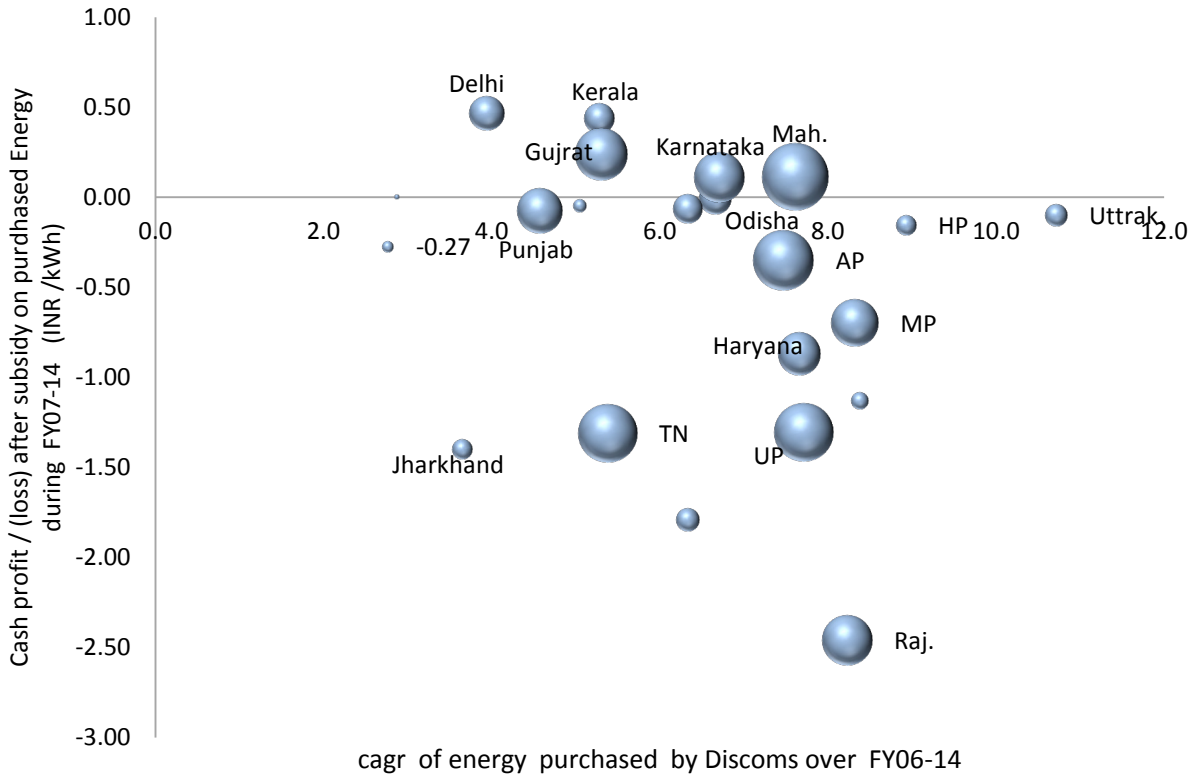
No correlation between financial health of states and demand growth

The financial position of state power distribution companies (DISCOMs) is being cited as a key impediment to demand growth. Analysis of state-wise demand suggests that there is no correlation between demand growth and financials of DISCOMs. Gujarat has the best financials, yet growth of energy input/purchased by DISCOMs has been just 5% over FY06-FY14. Of the seven states that have the

Improved financial health of DISCOMs may not necessarily drive demand.

highest ARG, only Tamil Nadu and Jharkhand's energy input (consumption) grew at ~4-5% CAGR over FY06-14. The other five states' (Bihar, Haryana, MP, Rajasthan, and UP) energy input/purchased grew at a CAGR of high ~8% over the same period. In other words, the improved financial health of DISCOMs may not necessarily drive demand. In fact, there is risk of demand erosion if these states return to financial prudence.

Exhibit 28: DISCOM profitability v/s. demand growth



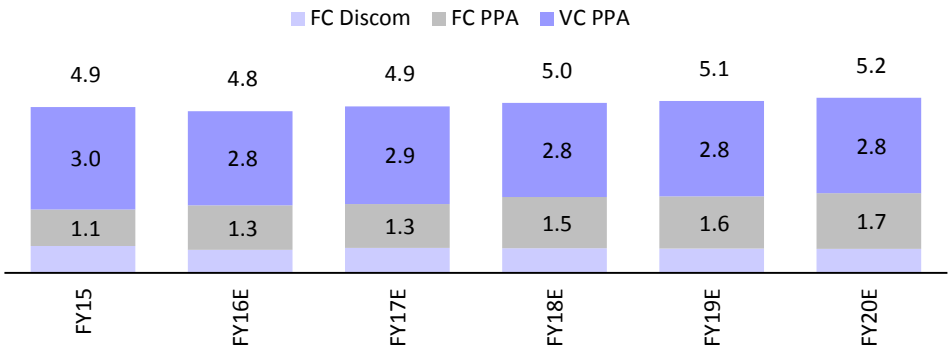
Source: MOSL, PFC

Analysis of Rajasthan DISCOMs suggests that ACS will continue to rise

The balance sheet of DISCOMs is set to get a makeover as state governments take over 75% of DISCOMs' debt by the end of FY17. This will re-start the flow of credit to them. The states are committing to reduce AT&C losses in a graded manner and increase tariff more frequently to bridge the gap between ARR and ACS. We have studied and tried to forecast ACS for Rajasthan DISCOMs. Our analysis suggest that fixed cost will increase further because of (1) a decline in the average utilization of committed capacities, (2) new capacities came at higher average capex, (3) average cost of transmission infrastructure is now trending up and (4) the share of renewable energy is increasing. Although an increase in domestic supply of coal is deflationary for variable cost, there are inflationary pressures (e.g. increase in clean environment cess from nil few years ago to INR400/t for FY17). Therefore, increasing ARR is the only way for DISCOMs' turnaround.

Will continue increasing due to rising fixed cost of PPAs

Exhibit 29: ACS for Rajasthan will increase due to rising fixed cost of PPAs (INR/kWh)



Source: MOSL, ARRs

Unrealistic demand expectations created overcapacity

It may take 5-6 years to rebalance the market

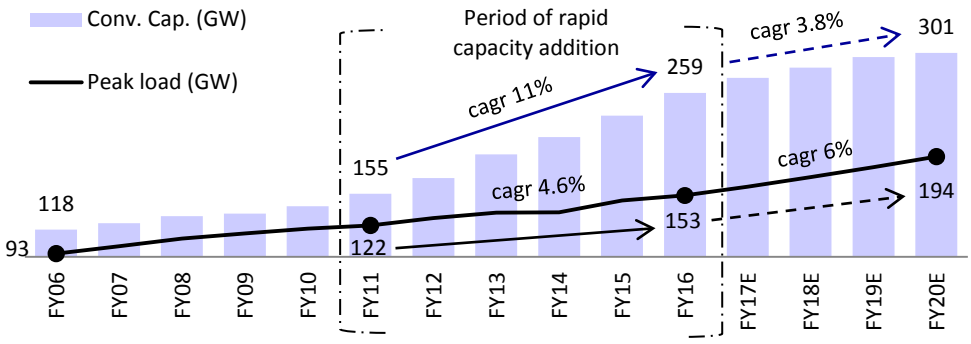
- **All India conventional capacity has increased at a CAGR of 11% to 259GW during FY11-FY16, spurred by flurry of private investment amid expectation of unrealistic demand growth.**
- **Conventional capacity addition is peaking, yet the capacity should grow at a CAGR of 3.8% to 301GW during FY16-20E. Capacity addition will fall sharply post FY17E in the private sector, but will pick up in the central sector. It will take 5-6 years to rebalance the market.**
- **Any sign of tightness in the market will revive another 20GW of projects, where more than 50% of budget is already spent.**
- **All India conventional capacity PLF will bottom out in FY17E, but central sector PLF will continue declining until FY19E because of continued momentum in capacity addition.**
- **Private sector PLF will improve from 52% in FY17E to 64% by FY20E as capacity addition drops sharply after FY17. The state sector's PLF will languish at 40%.**
- **The share of RE in generation will increase from 4% to 7%. Coal will remain the main driver of generation growth, but its dependence will keep reducing.**

Unrealistic demand expectations created overcapacity

The Indian power sector has witnessed rapid capacity addition over the past five years in anticipation of unrealistic high demand growth. Capacity grew at a CAGR of 11% over FY11-16, while peak load grew at a CAGR of only 4.6% over the same period.

Last five years have seen a period of rapid capacity addition

Exhibit 30: Conventional capacity and peak load



Source: MOSL, CEA

Capacity addition was driven by huge private sector investment. Doling out of captive coal mines during 2007-2009 and a very attractive merchant power market during 2009-2011 attracted huge investment by private developers. Many did not care to even secure PPAs. Almost everyone kept some spare capacity for the merchant market.

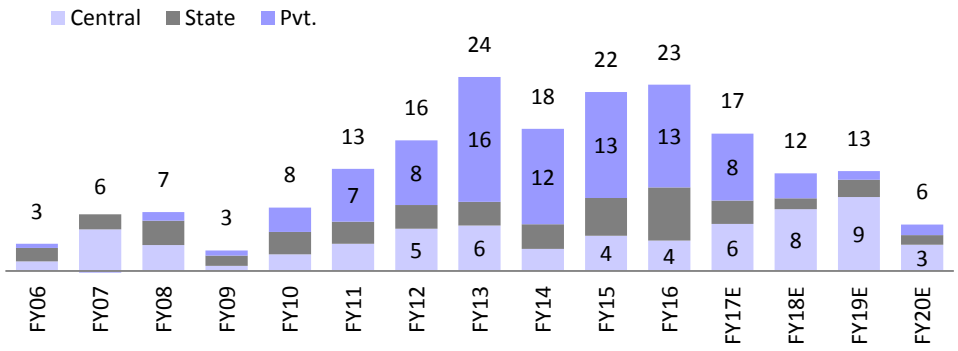
May take 5-6 years to rebalance the market

According to analysis of data provided by CEA on the broad status of projects and based our interaction with industry, we note that capacity addition has peaked. Private developers are hurrying to complete projects before 31 March 2017 in order

to retain tax benefits. Commissioning of projects by private players will dry post FY17. However, capacity addition by the central sector, led by NTPC, will be high in FY18 and FY19. We expect conventional capacity to increase by net 42GW to 301GW in FY20 after counting the deletion of nearly 6GW largely by the state sector (see Annex. III for details).

Conventional capacity addition has peaked

Exhibit 31: Conventional capacity addition (GW)

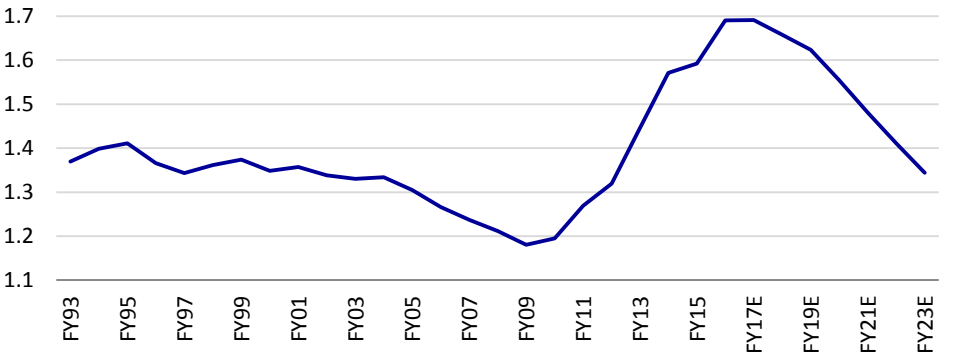


Source: MOSL, CEA

Conventional capacity addition growth will be slower at 3.8% over FY16-20E, while peak load may grow at a CAGR of 6%. Furthermore, we expect renewable energy (RE) capacity to increase by 41GW to 80GW by FY20. Thus, total installed capacity will increase by 83GW to 381GW by FY20E on factoring reasonable conservatism.

It will take as long as 5-6 years for overcapacity to correct

Exhibit 32: Conventional cap./peak load (x)



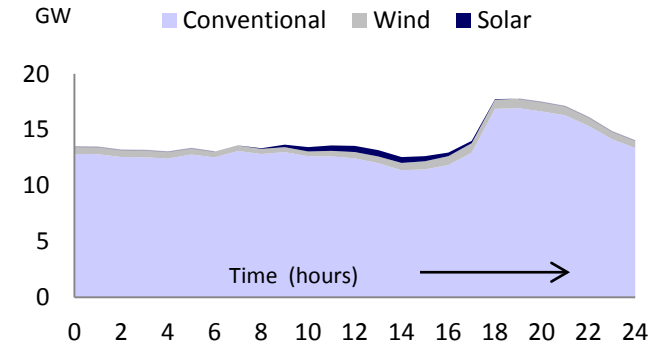
Source: MOSL, CEA

The Indian power sector is at the peak of overcapacity, as evident from Exhibit 32. If peak load grows at a CAGR of 6%, it will take as long as 5-6 years for overcapacity to correct. We are assuming that RE will not crowd out conventional capacity from peak load. In reality, some amount of wind energy is indeed available during evening peak load, but it cannot be relied upon.

There is a tendency of slower growth in peak load as the load curve tends to flatten as per capita consumption increases. This is evident from the following regional peak load charts. The load curve is steeper in the eastern region (ER), which is less developed compared to the northern region (NR). Further, LED lights are reducing peak load in the evenings. Therefore, we believe that it will take at least 5-6 years for overcapacity to correct even if energy demand were to grow at a CAGR of 7-8%.

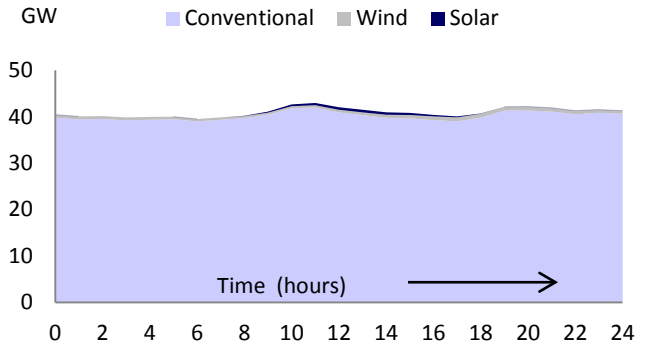
Further, we have identified 21GW of projects, which are held up either because of shortage of funds or other issues. Of this, there is 10GW of capacity with revised project cost of INR660b, which are stopped due to shortage of funds; INR400b is already spent on them. Any sign of tightness in the market will improve the chances of revival of these projects. Therefore, overcapacity may last for longer.

Exhibit 33: Load curve - Eastern Region at peak in FY15



Source: MOSL, CEA

Exhibit 34: Load curve – Northern region at peak in FY15



Source: MOSL, CEA

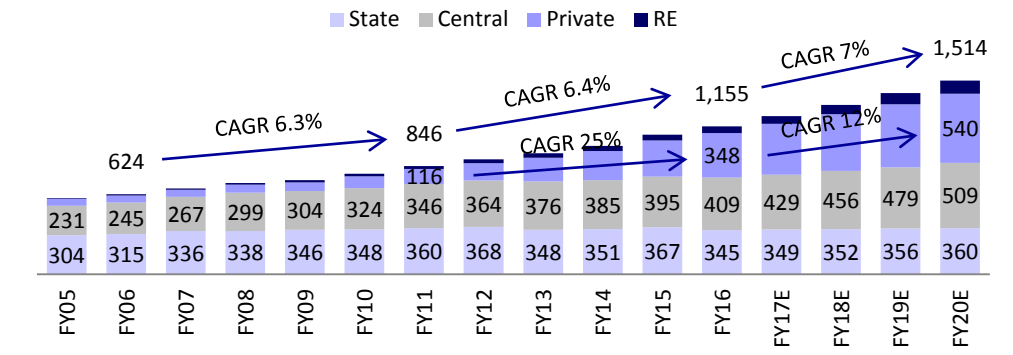
We expect generation to grow at 7% CAGR; private sector - key driver

Electricity generation has increased at a CAGR of 6.4% over FY11-16. Private sector has been the key driver of this growth. Indian DISCOMs have an impressive system of scheduling power from generating stations that have lower variable cost among the contracted capacities.

- Electricity generation by private generators increased at a CAGR of 25% over the past five years. Most private producers secured PPAs at low rates through competitively bid tenders. Private producers find preference in merit order dispatch as they enjoy low variable cost due to economy of scale, lower transportation costs and highly efficient new equipment. Private names will continue to lead generation because their plants are located either closer to ports or closer to coal mines. We are factoring in a 12% CAGR in private sector generation over FY16-20E.

Private sector is key driver of generation growth

Exhibit 35: Electricity generation (billion kWh)



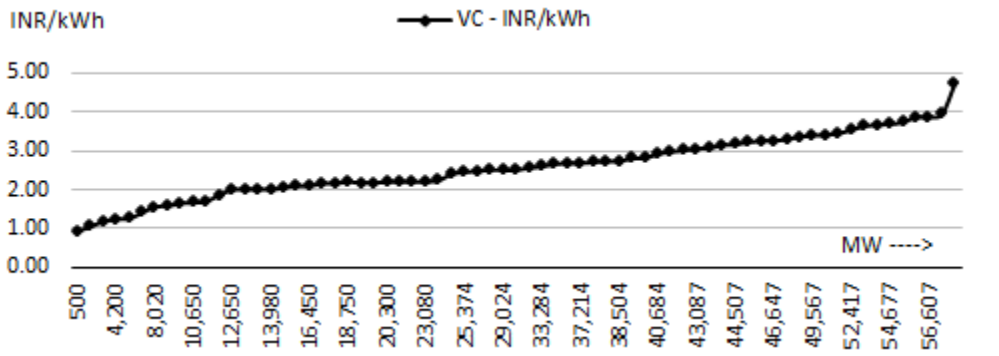
Source: MOSL, CEA

- The state sector's generation remains stagnant, despite capacity increasing by 25% to 100GW in FY16. As a result, PLF of the state sector declined from 53% in FY11 to 41% in FY16. The state sector has been a major loser due to system

inefficiencies and the strategic disadvantage of having location away from the source of energy. State GENCOs' variable costs are elevated as they incur high transportation cost for coal, and SHR (station heat rate) is high due to frequent back-downs and poor maintenance. Only ~20% of coal based capacity has variable cost less than INR2/kWh. As transmission-related bottlenecks are addressed, high-variable-cost plants will find it difficult to get schedule. The state sector is likely to remain laggard, in our view. We are factoring a 1% CAGR in state sector generation over FY16-20E.

Only 12GW of 64GW of state-owned coal capacity has variable cost less than INR2/kWh

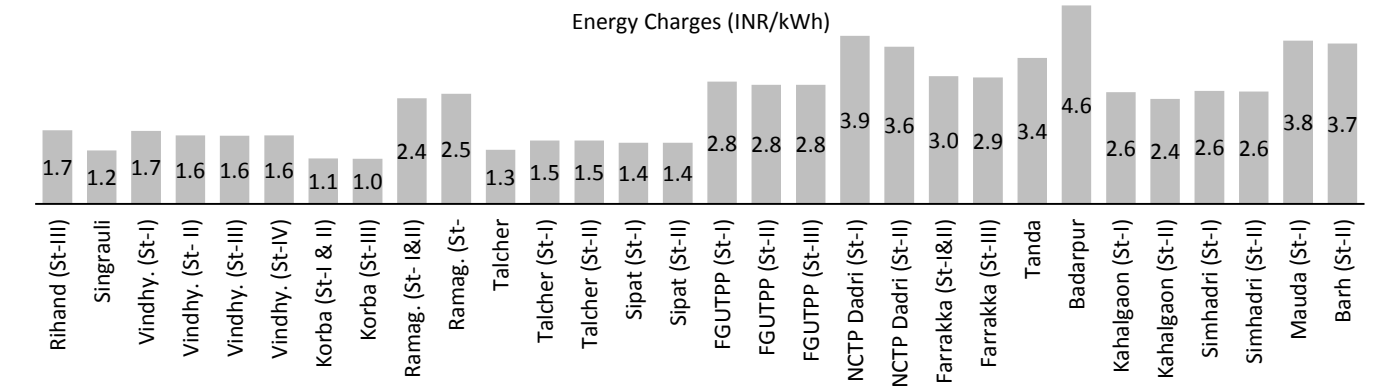
Exhibit 36: Variable cost curve for state-owned coal capacities



Source: MOSL, State Gencos ARR (FY16-17)

- The central sector too has been a laggard as generation grew at a CAGR of 3.4% v/s 6.4% for all India over FY11-16. Capacity increased at a CAGR of 7% to 76GW over FY11-16. As a result, PLF declined from 73% in FY11 to 61% in FY16. The MoP and the MoC (ministry of coal) have taken various initiatives to improve the quality of coal and reduce transportation cost by swapping of linkage, which should help reduce overall cost of coal transportation and variable cost. We expect generation to grow at a CAGR of 5% over FY16-20, which is better than the state sector but lower than all India generation CAGR of 7% over the same period.

Exhibit 37: NTPC's plants energy cost



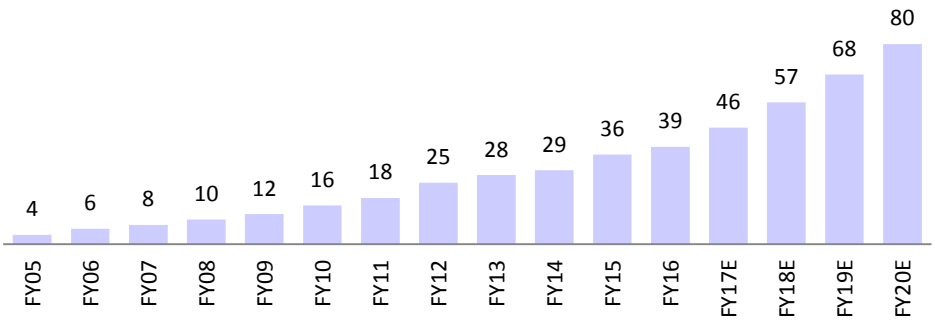
Source: NTPC's Tariff Petitions

- The MoP is targeting aggressively to increase RE capacity to 175GW by 2022. We are, however, conservatively factoring in RE capacity of 80GW by the end of

FY20E, which means an addition of 41GW in four years. This is achievable, in our view, given the strong push by the MoP, falling cost of projects and competitive tariffs.

We expect RE capacity and generation to increase at a CAGR of 20% over FY16-20E.

Exhibit 38: Renewable energy capacity (GW)

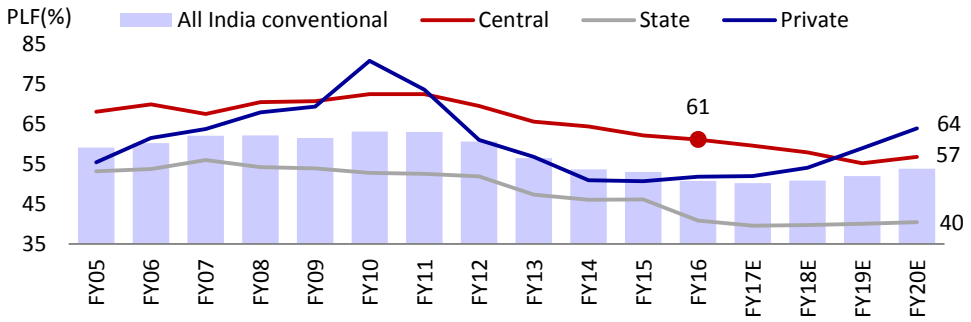


Source: MOSL, CEA

- All India PLF of conventional capacity will bottom out in FY17E at 50%. State sector PLF will remain low at 40%, while central sector plants' PLF will decline further from 61% in FY16 to 55% in FY19E. Private sector's PLF is at 52%, which is expected to start improving rapidly after FY17.

Private sector PLF is at its lowest point

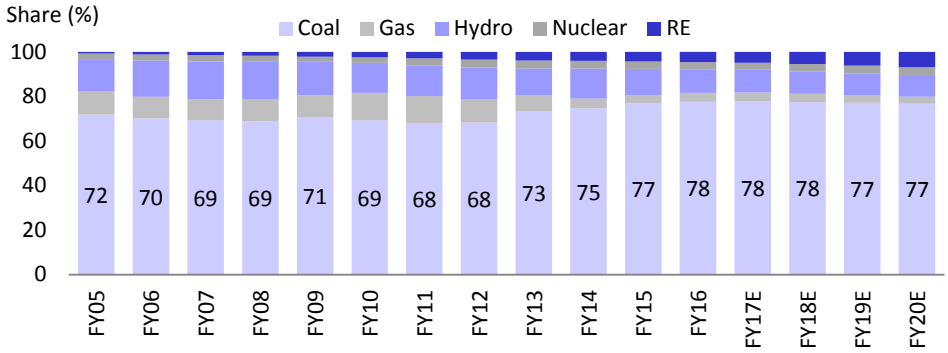
Exhibit 39: Plant load factors (%)



Source: MOSL, CEA

Coal will retain dominant share in power generation, while RE's share will increase 230bp to 7%

Exhibit 40: Power generation fuel-wise

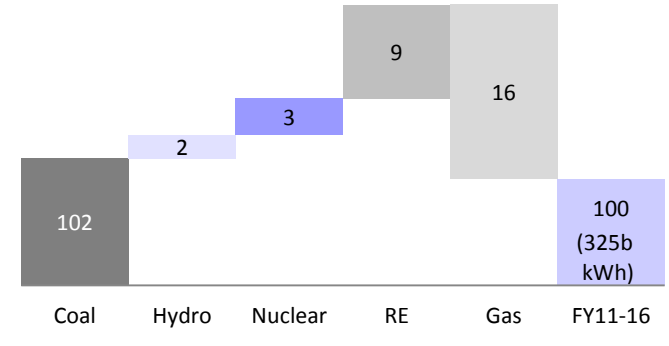


Source: MOSL, CEA

- In the past five years, all India generation increased by 325b kWh to 1155b kWh. Coal was the key driver of generation growth. Coal contributed 102%, RE 9% and

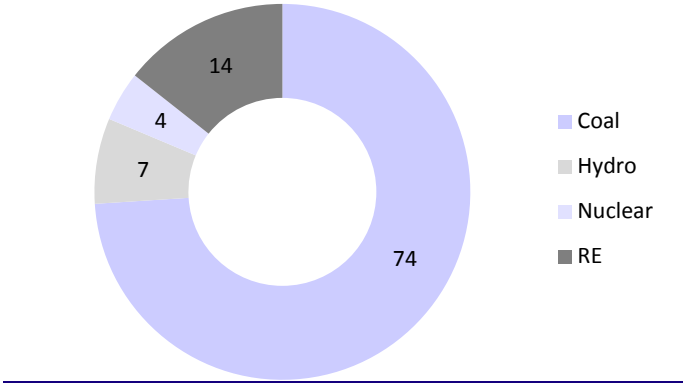
nuclear 3% of the 325b kWh total growth in generation. Hydro contributed just 2%, while gas-based generation dragged 16% of total growth in generation.

Exhibit 41: Contribution (%) in generation growth (FY11-16)



Source: MOSL, CEA

Exhibit 42: Contribution (%) in generation growth (FY16-20)



Source: MOSL, CEA

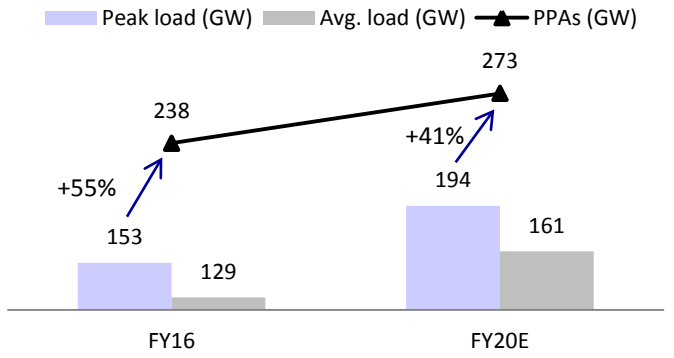
- We expect electricity generation to increase at a CAGR of 7% over FY16-20E. According to our estimates, RE will contribute 14% to growth, while hydro will contribute 7%. Nuclear energy too will contribute nearly 4%. If there are slippages in hydro generation (either due to water shortage or delay in new projects), coal's share will be correspondingly higher.

DISCOMs have 41% more PPAs than FY20E peak load

21-28GW capacities without PPAs, while demand may be just 4.7GW

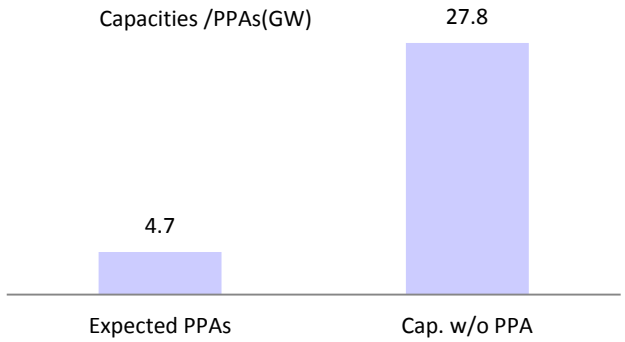
- **Power supply in India is comfortable with 259GW of commissioned conventional capacity as on 31 March 2016, while peak load was only 153GW in FY16. States had 237GW of available commissioned capacity with PPAs, i.e. 55% more than peak demand. Approx. 21GW of private commissioned capacity was stranded without PPAs.**
- **Rolling forward to FY20E, we believe conventional capacity will rise to 301GW after the deletion of 6-10GW old capacity, while peak load will increase to 194GW at a CAGR of 6%. States will have 273GW of available commissioned capacity with PPAs, i.e. 41% more than the projected all-India peak demand. However, approx. 28GW of private commissioned capacity may still be stranded without PPAs if states do not sign more PPAs.**
- **Despite a very comfortable situation at the country level, Gujarat, Andhra Pradesh, Kerala, J&K and a few smaller states may need to seek 4.7GW PPAs over the next 2-4 years to meet their long-term requirements.**

Exhibit 43: 41% more PPAs than FY20E peak load



Source: MOSL

Exhibit 44: Cap. w/o PPA outstrips expected PPAs by FY20E



Source: MOSL

States may seek 4.7GW of PPAs over the next 2-4 years

Gujarat, Andhra Pradesh, Kerala and J&K may need to enter into PPAs.

- Although the PPA situation at the country level is very comfortable, yet some states will need to sign PPAs to meet their average energy requirement as they often plan in isolation for political reasons. Among the larger states, Gujarat, Andhra Pradesh, Kerala and J&K may need to enter into PPAs to meet their average energy requirement (Exhibit 45). Around 4.7GW of PPAs may come up in the next 2-4 years from 11 states, despite surplus central sector unallocated PPAs of 14GW by FY20. Our calculations for the requirement of PPA capacities are based on an average PLF of 75% for average energy requirement and PLF of 80% for peak load requirement. If gas-based capacities become viable, Andhra Pradesh and Gujarat too may not need new PPAs until FY20.
- Karnataka, Kerala and Bihar's PPA situation has been tight in FY16. These states are expecting new capacities (they have signed PPAs, which will be commissioned over the next few years), which should put them it a comfortable position. Therefore, as of now, these states are managing their short-term needs from the oversupplied merchant market.
- Our analysis reveals that if each state were to plan from the point of view of securing PPAs to meet their peak load requirement individually, 25 states may

need to sign 39GW of PPAs by FY20. However, this analysis may not hold true as peak load demand can and is being met by power banking and from merchant power market. Peak load for most states in the northern region (NR) is 42-80% more than average load requirement. On the other hand, NR's peak load is just 31% higher than average requirement. Therefore, power banking and short-term PPAs can prove to be a cost-effective solution, in our view.

Exhibit 45: Conventional Power Projects with PPAs, Peak and Avg. load requirement – in MW

Region	FY16 Load			U/C Cap.	FY20E load			FY20E reqd. PPA		Surplus (deficit)	
	Peak	Avg.	PPAs	with PPA	Peak	Avg.	PPAs	Peak#	Avg.$	Peak	Avg.
Maharashtra	20,973	16,755	28,364	3,323	27,491	21,963	31,687	34,364	29,284	-2,677	2,403
Uttar Pradesh	16,988	12,484	18,368	4,279	22,268	16,364	22,647	27,835	21,818	-5,187	829
Tamil Nadu	14,217	11,373	15,497	4,288	17,949	14,359	19,785	22,436	19,145	-2,651	640
Gujarat	14,495	12,004	17,716	2,367	19,000	15,735	20,083	23,750	20,979	-3,667	-897
Punjab	10,852	6,329	12,198	274	14,225	8,297	12,472	17,781	11,062	-5,309	1,410
Rajasthan	10,961	7,727	12,986	3,725	14,368	10,129	16,711	17,960	13,506	-1,248	3,206
Karnataka	10,196	7,391	10,239	3,242	12,872	9,331	13,481	16,090	12,441	-2,609	1,040
Madhya Pradesh	10,902	6,299	13,736	3,727	14,290	8,256	17,463	17,863	11,009	-399	6,455
Haryana	9,113	5,646	10,621	1,029	11,945	7,401	11,650	14,932	9,868	-3,282	1,782
Telangana	6,854	4,708	9,501	840	8,653	5,943	10,341	10,816	7,925	-475	2,417
West Bengal	7,905	5,342	10,183	1,970	10,362	7,003	12,153	12,952	9,337	-799	2,816
Andhra Pradesh	7,381	6,119	8,020	1,069	9,318	7,725	9,089	11,648	10,299	-2,559	-1,211
Delhi	5,846	3,253	8,541	425	7,663	4,264	8,966	9,579	5,686	-613	3,280
Orissa	4,341	3,263	5,373	3,125	5,690	4,276	8,498	7,113	5,702	1,386	2,796
Chhattisgarh	3,932	2,406	6,912	1,055	5,154	3,154	7,967	6,443	4,206	1,524	3,761
Kerala	3,974	2,734	4,037	486	5,017	3,452	4,523	6,271	4,602	-1,748	-79
Bihar	3,735	2,825	2,928	4,110	4,896	3,704	7,037	6,120	4,938	918	2,099
DVC	2,814	2,199	6,694	69	3,689	2,883	6,763	4,611	3,843	2,152	2,920
Jammu & Kashmir	2,544	1,809	2,446	204	3,335	2,371	2,650	4,168	3,161	-1,519	-512
Uttarakhand	2,034	1,470	2,606	269	2,666	1,926	2,875	3,333	2,569	-458	306
Assam	1,491	965	1,184	428	1,954	1,265	1,612	2,443	1,687	-831	-75
Himachal Pradesh	1,488	1,012	2,419	1,221	1,950	1,327	3,640	2,438	1,769	1,202	1,871
Jharkhand	1,151	857	2,129	953	1,509	1,124	3,082	1,886	1,498	1,196	1,583
Dadra and Nagar	740	622	280	24	970	815	304	1,212	1,087	-909	-783
Goa	583	463	352	165	764	607	517	955	809	-439	-292
Puducherry	368	290	330	136	465	366	466	581	488	-115	-22
Meghalaya	400	223	462	93	524	292	555	655	389	-101	165
Chandigarh	342	190	113	21	448	249	134	560	332	-426	-198
Tripura	300	148	601	306	393	194	907	492	259	416	648
Daman & Diu	307	242	48	15	402	318	64	503	424	-439	-360
Manipur	168	84	149	0	220	111	149	275	147	-126	2
Nagaland	140	81	100	0	184	106	100	229	141	-130	-42
Arunachal Pradesh	139	73	141	330	182	96	471	228	128	243	343
Mizoram	102	57	73	221	134	75	294	167	100	126	193
Sikkim	109	55	182	345	143	72	527	179	95	348	432
State PPAs	**177,885**	**127,500**	**215,526**	**44,134**	**231,094**	**165,551**	**259,659**	**288,867**	**220,735**	**-29,208**	**38,925**
Cen. Unalloc. PPA			7,958	6,373			14,331			14,331	14,331
Pvt PPAs			2,750				2,750			2,750	2,750
Pvt Gas PPAs			5,000				5,000			5,000	5,000
Without PPA			21,280	6,493			27,773				
Adjustment			6,725				-8,598			-8,598	-8,598
Grand Total			**259,238**	**57,000**			**300,915**			**-15,724**	**52,408**

Source: MOSL, CEA, Company Data

Exhibit 46: Central and state sectors will be key drivers of capacity addition with PPA

	MW
Central	24,101
Private	4,807
State	15,226
Grand Total	**44,134**

Source: MOSL, Company, CEA

Exhibit 47: Private sector is likely to add ~4.8GW tied-up capacity

	Project	2017	2018	2019	Grand Total
Ind bharath	Ind Barath	350			350
JPVL	Prayagraj (Bara)	1,122			1,122
KSK	Akaltara		925		925
RKM	Uchpinda	350			350
TRN	TRN	390			390
Pvt	Tidong-I			50	50
Asian Genco	Teesta- III		1,020		1,020
IL&FS	Cuddalore	600			600
Grand Total		**2,812**	**1,945**	**50**	**4,807**

Source: MOSL, Company, CEA

Regional analysis reveals that SR has only marginal surplus

- Our region-wise analysis reveals that the northern region (NR), the western region (WR) and the eastern region (ER) are well positioned to meet their average load requirements. Even the southern region (SR) is comfortable with marginal surplus PPAs of 2.4GW. **There are two states – Andhra Pradesh and Kerala – that appear in a tight situation in SR. We can expect these two states to sign some PPAs.** Andhra Pradesh is aggressively installing RE capacities, which can help it to partly meet its energy requirements.
- Region-wise peak load too appears manageable with unallocated central capacity of 14GW and improved inter-region connectivity.

