



A Maharatna Company

Energizing India's Growth



INVESTOR PRESENTATION

NTPC: Vision, Mission and Core Values



Vision

To be the World's
Leading Power Company,
Energizing India's Growth

Mission

Provide Reliable Power and Related
Solutions in an Economical, Efficient
and Environment friendly manner,
driven by Innovation and Agility

Core Values-ICOMIT



Presentation Outline



A Maharatna Company

- **Company Overview**

- **Financial Highlights**

- **Operations Highlights**

- **Power Sector – in transition**

- **NTPC – Staying Ahead of the Curve**

- **Risks & Mitigation**

- **Sustainability Initiatives**





Largest Power Generator in India



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Strong Support from the Government of India

Maintaining Leadership Position for over 2 decades

A 50 GW+ Powerful Maharatna

Proven Operational Excellence

Presence across the Power Value Chain

Strong Focus on Renewable Energy Sources

Backward integration thru Coal Mining

- One of the 7 Maharatnas of Government of India
- GoI Control with 69.74% holding
- Plays a pivotal role to achieve power for all

- 16% share in India's total installed capacity
- NTPC Group contributed 24% to All India generation during FY 17.

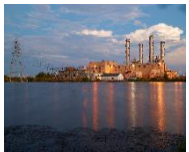
- Installed capacity of 51,671 MW + 20,976 MW under construction
- Highest capacity addition of 13395 MW in a plan period in the 12th plan.

- Highest ever gross generation of 250.31 BUs
- Maintaining consistent lead over All India PLF
- Top 3 coal stations belong to NTPC.

- Subsidiary NVVN traded 15.9 BUs in FY17
- Providing Consultancy in various areas
- International presence- Setting up power plant in Bangladesh

- 865 MW Solar PV capacity and 18 MW of Wind Power capacity commissioned
- Committed to set up 10,000 MW of Renewables over next 4-5 years.

- 10 coal mining blocks, with total Geological Reserves of around 7.3 BT
- Commenced Mining at Pakri Barwadih



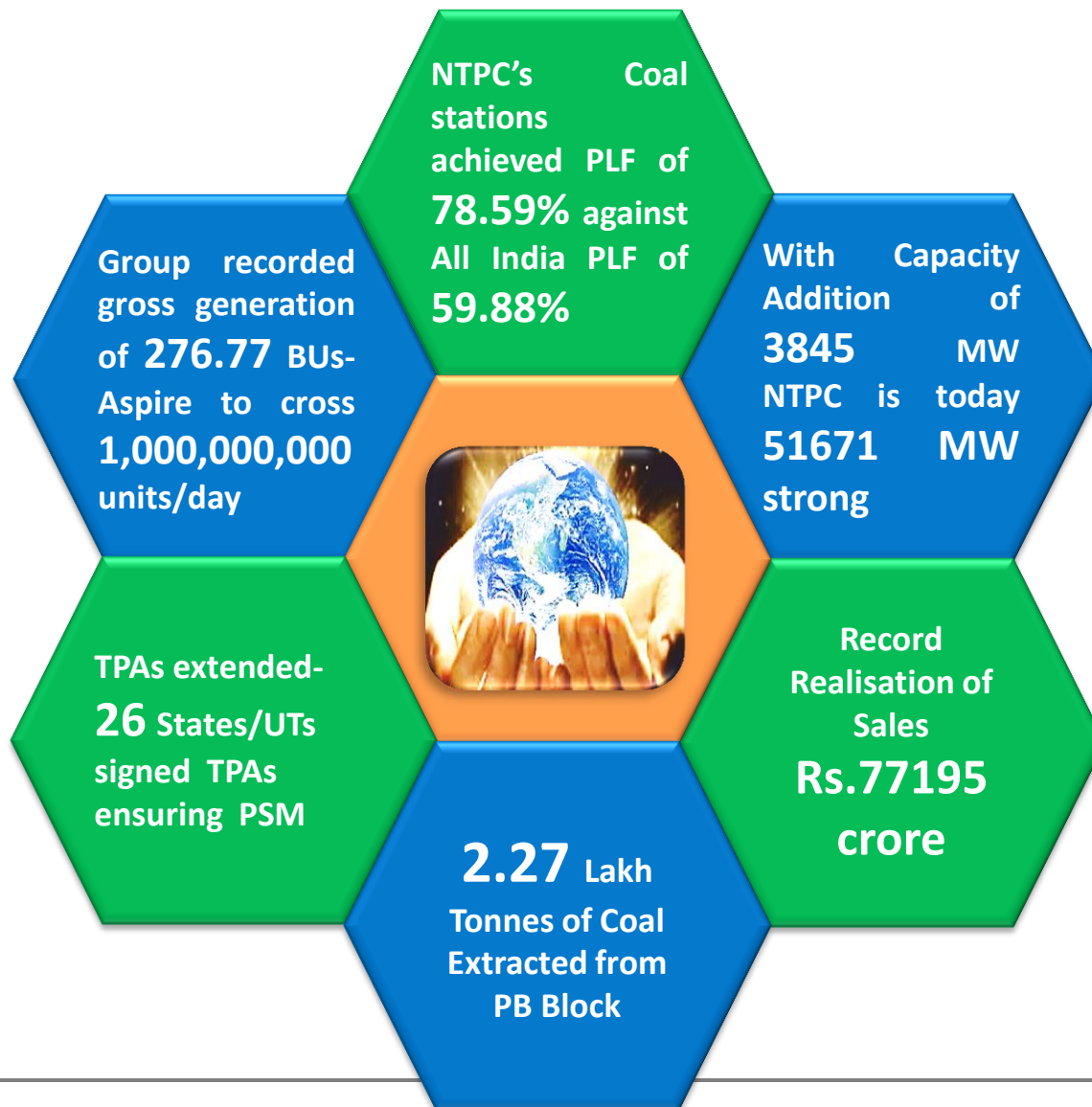
12th Largest Power Utility Globally

Ranked No.2 IPP in the world by PLATTS

Key Performance Highlights of FY 17



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NTPC Group: Pan India Presence



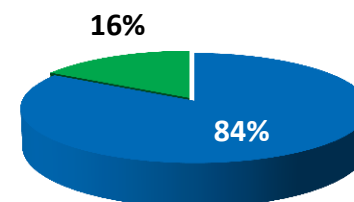
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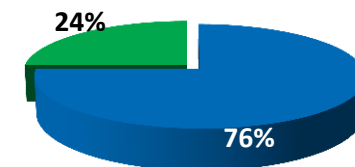
Map not to scale. Includes capacity of under construction plants

- Thermal Power Stations
- Ongoing Hydro Power Projects
- Gas Power Stations
- Ongoing Thermal Projects
- Solar PV
- Hydro Power Stations
- Wind Power Project

Share of Installed Capacity (*as on March 31,2017)



Share of Electricity Generated (during FY17)



* Rest of India 276350 MW
* NTPC (Group) 50498 MW

Rest of India 883.07 BUS
NTPC (Group) 276.77 BUS

Installed Capacity: 51671 MW

Fuel Mix	No. of Plants	Capacity (MW)	% Share
NTPC Owned			
Coal	20	38,755	75.00%
Gas/Liquid Fuel	7	4,017	7.77%
Hydro	1	800	1.55%
Solar/Wind	12	883	1.71%
Sub-total	40	44,455	86.03%
Owned by JVs and Subsidiaries			
Coal	8	5,249	10.16%
Gas	1	1,967	3.81%
Sub-total	9	7,216	13.97%
Total	49	51,671	100.00%



Group NTPC – 5 Subsidiaries and 20 Joint Ventures



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Power Generation

Kanti Bijlee Utpadan Nigam Ltd. (65%)

Bangladesh India Friendship Power Company Pvt Ltd. (50%)

Bhartiya Rail Bijlee Company Ltd. (74%)

Trincomalee Power Company Ltd. (50%)

Patratu Vidyut Utpadan Nigam Ltd. (74%)

Nabinagar Power Generating Company Pvt. Ltd. (50%)

Aravali Power Company Pvt. Ltd. (50%)

Meja Urja Nigam Pvt. Ltd. (50%)

NTPC Tamil Nadu Energy Company Ltd. (50%)

Anushakti Vidyut Nigam Ltd. (49%)

NTPC SAIL Power Company Ltd. (50%)

Ratnagiri Gas and Power Pvt. Ltd. (25.51%)

Services

NTPC Electric Supply Company Ltd. (100%)

Utility Powertech Ltd. (50%)

NTPC GE Power Services Pvt. Ltd. (50%)

National High Power Test Laboratory Pvt. Ltd. (20%)

Energy Efficiency Service Ltd.(31.70%)

Power Trading

NTPC Vidyut Vyapar Nigam Ltd. (100%)

Fertilizer Plants

Hindustan Urvarak & Rasayan Ltd. (33.28%)

Coal Acquisition

International Coal Ventures Pvt. Ltd. *

NTPC SCCL Global Ventures Pvt. Ltd. **

CIL NTPC Urja Pvt. Ltd. (50%)

Equipment Manufacturing

NTPC BHEL Power Projects Pvt. Ltd. (50%)*

BF NTPC Energy Systems Ltd. (49%)*

Transformers and Electricals Kerala Ltd. (44.60%)*

Highlights of Group Companies

- Investment in Group Companies as on 31.03.2017 is Rs.8,839 crore.
- Investment in Operational Group Companies is Rs.6,110 crore.
- 13 Group Companies are operational.
- 9 of them registered an aggregate profit of Rs. 1,540.38 crore.
- Group Companies together paid a dividend of Rs.310.08 crore during FY17, NTPC received Rs.163.09 crore as its share.

