Initiating Coverage | 22 December 2017
Sector: Utilities

NHPC

Come on in, the water's fine

Dhruv Muchhal - Research Analyst (Dhruv.Muchhal@MotilalOswal.com); +91 22 6129 1549
Sanjay Jain - Research Analyst (SanjayJain@MotilalOswal.com); +91 22 6129 1523

Contents: NHPC | Come on in, the water's fine

Summary 3

Two projects in advance stages to boost growth 4

Under-recoveries to decline… 6

RoE improving on step-up in payout 8

Regulatory risk to RoE is low in hydro power..10

Regulated operating framework 13

Steps to mitigate high tariff of new projects..16

Earnings are at inflection after five years of stagnation 18

SWOT Analysis 20

Bull & Bear case 21

Valuations attractive at 1x BV and 6% dividend yield...22

NHPC

BSE Sensex	S&P CNX
33,756	10,440

Stock Info

Bloomberg	NHPC IN
Equity Shares (m)	10,259
52-Week Range (INR)	35/26
1, 6, 12 Rel. Per (%)	0/0/0
M.Cap. (INR b)	302.6
M.Cap. (USD b)	4.7
Avg Val, INRm	206.6
Free float (%)	25.5

Financial Snapshot (INR b)

Y/E Mar	2017	2018E	2019E
Net Sales	86.2	90.3	107.3
EBITDA	48.4	51.7	67.8
PAT	30.3	24.4	31.8
EPS (INR)	3.0	2.4	3.1
Gr. (%)	25.6	-19.3	30.3
BV/Sh (INR)	28.3	28.4	29.2
RoE (%)	10.0	8.4	10.8
RoCE (%)	7.0	6.2	8.0
P/E (x)	9.9	12.4	9.5
P/BV (x)	1.0	1.0	1.0

Shareholding pattern (%)

As On	Sep-17	Jun-17	Sep-16
Promoter	74.5	74.5	74.6
DII	10.5	11.1	10.6
FII	4.3	3.8	3.6
Others	10.7	10.6	11.2

FII Includes depository receipts

NHPC

Come on in, the water's fine

+91 22 3027 8033

Dhruv.Muchhal@motilaloswal.com

Please click here for Video Link

CMP: INR30 TP: INR37(+25%) Buy

NHPC is India's largest hydro power generator, with a 15% share. The company has an installed capacity of 6.6GW, with attributable equity share (AES) of 5.9GW (5.1GW at parent and 51% share in 1.52GW NHDC). NHPC has 3.1GW projects under construction, which are expected to raise AES in capacity by 53%. Regulated equity in its projects and operating efficiencies are the key drivers of earnings.

Come on in, the water's fine

Valuations attractive at 1x BV and 6% dividend yield; initiate with Buy

Regulated equity to increase 35%, despite Subhanshiri project being on hold

NHPC is targeting commercialization of the 330MW Kishanganga project from January 2018 and the 800MW Parbati-II project from December 2018. These two projects will increase AES in capacity by 19% and attributing regulated equity (ARE) by 35%. The 2,000MW Subhanshiri project remains on hold for now.

Under-recoveries to decline on natural attrition and approval of five tariff orders

O&M under recoveries have peaked, in our view. Wage bill growth will be muted due to high natural attrition, while existing manpower can manage new projects. We expect approval of capex for the five projects over the next few years, which can boost recurring PAT by ~INR1.5b.

Higher dividend payout is boosting RoE; room for even higher payout/buyback

Capital allocation has improved with a payout of INR113b in four years. Debtor days have come down after the implementation of the UDAY scheme for DISCOMs. Net worth (NW) in non-core business has dropped from 51% to 36%, and RoE has improved from 8.7% to 9.9% over FY13-17. Another 32% of NW can be paid out, which is not deployed in core business.

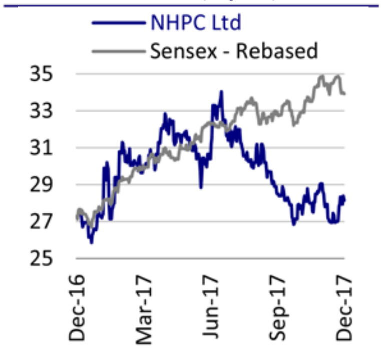
Earnings are at inflection after five years of stagnation

We expect core PAT CAGR of ~20% over FY17-20, driven by (a) commercialization of assets, leading to ~11% CAGR in regulated equity, (b) lower O&M under-recoveries and (c) approval of pending tariff petitions. Consolidated PAT CAGR of 8% over FY17-20E is diluted by lower other income. RoE will improve by 240bp to 12.4% and re-rate the stock.

Valuations attractive at 1x BV and 6% dividend yield; initiating with Buy

NHPC has low regulatory risk with high growth potential due to the large untapped water energy potential in India. We expect many regulatory tailwinds, as the government will need to invigorate investment in hydro power to handle volatility in solar energy in order to manage grid. Earnings growth visibility is strong for a few years as two projects are in advance stage of commissioning. Until a new wave to investment cycle strikes, NHPC will be high-dividend-yield stock. Valuations are attractive at P/BV of 1x FY19E and dividend yield of ~6%. We expect the stock to get re-rated as RoE improves. We value the stock at INR37/share based on DCF and initiate the coverage with a **Buy** rating.

Stock Performance (1-year)



Two projects in advance stages to boost growth

Regulated equity to increase 35% despite Subhanshiri being on hold

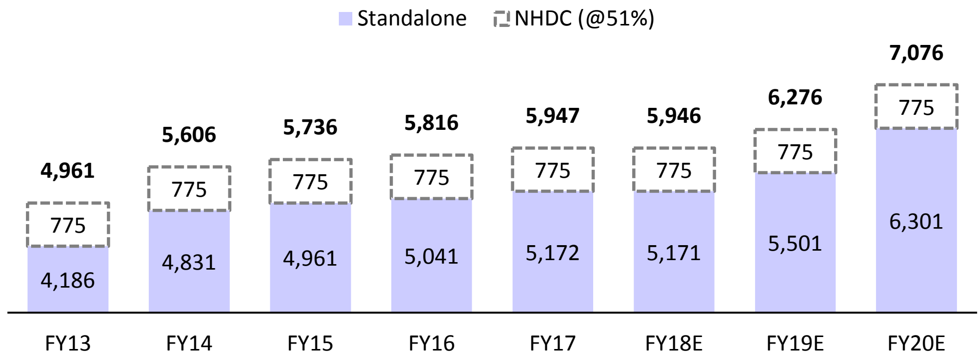
NHPC is India's largest hydro power generator, with a 15% share. The company has an installed capacity of 6.6GW, with attributable equity share (AES) of 5.9GW (5.1GW at parent and 51% share in 1.52GW NHDC). NHPC has 3.1GW projects under construction, which are expected to raise AES in capacity by 53%. Regulated equity in its projects and operating efficiencies are the key drivers of earnings.

Capitalization set to accelerate driving strong regulated equity growth

NHPC is targeting commercialization of the 330MW Kishanganga project from January 2018 and the 800MW Parbati-II project from December 2018. These two projects will increase the AES in capacity by 19% and the attributing regulated equity (ARE) by 35%. The 2,000MW Subhanshiri project – in which the company has already spent INR91b – remains on hold for now due to environmental issues.

Installed effective capacity will increase at 6% CAGR over FY17-20E, higher than 2% over FY14-17

Exhibit 1: NHPC's installed hydro capacity – MW

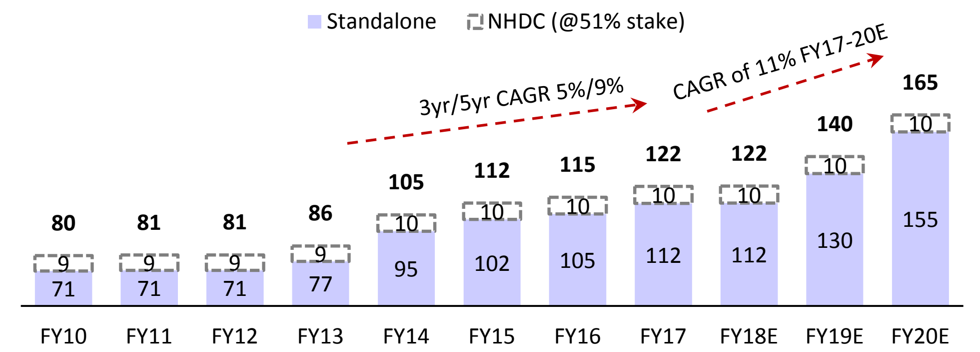


Source: MOSL, Company

Strong capitalization will drive growth in regulated equity (the key driver of earnings). We estimate regulated equity growth to accelerate from 5% over the last three years, to a CAGR of 11% (to ~INR165b) over FY17-20. Regulated equity growth is higher than capacity growth due to higher specific capex of the new projects. Regulated RoE is 16.5% for pondage-based storage projects, and 15.5% for other hydro projects.

Regulated equity growth will accelerate from 5% in last 3 years, to a CAGR of 11% (to INR165b) over FY17-20E, led by commercialization of projects

Exhibit 2: Regulated equity – INR b



Regulated Equity = Standalone + NDHC @ 51% stake Source: MOSL, Company, CERC

Exhibit 3: Projects under construction

	Capacity MW	Est. project cost INR m	Design Energy MU
Kishanganga	330	57,515	1,350
Parbati- II	800	83,988	3,109
Subhanshiri Lower	2,000	174,352	7,421

Source: MOSL, Company

Exhibit 4: NHPC hydro projects under evaluation

Project	Installed Capacity MW	Design Energy MW	Cost INR m	Specific cost INRm/MW		Status
Projects under clearance						
Kotli Bhel–IA	195	1,026	20,920	107	❖	PIB recommended project for clearance subject to Supreme Court approval, which is pending.
Teesta-IV	520	2,373	48,540	93	❖	All statutory clearances received, except for forest.
Dibang	2,880	11,223	259,130	90	❖	MoEF has granted in-principal approval. DPR submitted to CEA on September 15, 2016.
Tawang –I	600	2,963	61,730	103	❖	All statutory clearances received, except for forest.
Tawang –II	800	3,622	75,880	95	❖	All statutory clearances received, except for forest.
Projects under Chenab JV (NHPC: 49% stake)					❖	
Pakal Dul	1,000	3,330	81,120	81	❖	Cabinet approval received. Bidding process started.
Kiru	624	2,272	46,410	74	❖	Appraisal of DPR accorded by CEA on June 13, 2016. Clearances received.
Kwar	540	1,976	49,490	92	❖	All clearances received. Appraisal of DPR accorded by CEA on Feb 23, 2017.
Projects under subsidiary (NHPC: 74% stake)					❖	
Loktak	66	330	14,440	219	❖	EC and FC received. PIB memo is under preparation.

