एनटीपीसी
NTPC
A Maharatna Company

Sustainability Report

Financial Year 2017-18

GRI Standards & EUSS Compliant

Future of Ensuing Generation

Our Sustainability **Journey**

Sh. R.K. Singh, Hon'ble MoS (I/c) P and N&RE Unveiling NTPC's sustainability Report 2017

Evolution from GRI G3 to GRI Standards

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

Integrity
सत्यनिष्ठा

Customer Focus
ग्राहक को प्रधानता

Organisational Pride
संगठन पर गौरव

Mutual Respect and Trust
परस्पर आदर एवं विश्वास

Innovation and Learning
नवप्रवर्तन एवं ज्ञानार्जन

Total Quality and Safety
संपूर्ण गुणवत्ता एवं सुरक्षा

About the Report

Scope of the report

The sustainability report of NTPC Limited is in accordance with Global Reporting Initiative (GRI) Standards "Comprehensive" option. It covers NTPC's environment, economic and social performance between April 1, 2017 to March 31, 2018. This is the 6th year of reporting and the last sustainability report was released on February 13, 2018. NTPC follows financial year cycle for sustainability reporting. All the reports are available on the company's website http://ntpc.co.in/en/sustainability/reports-and-policies.

Report Methodology

For collection of data on performance indicators, a uniform approach has been followed across all NTPC stations. Collected data is then processed at individual operating stations in accordance with universally accepted methodologies through measurement, calculation and analysis. There is no re-statement or significant change in measurement methods applied in this report with respect to the previous report. Report content and aspect boundary provided in the report has been reviewed and approved by CMD of the company.

Boundary of the report

There are changes in the installed capacity of power generating units during this reporting period. However, there is broadly no change in company structure or ownership of the company. The report covers data and information from 27 operating thermal power stations, 11 Solar, 1 Wind and 2 Hydro power plants. Out of these, two thermal power stations at Lara and Solapur, one small hydro power unit at Singrauli, one wind station at Rojmal and two solar at Mandsaur and Bhadla have been added in the reporting boundary. All projects considered in current report are located in India and are under operation. All the entities are included in NTPC consolidated financial statement. However, Joint Ventures, Subsidiaries and Coal Mining Group are excluded from the reporting boundary. The details of boundary of the material issues are depicted in the materiality analysis chapter.

Assurance of the report

The report has been independently assured by M/s Deloitte Touche Tohmatsu India LLP. The assurance was conducted in accordance with Type 2 High Level of the AA1000 Assurance Standard 2008, covering qualitative and quantitative information. Assurance statement is included in this report.

NTPC appreciates feedback from all internal and external stakeholders. For any additional information regarding sustainability report, please reach out to the address given below:

Chief Sustainability Officer

Engineering Office Complex (EOC)
NTPC Limited
Sector - 24, Noida - 201 301 (U.P.)
Email- sustainability@ntpc.co.in
Phone: (+91) 120 – 2410311
Fax: (+91) 120 – 2410500

Headquarters

NTPC Limited
(A Govt. of India Enterprise)
NTPC Bhawan, Core-7,
SCOPE Complex
7, Institutional Area, Lodhi Road
New Delhi-110003

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Message from CMD

Dear Stakeholders,

NTPC's journey for sustainability is an ongoing one, where we are setting new benchmarks every day. In this journey, we are committed to making fundamental changes in the way we operate our businesses to transform ourselves as the most sustainable power producer as well as to become more transparent in the timely disclosure of our social, environmental and economic performances. Continuing this trend, I am pleased to share NTPC's 6th Sustainability Report which has achieved the highest assurance of Type 2, High level as per the AA1000AS (2008) Assurance Standard.

Sustainable Growth

Today, we are the 10th largest global power utility in terms of capacity and we intend to grow bigger in a more sustainable and responsible way. NTPC has registered robust growth in the reporting year with the addition of 4.4 GW commercial capacity to its existing fleet and poised to add another 4GW of capacities by FY 2019. The company contributed 23% of the nation's power requirement in FY18 with 15% of its installed capacity. The generation grew at over 6%, more

than the nation's growth, and group PAT reached ₹10,343 Cr, an increase of 10% year-on-year, making us the 3rd most profitable PSU of India.

With our recent venture into electric mobility, fertilizer production, water desalination, waste-to-energy businesses, the company is also actively exploring other business opportunities including overseas operations.

Good Governance

NTPC adheres to highest standards of ethics, integrity, transparency and accountability fostering the mutual respect and trust of its stakeholders. We are confident that with the rapid adoption of digitalisation in our business processes, we can significantly strengthen our efforts towards best and fair corporate practices and ensure faster decision making. The recently launched paperless initiative "PRADIP" has made substantial progress towards the same and more than 270 processes have been digitalised till date. The company has also implemented Governance, Risk and Compliance (GRC) framework in an enabling IT environment. This framework enforces segregation of duties at the user, role, transaction and process level on a real-time basis ensuring authorized access and compliance in a transparent manner.

Low Cost

NTPC is making continuous efforts to reduce the average cost of power to make it more affordable. Some major initiatives taken are optimization of fuel linkages, enhancement of operational efficiency and flexibility in the use of domestic coal to reduce transportation cost. Also, despite the fact that the landed cost of coal increased by 45% in the last five years, the average tariff billed to customers has decreased by more than 6% during this period.

Low Emission

For decarbonization of the energy mix, NTPC has targeted to add 28% of non-fossil based generation capacity and reduce the share of thermal units significantly by 2032. In FY 2017-18, 250 MW of solar, 50 MW of wind and 8 MW of small hydro were added to our renewable portfolio. The company has developed 928 MW of renewables and 800 MW of Hydel generation till date, thus making 3.2% of our generation as "zero emission generation".

In line with our low-carbon strategy, all new thermal capacity additions are done through more efficient and less CO_2 emitting supercritical and ultra-supercritical technologies. Based on these technologies around 3 GW of capacities constituting 68% of total added capacities, have been added in the reporting year. Existing thermal units are being retrofitted with new technologies and process improvements to decrease APC and reduce specific emissions. Substantial investment is being made towards installation of Flue-gas desulphurization (FGD) system, De-NOx and particulate emission control at NTPC stations. In the reporting period, first FGD system became operational at Vindhyachal station while work is in progress at 7 GW plus capacities.

Highest Safety

Safety is inculcated in the core values of NTPC and we give utmost priority to the safety of our workforce and communities at all our locations. The tragic incident at Unchahar Power Station has shaken the entire NTPC fraternity to the core. While we express our deepest condolences for the victims and their families, we also resolve to maintain the highest safety standard at our work sites and campuses so that such incidents are never ever repeated.

NTPC has set a safety goal to attain a state of zero incidents. In this regard, the company is constantly upgrading its operating procedures to make the work environment safer. It has developed a system to periodically review all operational and safety systems to address potential safety hazards with the inclusion of new technologies and

business areas. Emphasis on Behaviour-Based Safety has been given through specialized training and awareness sessions. Also, Safety Academy at NTPC Unchahar has been developed for focussed capacity building on safety and taking safety practices at NTPC to a new scale.

Environment First

To achieve its environmental goals and objectives, NTPC keeps on developing enabling policies and frameworks. Policy for Biodiversity and Rain Water Harvesting have been made in addition to the existing environment policy and water policy.

Towards water efficiency and its conservation, we have been able to reduce the specific water consumption by 5% over the previous year. The optimization of water usage has led many NTPC stations to surrender their water allocation to the tune of 75.5 million cubic meters making more fresh water available for others. Four of our stations have already attained Zero Liquid Discharge (ZLD) status while others are taking relentless efforts for the same. Air Cooled Condenser is being implemented at two upcoming projects, which will save water by more than 75%.

100 % fly ash utilization have always been on the top of priority list for the company and our constant endeavors have finally resulted in fly ash utilization to around 100% at load center stations and around 50% at remote stations. To lower stubble burning and subsequent air pollution we are going to start biomass co-firing across our major coal-fired thermal power stations. The company is developing an Eco park at the ash pond of Badarpur power plant after its closure that shall act as "Green Lungs" for National Capital Region of Delhi.

A massive drive has been taken up to replace 1.2 million old bulbs with energy efficient LED lights at NTPC stations, saving 200 MU of energy annually. Already three NTPC stations have been completely been fitted with LED bulbs.

People before PLF

The global energy industry is in transition and the successful companies are those that continue to recognize and adapt to the changing expectations of the stakeholders and communities they serve. As a responsible corporate citizen, NTPC has institutionalized policies like Human Rights and Right to equal opportunity. The company is currently involved in numerous CSR projects across the country and has gone beyond the compliance by spending ₹241 Cr on the CSR initiatives, touching the lives of over 2 million people. Our efforts have been aligned with four focus areas of health, water, sanitation, and education to make a meaningful impact.

Our employees have always been the foundation of our success and have made NTPC grow to its present size. Continuous efforts for their capability development and providing them with right working opportunities are being taken up. Our employee development centric efforts have been lauded in various forums. The company has been ranked among the top 25 "Great Place to Work" in India and have won ATD, USA award twice.

Building A Sustainable Energy Future

As we move towards a more digitalized and connected working environment, the value of natural and social capital is likely to grow more with time leading the way to a sustainable future. I am confident that in the years to come NTPC will evolve as the most sustainable power company fulfilling its social and environmental responsibilities and enjoying the respect and trust of its valued stakeholders.

Gurdeep Singh
Chairman and Managing Director

Growth Profile

1975 — Setting up with 100% ownership by the GOI

1982 — First 200 MW unit of Singrauli Commissioned

1997 — GoI conferred Navratna status granting more operational and financial autonomy

2005 — Rechristened as NTPC Limited in line with diversification in business operation beyond thermal power generation

2010 — Awarded Maharatna status

2012 — First Solar project of 5 MW at Dadri

2015 — First 800 MW Hydro Project at Koldam became operational

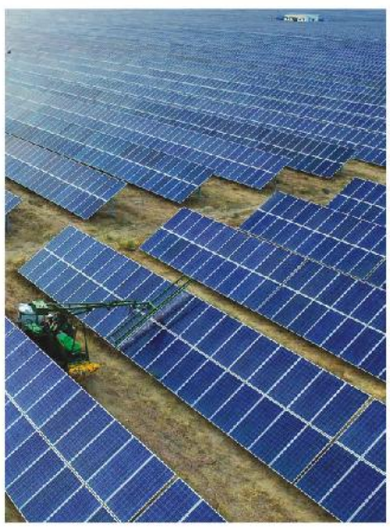
2016 — NTPC crossed 50 GW + mark in installed capacity

Coal taken out from NTPC's first coal mine, Pakri-barwadih

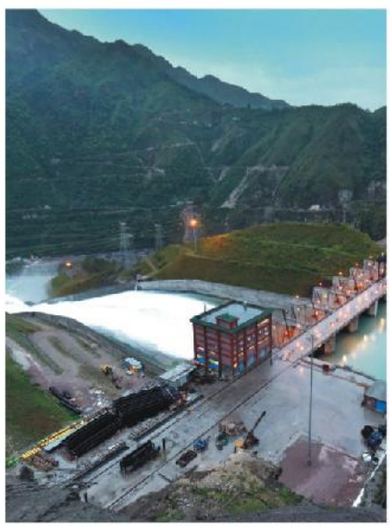
2018 — First 50 MW Wind project became operational at Rojmal

Taking Major Leaps towards Decarbonized Energy Future

NTPC, Kudgi



NTPC, Rajgarh



NTPC, Koldam

Sustainability Highlights

Environmental Performance

9 gm/kWh	reduction in specific CO_2 emissions compared to last year
5 %	y-o-y decrease in specific water consumption
928 MW	of renewable capacity till reporting period
33 Million	trees planted across India till reporting year
1.7 %	y-o-y saving in auxiliary power consumption (APC)
3.3 Cr.	of paper equivalent to 4,000 fully grown trees annually saved through paperless initiative
1,70,653	ESCerts earned through Perform, Achieve and Trade (PAT) scheme through various energy efficiency initiative
500 MW	capacity commenced FGD operation and 17 GW more installing FGD to curb SO_x emission
6 %	y-o-y increase in fly ash utilisation
53 %	Ash Utilized in reporting year