Strong Consolidated Financials



Balance Sheet	31.03.17	31.03.16	P&L	FY 17	FY 16
Total Debt	1,10,650	97,936	Revenue	83,048	74,484
Cash & Bank	3,301	4,938	EBITDA	22,463	19,006
Net Debt	1,07,349	92,998	PAT	10,714	10,781
Net Worth	98,641	92,369			

Subsidiaries

Joint Ventures

JVs under Exit

Consolidated EBITDA jumped by 18%.

*Company has resolved to withdraw from NTPC-BHEL, ICVL, BF-NTPC and TELK. **NTPC-SCCL is under liquidation.



Financial Highlights



Sustaining Robust Margins along-with Revenue Growth



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Rs. Crore

Particulars	Q1 FY 18	Q1 FY 17	FY 17	FY 16	FY15	FY14	FY13
Revenue from Operations	19,879	19,063	78,273	70,844	73,237	72,019	65,674
Other Income	663	158	1,069	1,165	2,100	2,689	3,102
Gross Profit	7,802	7,431	30,701	27,045	24,403	26,189	24,656
Gross Margin	39%	39%	39%	38%	33%	36%	38%
Employee Benefit Expenses	1,071	998	4,325	3,582	3,621	3,868	3,360
Other Expenses	1,690	1,261	5,092	5,576	4,577	4,557	4,182
EBITDA	5,703	5,329	22,353	19,052	18,306	20,453	20,216
EBITDA Margin	28%	28%	28%	26%	24%	27%	29%
Depreciation	1,570	1,395	5,921	5,172	4,912	4,142	3,397
Finance Cost	896	900	3,597	3,296	2,744	2,407	1,924
Exceptional Items	-	-	(783)	-	-	-	1,684
Profit Before Tax	3,465	3,037	12,388	10,596	10,547	13,905	16,579
Profit After Tax	2,618	2,339	9,385	10,770	10,291	10,975	12,619
Dividend	-	-	3,595	2,762	2,061	4,741	4,741

*Figures for FY 2015-16 & 2016-17 are as per IND AS and for FY 2012-13 to 2014-15 are as per previous GAAP.

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Consistently Growing Balance-Sheet



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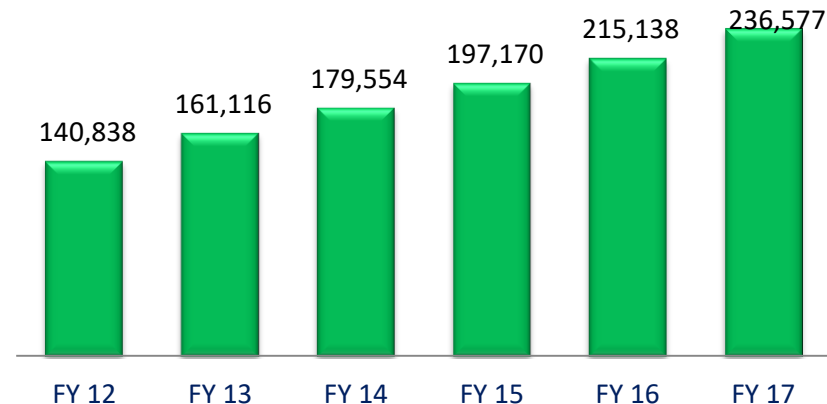
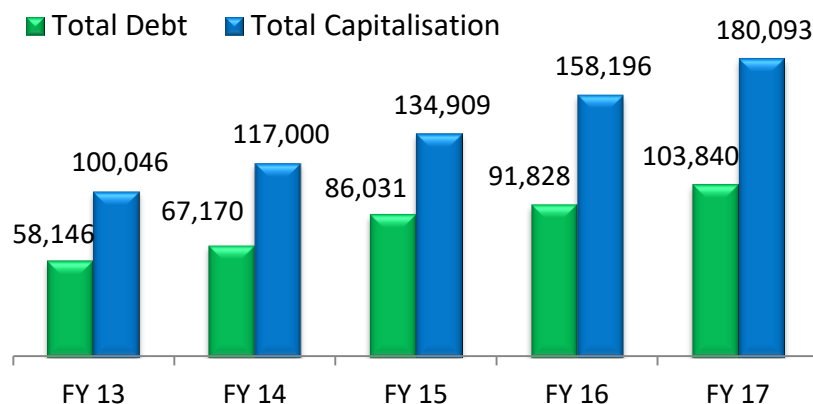
Rs. Crore

Particulars (Stand alone)	FY 17	FY 16	FY15	FY14	FY13
Total Fixed Assets (Net block+CWIP)	180,093	158,196	134,909	117,000	100,046
Investments	8,952	8,014	7,239	8,121	9,138
Net Worth	96,231	91,294	83,830	85,815	80,388
Total Debt	103,840	91,828	86,031	67,170	58,146
Value Added	29,159	27,440	25,090	25,966	22,999
CAPEX	28,252	25,960	23,239	21,797	19,926

Growth reflected in highest ever CAPEX of Rs. 28,252 crore on stand alone basis.

Total Debt and Capitalization

Total Assets

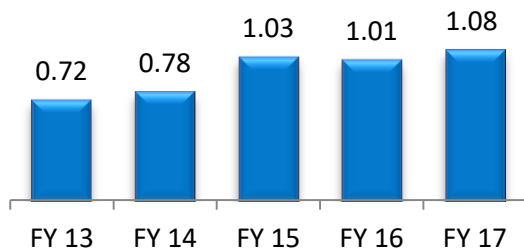


On growth path.....Capitalization registered CAGR of 16% over last 4 years

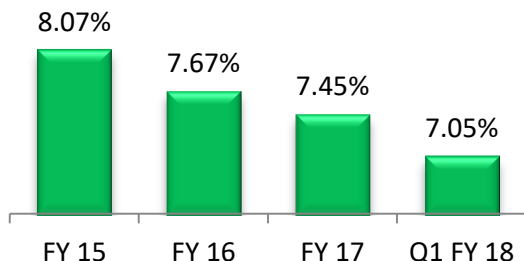


Prospering by Optimal Leveraging

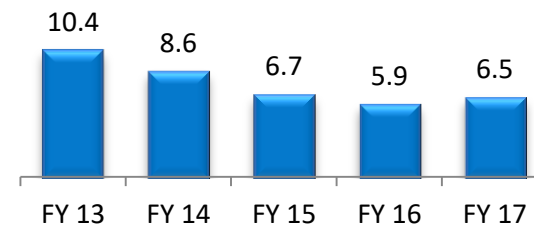
Debt/Equity



Average Rate of Borrowing

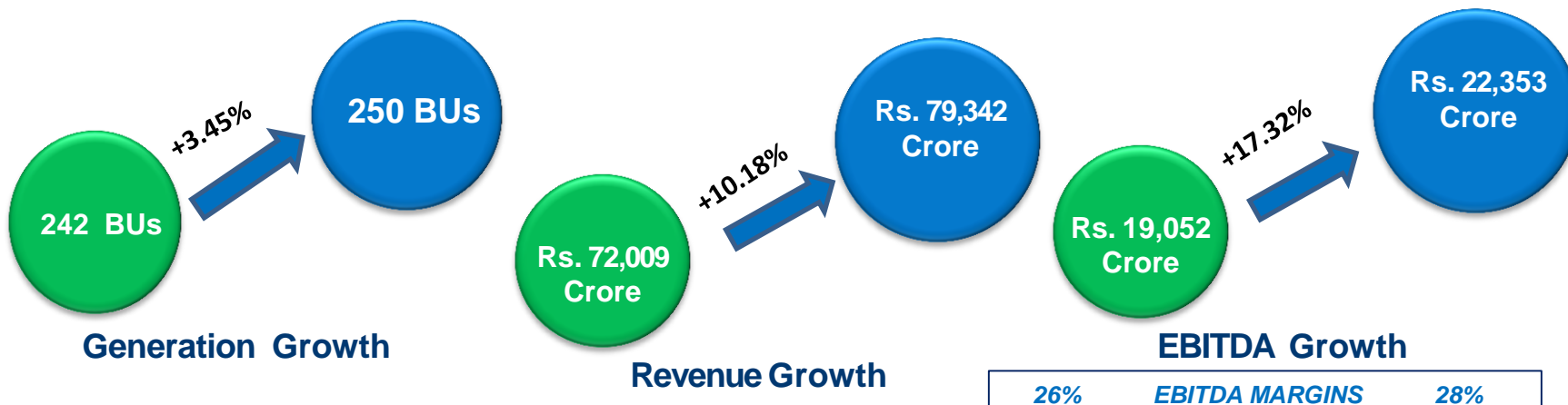


Interest Service Coverage



Strong credit metrics ensure debt at Optimal Costs... "AAA" by CRISIL, ICRA and CARE