Exhibit 48: Electricity demand-supply balance by regions

Region	FY16 Load			U/C Cap.	FY20E load			FY20E reqd. PPA		Surplus (deficit)	
	Peak	Avg.	PPAs	with PPA	Peak	Avg.	PPAs	Peak#	Avg.USD	Peak	Avg.
NR	54,474	41,681	70,297	11,447	71,404	54,636	81,745	89,255	72,847	-7,511	8,897
WR	48,640	39,947	67,409	10,675	63,757	52,362	78,084	79,696	69,816	-1,613	8,267
SR	40,445	34,006	47,623	10,061	49,161	41,334	57,684	61,451	55,112	-3,767	2,572
ER	18,076	14,019	27,488	10,573	23,694	18,376	38,060	29,617	24,501	8,443	13,560
NER	2,573	1,692	2,709	1,378	3,373	2,217	4,087	4,216	2,956	-129	1,130
Sum	164,208	131,344	215,526	44,134	211,389	168,924	259,659	264,236	225,232	-4,577	34,427
All-India	153,366	128,879	237,959	44,134	193,621	161,351	273,143	242,026	217,824	31,117	55,319

Source: MOSL, CEA

Investment in transmission to continue

RE, need for flexibility and arbitrage in variable cost across the country will be the drivers

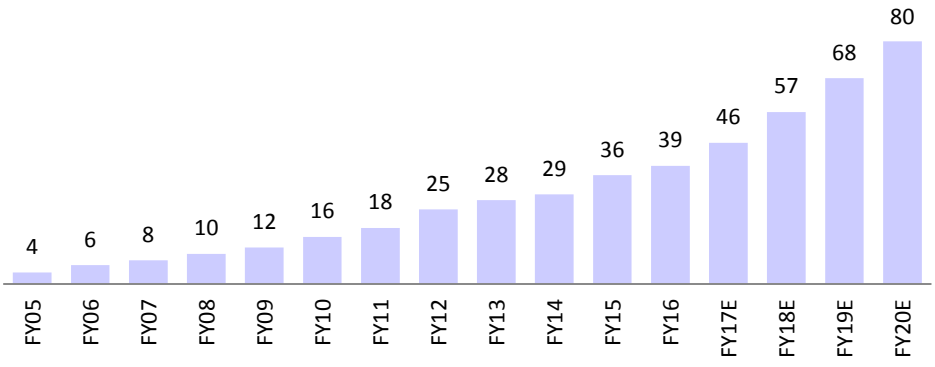
- **Investment in RE capacities should keep driving demand for spinning capacities, while investment in transmission and sophisticated equipment should help maintain quality of electricity.**
- **Demand centers and sources of energy are polarized. It makes more sense to transmit electricity rather than transporting coal.**
- **Over-investment in long -distance transmission is desirable to create flexibility in grid.**
- **16.3GW of stranded capacity will demand inter-region transmission capacity because these plants can sell power at a lower rate than the variable cost of many capacities in demand centers, e.g. NR and SR.**
- **The merchant power market will thrive, but is unlikely to be profitable for the next few years.**

Investment in RE will keep driving demand

- The MoP is targeting aggressively to increase RE capacity to 175GW by 2022. We are, however, conservatively factoring in RE capacity of 80GW by the end of FY20, which implies addition of 41GW in four years.
- This is achievable, in our view, given the strong push by the MoP, falling cost of projects and competitive tariffs. Investment is transmission will be more driven by the MoP's RE capacity target of 175GW, because it takes longer to set up transmission infrastructure compared to RE capacity addition.
- Investment in RE capacities should keep driving demand for spinning capacities, while investment in transmission and sophisticated equipment should help maintain quality of electricity.

We expect RE capacity and generation to increase at a CAGR of 20% over FY16-20E.

Exhibit 49: Renewable energy capacity (GW)



Source: MOSL, CEA

Centre of gravity of generation has shifted away from demand…

New investments in generation are closer to energy sources

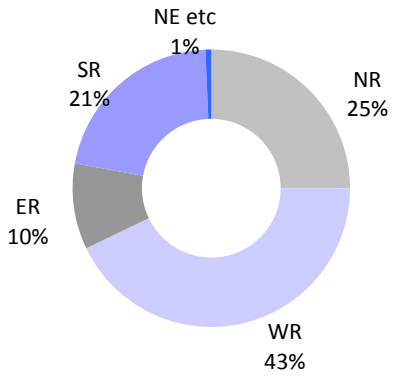
- WR was the key driver of capacity addition (43% of total addition) over FY05-FY15, spurred by allocation of captive coal mines and success of three UMPPs of 4GW each. Peak demand, on the other hand, grew the most (32% of all India growth) in SR. Very attractive merchant power rates during FY08-FY11

discouraged many of new capacities at pithead to get in long-term PPAs, leaving them stranded for transmission capacities.

Economics driving additional need for transmission

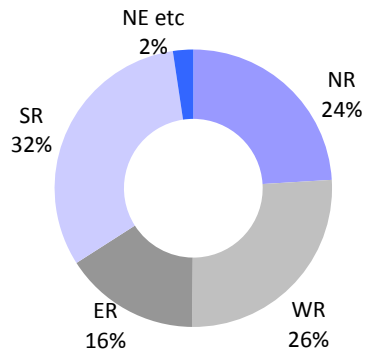
- Although the northern region is well invested in generation, it is now looking to source cheaper power from WR at the cost of keeping its capacities idle. This has created additional need for transmission for right reasons. It is always cheaper to produce power close to mines/port and transmit power, compared to transporting coal more than 1000km from mines/ports to the generation capacities in NR. This has created an imbalance in generation capacities with respect to demand centers, thereby creating transmission bottlenecks.

Exhibit 50: WR hogged 43% of cap. addition FY05-15



Source: MOSL, CEA

Exhibit 51: While demand grew most in SR over FY05-15

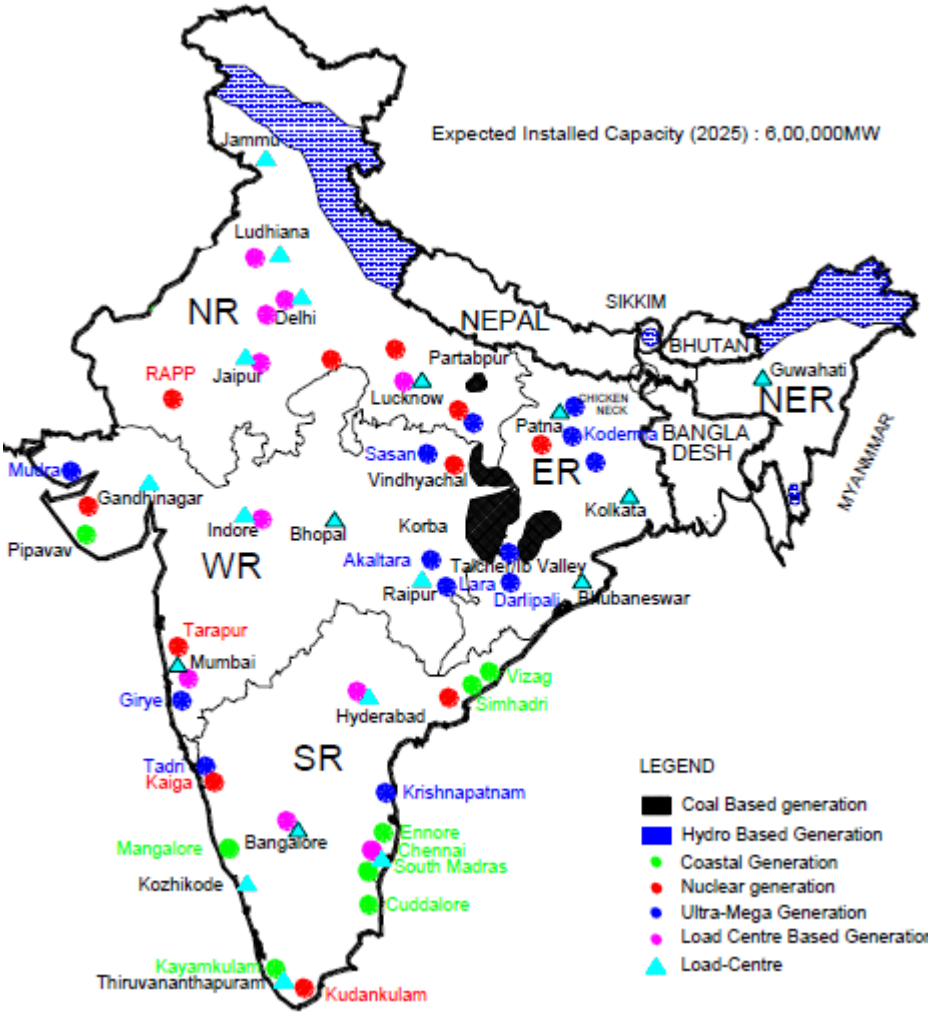


Source: MOSL, CEA

…due to uneven disposition of energy resources

- New investments in generation have come close to coal mines in Odisha, Chhattisgarh, MP and Jharkhand. Large hydro projects are located far off from load centers in Sikkim and the north-eastern regions. UMPPs are either located on coastline or closer to coal mines.
- Coal mines are mostly in central and eastern part of India, while load is distributed across NR, WR and SR.

Exhibit 52: Energy sources in India



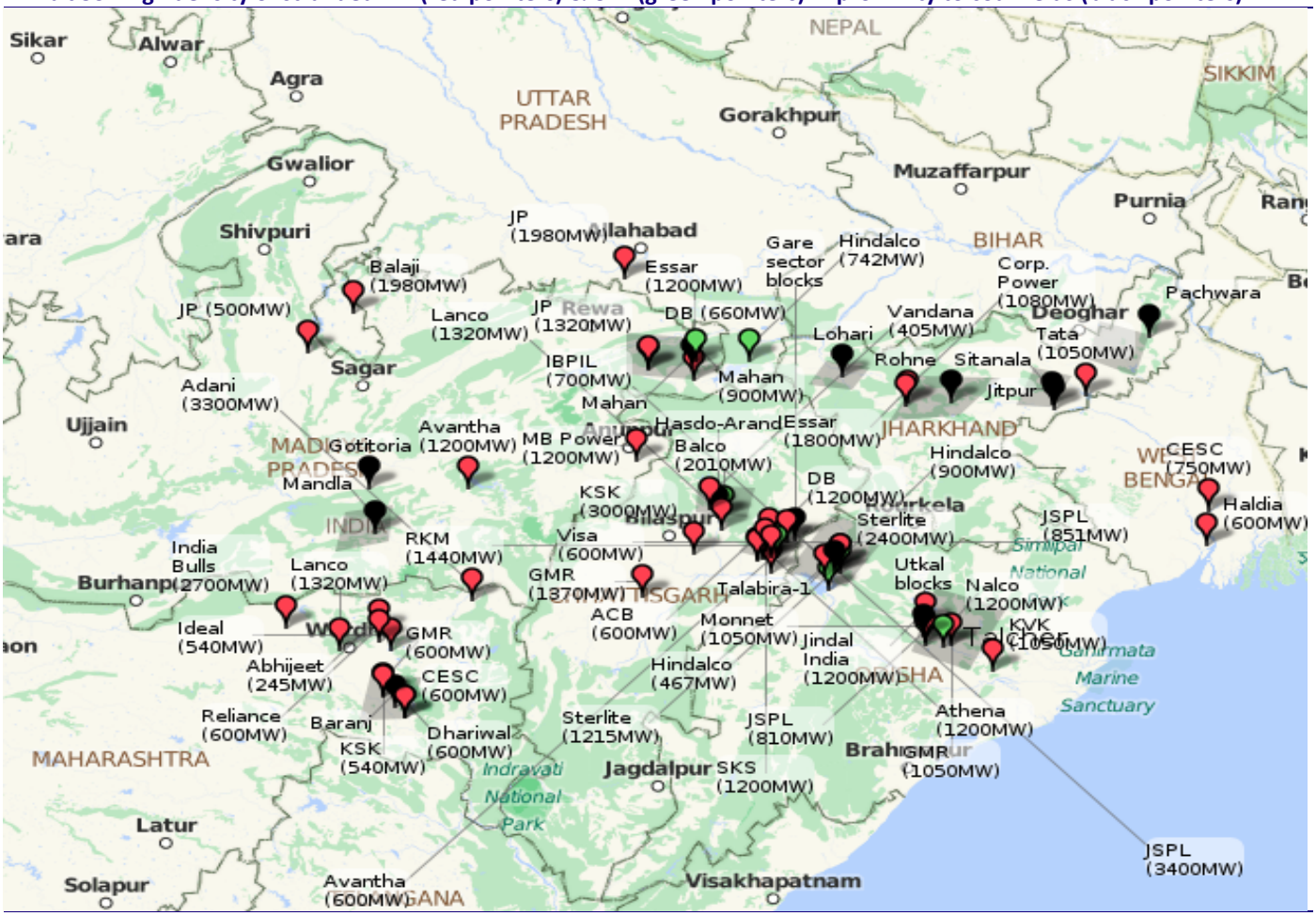
Source: Company

Cost of power transmission is far cheaper than cost of transporting coal

Cost of transmission declines, while cost of coal transportation increases over time

- Economics of total cost of delivered power will decide the location of electricity generation in future, due to plenty of redundancy in generation capacities.
- Cost of transmitting electricity can be lowered with the help of technological upgrade, e.g. higher MVA lines (800KV HVDC - lower system losses and can carry larger amount of electricity on single line), while cost of transporting coal keeps increasing because of higher cost of new rail infrastructure and general inflation.
- As such, there are bottlenecks in the rail freighting infrastructure. Transmission is much less labor-intensive compared to rail/road transport of coal.

Exhibit 53: High density of stranded IPP (red pointers) & CPP (green pointers) in proximity to coal fields (black pointers)



Source: MOSL

Over-investment in transmission is desirable to create flexibility in grid

- Long distance HVDC transmission corridors are being built to connect the power-surplus western region to the north and south regions. The NE-Agra HVDC line has been commissioned recently, which provides a large connection between NR and ER. Although this line is largely idle currently due to a delay in the hydro project (Subhanshiri) in NE, it has provided much-needed flexibility in the system. The Champa-Krukshetra HVDC line is expected to be commissioned in June 2016, which will connect stranded capacities in WR to demand centers in NR.

Availability of fuel and water is volatile.

- Over-investment in transmission is desirable for a country like India because the sources of energy lie either in the central/eastern coal belt or hydro resources in north (i.e. Himalayas), while demand centers are in the planes of north, west and south. Cost of transporting coal is very high from coal belts to demand centers in north, west or south of India because of long distances and bottlenecks in rail infrastructure. For a coastal power plant in west or south, it is often cheaper to import rather than sourcing it domestically from Coal India.
- **However, economics keep changing depending on coal prices. Also, there is another angle of water shortage.** At times, some thermal power plants are rendered idle due to water shortage. Therefore, it is prudent to overinvest in inter-region transmission capacities to create the desired flexibility. Hence, we

believe that investment momentum in the transmission system will continue. Power Grid is the key beneficiary.

Arbitrage in variable cost demands additional transmission infra

- Stranded power capacities of 22-28GW may have to wait for 2-3 years for securing PPAs. The MoP has come up with a good idea to capitalize on this – it has started promoting the short-term power market. Coal is being made available in a separate e-auction window for the power sector. At the same time, states have been asked to come to the electronic platform for meeting their short-term requirements. We believe the outlook for the short-term power market in India is promising.
- Many generating companies have high variable costs because of high transportation costs, low operating efficiencies, coal pilferage and corruption. Variable cost ranges as high as INR3-4/kwh. These plants do not get scheduled in merit order dispatches. On the other hand, new efficient merchant power plants are able to supply power at total cost as low as INR2.2/kwh. Clearly, there is an arbitrage, and the future of the short-term market appears promising, in our view. Availability of transmission infrastructure is the only bottleneck at times. However, these issues are being addressed gradually.

14GW of stranded capacity without PPAs near coal mines.

- There is nearly 14GW of stranded capacity without PPAs near coal mines in the states of MP, Chhattisgarh, Odisha and Maharashtra. These capacities have low variable cost and they sell to states like Delhi and Rajasthan (where variable cost is high due to transportation of coal) or to states in the south that have to either pay high transportation cost or import coal. Similarly, 2.2GW of hydro capacity can supply to states in north India. Therefore, we believe demand for investment in cross-country lines will continue.

Exhibit 54: Stranded capacities w/o PPAs – in MW

	Comm.	U/C	total	Remarks
Coal bearing states	**10,873**	**3,270**	**14,143**	This power will have to be sold
Chhattisgarh	4,636	990	5,626	outside of state because
Madhya Pradesh	1,824	1,200	3,024	cost of power is low and states
Odisha	1,315		1,315	are over supplied
Maharashtra	3,098	1,080	4,178	
Hydro	**1,270**	**855**	**2,125**	This power will have to be sold
Himachal Pradesh	1,174	244	1,418	outside of state
Sikkim	96	535	631	
Uttarakhand		76	76	
Demand Centers	**4,137**	**2,368**	**6,505**	This capacity may eventually get
Andhra Pradesh	1,150	2,020	3,170	absorbed within state/region
Gujarat	945		945	
Tamil Nadu	942	150	1,092	
Karnataka	980		980	
Rajasthan	120		120	
Uttar Pradesh		198	198	
Private Gas	**5,000**		**5,000**	Even this may demand transmission
Total	**21,280**	**6,493**	**27,773**	

Source: MOSL, CEA

Identifying winners: Two CSPUs and three pvt. GENCOs

PWGR is our top pick; re-initiating coverage on JSW Energy with BUY

- **After analyzing 50 private companies and five central PSUs, we have identified two CPSUs and three private GENCOs as likely outperformers.**
- **PWGR and NTPC are growing organically with capex visibility for the next 3-5 years, and are delivering double-digit RoEs. PWGR is our top pick.**
- **It is prudent to grow inorganically at the peak of overcapacity. Among the 50 private companies, we have shortlisted three names that have strong balance sheets and free cash flows. JSW Energy, Tata Power and CESC have balance sheet strength and FCF.**
- **We re-initiate coverage on JSW Energy with a BUY rating for its simple business model, strong balance sheet, regionally diversified portfolio of assets and strong negotiating power in M&A.**
- **Businesses of Tata Power and CESC are complex as they have exposure to RE, distribution, coal mining, retail, cricket (IPL), information technology, etc.**

GENCOs have attracted major chunk of private investment in the sector

The Indian power sector comprises generation companies (GENCOs), transmission companies (TRANSCOs) and distribution companies (DISCOMs). Among the three verticals, GENCOs have witnessed large private sector investment. PWGR dominates with more than 90% share in the inter-state-inter-region (ISIR) transmission system. There are few private sector TRASCOs, but they are much smaller in size and less relevant. DISCOMs are largely state government entities, though there are a few private franchises but largely in metropolitan cities like Mumbai, Delhi and Kolkata. Most of them are engaged in generation as well. Therefore, we will focus our discussion on GENCOs with the exception of PWGR.

Exhibit 55: RoE (%)

	FY11	FY12	FY13	FY14	FY15	FY16
PSU	**12**	**13**	**13**	**11**	**12**	**11**
Power Grid	14	15	17	14	14	15
NTPC	14	13	16	14	12	12
SJVN	13	14	13	13	17	13
NHPC	9	12	9	5	9	8
Neyveli Lignite	12	12	12	10	11	7
Pvt. Sector	**11**	**5**	**-1**	**-5**	**-14**	**4**
JSW Energy	16	6	18	18	20	16
Torrent Power	24	24	6	2	6	12
Tata Power	14	-6	1	0	3	6
CESC	6	5	9	9	4	7
Reliance Power	5	5	6	5	5	7
Adani Power	13	-4	-42	-4	-21	7
KSK Energy	7	4	4	-5	-10	-13
JP Power	4	7	6	1	2	-4
Lanco Infratech	14	2	-21	-67	-132	2

Source: MOSL, Company

Central PSUs delivering consistent double-digit RoEs

PWGR is our top picks.

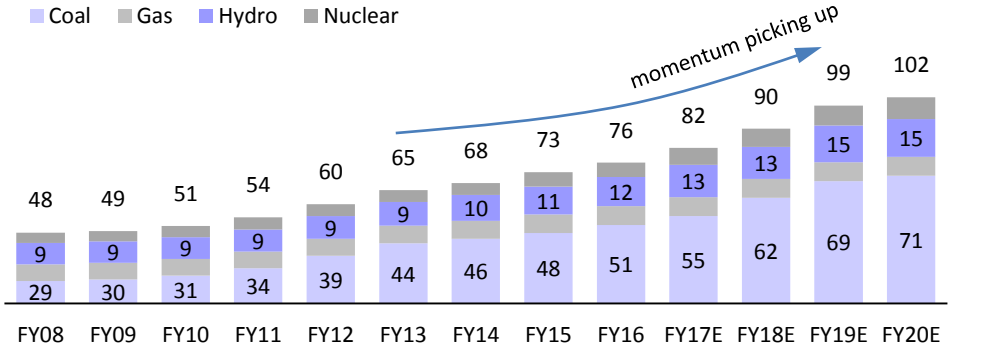
Among GENCOs, central PSUs have been able to deliver consistent double-digit RoEs as they work on cost plus model. Revenue is approved by the regulator based on regulations, which are revised every five years and are currently applicable for the command period 2014-19. Among the five key listed names, PWGR, NTPC, Neyveli

Lignite and SJVN have been able to report double-digit RoEs. Capacity addition in hydro has slowed down drastically due to environmental issues and opposition from local residents. This has affected growth for SJVN and NHPC. The RoE of NHPC is adversely affected because (1) projects have taken longer time to complete and (2) the share of equity in projects is higher than the regulatory ceiling of 30%, which yield lower debt return, i.e. negative EVA.

PWGR and NTPC have reinvestment opportunities because of their capex visibility of the next 4-5 years.

Both PWGR and NTPC are well managed and have been able to consistently generate double-digit RoEs, despite trimming of incentives under the revised regulations for the command period 2014-19. PWGR's RoE is superior to NTPC because it takes shorter period of ~3 years to complete a transmission project, compared to 5-6 years for coal-based power plants. IRR (internal rate of return) for a project is superior if the execution period is shorter because equity invested during the construction period does not earn RoE. Further, PWGR has higher balance sheet leverage compared to NTPC. Although investment in private GENCOs is drying up, both PWGR and NTPC have reinvestment opportunities because of their capex visibility of the next 4-5 years. PWGR is our top pick because of superior RoEs and lower execution risk. We also find NTPC attractive because capex has picked up momentum, which will be followed by capitalization and earnings growth.

Exhibit 56: Central sector power capacity (GW)



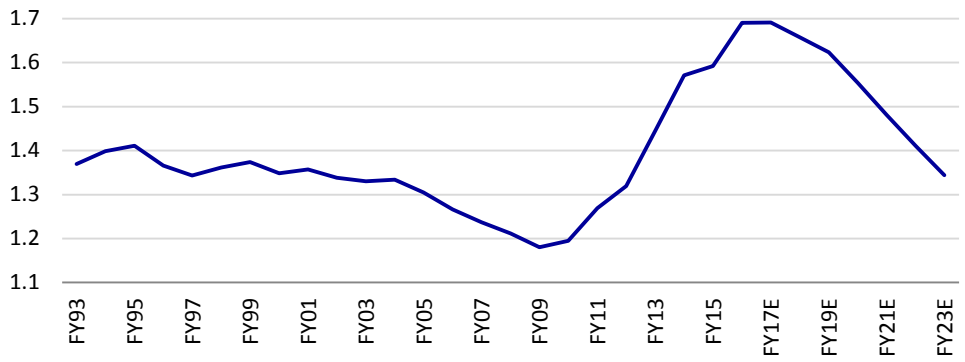
Source: Company, MOSL

Organic growth is drying in private sector

Private sector capacity grew at a CAGR of 29% over FY09-FY17E.

The Indian power sector witnessed maximum tightness in supply during FY09, which is evident from the ratio of conventional capacity to peak load (Exhibit 57). Merchant power rates had shot through the roof. DISCOMs were buying power in the short-term market at very high rates, ranging from INR6/kwh to INR10/kwh. This was followed by a spurt in investment in the private sector.

Exhibit 57: Conventional capacity to Peak load (x)

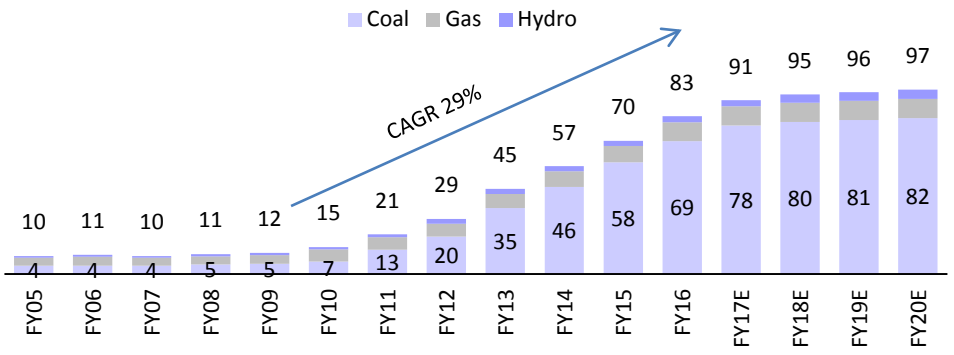


Source: MOSL, CEA

Capacity in the private sector grew at a CAGR of 29% to 91GW over FY09-FY17E. This was driven largely by coal-based projects, which grew at a hopping CAGR of 40% to 78GW over the same period.

Coal-based private capacities grew at a 40% CAGR.

Exhibit 58: Private sector power capacity (GW)



Source: MOSL, CEA

Private capacity addition is also expected to remain strong in FY17E as companies are rushing to complete projects before the exhaustion of tax benefits. Capacity addition will fall off the cliff in the private sector post FY17E, essentially implying that organic growth opportunities are drying up for the private sector. As a result, we expect the overcapacity situation to start correcting gradually.

Nine relevant companies in the listed space

There are about 50 companies (Annexure II) that have undertaken total projects of 97GW (excluding stalled projects), which are either already commissioned or will be commissioned by FY20E. Of these, nearly 28GW of capacity are without PPAs. There are many players with large projects which have material operations in other sectors (e.g. steel, construction). However, since power is not their core business and majority of their capacities are without PPAs and debt laden, they are likely to exit over time.

Nine companies control half of private capacities.

We have identified nine private companies with total capacities of 45GW in the listed space which are pure play in the sector and worth focusing on. These companies have nearly 4GW capacity under construction, while 19% of their capacity is stranded without PPAs.

Exhibit 59: Private Gencos capacity and their status

S.N.	Companies	Capacity				Status		Capacity w/o LT PPA	
		(MW)	Thermal (MW)	Hydro (MW)	Renew. (MW)	Comm. (MW)	u/const. (MW)	(MW)	%
1	Tata Power	9,034	7,661	693	680	9,034	0	270	3
2	RPower	5,845	5,760	0	85	5,845	0	0	0
3	JSW Energy	4,440	3,140	1,300	0	4,440	0	1,360	31
4	Adani	10,044	10,044	0	0	10,044	0	2,235	22
5	CESC	2,438	2,325	0	113	2,438	0	490	20
6	Torrent Power	3,280	3,231	0	49	3,280	0	1,402	43
7	Rattan India	2,700	2,700	0	0	1,350	1,350	1,350	50
8	KSK	3,272	3,262	0	10	2,072	1,200	523	16
9	Jai Prakash	4,320	3,920	400	0	2,880	1,440	1,173	27
		45,373	**42,043**	**2,393**	**937**	**41,383**	**3,990**	**8,803**	**19**

Source: MOSL, Company, Bloomberg

Three likely winners: JSW Energy, Tata Power and CESC

Torrent's business model is volatile because most of its capacity is gas-based and nearly 43% is without PPAs. Gas prices remain highly volatile. Despite a fall in gas prices, its cost of generation is still not competitive with coal-based power plants. Gas supply is likely to remain short in India due to low domestic production. Torrent has a franchisee business which is stable. Although its balance sheet is not leveraged, the company's value will remain volatile. This further narrows the discussion to eight companies.

Exhibit 60: Private companies: Key financials and valuation ratios

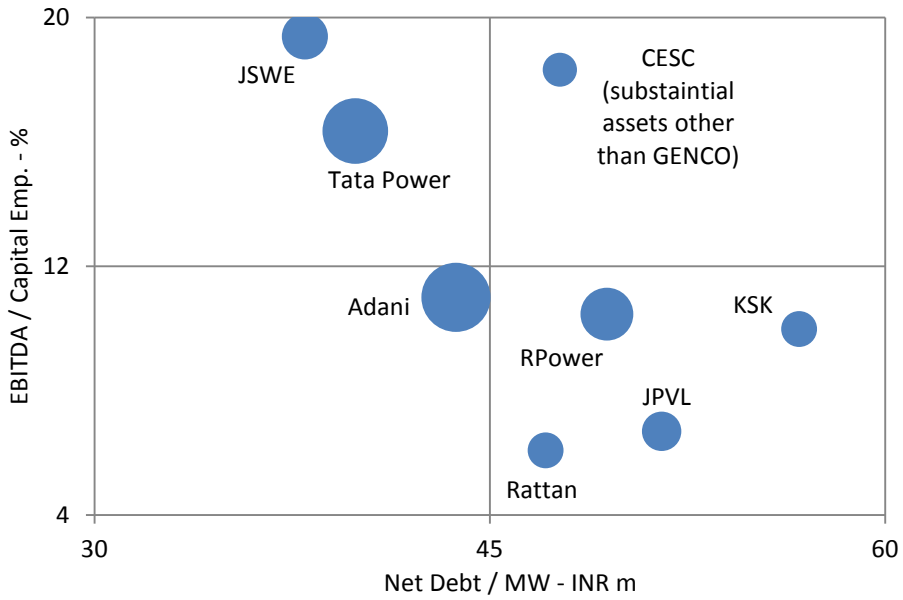
S.N.	Names	CMP#	Mkt Cap.	Net Worth	Cap.	Net Debt*		O/S capex	EV*		EBITDA FY17E	Net Debt /EBITDA	EV /EBITDA	P/BV
		(INR)	(INR b)	(INR b)	(MW)	(INR b)	INRm /MW	(INR b)	(INR b)	INRm /MW	(INR b)	(x)	(x)	(x)
1	Tata Power#	73	198	150	9,034	360	40	0	559	62	83	4.3	6.7	1.3
2	Rpower#	52	146	209	5,845	289	49	0	435	74	52	5.5	8.3	0.7
3	JSW Energy	84	137	85	4,440	169	38	0	306	69	44	3.8	6.9	1.6
4	Adani#	29	98	74	10,044	483	48	0	580	58	61	7.9	9.5	1.3
5	CESC#	609	81	63	2,438	116	48	0	197	81	33	3.5	6.0	1.3
6	Rattan India#	12	35	50	2,700	147	55	20	202	75	12	12.3	16.8	0.7
7	KSK#	31	13	26	3,272	226	69	40	279	85	25	9.0	11.1	0.5
8	Jai Prakash#	6	17	76	4,320	253	58	30	300	69	22	11.5	13.6	0.2

* incl. o/s capex; # as on July 8th, 2016

Source: MOSL, Company, Bloomberg

Looking closely at the key financials of these eight companies, it is clear that there are only three companies with good fundamentals and sound financials. JSW Energy, Tata Power and CESC are likely to emerge as winners in the sector, in our view. On the other hand, we believe RPower and Adani would barely sustain themselves. Also, Rattan India, KSK and Jai Prakash are heavily debt laden and have pending capex, open capacities, etc.

Exhibit 61: Private companies: Key financials and valuation ratios

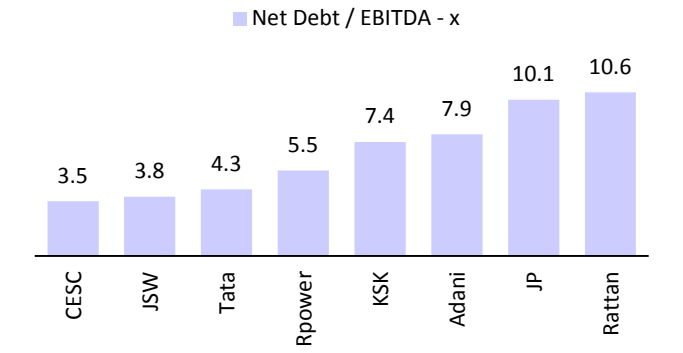


Source: MOSL, Company, Bloomberg

JSW Energy is simple and best among the lot

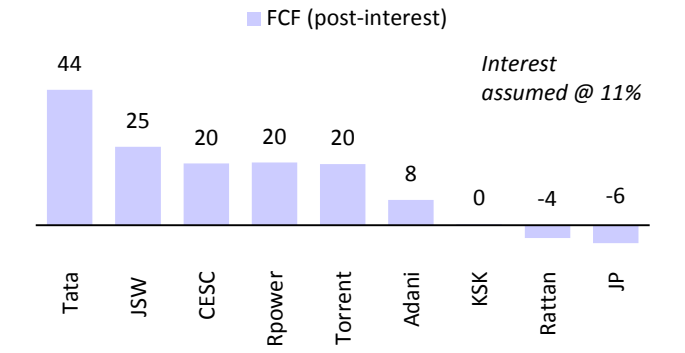
Overcapacity in the sector is at its peak level, which will take another 5-6 years to correct, in our view. Therefore, we believe it is prudent to grow inorganically rather than investing in new projects. In our view, companies with low financial leverage and robust free cash flows are better placed to grow inorganically given the immense opportunities. We believe JSW, Tata and CESC fit the matrix. CESC has chosen to grow its business in distribution by acquiring two circles in Rajasthan. Tata Power has acquired the renewal energy business of Welspun Group. JSW Energy has recently acquired and integrated hydro assets of JP and signed MoUs to acquire more assets. JSW Energy has the lowest net debt/EBITDA, significant free cash flows (post interest), management with risk appetite, and strong negotiating power.

Exhibit 62: JSWE has one of the lowest financial leverage



Source: MOSL, Company, Bloomberg

Exhibit 63: JSWE has strong free cash flows as well – INR b



Source: MOSL, Company, Bloomberg

Although JSW Energy has 31% of its capacities without long-term PPAs, it has been able to secure short-term PPAs for its merchant plant in Karnataka, benefiting from the short-term regional tightness. Assets without PPAs will become more valuable over the next 3-4 years as the market rebalances, in our view. **We re-initiate our**

coverage on JSW Energy with a BUY rating for its simple business model, strong balance sheet, regionally diversified portfolio of assets and strong negotiating power in M&A.