Source: MOSL, Company

Under-recoveries to decline…

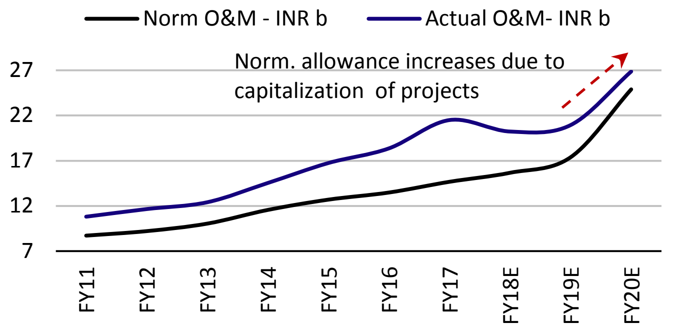
…on high natural attrition and approval of five tariff orders

Under-recoveries in operating & maintenance (O&M) costs have peaked at INR6.8b (Exhibit 6), in our view.

- **Wage bill growth will be muted due to high natural attrition (Exhibit 7), while existing manpower can manage new projects.**
- **We expect approval of capex for the five projects within 12 months, which can boost recurring PAT by ~INR1.5b.**

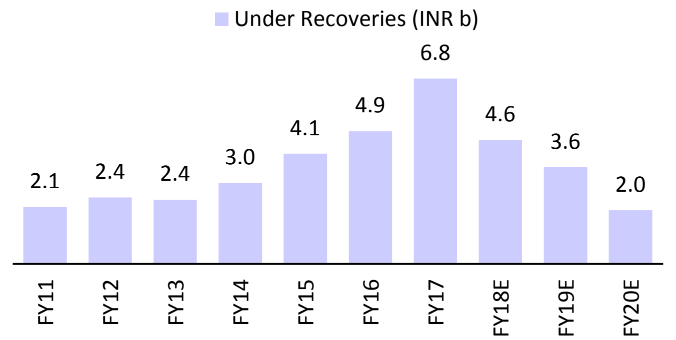
The regulator sets the operating & maintenance allowance for the term of the tariff period of five years. It considers the actual cost as benchmark at the start of the tariff period, and applies inflation at a suitable rate for the remaining term. The actual and normative O&M allowed by the regulator should thus align, if the actual cost increase is similar to the inflation factor of the regulator. The differences, if any, are on account of pending approval of tariff and certain corporate overheads. Since the last tariff reset in FY14, NHPC's actual O&M cost has outpaced normative, resulting in under-recoveries. This was due to higher wage increases, pending approval of projects, and a rise in other overheads.

Exhibit 5: O&M at standalone



Source: MOSL, Company

Exhibit 6: Under-recoveries have peaked

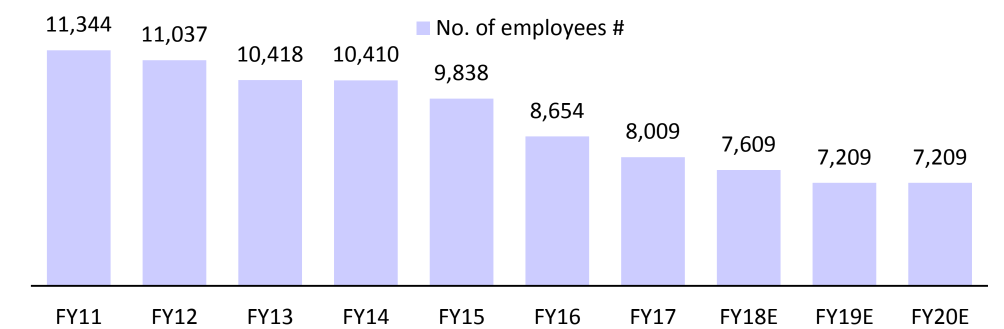


Source: MOSL, Company

We believe that under-recoveries have peaked, as (a) we expect cost increase to moderate due to flattening of effective employee cost as employees retire and (b) as the O&M allowance increases with capitalization of new projects. From FY20, when the next tariff period becomes effective, we expect the gap to normalize to historical levels, as the regulator considers FY19 cost as the new cost base. We are conservatively factoring in lower O&M cost on new projects due to the high tariff of these projects. O&M under-recoveries would decline on flattening employee cost and an increase in normative allowance (on project capitalization and inflation).

Effective employee cost will flatten due to retirements

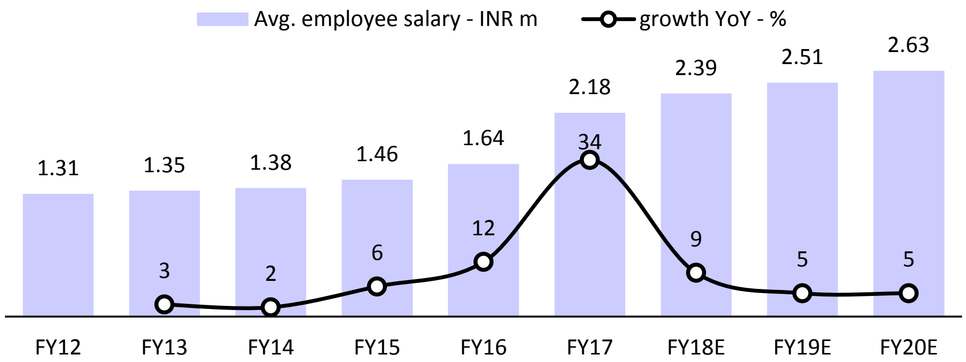
Exhibit 7: Employee count (standalone)



Source: MOSL, Company, CERC

Inflation in employee cost contributed to under-recoveries in O&M cost

Exhibit 8: Avg. employee salary

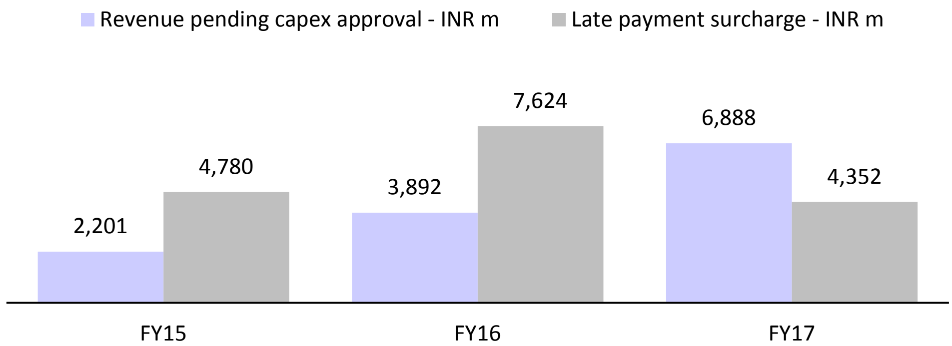


Source: MOSL, Company, CERC

As at the end of FY17, NHPC had ~INR6.9b of cumulative revenue pending recognition due to the pending approval of the tariff petition. For instance, for TLDP-IV, which commercialized at the end of FY16, the regulator has considered project cost of INR10.6b, as against the actual INR17.9b. The actual capex is pending approval of the Ministry of Power. Final tariff approval of five stations is pending. We expect some gains here as the petitions are gradually approved. In addition, there is outstanding late payment surcharge of INR4.3b as at the end of FY17, which is accounted on receipt basis.

Exhibit 9: Revenue (cuml.) pending capex approval (standalone) – INR m

Approval of pending tariff petitions to aid earnings growth. Late payment charges are recognized on receipt basis



Source: MOSL, Company

RoE improving on step-up in payout

Another 32% of NW can be paid out, which is not deployed in core business

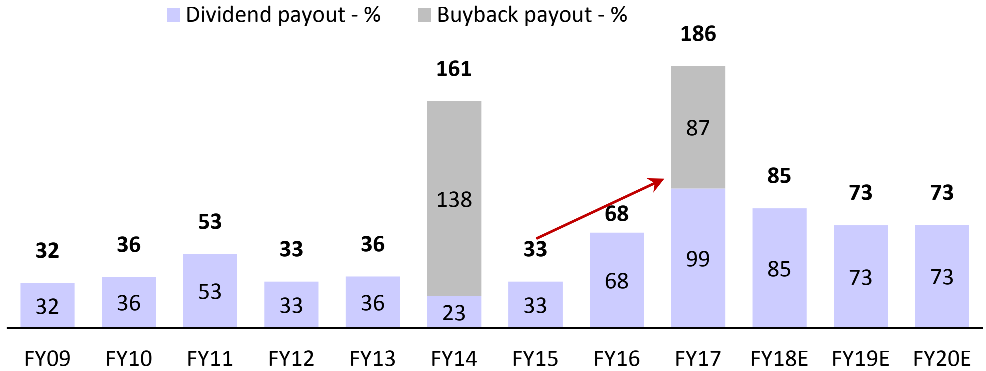
Capital allocation has improved, with payout of INR113b in four years. Debtor days have come down after the implementation of the UDAY scheme for DISCOMs. Net worth in non-core business has dropped from 51% to 36%, and RoE has improved from 8.7% to 9.9% over FY13-17. Another 32% of NW can be paid out, which is not deployed in core business.

Payout has increased

The central government's initiative to improve capital efficiency of PSUs (read CPSE guidelines) has led to a sharp improvement in NHPC's payouts – from ~32% over FY08-13 to 99% in FY17. Including buybacks, NHPC has returned ~INR113b since FY14. We expect strong payouts to continue – ~75% over FY18-20E – as capex requirement is low and there are enough buffers in the balance sheet to fund growth capex.

NHPC has returned ~INR113b in the form of dividend and buybacks in the last four years

Exhibit 10: Return to shareholders (payout) - %



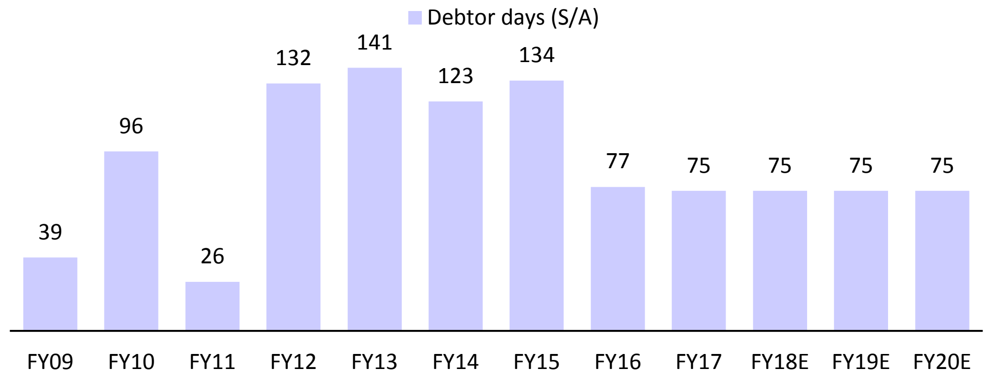
Source: MOSL, Company

UDAY has helped reduce working capital

UDAY bonds issue by states and resolution of payment issues with certain DISCOMs have led to a sharp improvement in debtor days, aiding cash flows.