Social Performance

₹ 242 Cr.	spent on various CSR activities, more than 2% limit, touching lives of 500 villages in reporting year
2,800	women from lower income group made self-reliant through skill based trainings in reporting year
1.2	Mn man-hours of training imparted to employees in reporting year
29 %	of total procurement from MSME vendors in reporting year
25,000	students benefitted through various education drive conducted in nearby areas in reporting year
4,00,000	individuals affected through regular health related initiatives in the communities in reporting year

Economic Performance

265	Billion Units of gross generation, an increase of 6 % y-o-y
₹ 10,343 Cr.	of PAT, an increase of 10 % y-o-y
4.4 GW	of commercial generation capacity added including 0.6 GW of renewables in reporting year
78 %	PLF of coal stations against national average of 60 in reporting year
2.67	MMT of coal excavated from captive mines in reporting year
100 %	bill realisation in reporting year
23 %	share in total power generation in India with 15.5% of its installed capacity in reporting year
₹ 4,221 Cr.	of total dividend paid in reporting year

Organizational Profile

NTPC Current Global Stature

- **10th largest global power utility**
- **More than 53 GW of installed capacity**
- **Ranked No. 1 IPP globally by Platts**
- **Among top 25 GPTW organisations**
- **512th largest company by Forbes**

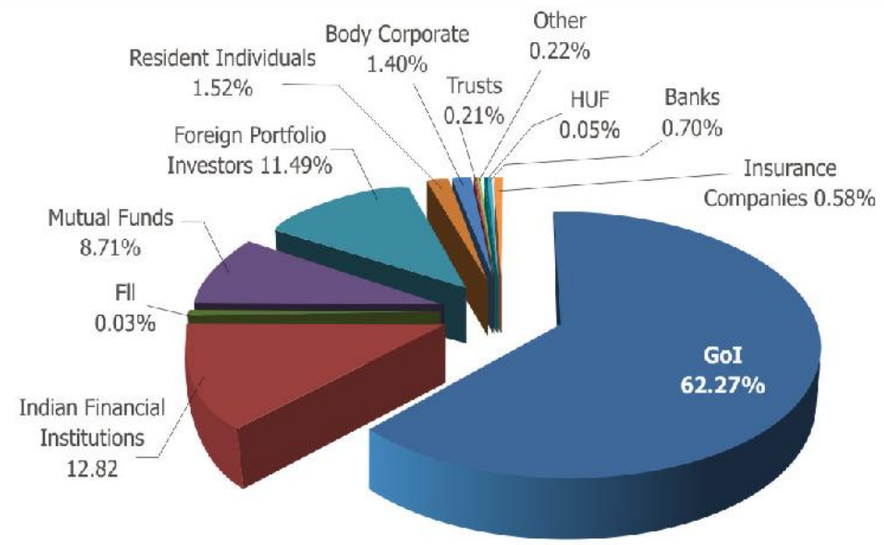
NTPC, a schedule 'A' MAHARATNA listed CPSE under the administrative control of Ministry of Power, is India's largest power utility with roots planted way back in 1975 to accelerate power development in India. Since then it has established itself as the dominant power major with presence in the entire value chain of the power generation business. From fossils fuels based power generation it has forayed into generating electricity via hydro, nuclear and renewable energy sources. This foray will play a major role in lowering its carbon foot print by reducing greenhouse gas emissions. To strengthen its business with sustained growth, the company has diversified into the fields of consultancy, power trading, training of power professionals, rural electrification, ash utilization and coal mining as well. NTPC subscribes to economic, environmental social charters principles proposed by NVG, EUSS, UNGC etc.

Nature of Ownership and legal form

NTPC is a Government Company as per section 2 (45) of the Companies Act, 2013. The President of India presently holds 62.27% of its paid-up capitals.

Shareholding pattern on the basis of ownership

Shareholding pattern FY 2017-18



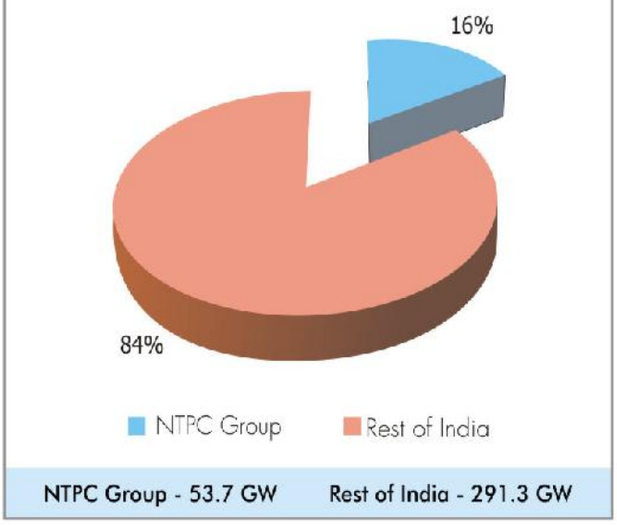
Power Generation

The total installed capacity of the company is 53,651 MW with 21 coal based, 7 gas based, 2 hydro based, 1 wind based, 9 joint venture and 11 solar PV projects. The snapshots are as below:

Type	Installed Capacity (MW)	Capacity added During the Year (MW)	Ongoing projects (MW)
Owned by Company			
Coal based	40,355	2,260	13,110
Gas based	4,017	-	-
Hydro	800	-	811
Renewable energy (Solar/Small Hydro)	928	308	-
Sub Total	**46,100**	**2,568**	**13,921**
Joint Ventures & Subsidiaries			
Coal based	5,584	910	7,150
Gas based	1,967	-	-
Sub Total	**7,551**	**910**	**7,150**
Total	**53,651**	**3,478**	**21,071**

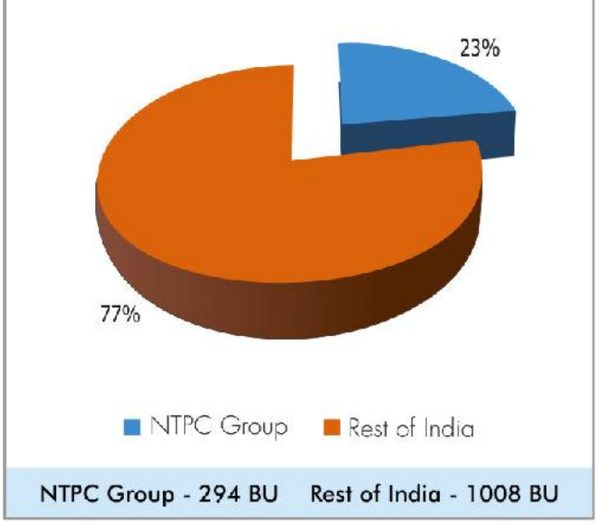
NTPC Kudgi

NTPC Share in All India Capacity (31.3.2018) (GW)



NTPC Group - 53.7 GW Rest of India - 291.3 GW

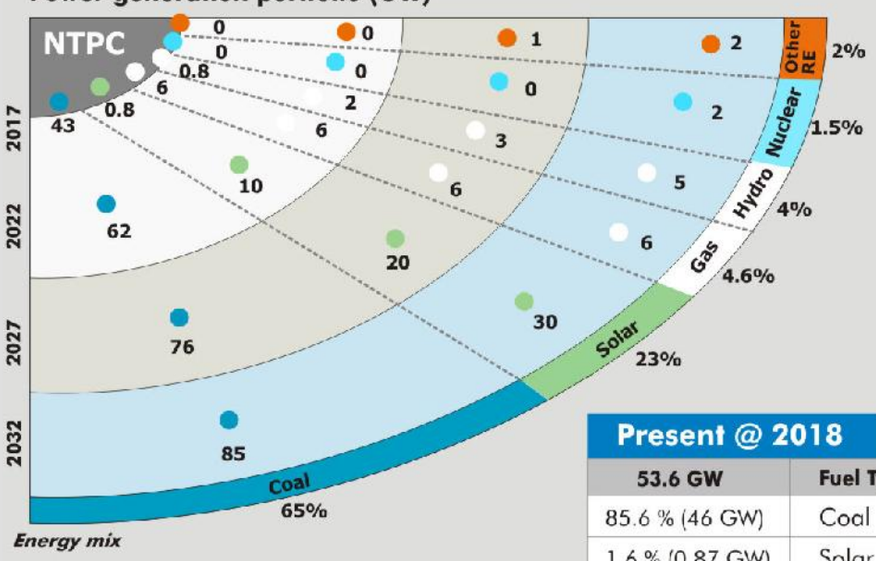
NTPC Share in All India Generation (FY 17-18) (BU)



NTPC Group - 294 BU Rest of India - 1008 BU

Growth Roadmap 2032

Power generation portfolio (GW)



Present @ 2018		NTPC @ 2032
53.6 GW	Fuel Type	130 GW
85.6 % (46 GW)	Coal	65.4% (85 GW)
1.6 % (0.87 GW)	Solar	23.1% (30 GW)
11.1 % (6 GW)	Gas	4.6% (6 GW)
1.5% (0.8 GW)	Hydro	3.8% (5 GW)
NIL	Nuclear	1.5% (2 GW)
0.1% (58 MW)	Other RE	1.5% (2GW)

A list of NTPC owned station wise capacity and generation for the FY 2017-18 are as under:

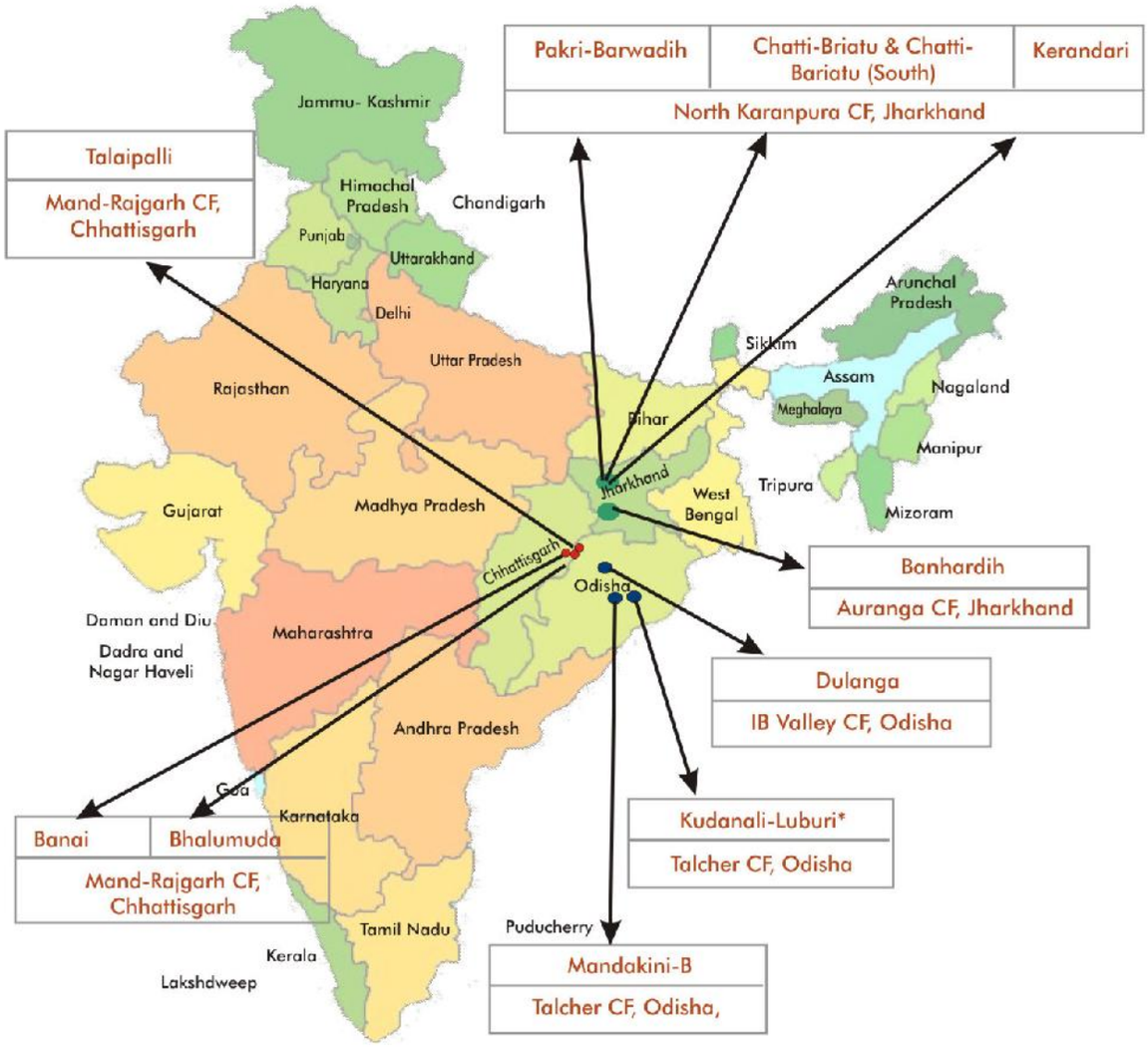
Station	Fuel	Gross Capacity (MW)			Gross Generation (MU)		
		2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
Northern Region		7,153	7,653	7,653	48,980	47,959	49,060
Singrauli	Coal	2000	2,000	2,000	16,271	15,219	14,782
Rihand	Coal	3,000	3,000	3,000	21,055	21,969	23,531
Unchahar	Coal	1,050	1,550	1,550	7,013	6,994	7,093
Tanda	Coal	440	440	440	3,130	3,241	3,278
Auraiya	Gas	663	663	663	1,511	536	377
DBF		3,787	3,787	3,787	16,389	13,742	13,955
Badarpur	Coal	705	705	705	2,241	1,705	1,557
Dadri	Coal	1,820	1,820	1,820	10,048	8,766	9,933
Dadri	Gas	830	830	830	2,999	2,237	1,628
Faridabad	Gas	432	432	432	1,101	1,034	837
Western Region		13,732	14,392	15,852	79,027	85,425	96,322
Mouda	Coal	1,660	2,320	2,320	1,876	4,300	7,973
Korba	Coal	2,600	2,600	2,600	20,429	20,365	20,478
Vindhyachal*	Coal	4,760	4,760	4,760	31,321	32,207	37,496
Sipat	Coal	2,980	2,980	2,980	22,285	23,779	23,010
Solapur	Coal	-	0	660	-	2	1,380
Kawas	Gas	656	656	656	1,212	1,718	2,406
JhanorGandhar	Gas	657	657	657	962	2,359	3,112
Anta	Gas	419	419	419	942	695	451
Lara	-	-	-	800	-	-	17
Eastern Region		9,470	9,720	9,720	60,248	65,622	67,436
Farakka	Coal	2,100	2,100	2,100	12,340	13,744	13,357
Kahalgaon	Coal	2,340	2,340	2,340	15,275	15,948	16,317
Barh	Coal	1,320	1,320	1,320	4,785	7,642	9,272
Talcher-Kaniha	Coal	3,000	3,000	3,000	23,967	22,848	22,977
Talcher-Thermal	Coal	460	460	460	3,764	3,760	3,781
Bongaigaon	Coal	250	500	500	117	1,680	1,732
Southern Region		4,960	6,560	6,560	34,863	33,810	34,398
Ramagundam	Coal	2,600	2,600	2,600	20,250	19,597	18,868
Simhadri	Coal	2,000	2,000	2,000	14,470	14,173	11,774
Kudgi	Coal	-	1,600	1,600	-	25	3,753
Rajiv Gandhi CCP	Liquid Fuel	360	360	360	143	15	4
Hydro Region		800	800	800	2,308	3,225	3,314
Koldm Hydro	Water	800	800	800	2,308	3,225	3,314
Total**		39,902	42,912	44,372	2,41,815	2,49,783	2,64,485

* As per NTPC, Regional location of Vindhyachal in Northern Region.
**Exclude 1267.97 MU Solar Power Generation and 870 MW Capacity, 41.86 MU Wind Generation and 50 MW Capacity, 3.08 MU Small Hydro and 8 MW Capacity.

Coal Mining

To ensure the long term fuel security, NTPC is developing coal mining projects through its 10 coal blocks (depicted in the map) having a total estimated geological reserves of about 7.3 Billion Metric Tonnes. By the end of Year 2025, NTPC including its group companies expects to produce about 107 MMT of coal per annum fulfilling more than 12 % of its estimated coal requirement.

Coal Mining at NTPC Dulanga



During FY 2017-18, from Pakri-Barwadih coal mine about 2.67 MMT coal have been extracted and 683 no of rakes of coal have been dispatched to power stations through Indian Railways network. Mining operations from Dulanga coal block has been started since February, 2018.

EV Charging Station at NTPC, Simhadri

E-Mobility

With thrust of Government of India for E-Mobility and its rapid adoption across the globe, NTPC has already established its foothold in E-Mobility business. The Company is currently exploring ways to set up EV charging stations by signing MoU with various city administrations and seeking strategic collaborations with aggregators/operators and other stakeholders in E-Mobility sector.

Towards this end, the Company has entered into an MOU for setting up EV ecosystem in Jabalpur, Bhopal and Navi Mumbai. MoUs have also been signed with Oil Companies and other PSUs for collaboration in development of charging infrastructure.

The Company has also installed charging stations in its power stations and offices and also leased some E-Vehicles for its offices in NCR. NTPC is developing an integrated EV ecosystem in and around its power stations and offices.

Power Trading

NTPC has sold more than 365 Million Units of URS power in the Power Exchange through its trading arm NVVN, based on consents received from most of the beneficiaries. As per this scheme, gains from these transactions have been shared in the ratio of 50:50 with the beneficiaries whose URS power is sold.

Waste to energy

NTPC has taken initiatives to establish technologies for clean and safe disposal of municipal waste which also provides some energy as a spin-off benefit. Waste to compost plant at Karsada, Varanasi has been revamped for which the O&M is also being managed. The plant processes about 600 TPD of MSW (municipal solid waste) and generates 60-80 TPD of compost.

Further, 24 TPD thermal gasification based demonstration scale plant at Varanasi has become operational during the year. Here, the MSW is

Waste to Energy plant at Karsada, Varanasi

first converted to producer gas, which is then used to generate approximately 200 kW of electric power. NTPC is presently working on more such plants which once established in technology and collection/preparation processes will change the face of waste disposal in Indian cities.

Consultancy Services

NTPC provide consultancy services in Engineering, Operation & Maintenance Management, Project Management, Contracts & Procurement Management, Quality Management, Training & Development, Solar & renewable power projects, compliance to Environmental norms for power stations etc.

These services have been provided in India and abroad viz. Gulf countries, Bangladesh, Nepal, Sri Lanka and Bhutan. It has provided Services for more than 42,000 MW capacity to external clients besides 7,551 MW of NTPC JVs.

Sl. No.	Area	Contracts executed (No.)	Sales (₹ Crore)
1.	Engineesering	14	105
2.	Operation & Maintenance Management	25	22.7
3.	Owners Engineer and other servic	20	185
4.	Project Monitoring, R&D etc.)	107	74

Supply Chain

NTPC has a structured and uniform supply chain management process in place. The inbound logistics involve supply of raw materials in forms of fuel, chemical, water, equipment and spares. The procurement process is explained in the next section.

Electricity is produced in the various coal, gas, hydro and renewable facilities across country. Major by-product generated during production of electricity in coal based plants is fly and bottom ash. Various efforts are being taken up to ensure 100 % utilisation of ash generated. During the production process, the generated wastes are either recycled or disposed responsibly. Effluents or dirty water generated in the production process is treated and reused in various production processes.

The electricity is then transmitted to the customers mainly state distribution companies through high voltage transmission lines.

Procurement Practices

Suppliers and Vendors

At NTPC, we treat our suppliers as our partners in our sustainability journey. Our suppliers, contract manufacturers and service providers are intrinsic to the business. For setting up of power plants and catering to their operations & maintenance requirements, NTPC engages contractors / suppliers.

NTPC consider all its domestic vendors operating in India as local vendors. All the operating units within India are significant locations of operations.

Vendor Assessment : For on boarding a new vendor, their capacity and capability is assessed to ascertain that it has the required facility and requisite financial health to execute the Contract or complete the Supplies as per the Customer's requirements.

Reference Work Verification : The reference jobs furnished by the bidders in fulfillment of the Qualifying Requirements are verified with their respective Clients. In case of a new bidder, the capacity and capability assessment may also be taken up.

Performance Reports : During the evaluation of a bidding process, the performance report of all the bidders, who are engaged in or have executed in the past contracts for NTPC, is sought from respective sites. Any area requiring specific attention are addressed through appropriate resolutions with the bidders. In case of major non-performance, the bidder may be rejected too.

Contract Review Meetings (CRMs) : During execution of a Contract, CRMs are held at regular intervals with all the important stakeholders. CRM provides an important forum to identify and discuss the problems in the supply chain being faced by the Site and the Contractor. Wherever needed, necessary resolution is agreed to as a part of Minutes of Meeting.

Enlistment : In case of regular work packages, which have standardized eligibility criteria, NTPC goes for enlisting the suppliers / contractors / agencies. Once the list of eligible suppliers / agencies is prepared, procurement for such packages from the enlisted agencies is done on Limited Tender Enquiry basis. Enlistment helps reduce lead time as well as maintain long term relationship with the prospective contractors. While selecting suppliers, NTPC follows the Domestic Price Preference as per the extant Govt. Guidelines, which are aimed at giving preference to local supplies over suppliers from abroad. The preference is given invariably in all procurements for Power Plants done on International Competitive Bidding basis.

Procurement from MSEs

The Government of India has notified a Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012. The total procurement made from MSEs (including MSEs owned by SC/ST entrepreneurs) during the year 2017-18 was ₹ 1160.62* crore, which was 28.69% of total annual procurement of ₹ 4045.64* crore against target of 20% of total procurement made by the Company.