Exhibit 64: Sector valuation table

	Rating	CMP# (INR)	TP (INR)	Up/(dw) %	MCAP (USD M)	EPS			P/E (x)		P/B(x)		RoE (%)	
						FY16E	FY17E	FY18E	FY17E	FY18E	FY17E	FY18E	FY17E	FY18E
Powergrid	Buy	165	205	24	12,994	11.5	14.0	16.3	11.8	10.1	1.7	1.5	15.7	16.1
NTPC	Buy	153	185	21	19,034	12.3	11.5	13.7	13.3	11.2	1.4	1.3	10.8	12.2
JSW Energy	Buy	84	98	17	2,064	8.5	7.0	8.0	12.0	10.5	1.5	1.3	12.9	13.4
Coal India	Buy	312	370	19	29,633	22.6	19.0	23.0	16.4	13.5	5.6	5.4	34.8	40.6

as on July 8th, 2016

Source: MOSL, Company

Annexures I – Comparative financial analysis

Exhibit 65: RoIC (%)

	FY11	FY12	FY13	FY14	FY15	FY16
PSU	**12**	**13**	**12**	**12**	**12**	**10**
Power Grid	8	8	8	8	8	9
NTPC	16	16	16	14	11	13
SJVN	16	17	14	17	19	11
NHPC	12	14	10	7	9	8
Neyveli Lignite	10	12	12	13	14	9
Pvt. Sector	**15**	**10**	**8**	**7**	**7**	**8**
JSW Energy	22	7	11	11	13	11
Torrent Power	17	21	10	7	9	11
Tata Power	26	16	11	9	10	11
CESC	6	8	9	9	6	8
Reliance Power	3	6	11	9	6	7
Adani Power	21	5	-1	5	5	9
KSK Energy	13	7	8	3	1	5
JP Power	11	14	10	9	9	7
Lanco Infratech	12	6	5	1	2	5

Source: MOSL, Company

Exhibit 66: RoCE (%)

	FY11	FY12	FY13	FY14	FY15	FY16
PSU	**9**	**9**	**8**	**8**	**9**	**8**
Power Grid	7	6	7	6	6	7
NTPC	8	9	10	9	7	7
SJVN	12	13	11	10	15	12
NHPC	7	8	6	5	7	7
Neyveli Lignite	9	8	8	9	6	6
Pvt. Sector	**8**	**6**	**5**	**6**	**7**	**9**
JSW Energy	9	6	11	13	14	13
Torrent Power	17	16	6	5	8	12
Tata Power	8	5	7	7	8	8
CESC	7	6	7	7	6	10
Reliance Power	5	4	4	4	4	8
Adani Power	4	2	-1	8	7	12
KSK Energy	5	5	5	3	3	6
JP Power	4	6	6	5	6	6
Lanco Infratech	8	4	4	2	2	6

Source: MOSL, Company

Exhibit 67: Net Debt / EBITDA (x)

	FY11	FY12	FY13	FY14	FY15	FY16
PSU	**2**	**2**	**3**	**3**	**3**	**3**
Power Grid	5	6	6	6	6	6
NTPC	2	2	2	3	5	5
SJVN	0	0	0	0	0	-1
NHPC	3	2	3	4	3	2
Neyveli Lignite	1	1	2	1	2	2
Pvt. Sector	**10**	**12**	**13**	**12**	**12**	**7**
JSW Energy	6	8	4	3	2	4
Torrent Power	1	2	5	6	4	2
Tata Power	4	6	5	5	5	4
CESC	4	5	6	7	7	4
Reliance Power	24	22	13	14	11	6
Adani Power	15	27	42	9	9	6
KSK Energy	10	14	15	27	35	12
JP Power	17	11	11	13	11	9
Lanco Infratech	8	17	13	24	23	18

Source: MOSL, Company

Exhibit 68: Net Debt – INR b

	FY11	FY12	FY13	FY14	FY15	FY16
PSU	**751**	**974**	**1,216**	**1,584**	**1,954**	**2,184**
Power Grid	370	509	663	786	928	1,016
NTPC	252	325	397	628	861	1,011
SJVN	-3	-1	-3	0	-2	-12
NHPC	125	118	124	147	136	128
Neyveli Lignite	7	24	35	23	30	40
Pvt. Sector	**957**	**1,550**	**1,912**	**2,120**	**2,269**	**2,347**
JSW Energy	92	112	110	103	88	151
Torrent Power	26	48	69	79	76	75
Tata Power	214	297	347	351	372	375
CESC	29	44	82	107	132	116
Reliance Power	54	137	227	274	296	289
Adani Power	232	354	401	433	439	516
KSK Energy	57	95	121	143	169	186
JP Power	111	165	221	269	314	223
Lanco Infratech	142	298	334	361	384	417
Total	**1,708**	**2,525**	**3,128**	**3,703**	**4,223**	**4,531**

Source: MOSL, Company

Exhibit 69: Net Debt / MW - INR m

	FY11	FY12	FY13	FY14	FY15	FY16
PSU	**11**	**12**	**13**	**14**	**14**	**14**
Power Grid						
NTPC	8	10	11	17	22	25
SJVN	-2	-1	-2	0	-1	-6
NHPC	33	31	31	30	28	26
Neyveli Lignite	3	9	13	8	9	9
Pvt. Sector	**50**	**68**	**72**	**69**	**59**	**64**
JSW Energy	53	43	35	33	28	34
Torrent Power	16	28	41	38	23	23
Tata Power	24	33	38	39	41	42
CESC	24	36	67	87	72	48
Reliance Power		110	89	61	50	49
Adani Power	117	77	67	60	49	51
KSK Energy	61	102	136	97	82	90
JP Power	65	97	101	117	87	100
Lanco Infratech	43	90	71	91	98	138

Source: MOSL, Company

Exhibit 70: EV/MW – INR m

	FY11	FY12	FY13	FY14	FY15	FY16
PSU	**76**	**65**	**60**	**55**	**55**	**56**
Power Grid						
NTPC	60	50	45	43	52	52
SJVN	59	53	50	57	51	54
NHPC	116	96	91	74	72	80
Neyveli Lignite	66	61	53	46	45	37
Pvt. Sector	**106**	**129**	**101**	**95**	**83**	**82**
JSW Energy	121	82	64	64	90	60
Torrent Power	88	85	79	59	47	49
Tata Power	48	60	64	61	62	59
CESC	55	58	94	139	116	80
Reliance Power		375	157	104	76	75
Adani Power	242	109	84	80	65	61
KSK Energy	107	127	156	117	94	96
JP Power	117	160	135	135	95	114
Lanco Infratech	72	103	76	95	101	142

Source: MOSL, Company

Exhibit 71: EV/EBITDA (x)

	FY11	FY12	FY13	FY14	FY15	FY16
PSU	**11.4**	**9.1**	**8.2**	**8.0**	**8.4**	**7.9**
Power Grid	12	12	11	10	11	9
NTPC	15	12	9	8	12	11
SJVN	5	5	5	5	4	5
NHPC	10	7	9	9	7	8
Neyveli Lignite	14	10	7	6	8	6
Pvt. Sector	**35**	**23**	**17**	**16**	**15**	**9**
JSW Energy	13	15	7	6	8	6
Torrent Power	8	6	10	9	7	5
Tata Power	9	10	8	8	8	6
CESC	9	7	9	10	11	7
Reliance Power	183	75	23	25	18	9
Adani Power	32	38	52	12	11	7
KSK Energy	18	18	17	32	40	13
JP Power	31	18	15	15	12	10
Lanco Infratech	13	20	14	25	23	19

Source: MOSL, Company

Exhibit 72: P/E (x)

	FY11	FY12	FY13	FY14	FY15	FY16
PSU	**14.3**	**10.9**	**8.9**	**9.9**	**9.7**	**10.3**
Power Grid	17.7	15.3	11.6	12.4	15.1	11.9
NTPC	17.5	14.4	9.3	8.8	12.0	10.5
SJVN	10.1	7.6	7.4	7.8	6.0	8.5
NHPC	12.6	7.1	8.4	12.9	7.8	9.3
Neyveli Lignite	13.4	10.2	7.6	7.4	7.4	11.4
Pvt. Sector	**24.0**	**14.3**	**9.3**	**10.2**	**13.8**	**14.8**
JSW Energy	14.0	30.3	8.2	8.6	14.1	9.2
Torrent Power	11.2	7.6	16.9	41.2	21.3	9.6
Tata Power	10.3				46.9	15.1
CESC	14.0	11.1	6.9	10.9	26.8	15.7
Reliance Power	48.1	37.9	17.1	19.2	15.4	11.6
Adani Power	30.6	-50.7	-4.2	-71.2	-10.5	19.1
KSK Energy	18.7	15.7	10.7	-15.4	-6.9	-2.8
JP Power	54.4	26.7	21.4	88.8	17.8	-10.8
Lanco Infratech	14.5	35.4	-2.3	-0.7	-0.6	66.7

Source: MOSL, Company

Exhibit 73: P/BV (x)

	FY11	FY12	FY13	FY14	FY15	FY16
PSU	**1.7**	**1.4**	**1.2**	**1.0**	**1.2**	**1.1**
Power Grid	2.2	2.1	1.9	1.6	2.0	1.7
NTPC	2.3	1.8	1.5	1.2	1.5	1.2
SJVN	1.3	1.0	0.9	1.0	1.0	1.1
NHPC	1.2	0.8	0.8	0.7	0.7	0.9
Neyveli Lignite	1.6	1.2	0.9	0.7	0.8	0.8
Pvt. Sector	**2.0**	**1.5**	**1.2**	**1.2**	**0.9**	**0.6**
JSW Energy	2.1	1.8	1.4	1.5	2.6	1.3
Torrent Power	2.5	1.7	1.1	0.7	1.2	1.1
Tata Power	1.6	1.9	1.9	1.6	1.3	1.1
CESC	0.8	0.6	0.6	1.1	1.3	1.2
Reliance Power	2.2	1.9	0.9	1.0	0.8	0.8
Adani Power	3.9	2.5	2.3	2.1	2.4	1.3
KSK Energy	1.5	0.8	0.6	1.0	0.8	0.5
JP Power	1.7	2.0	1.2	0.7	0.5	0.4
Lanco Infratech	2.1	0.9	0.7	1.2	-3.0	-1.9

Source: MOSL, Company

Annexures II – Private generation capacity

Exhibit 74: Promoter group wise private generation capacity ownership (incl. under-construction projects) along with the share of capacity without-PPA

Group	Total	w/o PPA	
	MW	MW	(%)
Adani Power	11,040	2,235	20
Tata Power	6,792	270	4
Lanco	6,336	2,956	47
Rpower	5,760	0	0
Vedanta	4,980	0	0
JSW Energy	4,440	1,360	31
JPVL	4,320	1,173	27
Essar	4,200	1,655	39
Jindal Power	3,400	2,440	72
GMR	3,300	1,322	40
KSK Energy	2,940	523	18
RattanIndia	2,700	1,350	50
CESC	2,485	490	20
Bajaj Energy	2,430	0	0
GVK	1,720	0	0
L&T	1,499	99	7
RKM	1,440	180	13
Abhijeet	1,326	540	41
Sembcorp	1,320	250	19
East Coast Energy Pvt. LTD.	1,320	0	0
CLP India	1,320	0	0
Nagarjuna	1,320	1,320	100
SKS	1,200	250	21
Athena	1,200	606	51
JITPL	1,200	622	52
Asian Genco	1,200	180	15
Coastal	1,200	0	0
DB	1,200	0	0
IL&FS	1,200	0	0
MB Power	1,200	380	32
Thapar	1,200	775	65
Monnet	1,050	181	17
Hinduja	1,040	0	0
Ind bharath	1,000	425	43
Meenakshi	1,000	1,000	100
Pvt	887	479	54
Aryan	625	90	14
TRN	600	210	35
Madhucon	600	600	100
Adhunik	540	0	0
Rinfra	500	0	0
GIPCL	500	250	50
S Kumar	400	0	0
Torrent	400	0	0
Himagiri	300	0	0
Vandana	270	243	90
Gati	161	16	10
Patel Engg	144	144	100
LNJ Bhilwara	86	0	0
PIL and NSL	44	0	0

Source: MOSL, Company, CEA

Annexures III – Capacities expected to be closed

Exhibit 75: State gencos capacity retirement year-wise – in MW

Plant	State	FY 17	FY20	FY21	FY22	Comments
Amarkantak	M.P	240				- U 1 and 2 have already been decommissioned and are to be retired - PLF of 46.6 - A supercritical unit is proposed to replace the retired units - Proposal has been submitted for retirement and replacement
Korba East II	CHH	200				- High heat rates and the units proposed to be retired are 50 years old non-reheat units - Lower efficiency - PLF of 44
Patratu	Jharkhand	445				- NTPC has taken over the plant - 315 MW capacity is already under the process of being phased out and 130 MW will be phased out after revival of U7 and U9 which is under way
Harduaganj*	U.P	60				- U5 is a 38 years old non-reheat unit and hence is to be phased out to set up a supercritical unit - U 1 to U4 and U6 (270 MW) have already been retired
Obra	U.P	194				- U3 to U6 (244 MW) have already been retired, U8 has been non-operational since 2006. - U1 & 2 (50 MW) to be phased out after COD of U7&8 of Anpara unit (500 MW) - Are 48 years old - PLF of 35 - Proposal has already been submitted for approval of UP government
Kothagudam	Telangana		720			- U1-4 are 48 years old and U5-8 are 37 years old with very high heat rates - Enivronmental clearance for new 800 MW capacity has been granted in July 2015 subject to retirement of these units by end of 2019
Ramagund.	Telangana		62.5			- Over 45 years old with very high heat rate - Low PLF of 32%
Ropar	Punjab			1260		- Has a low PLF of 36 and the govt. has suggested lower R&M spending for 4 units (840 MW) proposed for R&M. - Is a potential site for replacement with supercritical units
Bhatinda	Punjab				440	- High heat rate and low PLF of 25 - However LE and R&M has been carried out in 2007 (U1 & 2) and 2012 (U3 & 4) and the state wishes to continue operating the plant

Source: MOSL, Company, ARRs

Exhibit 76: Conditional capacity retirements by state gencos

Plant	State	Capacity to be retired (in MW)	Capacity to be added (in MW)	Condition	Comments
Satpura	M.P	830	660	On JV with NTPC	- Has already retired 5*62.5 MW units and U 6 to U 9 have high heat rates - Comprehensive R&M has not been approved
Panki	U.P	210	660	On COD of supercritical unit	- U3 & 4 are non-reheat units and no R&M works are proposed for these units - Environmental clearance of supercritical unit was subject to retirement of U3 & 4 - Have already decommissioned two units of 32 MW capacity each - NIT for supercritical unit floated
Chandrap.	Jharkhand	390	1320	On setting up 2 660 MW units	- Has already retired U4 to U6 (390 MW) and retiring U1 to U3 (390 MW) is necessary to set up the supercritical units for which primary studies have been carried out
Santaldih	WB	440			- The units have been decommissioned and the dismantling work has begun
Parli	MAH	420		On commissioning of 250 MW unit	- Has been under economic shutdown and had a PLF of 18 - Units have to be shutdown due to nonavailability of water - The 250 MW unit would be commissioned in FY17 depending on the rainfall and availability of water
Durgapur	WB	220			- U3 to U5 were declared retired since April 2014 and are under shut down and U1 and U2 decommissioned in 2010 and 2011 respectively

Source: MOSL, Company, ARRs

Companies

BSE Sensex: 27,127 **S&P CNX: 8,323** **July 2016**

NTPC

BSE SENSEX	S&P CNX
27,127	8,323

CMP: INR153 TP: INR185(+21%) Buy

Earnings growth picking up along with capitalization

RoE to start improving from FY18E and drive rerating of stock

- **INR1.7t capitalization over five years:** NTPC is in the midst of a major capacity expansion. The commercial capacity of NTPCsa (regulated standalone business) is expected to grow at an accelerated five-year CAGR of 7.5% (FY16-FY21) to 56GW, as compared to 5.5% CAGR over the last five years (FY11-FY16). Regulated equity, a key earnings driver, will grow at an even higher CAGR of 14.9% to INR829b as the specific capex for new capacities is higher. Further, the capacity of JVs will increase by 4.7GW to 10.7GW, while solar capacity will increase by 4GW. Thus, we expect total capitalization of INR1.7t over the period.
- **PLF to decline, but some plants to earn incentives:** Despite assuming an accelerated five-year CAGR of 6% in power generation (FY16-FY21) (as against 2% CAGR over FY11-FY16), the PLF of NTPCsa will decline from 74% in FY16 to 64% in FY21E. Some of its pit-head plants will continue to earn PLF incentives despite the decline in overall PLF of the company and the country.
- **Working capital incentives to continue:** Under the new regulations for 2014-19, most of the incentives have been squeezed out. The share of interest income in earnings will also decline. NTPCsa will continue to earn working capital incentives, as it is able to source capital at a much lower cost than the normative rate as well as manage its working capital more efficiently.
- **We see merit in NTPC's stand on GCV:** According to our calculations, NTPCsa is not deriving any benefit from measurement of GCV. Hence, it is unlikely to lose on the RoE front if it shifts to a "as received on wagon basis" from "as received on crusher basis" as directed by the regulator. We see merit in NTPC's position to measure GCV at crusher. Coal India and the Ministry of Coal & Power are making efforts to address the issue and the results are already evident in the decline in specific coal consumption.
- **Earnings CAGR of 10% over five years:** As a result, we expect the NTPC group's consolidated (NTPCgrp) EPS to grow at a slower pace than regulated equity, but achieve a healthy five-year CAGR of ~10% over (FY16-FY21) to INR19.5/share in FY21E.
- Book value will grow at a CAGR of 6.0% to INR140.3/share and RoE will improve by 230bp to 14.4% in FY21E, as the share of equity invested in CWIP declines. This is likely to result in a rerating of the stock's P/BV multiple.
- Dividend yield is likely to remain healthy at ~5%. We expect the stock to deliver 12-15% annual return (inclusive of dividends) over the next five years.
- **Strong business model; Reiterate Buy:** NTPC has one of the best business models in Indian power sector. Its revenue is guaranteed by government under PPA. Most of its plants are located close to mines and operate efficiently. Regulators are highly dependent on inputs from NTPC for laying down norms. We value the stock at INR185/share based on 1.5xFY18E book value. **Buy**.

Stock Info

Bloomberg	NTPC IN
Equity Shares (m)	8,245.5
52-Week Range (INR)	158/107
1, 6, 12 Rel. Per (%)	3/1/17
M.Cap. (INR b)	1,264.4
M.Cap. (USD b)	18.8
Avg Val (INRm)	632
Free float (%)	30.0

Financials Snapshot (INR b)

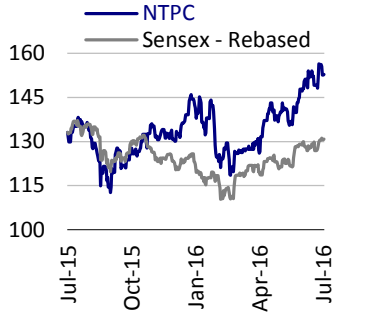
Y/E MAR	2016	2017E	2018E
Net Sales	787.1	825.4	965.8
EBITDA	191.6	221.3	288.9
PAT	101.5	95.1	112.9
EPS (INR)	12.3	11.5	13.7
Gr. (%)	15.7	-6.3	18.8
BV/Sh (INR)	104.7	109.0	115.5
RoE (%)	12.1	10.8	12.2
RoCE (%)	7.3	6.3	7.4
P/E (x)	12.5	13.3	11.2
P/BV (x)	1.5	1.4	1.3

Shareholding pattern (%)

As On	Mar-16	Dec-15	Mar-15
Promoter	70.0	75.0	75.0
DII	17.0	13.2	12.3
FII	10.8	9.6	10.3
Others	2.3	2.3	2.4

FII Includes depository receipts

Stock Performance (1-year)



Capitalization momentum picking up

Regulated equity to grow at five-year CAGR of 15%

Commercial capacity of regulated business to grow at five-year CAGR of 7.5% over FY16-21E

The project work on most of the 23GW capacities has picked up, which is also reflected in the amount of capex and commissioning of capacities. The installed capacity of NTPC consolidated or Group (NTPCgrp) increased by 2.2GW to 46.6GW during FY16. NTPCgrp's commercial capacity increased by 2GW to 45.1GW. Barring a few, most projects are running on schedule.

Exhibit 77: Commercial capacity addition schedule - MW

	FY16	FY17	FY18	FY19	FY20	FY21	FY16-21	CEA's estimate for CoD
NTPCsa	**1,960**	**2,760**	**5,250**	**6,150**	**3,120**	**3,620**	**20,900**	
Northern Region	**800**			**1,680**	**660**		**2,340**	
Unchahar- IV				500				18-Apr
Tanda II				660	660			U1 -Nov 18, U2 - May 19, no revision
Koldam	800							
TapobanVishnu.				520				
Western Region	**500**	**660**	**2,120**	**3,060**			**5,840**	
Vindhyachal V	500							30 Oct 2015 actual
Mouda II		660	660					U1 -Oct 16, U2 - Apr 17, no revision
Lara			800	800				U1 -Feb 17, U2 - Aug 17, no revision
Solapur			660	660				U1 -Apr 17, U2 -Oct 17, no revision
Gadarwara				1,600				U1 -Aug 17, U2 -Feb 18, no revision
Eastern Region	**660**	**250**	**1,820**	**660**	**1,460**	**2,120**	**6,310**	
Barh-II Bihar	660							U1 -Nov 14 actual, U2 - Feb 16
Barh I			1,320	660				U1 -July 17, U2 - Jan 18, U3-July 18; delayed by 3 months
N. Karanpura					660	1,320		U1 -Dec 18, U2 - Apr 19, U3-Aug 19; no revision
Bongaigaon		250	500					U1 -Apr 16, U2 - June 17, U3-Aug 17; delayed by 4 months
Darlipalli					800	800		U1 -Apr18, U2 - Aug 18; no revision
Southern Region		**1600**	**800**				**2,400**	
Kudgi		1,600	800					U1 -Jul 16, U2 - Mar 17, U3-Jun 17; U1&2 behind schedule
Solar		**250**	**510**	**750**	**1,000**	**15,00**	**4,010**	We expect 4GW against target of 10GW
NTPCjv		**640**	**2,730**	**1,320**			**4,690**	
Meja Urja Nigam			1,320					U1 -Jun 17, U2-Dec 17, advanced by one month
Nabinagar, BRBCL		250	750					U1 -Apr 16, U2-Apr 17, U3-Aug 17, U4 Nov 17, delayed by 5-6 months
Nabinagar NPGCPL			660	1,320				U1 -Aug 17, U2-Feb 18, U3-Aug 18, advanced by 2 months
Kanti,Bihar		390						U3 195MW-Sep15, U4 195MW - May 16, actual CoD delayed
NTPCgrp	**1,960**	**3,400**	**7,980**	**7,470**	**3,120**	**3,620**	**25,590**	

Source: MOSL, Company

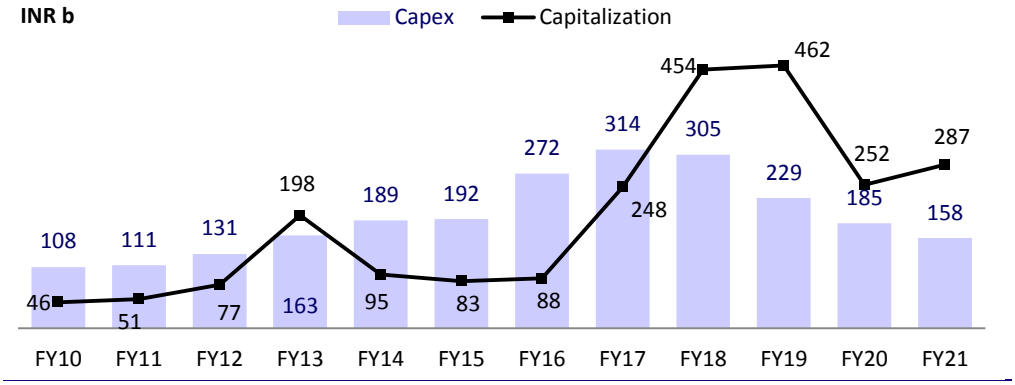
We expect NTPCsa (standalone) to add 16.9GW of conventional and 4GW of solar capacity, while the joint ventures (NTPCjv) will add another 4.7GW of conventional commercial capacity over the next five years. NTPCgrp's commercial capacity will increase by ~26GW to 71GW by end of FY21.

With the pickup in project activities, the capex momentum has already increased. Capitalization will start picking up in FY17 with the commercial capacity addition of 2.5GW (Mauda, Bongaigaon and Kudgi). The 660MW Mauda and 250MW

Bongaigaon capacities have already been commissioned during FY16, while the 800MW Kudgi capacity is in the advanced stages of commissioning.

Capitalization to accelerate in FY18 and FY19

Exhibit 78: Standalone capex momentum picks up

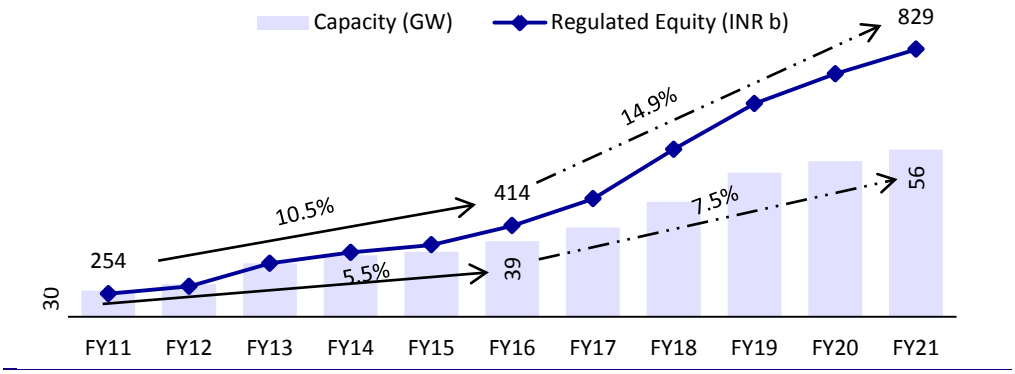


Source: MOSL, Company

Capitalization will see a spike in FY18 and FY19 when almost every project under construction will add at least one unit to commercial capacity. We expect an addition of ~5GW each to the commercial capacity. NTPCjv are expected to add another 2.7GW in FY18 and 1.3GW in FY19.

Higher specific capex for new projects to drive a regulated equity growth of ~15% over FY16-21E as against a capacity growth of 7.5% over the same period

Exhibit 79: Commercialized capacity and regulated equity (NTPCsa)



Source: MOSL, Company

Commercial capacity is expected to grow at an accelerated five-year CAGR of 7.5% over FY16-FY21 to 56GW as compared to a five-year CAGR of 5.5% over FY11-FY16 for the standalone business. Regulated equity, a key earnings driver, will grow at an even higher CAGR of 14.9% to INR829b as the specific capex for new capacities is higher. The average specific capex for new capacity addition will be INR81m/MW in FY16-FY21 as compared to INR59m/MW in FY11-FY16.

Incentives reduced under new regulations

Working capital incentives to continue, but marginal incentives for PLF and thermal efficiencies

NTPCsa operates under a regulated environment and its revenue is approved by the CERC (Central Electricity Regulated Commission) as per the regulations for that command period. These regulations are reviewed every five years and ensure a defined return of 15.5% (+0.5% for early completion) on equity invested in projects and a number of incentives for operational and financial efficiencies. NTPC sells its entire power through PPAs (power purchase agreements) to state Discoms. Its revenue is secured through tripartite agreement with the RBI being the third party.

NTPC had been earning handsome incentives under the old regulations for 2009-14.

Tax incentives discontinued – approximately 2-3% knocked off PAT

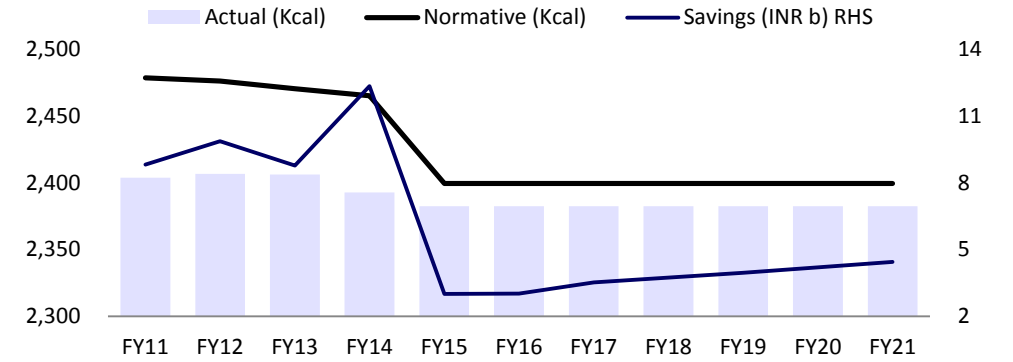
- The actual tax rate was lower than the normative tax rate of 33.9%. The revenue was calculated based on a marginal tax rate of 33.9%, while the actual tax rate was lower due to various tax benefits arising from capex.
- According to our calculations, NTPCsa earned approximately INR13b over FY10-FY14 i.e. an average of INR2.5b per annum. This comprises nearly 2-3% of its profit.
- Tax incentives have now been discontinued under the new regulations for 2014-19 and actual tax is charged to the customer.

Operating norms tightened – approximately 6-10% knocked off PAT

- NTPCsa has been earning revenue based on the normative station heat rate (SHR) and normative auxiliary consumption, while it has been operating at a significantly better rate, which allowed it to earn additional revenue.
- According to our compilation of station-wise data of normative SHR and calculated SHR, NTPCsa was saving nearly 70kcal in SHR. This amounted to additional earnings of INR9b-12b per annum until FY14.
- Under the new regulations, the normative rates have been tightened by ~50kcal. Thus, the SHR savings have been reduced to ~17kcal. As a result, the SHR-based incentive has reduced to INR3b-4b. Further, 40% of these reduced savings are now shared with the beneficiary as compared to nil earlier. Thus, NTPCsa will earn only ~INR2b incentives on a post-tax basis.
- Additionally, the actual auxiliary consumption was lower than the normative rates. As a result, NTPCsa was earning additional small incentives of ~INR200m. The norms related to this have also been tightened.

SHR norms tightened by `50 kcal

Exhibit 80: Station heat rate and incentives (pre-tax basis)

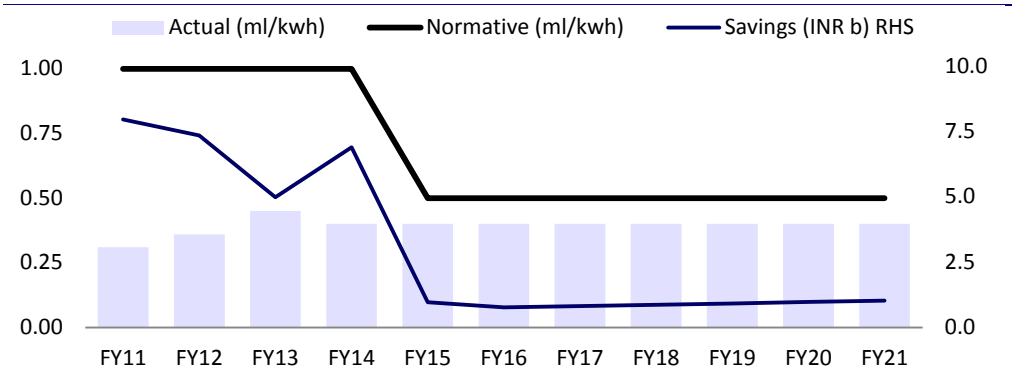


Source: MOSL, Company

- The norms for secondary fuel oil consumption have been tightened from 1ml/kwh to 0.5ml/kwh and it has moved from annual fixed charges to variable charges.
- NTPCsa's actual consumption hovers at around 0.4ml/kwh, allowing it to earn additional incentives of nearly INR5b-8b.
- One minor relief here is the reduction in sharing of incentives with the beneficiary from 50% to 40%.

Normative rates halved, but sharing reduced from 50% to 40%

Exhibit 81: Savings in oil consumption (pre-tax basis)

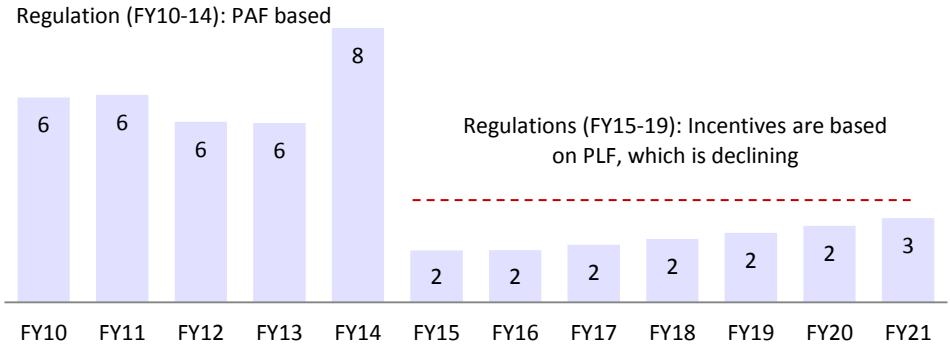


Source: MOSL, Company

- According to our calculations, the incentives from SHR, oil and Aux. consumption contributed 8-12% to the PAT until FY14. These incentives are now estimated to be less than 2%.

Approximately 6-8% knocked off PAT due to new regulations

Exhibit 82: PAF / PLF incentive (post-tax basis) in INRb

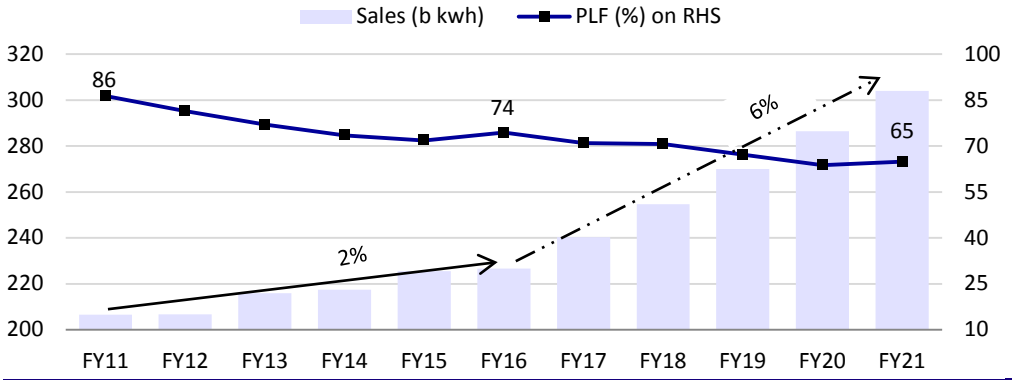


Source: MOSL, Company

- Under the new regulations, the PAF-based incentives have been done away with. Instead, the incentives are now linked to PLF, which is now dependent upon scheduling by Discoms and it is beyond the control of NTPCsa if its variable cost is high.
- NTPCsa has increased its capacities at a CAGR of 5.5% over the last five years, though generation has grown at a CAGR of only 2%. As a result, NTPCsa's PLF has declined from 86% in FY11 to 74% in FY16. Despite assuming a faster CAGR of 6% in demand, NTPCsa's PLF will decline further to 65% as capacity addition will grow at a faster CAGR of 7.5% over the next five years.
- All India PLF has also been on a declining trend due to capacity addition outpacing demand growth.

PLF to decline further

Exhibit 83: Sales and PLF

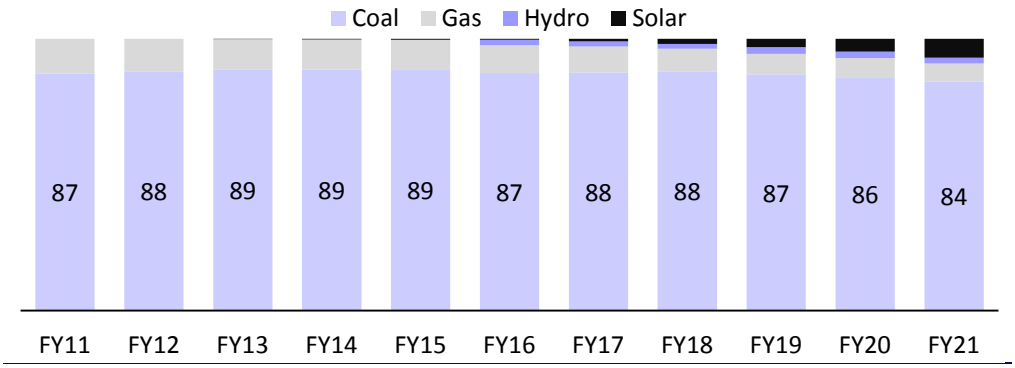


Source: MOSL, Company

- Despite the decline in NTPCsa's PLF, some of its plants and units continue to achieve a PLF of above 90%. These plants are pithead-based and have been operating at very high operating efficiencies. Therefore, we expect NTPCsa to continue earning PLF-linked incentives, which however are likely to be much lower.

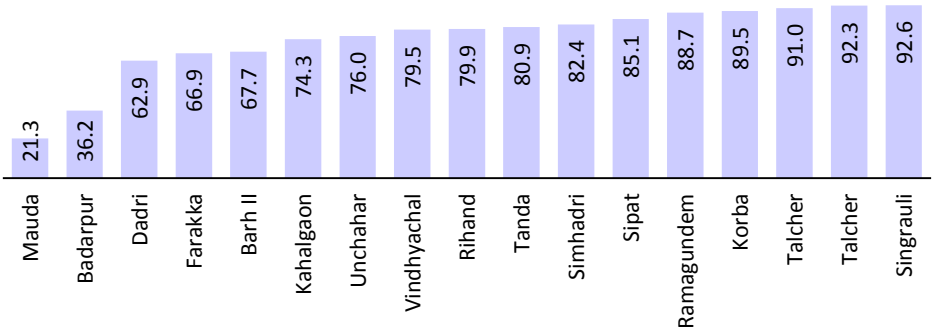
Dominance of coal-based plants to continue

Exhibit 84: Fuel-wise share of capacities



Source: MOSL, Company

Exhibit 85: NTPC's coal-based plant PLFs FY16 (%)

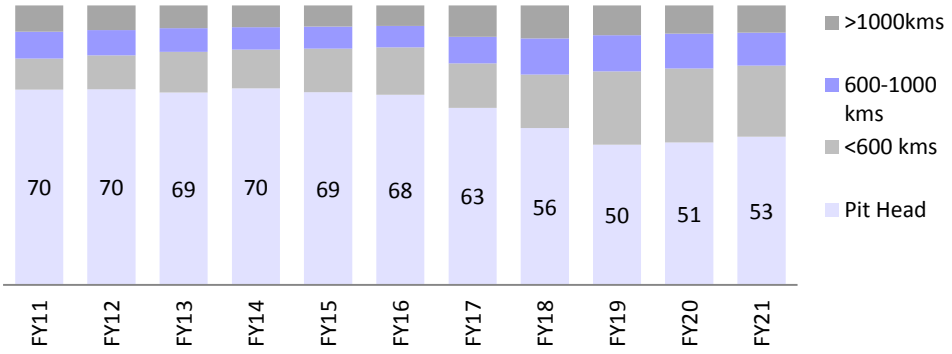


Source: MOSL, Company

- NTPCsa earns incentives mostly on its coal-based power plants which will continue to dominate the overall capacity, as there are virtually no new investments in new gas and hydro projects. However, the share of coal capacities will decline marginally due to solar plants.
- Gas-based power plants run on a low PLF due to shortage of domestic gas and high cost of imports. Hence, these plants do not earn incentives.
- Discoms have a prudent system of scheduling power purchases, which is based on merit order. Power plants are scheduled in such a way that the overall variable cost for a Discom is minimized. In such a situation, NTPCsa's pithead plants are at an advantage as the variable cost of power generation comprises the cost of coal and transportation. The cost of coal is similar for all players as they all source coal from Coal India, but the key difference lies in transportation costs. Pithead power plants are at a distinct advantage and still operate at a PLF of above 85% despite the huge overcapacity in the country.

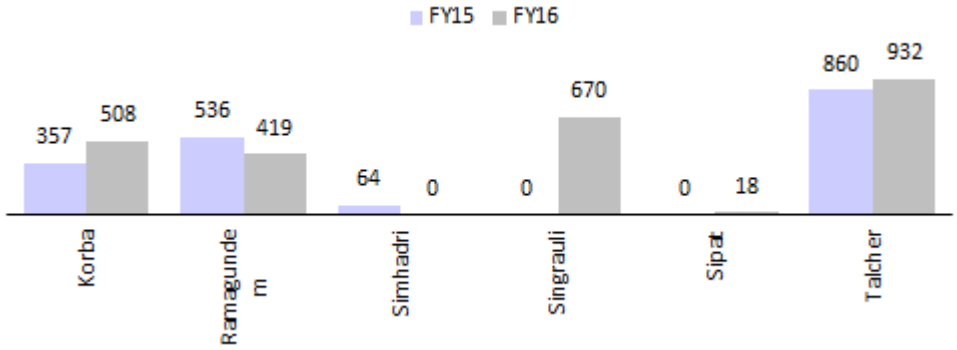
Exhibit 86: Distance of coal-based power plants from coal mines (share %)

Share of pithead plants to decline



Source: MOSL, Company

Exhibit 87: Generation based incentive on PLF >85% - INR m



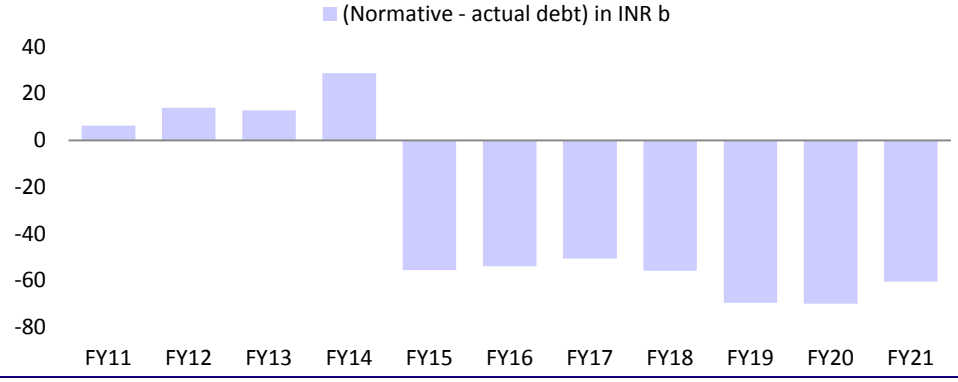
Source: MOSL, Company

Working capital a key source of incentives

- As per aggregation of data from tariff order, NTPCsa's actual total debt is lower than the normative debt (excluding working capital), indicating that the company has been funding its entire working capital from equity.