Debtor days have declined on UDAY bonds on resolution of issues with DISCOMs

Exhibit 11: Debtor days (standalone)

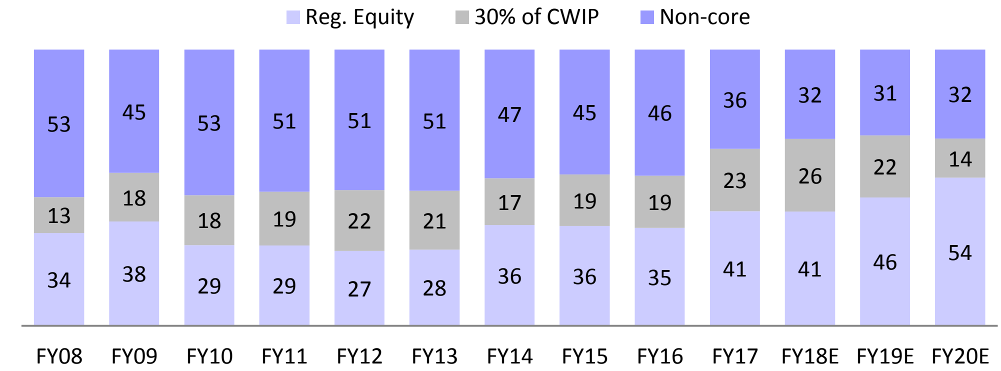


Source: MOSL, Company

Net worth in non-core business has declined and reduced drag on RoE

Higher payout and working capital release have led to a significant improvement in the balance sheet structure. The share of net worth in non-core business has declined from 51% in FY13 to 36% in FY17. This has been partially offset by the rising share of net worth in CWIP.

Exhibit 12: Deployment of standalone net worth in business (%)



Source: MOSL, Company

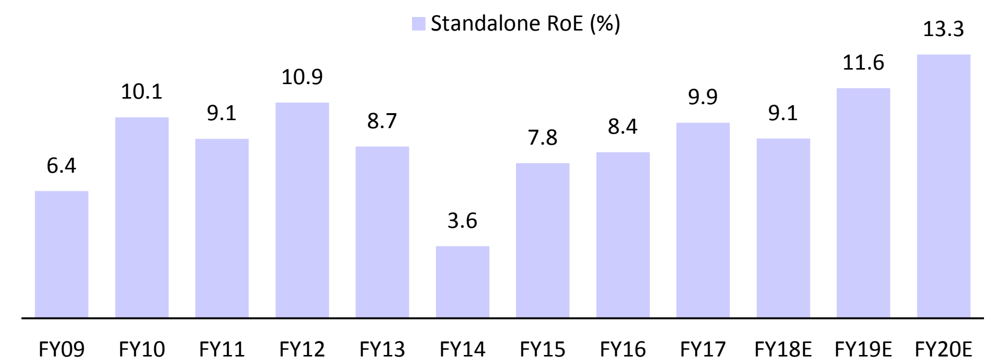
More room for stepping up dividend payout

Despite high payouts, NHPC will still have nearly one third of its net worth earning only treasury yield, which is significantly lower than the cost of equity. Therefore, NHPC should pay out more than 100% over the next few years to improve capital efficiencies.

RoE improvements will continue

Standalone RoE has improved from 8.7% in FY13 to 9.9% in FY17 due to the declining share of non-core net worth, despite an increase in CWIP. We expect RoE to improve further with a reduction in under-recoveries and an increase in the share of regulated equity in net worth on commercialization of new projects.

Exhibit 13: Standalone RoE (%)



Source: MOSL, Company

Regulatory risk to RoE is low in hydro power

Regulator needs to encourage investment

Risk of downward revision in RoE for hydro projects in the next five-year regulation command period starting 2019 is low because the government will have to encourage investment in hydro to balance volatile solar energy in grid. Pipeline of new hydro projects has dried due to their long-gestation period, geographical challenges and low IRR.

Hydro power projects have long-gestation period…

Hydro power projects have a long-gestation period due to the lengthy approval process, various environment studies, the risk of opposition, and difficult execution. Average execution time of the hydro power projects commissioned since FY13 (covering data for ~3.7GW) in India was 9.4 years.

Average execution time of hydro power projects commissioned since FY13 (~3.7GW) in India was 9.4 years

Exhibit 14: Execution time of hydro projects commissioned since FY13

Projects	Promoter	Capacity MW	Approval	Comm.	Time yrs
Chamera-III	NHPC	231	Sep-05	Jun-12	7
Chutak	NHPC	44	Aug-06	Jan-13	6
Teesta Low Dam-III	NHPC	99	Oct-03	Apr-13	10
Bhawani Barrage III	State	15	Mar-02	Dec-12	11
Myntdu	State	42	Jun-03	Mar-13	10
Budhil	Private	70	Jun-05	May-12	7
Uri-II	NHPC	240	Sep-05	Feb-14	8
Nimoo Bazgo	NHPC	45	Aug-06	Nov-13	7
Parabati-III	NHPC	390	Nov-05	Mar-14	8
Rampur	SJVNL	206	Jan-07	Mar-14	7
Bhawani Barrage II	State	30	Jun-99	Sep-13	14
Bhawani Barrage III	State	15	Mar-02	Sep-13	12
Chujachen	Private	99	Nov-04	Apr-13	8
Kol Dam	NTPC	400	Oct-02	Mar-15	12
Baglihar- II	State	300	Mar-12	Oct-15	4
Lower Jurala	State	40	Jul-07	Mar-16	9
Shrinagar	Private	330	Jun-00	Jun-15	15
Jerethang Loop	Private	96	Aug-06	Jun-15	9
Teesta Low Dam-IV	NHPC	160	Sep-05	Oct-16	11
Kashang	State	65	Nov-01	Oct-16	15
Pulichintala	State	30	Apr-07	Sep-16	9
Teesta-III	State	600	May-06	Jan-17	11
Nagarjuna Sagar TR	State	50	Jan-05	Jan-17	12
Chanju-I	Private	36	Apr-10	Feb-17	7
Dikchu	Private	96	Oct-11	Apr-17	6
		3,729		**Average -->**	**9.4**

Source: MOSL, CEA

Hydro projects have a three-stage approval process.

Stage 1: Preparing pre-feasibility/feasibility report

- A preliminary commercial viability report is prepared and submitted to CEA.
- Environment clearance is required to undertake the survey and investigation.
- Observations are made on the geological, hydrological, meteorological and topographical factors.
- The estimates are required to be approved by the ministry of power (MoP).

Stage 2: Detailed report and development work

- After approval by CEA and MoP, a detailed project report (DPR) is prepared.
- DPR is examined by various agencies like Geological Survey of India, the Central Water Commission, the Ministry of Water Resources and the Ministry of Defence.
- Environment assessment reports are also prepared to carry out public hearing and negotiate rehabilitation and resettlement package, if required, in coordination with the state government.
- Environment and forest clearances are obtained in this stage.
- DPR and clearances are finally approved by CEA.

Stage 3: Project construction

The proposal is presented to the CCEA. Construction activity begins only after the final approval by the CCEA. Some of the issues faced in execution of projects are:

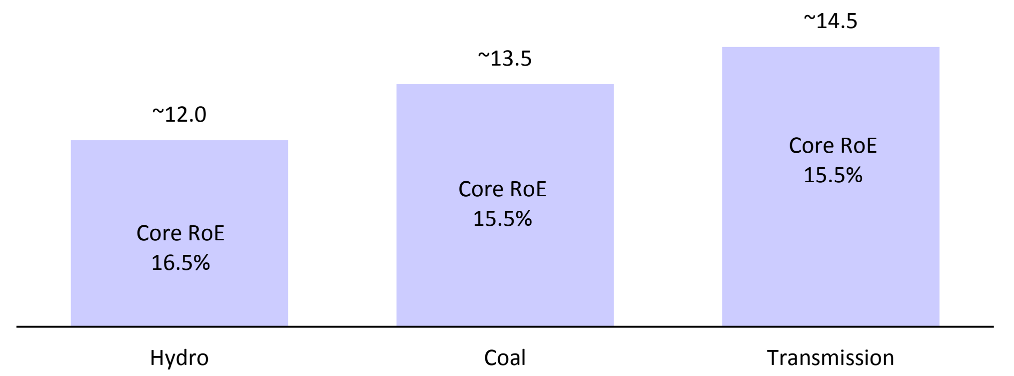
- Location disadvantage due to far-flung locations; difficulty in transporting project equipment
- Geological surprises
- Higher time taken in land acquisition due to delays in land records and ill-equipped state government machinery
- Skilled manpower in such remote locations
- Protest and bandhs by local bodies

…but similar regulated returns (compared to regulated coal/transmission projects) drive low IRRs

Despite the higher risk and time involved, the regulated RoE on hydro power plants is similar (at 15.5%; 16.5% in some cases) to that on regulated coal/transmission projects. At a 10-year gestation period for hydro projects and a regulated RoE of 16.5%, the IRR on hydro project is just ~12%. This compares to ~13.5% for coal projects (at five-year gestation) and ~14.5% for transmission projects (at three-year gestation). Moreover, hydro projects have higher concentration risk due to higher specific capex. Per MW cost of a hydro power plant is more than INR90m v/s ~INR60m for coal and even lower for transmission (except HVDC).

Hydro projects have low IRRs due to their high gestation period but almost similar returns compared to coal/transmission projects

Exhibit 15: IRRs on regulated return projects

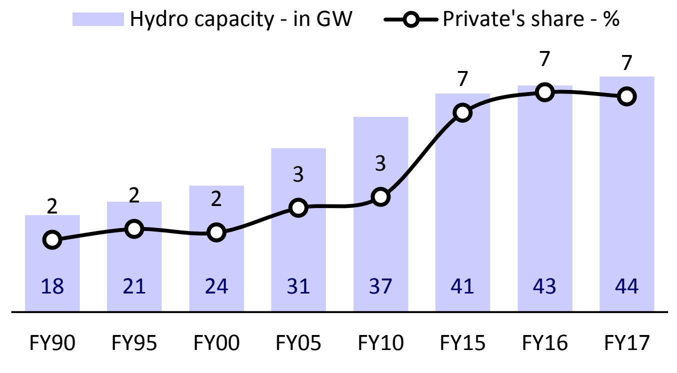


Source: MOSL

Lack of attractive of hydro projects is evident from meager share of private

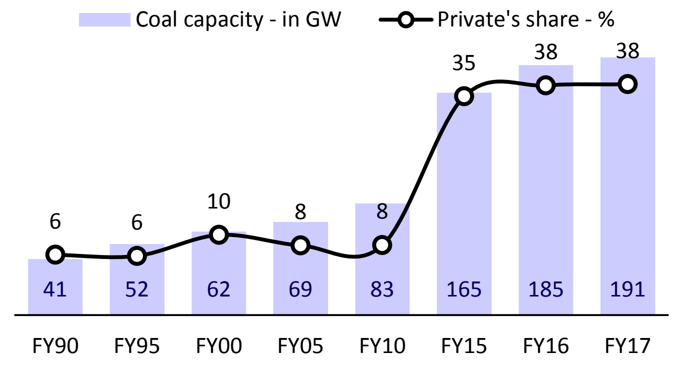
The low return potential and the high risk profile of hydro are evident from the low share of hydro capacity owned by private IPPs. Private sector owned just 7% of hydro capacities in India in FY17. Although this has increased from 3% in FY10, it remains paltry compared to coal, where the private sector's share increased from 8% in FY10 to 38% in FY17.