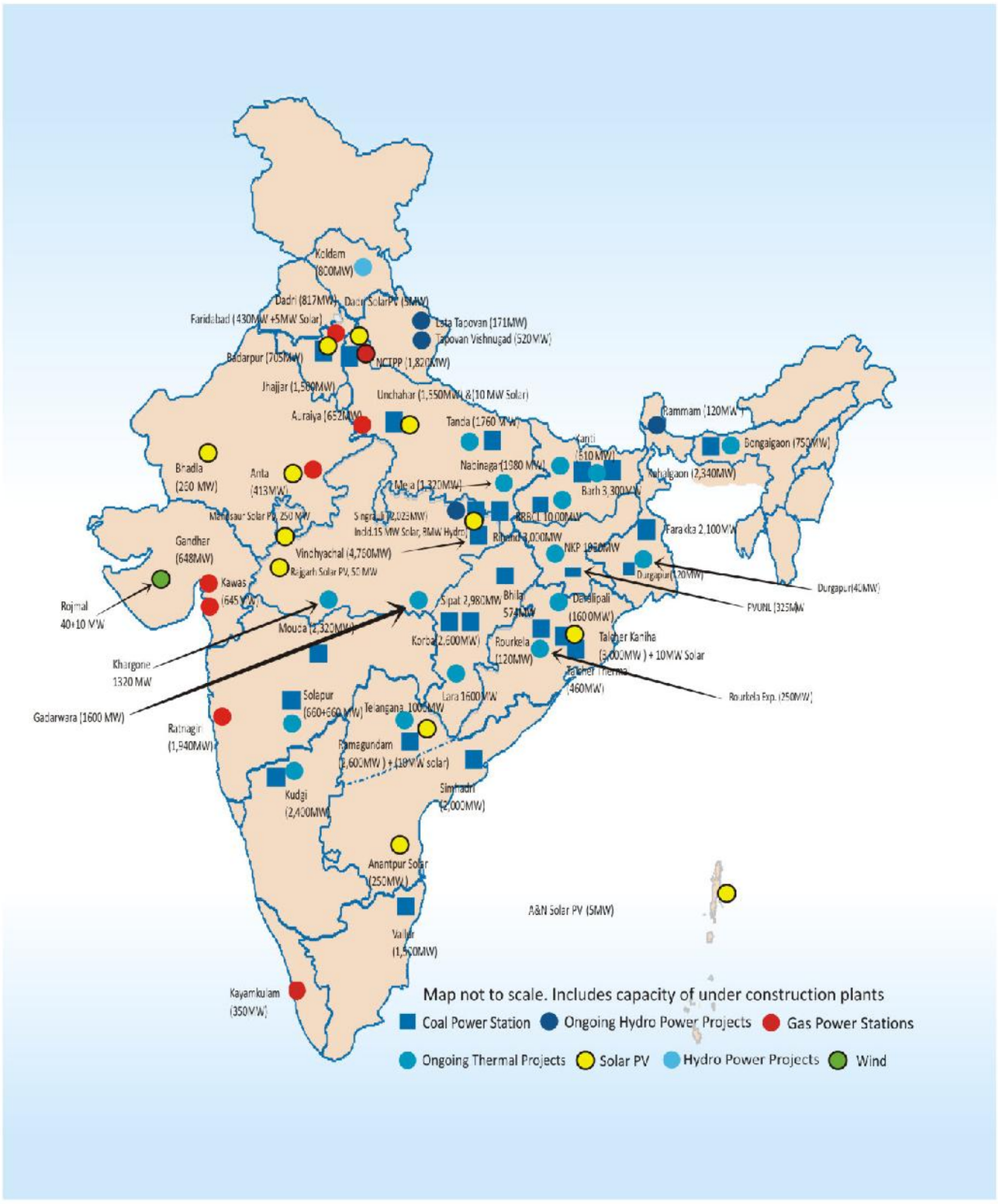
(*It excludes Primary fuel, Secondary fuel, Steel & Cement, the Project procurement including R&M packages and procurement from OEM, OES & PAC sources).

The total procurement made from MSEs owned by SC/ ST entrepreneurs during the year 2017-18 was ₹ 17.09* crore, which was 0.42% against the target of 4% of total procurement value.

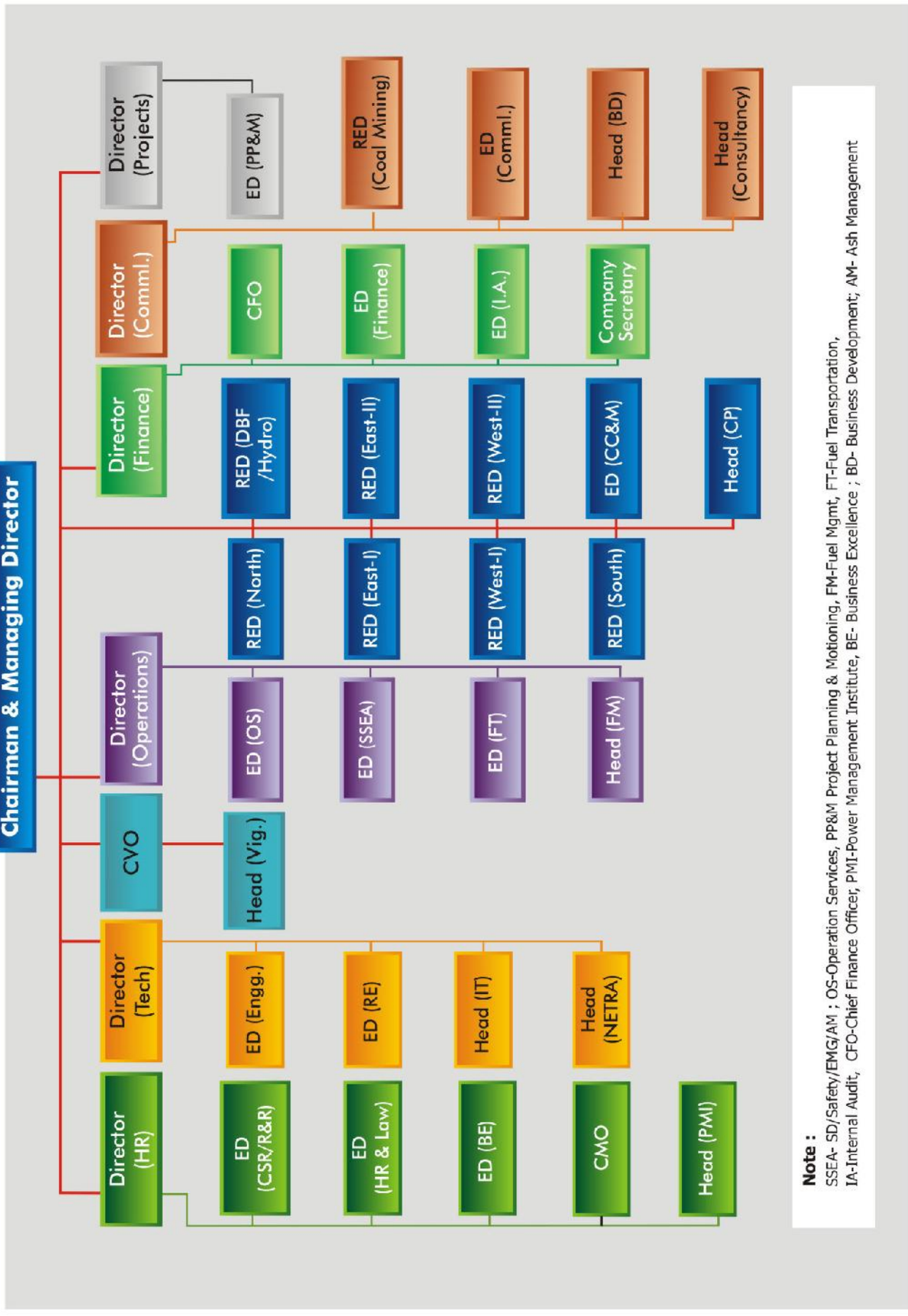
The Company organised 21 vendor development programmes for MSEs across the Company, out of which 6 vendor development programmes were exclusively organised for SC/ST MSE entrepreneurs.

Vendor's Meet at PMI, Noida

NTPC- Pan India Presence



Organisation Structure



Note :
SSEA- SD/Safety/EMG/AM ; OS-Operation Services, PP&M Project Planning & Motioning, FM-Fuel Mgmt, FT-Fuel Transportation,
IA-Internal Audit, CFO-Chief Finance Officer, PMI-Power Management Institute, BE- Business Excellence ; BD- Business Development; AM- Ash Management

Governance, Ethics and Integrity

NTPC firmly believes that sound Corporate Governance is Critical for enhancing and retaining investor trust. We are committed for meeting our performance goals with ethics and good governance.

As a good corporate citizen, the Company is committed to sound corporate practices based on conscience, openness, fairness, professionalism and accountability besides building confidence in its various stakeholders, thereby paving the way for long term success.

Performance evaluation

The performance of the board and the directors are evaluated by the Ministry of Power, the administrative ministry for NTPC. For evaluating the performance of NTPC, the GoI has instituted a system of joint annual target setting through a Memorandum of Understanding (MoU). The MoU system defines the evaluation criteria in advance on parameters like financial, productivity, HR, project implementation and operational performance.

Performance of functional directors on the board are also evaluated through a performance evaluation system at two levels- first evaluation at the level of Chairman & Managing Director and the second at the level of the Ministry. (For details refer page no. 72 of Annual Report 2017-18).

Composition of Board

(i) Seven whole-time Directors, including the Chairman & Managing Director (CMD).

(ii) One nominee Director

(iii) Seven independent Directors including one Woman Director.

The Board of Directors is the highest governing body headed by CMD and exercises executive power as delegated by the board through Delegation of Power (DOP). (For details refer to Governance section of Annual Report 2017-18)

Chair of the highest governance body

The chair of the highest governance body is the Chairman & Managing Director (CMD), who is also an executive officer in the organization.

Nominating and Selecting the highest governance body

SEBI LODR stipulate that the Board of Directors of the company shall have an optimum combination of executive and non-executive directors with at least one woman director and not less than fifty percent of the Board of Directors comprising non-executive directors.

The appointment of Functional Directors, Government Nominated Part Time Directors as well as Independent Directors on the Board of NTPC are made by Government of India based upon their experience and sectorial expertise through Cabinet Committee on Appointment of the recommendation from PESB / DPE.

Board of Directors

The Board of Directors is entrusted with the ultimate responsibility of the management, general affairs, direction and performance of the company.

The Directors on the Board are appointed by the President of India through respective administrative ministry.

During the financial year 2017-18, thirteen meetings of the Board of Directors were held.

Tenure of Board Member

The CMD and other whole-time Directors are generally appointed for a period of 5 years from the date of taking over charge or until the date of superannuation or until further orders from the Govt. of India, whichever event occurs earlier.

The tenure of the whole-time Director can be extended further by the GoI till the age of superannuation i.e. 60 years. Independent Directors are generally appointed by GoI for tenure of 3 years.

Remuneration

Remuneration policies of highest governance body and senior executives are fixed as per guidelines issued by DPE on the terms and conditions as fixed by the Government of India. No remuneration consultations are involved for determining remuneration as the same is fixed by GoI.

Ratio of the annual total compensation for the organization's highest paid individual to the median annual total compensation for FY 2016-17 and FY 2017-18 are 2.42:1 and 2.71:1 respectively.

Code of Conduct

The Company has in place Code of Conduct for Directors and Senior Management Personnel with a view to enhance ethical and transparent process in managing the affairs of the Company. This code is applicable to all the Board Members including Government Nominee (s) & the Independent Director (s) and the Senior Management Personnel of the Company. A copy of the Code of Conduct is available at the website of the Company at the web link:http://www.ntpc.co.in/en/investors/code-of-conduct

Conflict of Interests

All Directors of the Company have to declare their interests in the prescribed form for notice of Interests pursuant to Section 184 of the Companies Act, 2013. The Directors refrain from participating in discussions on such agenda items that include their interest in any form to any extent, directly or indirectly.