Exhibit 88: Normative debt as per tariff orders and actual debt

Increasing capex will force NTPCsa to fund its working capital through borrowings



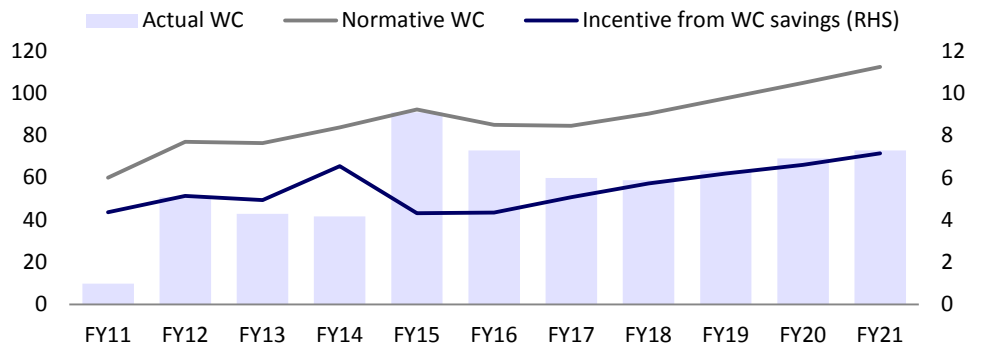
Source: MOSL, Company

- Normative working capital interest, charged to revenue, is based on short term bank lending rates and normative days for inventory of fuel, debtors, and spares.

- NTPCsa enjoys a dual advantage as its actual working capital is lower than the normative and its cost of funding is much lower than the normatively allowed short term bank lending rates.
- During FY15, there was an increase in the actual working capital, resulting in lower working capital incentives. We expect working capital to normalize (reduce) and incentives to increase.

NTPCsa also earns from equity funding of working capital

Exhibit 89: Working capital incentives (post-tax) – INR b



Source: MOSL, Company

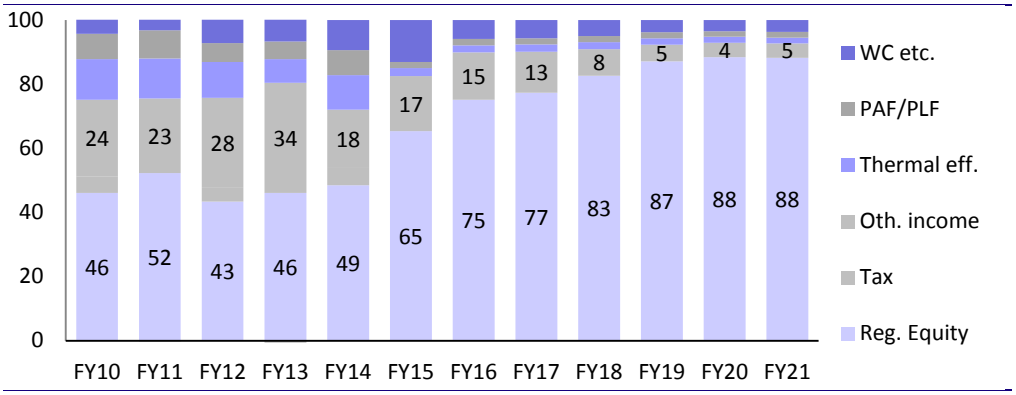
- Capital structure was leveraged by issuing bonus debenture towards the end of FY15. We believe that NTPCsa will have to resort to borrowings in order to fund its working capital which will pull down its core earnings.

Regulated equity now the key earnings driver

Regulated equity contributed only 40-45% of NTPC's earnings until FY14. NTPC earned handsome incentives under the liberal structure of the previous regulations for 2009-14 and also recorded a high other income from surplus funds on its balance sheet. However, the normative parameters have now been tightened under the new regulations for 2014-19, resulting in most of the incentives being squeezed out.

With incentives getting squeezed, regulated equity becomes the key earnings driver

Exhibit 90: NTPC's PAT distribution (%)



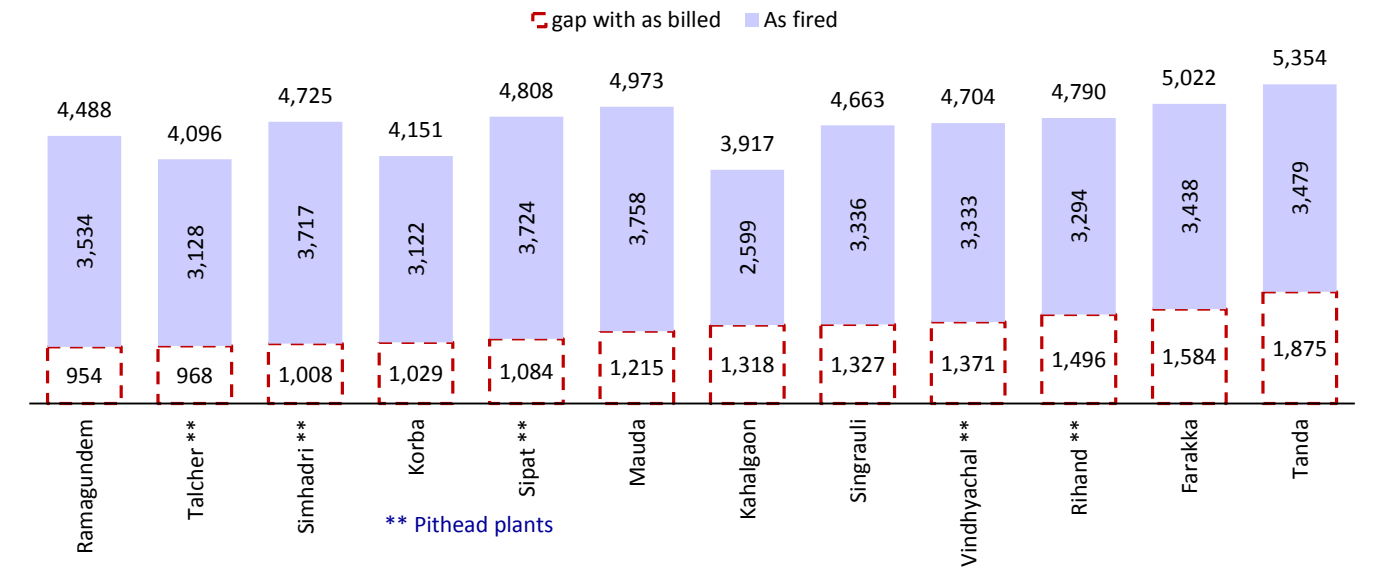
Source: MOSL, Company

GCV: As received at crusher or at incoming wagon

We are not factoring any GCV gains in our estimates

The 2014-19 CERC regulations changed the norms for determining GCV of coal from an 'as fired' basis to 'as received' basis. NTPC and a few other power plants are contesting the change in the High Court. The norms were refined to fix accountability for GCV losses incurred between "as billed" and "as fired." While there is undoubtedly a big gap between the two, the gap arises because coal starts to lose GCV as soon as it comes into contact with air i.e. immediately after over burden removal. Mined coal remains in inventories of mines for 3-4 weeks, remains for a couple of weeks in rail transit, and for 3-4 weeks in inventories of power plants. Further, there are issues of grade slippages. As per compilation of data in the following table, the gap ranges from ~1000kcal/kg for a pithead plant to 1,875kcal/kg for Tanda.

Exhibit 91: NTPC's gap between GCV 'as billed' and 'as fired' coal

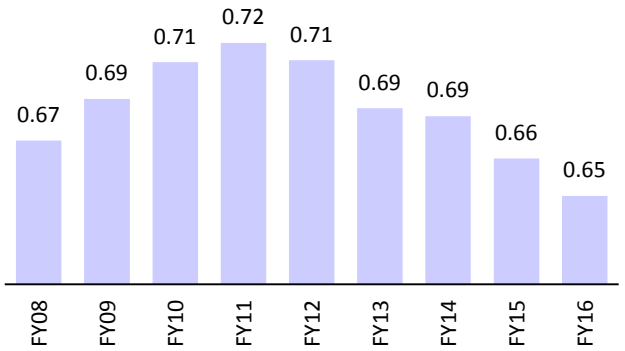


Source: Form15 (Jan-Mar 2014) in tariff petitions

Coal India making concerted efforts to improve the quality of coal

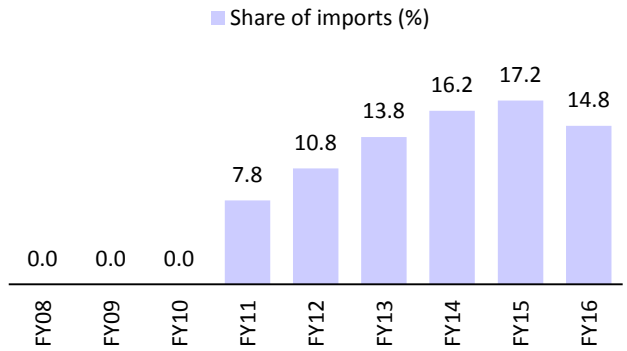
In the last two years, Coal India and the Ministry of Power have undertaken a number of initiatives to address this issue. There is a joint sampling to accurately measure the GCV of coal. Coal India has also begun supplying 100% crushed coal. Both the Ministry of Power and Coal India have committed to the states in the agreement under UDAY that there will re-grading of coal mines, while pricing of coal will move to a GCV basis and Coal India will supply 100% crushed coal to address the quality issues. The results of these efforts are reflected in the trends in average specific consumption of coal at power plants.

Exhibit 92: Specific consumption of coal in power generation declining, implying part benefit of GCV improvement



Source: MOSL, Company

Exhibit 93: Specific cons. In FY16 improved despite fall in share of imported coal in total mix



Source: MOSL, Company

NTPC's stand is reasonable, in our view

As a result of the regulation NTPC has also moved its billing to "as received basis" but at secondary crusher. There is still a dispute regarding the point of sampling. The CERC and the High Court want the coal sample for measuring GCV to be picked up from incoming wagons. NTPC has claimed that it is unsafe to collect samples from wagons due to overhead electric traction. There is also additional demurrage as a result of a slower turnaround. Further, there will be high volatility in GCV measurements as coal is not homogeneous. Hence, it is desirable to blend and crush before taking measurements.

We believe NTPC is not under reporting GCV of coal

We believe that NTPC is just a processor of coal. According to our analysis of its earnings and operational data, NTPC is not under reporting GCV of coal. It must also be kept in mind that the design station heat rates are based on coal "as fired basis." No equipment supplier will take responsibility for loss of GCV in storage.

We are not factoring GCV gains in our estimates

We are currently not building any gains/losses on account of the changed regulations as, in-line with the CERC, we believe that the losses are minimal. In any case, if they turn out to be significant, but under normative conditions, we believe (as per the Statement of Reason given by CERC on the 2014-19 regulations), it would be adequately factored by the CERC in its tariff computation unless they are particularly on account of NTPC.

Joint ventures to add 4.7GW

Turnaround expected by FY18

NTPC has four subsidiaries and a number of joint ventures. A few of its subsidiaries are into trading and distribution of power. Most of the JVs are profitable, barring a few. Ratnagiri Gas operates a 1,967MW gas-based power plant in Maharashtra and reported a loss of INR4b in FY15 due to high gas prices. Together, NTPCjv reported a PAT of INR4.3b in FY14 and a loss after tax of INR3b in FY15.

Exhibit 94: Financials and subsidiaries of JVs

Name of the Company	FY14				FY15					
	share (%)	Asset	Rev.	Cash flow	share (%)	Asset	NW	Rev.	Cash flow	Attrib. PAT
NTPC Electric Supply Company Ltd.	100	7,311	591	-1,364	100	6,449	418	236	-1,486	13
NTPC Vidyut Vyapar Nigam	100	12,244	35,323	1,146	100	11,662	2,059	38,880	-2,902	436
Kanti Bijlee Utpadan Nigam	65	31,118	1,622	132	65	38,279	8,843	4,605	343	112
Bhartiya Rail Bijlee Company	74	43,007	0	-72	74	52,375	11,720	0	863	0
Minority interest							8,879			60
JVs Major										
Ratnagiri Gas & Power Private Ltd	33	40,836	7,283	-1,982	29	29,688	2,621	525	-257	-4,052
NTPC-SAIL Power Company Private	50	17,079	8,835	151	50	16,710	8,212	8,115	-201	1,137
NTPC-Tamilnadu Energy Company	50	45,947	7,550	59	50	47,127	12,433	9,864	-178	-434
Aravali Power Company Private	50	48,885	17,492	-4	50	49,076	16,438	22,257	36	899
Meja Urja Nigam Private	50	9,262	0	276	50	18,973	5,400	-	58	0
Nabinagar Power Generating Company	50	9,846	0	-59	50	20,553	5,105	-	176	
JVs										
Utility Powertech	50	1,091	2,505	105	50	1,307	272	2,954	-25	116
NTPC - Alstom Power Services Private	50	405	176	-1	50	625	113	349	41	13
NTPC - BHEL Power Projects	50	2,304	429	316	50	3,760	663	2,963	-69	8
National High Power Test Laboratory	20	214	0	-49	22	507	234	-	33	
Transformers & Electricals Kerala	45	734	758	35	45	598	383	590	-65	-147
Energy Efficiency Services	25	318	84	14	25	789	287	176	12	26
CIL NTPC Urja	50	0	0	0	50	0		-	-	
Anushakti Vidyut Nigam	49	0	0	0	49	0		-	-	
Overseas										
Trincomalee Power Company, Sri Lanka	50	60	6	5	50	78	51	3	-14	-2
Bangladesh -India Friendship Power Company	50	71	0	44	50	405	320	-	31	
Winding up										
NTPC-SCCL Global Ventures Private (Withdrawn)	50	1	0	0	50	1	1	-	-	
BF - NTPC Energy Systems (withdrawn)	49	29	0	0	49	29	25	-	-	-2
National Power Exchange (winding up)	17	12	1	-1	17	11	11	1	0	
International Coal Ventures (withdrawing)	14	34	0	-6	0	23	23	-	1	
Pan-Asian Renewables (winding up)	50	6	0	4	50	3	2	0	-4	-4

Source: MOSL, Company

The JVs had a combined commercial capacity of 6GW by end of FY16. It is likely that Ratnagiri Gas' losses would reduce due to a fall in gas prices and the JV with TNEB to return to profitability as the third 500MW unit at Vallur stabilizes with a higher PLF. However, we are not factoring the expected turnaround in our estimates.

NTPCjv to begin adding to commercial capacities from start of FY17

- Nearly 640MW (390MW Kanti + 250MW Nabinagar) of capacity was commissioned during FY16 and is expected to be commercialized in FY17. This

will add INR19b (share of NTPCjv) to the gross block and INR871m to the bottom line of NTPCgrp.

- 2.7GW of capacities are expected to be commercialized during FY18. The 1,320MW Meja Urja project's CEA's expected date of CoD has been advanced by one month in the recent CEA's broad status report for January. This will add INR129b (share of NTPCjv) to the gross block and INR6b to the bottom line of NTPCgrp.
- 1,320MW i.e. the second and third units of Nabinagar JV are expected to be commercialized in FY19. The state government of Bihar has shown active interest in the project. In last 3-4 months, the CEA's expected date of CoD has been advanced by two months. This will add INR67b (share of NTPCjv) to the gross block and INR3.1b to the bottom line of NTPCgrp.

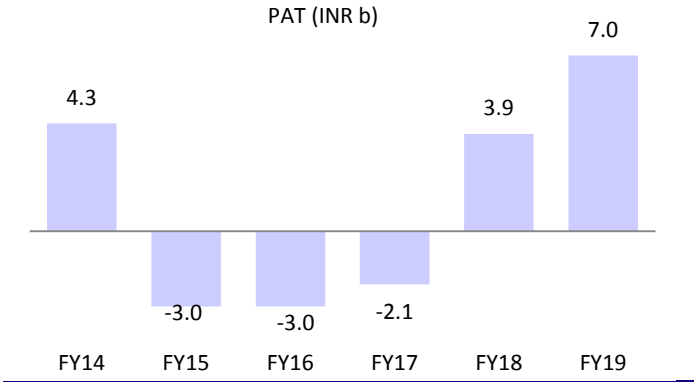
Exhibit 95: Commercial capacity addition estimates

	FY17	FY18	FY19	FY16-21	CEA's estimate for CoD
NTPCjv	**640**	**2,730**	**1,320**	**4,690**	
Meja Urja Nigam		1,320			U1 -Jun 17, U2-Dec 17, advanced by one month
Nabinagar, BRBCL	250	750			U1 -Apr 16, U2-Apr 17, U3-Aug 17, U4 Nov 17, delayed by 5-6 months
Nabinagar NPGCPL		660	1,320		U1 -Aug 17, U2-Feb 18, U3-Aug 18, advanced by 2 months
Kanti,Bihar	390				U3 195MW-Sep15, U4 195MW - May 16, actual CoD delayed

Source: MOSL, Company

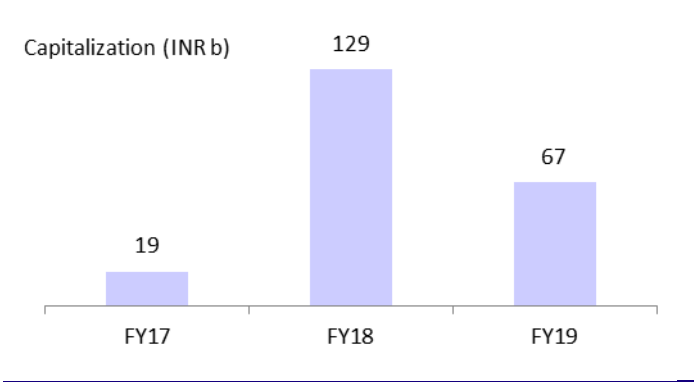
- We expect NTPCjv to turnaround by FY18E on the back of CoD of 3.4GW projects during F17E and FY18E.

Exhibit 96: JVs to turnaround in FY18



Source: MOSL, Company

Exhibit 97: Capitalization to pick up



Source: MOSL, Company

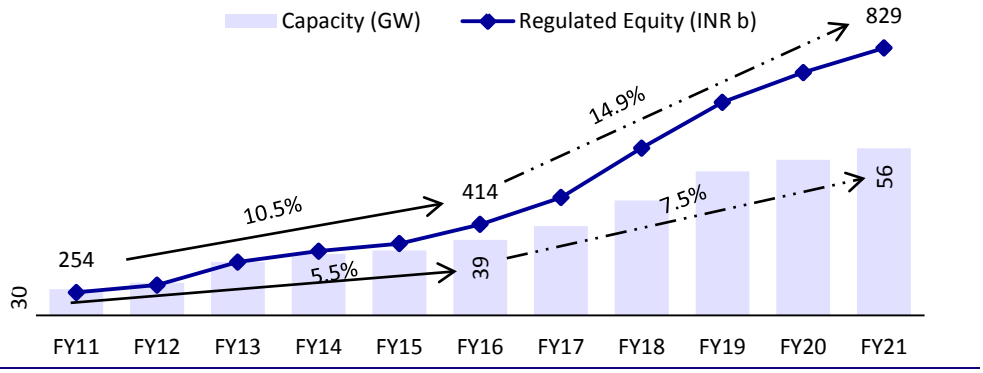
Project commissioning to drive earnings and RoE

INR1.7t of capitalization ahead; Reiterate BUY

- NTPC is in the midst of a major capacity expansion. The commercial capacity of NTPCsa (regulated standalone business) is expected to grow at an accelerated five-year CAGR of 7.5% (FY16-FY21) to 56GW, as compared to 5.5% CAGR over the last five years (FY11-FY16). Regulated equity, a key earnings driver, will grow at an even higher CAGR of 14.9% to INR829b as the specific capex for new capacities is higher. Further, the capacity of JVs will increase by 4.7GW to 10.7GW, while solar capacity will increase by 4GW. Thus, we expect total capitalization of INR1.7t over the period.
- Despite assuming an accelerated five-year CAGR of 6% in power generation (FY16-FY21) (as against 2% CAGR over FY11-FY16), the PLF of NTPCsa will decline from 74% in FY16 to 64% in FY21E.
- Under the new regulations for 2014-19, most of the incentives have been squeezed out. The share of interest income in earnings will also decline. NTPCsa will continue to earn working capital incentives, as it is able to source capital at a much lower cost than the normative rate as well as manage its working capital more efficiently. Some of its pit-head plants will continue to earn PLF incentives despite the decline in overall PLF of the company and the country.
- According to our calculations, NTPCsa is not deriving any benefit from measurement of GCV. Hence, it is unlikely to lose on the RoE front if it shifts to a "as received on wagon basis" from "as received on crusher basis" as directed by the regulator. We see merit in NTPC's position to measure GCV at crusher.
- As a result, we expect the NTPC group's consolidated (NTPCgrp) EPS to grow at a slower pace than regulated equity, but achieve a healthy five-year CAGR of 10% over (FY16-FY21) to INR19.5/share in FY21E.
- Book value will grow at a CAGR of 6% to INR140.3/share and RoE will improve by 230bp to 14.4% in FY21E, as the share of equity invested in CWIP declines. This is likely to result in a rerating of the stock's P/BV multiple.
- Dividend yield is likely to remain healthy at ~5%. We expect the stock to deliver 12-15% annual return (inclusive of dividends) over the next five years.
- We value the stock at INR185/share based on 1.5xFY18E book value. We reiterate **Buy**.

Exhibit 98: Regulated equity and conventional generation capacity growth

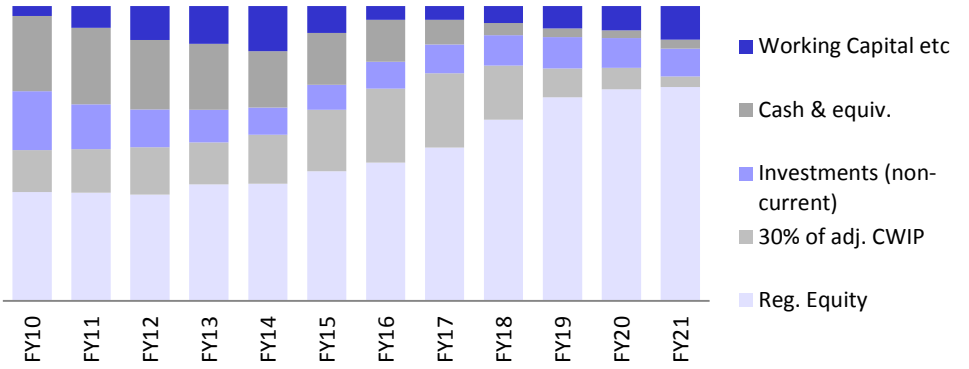
Regulated equity to grow at CAGR of 15%



Source: MOSL, Company

Share of cash and equivalents to decline and impact share of interest income in PAT

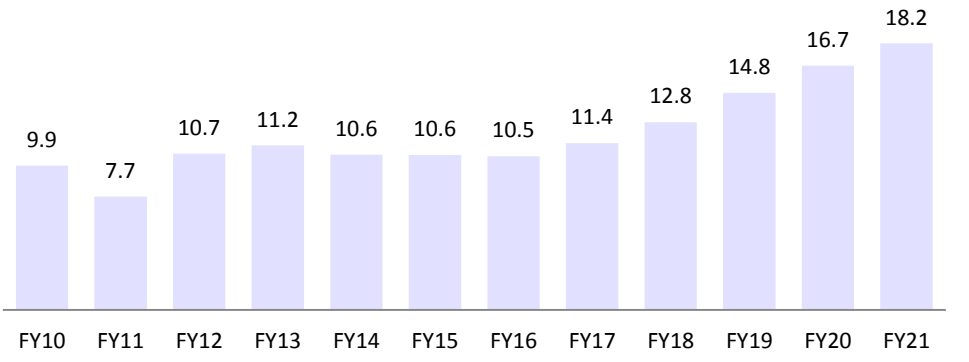
Exhibit 99: Application of equity



Source: MOSL, Company

NTPCsa EPS to grow at a slightly slower CAGR of ~12% due to declining share of Other income

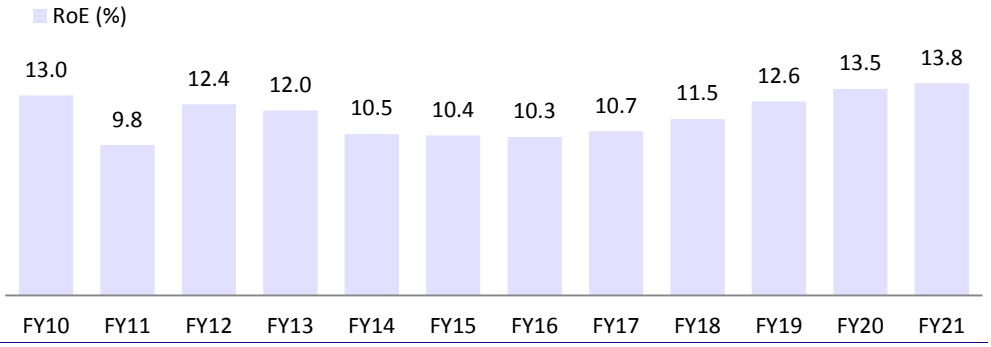
Exhibit 100: NTPCsa EPS (INR/share) will grow at CAGR of ~12% over FY16-21E



Source: MOSL, Company

NTPCsa RoE to improve along with decline in share of CWIP

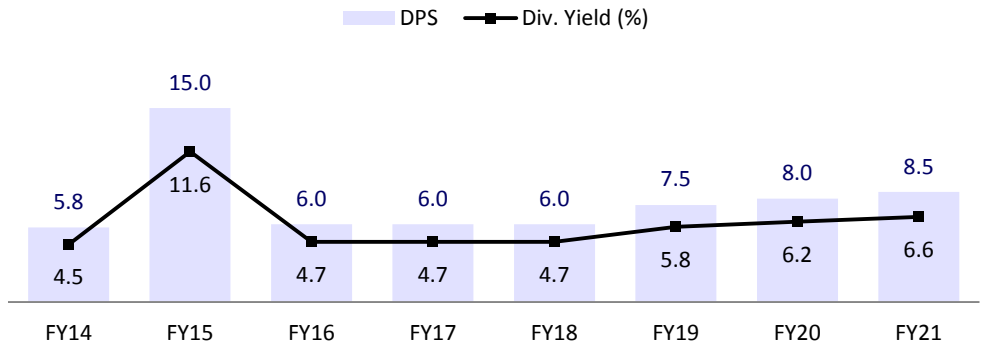
Exhibit 101: NTPCsa RoE



Source: MOSL, Company

Dividend yield remains attractive (assuming payout of ~45-55%)

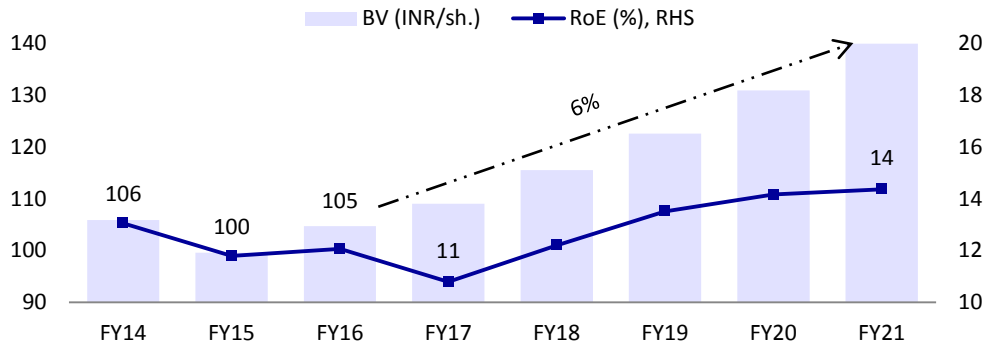
Exhibit 102: NTPCgrp DPS (INR/share) and yield



Source: MOSL, Company

Book value to grow at CAGR of 6%

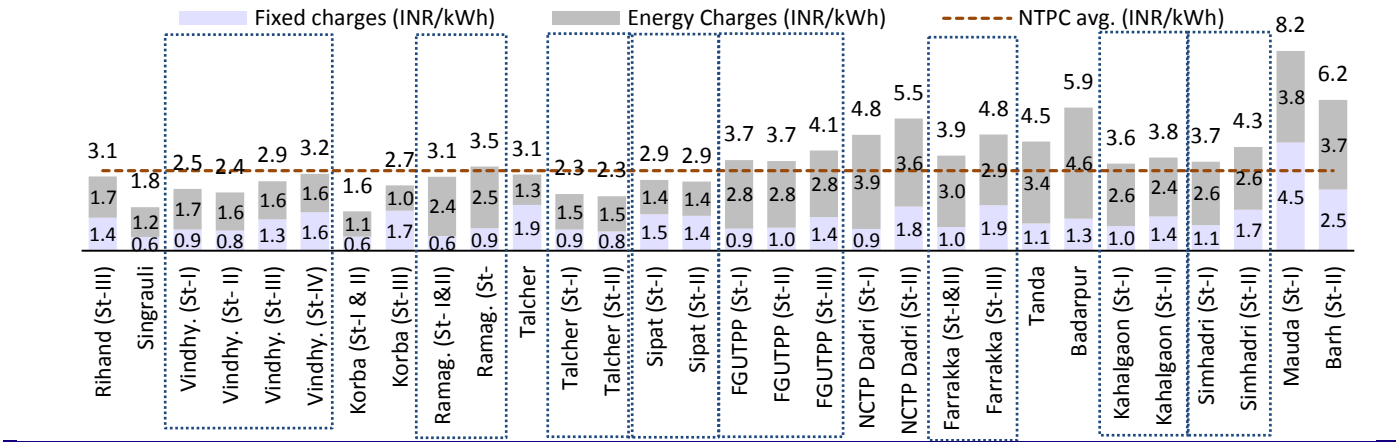
Exhibit 103: NTPCgrp BV and RoE



Source: MOSL, Company

Annexure

Exhibit 104: NTPC approved fixed and variable cost unit-wise (FY15)



Source: MOSL, Company

Exhibit 105: Regulated Equity (as per tariff orders) – INR b

	FY10	FY11	FY12	FY13	FY14	FY15
Coal-based	**196**	**212**	**235**	**282**	**301**	**343**
Singrauli	6	6	6	6	6	7
Rihand	21	21	21	21	21	35
Unchahar	11	11	11	11	11	12
Tanda	3	3	3	3	3	4
Korba	9	15	16	16	16	17
Vindyachal	20	20	20	27	34	42
Sipat	12	12	24	38	39	40
Mauda	0	0	0	9	16	18
Ramagundam	16	16	16	16	16	16
Simhadri	10	10	18	25	26	27
Farakka	16	16	16	23	24	23
Kalagaon	24	26	27	28	28	27
Talcher Kaniha	28	28	28	28	28	29
Talcher	4	4	4	4	4	5
Dadri	15	22	23	23	23	24
Badarpur	1	1	1	2	2	1
Barh	0	0	0	0	0	16
Bonglagaon	0	0	0	0	0	0
Muzaffarpur	0	0	0	0	0	0
Gas-based	**44**	**44**	**45**	**45**	**46**	**43**
Anta	3	3	3	3	3	3
Auraiya	4	4	4	4	5	5
Kawas	8	8	8	8	9	9
Dadri	9	9	9	9	9	4
Jhanor Gandhar	12	12	12	13	13	13
Kayamkulam CCPP	4	4	4	4	4	4
Faridabad	5	5	5	5	5	5
Total	**240**	**256**	**279**	**327**	**347**	**386**

Source: MOSL, Company

Exhibit 106: Normative Debt (as per tariff orders) – INR b

	FY10	FY11	FY12	FY13	FY14	FY15
Coal-based	**159**	**177**	**207**	**290**	**332**	**346**
Singrauli	1	1	1	2	1	2
Rihand	13	12	10	9	38	35
Unchahar	7	6	5	4	3	3
Tanda	2	2	2	2	2	1
Korba	1	15	15	15	14	13
Vindyachal	24	21	18	32	46	46
Sipat	25	24	48	75	71	67
Mauda	0	0	0	21	37	38
Ramagundam	7	6	5	4	3	3
Simhadri	19	18	32	46	44	41
Farakka	0	0	0	15	15	14
Kalagaon	31	31	30	29	26	23
Talcher Kaniha	13	11	9	6	4	2
Talcher	1	1	1	1	1	0
Dadri	14	30	29	28	26	24
Badarpur	0	0	0	1	1	0
Barh	0	0	0	0	0	34
Bonglagaon	0	0	0	0	0	0
Muzaffarpur	0	0	0	0	0	0
Gas-based	**7**	**7**	**8**	**9**	**10**	**12**
Anta	3	2	2	2	2	1
Auraiya	0	0	0	1	2	3
Kawas	0	0	2	3	3	4
Dadri	0	0	0	0	0	0
Jhanor Gandhar	0	1	3	3	3	3
Kayamkulam CCPP	2	1	0	0	0	0
Faridabad	2	2	1	1	1	0
Total	**166**	**184**	**215**	**299**	**342**	**358**

Source: MOSL, Company

Exhibit 107: Fixed charge incl. WC and O&M – INR b

	FY10	FY11	FY12	FY13	FY14	FY15
Coal-based	**136**	**154**	**166**	**204**	**221**	**238**
Singrauli	6	6	7	7	8	8
Rihand	12	12	12	12	12	22
Unchahar	7	7	7	7	7	8
Tanda	3	3	3	3	3	3
Korba	7	12	13	13	14	14
Vindyachal	18	18	18	24	29	29
Sipat	8	9	17	28	28	28
Mauda	0	0	0	7	14	13
Ramagundam	11	11	11	12	12	12
Simhadri	7	7	13	19	19	19
Farakka	8	8	9	15	15	15
Kalagaon	16	17	17	18	18	18
Talcher Kaniha	17	17	17	17	17	17
Talcher	3	3	4	4	4	4
Dadri	10	20	16	16	16	16
Badarpur	4	4	4	4	4	4
Barh	0	0	0	0	0	10
Bonglagaon	0	0	0	0	0	0
Muzaffarpur	0	0	0	0	0	0
Gas-based	**22**	**23**	**23**	**24**	**25**	**23**
Anta	2	2	2	2	2	2
Auraiya	2	2	2	3	3	3
Kawas	4	4	4	4	5	4
Dadri	5	5	5	5	5	3
Jhanor Gandhar	4	5	5	5	5	5
Kayamkulam CCPP	3	3	3	2	2	3
Faridabad	3	3	3	2	2	2
Total	**158**	**176**	**190**	**228**	**246**	**261**

Source: MOSL, Company

Exhibit 108: Operating heat-rate (kCal/kg)

	FY10	FY11	FY12	FY13	FY14E	FY15E
Coal-based						
Singrauli	2,393	2,393	2,393	2,393	2,390	2,392
Rihand	2,347	2,347	2,346	2,350	2,357	2,357
Unchahar	2,387	2,383	2,403	2,417	2,405	2,408
Tanda	2,728	2,727	2,732	2,770	2,759	2,754
Korba	2,369	2,375	2,381	2,383	2,384	2,378
Vindyachal	2,375	2,372	2,372	2,370	2,380	2,376
Sipat	2,360	2,347	2,349	2,340	2,343	2,343
Mauda	0	0	0	0	0	2,369
Ramagundam	2,372	2,371	2,371	2,371	2,370	2,371
Simhadri	2,351	2,348	2,348	2,364	2,365	2,357
Farakka	2,415	2,407	2,400	2,399	2,403	2,401
Kalagaon	2,372	2,378	2,390	2,405	2,398	2,371
Talcher Kaniha	2,356	2,357	2,353	2,360	2,385	2,366
Talcher	2,867	2,859	2,851	2,843	2,823	2,839
Dadri	2,500	2,285	2,483	2,481	2,481	2,429
Badarpur	2,773	2,750	2,750	2,749	2,755	2,751
Barh	0	0	0	0	0	2,262
Bonglagaon	0	0	0	0	0	0
Muzaffarpur	0	0	0	0	0	0

Source: MOSL, Company

Financials and Valuations

Income Statement							(INR Million)	
Y/E Mar	2011	2012	2013	2014	2015	2016	2017E	2018E
Net Sales	**550,627**	**620,522**	**657,370**	**789,506**	**806,220**	**787,055**	**825,365**	**965,827**
Change (%)	18.7	12.7	5.9	20.1	2.1	-2.4	4.9	17.0
EBITDA	**119,729**	**137,263**	**170,672**	**197,106**	**171,941**	**191,632**	**221,275**	**288,860**
EBITDA Margin (%)	21.7	22.1	26.0	25.0	21.3	24.3	26.8	29.9
Depreciation	24,857	27,917	33,968	47,700	55,646	61,534	66,382	85,215
EBIT	**94,872**	**109,346**	**136,704**	**149,406**	**116,295**	**130,098**	**154,893**	**203,645**
Interest	14,210	17,116	19,244	32,031	35,704	41,513	49,983	73,001
Other Income	23,447	27,897	31,188	27,601	20,789	12,341	15,317	11,046
Extraordinary items	16,387	3,136	17,138	-119	3,292	0	0	0
PBT	**120,496**	**123,262**	**165,786**	**144,858**	**104,672**	**100,926**	**120,226**	**141,691**
Tax	29,470	31,024	39,592	30,824	4,638	-589	25,125	28,752
Tax Rate (%)	24.5	25.2	23.9	21.3	4.4	-0.6	20.9	20.3
Min. Int. & Assoc. Share	0	0	0	0	0	0	0	0
Reported PAT	**91,026**	**92,237**	**126,194**	**114,034**	**100,034**	**101,514**	**95,101**	**112,939**
Adjusted PAT	**80,192**	**90,969**	**109,726**	**91,496**	**87,706**	**101,514**	**95,101**	**112,939**
Change (%)	-1.0	13.4	20.6	-16.6	-4.1	15.7	-6.3	18.8