Exhibit 16: Private sector is insignificant in hydro…



Source: MOSL, CEA

Exhibit 17: …unlike coal



Source: MOSL, CEA

Less risk of cut in regulated RoE for hydro power

Regulatory risk of RoE cut is low due to already low IRRs and need to encourage hydro generation

The regulator, CERC, fixes tariff norms for a period of five years for projects monitored by it. The current regulations end in FY19. In the recent regulations for the regulated renewable energy projects (which are for three years), the regulator had cut the RoE from 15.5% to 14% due to a fall in cost of equity. On the same pretext, the regulator may revise RoE for the other regulated projects when the next regulations are due in FY20. While we are building in the risk for coal and transmission projects, we believe the risk of cut in RoE of hydro projects is low. The IRRs on hydro projects are already low, and a cut would make hydro projects unviable. There is a need to encourage hydro generation if India has to increase penetration of renewable energy.

Regulated operating framework

NHPC had single-largest share of hydro capacities added in last five years

Revenue is regulated by CERC. The regulations are reviewed every five years. Regulated equity (i.e., 30% of project cost), working capital efficiencies, operating efficiencies and extra generation over designed energy are the key drivers of earnings. India has huge untapped potential, while NHPC is better placed because of its expertise in execution and strong balance sheet.

Installed capacity of 5.9GW and regulated equity of ~INR122b.

Exhibit 18: NHPC hydro power plant portfolio

Plants	Cap. MW	Comm. Date	Design Energy MU	Capital cost INR m	Tariff FY17 INR/kWh	Type	Reg. Equity INR m FY17
Baira Siul	180	Sep-81	779	2,081	1.97	RoR with pondage	871
Loktak	105	May-83	448	1,797	3.65	Storage	780
Salal	690	Nov-87	3,082	9,722	2.20	RoR	5,022
Tanakpur	94	Apr-92	452	4,213	2.96	RoR	1,061
Chamera-I	540	Apr-94	1,665	20,944	2.16	Storage	6,487
Uri-I	480	Apr-97	2,587	34,408	2.04	RoR	10,929
Rangit	60	Feb-00	339	4,950	3.53	RoR with pondage	1,878
Chamera-II	300	Feb-04	1,500	20,098	1.96	RoR with pondage	6,161
Dhauliganga-I	280	Oct-05	1,135	17,538	2.99	RoR with pondage	4,729
Dulhasti	390	Mar-07	1,907	5,217	6.14	RoR with pondage	19,867
Teesta-V	510	Mar-08	2,573	27,763	2.31	RoR with pondage	11,348
Sewa-II	120	Jun-10	534	11,556	4.53	RoR with pondage	3,175
Chamera-III	231	Jun-12	1,108	21,406	4.25	RoR with pondage	5,413
Chutak	44	Jan-13	213	9,399	8.24	RoR with pondage	2,683
TLDP-III	132	Mar-13	594	20,833	6.20	RoR with pondage	5,599
Nimoo Bazgo	45	Jan-13	239	10,538	9.29	RoR with pondage	3,161
Uri-II	240	Feb-14	1,124	24,308	5.72	RoR	7,292
Parbati-III	520	May-14	7,014	27,462	5.48	RoR with pondage	7,434
TLDP-IV	160	Aug-16	720	17,932	2.56	RoR with pondage	5,380
Difference to Rpt.							2,500
Standalone	**5,121**		**28,012**	**292,164**			**111,770**
Indira Sagar	1,000	2,005	1,629	45,962	3.73	Storage	12,728
Omkareshwar	520	2,007	754	30,318	5.48	Storage	7,243
Subsidiary NHDC	**1,520**		**2,383**	**76,279**			**19,971**
NHPC @ NHDC stake 51%	**775**		**1,215**	**38,902**			**10,185**
Total	**5,896**		**29,227**	**331,066**			**121,955**

Source: MOSL, Company

NHPC operates under a regulatory framework. The factors influencing NHPC's earnings are:

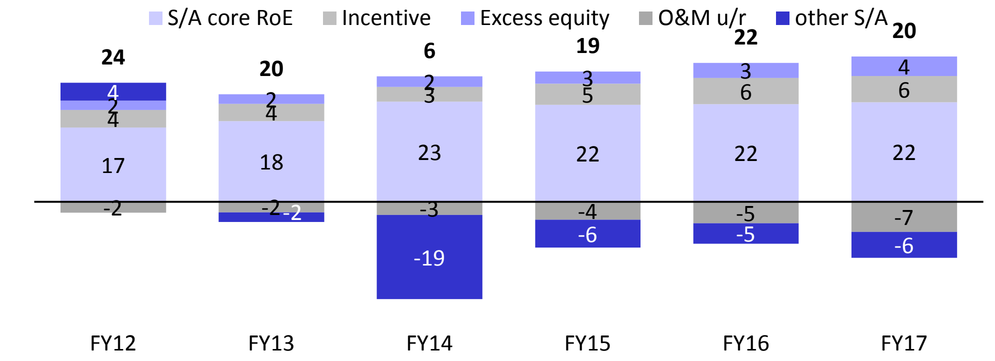
(a) Regulated RoE and equity: Regulated RoE on hydro power plants is 15.5% (16.5% in case of pondage and storage plants). Regulated equity is determined as maximum of 30% of the capital cost, as approved by the regulator. Commercialization of projects drives regulated equity growth. NHPC's regulated equity was ~INR122b as at the end of FY17.

(b) Incentives: NHPC earns incentives in the form of (1) secondary incentive @ INR0.9/kWh for generation above the design (normative), (2) incentives – for plant availability above normative and (3) UI charges – for maintaining the frequency of the grid. Incentive income represented ~16% of standalone PBT over FY13-17.

(c) Working capital incentive: Interest on working capital is allowed at a normative rate, and is irrespective of the actual working capital and interest cost for working capital loan. Normative loan rate is higher than NHPC's interest cost, driving savings. Efficiency in managing of working capital (in number of days) also drives savings.

(d) O&M cost: Expenses (other than water, rates and taxes) are allowed on a normative basis. NHPC's efficiency in managing its cost drives savings/impact.

Exhibit 19: Key components of core (ex-other income) PBT – INR b (standalone)



Source: MOSL, Company

Exhibit 20: Design and actual generation (standalone plants)

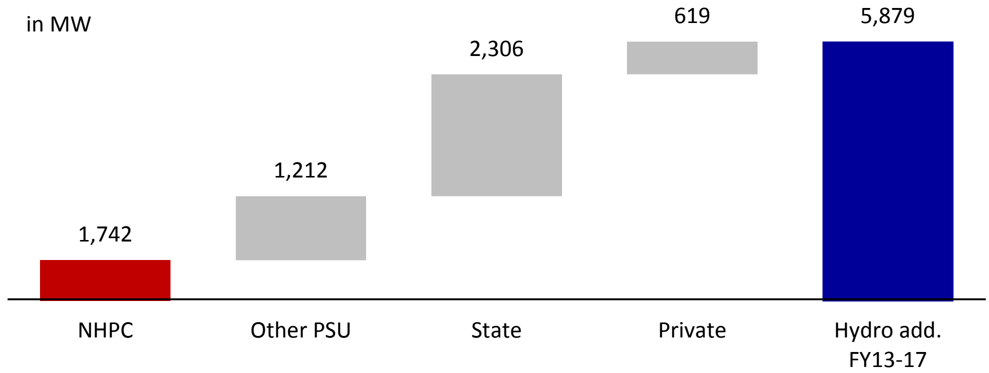
	Capacity	Design Energy - MU			Actual generation - MU		
	MW	FY15	FY16	FY17	FY15	FY16	FY17
Baira Siul	180	779	779	779	797	746	669
Loktak	105	448	448	448	372	537	741
Salal	690	3,082	3,082	3,082	3,492	3,591	3,423
Tanakpur	94	452	452	452	447	452	430
Chamera-I	540	1,665	1,665	1,665	2,552	2,624	2,224
Uri-I	480	2,587	2,587	2,587	3,077	3,283	2,803
Rangit	60	339	339	339	328	345	347
Chamera-II	300	1,500	1,500	1,500	1,499	1,524	1,444
Dhauliganga-I	280	1,135	1,135	1,135	744	1,090	956
Dulhasti	390	1,907	1,907	1,907	2,176	2,361	2,280
Teesta-V	510	2,573	2,573	2,573	2,587	2,710	2,773
Sewa-II	120	534	534	534	594	597	471
Chamera-III	231	1,108	1,108	1,108	1,021	1,044	917
Chutak	44	213	213	213	35	138	220
TLDP-III	132	594	594	594	394	515	554
Nimoo Bazgo	45	239	239	239	76	268	246
Uri-II	240	1,124	1,124	1,124	1,188	1,196	1,473
Parbati-III	520	701	701	701	661	643	682
TLDP-IV	160			720			603
		20,980	**20,980**	**21,700**	**22,040**	**23,664**	**23,256**

Source: Company Data

NHPC has an edge; it was single-largest player in last five years

NHPC being a public sector enterprise has an edge in tackling the issues peculiar to the hydro power projects. Its quasi-government nature helps it to work smoothly with various government departments in terms of handling clearances and approvals. Rehabilitation and resettlement of the scale and nature involved in the hydro projects can be better managed by a public sector enterprise. Moreover, given the nature of development, projects often involve significant time and cost overruns. NHPC can work smoothly with the regulator to manage overruns. Of the ~5.9GW of hydro power capacity added over FY13-17 in India, NHPC was the single largest player with ~1.7GW (or ~30% of the capacity added).

Exhibit 21: NHPC was single-largest player in terms of hydro capacity added over FY13-17



Source: MOSL, CEA

Hydro has huge potential in India, also more efficient

There is huge potential for hydro power generation in India. According to CEA, India's hydro power potential is estimated at ~148GW (~84GW at 60% load factor), as against the installed capacity of ~44GW in FY17. In addition, there is pumped storage generation potential of ~94GW, and small, mini hydro (<25MW) potential of ~7GW. While the practical potential will be lower, we believe hydro capacity has long way to grow in India. Hydro power is cleaner, provides long-term cost security (unlike coal), is predictable (unlike solar/wind), and can play a critical role in managing the grid (important as penetration of solar/wind increases).

According to CEA, India has hydro generation capacity potential of ~148GW, as against installed ~44GW (FY17)

Exhibit 22: India's hydro power potential

in MW	Inst. Capacity	Potential @ 60% load factor
Basin/River		
Indus	33,832	19,988
Ganga	20,711	10,715
Central Indian Rivers	4,152	2,740
West-Flowing Rivers	9,430	6,149
East-Flowing Rivers	14,511	9,532
Brahmaputra	66,065	34,920
Total	**148,701**	**84,044**
Pumped hydro	93,000	
Small, mini	6,872	
Total hydo potential	**248,573**	

Source: MOSL, CEA

Steps to mitigate high tariff of new projects

Project delays lead to cost overruns and high tariff

The delay in the construction of the upcoming power projects has led to significant time and cost overruns.