Implementation of Integrity

The Company is committed to have total transparency to its business processes and as a step in this direction, it signed a Memorandum of Understanding with Transparency International India in December, 2008. The Integrity Pact is being implemented for all contracts having value exceeding ₹10 crore. Presently, the Company is having one Independent External Monitor to oversee the implementation of

NTPC's Annual General Meeting, 2018

Committees of the Board of Directors

(The terms of reference on committees and details of the members have been given in NTPC's Annual Report FY 2017-18)

Sl. No.	Committee of the Board of Director	Committees responsible for decision-making on		
		Economic topics	Environment topics	Social topics
1.	Audit Committee	✓		
2.	Stakeholders' Relationship Committee	✓		
3.	Committee for Guiding and Acquisition of Power Assets	✓		
4.	Nomination and Remuneration Committee including PRP	✓		
5.	Corporate Social Responsibility and Sustainability Committee	✓	✓	✓
6.	Committee on Management Controls	✓		
7.	Projects Sub-Committee	✓	✓	✓
8.	Committee of Functional Directors for Contracts	✓		
9.	Contracts Sub-Committee	✓		
10.	Committee of the Board for Allotment and Post-Allotment activities of NTPC's Securities	✓		
11.	Committee for Vigilance Matters	✓		
12.	Exchange Risk Management Committee	✓		
13.	Risk Management Committee	✓	✓	✓
14.	Committee of Directors on Fuel Management and Development & Operation of Coal Blocks	✓		
15.	Committee on Business Development	✓		

Policies and systems during FY 2017-18 on Sustainable Development and Business Responsibility Aspects

No	Policies/ systems	Web Link
Director (Finance)		
1.	Code of Conduct	http://www.ntpc.co.in/investors/code-of-conduct
2.	Fraud Prevention Policy	http://www.ntpctender.com/about/FraudPolicy.asp
4.	Whistle Blower Policy	http://www.ntpc.co.in/sites/default/files/downloads/WhistleBlowerPolicy.pdf
5.	Internal Code of Conduct for prevention of insider trading	http://www.ntpc.co.in/download/internal-code-conduct-prevention-insider-trading-dealing-securities-ntpc-limited
6.	Code of Corporate Fair Disclosure Practices for prevention of insider trading	http://www.ntpc.co.in/download/code-corporate-fair-disclosure-practices-prevention-insider-trading
7.	Related Party Transaction Policy	http://www.ntpc.co.in/download/related-party-transaction-policy-ntpc
8.	Policy for determination of materiality of events or information for disclosure	http://www.ntpc.co.in/sites/default/files/downloads/NTPCPolicyForDeterminationof Materialityofevents.pdf
9.	Policy on maintenance & preservation of documents	http://www.ntpc.co.in/sites/default/files/Document PreservationPolicy.pdf
11.	Policy for determining Material Subsidiaries	http://www.ntpc.co.in/download/policy-determining-material
12.	Dividend Distribution Policy	http://www.ntpc.co.in/sites/default/files/downloads/Divident DistributionPolicyofNTPCLimited.pdf
Director (HR)		
13.	CDA Rules	Policy manual available on NTPC Intranet
14.	Training Policy for Directors of NTPC	http://www.ntpc.co.in/download/training-policy-director-ntpc
15.	Human Right Policy	Policy available on NTPC Intranet
16.	Placement and Transfer Policy	Policy manual available on NTPC Intranet
17.	R&R Policy	http://www.ntpc.co.in/en/corporate-citizenship/r-and-r-policies
18.	Initial Community Development Policy	http://www.ntpc.co.in/download/initial-community development policy-2009
19.	Policy for CSR and Sustainability	http://www.ntpc.co.in/download/ntpc-policy-csr-sustainability
20.	Career Development Policy	http://www.ntpc.co.in/en/careers/career-growth-opportunities
Director (Operations)		
21.	Safety Policy	http://www.ntpc.co.in/en/sustainability/health-and-safety
22.	Environment Policy	http://www.ntpc.co.in/en/environment/environment-policy-andmanagement
23.	Water Policy	http://www.ntpc.co.in/sustainability-report-policies/7312/ntpc-water-policy-2017
Director (Technical)		
24.	Biodiversity Policy	http://www.ntpc.co.in/sites/downloads/biodiversitypolicy2018.pdf
25.	Rain Water Harvesting Policy	https://www.ntpc.co.in/sites/default/files/downloads/NTPCRainWater Harvesting Policy2018.pdf
Director (Comml.)		
26.	Commercial systems & Procedures	http://www.ntpc.co.in/sites/default/files/downloads/procurementandworkpolicy.pdf

Corruption and Anti-Competitive Behaviour

Aspects of Vigilance Mechanism

NTPC remains committed to behaviour that is in consonance with the principles of ethical and fair business practices. The company has a full-fledged vigilance department headed by the Chief Vigilance Officer (CVO) of the rank of Joint Secretary, GoI, who is a nominee of the Central Vigilance Commission. The CVO is assisted by team of experts in dealing vigilance and technical matters for corruption /examining issues relating to corruption. In order to ensure independence in functioning and also for quick flow of information, relating to corruption, to the highest management, each individual station/projects of the Company has a separate vigilance unit reporting directly to the respective head of the stations as well as to the CVO, at the corporate Centre. The company also comply with relevant statutory requirements including anti-competitive behaviour. All operating stations are fully equipped and assessed for risk related corruption at sites.

Vigilance Cases and Penalty During the Period

During 2017-18, 91 complaints were investigated by Vigilance department, out of which 55 complaints were carried to a logical conclusion and appropriate disciplinary action has been initiated wherever necessary. The remaining 36 complaints were under various stages of investigation as on 31.03.2018. Because of our various endeavors in preventing vigilance issues, the number of cases are coming down.

Anti-Competitive Behavior, Anti-Trust, and Monopoly Practices

The Company has a Board approved 'Whistle Blower Policy' for directors and employees to report to the management concerns about unethical behaviour, actual or suspected fraud or violation of the company's code of conduct and ethics policy. It also safeguards against victimization of employees, who avail the mechanism and for direct access to the Chairman of the Audit Committee. No personnel of the company had been denied access to the Chairman of audit committee.

As per the provisions of Section 619 (3) of the Companies Act, 1956, Fraud Prevention Policy has been implemented in NTPC and suspected fraud cases referred by the Nodal Officers to Vigilance Dept. are investigated immediately to avoid/stop fraudulent behaviours as defined in "Fraud Prevention Policy".

No case has been filed by any stakeholder against the company regarding unfair trade practices, irresponsible advertising and /or anti-competitive behaviour during the year.

To curtail the organizational risk in terms of corruption, NTPC has taken following measures:

The Company has implemented Whistle Blower Policy, the Complaints Handing Policy, Fraud Prevention Policy and the policy for Banning of Business Dealing to ensure strict anti corruption measures

Integrity Pact has been implemented in NTPC since 2009. Tenders having estimated value of ₹10 crore and above are covered under the Integrity Pact.

Training sessions conducted on the company's anti-corruption policies and procedures at various projects and stations.

During Vigilance Awareness Week, bilingual posters and banners based on the policies were distributed and displayed to premises nearby. Links were also provided for e-pledges to be placed on intranets of al NTPC locations.

e-procurement process is used to improve efficiency and to ensure transparency in the process.

The CVC has launched a pilot project for assigning scores to index the integrity of an organization. The pilot project presently covers 25 organizations which include NTPC, other PSUs, PSBs and Government Departments. The basic idea is to ascertain if these organizations have system in place for their major activities and if so, whether the systems are being followed.

Managing Legal Aspect

Total nos. of pending litigations cases decrease by 88

Quarterly compliance report is being taken from the concerned Project/Stations/offices/Departments of the company certifying that they have duly complied with all the relevant laws, orders, regulations and other legal requirements of the Central, State and other Government, Regulatory and Local Authorities concerning the business and affairs of the Company. Quarterly Compliance report is being prepared and put up to the Board on quarterly basis. The observations wherever made by any Statutory authorities are being attended to or have been taken up for action to ensure compliance of the same.

Precautionary Approach

India is party to international protocols/ forums on precautionary approach and Indian laws & regulations are also based on these aspects. The Company has a system of Statutory Compliance Reporting System (SCRS) for managing compliances as a part of the precautionary approach to prevent any non-compliance. This system is web-based and is hosted on the Company's intranet and covers all Indian manufacturing locations of the Company. The status of statutory compliances is reviewed on a quarterly basis by the senior officials of the Company.

Corporate Membership national & international organisations for getting support in the areas of environmental management, social responsibility and economic performance

1	British Safety Council	Safety
2	Institute of Fire Engineers	
3	National Safety Council	
4	National Safety Council, USA	
5	Confederation of Indian Industry (CII)	Industry Association
6	Delhi Productivity Council (DPC)	
7	Federation of Indian Chambers of Commerce & Industry (FICCI)	
8	Foundation of Restoration of National Values	
9	Institute of Company Secretary of India (ICSI)	
10	Institute of Internal Auditors	
11	Power HR Forum	Human Resource
12	Power Sector Skill Council	
13	The Foreign Correspondents' Club of South Asia	
14	Strategic Human Resource Management (SHRM), USA.	
15	India Infrastructure Forum	Infrastructure
16	South Asia Forum for Infrastructure Regulation (SAFIR)	
17	United Nation Global Compact (UNGC)	Society & Environment
18	TERI Council for Business Sustainability (CBS)	
19	India Business and Biodiversity Initiatives (IBBI)	
20	Central Board of Irrigation & Power (CBIP)	Energy
21	Electric Power Research Institute (EPRI), USA	
22	Energy Transition Commission India (ETC), India	
23	Indian Federation of Green Energy	
24	International Conference on Large High Voltage Electric System (CIGRE)	
25	The Energy and Resources Institute (TERI)	
26	World Energy Council (WEC)	
27	Central Mechanical Engineering Research Institute (CSIR)	
28	Council of Power Utilities	
29	Excellence Enhancement Centre, EEC	
30	National Accreditation Board for T&C Laboratories	
31	The American Society for Nondestructive Testing	
32	The Mining, Geological & Metallurgical Institute of India	Mining

Internal Control of Governance Structure

To ensure regulatory and statutory compliances as well to provide highest level of corporate governance, the Company has robust internal systems and processes in place for smooth and efficient conduct of business and complies with relevant laws and regulations. A comprehensive delegation of power (DOP) exists for faster decision making which is being periodically reviewed to align with changing business environment. Elaborate guidelines for preparation of accounts are followed consistently for uniform compliance. In order to ensure that all checks and balances are in place and all internal control systems are in order, regular and exhaustive internal audits are conducted by the experienced firms of Chartered Accountants in close co-ordination with the Company's own Internal Audit Department. Besides, the Company has two committees of the Board viz. Audit Committee and Committee on Management Controls to ensure the same.

Key Impacts, Risks and Opportunities

NTPC has a structured system to identify its economic, environmental and social risks and impacts due to its business operations and associated activities. The company is taking many endeavours to address these risks in a timely manner and converting them into opportunities, thereby enhancing the Company's competitive advantage.

Risks/ Opportunities	NTPC's Initiatives
Water Availability Water has become a significant risk area, considering the increasing pressure on the available water resources. It is one of the main inputs to operate coal and gas power plants. Reducing water availability, its increasing costs and stricter regulatory regime is posing risks to our operations.	Various water conservation initiatives with process improvements and technology adoption has been taken up. Optimisation of cycles of concentration (COC) and implementation of ZLD is being implemented at all stations to reduce fresh water consumption. ACC based cooling is being adopted at water stressed projects. Our policy driven approach has accelerated these initiatives.
Controlling air emissions Revised environmental norms for thermal power plants as notified by GoI require modifications in power plants to contain SPM, SOx, NOx emissions which entails substantial investment. Also, government has directed thermal power stations to blend crop residue with coal in its boiler to curb air pollution in cities due to stubble burning.	NTPC is spearheading the adoption of Flue Gas Desulphurisation at a massive scale and developing solutions for de-NOx that can be used for high ash content coal in India. Biomass co-firing up to 10% is being implemented at thermal units in close proximity to major cities.
Integration of Renewables Rising climate change concerns are leading us to decarbonised energy transition with increasing share of renewables in our generation portfolio. Also, influx of more variable renewable energy sources in the grid would require many coal-based plants to operate in a flexible manner.	We have targeted to achieve 32 GW of renewables by 2032 and have developed 928 MW of renewables till date. NTPC has a wider spectrum of thermal capacities ranging from 60 MW to 800 MW and is well prepared to tackle issues pertaining to renewable grid integration. We have developed internal systems and practices to deal with issues of flexibilization and having technically minimum generation system.
Fuel Security It has become a risk area owing to reduction in coal supplies and gradual increase in our fleet size.	NTPC is ensuring fuel security through its long-term coal supply agreements. Also, the company has been allocated 10 coal blocks for captive mining, which would be able to meet 12% of its coal requirement by 2025. Our strategic plan to increase renewable capacity would reduce our dependence on fossil fuels proportionally.
Business growth and diversification With the rising economic growth attributed to rapid urbanisation and increased industry production, the electricity demand is poised to grow exponentially in India and other developing world. Government schemes such as SAUBHAGYA, DDUGJY etc. are likely to boost the power demand. Power generating units needs to ramp up their production to meet the increasing demand. Also, to ensure the profitability and future cash flows, power companies need to diversify their business and increase global footprint.	NTPC is looking for opportunities for acquisition of power plants if available at attractive valuations for adding capacity after analysing the technical and financial viability of the project(s). The company has already diversified into renewables, consultancy services, EV ecosystem and waste to energy services. The Company, by virtue of its growing project management and O&M experience with an expanding power generation portfolio, is looking at overseas opportunities, mainly in Middle East and South East Asia.