- First Indian corporate to raise Masala bonds of Rs.4,000 crore from International market-Rs 2000 crore as Green Masala bonds
- Placed Rs. 8,867.50 crore of bonds in domestic market



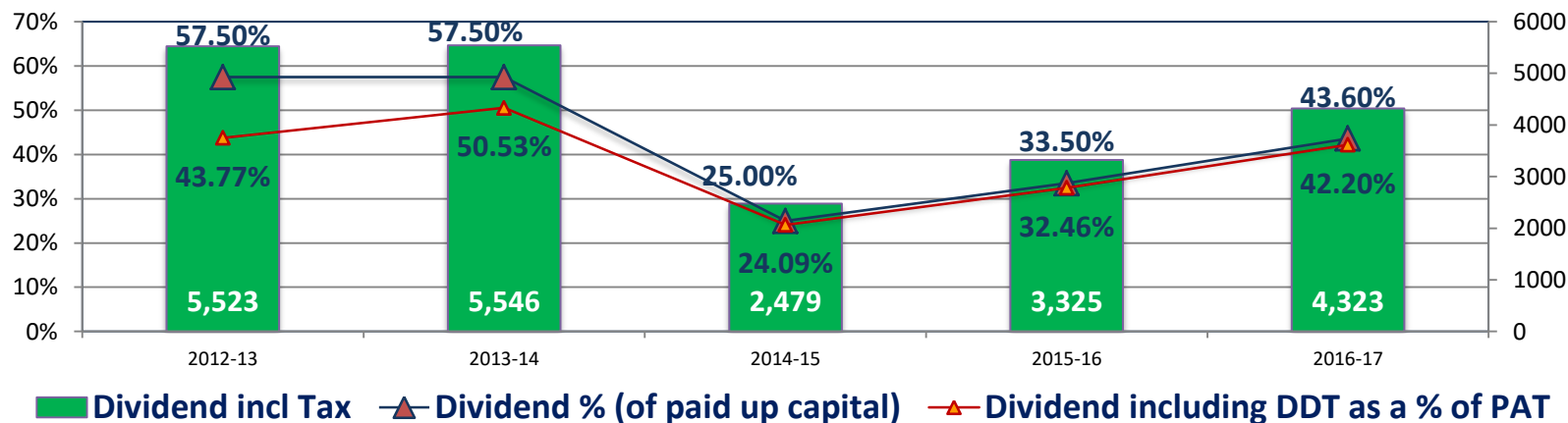
- Registered 10% growth in revenues viz-a-viz Generation growth of 3.45%.
- EBITDA has registered a growth of 17.32% which is highest in last 4 years.

High Returns to Investors

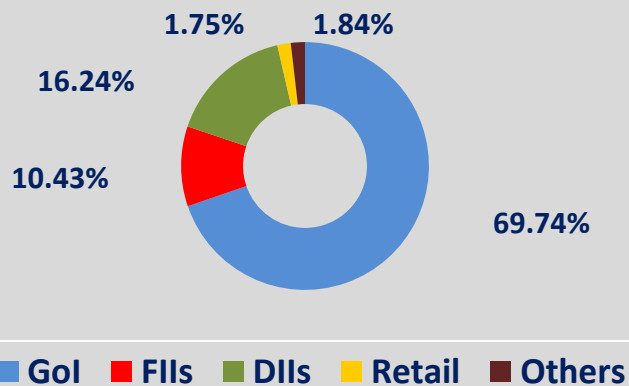


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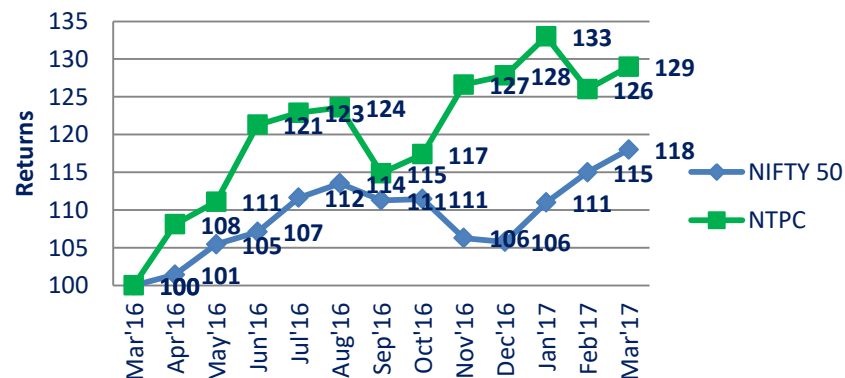
Consistent & High Dividend Payouts – Paying dividend for last 24 years



Diversified Shareholding Pattern (as on 30.06.17)



FY17 Returns NTPC Scrip (29%) Vs. NIFTY 50 (18%)



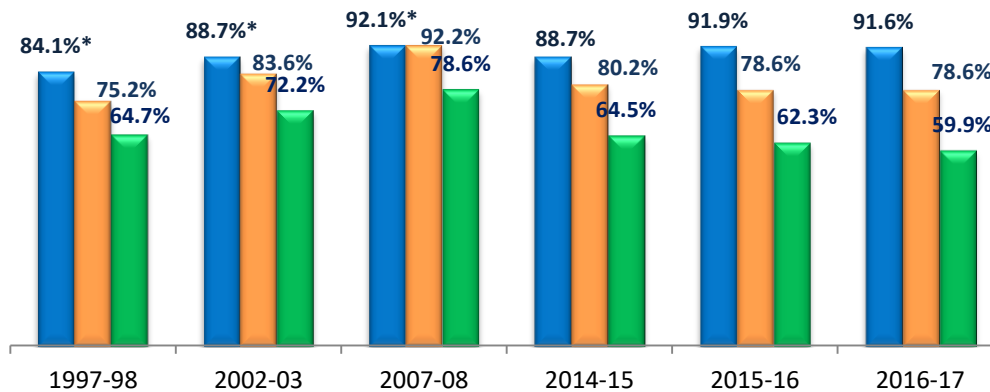
Operations Highlights



Highly Efficient Plant Operations

Proven Operational Excellence over last 2 decades

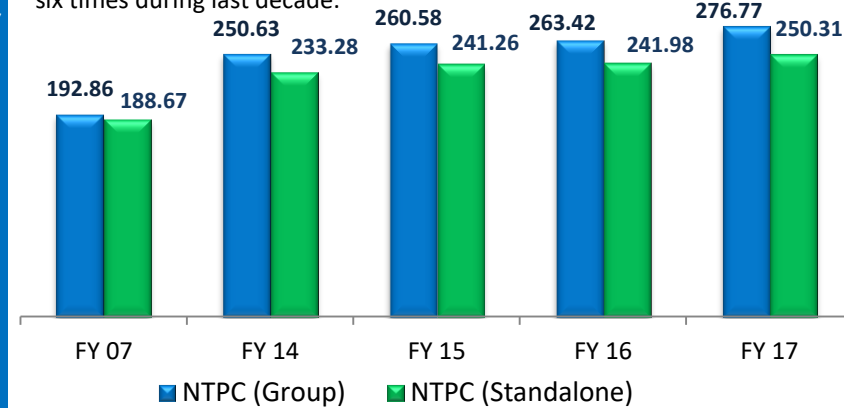
- Consistently maintaining spread of 15%-16% in terms of PLF over the last 2 decades on All-India level - further widened to 19% in FY 2016-17.
- 6 NTPC coal stations amongst the top 10 stations of the country in terms of PLF.
- All stations recovered full Annual Fixed Charges under CERC regulations except Barh.
- Turned around 4 sick plants across India through in-depth engineering driven by strong systems
- Operating and managing 187 units with varied fuel sources and technologies.



*AVF on bar ■ NTPC AVF (DC) ■ NTPC PLF ■ All-India PLF

Standalone + Group Generation during last decade (in BUs)

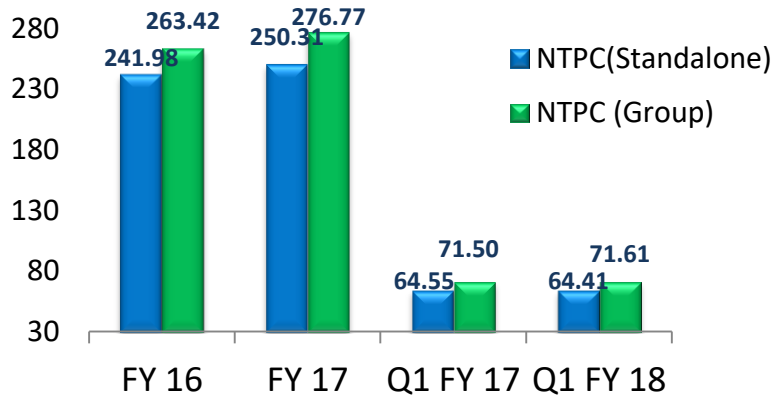
Contribution from Group Companies in total generation has increased over six times during last decade.