- **Kishanganga (330MW) is delayed by about two years, and cost has inflated by ~60% of the original estimate.**
- **Parbati-II is delayed by six years, and cost has inflated by ~110% of the original estimate.**
- **Subhanshiri Lower (2000MW) is stuck, as it is still awaiting approval of the MoEF (~INR91b capital invested as at the end of FY17)**

At the revised project cost, we estimate Kishanganga's tariff at ~INR7/kWh and Parbati-II's tariff at ~INR5/kWh in the first five years. It is significantly higher than the spot market rates and the likely cost of buying power under long-term contracts from coal-based plants. It raises the risk of DISCOMs denying signing PPAs. NHPC is taking various steps to lower the tariff, which include:

- Amortizing depreciation equally over 35 years of the project life, as against bulked in the first 12 years, which will reduce the tariff burden in the initial years without impacting project economics.
- Lowering O&M allowance, as against the normative of 2% of the project cost. The project cost has increased significantly, and at the 2% norm, NHPC has enough headroom to lower the allowance while not impacting the recovery of actual cost.
- Swapping of high-cost loans to take benefit of lowering interest rates.
- Support from the government under the likely hydro policy.

The above measures, without any support from the government, can lower tariff by INR0.5-1/kWh. Government support can lead to a further reduction. We also note that DISCOMs have accepted higher tariffs in the past – tariff of NHPC projects commissioned in the last five years has ranged from INR2.6/kWh to INR9.3/kWh. Hydro power provides the benefit of long-term cost security, cleaner source, flexibility and predictability, for which DISCOMs are ready to pay a higher. Despite high tariff, NHPC has signed a PPA for its Kishanganga power plant.

As a risk-mitigation measure, NHPC can also look at pooling tariff across its power plants and offering as a single contract. It is similar to the proposal offered by NTPC to the government. We estimate the average tariff of commissioned power plants of NHPC (standalone) was ~INR3.8/kWh in FY17.

Exhibit 23: Tariff of NHPC projects commissioned over last five years

	Capacity MW	Comm. Date	Tariff - FY17 INR/kWh
Chamera-III	231	Jun-12	4.25
Chutak	44	Jan-13	8.24
TLDP-III	132	Mar-13	6.20
Nimoo Bazgo	45	Jan-13	9.29
Uri-II	240	Feb-14	5.72
Parbati-III	520	May-14	5.48
TLDP-IV	160	Aug-16	2.56

Source: MOSL, Company

Update on Subhanshiri Lower project

Subhanshiri lower is a 2,000MW (8x250MW) project in the state of Assam/Arunachal Pradesh. The work on the project is stalled since 16th December 2011 due to local agitation and direction from the National Green Tribunal (NGT), Kolkata. The project was earlier delayed due to issues with the state governments of Assam and Arunachal Pradesh on the location of the project (and thus distribution of benefits). In the most recent NGT hearing (16th October 2017), the Court has directed the MoEF to form a committee of three members to re-evaluate the terms of reference and other reports submitted by various other committees on the project. The three-member committee is to be constituted in one month. The committee will submit its report within three months for appraisal by the Expert Appraisal Committee under the EIA Notification, 2006. The EIA will appraise the report within 60 days and place it before the competent authority for final decision.

The company is confident of a positive outcome and commissioning of construction activity. The project would take four years for completion post start of construction. NHPC has invested ~INR91b in the project as at the end of FY17, which at 30% maximum equity represents ~10% of NHPC's standalone net worth. The project capex is estimated at INR175b. Unless the issue is resolved, the capital invested in the project would remain a drag on the balance sheet, impacting the return ratios. We are building in ~INR10b on annual capex on the project until NHPC restarts construction.

Earnings are at inflection after five years of stagnation

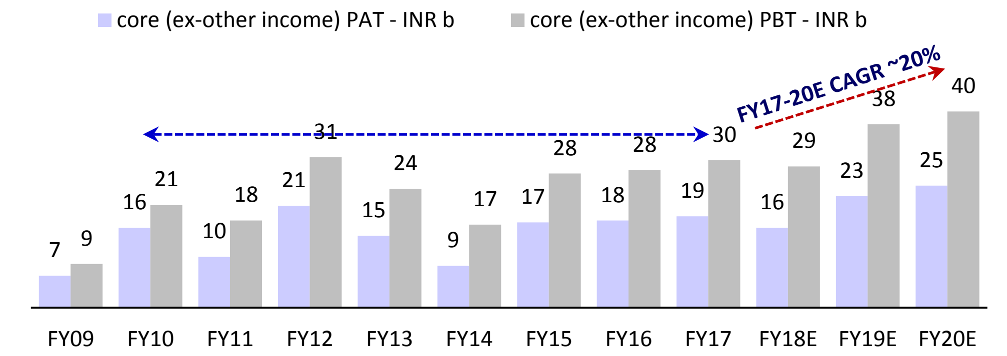
RoE too will improve and drive re-rating

Earnings are at inflection after five years of stagnation. We expect core PAT CAGR of ~20% over FY17-20, driven by (a) commercialization of assets, leading to ~11% CAGR in regulated equity, (b) lower O&M under-recoveries and (c) approval of pending tariff petitions. Consolidated PAT CAGR of 8% over FY17-20E is diluted by lower other income. RoE will improve 240bp to 12.4% and re-rate the stock.

Over the last five years (FY12-17), the benefit of 9% CAGR in core earnings was dragged by (a) stricter tariff norms, particularly due to a reduction in normative tax rate to actual tax rate, (b) an increase in O&M under-recoveries due to rising employee cost, despite retirements and (c) delay in approval of tariff petitions.

We expect core PAT CAGR of ~20% over FY17-20

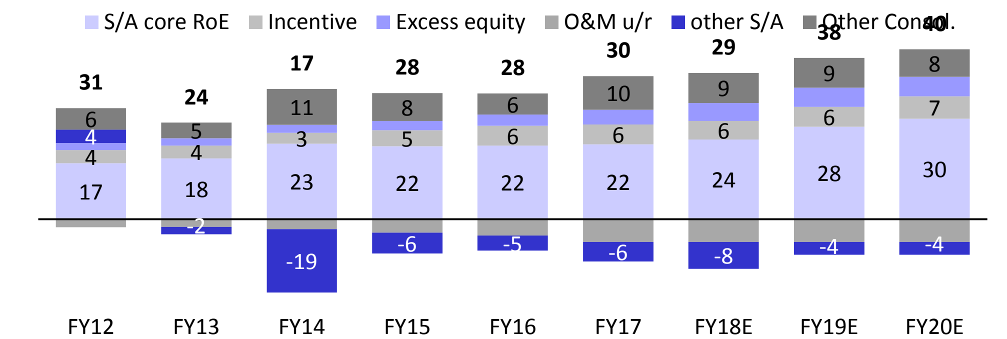
Exhibit 24: Core (ex-other income) PBT and PAT



Source: MOSL, Company

Core RoE is the key driver of PBT

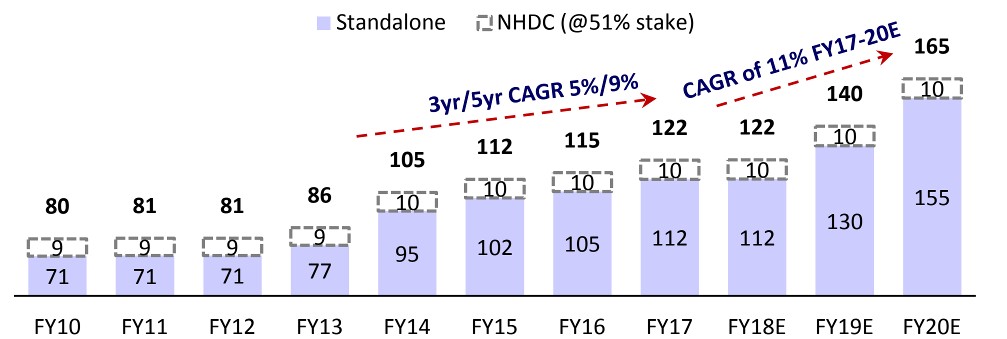
Exhibit 25: Break-up of core PBT – INR m



Source: MOSL, Company

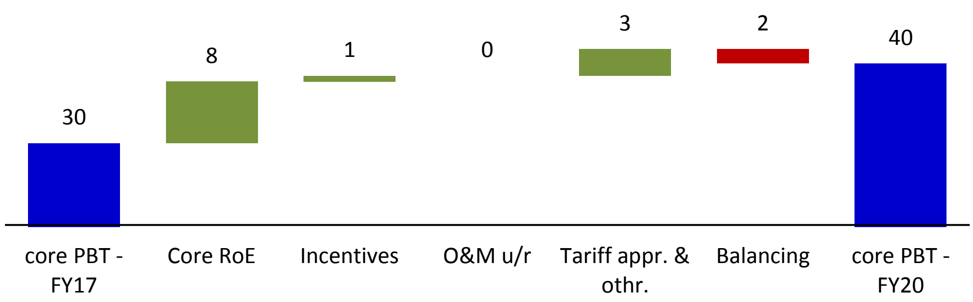
Regulated equity growth accelerating

Exhibit 26: Regulated equity – INR b



Source: MOSL, Company

Exhibit 27: Drivers of core PBT– INR m

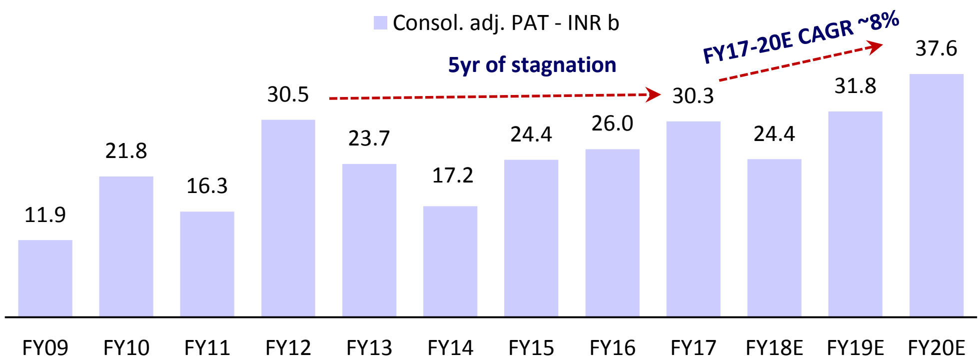


Source: MOSL, Company

Consolidated PAT growth would be lower at ~8%, as the FY17 base is inflated by other income.