Risk Management at NTPC

To effectively manage the risks associated with the business, NTPC has taken adequate measures to institutionalize risk management process in the company by implementing an elaborate Enterprise Risk Management (ERM) framework. As part of implementation of the ERM framework, a Director Level Committee called Risk Management Committee (RMC) has been constituted. RMC, as owner of Enterprise Risk Management framework has been entrusted with the responsibility to identify and review the risks and formulate strategies and action plans for risk mitigation on short-term as well as long-term basis.

As per the listing agreement of SEBI, the Risk Management Committee has been constituted with majority of its members being members of the Board of Directors. Director (Projects), Director (Technical), Director (Operations), Regional Executive Director (Coal Mining) and Head (Corporate Planning) are its members. Apart from the members, other REDs and functional EDs are invited to deliberate on issues.

The role and responsibilities of the Risk Management Committee

- **Finalization of risks**
- **Monitor and review risk management framework**
- **Implementation of risk management plan/ framework**
- **Information to the Board on quarterly basis about the risk assessed and action required to be taken/ already taken for mitigating the risks**

The objective of the process is to improve risk awareness of the employees and manage the Company's risk exposure. Our risk assessment method is based on a sustainable business model analysing risks in a broader framework and incorporating social and environmental issues with economic considerations. The identified risks/opportunities are then mapped with stakeholders' concern and organisation's priority. These risks/opportunities are then prioritised and action plans are developed at different levels.

It enables us to consider emerging risk areas and turning them into opportunities which are not captured by other analytical and systems-

View of CHP, NTPC Talcher Kaniha

Stakeholder Engagement

Stakeholder engagement at NTPC is an ongoing journey where the company interacts with its stakeholders at different levels to understand and address their expectations and collaborates with them to create shared value. In about 43 years of existence, NTPC has built a constructive relationship built on mutual trust, transparency, ethics and accountability, with all its stakeholders. The continual dialogue process with stakeholders and their feedbacks on issues concerning the company's operations has enabled much of its growth and achievements.

NTPC has a structured stakeholder management mechanism in place at all establishments. Stepwise guideline has been adopted for identifying the stakeholders, analysing their perspectives and interests, mapping and prioritizing them. This is outlined below:

Identification and Prioritisation of Stakeholders

NTPC has a well-defined 3 layered approach for the identification and prioritization of stakeholders. With a pre-defined periodicity; brainstorming sessions are conducted at 3 levels: project/stations, regional headquarters and corporate functions. These sessions involve a cross functional leadership team comprising Head of the projects (HoPs), Head of the departments (HoDs) & Sectional Heads etc. For identification of stakeholders, all the stakeholders are first listed down, without any screening criteria based on their interest in NTPC in the current scenario & probability of gaining interest in the future as well.

Theses stakeholders are clubbed under the nine broad categories of:

After developing the first list of stakeholders, further analysis is done based on the following attributes to further determine which stakeholders are most useful to engage with.

Contribution	Legitimacy	Willingness to Engage	Influence	Need for
Involvement What type of knowledge & expertise does the stakeholder process?	How legitimate is the stakeholder's claims on the organisation?	To what extent is the stakeholder willing to engage with the company?	How much impact does the stakeholder have on NTPC?	Can their exclusion delegitimize the process?

The major stakeholders identified through this process is illustrated in the next sections.

Approach to stakeholder engagement

The final list of stakeholders is then prioritised using a power - interest matrix to devise the corresponding engagement strategies

Customer Meet at NTPC Eastern Region, HQs

A detailed engagement process is created with information about frequency, agenda, touch points, analysis, review etc. for high priority stakeholders as listed in below table. Interfacing functions/ departments are designated as the owners of the concerned engagement process and have the responsibility of ensuring end to end coverage. They are also entrusted with identifying and addressing the critical concerns. The issues/ concerns raised by various stakeholders during the engagement process along with the Company's response towards these issues are presented in the table below.

Medium of Engagement	Frequency	Key Concerns	NTPC's Response
Government of India			
▸ Secretary level review ▸ Meeting with MoP, DPE, Parliamentary Committees, CEA etc.	▸ Quarterly ▸ Need based	▸ 24X7affordable power for all	▸ We are increasing the availability of our units through ensuring fuel availability and timely upkeep of machines. We are also reducing the cost of power through efficient and maximum utilisation of assets, better man-megawatt ratio and right policy advocacy.
		▸ Maximizing the infrastructure utilization	▸ We are upgrading our assets management strategies to optimally utilize our infrastructures at minimum cost.
		▸ Social development	▸ We are facilitating social developments around our locations through our CSR activities. Activities directed on four focus areas of education, water, health and sanitation has started to show promising results.
		▸ Environment conservation	▸ We strive to achieve environmental stewardship and go beyond regulations to reduce emission, drive energy efficiency, improve water efficiency through reduced fresh water consumption and waste water recycling.
		▸ Promote government scheme such as Make in India, Skil India, Swachh Bharat mission	▸ We keep promoting government welfare schemes through our CSR activities, preferring local vendors in our procurement systems and through direct participation in some schemes such as SAUBHAGYA, DDUGJY etc.
Shareholders			
▸ Analyst and Investors Meeting ▸ Annual General Meeting ▸ Review meets with Bankers (Domestic and Foreign)	▸ Quarterly ▸ Annual ▸ Regular	▸ Improving RoI	▸ We are endeavoring to improve RoI through optimal utilization of assets and reducing the cost of power generation.
		▸ Risk & Governance Compliance	▸ We have an elaborative risk management framework in placing to mitigate strategic and operational risks. We are maintaining good governance mechanism by adhering to the principles of ethics, integrity, transparency and accountability.
		▸ Business Sustainability	▸ We strive to ensure business sustainability by setting targets on triple bottom line framework, measuring and reporting the same and addressing the gaps.

Medium of Engagement	Frequency	Key Concerns	NTPC's Response
Regulatory & Statutory Bodies			
▸ Public hearings ▸ Statutory Audits & Inspections, Meeting for Clearances, Consents & Compliances	▸ Need based ▸ As per statutory provisions	▸ Optimum electricity tariffs ▸ Compliance with changing	▸ We have taken major initiatives such as optimization of fuel linkages, enhancement of operational efficiencies and flexibility in the use of domestic coal to reduce electricity tariffs. ▸ SOX , NOX and PM emissions are being curtailed through installation of FGD, Combustion Modification systems and retrofitting of ESPs respectively. Various water conservation initiatives with process improvements and technology adoption has been taken up. Recycling of waste water through ZLD is being practiced. New Biodiversity conservation projects are being taken up.
Employees			
▸ Participative forums ▸ Communication meetings ▸ Employee Surveys ▸ Intranet ▸ Trainings and Workshop ▸ Internal Magazines	▸ As per defined frequency ▸ Need based	▸ Professional growth ▸ Work life balance ▸ Health, safety & security ▸ Adequate remuneration benefits ▸ Timely resolution of grievances	▸ We are ensuring professional growth of our employees through on-the-job and leadership development trainings, funding support for external training/higher education and implementation of job rotation and sabbatical policy. ▸ We are taking initiatives to create avenues for recreation and hobbies and provide urban facilities at our projects/stations. ▸ We strive to achieve our target of zero incidents by establishment of robust safety culture, upgradation of operating procedures to make the work environment safer and secure. ▸ We are ensuring that our compensation levels are as par or more than the market benchmark. ▸ Employee grievances are timely and systematically addressed through a well-defined mechanism. These are done through both online and offline portals.
Communities			
▸ Public hearings ▸ VDAC ▸ Public Information Centres	▸ Need based ▸ Annually	▸ Infrastructure Development ▸ Quality of life improvement ▸ Employment Opportunities ▸ Land acquisition and R&R issues	▸ We are building schools, hospitals, skill training centers etc. across country through our CSR activities. ▸ We are touching lives of many people by improving their quality of life by providing them basic amenities such as affordable power, drinking water, toilet facilities etc. ▸ We provide direct and indirect employment opportunities for project affected people (PAP) in and around our plants. We also provide skill trainings to nearby communities to improve their earnings. ▸ Community well-being and inclusive growth is being driven through the CSR, R&R and sustainable development initiatives. ▸ Attractive compensation plans have been devised on the basis of National R&R, State R&R and NTPC R&R plans. Land acquisition is being expedited through liaising with state government.

Medium of Engagement	Frequency	Key Concerns	NTPC's Response
Customers			
▸ Regional Customer Meets ▸ Regional Power Committees (RPCs) ▸ Commercial ▸ Technical Co-ordination Committee ▸ Operation Co-ordination Committee ▸ Business Partner Meet ▸ Customer Support Services	▸ Quarterly ▸ Monthly ▸ Yearly ▸ As per requirement	▸ Resolving commercial issues ▸ Resolving technical Issues	▸ We are taking actions to ensure timely respond to any customers' issue and solve their changing energy needs. We also run discount schemes to incentivize faster realization from our customers. ▸ We give utmost importance to our quality and have strengthen our quality control mechanism to avoid happening of any technical issue.
Suppliers			
▸ Pre-bid conference ▸ Suppliers Meet, Vendor Enlisting ▸ NTPC Website	▸ Before tendering ▸ Need based	▸ Transparent dealings ▸ Timely Payments ▸ Fair opportunities	▸ We strive to conduct all our business dealings in an ethical and transparent manner through enforcement of our strict anti-corruption policies and procedures. ▸ We are constantly reviewing our payment procedures to remove bottlenecks and ensure timely payments to the suppliers. ▸ We are relaxing financial criteria in qualifying requirements to provide fair opportunities to small but capable suppliers.
Media			
▸ Press Releases ▸ Press conference	▸ Need based ▸ Event based	▸ Information sharing ▸ Brand image	▸ We periodically share information of our important activities and achievement through press release, social media and other print and digital media. ▸ We have been able to enhance our brand image through our unmatched performance in power sector and continuous engagement with media at different forums.
Citizens of India			
▸ Right to Information (RTI) Act ▸ NTPC Website	▸ Continuous	▸ Community development ▸ Environment issues ▸ Progressive organization	▸ We are taking consistent efforts in upholding the status of Progressive organization by achieving our social, environmental and economic targets in a sustainable and responsible manner.

The data of entire process is captured through a dedicated IT tool to register the stakeholder issues and updates of the progress made. Key concerns with long term implications are integrated with Strategic Planning Process. The whole process and outcome is reviewed every 2 years.

Materiality Analysis

At NTPC, materiality assessment process is an on-going process which helps to prioritise inputs from our stakeholders through continuous interactions into our decision making process. The effective management of prioritised inputs i.e. material issues is critical to our sustainable strategy. A fresh materiality assessment was conducted for the reporting period. There were significant changes in the process and outcomes as compared to previous year as 15 old issues were dropped and 10 new issues has been added to the final materiality matrix. We engaged with both internal and external stakeholders to conduct the materiality assessment process. A four-step process was adopted for the same which is outlined below:

NTPC's Materiality Assessment Process

Identification

A list of 33 relevant material issues was compiled from various following sources:

- Stakeholders' perspective (Internal and external) through ongoing engagements, mentioned in earlier section
- Risk Management Committee (RMC) findings
- Material issues identified by global and Indian power utilities
- GRI Electric Utilities Sector (EUSS) Disclosures
- Laws, Regulations, International agreements
- Global mega trends

Shortlisting

The identified 33 issues were analysed objectively on the basis of their relevance and significance to NTPC. A priority list of 19 most common issues were shortlisted and their boundary were mapped across the NTPC's value chain. These issues were further categorised into social, environmental and economic categories.