- Maintenance practices and real-time monitoring system ensure high availability and efficient operations
- 100% analysis of boiler tube failures .
- Daily and Monthly review system (ORT-Operation Review team) system ensures high level of performance.
- Periodic structured Technical Audits carried out for all units for identifying and correction of gaps .
- Fleet-wide monitoring by experts with online data system at Antariksh centre allows real time interventions.
- All stations are OHSAS-18001/IS-18001 certified

Sustained Growth in Generation...handholding SUs

5.07% Growth in Group Generation in FY 17



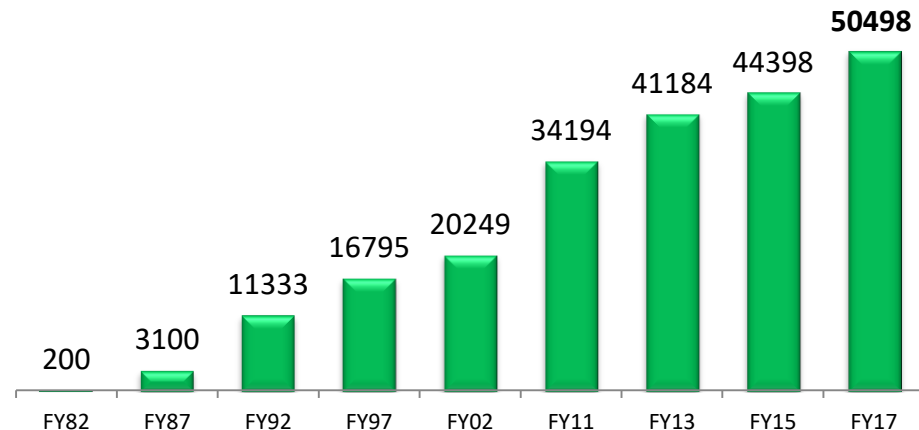
Sustained Growth in Generation

- Group NTPC has achieved a generation of 276.77 BUs in FY17 registering a growth of 5.07% on previous year.
- Group companies registered a generation growth of ~23% during FY 17 over last year.
- NTPC and Group NTPC achieved highest ever daily generation of 799.84 million units (MUs) and 888.35 MUs respectively on March 23, 2017.

Partnering State Utilities under UDAY

- Entrusted by Govt. of India to handhold State GENCOs for improvement of Operational efficiency under UDAY.
- An institutional setup created to enhance operational efficiency of State GENCOs under UDAY
- Workshops conducted for State GENCOs in which best practices followed in NTPC power stations were shared

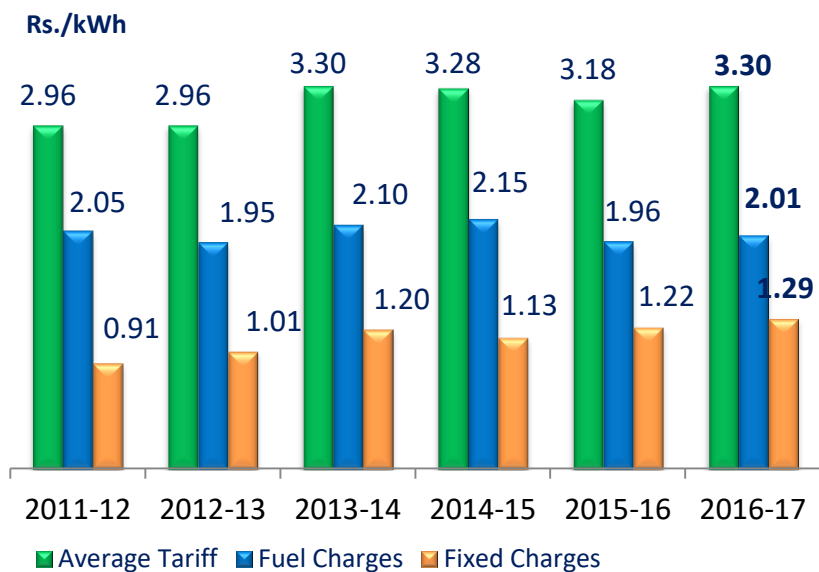
Capacity (NTPC Group)



Sustaining Status of Competitive Cost Power Producer



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Overall Tariff (Coal+gas+ Solar)

Average Coal Based Power Cost (Rs/kWh)						
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Fixed Charges	0.89	0.98	1.14	1.09	1.18	1.19
Variable Charges	1.89	1.73	1.99	2.02	1.89	1.99
Avg. Coal tariff	2.78	2.71	3.13	3.11	3.07	3.18

- Tariffs based on Regulations notified by CERC. Regulatory mechanism assures Returns balancing Risk -reward Ratio.
- CERC vide 4th Amendment to IEGC has allowed Compensation against degradation of the operational parameters due to partial loading.
- NTPC has taken up impact of new environment norms and notifications related with Ash Transportation with CERC.
- NTPC revenues are immune to volatile merchant power prices.



- **Payment Security Mechanism**
 - 26 states have signed the TPA extension agreements in pursuance of GoI and RBI approval for extension of TPAs.
 - LC coverage from SEBs adequate to cover monthly billing
 - Tripartite Agreements between Government, RBI and each state in terms of the Scheme for One Time Settlement of SEB dues.
 - Recourse to Reserve Bank of India (RBI) in case of default in making payment.

Coal based plants close to pit head stations ensure competitive variable cost of generation



Continuous Reduction of ECR of coal stations

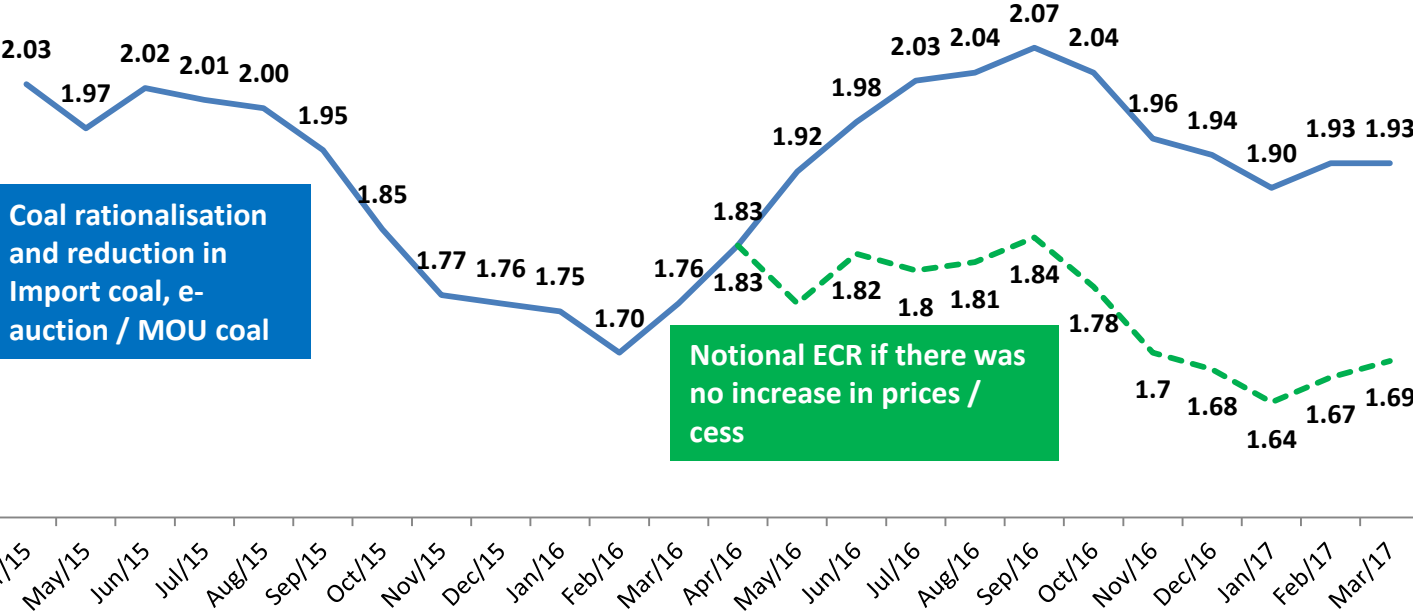


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ECR brought down effectively by 39 paise during FY 17

Third party sampling and grade re-conciliation started

Reasons for offset of reduction:



1. Impact of Clean Energy Cess w.e.f. Mar'16

2. Impact of Coal price notification w.e.f. May'16

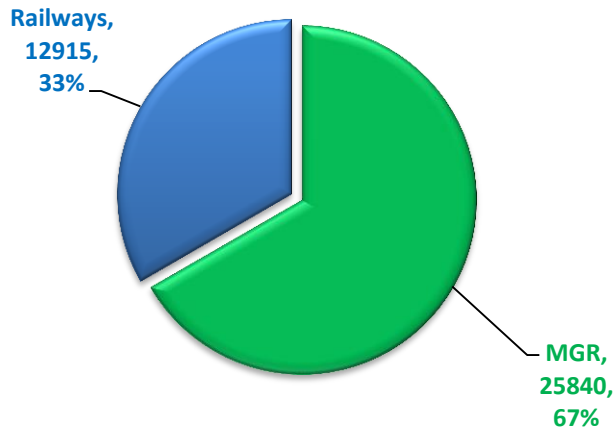
3. Railway freight w.e.f. Aug'16

Further reduction of around 19 paise per unit possible in FY 18 with implementation of :

- Rationalization of Coal Linkages
- Flexible utilization of coal
- Re-grading of Coal Mines
- Goods & Services Tax (GST)

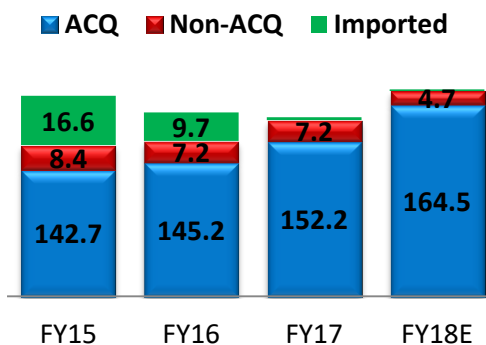
Long-term Fuel Security & Fuel Supply

Coal Transportation (Standalone Commissioned Capacity)



- Long term Fuel Supply Agreements have been signed with CIL and SCCL for supply of coal for a period of 20 years for total ACQ of 164.47 MTPA
- NTPC through sustained policy advocacy has secured a single ACQ (Annual Contracted Quantity) for all its coal stations resulting in:
 - Optimum utilization of coal leading to reduction in ECR
 - Avoidance of loss of fixed charges due to coal shortage
 - More efficient operation of power plants
 - Higher marginal contribution from operations
- 67% of coal capacity is linked by MGR /belt conveyor system to coal mines representing 10 out of 20 coal plants.

Coal Supply (For NTPC Own Plants)



(In MMT)	FY 15	FY 16	FY 17	FY 18E
ACQ	142.7	145.2	152.2	164.5
Non-ACQ	8.4	7.2	7.2	4.7
Import	16.6	9.7	1.0	0.5
Total	167.7	162.1	160.4	169.7

- NTPC leads drive to cease import of thermal coal with 89% decrease in imported coal supply in FY 17 Vs. FY 16. No further orders for import of coal were placed.
- 94.04% ACQ materialization during FY 17 as compared to 91.19% in FY 16.

People before “PLF”



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OUR HR VISION

“To enable our people to be a family of committed world class professionals, making NTPC a learning organization”

Consistent Improvement in Productivity of Manpower

FY 12

Per Employee

FY 17

43%

Rs.2.70 crore

Revenue

Rs.3.85 crore

72%

Rs.0.82 crore

Value Added

Rs.1.42 crore

55%

Rs.0.70 crore

EBITDA

Rs.1.09 crore

31%

9.25 MUs

Generation

12.16 MUs

55%

0.73

Man MW Ratio

0.47



Consistent performer under the Public Sector Category and Energy, Gas and Oil Sector at the India's Best Companies to Work Survey by Great Places to Work Institute & Economic Times

Strong Top Management with proven track record backed by competent manpower



Transforming Power Sector



	Today		Target
Installed Capacity	~330 GW	→	~ 515 GW by FY22
Generation (in BUs)	~1160 BUs	→	~1611 BUs by FY22
Peak Load Demand	~153 GW	→	~235 GW by FY22
Per capita consumption	~ 1075 kWh	→	~ 3026 kWh (World average)
Renewable capacity	~57 GW	→	175 GW by FY22
Coal Requirement	~600 MT	→	727 MT by FY22
Transmission Capacity (Inter Reg)	~60 GW	→	~126 GW by FY22
AT & C Losses	~22.70%	→	15% by FY19

Government's focus on attaining affordable "24x7 Power for All" by 2019.

Strong Growth Drivers for Power Sector in India

India's GDP is expected to grow at ~8% over next 5 years.

Electricity Demand in India is expected to grow at CAGR of ~7%.

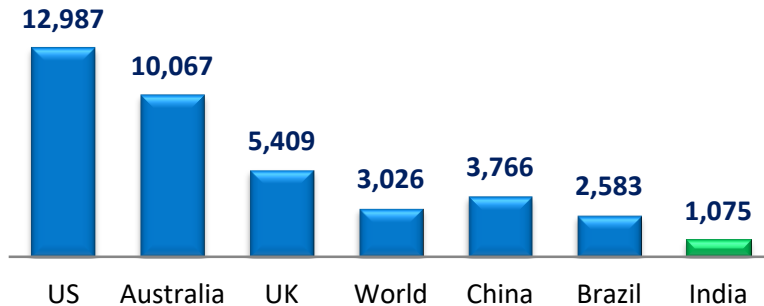
Demand

Supply

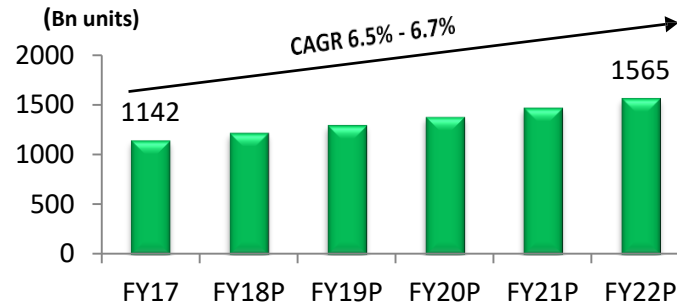
- Growing population coupled with increasing urbanization to boost growth of consumption.
- Per Capita Consumption still one of the lowest
- Benefits of UDAY to yield results by improving financial capability of Discoms leading to increase in offtake.
- Facilitation of open access by States

- Increased coal production by coal companies in India to improve feedstock supply.
- Financial reforms undertaken by GoI such as 5/25 refinancing scheme to boost project viability.
- Falling prices of Solar energy.
- Investment in new inter-state transmission systems

India has Low Per Capita Consumption (kWh/Year)



Energy requirement to rise at a healthy pace



Moving towards Green Future

FY17

Capacity (GW):
57

FY22E

Capacity (GW)
175

Lagging Grid Growth

- Grid growth as a driver for solar lighting demand varies by region. Grid Penetration needs to grow to counteract the effect of population growth.

Price Trends

- Rapid Technological innovations & scale-up of commercialization efforts decrease the manufactured price of solar products.

Key Drivers

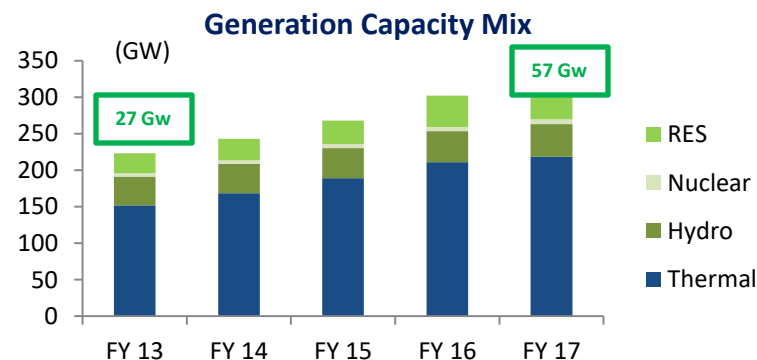
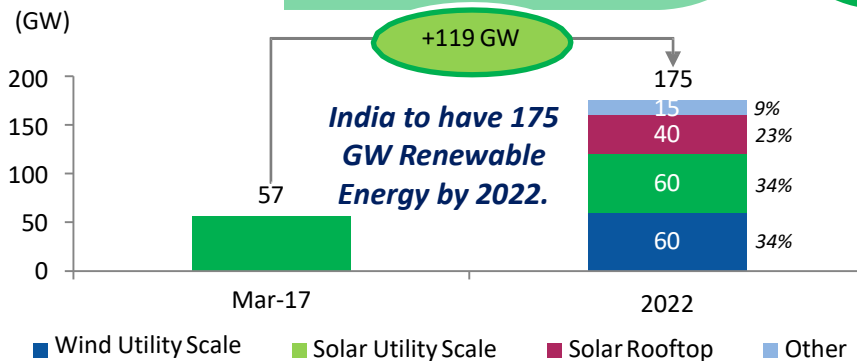
Regulatory Incentives

- Providing Payment Security Mechanism leading to low bids.