Balance Sheet							(INR Million)	
Y/E Mar	2011	2012	2013	2014	2015	2016	2017E	2018E
Share Capital	82,455	82,455	82,455	82,455	82,455	82,455	82,455	82,455
Reserves	596,468	650,457	721,421	790,843	738,485	780,753	816,487	870,058
Net Worth	**678,923**	**732,912**	**803,875**	**873,297**	**820,940**	**863,208**	**898,941**	**952,513**
Debt	431,877	502,789	581,461	814,549	1,022,520	1,149,537	1,299,585	1,432,885
Deferred Tax	6,030	6,369	9,153	12,393	12,656	12,656	12,656	12,656
Total Capital Employed	**1,116,829**	**1,242,070**	**1,394,489**	**1,707,044**	**1,864,995**	**2,034,280**	**2,220,062**	**2,406,933**
Gross Fixed Assets	727,552	818,283	1,032,457	1,313,937	1,443,608	1,531,162	1,797,658	2,380,374
Less: Acc Depreciation	335,192	365,719	403,096	471,858	525,077	586,611	652,994	738,208
Net Fixed Assets	**392,360**	**452,564**	**629,361**	**842,080**	**918,530**	**944,550**	**1,144,664**	**1,642,166**
Capital WIP	354,953	418,279	371,094	538,250	675,547	859,623	906,947	628,922
Investments	105,328	95,839	91,376	16,635	141	141	141	141
Current Assets	**404,748**	**441,626**	**519,333**	**603,487**	**601,543**	**563,365**	**498,422**	**478,411**
Inventory	36,391	37,029	40,572	59,885	79,725	67,307	61,336	67,333
Debtors	14,350	58,325	53,650	67,257	92,499	89,682	80,258	91,794
Cash & Bank	179,973	177,643	184,902	186,876	161,390	138,447	88,899	51,355
Loans & Adv, Others	174,034	168,630	240,210	289,470	267,929	267,929	267,929	267,929
Curr Liabs & Provns	**140,560**	**166,237**	**216,676**	**293,408**	**330,766**	**333,399**	**330,112**	**342,707**
Curr. Liabilities	140,560	166,237	216,676	293,408	330,766	333,399	330,112	342,707
Provisions	0	0	0	0	0	0	0	0
Net Current Assets	**264,188**	**275,389**	**302,657**	**310,080**	**270,777**	**229,966**	**168,310**	**135,704**
Total Assets	**1,116,829**	**1,242,070**	**1,394,489**	**1,707,044**	**1,864,995**	**2,034,280**	**2,220,062**	**2,406,933**

Financials and Valuations

Ratios

Y/E Mar	2011	2012	2013	2014	2015	2016	2017E	2018E
Basic (INR)								
EPS	**9.7**	**11.0**	**13.3**	**11.1**	**10.6**	**12.3**	**11.5**	**13.7**
Cash EPS	14.1	14.6	19.4	19.6	18.9	19.8	19.6	24.0
Book Value	82.3	88.9	97.5	105.9	99.6	104.7	109.0	115.5
DPS	3.8	4.0	5.8	5.8	5.8	6.0	6.0	6.0
Payout (incl. Div. Tax.)	34.4	35.8	37.6	41.6	47.4	48.7	52.0	43.8
Valuation(x)								
P/E	13.9	13.7	10.0	11.1	12.6	12.5	13.3	11.2
Cash P/E	10.9	10.5	7.9	7.8	8.1	7.8	7.8	6.4
Price / Book Value	1.9	1.7	1.6	1.4	1.5	1.5	1.4	1.3
EV/Sales	2.8	2.6	2.5	2.4	2.6	2.9	3.0	2.7
EV/EBITDA	14.0	11.8	10.7	10.6	11.9	11.9	11.2	9.2
Dividend Yield (%)	2.5	2.6	3.7	3.7	3.7	3.9	3.9	3.9
Profitability Ratios (%)								
RoE	9.8	12.4	12.0	10.9	10.0	12.1	10.8	12.2
RoCE	7.7	8.7	8.8	8.2	6.0	7.3	6.3	7.4
RoIC	15.9	15.9	16.0	13.7	11.2	12.7	10.8	11.0
Turnover Ratios (%)								
Asset Turnover (x)	1.5	1.5	1.2	1.1	0.9	0.8	0.8	0.7
Debtors (No. of Days)	10	34	30	31	42	42	35	35
Inventory (No. of Days)	31	28	30	37	46	41	37	36
Leverage Ratios (%)								
Net Debt/Equity (x)	0.4	0.4	0.5	0.7	1.0	1.2	1.3	1.4

Cash Flow Statement

(INR Million)

Y/E Mar	2011	2012	2013	2014	2015	2016	2017E	2018E
Adjusted EBITDA	108,335	134,446	155,792	178,937	179,139	191,632	221,275	288,860
Non cash opr. exp (inc)	68,026	56,429	62,983	45,263	16,355	12,451	15,317	11,046
(Inc)/Dec in Wkg. Cap.	-24,655	-23,494	-5,971	-13,109	-11,694	17,868	12,108	-4,938
Tax Paid	-29,544	-17,607	-28,956	-26,867	-20,100	589	-25,125	-28,752
Other operating activities	-11,312	-11,109	-28,896	-18,917	-16,242	-12,341	-15,317	-11,046
CF from Op. Activity	**110,850**	**138,666**	**154,952**	**165,308**	**147,459**	**210,198**	**208,258**	**255,170**
(Inc)/Dec in FA & CWIP	-110,855	-130,577	-162,912	-189,485	-191,772	-271,630	-313,821	-304,691
Free cash flows	**-5**	**8,089**	**-7,960**	**-24,176**	**-44,314**	**-61,432**	**-105,563**	**-49,521**
(Pur)/Sale of Invt	34,199	18,039	16,225	16,225	16,391	0	0	0
Others	-1,215	234	6,519	37,017	17,182	12,352	15,317	11,046
CF from Inv. Activity	**-77,872**	**-112,304**	**-140,169**	**-136,243**	**-158,200**	**-259,278**	**-298,504**	**-293,645**
Inc/(Dec) in Net Worth	0	0	0	0	0	0	0	0
Inc / (Dec) in Debt	50,473	52,135	72,624	93,854	205,811	127,017	150,048	133,299
Interest Paid	-30,998	-39,693	-39,461	-62,429	-72,371	-41,513	-49,983	-73,001
Divd Paid (incl Tax) & Others	-36,511	-41,133	-40,688	-58,516	-148,185	-59,367	-59,367	-59,367
CF from Fin. Activity	**-17,036**	**-28,691**	**-7,524**	**-27,091**	**-14,745**	**26,137**	**40,698**	**931**
Inc/(Dec) in Cash	**15,943**	**-2,330**	**7,259**	**1,975**	**-25,486**	**-22,943**	**-49,548**	**-37,544**
Add: Opening Balance	164,030	179,973	177,643	184,902	186,876	161,390	138,447	88,899
Closing Balance	**179,973**	**177,643**	**184,902**	**186,876**	**161,390**	**138,447**	**88,899**	**51,355**

JSW Energy

BSE SENSEX	S&P CNX
27,127	8,323

JSW Energy Limited

Stock Info

Bloomberg	JSW IN
Equity Shares (m)	1,640.1
52-Week Range (INR)	106/59
1, 6, 12 Rel. Per (%)	18/-8/-13
M.Cap. (INR b)	138.3
M.Cap. (USD b)	2.1
Avg. Val (INR m)/Vol m	218.6 / 2.5
Free float (%)	25.0

Financials Snapshot (INR b)

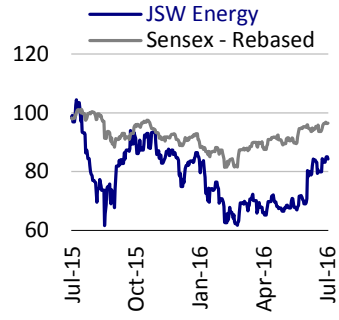
Y/E MAR	2016	2017E	2018E
Net Sales	99.7	101.0	101.7
EBITDA	41.4	42.5	42.0
PAT	14.0	11.5	13.1
EPS (INR)	7.6	7.0	8.0
Gr. (%)	-10.0	-8.0	14.1
BV/Sh (INR)	52.0	56.8	62.4
RoE (%)	15.5	12.9	13.4
RoCE (%)	12.5	11.0	11.3
P/E (x)	9.2	12.1	10.6
P/BV (x)	1.3	1.5	1.3

Shareholding pattern (%)

As On	Mar-16	Dec-15	Mar-15
Promoter	75.0	75.0	75.0
DII	11.8	12.0	6.2
FII	9.0	8.9	7.2
Others	4.2	4.1	11.5

FII Includes depository receipts

Stock Performance (1-year)



CMP: INR84 TP: INR98 (+17%) Buy

Lowest leverage at peak of overcapacity in the sector

Reinstating coverage with BUY and TP of INR98

Two-thirds of capacity contracted under PPAs, providing sufficient cash flows to service consolidated debt

- JSW Energy's (JSWE) 2,777MW of capacity is contracted under long-term (LT) PPAs. Another 200MW of LT PPA is expected from Punjab for its hydro assets, which will increase the share of LT PPAs to 67%.
- LT PPAs have a set of structured and fairly predictable cash flows. In the first 10 years, annual EBITDA is expected to be ~INR20-25b (~60% of consolidated EBITDA), which we believe is sufficient to service debt.

Open capacity is well diversified, only 10% capacity is vulnerable

- JSWE has benefited in the short-term (ST) market from tight supply in the southern region (SR). With improving inter-region transmission, JSWE is reducing its exposure to the ST market as premiums are coming off in SR.
- Only 33% capacity is now exposed to the ST market, but majority of it is in the critically balanced market of Karnataka in SR. Expected PPAs from this state are likely to help tide over the next three difficult years, after which the market is expected to find balance. Only 10% of its capacity is vulnerable being exposed to the oversupplied western region (WR).

Merchant power market will thrive, but rates will be capped at INR3/kWh

- Despite oversupply, the merchant market will thrive as there is an arbitrage between high variable cost of contracted capacities and cost of new stranded plants. Merchant rates will be capped at INR3/kWh, in our view.
- We are factoring in INR2.75/kWh for non-SR and INR4.3/kWh for SR.

High capital efficiency and strong free cash flows

- JSWE is one of the few companies in the sector that has built a strong set of assets at low cost. JSWE is generating strong operating cash flows.
- JSWE's balance sheet and return ratios are the best among private names. With capex now behind, free cash flows have turned positive.

Inorganic growth opportunities plenty, patience is the key

- At the peak of overcapacity, organic growth still does not make sense.
- But inorganic growth opportunities are plenty amid financially stressed competition. Patience is the key, in our view.

Reinstating coverage with BUY with TP of INR98

- Strong free cash flows and lowest financial leverage amid financially stressed competition provide strong negotiating power to JSWE for inorganic growth at the peak of overcapacity. JSWE has been able to consistently generate double-digit RoEs due to low cost of its projects.
- SOTP of EV is INR279b, which will decline gradually if not reinvested. Since net debt is declining at a faster rate, equity value will continue increasing. We value JSWE at INR98/share based on FY18E SOTP. We reinstate coverage with a BUY rating.

63-67% of capacity contracted under PPAs

This provides sufficient cash flows to service consolidated debt

- **63% or 2,777MW of JSWE's generation capacity is contracted under long-term PPAs. Another 200MW of PPA is expected from Punjab for its Karcham Wangtoo hydro assets, which will increase the share of LT PPAs to 67%.**
- **LT PPAs have a set of structured and fairly predictable cash flows. In the ensuing 10 years, annual EBITDA is expected to be ~INR20-25b (i.e. ~60% of consolidated EBITDA), which we believe is sufficient to service consolidated debt.**

~63% or 2,777MW of JSWE's generation capacity is contracted under long-term PPAs. Another 200MW of PPA is expected from Punjab once the tariff is approved for its Karcham Wangtoo hydro power plant, which was acquired from Jai Prakash Power (JPVL) in FY16. If the Punjab PPA is finalized, the share of PPAs will increase to 67% of total capacity.

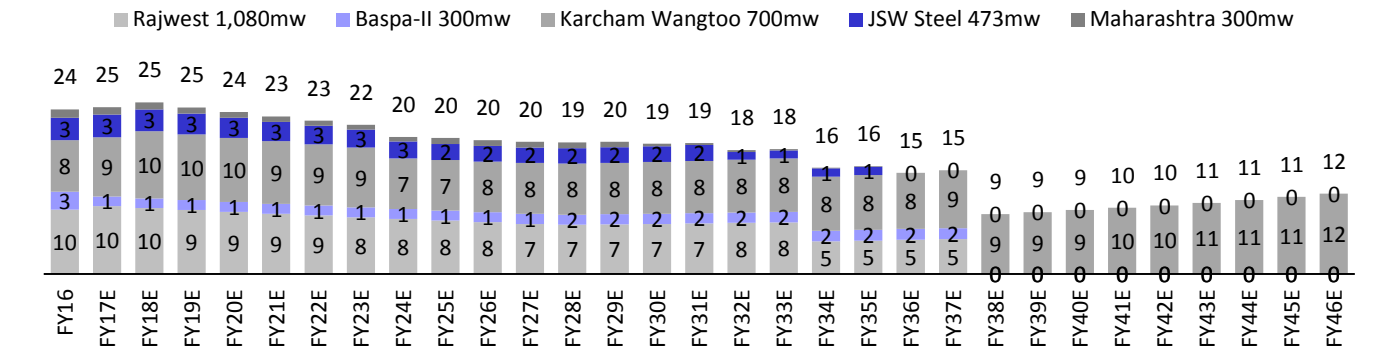
Exhibit 109: Portfolio of diversified assets

S.N.	Asset	Location		Fuel	Capacity	LT PPAs (MW)			Open	PLF (%)					
		State	Region		(MW)	free	PPA	Total	(MW)	FY15	FY16	FY17E	FY18E	FY19E	FY20E
1	Vijaynagar	K'taka	SR	Imp. coal	860	-	-	-	860	97.4	89.7	90.0	90.0	90.0	90.0
2	Ratnagiri	Maha.	WR	Imp. coal	1,200	-	773	773	427	72.7	79.8	85.0	85.0	85.0	85.0
3	RajWest	Raj.	NR	Lignite	1,080	-	1,080	1,080	-	77.7	76.3	85.0	85.0	85.0	85.0
4	Baspa-II	HP	NR	Hydro	300	36	264	300	-	47.7	49.7	50.0	50.0	50.0	50.0
5	K. Wangtoo	HP	NR	Hydro	1,000	120	504	624	376	48.4	54.0	50.0	50.0	50.0	50.0
					4,440	**156**	**2,621**	**2,777**	**1,663**	**73.8**	**56.2**	**68.3**	**68.3**	**68.3**	**68.3**

Source: MOSL, Company

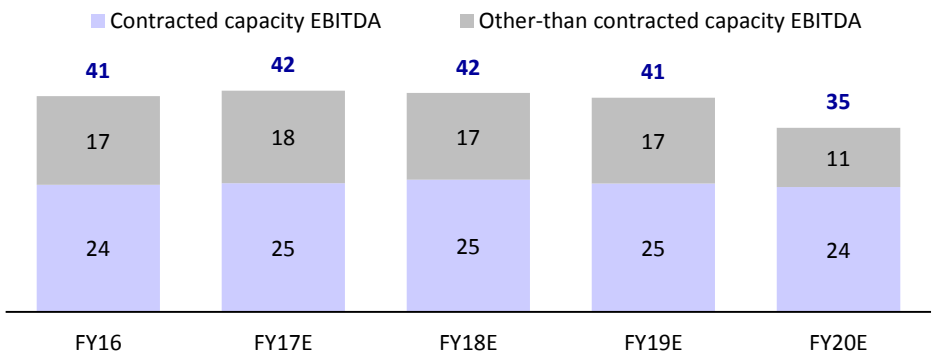
Contracted capacities have a set of structured and fairly predictable cash flows. In the ensuing 10 years, annual EBITDA is expected to be ~INR20-25b (~60% of consolidated EBITDA), which is enough to service debt of the company, in our view.

Exhibit 110: Break-up of operating cash flows through contracted capacities – INR b



Source: MOSL, Company

Exhibit 111: EBITDA – INR b



Source: MOSL, Company

Earnings from contracted capacities are fairly predictable and secured, and thus provide a strong base for future growth opportunities and help absorb earnings volatility from its merchant power capacities. Cash flows from contracted arrangements are sufficient to meet the group's annual interest obligation of ~INR13-15b and normative debt repayment of ~INR7-8b. A strong balance sheet and steady operating cash flows have enabled JSWE to secure better terms with lenders (such as interest rate reduction and elongated debt repayment). JSWE's strong balance sheet (~2.0x debt-to-equity in FY16) compared to its stressed peers provides room for inorganic growth.

We discuss the individual long-term contracts below:

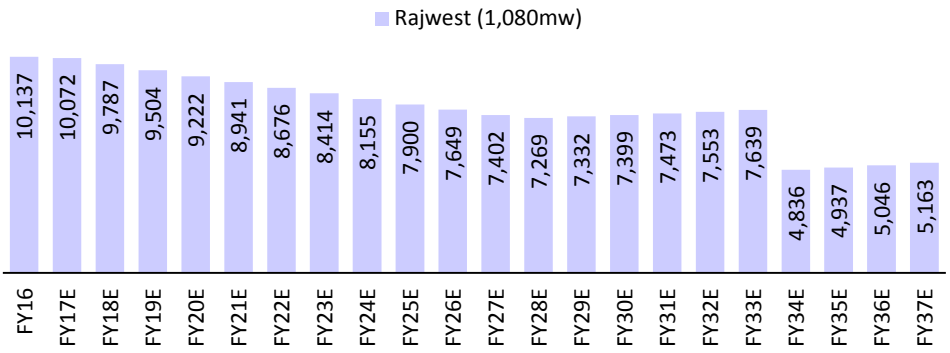
Raj West (Barmar)

- Entire 1,080MW capacity is contracted with the state of Rajasthan.
- Fuel (lignite) is sourced through captive mines (49% owned), while costs are pass-through.
- Returns are determined based on the Rajasthan State Regulatory Commission norms, which are broadly in line with norms set by the Central Electricity Regulatory Commission.
- JSWE has claimed project cost of INR69b, but the regulator has approved only INR59b. JSWE has petitioned against the disallowance. If approved, it could lead to an upside to our estimates.
- Approved equity (at approved project cost) is INR14.8, representing 25% of project cost. The plant was commissioned in a phased manner beginning FY2010 and was fully complete by FY2014.

In FY15/16, the plant operated at PLF of ~76-77%, lower than the normative 80%, due to shortage of lignite. JSWE has ramped up production at the captive mines, which should help in increasing PLF to 85%.

Raj West is expected to generate annual operating cash flows of ~INR 9-10b over the next five years. The long-term cash flow profile (typical for a regulated project) will decline due to normative debt repayments.

Exhibit 112: Raj West annual operating cash flow stream – INR m



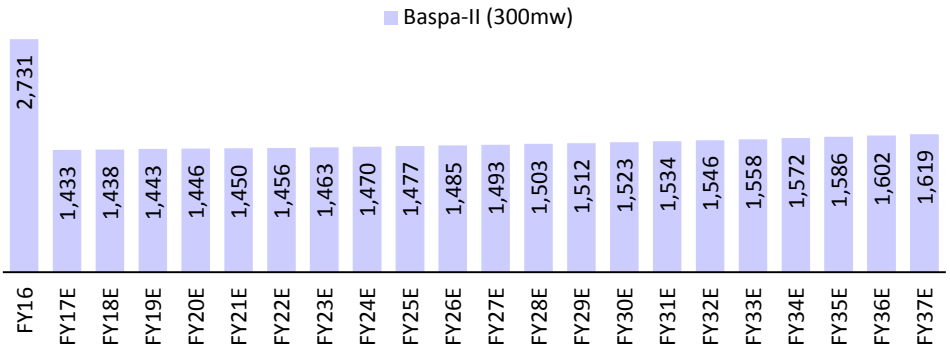
Source: MOSL, Company

Baspa-II

- 300MW of hydro capacity is fully contracted to Himachal Pradesh. Free power is 12% of the plant capacity. The plant was commissioned in 2003.
- Revenues are regulated under the Himachal Pradesh Electricity Regulatory Commission norms.
- Approved project cost is INR16.3b and normative equity is INR4.9b.
- Normative debt (including approved costs of ~INR100-120m related to debt restructuring) was fully repaid in FY16. Annual normative depreciation is INR702m, but due to the reversal of advance depreciation (as debt becomes nil), net normative depreciation charge is nil. This will reduce operating cash flows in FY17E.

Baspa-II's annual operating cash flow generation is estimated to decline from ~INR2.7b in FY16E to INR1.4b in FY17E.

Exhibit 113: Baspa-II operating cash flow stream – INR m



Source: MOSL, Company

Karcham Wangtoo

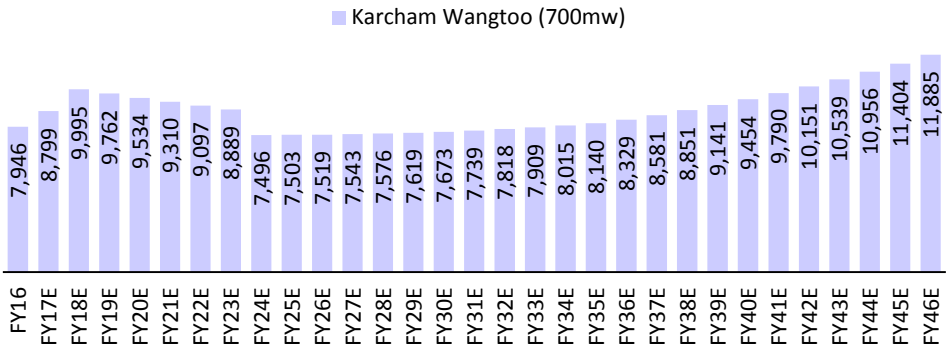
- The project capacity is 1,000MW (design 1,091MW) with 504MW under long-term PPA. 120MW is supplied as free power to Himachal Pradesh, which will increase to 180MW from FY24. It has long-term open access of 880MW.
- Tariff is determined as per the CERC norms. However, the project cost is yet to be approved. Hence, billing is being done on a provisional basis.
- JSWE is in discussion with the state of Punjab for the off-take of 200MW under long-term contract. This is expected to be concluded once the CERC finalizes the

tariff. Management expects it to be done by 1HFY17. We are factoring in Punjab's 200MW PPA in our numbers – 50% in FY17E and 100% from FY18E.

- For the remaining 180/120MW, JSWE is participating in other long-term PPA bids. In the meantime, it is selling power in the merchant market.

We estimate the contracted capacity of 700MW (beginning FY18) to generate annual operating cash flows of ~INR8.8-10b over the next five years. Contracted cash flow is estimated to increase in FY17-18E as more capacity gets under PPA (viz. Punjab). Cash flows will then fall gradually as the decline in normative interest cost will be partly offset by the increase in O&M (escalation of 6.64%). After debt repayment, operating cash flows would see a rising trend as the actual increase in O&M cost estimate of 5% p.a. lags the normative 6.64%.

Exhibit 114: Karcham Wangtoo contracted capacity operating cash flow stream – INR m



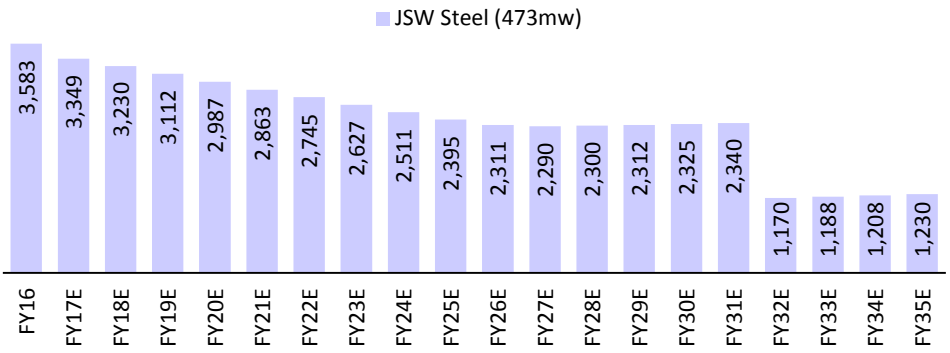
Source: MOSL, Company

Ratnagiri

- The project capacity is 1200MW. There is a PPA of 473MW with JSW Steel and 300MW with the state of Maharashtra. Remaining 427MW capacity is exposed to the merchant market.
- The plant is located at a port in Maharashtra and operates on imported coal.

JSW Steel PPA (473MW): Fixed charge is determined as per the CERC regulation, while variable cost is pass-through. Annual operating cash flow generation is estimated at INR3.3-2.9b over the next five years. Cash flows will likely have a declining trajectory due to falling normative debt.

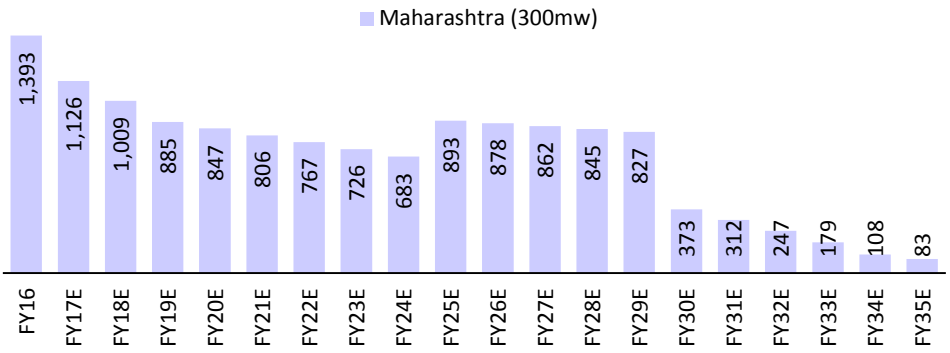
Exhibit 115: Operating cash flow stream from JSW Steel PPA (INR m)



Source: MOSL, Company

Maharashtra PPA (300MW): The PPA was awarded after competitive bidding. Capacity charge includes a stream of pre-defined non-escalable unit charge and escalable unit charge (linked to inflation). Fuel cost is adjusted for a change in the benchmark coal index, but on base value that was set when bid in FY10. Transportation and fuel costs are non-escalable. The operating cash flow profile is volatile due to the structure of capacity charge.

Exhibit 116: Maharashtra PPA capacity operating cash flow stream – INR m



Source: MOSL, Company

Open capacity is well diversified

Only 10% capacity is vulnerable

- **JSWE has benefited in the ST market from tight supply in the southern region (SR).**
- **With improving inter-region transmission, JSWE is reducing its exposure to ST/merchant market as premiums are coming off in SR.**
- **Only 33% of the capacity is now exposed to the ST market, but majority of it is in the critically balanced market of Karnataka in SR. Expected PPA from the state will help tide over the next three difficult years, after which the market is expected to find balance.**
- **Only 10% of its capacity is vulnerable due to its exposure to the oversupplied western region.**

JSWE has benefited from its exposure to the ST market in the tight southern region, despite being dependent on imported coal. With improving inter-region transmission capacities, regional premiums are coming off. JSWE too has been gradually reducing its exposure to the ST market, but 33% or ~1,463MW capacity is still exposed to the short-term power market. This is spread over three regions and is well diversified. Only 10% capacity is exposed to the vulnerability of the merchant market because of being in the oversupplied western region.

- 860MW Vijanagar plant is located in SR - critically balanced if not tight. This unit is likely to secure ST PPA for three years from Karnataka at decent realizations, while short-term opportunities in Andhra and Telengana are drying up.
- 176MW of hydro capacity is very competitive in the ST market. As hydro projects are difficult to build and costs are high, the MoP is working toward making these projects more attractive. Recently, hydro projects have been exempted from competitive bidding. There is a move to bring large hydro projects into the ambit of renewal energy (RE). Hydro projects with open capacities will become more valuable with time.
- 427MW Ratnagiri capacity is most vulnerable as it is situated in the oversupplied WR. But its location on the western side of the state offers some advantage because there are transmission bottlenecks between east and west Maharashtra.

Exhibit 117: Open to short-term market

S.N.	Asset	Location		Fuel	Open	Remarks
		State	Region		(MW)	
1	Vijaynagar	K'taka	SR	coal	860	Tight supply in the region
				import		expecting 3 year PPA from K'taka
2	Ratnagiri	Maha.	WR	coal	427	Over supplied market
				import		headwind for few years
3	K. Wangtoo	HP	NR	Hydro	176	Hydro is likely to be next RE
					1,463	

Source: MOSL, Company

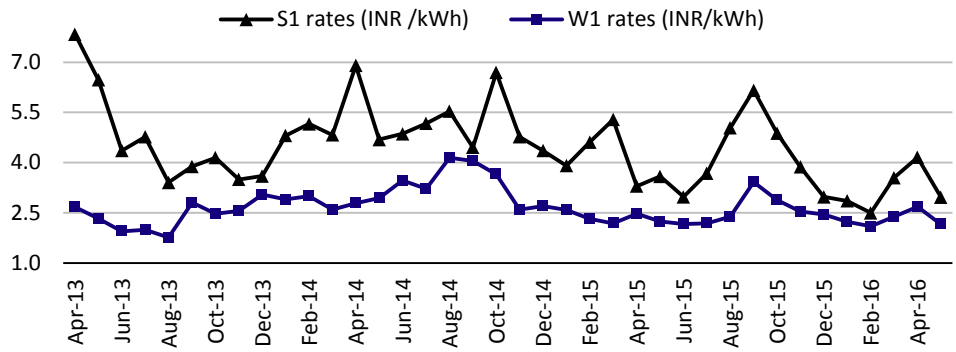
JSWE has benefited from its merchant portfolio in SR

India has been an oversupplied merchant power market for the past few years. However, JSWE has benefited from its exposure to the merchant market. Its merchant market portfolio's significant positioning in southern India has come to its

advantage. Prior to the acquisition of JPVL's hydro assets in FY16, 67% of its merchant power capacity was in south. However, post the acquisition, it has come down to 59%. The advantage for the merchant power market in south is evident from the premium in day-ahead rates in south compared to the western region.

Southern region merchant day-ahead rates have trended at a premium to other regions amid constraints in transmission. Premium, however, has come off recently.

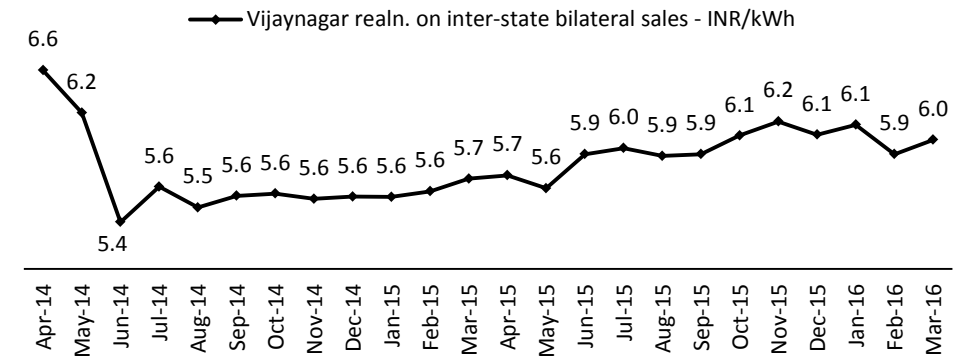
Exhibit 118: Southern region rates have been at a premium to the western region



Source: MOSL, Company

JSWE has benefited from its position in the supply-short southern region. Under its bilateral arrangement for sales in south, it has secured a realization of more than INR5/kWh.

Exhibit 119: Vijaynagar's realization on inter-state bilateral sales – INR/kWh



Source: MOSL, Company

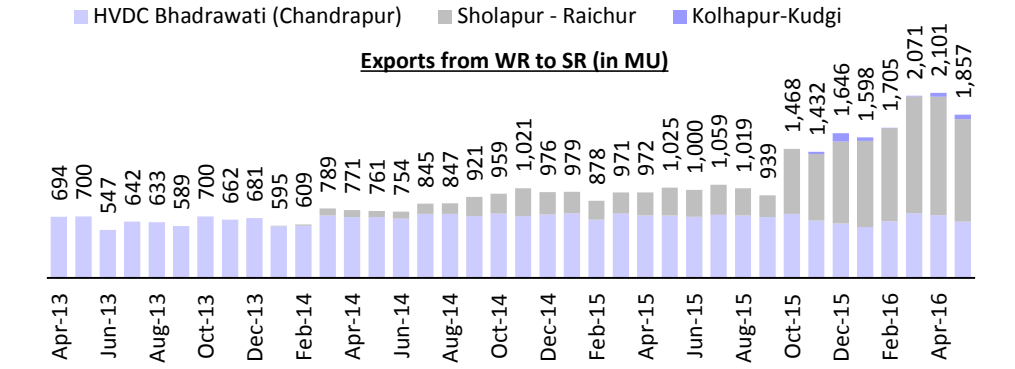
But premium is easing in SR due to improving inter-region transmission

The two key constraints – lack of transmission network and delayed new capacity starts – driving the premium in south over the past few years are gradually starting to ease. Transmission grid capacity to south has increased from ~3GW a year back to ~5.9GW due to the commissioning of ancillary lines connecting Raichur-Sholapur. The grid network is likely to expand further. Starting FY18, various transmission projects are likely to get commissioned and are estimated to increase grid connectivity to south to ~18GW by FY20.

Various new generation capacities have also been added to the grid over the past few years, and the trend would continue over the next few years as per our demand-supply model. 8.2GW of coal-based power generation capacity was commissioned in the southern region in FY15/16, and additional ~9GW is expected over the next few years.

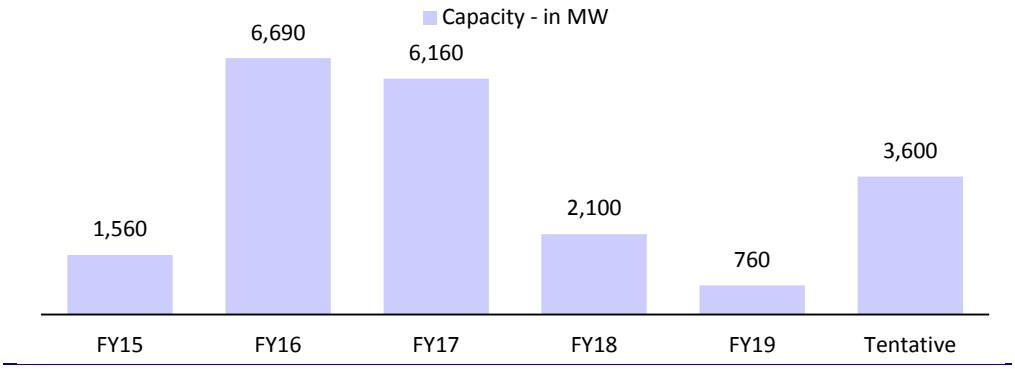
With the commissioning of ancillary grid lines connecting the Raichur-Sholapur line, export capacity between WR and SR has increased from ~3,000MW a year ago to ~5,900MW.

Exhibit 120: Export volumes from WR to SR transmission grid



Source: MOSL, Company

Exhibit 121: Coal-based generation capacity commissioned/to be in Southern India



Source: MOSL, Company

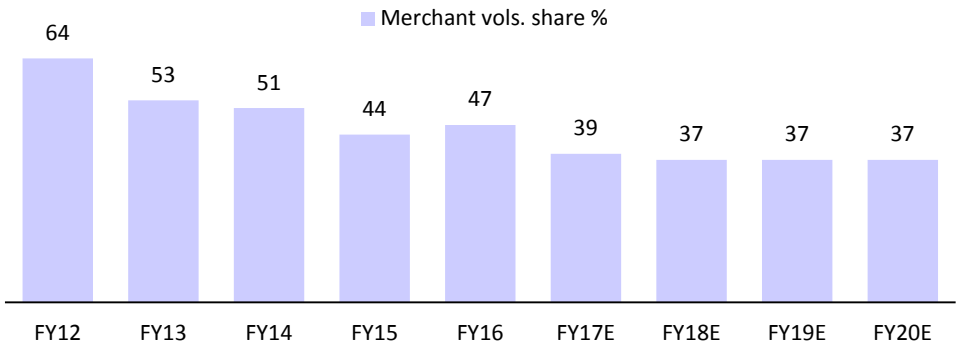
The two major short/bilateral market purchasing states – Andhra Pradesh and Telangana – are expected to significantly reduce short-term/open market power purchases. In FY16, JSWE's Vijaynagar plant sold ~50% of its volumes to these two states at a lucrative ex-bus realization estimated to be at +INR 5.0/kWh. We estimate AP's electricity balance would turn from a deficit of ~3.4b kWh in FY16 to a surplus of ~4.2b kWh in FY18. Telangana (in its ARRs) is expecting to reduce short-term power purchase from ~26% of its total energy requirement in FY16 to just ~12% in FY17. Post FY17, we estimate both these states to be in a power surplus position with the start of new capacities, PPAs and RE addition as the key drivers.

JSWE too has been gradually reducing its exposure to ST market

JSWE's share of ST/merchant market volumes has declined over the years due to the ramp-up of the Raj West power plant and the acquisition of hydro assets of JP which had lower merchant exposure (180MW of 1,300MW). The merchant market volumes share has declined from ~64% in FY12 to ~40% in FY16, and is estimated to fall to ~37% in FY18.

JSWE's merchant exposure has declined.

Exhibit 122: Share of merchant/ST volumes



Source: MOSL, Company

Karnataka is processing 1,000MW ST bids

JSWE is well placed for 750MW ST PPA, given it is the only open IPP capacity in the state.