Prioritisation

Material Topics were prioritised on the basis of their (X,Y) score as described below:

Y-Score: Influence on stakeholder assessment & decisions

We engaged with our key stakeholders through a representative sample size at corporate, region and site levels to get their feedback on the shortlisted issues. The response from all stakeholders were consolidated and finally a score was assigned.

- Conducted online survey for employees (1260 responses) to rate the importance of each issues on a scale of 1 to 5 (1= not at all important, 5= extremely important) in terms of its criticality to influence the stakeholder assessment & decisions.
- Conducted focus group discussions and offline surveys to gather response from vendors, customers, communities and investors.
- Used secondary research to assess the importance of issues from the perspective of Government, Regulators etc.

X-Score: Significance of economic, environmental & social impacts

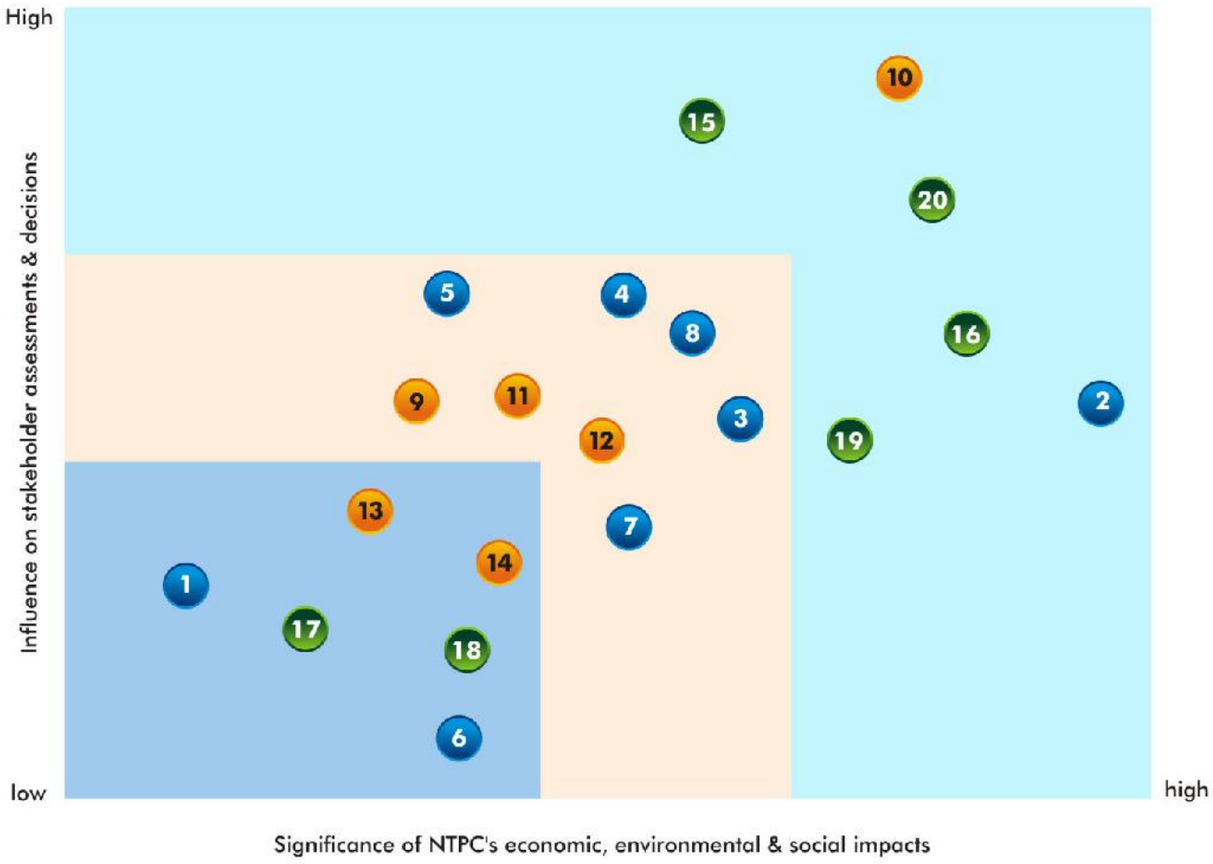
An internal assessment system was developed to quantify the impact of issues. This quantification has been done in terms of various factors such as cost, risk, resource requirement etc.

Validation

NTPC's senior management reviewed the materiality matrix and set the threshold for materiality. As a result, 6 of the 20 material issues, with an overall score above the threshold limit by both the stakeholders perspective and significance of impacts were prioritised as the most important material issues.

Finally, materiality matrix was freezed based on the scores of each material issue.

Materiality Matrix



Business & Governance	Social	Environmental
1 Ethics & Integrity	9 Employee Development & Engagement	15 Decarbonization of Energy Mix
2 Fuel Availability	10 Occupational Health & Safety	16 Water & Effluents Management
3 Operational Efficiency & Plant Reliability	11 Customer Satisfaction	17 Biodiversity
4 New Technologies & Digitalisation	12 Land Acquisition	18 Waste Management
5 Sustainable Supply Chain	13 Community Engagement	19 Air Emissions
6 Plant Decommissioning	14 Labour Practices	20 Ash Management
7 Disaster Management		
8 Profitability		

Ethics & Integrity

Boundary	Internal & External

We conduct our business processes by adhering to principles of ethics and integrity which are the important constituent of our core values. With the policies such as Code of Conduct, Whistle Blower, Complaint Handling and Banning of Business Dealings in place, we have been able to achieve 100 % compliance with laws and regulations and ensure a transparent and corruption free work environment. Every office displays a board exhorting any visitor not to succumb to pressure and bring any case of corrupt practices directly to the notice of Chief Vigilance Officer.

Fuel Availability

Boundary	Internal

We have long term fuel supply agreement with major domestic fuel suppliers. Supplementary Agreement has also been signed at subsidiary level under rationalisation of coal linkages. To fulfil the short term needs we also intend to import coal. We have strategically ventured into coal mining to ensure the long term supply of fuel to our stations.

Occupational Health and Safety

Boundary	Internal

Safety is inculcated in the core values of NTPC and we give utmost priority to health and safety of our workforce at all our locations. We strive to achieve our target of zero incidents by establishment of robust safety culture and policy. The company is constantly upgrading its operating procedures to make the work environment safer and address potential safety hazards with inclusion of new technologies and business areas. Occupational health check-ups are mandatorily done for all employees and contract labours working in the power stations. The medical history of employees and their family members is maintained under online centralised HMS frame work named as Jeevan Rekha.

Operational Efficiency & Plant Reliability

Boundary	Internal

We strive to improve our operational efficiency through process innovations and adoption of advanced technologies. Adopting best operation and maintenance (O&M) practices, periodic review and improvement of current systems, secure and consistent access to information to all are enabling us to increase our productivity. We are increasing plant reliability through improved scheduling of maintenance through data analytics, ensuring fuel availability and providing job specific trainings to our workforce.

Employee Development & Engagement

Boundary	Internal

We are continuously reengineering our HR systems to strengthen the relationship between business growth and systematic employee development programs. We are fostering employee growth and development through continuous engagement activities and training programmes. The company has prioritised employee training as a key focus area. A centralized Power Management Institute, Noida operate at the apex level with Regional Learning Institutes at each of the regions to cascade down the initiative to the station level training centres called as EDC. We have a system of systematic job rotation and career development scheme to aid employee in their horizontal and vertical growth.

Air Emissions

Boundary | **Internal & External**

We strive to achieve the highest standards of emission control by going beyond the regulatory compliances and adopting state-of-the-art technologies. Substantial investment is being made towards installation of Flue-gas desulphurisation (FGD) system, De-NOx and retrofitting of ESP to curb SO_x, NO_x and particulate emissions at NTPC stations.

Water & Effluents Management

Boundary | **Internal & External**

Being a thermal power major, we recognizes our dependence on water and is fully committed to reduce our water footprint. We are minimizing the fresh water usage and making our processes water efficient through implementation of advanced technologies and process re-engineering. Persistent endeavours are underway to transform all stations as "Zero Liquid Discharge (ZLD)" and emphasis has been laid on cascaded use of waste water generated from one process to another. We are ensuring good quality fresh water is available in and around our plant locations through implementation of "Water Policy" and "Rain Water Harvesting policy" and capacity building of concerned stakeholders.

Customer Satisfaction

Boundary | **Internal & External**

We are continuously endeavouring to earn the trust of our customers and to be the most preferred brand in the Indian and global energy industry. We are taking actions to ensure that we timely respond to and solve customers' changing energy needs. This includes not only reliable and affordable power but also providing them renewable power. The managment of NTPC led by CMD meets periodically the senior management team of beneficiaries from state transmission and distribution utilities to resolve issues.

Waste management

Boundary | **Internal & External**

Being primarily a coal-based thermal power company, the waste generated during operation and maintenance of the plant includes lubricating oil, transformer oil, metal and non-metal scraps etc. In addition, domestic waste is generated in township and bio-medical waste is generated in NTPC hospitals. The Company has specific systems for handling such wastes. Special care is taken while treating and disposing the chemical discharge and hazardous wastes. All NTPC plants have become e-waste free and the metal scraps are kept in central stores and subsequently auctioned through MSTC, a leading government company. All hospitals have incinerators to tackle bio medical wastes. For solid waste management at township separate mechanisms for dry and wet waste disposal are in place. All of these systems and practices get monitored through Integrated Management System (IMS) for which all NTPC stations have taken due accreditation.

Disaster Management

Boundary | **Internal & External**

We periodically review and monitor our safety and security systems to identify new kind of hazards and loopholes and address them in time. We have designed the plant structures in a way that is resistant to natural calamities. We have also developed location wise specific Disaster Management Plans (DMP) that will reduce the negative impacts of natural disasters. We conduct appropriate mock drills periodically to build awareness and capabilities in our employees.

New Technologies & Digitalisation

Boundary	Internal

We are adopting new technologies and facilitating digitalisation to bring efficiency and decreases the cost of production. Modern and clean technologies have been adopted including substantial investment in R&D of highly efficient technologies of power generation. Adoption of new technologies are pursued by our R&D wing named NETRA. A very potential project AUSC aimed at achieving quantum leap in energy efficiency is being driven by NETRA in association with BHEL and IGCAR. We believe digitalisation of the energy world is absolute necessity to provide new services and contribute to the development of low-carbon businesses. Full scale digitalisation project for power stations has been tested at NTPC, Simhadri. Smaller scale initiatives under digitalisation are also being undertaken by various functional groups.

Profitability

Boundary	Internal

We endeavour to be the best power company having a long-term vision and conducting business fairly and openly. Although we operate in a semi-regulated economic environment, we are boosting our economic performance through efficient and maximum utilisation of assets, better man-megawatt ratio and right policy advocacy, bringing much relies to the citizens of country.

Decarbonisation of energy mix

Boundary	Internal

We continue to innovate and take new targets to drive forward the transition to a low-carbon future. NTPC has targeted to add 32 GW of renewables by 2032 and reduce the share of thermal units gradually. Along with process improvements to improve energy efficiency in existing stations, only super critical and ultra-super critical technologies are being adopted for all new thermal capacity additions leading to less GHG emissions. Our latest fleet of 800 MW units have 30% less specific GHG emissions as compared to conventional 210 MW units.

Labour Practices

Boundary	Internal

As a responsible company, we are truly committed to fair labour practices within our premises. We uphold the best global and Indian labour standards pertaining to wage determination, allocation of tasks, shifts and working hours, provision of training, incentive and rewards schemes and occupational health and safety standards. We have a dedicated Human Rights policy in place and promote all kind of organisational rights such as the right to engage in collective bargaining, the right to freedom of association etc. NTPC has been upholding the sanctity of the bipartite collective bargaining forum coined as NBC (NTPC Bipartite Council) which is operating since 1982, and has successfully completed 5 wage and 35 ex-gratia (bonus) settlements.

Sustainable Supply Chain

Boundary	Internal & External

We consider our suppliers as our partners in success and growth drivers in our transformational journey. Aligned to our vision and strategy, we intend to undertake conscious efforts to build their capacities manner on environment, social and economic fronts to create shared value which is the ultimate objective of sustainable supply chain.