We expect PAT CAGR of ~8% over FY17-20E

Exhibit 28: Consolidated PAT – INR b

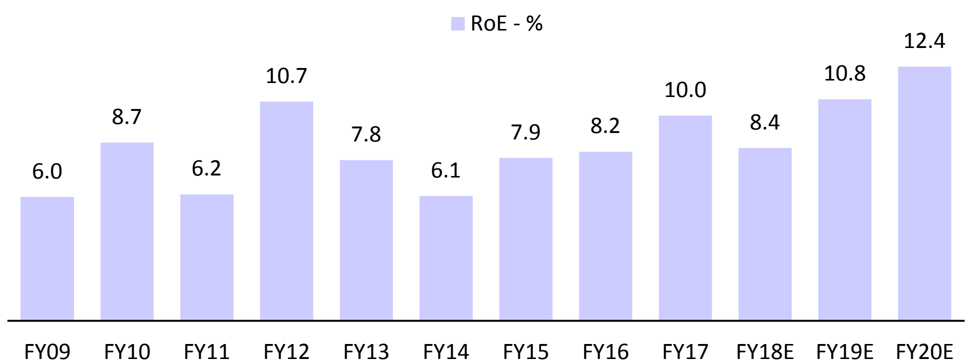


Source: MOSL, Company

We expect CWIP to peak in FY18. RoE is likely to improve from the long-term average of ~8% (~10% in FY17) to ~12% by FY20, driven by commercialization of assets and dividend payouts (~75% over FY18-20).

Improving balance sheet will boost RoE by 240bp over FY17-20E

Exhibit 29: Consolidated RoE - %



Source: MOSL, Company

SWOT Analysis

Bull & Bear case

Bull case

- No under-recoveries in O&M and project cost against some under recoveries in base case
- Subhansiri project will be cleared and get commissioned in FY23
- Higher growth of ~8% and ~5% in the second and terminal stage of the DCF valuation, against ~5% and ~3%, respectively, in the base case.
- Consolidated PAT will increase by ~11% and RoE by 130bps over the base case. TP will increase to INR41/sh.

Bear Case

- Regulated RoE to decline by 150bps starting FY20 against no change in base case.
- Non reduction in under recoveries for O&M and project cost.
- On the above assumptions, consolidated PAT would stand cut by 10%-21%, RoE by 80-220bps and TP to INR30/sh against the base case assumption.

Exhibit 30: Scenario Analysis – Bull & Bear Case

	Bull case			Base case			Bear case		
	FY18	FY19	FY20	FY18	FY19	FY20	FY18	FY19	FY20
Revenue	90	107	133	90	107	127	87	102	117
EBITDA	52	68	91	52	68	85	49	63	75
Adj. PAT	24	32	42	24	32	38	22	28	30
EPS	2.4	3.1	4.1	2.4	3.1	3.7	2.1	2.7	2.9
RoE	8.4	10.8	13.7	8.4	10.8	12.4	7.6	9.6	10.1
TP		41			37			30	

Source: MOSL

Valuations attractive at 1x BV and 6% dividend yield

Initiate with Buy; TP of INR37/share

NHPC has low regulatory risk with high growth prospects due to the large untapped water energy potential in India. We expect many regulatory tailwinds, as the government will need to invigorate investment in hydro power to counter volatility in solar energy and manage grid. Earnings growth visibility is strong for a few years due to the two projects that are expected to be commercialized over the next 12 months. Until the new wave to investment cycle strikes, NHPC will be a high-dividend-yield stock. We expect stock to get re-rated as RoE improves. Valuations are attractive at P/BV of 1x FY19E and a dividend yield of 6%. We value the stock at INR37/share based on DCF and initiate the coverage with Buy rating.

Expect regulatory tailwinds for hydro projects...

The regulatory framework for hydro power is getting favorable.

- Higher solar/wind penetration will require support of flexible hydro generation
- Hydro power is also proposed to be considered as renewable power (it is already considered so in Europe)
- Government is evaluating financial support and easing of procedures for hydro projects
- New hydro projects continue to enjoy regulated returns, unlike mandatory competitive bidding for new thermal projects since 2011

We do not expect a cut to regulated returns on hydro projects in the next tariff revision (unlike coal/transmission) due to the already lower IRRs and the need for encouragement of investment in hydro.

…and acceleration in earnings growth and RoE

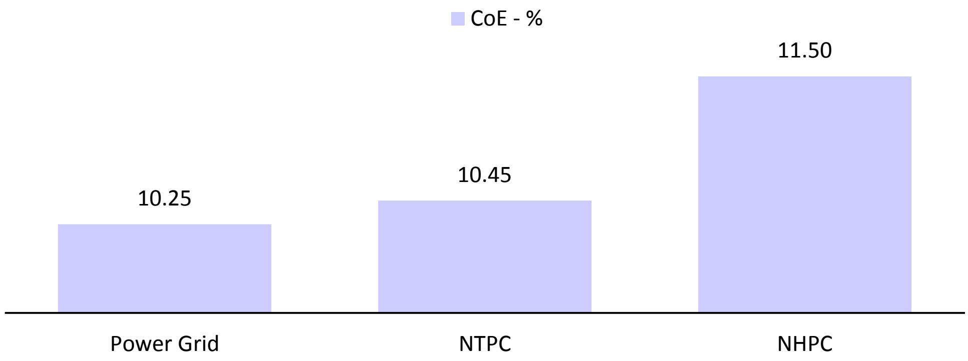
For NHPC, we estimate core PAT CAGR of ~20% over FY17-20, driven by strong capitalization and operating efficiencies. RoE will improve from an average of ~8% over FY08-17 to ~12%, aided by improving capital efficiency. Dividend payout will remain strong at a minimum of ~75% over FY18-20E on healthy cash generation.

CoE is higher than peers due to volatility in earnings

The predictability of commercialization of hydro projects (and thus driving earnings growth) is lower (unlike solar, coal and transmission projects) due to significant overruns and complex project issues. Moreover, NHPC's scale is much smaller to regulated peers like NTPC and Power Grid. Scale provides risk diversification. For NHPC's capacity to grow by ~10% (for its installed base of ~5.9GW), it will need to add ~600MW capacity every year, which is generally the size of a single project. As against this, if NTPC has to add 10% capacity (for its installed base of ~47GW), it will need to add ~4.7GW capacity every year, representing more than a few projects. Thus, for the current scale of NHPC, low IRRs and less predictable earnings, it has a higher CoE compared to peers.

Cost of equity for NHPC is higher than peers, but it can decline over next few years

Exhibit 31: Cost of equity - %



Source: MOSL, Company

Strong earnings growth and attractive dividend yield; Initiate with Buy

The stock has delivered a total shareholder return (TSR) of ~16% over the last three years and ~13% over the last five years, despite muted PAT growth. The re-rating, in our view, was driven by improving capital allocation and falling cost of equity.

We believe that capital allocation efficiency will continue. The cost of equity environment remains favorable. Regulatory risk on hydro power is low, and earnings growth would accelerate on capacity commissioning and efficiency gains. At CMP, the stock trades at ~1x FY19E P/BV. For an IRR of ~12-13% (including incentive income) and CoE of 11.5%, the stock is not factoring in any growth potential. The dividend yield is attractive at ~6% (GSec is 6.5%). We value the stock on a DCF basis, with explicit forecast to FY22, growth of ~5% from FY21-30 and a ~2% terminal growth rate. The target multiple is 1.1x P/BV and TP, including a dividend stream, is INR37/share, upside of ~32%. Initiate with **Buy**.

Exhibit 32: DCF-based target price derivation

Rf. Nominal risk free rate				(%)	6.50
B. Beta					1.00
Km. Equity Risk premium				(%)	5.00
Cost of equity (Rf+Km x B)				(%)	11.50
DCFE				**INR m**	**INR/sh.**
A. FY19-22				67,107	7
	Reg. RoE	**Re-Invst**	**Growth**		
	(%)	**(%)**	**(%)**		
B. FY21-30	15.50	30	4.7	131,690	13
C. Terminal Value	12.00	20	2.4	141,061	14
DCF value per share					33
Dividend for FY18/19E					4
Target price per share					37
CMP					29.5
Upside (%)					25.2
BV					29
P/BV					1.1

Source: MOSL, Company

Key risks

- Delay in commissioning of projects is expected to impact regulated equity addition and earnings growth.
- Cut in regulated RoE in the next tariff period should impact earnings and viability of new projects for NHPC.
- Logjam at Subhanshiri and the risk of project cost write-off.

Exhibit 33: Sector valuation

	Rating	CMP (INR)	TP (INR)	Up/(dw) %	MCAP (USD M)	EPS			P/E (x)		P/B(x)		RoE (%)	
						FY17	FY18E	FY19E	FY18E	FY19E	FY18E	FY19E	FY18E	FY19E
Powergrid	Buy	204	261	28	16,611	14.0	17.4	20.4	11.7	10.0	1.9	1.6	17.0	17.4
NTPC	Buy	180	211	17	23,153	12.0	13.4	15.7	13.4	11.5	1.4	1.3	11.0	11.9
JSW Energy	Sell	87	49	-43	2,211	3.9	3.4	2.7	25.4	32.0	1.3	1.3	5.3	4.2
CESC	Buy	1,050	1,360	30	2,181	51.9	88.9	99.3	11.8	10.6	1.2	1.1	10.6	10.8
Tata Power	Sell	91	72	-21	3,837	7.4	7.3	7.5	12.5	12.1	1.9	1.6	16.0	14.6
NHPC	**Buy**	**30**	**37**	**25**	**5,091**	**3.0**	**2.4**	**3.1**	**12.4**	**9.5**	**1.0**	**1.0**	**8.4**	**10.8**
Coal India	Buy	268	335	25	26,386	14.9	17.5	20.7	15.3	13.0	6.5	6.2	43.4	48.9

Source: MOSL, Company

Financials and Valuations

Income Statement (INR Million)

Y/E Mar	2013	2014	2015	2016	2017	2018E	2019E	2020E
Net Sales	**64,062**	**74,159**	**82,441**	**83,540**	**86,231**	**90,314**	**107,258**	**127,163**
Change (%)	-7.4	15.8	11.2	1.3	3.2	4.7	18.8	18.6
EBITDA	**42,730**	**43,833**	**57,382**	**53,727**	**55,621**	**55,783**	**72,013**	**85,990**
EBITDA Margin (%)	66.7	59.1	69.6	64.3	64.5	61.8	67.1	67.6
Depreciation	12,411	14,994	17,153	14,320	14,618	14,606	17,044	20,488
EBIT	**30,319**	**28,839**	**40,230**	**39,407**	**41,004**	**41,177**	**54,969**	**65,502**
Interest	5,962	11,802	12,728	11,182	10,734	9,016	12,237	15,067
Other Income	12,152	13,221	9,132	10,924	15,038	7,959	7,094	6,933
Extraordinary items	2,441	-4,972	550	0	0	0	0	0
PBT	**38,949**	**25,286**	**37,184**	**39,149**	**45,307**	**40,120**	**49,826**	**57,368**
Tax	10,223	8,954	9,203	10,003	10,531	11,562	13,890	15,696
Tax Rate (%)	26.2	35.4	24.8	25.5	23.2	28.8	27.9	27.4
Min. Int. & Assoc. Share	2,552	4,144	3,067	3,130	4,482	4,121	4,092	4,023
Reported PAT	**26,174**	**12,188**	**24,914**	**26,017**	**30,294**	**24,437**	**31,844**	**37,649**
Adjusted PAT	**23,733**	**17,160**	**24,364**	**26,017**	**30,294**	**24,437**	**31,844**	**37,649**
Change (%)	-22.3	-27.7	42.0	6.8	16.4	-19.3	30.3	18.2