What could come as a silver lining to JSWE is the increase in deficit in Karnataka due to a sharp fall in hydro generation, while there are delays in new projects. According to our calculations, Karnataka's electricity deficit is expected to increase from ~1b kWh in FY15 to ~5b KWh in FY16, and is unlikely to decline meaningfully in FY17E. Karnataka has called for 1,000MW of ST/medium-term PPAs in order to fill this gap. According to media reports, JSWE has emerged as an L2 bidder for supplying 750MW at a realization of INR4.38/kWh. Supplies under this PPA are expected to start from July 2016. We believe JSWE is well positioned for this PPA as:

- It is the only open-IPP capacity in the state that can offer large volumes. This helps as it saves inter-state transmission cost (of ~INR0.3-0.5/kWh) as against other open capacities that are based mostly in Andhra Pradesh.
- The southern power supply market is still relatively well balanced. The southern region's peak requirement is ~43-50GW (assuming 7% growth over FY16). Untied private-IPP supply, adjusting for upcoming bilateral/PPA in Andhra Pradesh and KA, would be ~5-7% of the peak requirement, which is not significant.

Besides Karnataka, our estimates suggest AP and Telangana would still remain buyers in the short-term market, but to a limited extent.

Exhibit 123: Southern region peak demand and untied capacity

(In MW)	FY16	FY17E	FY18E	FY19E	FY20E	Remark
Southern region peak demand	40,445	43,276	46,305	49,547	53,015	7% growth
Untied capacities in south	2,310	3,330	2,430	3,430	3,430	
NCC		1,320	1,320	1,320	1,320	
Meenakshi	300	1,000	1,000	1,000	1,000	
Simhapuri	600	600	600	600	600	
JSW	860	860	860	860	860	
Ind Bharath	300	300	300	300	300	
Thermal Powertech	250	250	250	250	250	
Less:						
PPA to Andhra			-900	-900	-900	
KA's upcoming PPA		-1,000	-1,000			
Untied % of peak	**6**	**8**	**5**	**7**	**6**	

Source: MOSL, Company

Based on recent similar bids in the southern region, we believe JSWE can secure a price of ~INR4.0-4.5/kWh (we build in INR4.3/kWh, media reports suggest INR4.38/kWh). In March 2016, Thermal Powertech, based in Andhra Pradesh, was supplying power at ~INR5/kWh to Karnataka under a short-term contract.

Exhibit 124: Recent Case1 bids in southern India

State	Year	Supplier	Capacity (MW)	Levelized tariff (INR/kWh)
Tamil Nadu	FY14	DB Power	200	4.91
Tamil Nadu	FY14	Jindal Power Ltd	400	4.95
Kerala	FY15	Jindal Power	200	3.60
Kerala	FY15	Jhabua Power	115	4.15
Kerala	FY15	Balco	115	4.29
Kerala	FY15	Jindal India - Thermal	200	4.39
Kerala	FY15	Jindal Power	150	4.29
Andhra Pradesh	FY16	East Coast Energy Ltd	488	4.27
Andhra Pradesh	FY16	NCC Power Projects	500	4.35
Andhra Pradesh	FY16	Korba West Avantha	540	4.49
Andhra Pradesh	FY16	MB Power Ltd	374	4.69
Andhra Pradesh	FY16	Jindal India Thermal Ltd	400	4.83

Source: MOSL, Company

JSWE's Karnataka ST PPA could be timely to tide over difficult three years

The Karnataka three-year ST PPA is very timely to fill the gap created by the end of ST PPA with AP in June 2016 and should help tide over the next difficult three years when the sector is at the peak of overcapacity. Improving inter-region transmission connectivity is having an adverse impact on merchant rates of power. Although the merchant power market is expected to remain well supplied for the foreseeable future, things would definitely start improving by FY20E as new capacity addition slows.

Demand and supply in Telangana, Andhra and Karnataka

Telangana: Market purchases to halve in near term; deficit signs again in FY19

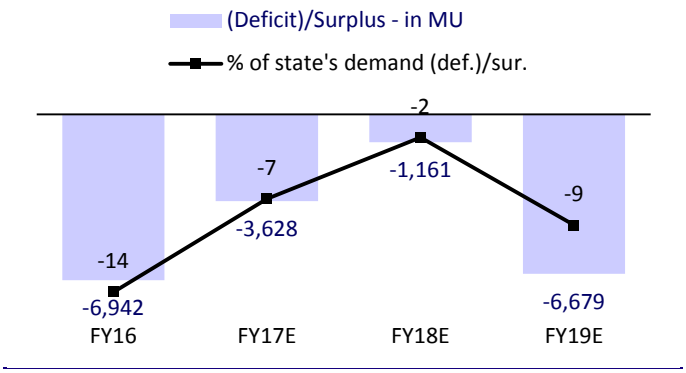
Telangana, under its ARR filings, is estimating short-term market purchase of electricity to almost halve in FY17 on the back of new capacity starts. From ~14b kWh or ~26% of its electricity requirement in FY16, it estimates short-term purchases to decline to ~7b kWh or ~12% of electricity requirement in FY17. Our supply-demand model for Telangana also corroborates this trend – a deficit of ~14% in FY16 declining to ~4% in FY17. Commissioning of Singareni 1,200MW (recently signed 570MW PPA with Thermal Powertech) and upcoming solar capacities are driving improved near-term availability.

Over the longer term, Telangana may turn into deficit only if demand grows by ~17% in FY18 and ~19% in FY20, as projected in ARR filings by Telangana. Industries and particularly government's pet project Lift Irrigation Scheme (LIS) are expected to be the major drivers of this optimism. LIS is estimated to represent ~33% of incremental demand in FY18 and ~72% in FY19. More encouragingly, unlike agriculture which is free, LIS is estimated to fetch realization of > INR5/kWh. Our discussions with Telangana DISCOM officials suggest that the government is working

very actively on LIS. This was also corroborated by our discussions with a few steel companies that have seen major pipeline order flows from Telangana.

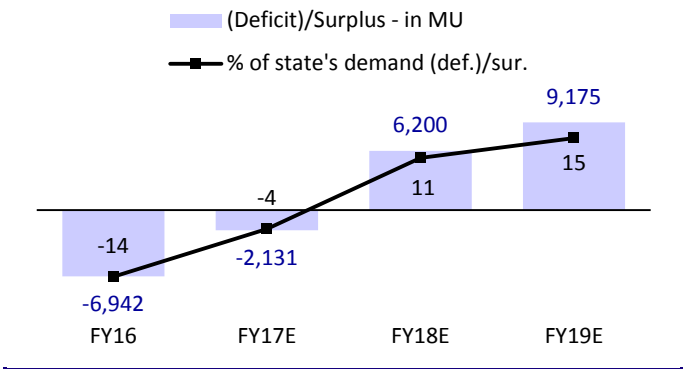
If demand, as estimated in ARR filings, materializes, we believe Telangana would see its electricity deficit rising to ~9% in FY19. We, however, base our estimate on 7% demand growth assumption. As per our demand-supply model, Telangana would be in a surplus of ~15% in FY19. Our supply assumptions are based on bottom-up forecast of upcoming capacity and normalized PLFs, rather than the state government's upcoming project pipeline.

Exhibit 125: Surplus (deficit) as per ARR



Source: MOSL, Company

Exhibit 126: Surplus (deficit) estimate at 7% p.a. growth



Source: MOSL, Company

Exhibit 127: Telangana's electricity demand-supply balance

	FY15	FY16	FY17E	FY18E	FY19E	Remarks
Available supply - in MU	**44,294**	**42,790**	**51,082**	**63,138**	**70,099**	Bottom-up analysis of upcoming supply
Demand (as per ARRs) - in MU	**46,273**	**49,732**	**54,710**	**64,299**	**76,778**	
growth (%)		7.5	10.0	17.5	19.4	
Share of incremental demand (%)						
Domestic			22	14	7	
Commercial			6	2	2	
Industrial			30	37	12	Can be at risk
Agriculture			9	6	5	
LIS			26	33	72	Pet project of Telangana government
Others			7	7	2	
(Deficit)/Surplus - in MU	**-1,980**	**-6,942**	**-3,628**	**-1,161**	**-6,679**	
% of state's demand (def.)/sur.	**-4**	**-14**	**-7**	**-2**	**-9**	
Demand (MOSL) - in MU	**46,273**	**49,732**	**53,213**	**56,938**	**60,924**	
growth (%)		7.5	7.0	7.0	7.0	Avg. demand growth of ~7%
(Deficit)/Surplus - in MU	**-1,980**	**-6,942**	**-2,131**	**6,200**	**9,175**	
% of state's demand (def.)/sur.	**-4**	**-14**	**-4**	**11**	**15**	

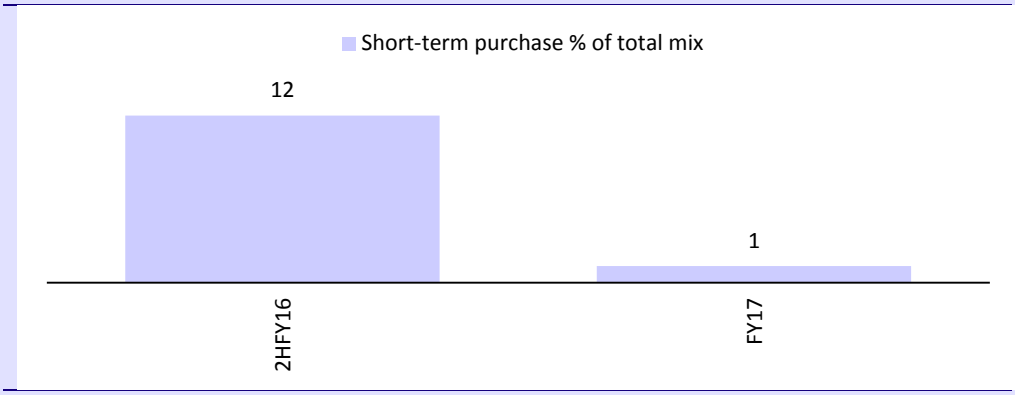
Source: MOSL, Company

Although it is too early to say if demand growth as estimated under ARRs or LIS would materialize, we believe demand could get some push because of elections that are due in the state in FY19. The government, being in its first term, is expected to push for delivery of its poll commitments. Some signs are already visible in LIS.

Andhra Pradesh: Backing of 2,400MW PPAs, new capacities to drive surplus

Andhra Pradesh was estimating about 12% of electricity demand to be met from short-term purchases in 2HFY16, which has come down to just ~1% in FY17. After our recent interactions with AP's Transco officials, we see the likelihood of AP turning into a net seller in the short-term power exchange market. AP is benefiting from the extension of KSK's medium-term PPA from 216MW to 400MW, and the start of Hinduja's 1,050MW and Thermal Powertech's 231MW coal-based capacities. Gas-based supplies are also expected to increase due to the central government's E-RLNG scheme. Our demand-supply model for AP estimates a net deficit (or short-term market purchase) of ~5.3bu in FY16, which would balance out in FY17.

Exhibit 128: AP expects short-term power purchases to be insignificant in FY17E



Source: MOSL, AP ARRs

Over the long term, we estimate AP to be in a significant electricity surplus position. Based on 14% electricity demand growth in FY17 (as per ARR, which could be at risk) and 7% thereafter (our view), we expect a surplus of ~7.5b kWh or ~11% of its electricity demand. Under our bottom-up supply model, we estimate ~3.8GW of renewable capacity to be added by FY19E (though the target is much higher, as per our interactions with AP Transco officials). We also assume ~1,000MW of long-term PPAs will be signed. AP has already concluded bids for 2,400MW long-term PPA. Of the 2,400MW, ~900MW is offered by south-based plants, for which there are no transmission constraints. We estimate ~1,000MW of supplies to come from these PPAs beginning FY18. Our checks with Transco officials highlighted that actual acceptance of bids may be lower than 2400MW because of a jump in renewable capacity addition.

AP has not provided long-term electricity demand forecast in its ARR, unlike Telangana. But as per 'Power for All', it estimates electricity demand to increase to ~82b kWh by FY19 (as against our base case estimate of ~66bu). The document assumes ~10b kWh of demand to come from load relief and ~5b kWh from an increase in supply to the agriculture sector from 7 hours currently to 9 hours. We are more hopeful of the agriculture demand potential due to an increase in the number of hours of supply, based on our interactions with AP's Transco officials. Even if we were to consider the whole of ~5b kWh (incremental agriculture demand) in our forecast for AP, there will still be in a surplus of ~2.5b kWh.

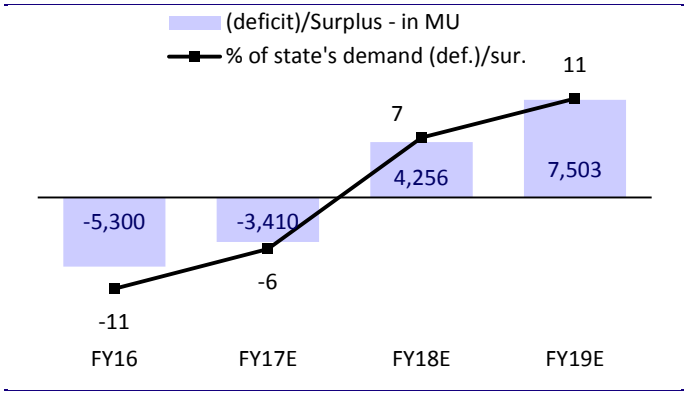
On the other hand, if 'Power for All' demand estimates were to materialize, we would be looking at electricity deficit of ~9b kWh or ~11% of AP's demand.

Exhibit 129: Andhra Pradesh electricity supply-demand balance

	FY15	FY16	FY17E	FY18E	FY19E	Remarks
Available - in MU		**45,144**	**54,096**	**65,788**	**73,341**	Bottom-up analysis of upcoming supply
Demand (as per PFA) - in MU		**50,444**	**68,563**	**75,201**	**82,392**	Demand as per Power For All. FY17E sharp
growth (%)			35.9	9.7	9.6	increase is on factoring of load relief
(deficit)/Surplus - in MU		**-5,300**	**-14,467**	**-9,413**	**-9,051**	
% of state's demand (def.)/sur.		**-11**	**-21**	**-13**	**-11**	
Demand (MOSL) - in MU		**50,444**	**57,506**	**61,532**	**65,839**	14% growth in FY17 is based on ARR filings.
growth (%)			14.0	7.0	7.0	
(deficit)/Surplus - in MU		**-5,300**	**-3,410**	**4,256**	**7,503**	
% of state's demand (def.)/sur.		**-11**	**-6**	**7**	**11**	

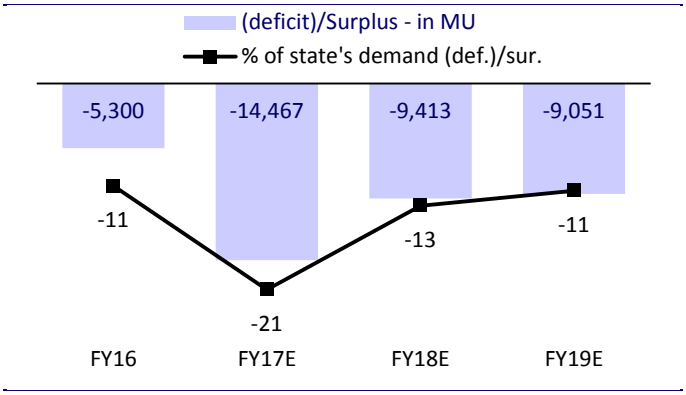
Source: MOSL, Company

Exhibit 130: Surplus (deficit) under base-case estimates



Source: MOSL, AP's ARRs, AP's Power for All

Exhibit 131: Surplus (deficit) as per "Power for All"



Source: MOSL, Company, AP's Power for All

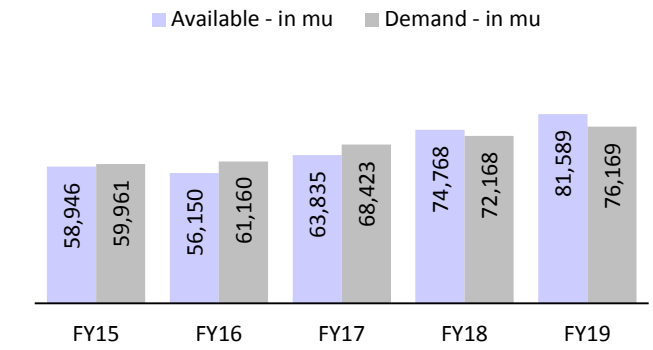
Karnataka: Can be a silver lining for JSWE

Karnataka's electricity deficit (or short-term market purchase requirement) surged from ~1.1b kWh in FY15 to ~5.1b kWh in FY16 (or ~8% of its electricity demand). Karnataka's ~25% of power capacity is hydro based, which had suffered in FY16 as deficient monsoon led to a sharp fall in plant PLFs. Hydro power's PLF dropped to 23% in FY16 from 41% in FY15. In addition, deficit in FY16 was partly constrained due to below-average electricity demand growth of just 2% (based on CEA's data).

Karnataka's deficit situation is not likely to improve meaningfully in FY17. In the ARR filings, Karnataka is estimating electricity demand of ~68b kWh in FY17, while our supply model suggests available supply of ~64b kWh, leading to a deficit of ~4.6b kWh or ~7% of its electricity demand. Our supply model assumes 30% PLF for hydro capacities, up from 25% in FY16, which can surprise negatively considering low reservoir water levels, unless off-course monsoon is extremely good. We also assume some benefit from the start of Bellary U-3 (700MW) and Yeramarus (800MW) thermal coal-based capacities. However, these supplies could also be at some risk in the near term due to low water availability at these plants and transmission constraints.

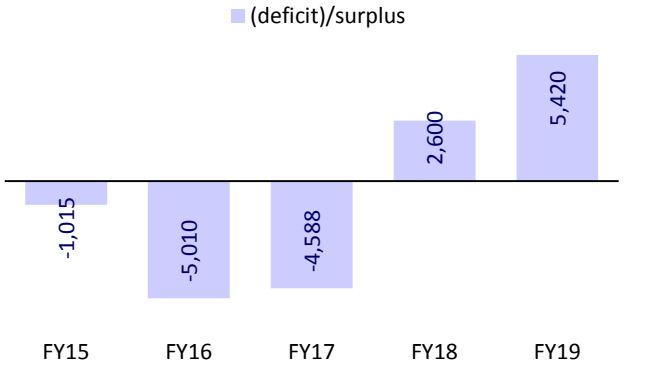
Post FY17, we estimate the supply situation for the state to improve on new capacities (and considering demand forecast made by KA's DISCOM, which assumes 5-6% demand growth), but still remain critically balanced in FY18. Start of Kudgi (1,200MW), Yeramarus U-2 (800MW) and renewable capacities would drive improved supply.

Exhibit 132: Karnataka's electricity demand-supply balance…



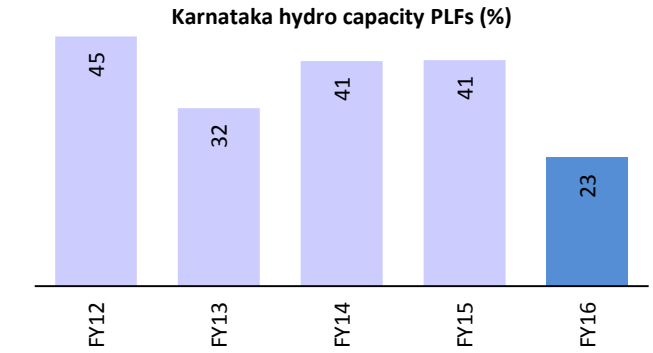
Source: MOSL, KA's ARR filings, Power For All

Exhibit 133: ..and deficit – in Kwh (mu)



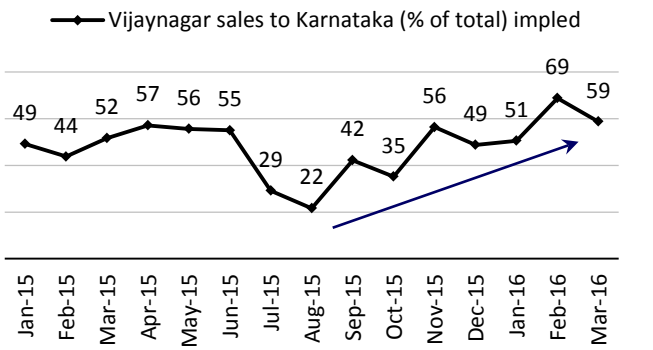
Source: MOSL, Company, KA's ARR filings, Power For All

Exhibit 134: Karnataka's hydro capacity PLFs (%)



Source: MOSL, Company

Exhibit 135: Sales to KA from Vijaynagar (% of total)



Source: MOSL, Company

Merchant power market will thrive

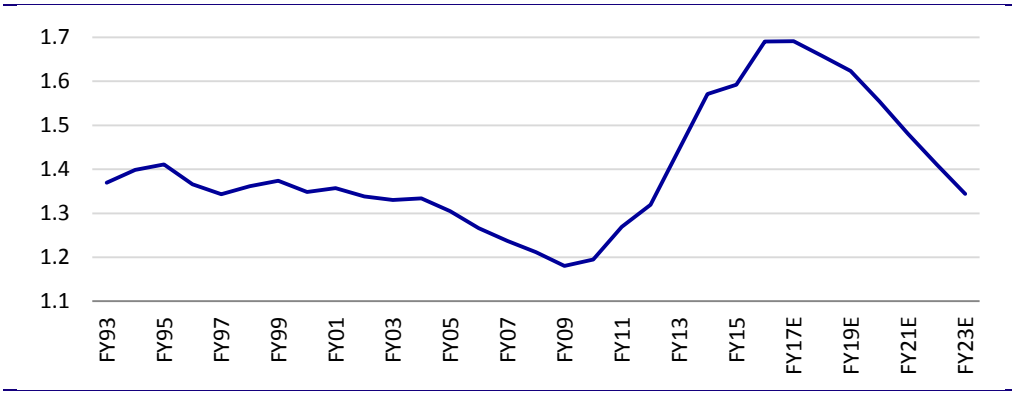
But rates will be capped at INR3/kWh

- **Despite oversupply, the merchant market will thrive as there is an arbitrage between high variable cost of contracted capacities and total cost of new stranded power plants.**
- **We expect merchant rates to be capped at INR 3/kWh. We are factoring in rates of INR 2.75/kWh for non-SR and INR 4.3/kWh for SR capacities of JSWE.**

As discussed earlier in the sector report, the Indian power sector is at the peak of overcapacity. It will take 5-6 years for the market to re-balance. DISCOMs have signed 41% more PPAs than FY20E peak load. Therefore, LT PPAs will be few over the next 3-4 years. According to our calculations, 28GW of capacity will remain stranded without PPAs. Therefore, the short-term market will remain oversupplied for at least three years, in our view.

It will take 5-6 years for the market to re-balance…

Exhibit 136: Conventional cap./peak load (x)



Source: MOSL, CEA

…yet the merchant market will thrive…

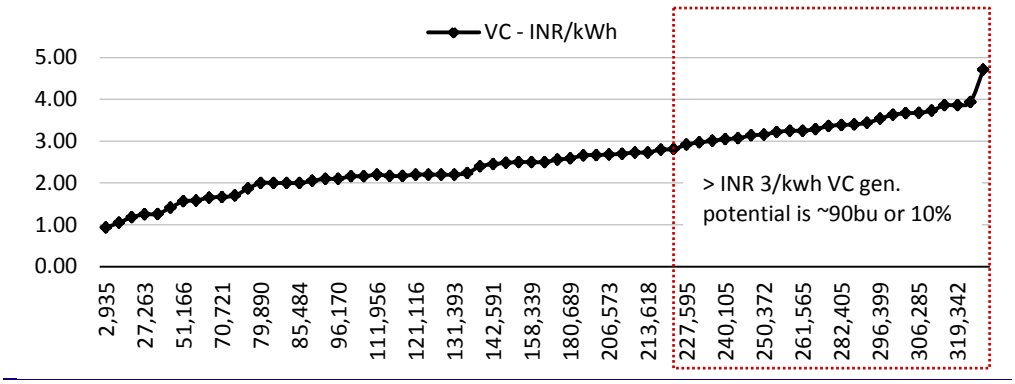
Although DISCOMs are comfortable with available capacities and PPAs, they will keep buying in the merchant market for reducing costs. There is an arbitrage between variable cost of existing capacities (high for many GENCOs) and many open/stranded capacities that are able to generate power at very low cost because of the proximity to mines, improved domestic coal supply and operating efficiencies.

We find that state-owned generating stations typically fall at the higher end of the contracted supply cost curve. Their variable cost, adjusted for transmission cost, sets the cap for merchant power rates, in our view.

…but rates will be capped at INR3/kWh, in our view

At variable cost of more than INR3/kWh, the generation potential of state-owned companies was ~90b kWh (or 9-10% of India's electricity generation) in FY16E. Therefore, we believe INR3/kWh will likely be the cap for around 2-3 years.

Exhibit 137: Variable cost curve for state-owned coal capacities



Source: MOSL, State GENCOS ARR

We are factoring in realization of INR2.75/kWh in WR

We are factoring in INR2.75/kWh realization for JSWE's merchant market sales in regions other than SR. As mentioned above, merchant power prices would have to be competitive enough to incentivize state DISCOMs to substitute their contracted capacity volumes with merchant power. For JSWE's SR merchant sales, we estimate realization of INR 4.3/kWh on the back of KA's three-year ST PPAs.

High capital efficiency and strong free cash flows

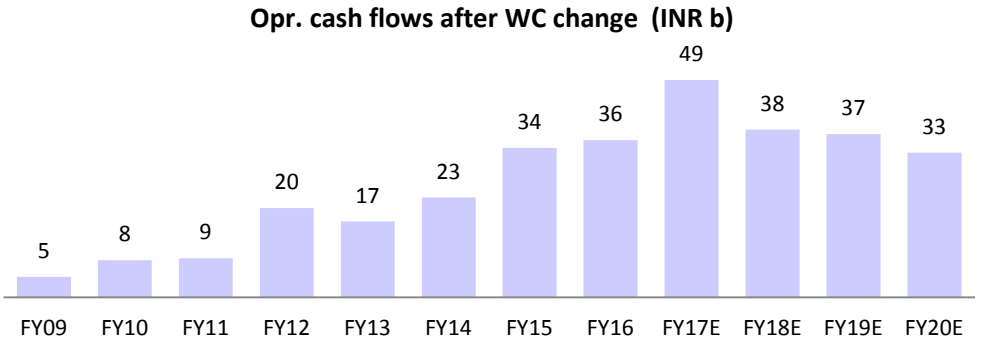
Inorganic growth opportunities plenty, patience is the key

- **JSWE is one of few companies in the sector that has built a strong set of assets at low cost. JSWE is generating strong operating cash flows. As a result, its balance sheet and return ratios are the best among private names.**
- **With capex behind now, free cash flows have turned positive. At the peak of overcapacity, organic growth still does not make sense, but inorganic growth opportunities are plenty. Patience is the key, in our view.**

Strong operating cash flows

JSWE has been generating strong operating cash flows, which have grown from INR5b in FY09 to INR36b in FY16. Since hydro assets acquired from JPVL were consolidated in 2HFY16, the benefit in operating cash flow was partial in FY16. Therefore, operating cash flows are likely to see a jump in FY17E.

Exhibit 138: Operating cash flows

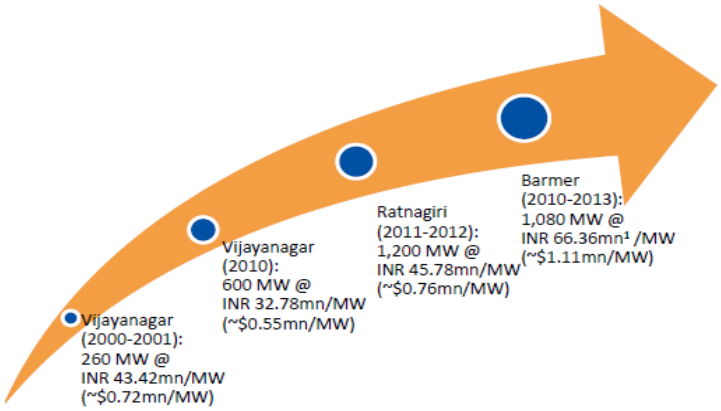


Source: MOSL, Company

Assets have been installed/acquired at low cost and operated efficiently

JSWE has set up projects at low cost. First 260MW capacity was set up in FY2001 at INR43m/MW, while the brown field expansion of 600MW came at much lower capex of INR33m/MW in FY10. Next capacity expansion of 1200MW at green field site of Ratnagiri came at INR46m/MW in FY12. Finally, 1080MW Raj West green field site came at specific capex of INR66m/MW. The specific capex has been slightly higher at Raj West to accommodate the CFBC boiler in order to use lignite from captive mines. Even the recent acquisition of the hydro asset has been at attractive valuation of INR70m/MW in FY16. JSWE has been able to grow its business both organically and inorganically and at attractive project cost.

Exhibit 139: Efficient capital allocation and project execution



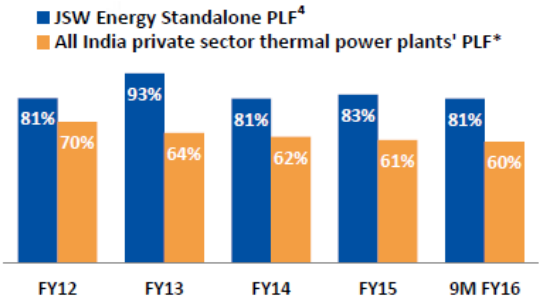
Project cost of some the power plants set up by other players in the industry

Power project	Capacity	Project cost		1st COD
	MW	₹ crore/MW	$mn/MW	Year
Lanco (Amarkantak)	600	5.23	0.87	2009
Lanco (Udupi)	1,200	4.67	0.78	2010
Aryan Coal (Kasaipalli)	270	5.00	0.83	2011
Tata Power/DVC (Maithon)	1,050	5.24	0.87	2011
Adhunik (Padampur)	540	6.18	1.03	2013
GMR EMCO (Warora)	600	6.25	1.04	2013
GMR (Kamalanga)	1,050	6.21	1.04	2013
Dhariwal (Chandrapur)	600	6.22	1.04	2014
DB Power (Janjgir-Champa)	1,200	7.02	1.17	2014
JPVL (Nigrie)	1,320	7.92	1.32	2014
Neyveli (Barsingsar) [1]	250	7.00	1.17	2010
Giral (Rajasthan)[1]	250	7.69	1.28	2011

Source: Company

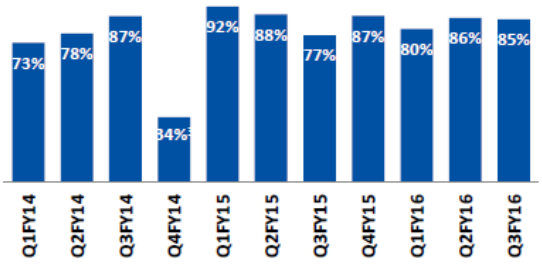
Exhibit 140: Efficiently run operating assets

JSW Energy Stand alone[4]



- ✓ Among the best run thermal power plants in India on a consistent basis
- ✓ Vijayanagar plant has been consistently recognised as a top performing operating power plant by the Ministry of Power for 8 consecutive years[2]

Raj West Power PLF[1]



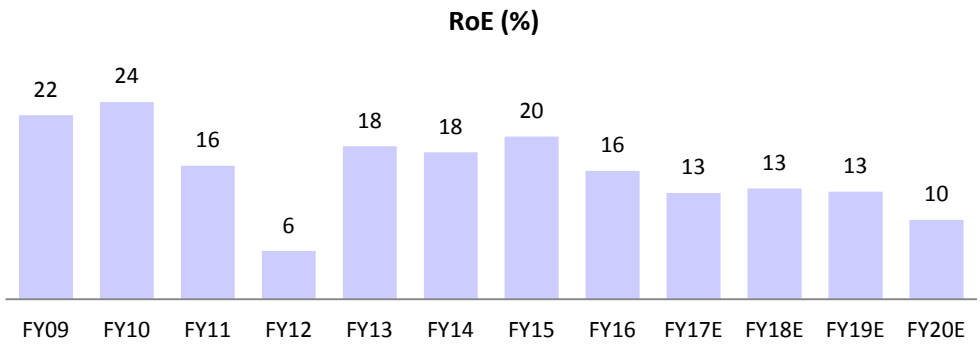
- ✓ Benchmark O&M practice resulting in consistently higher PLFs

Source: Company

Strong return ratios and free cash flow generation

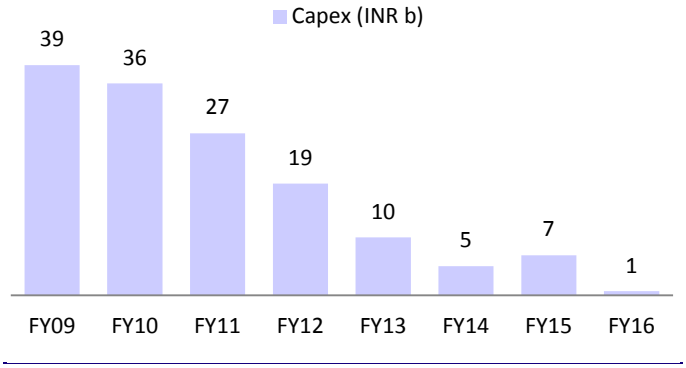
This has helped in reporting attractive return ratios and generating healthy free cash flows.

Exhibit 141: Return on equity



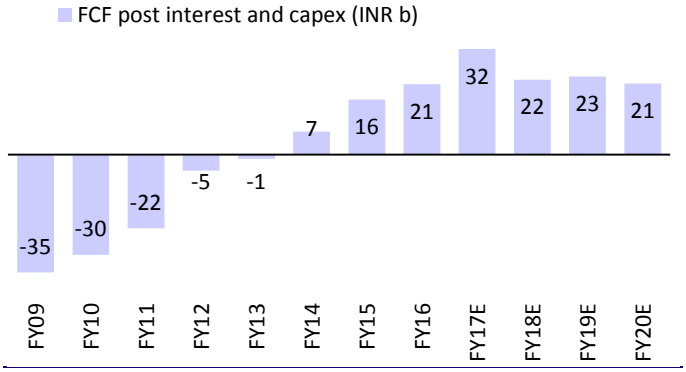
Source: MOSL

Exhibit 142: Capex has tapered



Source: Company, MOSL

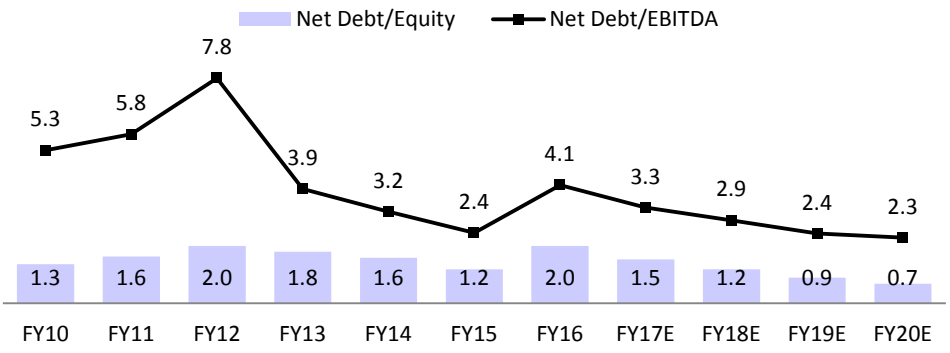
Exhibit 143: Free cash flow generation is growing



Source: Company, MOSL

Financial leverage is declining sharply with strong free cash flows. Both debt-to-equity and debt-to-EBITDA ratios are likely to decline sharply, despite the INR92b acquisition in FY16.

Exhibit 144: Financial leverage

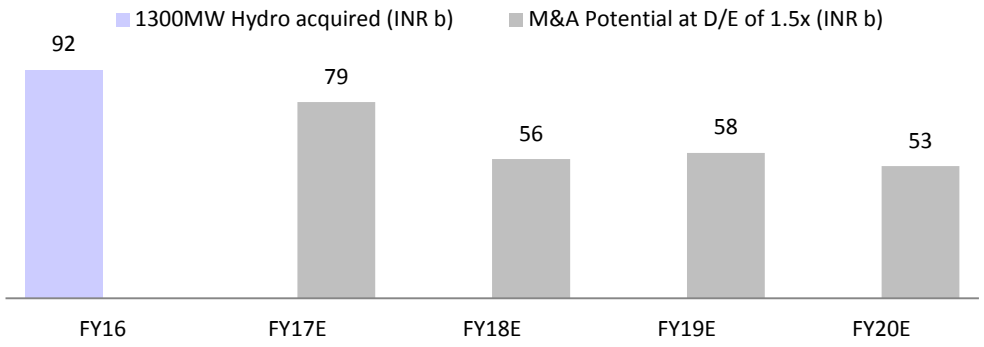


Source: MOSL

JSWE turned FCF positive in FY14 as it was able to spot stress in the sector early and pull out of organic growth at the right time. Thereafter, FCF has been growing despite pressure in the merchant market. This has helped JSWE in making attractive acquisitions and allocating capital efficiently. Acquisition of hydro assets has fueled

growth in both FY16 and FY17. At the peak of overcapacity, organic growth still does not make sense, although there are multiple brown field growth options at the existing sites. Since government policies are turning favorable for hydro projects, JSWE has started working on the 240MW Kutehar project at capex of INR29b.

Exhibit 145: Inorganic growth and potential



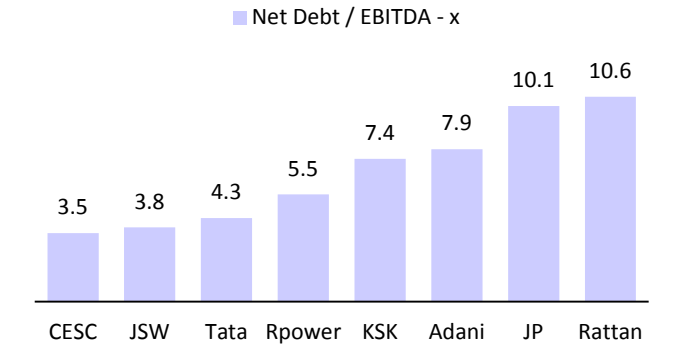
Source: MOSL

JSWE has the potential to acquire assets worth INR60-67b, i.e. approximately 1GW each year if it leverages FCF at a D/E ratio of 1.5x. Re-investment is necessary to prevent the RoE from declining.