Growth Economies

- Rising demand for energy, driven by GDP growth rate.
- Penetration to remote under served areas

India's COP 21 commitment: To reduce 33-35% carbon emissions by 2030



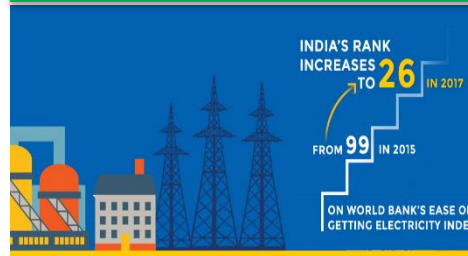
Source: MNRE, CEA

Improved policy Ecosystem...energising Power Sector

Revised Tariff Policy

- Ensuring electricity for all
- Efficiency for affordable tariffs
- Environment for sustainable future
- Ease of Doing Business

Quantum jump in Index of ease of getting Electricity



UDAY (A new dawn for distribution sector)

- Turning around DISCOMs through Financial & Operational Efficiency Improvements
- 27 States & UTs are onboard
- Savings of ~Rs.12,000 crore due to reduction in interest cost

Integrated approach towards making 24x7 affordable power for All

SHAKTI

Scheme for Harnessing Koyala Transparently in India

Transformational Policy for auction and allocation of coal linkages leading to :

- Affordable Power
- Access to coal
- Accountability in allocation of coal

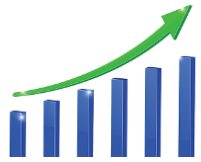
From Shortage to Surplus



Coal Reforms

- Flexibility in utilization of coal
- Coal Swapping & Rationalization of Coal Linkages
- Reduction in Coal Imports
- Coal quality improvement through third party sampling , supply of crushed coal

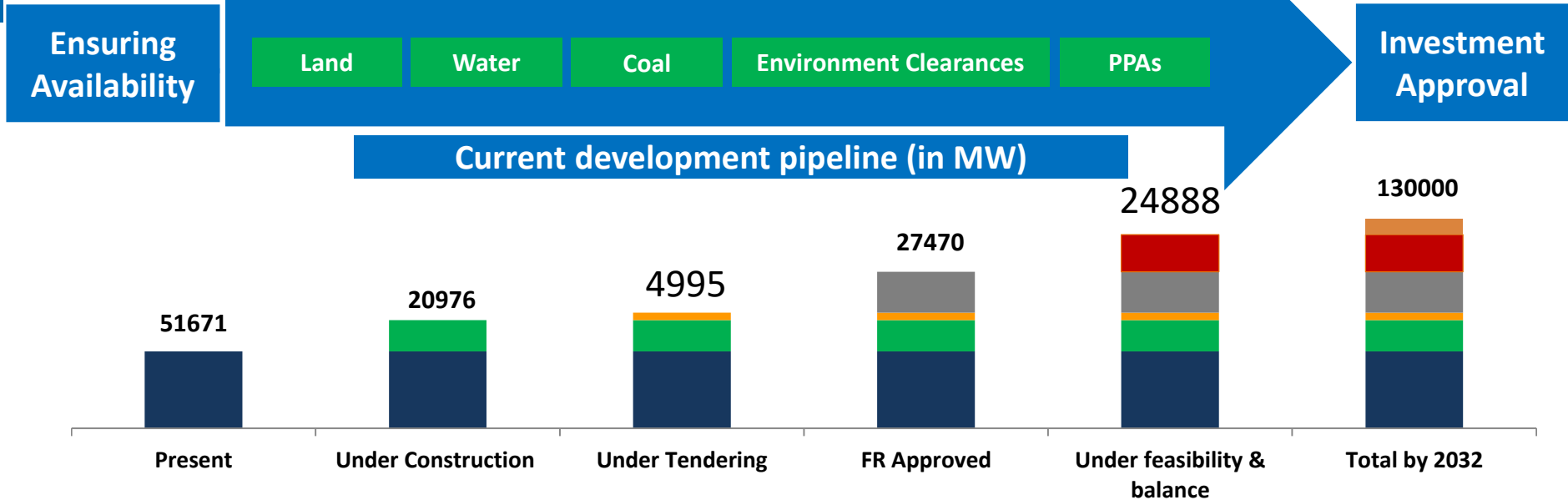
UDAY has started to improve financial health of SEBs resulting in record realization by NTPC



NTPC: Staying Ahead of the Curve



Clear Growth Visibility



Projects Under Construction					
Fuel Mix	In MW	Coal Technology	In MW	Group Mix	In MW
Coal	20120	Ultra Super Critical	2920	NTPC	15566
Hydro	819	Super Critical	16160	Domestic JVs	4090
Solar	5	Sub Critical	1040	International JV	1320
Wind	32	Total	20120	Total	20976
Total	20976				

Clear Growth cont... commissioning targets for FY18



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Project	Target MW	NTPC	JV Projects	Commissioned
Lara (Unit#1)	800	800		
Solapur (Unit #1)	660	660		660
Gadarwara (Unit#1)	800	800		
Kudgi (Unit#3)	800	800		
Bongaigaon (Unit #3)	250	250		
Mandsaur Solar	250	250		245
Rojmal Wind	50	50		18
Singrauli Hydro	8	8		
Nabinagar (BRBCL JV) (Unit # 2)	250		250	250
Nabinagar (BRBCL JV) (Unit#3)	250		250	
Meja (Unit#1)	660		660	
Nabinagar (NPGCL- JV) (Unit#1)	660		660	
Total FY 18 E	5438	3618	1820	1173

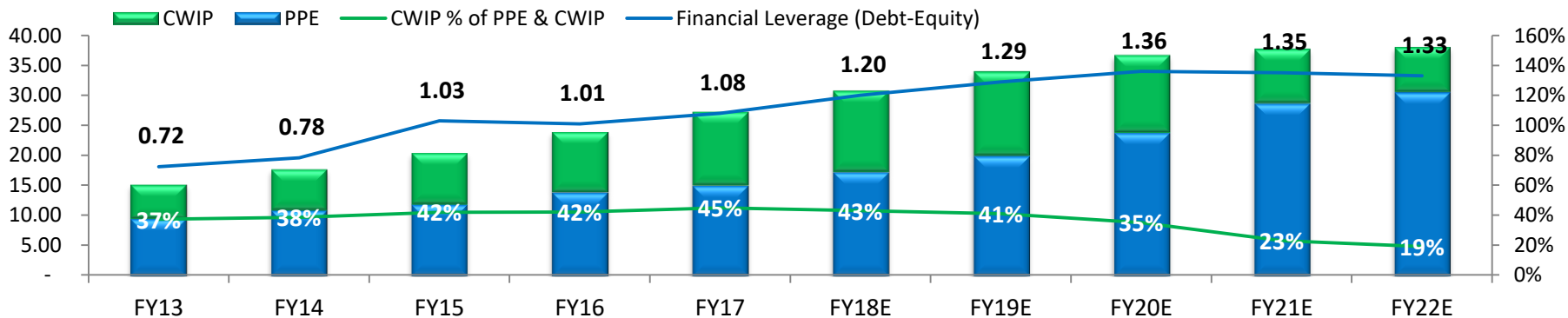


Why to Invest in NTPC



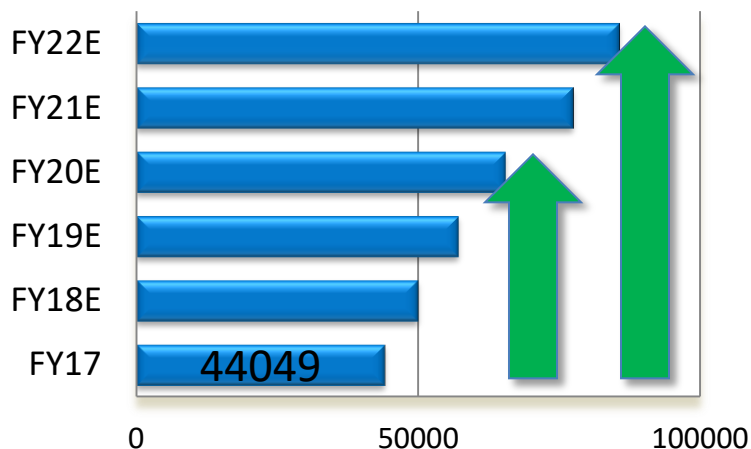
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Growth in PPE, CWIP & Financial leverage



Expansion in Regulated Equity

Regulated Equity (Rs. in crore)



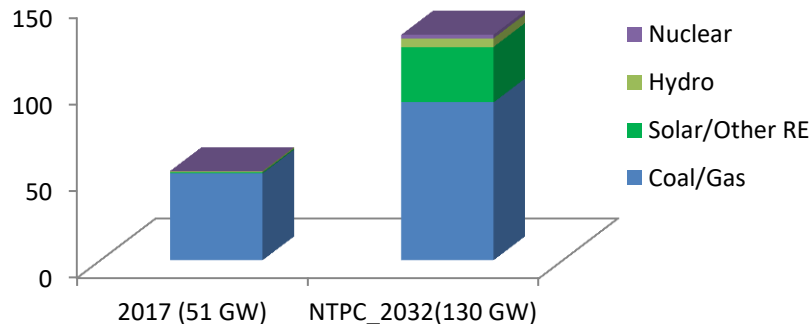
- PPE increased at a CAGR of 16.48% while CWIP grew at a CAGR of 29.46% during FY 13 to FY 17 .
- From FY 13 to FY 17, CWIP to Total fixed assets (PPE and CWIP) ranged between 37% -45%.
- Reversal in this ratio expected after FY 18 due to CoD @ 3-4GW/year.
- Going forward, growth continues however the turnaround from CWIP to PPE would be quicker in Solar projects
- Fall in CWIP ratio will lead to RoE expansion as the equity blocked in CWIP will start earning.
- Benefit of financial leverage to result in higher RoE.