Balance Sheet (INR Million)

Y/E Mar	2013	2014	2015	2016	2017	2018E	2019E	2020E
Share Capital	123,007	110,707	110,707	110,707	102,593	102,593	102,593	102,593
Reserves	180,743	171,753	196,868	205,720	187,555	188,600	197,053	207,002
Net Worth	**303,750**	**282,460**	**307,575**	**316,427**	**290,148**	**291,194**	**299,646**	**309,595**
Minority Interest	23,102	30,657	33,257	31,681	33,822	33,447	33,043	32,570
Advance Against Depreciation	0	0	0	0	0	0	0	0
Debt	188,059	193,090	187,245	199,382	192,267	199,751	207,566	195,523
Deferred Tax	6,241	9,344	9,886	15,136	16,653	16,653	16,653	16,653
Total Capital Employed	**521,152**	**515,551**	**537,963**	**562,627**	**532,891**	**541,044**	**556,909**	**554,341**
Gross Fixed Assets	329,392	404,868	405,761	342,331	353,055	353,969	413,440	497,440
Less: Acc Depreciation	94,019	108,975	126,600	116,191	130,784	145,390	162,434	182,922
Net Fixed Assets	**235,373**	**295,892**	**279,161**	**226,140**	**222,271**	**208,579**	**251,007**	**314,519**
Capital WIP	199,618	149,240	163,775	167,416	175,876	205,789	173,289	100,289
Investments	0	0	7,633	5,999	10,200	10,227	10,255	10,282
Current Assets	**188,370**	**168,879**	**163,551**	**228,446**	**193,424**	**185,330**	**191,239**	**198,132**
Inventory	642	798	906	928	1,008	1,008	1,008	1,008
Debtors	22,401	24,224	29,052	19,045	18,540	18,451	21,929	26,016
Cash & Bank	94,235	74,162	71,975	72,847	34,725	22,672	20,853	22,636
Loans & Adv, Others	71,092	69,695	61,618	135,626	139,152	143,199	147,449	148,471
Curr Liabs & Provns	**102,209**	**98,461**	**76,158**	**65,375**	**68,881**	**68,881**	**68,881**	**68,881**
Net Current Assets	**86,160**	**70,419**	**87,393**	**163,071**	**124,544**	**116,449**	**122,359**	**129,251**
Total Assets	**521,152**	**515,551**	**537,963**	**562,627**	**532,891**	**541,044**	**556,909**	**554,341**

Financials and Valuations

Ratios

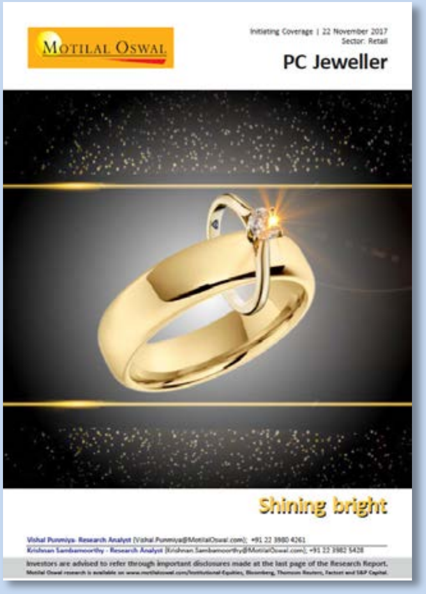
Y/E Mar	2013	2014	2015	2016	2017	2018E	2019E	2020E
Basic (INR)								
EPS	**1.9**	**1.6**	**2.2**	**2.4**	**3.0**	**2.4**	**3.1**	**3.7**
Cash EPS	2.9	2.9	3.8	3.6	4.4	3.8	4.8	5.7
Book Value	24.7	25.5	27.8	28.6	28.3	28.4	29.2	30.2
DPS	0.6	0.3	0.6	1.3	2.5	1.9	1.9	2.3
Payout (incl. Div. Tax.)	36.4	22.6	32.8	67.6	98.9	95.7	73.5	73.6
Valuation(x)								
P/E	11.5	14.9	11.0	10.7	9.9	12.4	9.5	8.0
Cash P/E	7.5	8.0	6.4	6.9	6.7	7.8	6.2	5.2
Price / Book Value	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0
EV/Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EV/EBITDA	9.1	9.3	8.0	9.1	10.2	9.9	7.7	6.0
Dividend Yield (%)	2.7	1.3	2.5	5.2	8.4	6.4	6.4	7.6
Profitability Ratios (%)								
RoE	7.8	6.1	7.9	8.2	10.0	8.4	10.8	12.4
RoCE	6.2	6.4	6.5	6.2	7.0	6.2	8.0	10.0
Adjusted RoE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turnover Ratios (%)								
Asset Turnover (x)	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2
Debtors (No. of Days)	128	119	129	83	78	75	75	75
Inventory (No. of Days)	4	4	4	4	4	4	3	3
Leverage Ratios (%)								
Net Debt/Equity (x)	0.3	0.4	0.3	0.4	0.5	0.5	0.6	0.5

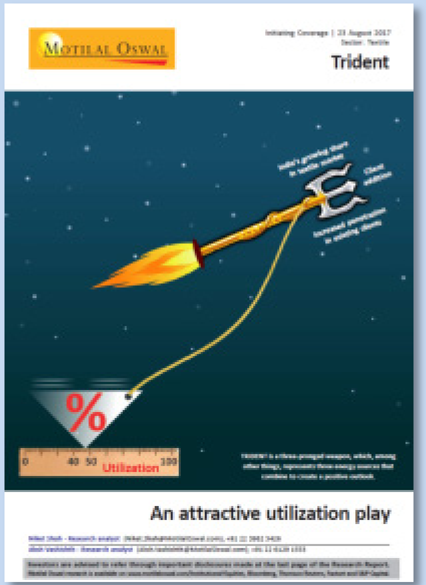
Cash Flow Statement **(INR Million)**

Y/E Mar	2013	2014	2015	2016	2017	2018E	2019E	2020E
Adjusted EBITDA	42,730	43,833	57,382	53,727	55,621	55,783	72,013	85,990
Non cash opr. exp (inc)	1,341	-35,311	-26,357	-36,000	-19,022	0	0	0
(Inc)/Dec in Wkg. Cap.	-11,507	1,909	-5,631	11,134	35,873	90	-3,479	-4,087
Tax Paid	-7,736	-7,942	-8,092	-8,718	-10,808	-11,562	-13,890	-15,696
Other operating activities	0	0	0	0	0	0	0	0
CF from Op. Activity	**24,828**	**2,489**	**17,302**	**20,143**	**61,664**	**44,310**	**54,645**	**66,208**
(Inc)/Dec in FA & CWIP	-23,989	-22,499	-17,260	-21,470	-15,870	-30,827	-26,972	-11,000
Free cash flows	**839**	**-20,010**	**42**	**-1,326**	**45,794**	**13,484**	**27,673**	**55,208**
(Pur)/Sale of Invt	0	0	0	0	0	0	0	0
Others	10,694	11,746	9,580	14,007	-2,775	3,911	2,844	5,910
CF from Inv. Activity	**-13,296**	**-10,754**	**-7,680**	**-7,462**	**-18,645**	**-26,915**	**-24,128**	**-5,090**
Inc/(Dec) in Net Worth	625	-23,679	0	0	-26,259	0	0	0
Inc / (Dec) in Debt	11,179	4,494	-196	-6,184	-8,364	7,483	7,816	-12,043
Interest Paid	-15,320	-16,195	-16,544	-15,020	-13,912	-9,016	-12,237	-15,067
Divd Paid (incl Tax) & Others	-8,293	23,571	4,931	9,395	-32,607	-27,915	-27,915	-32,224
CF from Fin. Activity	**-11,809**	**-11,809**	**-11,809**	**-11,809**	**-81,141**	**-29,448**	**-32,336**	**-59,335**
Inc/(Dec) in Cash	**-276**	**-20,074**	**-2,187**	**872**	**-38,122**	**-12,052**	**-1,819**	**1,783**
Add: Opening Balance	94,512	94,235	74,162	71,975	72,847	34,725	22,672	20,853
Closing Balance	**94,235**	**74,162**	**71,975**	**72,847**	**34,725**	**22,672**	**20,853**	**22,636**

REPORT GALLERY

RECENT INITIATING COVERAGE REPORTS





Disclosures:

The following Disclosures are being made in compliance with the SEBI Research Analyst Regulations 2014 (herein after referred to as the Regulations).

Motilal Oswal Securities Ltd. (MOSL) is a SEBI Registered Research Analyst having registration no. INH000000412. MOSL, the Research Entity (RE) as defined in the Regulations, is engaged in the business of providing Stock broking services, Investment Advisory Services, Depository participant services & distribution of various financial products. MOSL is a subsidiary company of Motilal Oswal Financial Service Ltd. (MOFSL). MOFSL is a listed public company, the details in respect of which are available on www.motilaloswal.com. MOSL is registered with the Securities & Exchange Board of India (SEBI) and is a registered Trading Member with National Stock Exchange of India Ltd. (NSE) and Bombay Stock Exchange Limited (BSE), Metropolitan Stock Exchange Of India Ltd. (MSE) for its stock broking activities & is Depository participant with Central Depository Services Limited (CDSL) & National Securities Depository Limited (NSDL) and is member of Association of Mutual Funds of India (AMFI) for distribution of financial products. Details of associate entities of Motilal Oswal Securities Limited are available on the website at http://onlinereports.motilaloswal.com/Dormant/documents/Associate%20Details.pdf

Pending Regulatory Enquiries against Motilal Oswal Securities Limited by SEBI:

SEBI pursuant to a complaint from client Shri C.R. Mohanraj alleging unauthorized trading, issued a letter dated 29th April 2014 to MOSL notifying appointment of an Adjudicating Officer as per SEBI regulations to hold inquiry and adjudge violation of SEBI Regulations; MOSL requested SEBI to provide all documents, records, investigation report relied upon by SEBI which were referred in Show Cause Notice. The matter is currently pending.

MOSL, it's associates, Research Analyst or their relative may have any financial interest in the subject company. MOSL and/or its associates and/or Research Analyst may have beneficial ownership of 1% or more securities in the subject company at the end of the month immediately preceding the date of publication of the Research Report. MOSL and its associate company(ies), their directors and Research Analyst and their relatives may; (a) from time to time, have a long or short position in, act as principal in, and buy or sell the securities or derivatives thereof of companies mentioned herein. (b) be engaged in any other transaction involving such securities and earn brokerage or other compensation or act as a market maker in the financial instruments of the company(ies) discussed herein or act as an advisor or lender/borrower to such company(ies) or may have any other potential conflict of interests with respect to any recommendation and other related information and opinions.; however the same shall have no bearing whatsoever on the specific recommendations made by the analyst(s), as the recommendations made by the analyst(s) are completely independent of the views of the associates of MOSL even though there might exist an inherent conflict of interest in some of the stocks mentioned in the research report. Research Analyst may have served as director/officer, etc. in the subject company in the last 12 month period. MOSL and/or its associates may have received any compensation from the subject company in the past 12 months.