JSWE stands out in the private sector

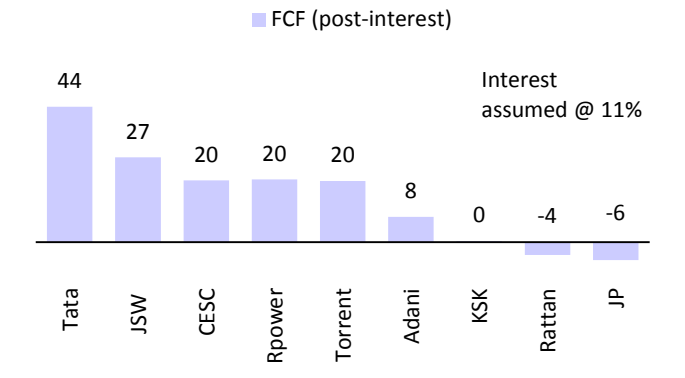
What stands out unique for JSWE is that it is one of the few companies in the Indian power sector (except for public sector companies) that is generating strong stream of cash flows. For many groups, investment in power is non-core.

Exhibit 146: Least financial leverage in the sector



Source: Company, MOSL

Exhibit 147: FCF generation among the top in the sector



Source: Company, MOSL

Acquisition opportunities plenty, but patience needed

With 28GW of stranded capacities and under recoveries in many large-size projects, the sector is under financial stress. Most developers are optimistic that demand growth will accelerate following the balance sheet restructuring of DISCOMs under UDAY, which will prompt states to invite bids for PPAs. However, the wait is only getting longer.

According to our calculations, DISCOMs have signed more than sufficient PPAs to cover their demand growth requirements over the next 4-5 years. Therefore, we

believe there will be paucity of PPAs for at least the next 2-3 years. This will increase financial stress on the balance sheets of many companies and force them to sell assets. Therefore, we believe a patient player like JSWE stands to benefit from its strong negotiating power.

JSWE is already in negotiation for multiple assets and has signed MoUs for three of them (i.e. 500MW Bina plant from JPVL, 1050MW thermal power plant from Monnet, and 1000MW power plant from Jindal Power). These negotiations are getting dragged due to the lack of agreement on valuations. We believe patience is needed to get the right valuation.

JP's 500MW Bina Power Plant

JSWE is reportedly in talks with JPVL for the acquisition of its 500MW Bina Power Plant in Madhya Pradesh. The plant has signed long-term PPA for 350MW with the state of Madhya Pradesh – 325MW is supplied under regulated return as per MP tariff norms and the remaining 25MW is at variable cost (5% of the plant capacity of 500MW). The remaining capacity of 150MW is without any PPA.

Our view

The long-term PPA (for 325MW) earns normative pre-tax equity return of INR1,327m p.a (for 65% capacity). The last approved variable cost was INR2.7/kWh. While 325MW PPA is a strong point of this asset, open capacity of 150MW in the most oversupplied western region is a negative.

JSPL's 1,000MW Tamnar power plant

JSWE has entered into an agreement with Jindal Steel and Power (JSPL) to acquire the 1,000MW power plant in Tamnar. The deal is structured such that if the plant is able to secure a PPA and coal linkage before May 2018, the transaction value will be INR65b. Otherwise, the asset will be valued at INR40b. JSPL will have to complete regulatory formalities by May 2018 for the deal to go through.

Our view

JSWE is seeking minimum RoE of ~15% under the PPA. Assuming a 15% regulated equity return for the remaining theoretical asset life of ~15 years, discounted at cost of equity of 12% (pre-tax WACC of 11.9%), the value of the asset is ~INR 68b, close to what JSWE has agreed to pay.

If there is no PPA by May 2018, the transaction value is INR40b. Although merchant power rates will remain subdued for the next 3-4 years due to overcapacity, we believe market volumes will thrive. Since this asset is located close to coal mines in Chhattisgarh, it will still be able to generate EBITDA of INR0.4-0.6/kwh and sell power generated. This implies annual operating cash flows of INR3-5b. We believe that capacities without PPAs will demand better valuation after 3-4 years as the market starts to balance.

Monnet's 1,050mw Odisha power plant

The power plant is located in the coal-belt area of Angul, Odisha. The plant is further at least two years into completion. Capital spent (as per CEC report) was INR53b as of December 2014, post which limited activities have happened. The project has PPAs with West Bengal for 400MW and Odisha for 269MW. Remaining 200MW PPA is with PTC and 181MW capacity is open/untied. The deal is currently undergoing due-diligence process.

Our view

We believe the major bottleneck in the deal finalization is its value. Both equity and debt provides would have to likely take a cut in light of escalation in project cost due to delays.

Reinstating coverage with BUY and TP of INR98

Strong FCF, double-digit RoE, lowest leverage at peak of overcapacity

- **SOTP of EV is INR279b, which will decline gradually if FCF is not reinvested. Since net debt is declining at a faster rate, equity value will continue increasing. We value JSWE at INR98/share based on FY18E SOTP.**
- **Strong free cash flows and lowest financial leverage amid financially stressed competition provide strong negotiating power to JSWE for inorganic growth at the peak of overcapacity.**
- **JSWE has been able to consistently generate double-digit RoEs due to low cost of projects. We reinstate coverage with a BUY rating.**

JSWE has a well-diversified set of power assets spread across three high-demand regions. Two-thirds of capacity is secured through PPAs, while the remaining is competitive in the merchant market. Only 10% of capacity is vulnerable due to its exposure to the oversupplied western region.

- Nearly two-thirds of capacity is committed through long-term PPAs, which provides sufficient cash flows to meet interest and debt repayment obligations. DCF value of cash flows (FY19E onwards) is INR171b. This value decreases gradually with time due to the reducing average life of PPAs.
- Merchant capacity of Karcham Wangtoo is very valuable because of low operating cost and a high likelihood of securing PPAs. The Ministry of Power has recently come out with a favorable policy for hydro projects. New hydro projects are 50-60% more expensive than the project cost of Karcham Wangtoo.
- We are valuing Ratnagiri's 427MW open capacity at INR50m/MW. Although this capacity is currently vulnerable, it will be more valuable after 3-4 years as the market balances, in our view. This project has an advantage of being near the port and water surplus region.

Exhibit 148: JSW Energy: SOTP-based valuation — **INR million**

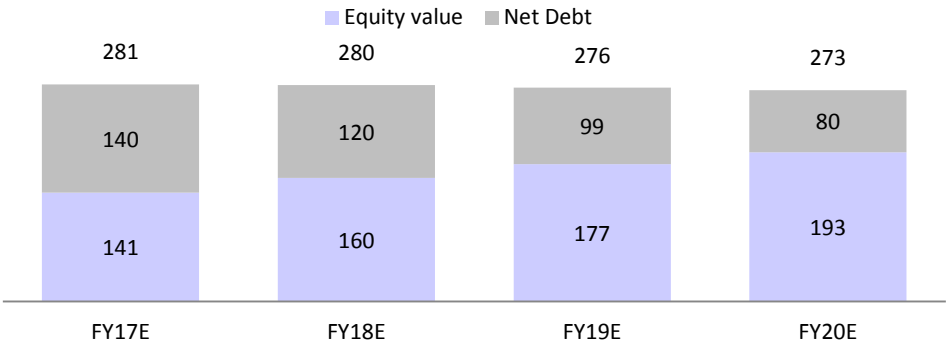
	MW	INR/MW	FY17E	FY18E	FY19E	FY20E	FY21E	Remarks
NPV of PPAs	2,777	64	177,291	171,615	166,054	160,538	155,068	DCF, 12% RoE, debt:equity 75:25
Merchant capacity								
Vijaynagar	860	60	51,600	51,600	51,600	51,600	51,600	
Ratnagiri	427	50	21,350	23,485	24,424	25,401	26,417	will be more valuable in 3-4years
Karcham Wangtoo	180	75	13,495	13,201	12,917	12,641	12,375	
JSW Power Trading			700	700	700	700	700	1x invested equity
Jaigarh Power Transco			5,919	5,919	5,919	5,919	5,919	6x FY15 EV/EBITDA
Barmer Mining			94	94	94	94	94	1x FY15 net worth
JSW Steel			10,156	13,307	14,638	16,102	17,712	Current market price
Total value			**280,604**	**279,922**	**276,347**	**272,996**	**269,885**	
Less: Net Debt			140,061	119,997	98,891	79,942	61,872	
Equity Value			**140,543**	**159,925**	**177,455**	**193,053**	**208,013**	
No. of shares (m)			1,640	1,640	1,640	1,640	1,640	
Value per share (INR/sh)			**86**	**98**	**108**	**118**	**127**	

Source: MOSL, Company, MOSL

- SOTP of EV is INR279b, which will decline gradually if FCF is not reinvested. Since net debt is declining at a faster rate, equity value will continue increasing. We value JSWE at INR98/share based on FY18E SOTP.
- Strong free cash flows and lowest financial leverage amid financially stressed competition provide strong negotiating power to JSWE for inorganic growth at the peak of overcapacity. JSWE has been able to consistently generate double-digit RoEs due to strong operating cash flows and low cost of projects. We reinstate coverage with a BUY rating.

Equity value is increasing, despite falling EV, due to a faster decline in net debt.

Exhibit 149: Equity Value and Net Debt (INR b)

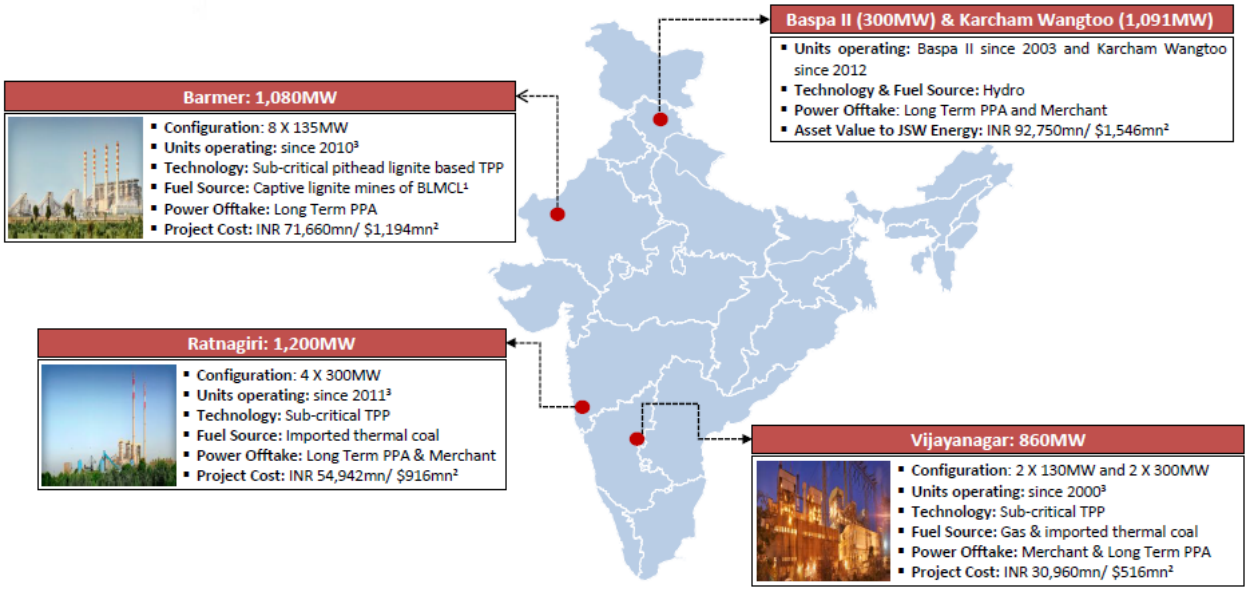


Source: MOSL

Operating assets

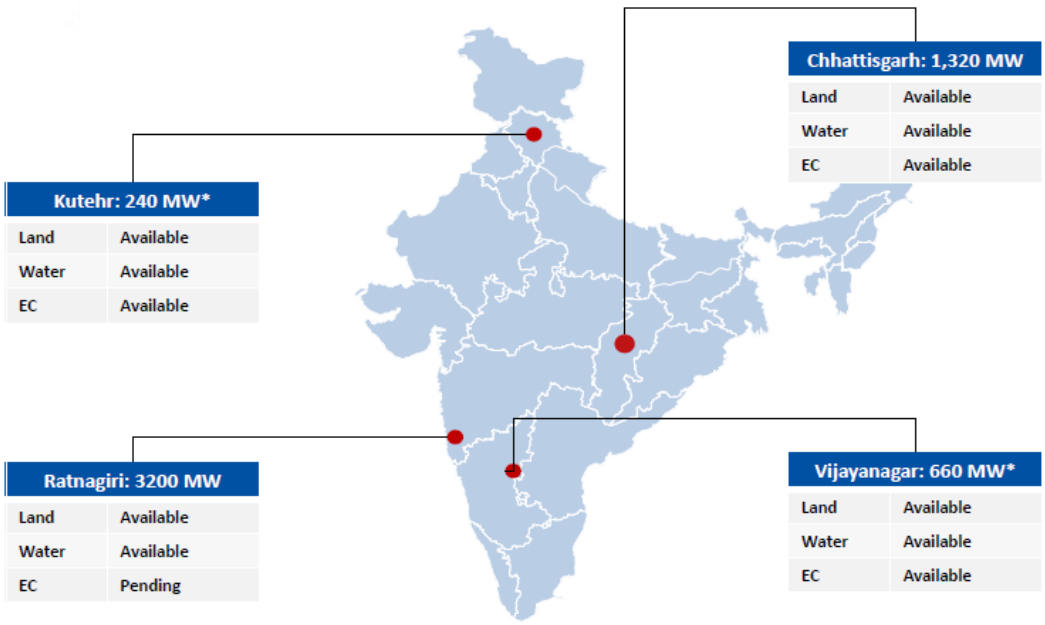
…and organic growth opportunities

Exhibit 150: Diversified set of power assets



Source: Company

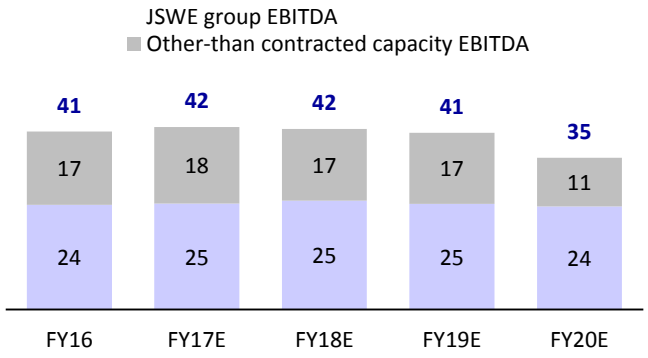
Exhibit 151: Organic growth opportunity



Source: Company

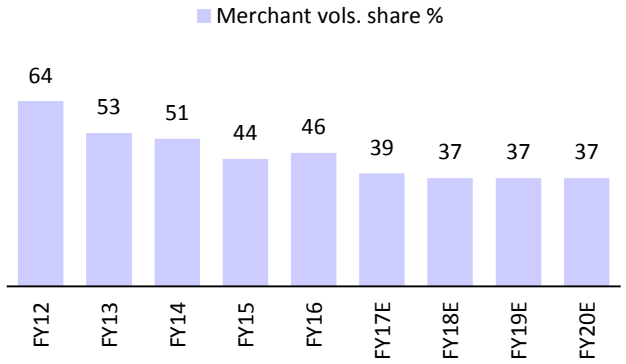
Story in Charts

Exhibit 152: Contracted capacity drives ~60% of EBITDA; steady and predictable



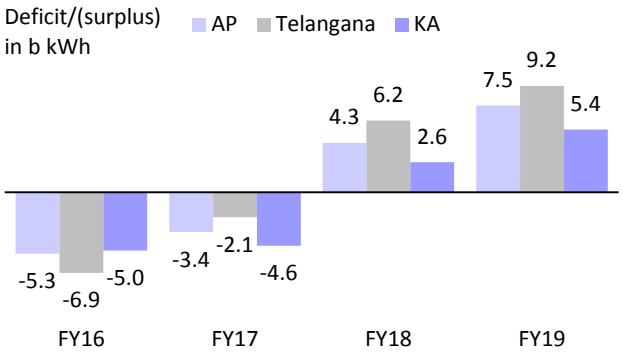
Source: MOSL, Company

Exhibit 153: JSWE has reduced its exposure to merchant power market



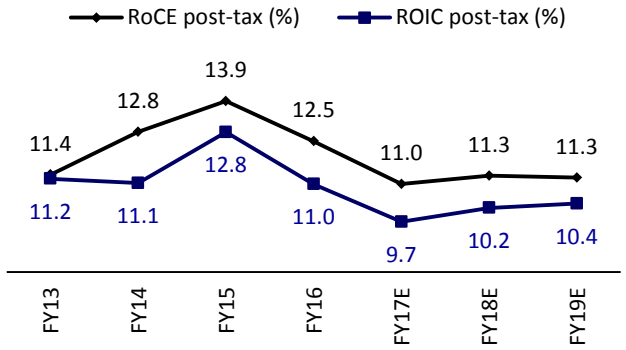
Source: MOSL, Company

Exhibit 154: Karnataka's electricity supply position critically balanced; JSWE well-placed to secure KA's 3 year PPA



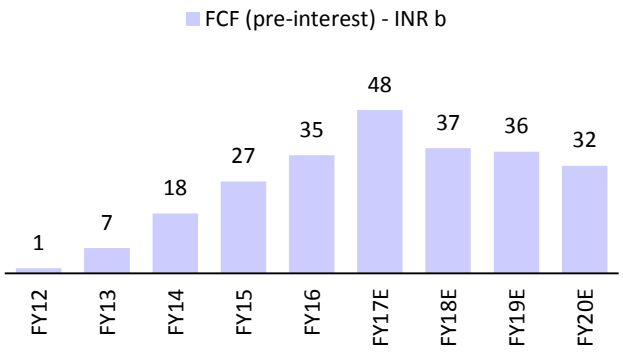
Source: MOSL, Company

Exhibit 155: One of the healthiest returns in the private generation sector; low cost capacity a key advantage



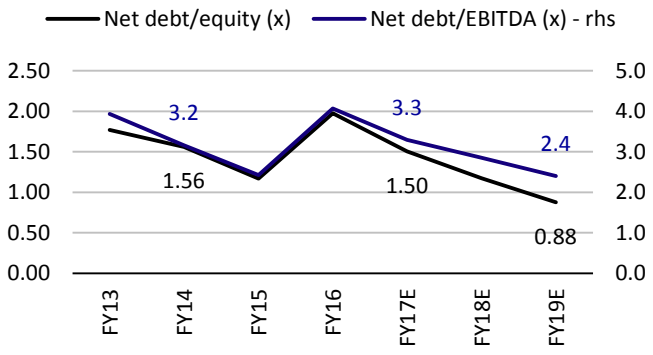
Source: MOSL, Company

Exhibit 156: Growing and healthy FCF generation provides firepower for acquisition



Source: MOSL, Company

Exhibit 157: One of the most comfortable balance sheets in the Indian power sector



Source: MOSL, Company

Financials and Valuations

Income Statement (INR Million)

Y/E Mar	2011	2012	2013	2014	2015	2016	2017E	2018E
Net Sales	**43,021**	**61,188**	**89,343**	**87,054**	**93,802**	**99,689**	**101,015**	**101,677**
Change (%)	82.7	42.2	46.0	-2.6	7.8	6.3	1.3	0.7
EBITDA	**15,718**	**14,478**	**27,932**	**32,514**	**36,234**	**41,446**	**42,483**	**42,041**
EBITDA Margin (%)	36.5	23.7	31.3	37.3	38.6	41.6	42.1	41.3
Depreciation	2,668	5,033	6,615	8,100	7,898	9,502	10,616	10,656
EBIT	**13,050**	**9,444**	**21,317**	**24,415**	**28,337**	**31,944**	**31,867**	**31,385**
Interest	4,325	7,172	9,628	12,059	11,375	15,032	16,745	14,695
Other Income	1,255	1,466	2,134	2,022	2,301	2,100	960	1,609
Extraordinary items	0	-1,613	-1,966	-3,777	-342	1,500	0	0
PBT	**9,979**	**2,125**	**11,857**	**10,600**	**18,921**	**20,513**	**16,082**	**18,299**
Tax	1,562	419	2,733	2,836	5,150	6,051	4,342	4,941
Tax Rate (%)	15.6	19.7	23.1	26.8	27.2	29.5	27.0	27.0
Min. Int. & Assoc. Share	-1	6	-29	51	86	133	86	86
Reported PAT	**8,418**	**1,701**	**9,037**	**7,547**	**13,495**	**13,955**	**11,465**	**13,083**
Adjusted PAT	**8,418**	**1,701**	**9,037**	**7,547**	**13,495**	**13,955**	**11,465**	**13,083**
Change (%)	12.9	-79.8	431.4	-16.5	78.8	3.4	-17.8	14.1

Balance Sheet (INR Million)

Y/E Mar	2011	2012	2013	2014	2015	2016	2017E	2018E
Share Capital	16,401	16,401	16,401	16,401	16,401	16,401	16,401	16,401
Reserves	40,364	40,600	45,637	49,311	58,780	68,958	76,676	86,013
Net Worth	**56,765**	**57,001**	**62,038**	**65,712**	**75,180**	**85,358**	**93,077**	**102,413**
Debt	103,785	121,112	120,726	114,643	105,127	173,365	153,365	133,365
Deferred Tax	1,562	1,292	1,524	1,933	2,930	4,383	5,348	6,446
Total Capital Employed	**162,835**	**179,904**	**184,740**	**182,791**	**183,784**	**263,657**	**252,426**	**242,946**
Gross Fixed Assets	73,982	124,268	160,288	166,247	169,858	262,307	263,307	264,307
Less: Acc Depreciation	9,767	14,818	21,335	30,006	38,047	47,304	57,920	68,576
Net Fixed Assets	**64,214**	**109,450**	**138,953**	**136,241**	**131,810**	**215,003**	**205,387**	**195,731**
Capital WIP	70,518	36,702	9,772	6,146	4,536	7,265	7,265	7,265
Investments	2,389	2,871	2,714	2,535	2,327	1,932	1,932	1,932
Current Assets	**38,756**	**43,671**	**52,062**	**47,416**	**55,430**	**56,344**	**52,765**	**52,977**
Inventory	5,348	7,658	4,415	4,158	5,483	6,494	6,089	6,128
Debtors	7,645	10,640	18,487	11,976	11,723	28,381	16,605	16,714
Cash & Bank	12,231	8,786	10,825	12,016	17,376	4,701	13,304	13,367
Loans & Adv, Others	13,533	16,587	18,334	19,266	20,849	16,767	16,767	16,767
Curr Liabs & Provns	**13,213**	**13,084**	**19,041**	**9,653**	**10,416**	**17,717**	**15,752**	**15,789**
Curr. Liabilities	10,917	11,336	14,837	5,449	6,062	13,322	11,358	11,394
Provisions	2,296	1,748	4,204	4,204	4,353	4,394	4,394	4,394
Net Current Assets	**25,543**	**30,588**	**33,021**	**37,763**	**45,014**	**38,627**	**37,012**	**37,188**
Total Assets	**162,835**	**179,904**	**184,740**	**182,791**	**183,784**	**263,657**	**252,426**	**242,946**

Financials and Valuations

Ratios

Y/E Mar	2011	2012	2013	2014	2015	2016	2017E	2018E
Basic (INR)								
EPS	**5.1**	**2.0**	**6.7**	**6.9**	**8.4**	**7.6**	**7.0**	**8.0**
Cash EPS	6.8	5.1	10.7	11.8	13.3	13.4	13.5	14.5
Book Value	34.6	34.8	37.8	40.1	45.8	52.0	56.8	62.4
DPS	1.0	0.5	2.0	2.0	2.0	2.0	2.0	2.0
Payout (incl. Div. Tax.)	19.5	24.8	29.8	29.0	23.7	26.3	28.6	25.1
Valuation(x)								
P/E	14.0	30.3	8.2	8.6	14.1	9.2	12.1	10.6
Cash P/E	10.6	12.0	5.1	5.0	9.0	5.2	6.3	5.8
Price / Book Value	2.1	1.8	1.4	1.5	2.6	1.3	1.5	1.3
EV/EBITDA	13.3	14.7	7.1	6.1	7.8	6.8	6.6	6.1
Dividend Yield (%)	1.4	0.8	3.7	3.4	1.7	2.9	2.4	2.4
Profitability Ratios (%)								
RoE	16.1	5.8	18.5	17.7	19.6	15.5	12.9	13.4
RoCE	8.7	6.1	11.4	12.8	13.9	12.5	11.0	11.3
Turnover Ratios (%)								
Asset Turnover (x)	0.3	0.3	0.5	0.5	0.5	0.4	0.4	0.4
Debtors (No. of Days)	64.9	63.5	75.5	50.2	45.6	103.9	60.0	60.0
Inventory (No. of Days)	45.4	45.7	18.0	17.4	21.3	23.8	22.0	22.0
Leverage Ratios (%)								
Net Debt/Equity (x)	1.6	2.0	1.8	1.5	1.2	2.0	1.5	1.2

Cash Flow Statement

(INR Million)

Y/E Mar	2011	2012	2013	2014	2015	2016	2017E	2018E
Adjusted EBITDA	15,718	14,478	27,932	32,514	36,234	41,446	42,483	42,041
Non cash opr. exp (inc)	637	312	-1,185	-2,341	861	2,080	0	0
(Inc)/Dec in Wkg. Cap.	-4,467	6,323	-6,874	-4,894	1,322	-4,855	10,217	-112
Tax Paid	-2,995	-826	-2,627	-2,588	-4,489	-2,998	-3,377	-3,843
Other operating activities	0	0	0	0	0	0	0	0
CF from Op. Activity	**8,892**	**20,287**	**17,246**	**22,691**	**33,929**	**35,673**	**49,323**	**38,086**
(Inc)/Dec in FA & CWIP	-27,341	-18,833	-9,783	-4,940	-6,772	-693	-1,000	-1,000
Free cash flows	**-18,449**	**1,454**	**7,464**	**17,751**	**27,156**	**34,981**	**48,323**	**37,086**
(Pur)/Sale of Invt	0	0	0	0	0	0	0	0
Others	621	632	1,420	2,030	1,475	-31,674	960	1,609
CF from Inv. Activity	**-26,720**	**-18,200**	**-8,363**	**-2,910**	**-5,297**	**-32,366**	**-40**	**609**
Inc/(Dec) in Net Worth	0	0	0	0	0	0	0	0
Inc / (Dec) in Debt	17,591	3,571	3,819	-2,701	-8,124	3,003	-20,000	-20,000
Interest Paid	-4,071	-7,196	-9,710	-12,052	-11,328	-15,036	-16,745	-14,695
Divd Paid (incl Tax) & Others	-1,802	-1,906	-953	-3,838	-3,820	-3,948	-3,936	-3,936
CF from Fin. Activity	**11,718**	**-5,532**	**-6,844**	**-18,591**	**-23,272**	**-15,982**	**-40,681**	**-38,631**
Inc/(Dec) in Cash	**-6,110**	**-3,445**	**2,040**	**1,191**	**5,359**	**-12,675**	**8,603**	**64**
Add: Opening Balance	18,341	12,231	8,786	10,825	12,016	17,376	4,701	13,304
Closing Balance	**12,231**	**8,786**	**10,825**	**12,016**	**17,376**	**4,701**	**13,304**	**13,367**

Power Grid Corporation

BSE SENSEX	S&P CNX
27,127	8,323

CMP: INR165 TP: INR205 (+24%) Buy

Strong visibility of 14% EPS CAGR for 5-6 years

Impressive RoE; Raising TP, Retaining PWGR as Top pick

PWGR to benefit from continued momentum in transmission

- While capex intensity has been high over the past 5-6 years due to investments in generation, we believe the momentum will continue to be driven by: (1) investments in renewable energy, (2) the rising need for flexibility in the Grid to deal with issues like water/coal shortages, (3) demand for ISIR lines from surplus/deficit energy states and (4) arbitrage in cost of power across regions. According to our estimates, ~16GW of capacity in the power surplus states is stranded without PPAs, for which the Grid has not been created.
- Power Grid (PWGR), which owns more than 90% of India's inter-state-inter-region (ISIR) transmission network and handles more than 45% of electricity transmitted in the country, is likely to continue benefiting from the investment cycle.

Strong visibility of regulated projects for 5-6 years

- PWGR has a strong pipeline of regulated projects – ~INR 1.3t as at end-FY16 – which provides strong capex visibility for the next 4-5 years.
- We estimate capitalization of regulated projects at ~INR 1.4t over FY17-22E. This implies doubling of the regulated gross block and thus earnings.

TBCB projects too generating double-digit IRRs; many competitive advantages

- Tariff-based-competitive-bidding (TBCB) projects are likely to garner double-digit IRRs as well, as against our initial estimate of 4-5%. TBCB projects are benefiting from a decline the prices of commodities, such as aluminum and steel which account for more than 40% of project cost.
- PWGR has many competitive advantages over private players, e.g. (1) cost of capital is low because of its balance sheet strength, (2) negotiating power with vendors is high because of its market dominance, and (3) leverage in dealing with regulators and resolving right-of-way issues.

Attractive RoE – improving further on capitalization

- PWGR has been able to deliver impressive RoEs compared to other regulated businesses like NTPC due to its (a) shorter execution cycle – CWIP to capex average of 1.2x over the past decade v/s. ~3x for NTPC, (b) better capital efficiency with debt-to-equity of ~2.5x and (c) additional income stream from its Telecom and Consultancy businesses, which require minor investments.
- Capitalization is now outpacing capex due to the commissioning of long-gestation projects, e.g. NE-Agra HVDC line. CWIP already declined from 28% at end-FY15 to 19% at end-FY16, and we expect this trend will continue due to strong capitalization. Consequently, RoEs have already benefited, and, in our view, should improve further from ~15% in FY16 to ~17% in FY22E.

Stock Info

Bloomberg	PWGR IN
Equity Shares (m)	5,231.6
52-Week Range (INR)	171 / 121
1, 6, 12 Rel. Per (%)	10/8/22
M.Cap. (INR b)	842.8
M.Cap. (USD b)	12.5
12M Avg Val (INR M)	474
Free float (%)	42.1

Financials Snapshot (INR b)

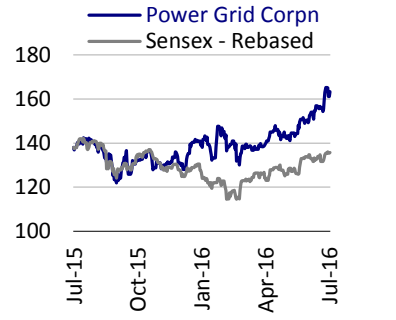
Y/E MAR	2016	2017E	2018E
Net Sales	213.5	264.3	310.1
EBITDA	186.0	233.0	275.6
PAT	60.1	73.0	85.1
EPS (INR)	11.5	14.0	16.3
Gr. (%)	18.2	21.4	16.5
BV/Sh (INR)	82.9	94.7	107.9
RoE (%)	14.7	15.7	16.1
RoCE (%)	6.6	7.3	7.9
P/E (x)	11.9	11.5	9.9
P/BV (x)	1.7	1.7	1.5

Shareholding pattern (%)

As On	Mar-16	Dec-15	Mar-15
Promoter	57.9	57.9	57.9
DII	8.5	9.1	7.9
FII	26.3	25.7	27.6
Others	7.3	7.3	6.6

FII Includes depository receipts

Stock Performance (1-year)



Strong visibility of 14% EPS CAGR for 5-6 years; raising TP, reiterating top pick

- EPS is expected to increase at a CAGR of ~14% over FY16-22E, given the visibility of capitalization and double-digit IRR in TBCB projects. Internal generation of equity is now sufficient to fund capex as capitalization outpaces capex, alleviating the need for dilution.
- TP is raised to INR 205/share (prior: INR 178) on rolling forward the DCF to FY18E. We have also increased our capitalization estimate from INR240b to INR280b in FY17E due to the early commissioning of projects. Resultantly, EPS for FY17-22E is upgraded by 1.3-2.0%.
- We reiterate our Buy rating, with an upside potential of ~27%. The stock trades at 1.5x FY18E P/BV. PWGR continues to be our top pick because of its attractive RoEs and strong earnings growth potential. The stock is getting re-rated on returns on TBCB projects and the receding risk of equity dilution.