NTPC Leading India's Energy Transition



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..... Leading Nation Towards Green Future



Fuel Type	Present_2017 (51 GW)	NTPC_2032 (130 GW)
Coal/Gas	50	91
Solar/Other RE	0.6	32
Hydro	0.8	5
Nuclear	0	2

NTPC Solar Power Plan....Diversifying Fuel Mix....865 MW already commissioned

15,000 MW UNDER NSM

10,000 MW OWN SOLAR CAPACITY ADDITION (By 2022)

Commissioned

FIRST TRANCHE 3000 MW

Current Projects-1312 MW (including Wind)

Ananthapuramu Solar Power Project

- Under Execution- 37 MW
- Under Tendering- 1275 MW



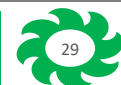
Transformation from barren land to 250 MW project in 1 year time

- Ananthapuramu (AP) - 250 MW
- Rooftop in VSTPP – 0.452 MW
- Bhadla (Raj.) - 260 MW
- Mandsaur (MP) - 245 MW

PPA/PSA Signed for 2750 MW
PSA to be signed 250 MW
Commissioned 1380 MW

Projects Identified for future implementation-6817 MW

..... Moving towards building 30% of non-fossil fuel basket



Widening of Growth Path with Commencement of Coal Mining

Status of Coal Mines

Coal block	GR (MMT)	Mining Capacity MMTPA	Status			
			EC	FC	Acq. Notice	Mining/MDO
Pakri Barwadih	1574	18	Yes	Yes	Yes	Mining started
Chatti Bariatu	548	7	Yes	Yes	Yes	RA Completed
Kerandari	285	6	Yes	St-I accorded	Yes	Bids Opened
Talaipalli	1267	18	Yes	Yes	Yes	RA Completed
Dulanga	196	7	Yes	Yes	Yes	MDO Appointed

Other Five Mines with GR of ~3.42 BT and Mining Capacity of ~51 MMTPA - under various phases of development.



2.27 Lakh tonne of coal extracted in FY 2016-17. Further, 3.98 Lakh tonne extracted in Q1 2017-18.

New Initiatives – Dynamism to changing norms & disruptions



Acquisition of Chhabra Thermal Power Station

MoU has been signed with Rajasthan Vidyut Utpadan Nigam Ltd. for possible acquisition of Chhabra St-I & II by NTPC in phased manner. The due diligence and availability of pre-requisites is being ensured.

EV Charging Business

Foraying into EV Charging business and setting up of charging stations at multiple locations. Also exploring options for engaging with storage battery developers. (Market Potential~ 90 BU)



Fertilizers and Chemical Plants

Hindustan Urvarak & Rasayan Limited (HURL), a JV company of NTPC, CIL and IOC has been established to build and operate new fertilizer and chemicals complexes at Gorakhpur, Sindri and Barauni. Technical evaluation of EPC bids of the projects is under process.

Marketing of Desalinated water

NTPC has developed technology for production of quality drinking water from sea water utilizing heat from the flue gas of power plant. This technology has been implemented on pilot basis at Simhadri. NTPC is now looking forward to various avenues to market the same.



Pooled Tariff - Cost Competitiveness

Present Scenario

- States schedule power based on its own Merit Order
- Beneficiaries of one region are not able to schedule power from stations in other regions since it does not have allocation.
- As a result power from cheaper stations is not fully scheduled whereas power from costlier stations in other region is dispatched.

Need

- To optimally utilize the resource by running cheaper stations and reduce average cost of generation by creating framework to enable states to draw cheaper un-requisitioned power, thereby replacing costlier power resulting in savings to end customers.
- Already prevalent in many infrastructure sectors –Railways ,steel ,coal, petroleum and Power transmission.

Methodology

- The Fixed Charges of NTPC Coal and Gas based stations shall be pooled based on per MW basis and shall be apportioned to all beneficiaries on the basis of total allocation without change in capacity allocated.
- Tariff determination as per existing CERC framework. Any increase in liability of states due to pooling shall be compensated by savings accrued through higher dispatch of cheaper ECR stations called Generation Bucket Filling(GBF).

Benefits

- Maximum utilisation of cheaper Pit head stations resulting in reduction in per unit cost of electricity.
- Availability of a large pool of reliable and affordable power.
- Optimal use of domestic coal by inter station transfer of coal.
- Improvement in efficiency with respect to current level resulting in higher quantum of sharing of operating efficiency gains with States.

Risks & Mitigation



Key Risks and Mitigation



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Risk	Mitigation
<p>Weakness in demand from SEBs resulting in lower PLFs</p>	<ul style="list-style-type: none"> ▪ Financial distress has been forcing SEBs to opt for load shedding and thereby restrict demand ▪ Approval for extension of Tripartite agreement accorded by GoI and RBI for 10/15 years with recourse to RBI ▪ Discoms required to issue LCs covering 105% of the average monthly billing ▪ 'UDAY' scheme launched by GoI to addressing discoms financial distress <ul style="list-style-type: none"> - Tariff revision by almost all the states - Reduction in ACS-ARR gap and AT&C losses - Interest cost reduction
<p>Supply may outstrip demand</p>	<ul style="list-style-type: none"> ▪ Pick up in industrial activity leading to spurt in generation since India is the fastest growing economy ▪ Suppressed demand of discoms due to high debt. Revival in demand expected after implementation of UDAY ▪ Amended tariff policy allows for sale of un-requisitioned power and sharing of benefits. ▪ Focus on Cost optimization-Reduced ECR ▪ Adoption of high efficiency units into the existing fleet
<p>Consistent RoE</p>	<ul style="list-style-type: none"> ▪ Capex intensive model delivering consistent earnings and dividends ▪ Upside from PLF incentives ▪ Improving leverage to increase ROE ▪ Increasing Solar portfolio to earn quicker returns due to lower gestation period compared to coal stations
<p>Competition from Private Players</p>	<ul style="list-style-type: none"> ▪ Relatively robust business model with regulated returns ▪ GoI ownership ▪ Unparallel depth and Width of management expertise and high standards of corporate governance
<p>Funding Requirements for New Projects</p>	<ul style="list-style-type: none"> ▪ Strong balance sheet and healthy leverage ratios ▪ Easy access to domestic and overseas debt market; mobilized debt on most optimal rates from both domestic and international markets due to low gearing and healthy coverage ratios ▪ Targeting capex of Rs.28,000 crore in FY18.

Key Risks and Mitigation



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Risk	Mitigation
Environmental Laws and Regulations	<ul style="list-style-type: none"> ▪ Environmental clearances for all under construction projects received ▪ Targeting 10 GW solar capacity in next 5 years ▪ Implemented FGD at VSTPP, under implementation at Bongaigoan and NIT issued for various plants ▪ Studies on Nox emissions underway ▪ SPM emission within allowed limits. ▪ Internal and external audits. ▪ Retrofitting to meet new norms
Coal and Gas Supply Constraints	<ul style="list-style-type: none"> ▪ Long term Fuel Supply Agreements with CIL. ▪ Bridge linkage allocated for upcoming capacity ▪ Govt approved flexibility in use of domestic coal to reduce the cost of power generation ▪ Captive coal blocks – to meet coal supply of ~20 GW capacity
Delay in execution of projects	<ul style="list-style-type: none"> ▪ Multi-pronged strategy developed and enhanced delegation of power for quick decision making ▪ Investment approval accorded by board only after substantial acquisition of land and ensuring availability of water, coal, PPAs and environmental clearances
Land Acquisition Uncertainty	<ul style="list-style-type: none"> ▪ Progressive R&R Policy, focus on consultation and participation, negotiated settlement and attractive compensation. ▪ Institutional mechanisms like Village Development Advisory Committees and Public Information Centers ▪ Changing strategy to acquire land on “willing buyer and willing seller concept”. ▪ Liaising with state government