In the last 12 months period ending on the last day of the month immediately preceding the date of publication of this research report, MOSL or any of its associates may have:

a) managed or co-managed public offering of securities from subject company of this research report,
b) received compensation for investment banking or merchant banking or brokerage services from subject company of this research report,
c) received compensation for products or services other than investment banking or merchant banking or brokerage services from the subject company of this research report.
d) Subject Company may have been a client of MOSL or its associates during twelve months preceding the date of distribution of the research report.

MOSL and it's associates have not received any compensation or other benefits from the subject company or third party in connection with the research report. To enhance transparency, MOSL has incorporated a Disclosure of Interest Statement in this document. This should, however, not be treated as endorsement of the views expressed in the report. MOSL and / or its affiliates do and seek to do business including investment banking with companies covered in its research reports. As a result, the recipients of this report should be aware that MOSL may have a potential conflict of interest that may affect the objectivity of this report. Compensation of Research Analysts is not based on any specific merchant banking, investment banking or brokerage service transactions.

Terms & Conditions:

This report has been prepared by MOSL and is meant for sole use by the recipient and not for circulation. The report and information contained herein is strictly confidential and may not be altered in any way, transmitted to, copied or distributed, in part or in whole, to any other person or to the media or reproduced in any form, without prior written consent of MOSL. The report is based on the facts, figures and information that are considered true, correct, reliable and accurate. The intent of this report is not recommendatory in nature. The information is obtained from publicly available media or other sources believed to be reliable. Such information has not been independently verified and no guaranty, representation of warranty, express or implied, is made as to its accuracy, completeness or correctness. All such information and opinions are subject to change without notice. The report is prepared solely for informational purpose and does not constitute an offer document or solicitation of offer to buy or sell or subscribe for securities or other financial instruments for the clients. Though disseminated to all the customers simultaneously, not all customers may receive this report at the same time. MOSL will not treat recipients as customers by virtue of their receiving this report.

Analyst Certification

The views expressed in this research report accurately reflect the personal views of the analyst(s) about the subject securities or issues, and no part of the compensation of the research analyst(s) was, is, or will be directly or indirectly related to the specific recommendations and views expressed by research analyst(s) in this report.

Disclosure of Interest Statement	NHPC
Analyst ownership of the stock	No

A graph of daily closing prices of securities is available at www.nseindia.com, www.bseindia.com. Research Analyst views on Subject Company may vary based on Fundamental research and Technical Research. Proprietary trading desk of MOSL or its associates maintains arm's length distance with Research Team as all the activities are segregated from MOSL research activity and therefore it can have an independent view with regards to subject company for which Research Team have expressed their views.

Regional Disclosures (outside India)

This report is not directed or intended for distribution to or use by any person or entity resident in a state, country or any jurisdiction, where such distribution, publication, availability or use would be contrary to law, regulation or which would subject MOSL & its group companies to registration or licensing requirements within such jurisdictions.

For Hong Kong:

This report is distributed in Hong Kong by Motilal Oswal capital Markets (Hong Kong) Private Limited, a licensed corporation (CE AYY-301) licensed and regulated by the Hong Kong Securities and Futures Commission (SFC) pursuant to the Securities and Futures Ordinance (Chapter 571 of the Laws of Hong Kong) "SFO". As per SEBI (Research Analyst Regulations) 2014 Motilal Oswal Securities (SEBI Reg No. INH000000412) has an agreement with Motilal Oswal capital Markets (Hong Kong) Private Limited for distribution of research report in Hong Kong. This report is intended for distribution only to "Professional Investors" as defined in Part I of Schedule 1 to SFO. Any investment or investment activity to which this document relates is only available to professional investor and will be engaged only with professional investors." Nothing here is an offer or solicitation of these securities, products and services in any jurisdiction where their offer or sale is not qualified or exempt from registration. The Indian Analyst(s) who compile this report is/are not located in Hong Kong & are not conducting Research Analysis in Hong Kong.

For U.S.

Motilal Oswal Securities Limited (MOSL) is not a registered broker - dealer under the U.S. Securities Exchange Act of 1934, as amended (the"1934 act") and under applicable state laws in the United States. In addition MOSL is not a registered investment adviser under the U.S. Investment Advisers Act of 1940, as amended (the "Advisers Act" and together with the 1934 Act, the "Acts), and under applicable state laws in the United States. Accordingly, in the absence of specific exemption under the Acts, any brokerage and investment services provided by MOSL, including the products and services described herein are not available to or intended for U.S. persons. This report is intended for distribution only to "Major Institutional Investors" as defined by Rule 15a-6(b)(4) of the Exchange Act and interpretations thereof by SEC (henceforth referred to as "major institutional investors"). This document must not be acted on or relied on by persons who are not major institutional investors. Any investment or investment activity to which this document relates is only available to major institutional investors and will be engaged in only with major institutional investors. In reliance on the exemption from registration provided by Rule 15a-6 of the U.S. Securities Exchange Act of 1934, as amended (the "Exchange Act") and interpretations thereof by the U.S. Securities and Exchange Commission ("SEC") in order to conduct business with Institutional Investors based in the U.S., MOSL has entered into a chaperoning agreement with a U.S. registered broker-dealer, Motilal Oswal Securities International Private Limited. ("MOSIPL"). Any business interaction pursuant to this report will have to be executed within the provisions of this chaperoning agreement.

The Research Analysts contributing to the report may not be registered /qualified as research analyst with FINRA. Such research analyst may not be associated persons of the U.S. registered broker-dealer, MOSIPL, and therefore, may not be subject to NASD rule 2711 and NYSE Rule 472 restrictions on communication with a subject company, public appearances and trading securities held by a research analyst account.

For Singapore

Motilal Oswal Capital Markets Singapore Pte Limited is acting as an exempt financial advisor under section 23(1)(f) of the Financial Advisers Act(FAA) read with regulation 17(1)(d) of the Financial Advisors Regulations and is a subsidiary of Motilal Oswal Securities Limited in India. This research is distributed in Singapore by Motilal Oswal Capital Markets Singapore Pte Limited and it is only directed in Singapore to accredited investors, as defined in the Financial Advisers Regulations and the Securities and Futures Act (Chapter 289), as amended from time to time. 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:

Disclaimer:

The report and information contained herein is strictly confidential and meant solely for the selected recipient and may not be altered in any way, transmitted to, copied or distributed, in part or in whole, to any other person or to the media or reproduced in any form, without prior written consent. This report and information herein is solely for informational purpose and may not be used or considered as an offer document or solicitation of offer to buy or sell or subscribe for securities or other financial instruments. Nothing in this report constitutes investment, legal, accounting and tax advice or a representation that any investment or strategy is suitable or appropriate to your specific circumstances. The securities discussed and opinions expressed in this report may not be suitable for all investors, who must make their own investment decisions, based on their own investment objectives, financial positions and needs of specific recipient. This may not be taken in substitution for the exercise of independent judgment by any recipient. Each recipient of this document should make such investigations as it deems necessary to arrive at an independent evaluation of an investment in the securities of companies referred to in this document (including the merits and risks involved), and should consult its own advisors to determine the merits and risks of such an investment. The investment discussed or views expressed may not be suitable for all investors. Certain transactions -including those involving futures, options, another derivative products as well as non-investment grade securities - involve substantial risk and are not suitable for all investors. No representation or warranty, express or implied, is made as to the accuracy, completeness or fairness of the information and opinions contained in this document. The Disclosures of Interest Statement incorporated in this document is provided solely to enhance the transparency and should not be treated as endorsement of the views expressed in the report. This information is subject to change without any prior notice. The Company reserves the right to make modifications and alternations to this statement as may be required from time to time without any prior approval. MOSL, its associates, their directors and the employees may from time to time, effect or have effected an own account transaction in, or deal as principal or agent in or for the securities mentioned in this document. They may perform or seek to perform investment banking or other services for, or solicit investment banking or other business from, any company referred to in this report. Each of these entities functions as a separate, distinct and independent of each other. The recipient should take this into account before interpreting the document. This report has been prepared on the basis of information that is already available in publicly accessible media or developed through analysis of MOSL. The views expressed are those of the analyst, and the Company may or may not subscribe to all the views expressed therein. This document is being supplied to you solely for your information and may not be reproduced, redistributed or passed on, directly or indirectly, to any other person or published, copied, in whole or in part, for any purpose. This report is not directed or intended for distribution to, or use by, any person or entity who is a citizen or resident of or located in any locality, state, country or other jurisdiction, where such distribution, publication, availability or use would be contrary to law, regulation or which would subject MOSL to any registration or licensing requirement within such jurisdiction. The securities described herein may or may not be eligible for sale in all jurisdictions or to certain category of investors. Persons in whose possession this document may come are required to inform themselves of and to observe such restriction. Neither the Firm, not its directors, employees, agents or representatives shall be liable for any damages whether direct or indirect, incidental, special or consequential including lost revenue or lost profits that may arise from or in connection with the use of the information. The person accessing this information specifically agrees to exempt MOSL or any of its affiliates or employees from, any and all responsibility/liability arising from such misuse and agrees not to hold MOSL or any of its affiliates or employees responsible for any such misuse and further agrees to hold MOSL or any of its affiliates or employees free and harmless from all losses, costs, damages, expenses that may be suffered by the person accessing this information due to any errors and delays.

Registered Office Address: Motilal Oswal Tower, Rahimtullah Sayani Road, Opposite Parel ST Depot, Prabhadevi, Mumbai-400025; Tel No.: 022-3980 4263; www.motilaloswal.com. Correspondence Address: Palm Spring Centre, 2nd Floor, Palm Court Complex, New Link Road, Malad (West), Mumbai- 400 064. Tel No: 022 3080 1000. Compliance Officer: Neeraj Agarwal, Email Id: na@motilaloswal.com, Contact No.:022-30801085.

Registration details of group entities.: MOSL: SEBI Registration: INZ000158836 (BSE/NSE/MSE); CDSL: IN-DP-16-2015; NSDL: IN-DP-NSDL-152-2000; Research Analyst: INH000000412. AMFI: ARN 17397. Investment Adviser: INA000007100. Motilal Oswal Asset Management Company Ltd. (MOAMC): PMS (Registration No.: INP000000670) offers PMS and Mutual Funds products. Motilal Oswal Wealth Management Ltd. (MOWML): PMS (Registration No.: INP000004409) offers wealth management solutions. *Motilal Oswal Securities Ltd. is a distributor of Mutual Funds, PMS, Fixed Deposit, Bond, NCDs, Insurance and IPO products. * Motilal Oswal Commodities Broker Pvt. Ltd. offers Commodities Products. * Motilal Oswal Real Estate Investment Advisors II Pvt. Ltd. offers Real Estate products. * Motilal Oswal Private Equity Investment Advisors Pvt. Ltd. offers Private Equity products