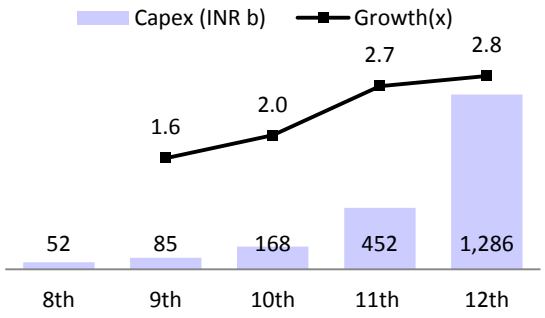
Exhibit 158: Best-in-class RoE (%) – should improve further by 200bp

	FY11	FY12	FY13	FY14	FY15	FY16
PSU	**12**	**13**	**13**	**11**	**12**	**11**
Power Grid	14	15	17	14	14	15
NTPC	14	13	16	14	12	12
SJVN	13	14	13	13	17	13
NHPC	9	12	9	5	9	8
Neyveli Lignite	12	12	12	10	11	7
Pvt. Sector	**11**	**5**	**-1**	**-5**	**-14**	**4**
JSW Energy	16	6	18	18	20	16
Torrent Power	24	24	6	2	6	12
Tata Power	14	-6	1	0	3	6
CESC	6	5	9	9	4	7
Reliance Power	5	5	6	5	5	7
Adani Power	13	-4	-42	-4	-21	7
KSK Energy	7	4	4	-5	-10	-13
JP Power	4	7	6	1	2	-4
Lanco Infratech	14	2	-21	-67	-132	2

Source: MOSL, Company

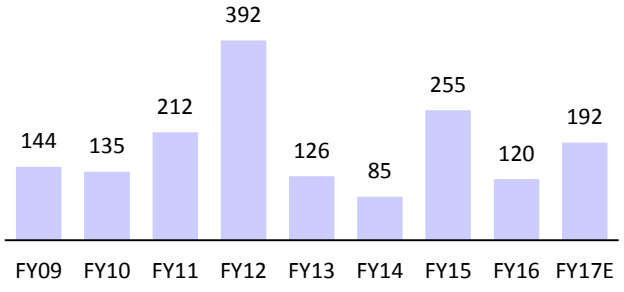
Story in Charts

Exhibit 159: Capex momentum remains strong (INR b)



Source: MOSL, Company

Exhibit 160: Regulated project awards strong as well (INR b)



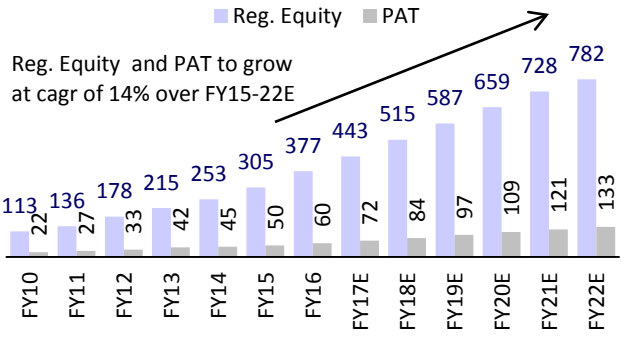
Source: MOSL, Company

Exhibit 161: Strong pending capitalization (INR b) …

a. Projects under progress at FY15 year end	1,489	
b. of above, the spent amount	654	
c. Outstanding projects at FY15 end (a-b)		835
d. Chhattisgarh Pugalur		210
f. Green Energy Corridor	140	
g. Part A&B included in (a)	52	
h. GEC's balance order (f-g)		88
j. Outstanding projects		**1,133**
k. CWIP at FY15 year end	399	
l. Pipeline of capitalization (j+k) at end of FY15		**1,532**
m. capitalized during FY16		303
n. new addition since 1st March 2015		52
o. Pipeline of capitalization (l-m+n) at end of FY16		**1,280**

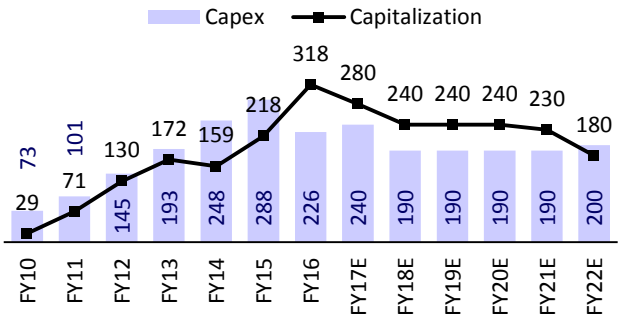
Source: MOSL, Company

Exhibit 162: …will drive RAB & standalone PAT growth (INR b)



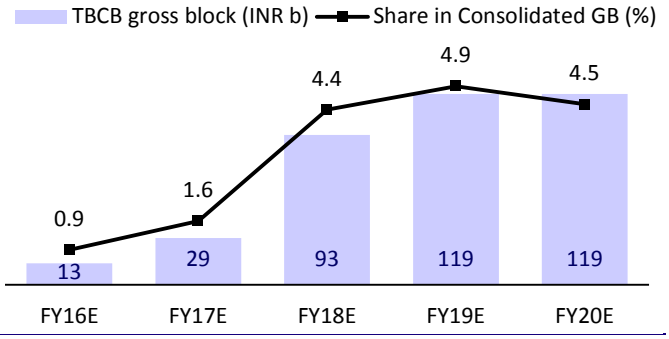
Source: MOSL, Company

Exhibit 163: Regulated capex and capitalization (INR b)



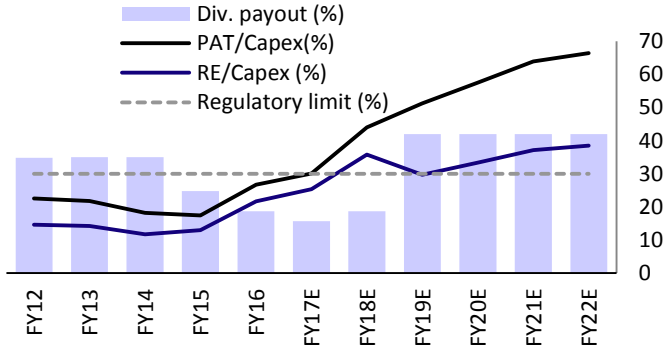
Source: MOSL, Company

Exhibit 164: TBCB (INR b) has marginal contribution in GB



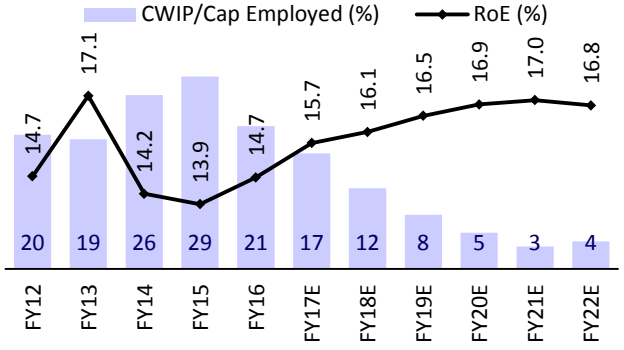
Source: MOSL, Company

Exhibit 165: Internal equity improving yet near term gaps



Source: MOSL, Company

Exhibit 166: RoE (%) to improve as CWIP/CE ratio (%) falls



Source: MOSL, Company

Financials and Valuations

Income Statement (INR Million)

Y/E Mar	2011	2012	2013	2014	2015	2016	2017E	2018E
Net Sales	**86,118**	**104,405**	**131,639**	**156,754**	**176,585**	**213,523**	**264,267**	**310,124**
Change (%)	17.7	21.2	26.1	19.1	12.7	20.9	23.8	17.4
EBITDA	**71,116**	**86,926**	**112,139**	**132,639**	**151,262**	**186,047**	**232,966**	**275,645**
EBITDA Margin (%)	82.6	83.3	85.2	84.6	85.7	87.1	88.2	88.9
Depreciation	22,729	26,374	34,278	40,794	51,733	63,022	79,417	94,604
EBIT	**48,386**	**60,552**	**77,861**	**91,845**	**99,529**	**123,025**	**153,550**	**181,041**
Interest	16,658	19,858	25,994	32,537	40,812	50,860	66,546	78,616
Other Income	6,608	6,331	5,632	4,707	5,745	4,284	5,815	5,637
Extraordinary items	-90	-104	316	-425	-421	-1	0	0
PBT	**38,247**	**46,922**	**57,814**	**63,590**	**64,041**	**76,450**	**92,819**	**108,062**
Tax	11,528	13,892	14,688	18,114	13,579	16,304	19,772	22,964
Tax Rate (%)	30.1	29.6	25.4	28.5	21.2	21.3	21.3	21.3
Min. Int. & Assoc. Share	0	0	0	0	0	0	0	0
Reported PAT	**26,719**	**33,030**	**43,126**	**45,476**	**50,463**	**60,146**	**73,047**	**85,098**
Adjusted PAT	**26,809**	**33,133**	**42,810**	**45,901**	**50,883**	**60,146**	**73,047**	**85,098**
Change (%)	24.0	23.6	29.2	7.2	10.9	18.2	21.4	16.5

Balance Sheet (INR Million)

Y/E Mar	2011	2012	2013	2014	2015	2016	2017E	2018E
Share Capital	46,297	46,297	46,297	52,316	52,316	52,316	52,316	52,316
Reserves	167,879	189,535	217,734	294,664	332,071	381,247	443,003	512,419
Net Worth	**214,176**	**235,832**	**264,031**	**346,979**	**384,387**	**433,563**	**495,319**	**564,735**
Debt	416,125	543,554	692,334	842,196	962,434	1,108,510	1,231,632	1,300,807
Deferred Tax	32,013	44,205	57,415	70,195	73,030	73,203	73,203	73,203
Total Capital Employed	**662,314**	**823,591**	**1,013,780**	**1,259,370**	**1,419,852**	**1,615,275**	**1,800,153**	**1,938,745**
Gross Fixed Assets	514,729	645,297	823,160	982,247	1,204,801	1,536,335	1,832,364	2,136,693
Less: Acc Depreciation	135,392	162,079	197,475	239,730	292,891	356,131	435,547	530,151
Net Fixed Assets	**379,338**	**483,218**	**625,685**	**742,517**	**911,911**	**1,180,205**	**1,396,817**	**1,606,542**
Capital WIP	134,340	163,418	194,716	323,911	404,760	341,158	308,033	231,408
Investments	9,517	7,737	5,864	4,234	2,196	2,196	2,196	2,196
Current Assets	**250,155**	**266,949**	**307,576**	**344,235**	**288,776**	**271,173**	**279,159**	**261,363**
Inventory	111,317	130,780	163,467	183,914	139,241	104,749	108,994	74,840
Debtors	12,010	15,292	14,914	16,183	22,070	19,707	23,680	28,936
Cash & Bank	48,059	31,113	26,789	49,744	29,886	54,857	52,080	68,011
Loans & Adv, Others	78,770	89,764	102,407	94,395	97,580	91,860	94,405	89,577
Curr Liabs & Provns	**111,036**	**97,731**	**120,061**	**155,527**	**187,791**	**179,457**	**186,052**	**162,764**
Curr. Liabilities	111,036	97,731	120,061	155,527	187,791	179,457	186,052	162,764
Provisions	0	0	0	0	0	0	0	0
Net Current Assets	**139,119**	**169,218**	**187,516**	**188,708**	**100,985**	**91,716**	**93,107**	**98,599**
Total Assets	**662,314**	**823,591**	**1,013,780**	**1,259,370**	**1,419,852**	**1,615,275**	**1,800,153**	**1,938,745**

Financials and Valuations

Ratios

Y/E Mar	2011	2012	2013	2014	2015	2016	2017E	2018E
Basic (INR)								
EPS	**5.8**	**7.2**	**9.2**	**8.8**	**9.7**	**11.5**	**14.0**	**16.3**
Cash EPS	10.7	12.9	16.7	16.6	19.6	23.5	29.1	34.3
Book Value	46.3	50.9	57.0	66.3	73.5	82.9	94.7	107.9
DPS	1.8	2.1	2.8	2.6	2.0	1.8	1.8	2.5
Payout (incl. Div. Tax.)	35.3	34.8	35.0	35.1	24.7	18.7	15.6	18.7
Valuation(x)								
P/E	27.7	15.1	11.4	12.2	14.9	11.9	11.5	9.9
Cash P/E	15.1	8.4	6.3	6.5	7.4	5.8	5.5	4.7
Price / Book Value	3.5	2.1	1.8	1.6	2.0	1.7	1.7	1.5
EV/EBITDA	15.7	11.6	10.3	10.2	11.2	9.5	8.7	7.5
Dividend Yield (%)	1.1	2.0	2.6	2.4	1.4	1.3	1.1	1.6
Profitability Ratios (%)								
RoE	25.1	14.7	17.1	14.2	13.9	14.7	15.7	16.1
RoCE	6.5	6.4	6.8	6.1	6.2	6.6	7.3	7.9
RoIC	7.9	7.8	8.3	7.9	8.4	8.8	9.1	9.3
Turnover Ratios (%)								
Asset Turnover (x)	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Debtors (No. of Days)	51	53	41	38	46	34	33	34
Inventory (No. of Days)	214	189	167	165	108	79	75	51
Current Liabilities (Days)	214	141	122	139	145	136	129	110
Leverage Ratios (%)								
Net Debt/Equity (x)	1.7	2.2	2.5	2.3	2.4	2.4	2.4	2.2

Cash Flow Statement

(INR Million)

Y/E Mar	2011	2012	2013	2014	2015	2016	2017E	2018E
Adjusted EBITDA	71,116	86,926	112,139	132,639	151,262	186,047	232,966	275,645
Non cash opr. exp (inc)	7,730	5,704	6,186	4,430	5,325	4,284	5,815	5,637
(Inc)/Dec in Wkg. Cap.	-57,246	-37,040	14,227	10,137	61,903	34,240	-4,168	10,439
Tax Paid	-5,242	-10,464	-11,356	-12,302	-11,519	-16,304	-19,772	-22,964
Other operating activities	-2,208	-998	-4,299	-2,921	-4,243	-3,574	-5,815	-5,637
CF from Op. Activity	**14,151**	**44,128**	**116,897**	**131,983**	**202,728**	**204,693**	**209,026**	**263,120**
(Inc)/Dec in FA & CWIP	-103,424	-148,384	-226,145	-250,288	-294,508	-267,932	-262,904	-227,704
Free cash flows	**-89,274**	**-104,256**	**-109,249**	**-118,305**	**-91,780**	**-63,238**	**-53,878**	**35,416**
(Pur)/Sale of Invt	4,784	5,127	5,305	4,139	7,934	4,284	5,815	5,637
Others	0	0	0	0	0	0	0	0
CF from Inv. Activity	**-98,640**	**-143,257**	**-220,840**	**-246,149**	**-286,574**	**-263,647**	**-257,089**	**-222,067**
Inc/(Dec) in Net Worth	37,127	0	0	52,966	0	0	0	0
Inc / (Dec) in Debt	65,738	109,200	138,868	127,244	115,070	146,075	123,122	69,175
Interest Paid	-14,975	-15,438	-22,970	-28,374	-37,816	-50,860	-66,546	-78,616
Divd Paid (incl Tax) & Others	-8,410	-11,579	-16,279	-14,715	-13,266	-11,291	-11,291	-15,682
CF from Fin. Activity	**79,481**	**82,183**	**99,619**	**137,121**	**63,988**	**83,925**	**45,286**	**-25,122**
Inc/(Dec) in Cash	**-5,009**	**-16,945**	**-4,325**	**22,955**	**-19,858**	**24,971**	**-2,777**	**15,931**
Add: Opening Balance	53,068	48,059	31,113	26,789	49,744	29,886	54,857	52,080
Closing Balance	**48,059**	**31,113**	**26,789**	**49,744**	**29,886**	**54,857**	**52,080**	**68,010**

Coal India

BSE SENSEX	S&P CNX
27,127	8,323

CMP: INR312 TP: INR370 (+19%) Buy

Prices rationalized with focus on volume growth

Pricing pressure from imports easing; buyback in pipeline; Maintain BUY

8% volume CAGR aided by import substitution

- We expect volumes to grow at a CAGR of 8.2% over FY16-20E to 731mt. Supplies to the power sector are estimated to grow at a slower pace of 6% on the back of ~7% all-India electricity generation growth estimate. Non-power sector volumes are estimated to grow at a 14.7% CAGR, aided by import substitution.
- Coal India (COAL) is targeting to significantly increase e-auction volumes from 66.3mt in FY16 to 120mt in FY17E. However, we believe only 75mt is achievable in FY17E.
- COAL is also targeting auctioning of 23mt linkages for non-power segments, and efforts toward this have already begun.

Price hike well timed, can absorb wage hike of ~18%

- COAL has taken average price hike of 6.9% (w.e.f. 30 May) to offset the impact from upcoming wage hikes (applicable from 1 July 2016). We expect the price increase to absorb ~18% wage hike.
- Prices were cut for higher grades of coal to make them competitive, while prices of lower-grade coal were raised to increase revenue. Most of the price hike was borne by the power sector, which has been enjoying the lowest coal prices.
- Despite the price hike, COAL's prices for various grades of coal continue to remain at a significant discount to imported coal prices. As international prices of coal have bottomed out, pricing pressure from imports is easing.

NSR: Price hike and higher non-power share to offset decline in e-auction prices

- While e-auction realization is estimated to decline sharply from ~INR 1,850/t in FY16 to ~INR 1,450/t, average realization will still increase marginally from ~INR 1,418/t in FY16 to ~INR 1,425/t by FY20E due to the higher share of non-power volumes and the recent price hike for power sector.
- The share of non-power/market-linked volumes is estimated to increase from ~23% in FY16 to ~29% by FY20E.

Cost of production benign on deflationary input costs and operating leverage

- We estimate cost of production (CoP) ex-OBR to decline marginally from INR 1,067/t in FY16 to INR 1,031/t in FY20E, despite the impact of wage hike.
- Key drivers of benign cost estimates are deflationary input costs, rising share of low-cost outsourced production, and operating leverage.
- Benefits from these factors were already visible in FY16, with ex-OBR CoP per ton of composite production (coal+OBR) declining ~11% YoY.

Stock Info

Bloomberg	COAL IN
Equity Shares (m)	6,316.4
52-Week Range (INR)	447 / 272
1, 6, 12 Rel. Per (%)	1/-12/-23
M.Cap. (INR b)	1,968.5
M.Cap. (USD b)	29.2
12M Avg Val (INR M)	1480
Free float (%)	20.4

Financials Snapshot (INR b)

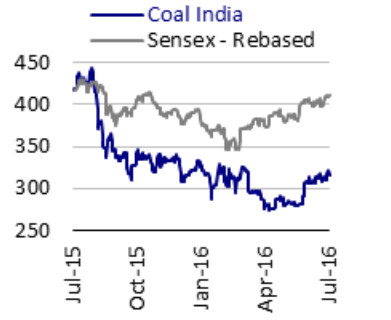
Y/E MAR	2016	2017E	2018E
Net Sales	756.4	794.2	871.0
EBITDA	159.4	131.8	168.4
PAT	142.7	119.9	145.4
EPS (INR)	22.6	19.0	23.0
Gr. (%)	4.0	-16.0	21.3
BV/Sh (INR)	53.6	55.5	57.8
RoE (%)	42.2	34.2	39.8
RoCE (%)	40.0	36.4	42.4
P/E (x)	14.2	16.9	13.9
P/BV (x)	6.0	5.8	5.6

Shareholding pattern (%)

As On	Mar-16	Dec-15	Mar-15
Promoter	79.7	79.7	79.7
DII	8.6	8.6	8.8
FII	8.5	8.8	9.0
Others	3.2	2.9	2.5

FII Includes depository receipts

Stock Performance (1-year)



New guidelines for capital allocation efficiencies; buyback in pipeline

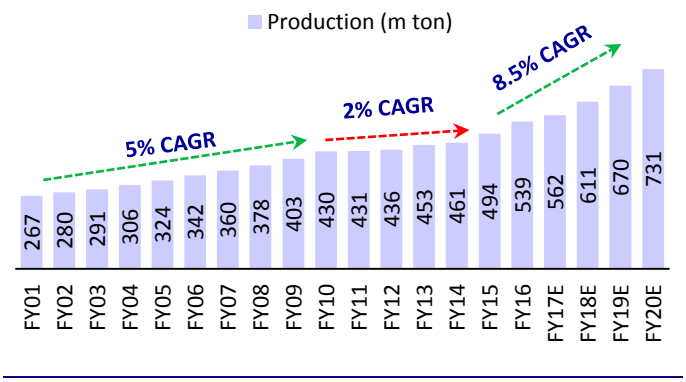
- The central government has come out with comprehensive capital allocation guidelines to improve shareholder return and capital efficiencies.
- This is prompting COAL to consider buyback of shares. The company's subsidiaries have already announced buybacks totaling ~INR51b. Although small, buybacks are value accretive as they improve return ratios.

Valuations attractive; Maintaining BUY

- Adjusted EBITDA (ex-OBR, including transportation) is expected to increase from INR209b in FY16 to INR317b by FY20E, implying a CAGR of ~11%, due to ~8% volume growth and benign cost trends, even as realization is estimated to be broadly flat.
- The stock is trading at an EV of 8.2x FY17E EBITDA and 6.8x FY18E EBITDA. Valuations are attractive. Coal prices have bottomed out. We value Coal India at INR370/share based on EV/EBITDA of 7.5x FY18E, and maintain our **Buy** rating.

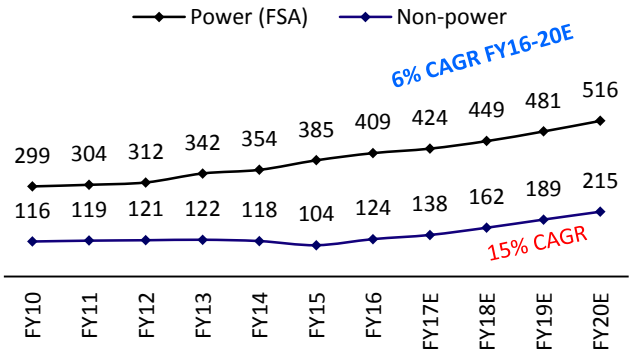
Story in charts

Exhibit 167: Production to grow by ~8% CAGR over FY16-20E



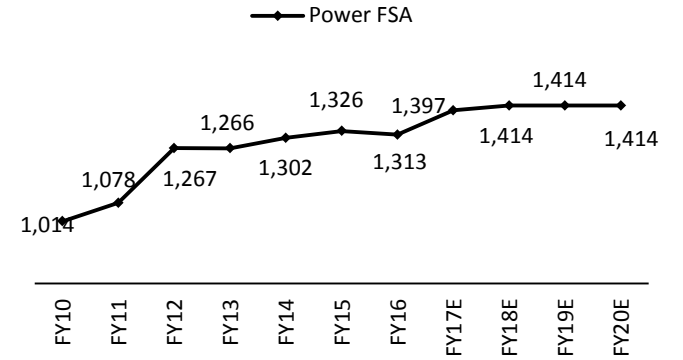
Source: MOSL, Company

Exhibit 168: Power disp. growth 6% CAGR over FY16-20E (mt)



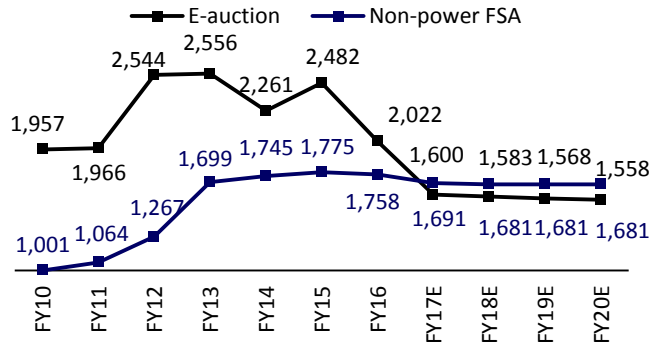
Source: MOSL, Company

Exhibit 169: FSA price realization - INR/t



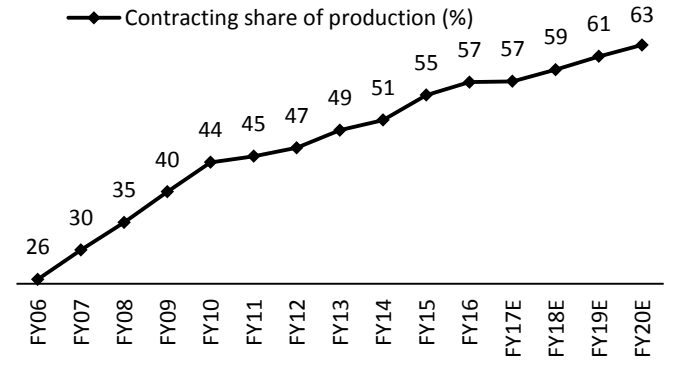
Source: MOSL, Company

Exhibit 170: Non-power price realization - INT/t



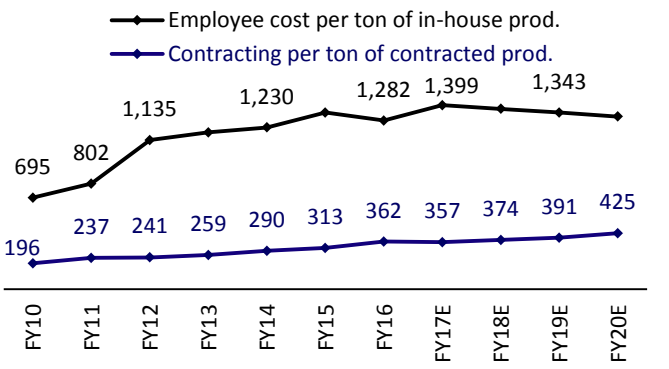
Source: MOSL, Company

Exhibit 171: Contracting % of prod. to inc. to ~63% by FY20E



Source: MOSL, Company

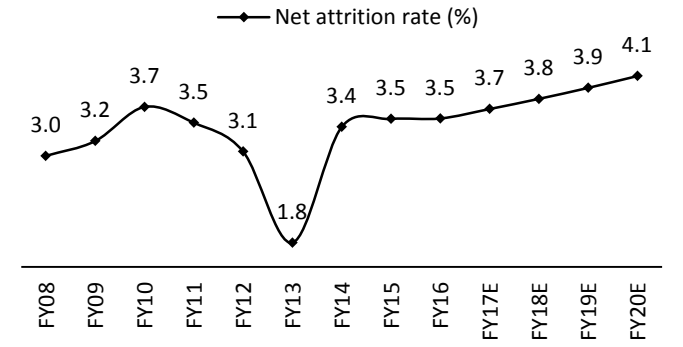
Exhibit 172: and is ~70% cheaper than in-house (INR/t)



Source: MOSL, Company

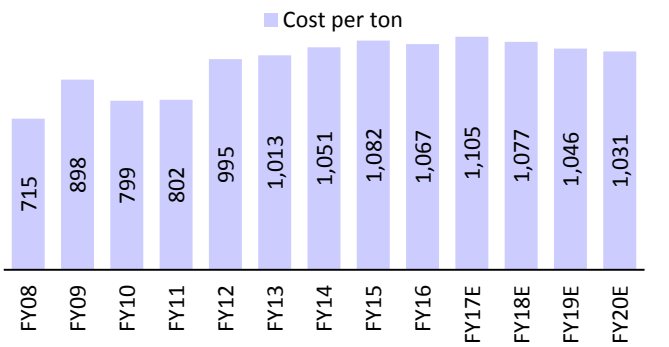
Story in charts

Exhibit 173: Net attrition rate (%)



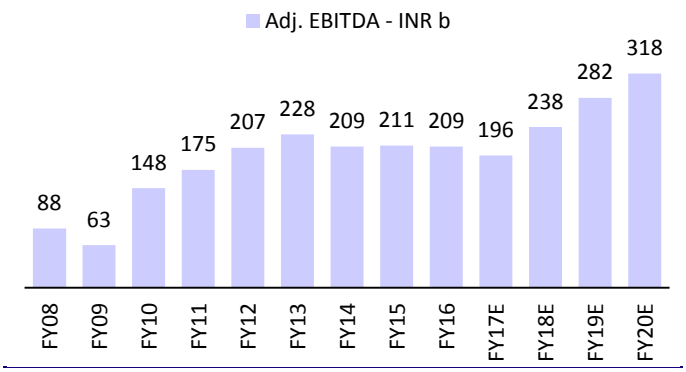
Source: MOSL, Company

Exhibit 174: Cost per ton to be flattish - INR/t



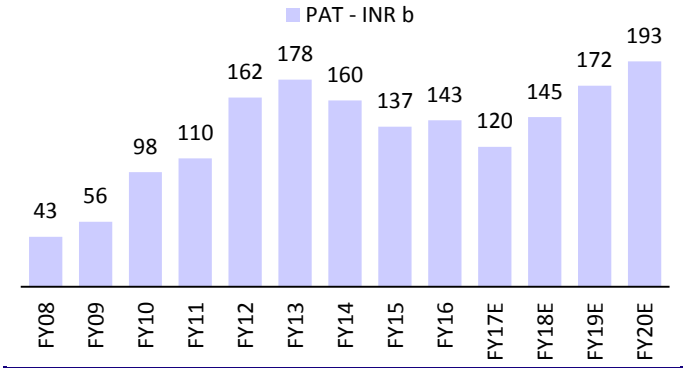
Source: MOSL, Company

Exhibit 175: Adj EBITDA



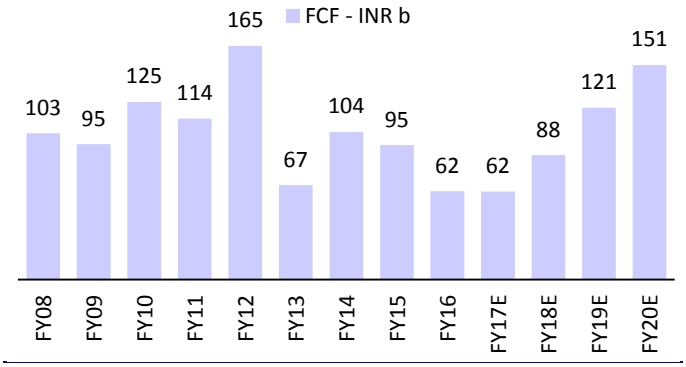
Source: MOSL, Company

Exhibit 176: PAT – INR b



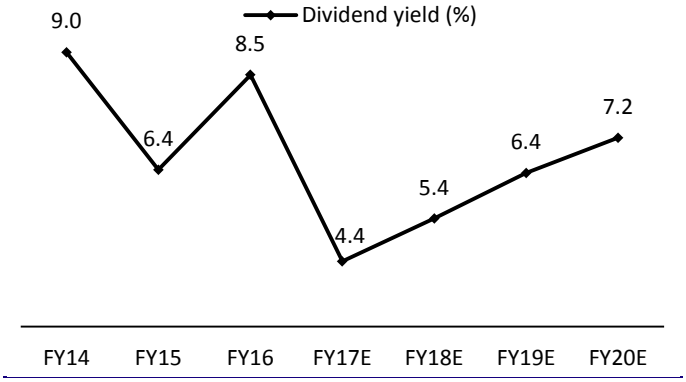
Source: MOSL, Company

Exhibit 177: Strong FCF despite higher capex



Source: MOSL, Company

Exhibit 178: Dividend yield to protect downside



Source: MOSL, Company

Financials and Valuations

Income Statement (INR Million)

Y/E Mar	2011	2012	2013	2014	2015	2016	2017E	2018E
Net Sales	**502,336**	**624,154**	**683,027**	**688,100**	**720,146**	**756,443**	**794,178**	**871,035**
Change (%)	7.6	24.3	9.4	0.7	4.7	5.0	5.0	9.7
EBITDA	**136,464**	**156,679**	**180,836**	**159,632**	**152,300**	**159,404**	**131,763**	**168,388**
EBITDA Margin (%)	27.2	25.1	26.5	23.2	21.1	21.1	16.6	19.3
Depreciation	17,654	19,692	18,130	19,964	23,198	24,664	25,864	27,064
EBIT	**118,810**	**136,986**	**162,707**	**139,668**	**129,102**	**134,740**	**105,899**	**141,323**
Interest	737	540	452	580	73	207	65	61
Other Income	49,615	76,150	88,373	89,694	86,761	80,943	73,039	72,556
Extraordinary items	-2,162	911	69	14	50	414	0	0
PBT	**165,525**	**213,508**	**250,697**	**228,795**	**215,839**	**215,891**	**178,873**	**213,819**
Tax	55,959	64,845	76,227	77,679	78,573	73,148	59,010	68,401
Tax Rate (%)	33.8	30.4	30.4	34.0	36.4	33.9	33.0	32.0
Min. Int. & Assoc. Share	0	0	0	0	0	0	0	0
Reported PAT	**109,566**	**148,664**	**174,470**	**151,116**	**137,266**	**142,743**	**119,863**	**145,418**
Adjusted PAT	**110,202**	**162,386**	**177,530**	**159,881**	**137,316**	**142,743**	**119,863**	**145,418**
Change (%)	12.1	47.4	9.3	-9.9	-14.1	4.0	-16.0	21.3

Balance Sheet (INR Million)

Y/E Mar	2011	2012	2013	2014	2015	2016	2017E	2018E
Share Capital	63,164	63,164	63,164	63,164	63,164	63,164	63,164	63,164
Reserves	269,978	341,366	421,556	360,881	340,367	275,428	287,414	301,956
Net Worth	**333,142**	**404,530**	**484,720**	**424,045**	**403,531**	**338,592**	**350,578**	**365,120**
Debt	13,664	13,054	10,778	1,715	4,019	4,019	4,019	4,019
Deferred Tax	-11,941	-11,941	-22,550	-19,717	-19,591	-19,591	-19,591	-19,591
Total Capital Employed	**335,191**	**406,179**	**473,584**	**406,678**	**388,617**	**323,678**	**335,664**	**350,206**
Gross Fixed Assets	376,253	380,964	390,107	414,795	448,080	508,080	568,080	628,080
Less: Acc Depreciation	238,708	246,561	255,449	266,951	286,929	311,594	337,458	364,523
Net Fixed Assets	**137,546**	**134,403**	**134,658**	**147,844**	**161,150**	**196,486**	**230,622**	**263,557**
Capital WIP	11,459	29,034	34,960	43,158	51,594	71,594	91,594	111,594
Investments	10,637	19,814	23,950	37,749	28,134	28,134	28,134	28,134
Current Assets	**668,364**	**874,731**	**999,590**	**793,955**	**844,940**	**753,105**	**752,871**	**760,285**
Inventory	55,856	60,713	56,178	55,681	61,838	62,173	65,275	71,592
Debtors	34,189	56,630	104,802	82,410	85,219	89,115	93,561	102,615
Cash & Bank	458,064	582,028	622,360	523,895	530,925	434,859	427,078	419,121
Loans & Adv, Others	120,254	175,360	216,249	131,969	166,958	166,958	166,958	166,958
Curr Liabs & Provns	**492,815**	**651,803**	**719,573**	**616,028**	**697,201**	**725,641**	**767,556**	**813,364**
Curr. Liabilities	492,815	651,803	719,573	616,028	697,201	725,641	767,556	813,364
Provisions	0	0	0	0	0	0	0	0
Net Current Assets	**175,549**	**222,928**	**280,017**	**177,927**	**147,739**	**27,464**	**-14,685**	**-53,079**
Total Assets	**335,191**	**406,179**	**473,584**	**406,678**	**388,617**	**323,678**	**335,664**	**350,206**

Financials and Valuations

Ratios

Y/E Mar	2011	2012	2013	2014	2015	2016	2017E	2018E
Basic (INR)								
EPS	**17.4**	**25.7**	**28.1**	**25.3**	**21.7**	**22.6**	**19.0**	**23.0**
Cash EPS	24.4	34.7	36.0	33.7	31.5	31.0	29.6	34.4
Book Value	52.7	64.0	76.7	67.1	63.9	53.6	55.5	57.8
DPS	3.9	10.0	14.0	29.0	20.7	27.4	14.2	17.3
Payout (incl. Div. Tax.)	30.5	46.2	57.3	132.2	112.9	145.5	90.0	90.0
Valuation(x)								
P/E	18.4	12.5	11.4	12.7	14.8	14.2	16.9	13.9
Price / Book Value	6.1	5.0	4.2	4.8	5.0	6.0	5.8	5.6
EV/EBITDA	9.1	7.0	6.2	7.2	7.1	7.6	8.2	6.8
Dividend Yield (%)	1.2	3.1	4.4	9.0	6.4	8.5	4.4	5.4
EV /ton of Reserves	72.8	67.1	65.1	69.2	69.0	73.4	73.8	74.2
Profitability Ratios (%)								
RoE	32.9	36.7	36.0	35.6	34.0	42.2	34.2	39.8
RoCE	37.0	40.0	39.7	34.4	34.5	40.0	36.4	42.4
RoIC	-52.0	-51.6	-52.4	-45.5	-39.1	-41.2	-33.6	-45.8
Turnover Ratios (%)								
Asset Turnover (x)	1.5	1.5	1.4	1.7	1.9	2.3	2.4	2.5
Debtors (No. of Days)	25	33	56	44	43	43	43	43
Inventory (No. of Days)	41	36	30	30	31	30	30	30
Creditors (No. of Days)	5	5	4	4	5	5	5	5
Leverage Ratios (%)								
Net Debt/Equity (x)	-1.3	-1.4	-1.3	-1.2	-1.3	-1.3	-1.2	-1.1

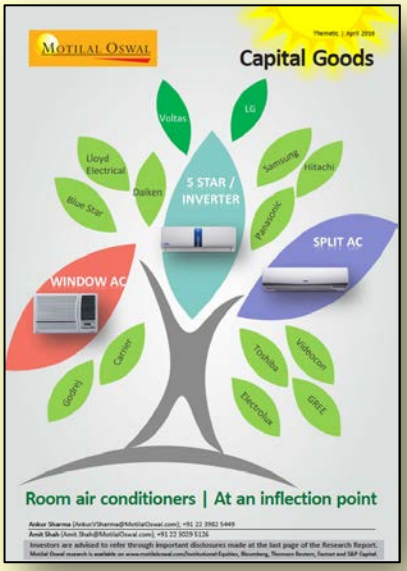
Cash Flow Statement

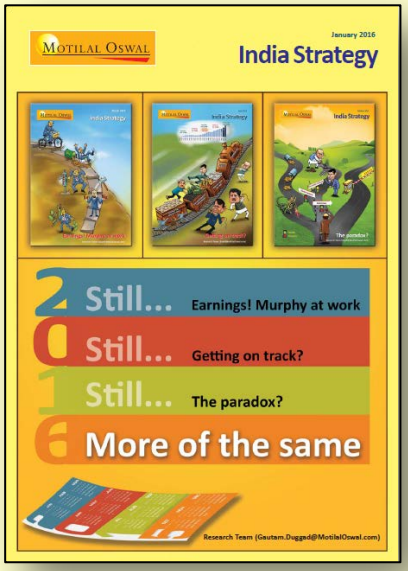
(INR Million)

Y/E Mar	2011	2012	2013	2014	2015	2016	2017E	2018E
Adjusted EBITDA	136,464	156,679	180,836	159,632	152,300	159,404	131,763	168,388
Non cash opr. exp (inc)	44,553	73,597	65,165	71,437	80,749	59,947	76,429	82,162
(Inc)/Dec in Wkg. Cap.	4,662	35,647	-68,387	2,442	6,487	-3,906	-7,071	-14,403
Tax Paid	-55,959	-67,044	-86,520	-88,264	-95,721	-73,148	-59,010	-68,401
Other operating activities	0	0	0	0	0	0	0	0
CF from Op. Activity	**129,720**	**198,879**	**91,094**	**145,247**	**143,815**	**142,297**	**142,110**	**167,746**
(Inc)/Dec in FA & CWIP	-16,153	-34,094	-24,540	-41,164	-49,014	-80,000	-80,000	-80,000
Free cash flows	**113,567**	**164,784**	**66,554**	**104,083**	**94,801**	**62,297**	**62,110**	**87,746**
(Pur)/Sale of Invt	2,183	-9,177	-4,136	-13,799	9,615	0	0	0
Others	0	42,177	56,433	64,754	52,871	49,111	38,050	35,234
CF from Inv. Activity	**-13,970**	**-1,094**	**27,758**	**9,791**	**13,472**	**-30,889**	**-41,950**	**-44,766**
Inc/(Dec) in Net Worth	-766	0	0	0	0	0	0	0
Inc / (Dec) in Debt	-5,967	-2,474	-2,287	-12,634	1,935	0	0	0
Interest Paid	0	-540	-452	-580	-73	-207	-65	-61
Divd Paid (incl Tax) & Others	-41,730	-70,808	-75,781	-240,289	-152,119	-207,682	-107,877	-130,876
CF from Fin. Activity	**-48,463**	**-73,821**	**-78,520**	**-253,503**	**-150,257**	**-207,888**	**-107,941**	**-130,937**
Inc/(Dec) in Cash	**67,287**	**123,963**	**40,332**	**-98,465**	**7,030**	**-96,481**	**-7,781**	**-7,957**
Add: Opening Balance	390,778	458,064	582,028	622,360	523,895	530,925	434,859	427,078
Closing Balance	**458,064**	**582,028**	**622,360**	**523,895**	**530,925**	**434,444**	**427,078**	**419,121**

THEMATIC GALLERY

SECTOR UPDATES





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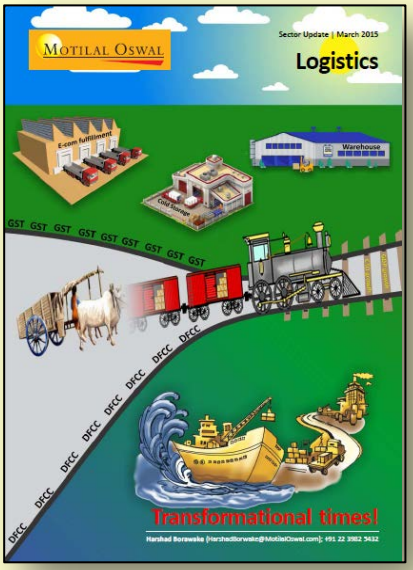

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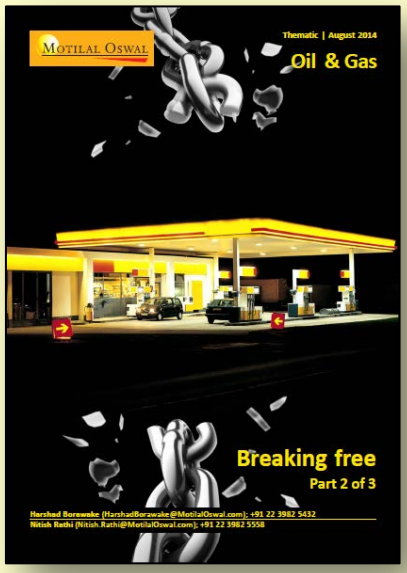

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In respect of any matter arising from or in connection with the research you could contact the following representatives of Motilal Oswal Capital Markets Singapore Pte Limited:

Varun Kumar
Varun.kumar@motilaloswal.com
Contact : (+65) 68189232
Office Address:21 (Suite 31),16 Collyer Quay,Singapore 04931

Kadambari Balachandran
kadambari.balachandran@motilaloswal.com
(+65) 68189233 / 65249115

Motilal Oswal Securities Ltd
Motilal Oswal Tower, Level 9, Sayani Road, Prabhadevi, Mumbai 400 025
Phone: +91 22 3982 5500 E-mail: reports@motilaloswal.com