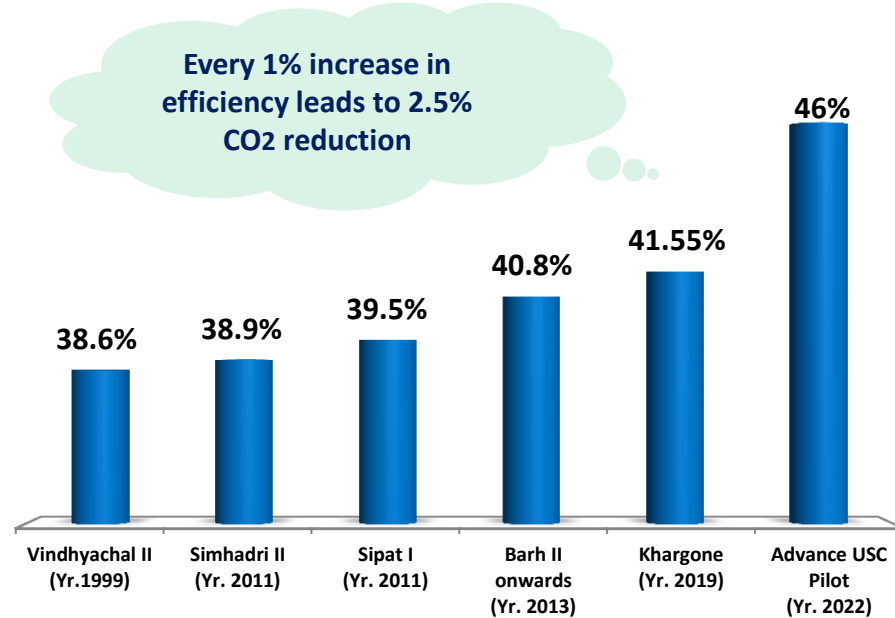
Sustainability Initiatives



Technology Progression—Increased Efficiency and Greater Environmental Protection

Technologies Introduced

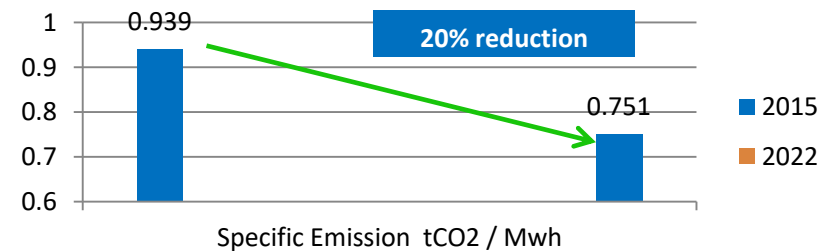
- Adoption of super critical parameters for higher efficiency in 2004
- Adopted Ultra Super critical technology in 1320 MW Khargone TPP and 1600 MW Telangana-I TPP which may result in savings of 154kcal in SHR
- All USC units now ordered are with temperature upto 600°C/ 600°C
- Adoption of high reheat parameters for smaller units
- 765KV AC switchyard
- State of art automation technologies for C&I and Electrical systems
- High concentration slurry disposal system & Dry Ash extraction and disposal system



Technologies Under Development

- Development of IGCC suitable for Indian coal
- Development of Adv Ultra supercritical power plant along with IGCAR and BHEL for inlet steam temperature in the range of 700°C
- Use of advanced technologies in the renovation and modernization of aging power stations

Target of 20% reduction in CO₂ emissions by 2022



Constant endeavor to reduce CO₂ emissions- steps to increase cycle efficiency

NETRA- PROVIDING THE TECHNOLOGY AND R&D EDGE

Spent Rs. 114.38 crore on R&D activities during the year 2016-17

Technology Development-In house & Collaborative R&D for development of new processes, tools & systems.

Focus Areas:

- Efficiency & Availability Improvement and Cost Reduction
- Renewables and Alternate Energy
- Climate Change and Environment
- Scientific Support to Stations

- Advanced Scientific Support through ISO 17025 accredited Labs.
- Knowledge networking by leveraging best brains nationally & internationally and Institutional & Policy Support by apex bodies.

Key NETRA Initiatives

Flue Gas Based Sea-Water Desalination Plant at Simhadri



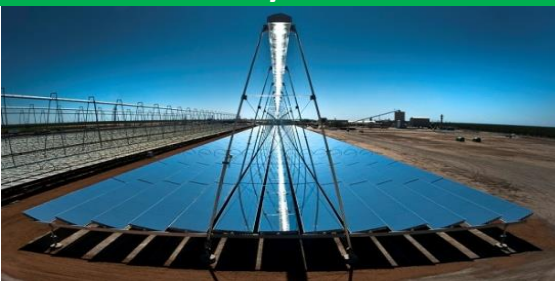
Robotic Dry Cleaning system for Solar PV plant



100 kWp Floating Solar PV System at Kayamkulam



Solar Thermal Hybrid at Dadri



Solar Wind Hybrid at Kudgi



Geo-polymer road using fly ash

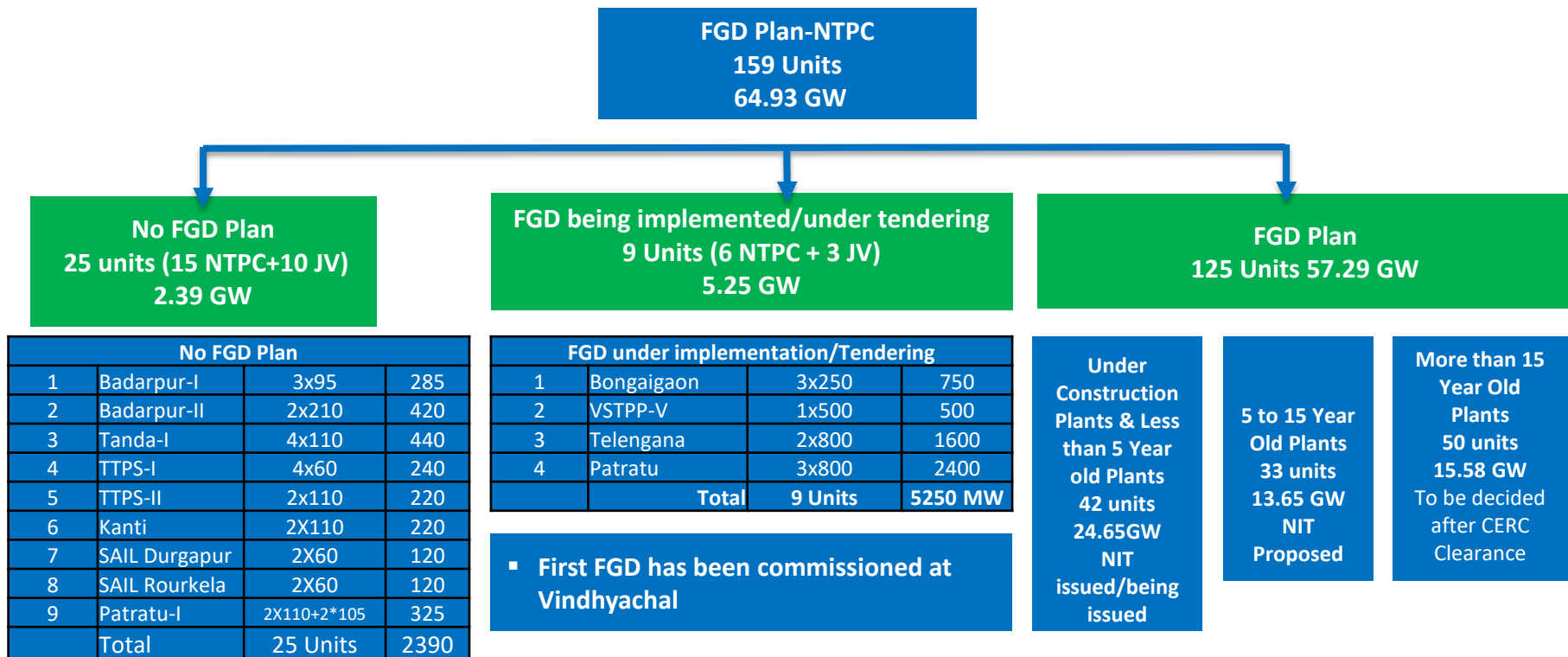


Committed to Comply with Environment Norms



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Firm Action Plan to comply with New Environment Norms Finalized



De Nox Action Plan:

In order to check the suitability of SCR technology for high ash and abrasive ash, SCR pilot test studies is being undertaken at NTPC running stations to check the suitability of SCR system for High ash Indian Coal and results of same are expected to come from Dec. 2017-June 2018. Planning/ strategies shall be decided after the SCR pilot test result.

Rs. 277.81 crore spent on CSR activities during the year 2016-17.

Theme of 2016-17: Clean Water & Sanitation

- Provided clean drinking water facility at 59 villages around NTPC stations in 2016-17.
- Deepening of ponds, water harvesting projects, construction of Ghats to improve water levels.
- Revival of Municipal Solid Waste Plant
- Mechanized Sweeping, Collection and Transportation of Municipal Solid Waste (MSW) in Varanasi
- Setting up of Biomethanation Plants.



Other Key CSR Activities

- Vocational training, skill upgradation and income generation programs.
- Company is providing vocational training to the village youth.
- Company undertook livestock developments and crop management projects to enhance Income generation of the village community.
- Opened Jan Aushadhi stores at 12 NTPC stations and few more are expected shortly.
- Planted 10 million trees during 2016-17, total of 32 million trees planted so far.



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