Ash Management

Boundary | **Internal & External**

Fly ash and bottom ash are our major by-products. We are taking extensive efforts to manage them properly and increase the utilisation through exploring alternate and innovative ways besides conventional methods. NTPC introduced Ash Policy in 2015 laying the vision and strategies for ash utilization in an integrated way from power generation to ash utilisation. Our consistent endeavours have finally resulted in fly ash utilization to around 100 % at load center stations and around 50 % at remote stations. Besides this, dry fly ash is being issued to cement industries and ash brick manufacturers. Pond ash is given for road-construction in considerable quantity.

Land Acquisition

Boundary | **Internal & External**

Land acquisition is a critical aspect of our expansion plans. We keep on devising attractive compensation plans on the basis of national and state R&R framework to provide maximum benefits to project affected people. We also liaison with state governments to expedite the process.

Biodiversity

Boundary | **Internal & External**

To mainstream the concept of biodiversity across NTPC's value chain and adopt a precautionary approach for sustainable management of biodiversity in all decision making process, a dedicated Biodiversity policy has been formulated. NTPC is committed to conduct its operations in a way that promotes the conservation of regional biodiversity, ecosystem and habitat, through a coordinated and comprehensive programme of avoidance, minimization and mitigation of its impacts.

Community Engagement

Boundary | **Internal & External**

We are relentlessly working to give back to society, share the value we create and contribute to the economy. NTPC is providing various socio-economic developmental opportunities to the underprivileged section of society. The company has made its CSR policy more robust and included specific areas like water, education, health and sanitation. From 2014 onwards the company has been spending much more than the mandated 2% CSR budget, on an average of 2.2 % for the period up to 2017-18.

Plant Decommissioning

Boundary | **Internal**

We are closing and replacing some of the old thermal power units with more efficient ones. We are devising plans and implementing them to address issues pertaining to construction and potential unemployment. We are working in collaboration with industry peers to decommission such plants in a safe and environment friendly manner.

Economic Performance

- Direct Economic Value Generated and Distribution
- Significant Infrastructure Investment and services supported
- Financial Excellence
- Policy and practices adopted for Suppliers and Local Sourcing
- Financial Assistance from Government
- Research & Development

NTPC maintains the highest standards of corporate governance along with rapid growth and performance excellence. NTPC has all along setting new benchmarks of all round excellence. The strong financial foundation on which the company stands today and the robust corporate image it enjoys are largely because of the system orientation ingrained in the finance and account department.

The total dividend payout for FY 2017-18 amount to ₹ 4040 Cr. This is the 25th consecutive year that NTPC Limited has paid dividend.

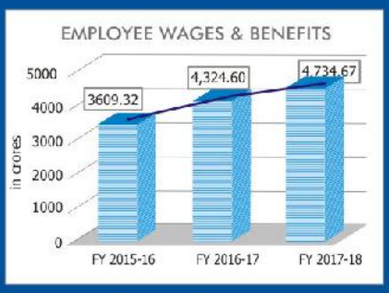
Direct Economic Value Generated and Distributed

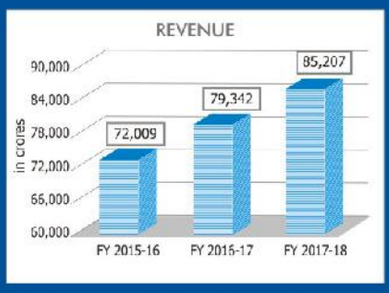
NTPC's operational performance during the year has resulted in an increase in its direct economic value generated from ₹ 79,342.30 crore in the FY 2016-17 to ₹ 85207.95 crore in FY 2017-18.

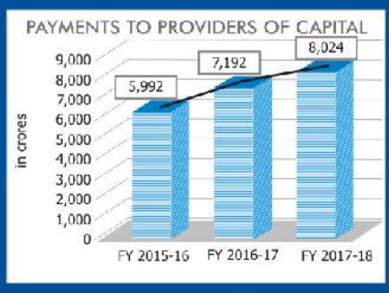
Particulars	FY 2015-16 (₹ in crores)	FY 2016-17 (₹ in crores)	FY 2017-18 (₹ in crores)
A. Direct Economic Value Generated			
Revenues	72,009	79,342	85,207
Sub Total (A)	72,009	79,342	85,207
B. Direct Economic Value Distributed			
Operating Cost	48,832	52,164	55,871
Employee Wages & Benefits	3609	4,325	4,735
Payments to Providers of Capital	5993	7,192	8,025
Payments to Government	268	3,464	2,681
Community investments	490	273	247
Sub Total (B)	59,191	67,418	71,559
Economic value retained (A-B)	12,329	11,749	12,449

CMD, NTPC Presenting Dividend to Sh. R. K. Singh, Hon'ble MoSP (I/c) Power and New & Renewable Energy

Elements of direct economic value distributed, i.e., employee wages, payment of providers of capital and payment to Government have shown improvement as depicted below:







Details of financial performance are also given in the Annual Report FY 2017-18 which is available at the link www.ntpc.co.in/en/investors/annual-report

Significant Infrastructure Investment and services supported

NTPC commits itself to contribute to the society through initiatives that have positive impact on society at large, improve the quality of life of the people and promote inclusive growth and environmental sustainability. The average net profit of the company for the previous 3 financial years stands at ₹ 11,037 crore.

Capital Expenditures

In FY 2017-18, NTPC spend ₹ 29,415 Cr. against the budgeted amount of ₹ 28,000 Cr. The company has added 3.4 GW of generation capacity in the same period. The company has budgeted an amount of ₹ 22,300 Cr. for FY 2018-19. NTPC has planed to add another 4 GW of capacity to its fleet.

Community Investment

By spending ₹ 242 crore on CSR during FY 2017-18, NTPC surpassed the prescribed 2% amount of ₹ 220.75 crore by ₹ 20.79 crore, thus achieving a CSR spend of 2.2% of average net profit of previous 3 financial years.

CSR initiatives during the FY 2017 -18 have been taken up on Pan India basis around NTPC operations.

S. No.	CSR Projects	Amount spend on the project (In Cr.)	
		FY 2016-17	FY 2017-18
1	Swachh Vidhyalya Abhiyaan	35.73	10.52
2	Healthcare & Sanitation	55.52	36.96
3	Education & skill development	60.45	65.26
4	Rural Development	51.30	32.11
5	Environment	35.33	56.22
6	Drinking Water	9.36	12.34
7	Sports	1.90	1.58
8	Capacity Building	11.39	-
9	Protection of National Culture and Heritage	0.82	14.57
10	Other CSR Activities	16.01	11.98
	Grand Total	**277.81**	**241.54**

Financial Excellence

NTPC become India's First Quasi-sovereign company to be listed at India's first international exchange (India-INX). Listing at India-INX will provide an opportunity to reach out to international investors (to raise funds using a wide variety of products and currencies) from India in a similar manner as available in other international markets.

Credit Ratings

NTPC enjoys the highest credit ratings for its domestic bonds programme and borrowings from banks while NTPC's International Ratings are at par with Sovereign ratings as given in the table.

Credit Rating Agency	Rating	Remarks
Domestic		
CRISIL	CRISIL AAA	Highest Ratings
ICRA	ICRA AAA (Stable)	
CARE	CARE AAA	
International		
S&P	BBB- Stable	Equivalent to Sovereign ratings
Fitch	BBB- Stable	
Moody's	Baa2	

Based on the rationale provided by the rating agencies, the key drivers for NTPC's credit strength include its relationship with Government of India, dominant position in India's power generation sector, exceptional financial profile for its rating level, and strong liquidity position. Furthermore, the strong and sustainable growth evident in India's electricity demand supports the company's operating profile and its dominant position as a low-cost producer in the country's power industry. NTPC enjoys relatively competitive borrowing costs that have further declined in recent years.

Policy and practices adopted for Suppliers and Local Sourcing

Under the Procurement and Works Policy of NTPC, transparent and detailed tendering procedures are adopted for all procurements. In order to encourage Indian suppliers, provisions regarding price preference and deemed export benefits (Customs & Excise Duty benefits) are stipulated in the bidding documents as per the extant policy of Government of India. Issues of labour, welfare, safety, etc. have been incorporated in the bidding documents of international competitive bidding and domestic competitive bidding basis.

There are economic opportunities for the local suppliers arising out of the need for goods and services by NTPC projects.

Financial Assistance from Government

NTPC is running sustainably and profitability and is giving regular dividends to the Government of India. No capital has been invested by the Government of India in NTPC since FY 2000. The Company does not receive any direct government benefit by way of subsidies, grants or royalties.

Financial implications and other risks and opportunities for the organization's activities due to climate change

Climate change concerns has been the key driver for the new stringent norms and the aggressive push for renewables. As an environmentally responsible company, NTPC has not only initiated actions to mitigate them but has also taken a leadership role and converted these into opportunities:

i. **Fuel Diversification:** NTPC has diversified its power generation portfolio by adding hydro and RE projects. As on 31st March 2018, NTPC has 1,728 MW non fossil based power generation capacity. NTPC has planned to become a 130 GW company by 2032 and it will have a diversified fuel mix comprising 65.4% coal, 4.6% gas, 1.5% nuclear and 28.5% Renewable Energy Sources (RES) including hydro. Thus 30% of its capacity would be non-fossil based.

ii. **Efficiency improvement:** NTPC has been upgrading the technology for its thermal power plants and has already commissioned 13 units (9,140 MW) based on supercritical technology, which has higher efficiency compared to earlier units. Further 27 super critical units (19,220 MW) are under construction.

iii. **Development of advance**

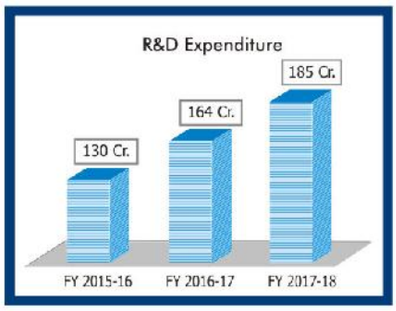
technology: NTPC in association with BHEL and IGCAR is developing Advanced Ultra Super Critical Technology, which would further be more efficient and environment friendly than the super critical units.

iv. **Renovation and Modernization:** NTPC has taken up extensive renovation and modernization of its old power generating units to maintain/ upgrade their efficiencies. Schemes have been also implemented to reduce plant emissions and hence improve their environmental performance to aid sustainable development.

v. **Plantation:** NTPC has planted about 33 million trees till reporting year in and around its power projects.

Research & Development

As a leading player of the world energy sector, NTPC has been focussing on adoption of cutting edge technologies in further improving its services and efficiency. The company has mapped the emerging technologies with its need and is continuously upgrading its technologies through research and development. The company is particularly sensitive to Research & Development and the paradigm shift which it can make.



Focus Areas of R&D

Efficiency & Availability Improvement and Cost Reduction

- 400 TR Flue Gas based Air conditioning at Talcher Kaniha
- FG duct modification in 7 Stations and CW System modification 5 Stations leading

Renewables and Alternate Energy

- Solar PV performance & degradation study for Ananthapur.
- Centralized PV forecasting solution- Clear sky model has been developed
- Ground sourced Heat Pump system at NETRA (5 TR open loop & 5 TR closed loop)
- Solar tree installation at PMI (6.5 kWp)
- Solar Thermal Hybrid plant being set up at Dadri
- Conversion of MSW to solid fuel for co firing in boiler using Hydro Thermal Treatment
- Bio mass/Hazardous waste conversion to Energy using Plasma Gasification.

Climate Change and Environment

- Use of Gypsum for Soil conditioning.
- Feasibility of CO_2 capture from flue gas and its utilization by conversion into soda ash
- Fly ash based Geo-polymer road constructed at DADRI, IRC certification granted.
- 50 % Bottom Ash and 25% fly ash as replacement to sand in cement concrete

Scientific Support to Stations\

- Flexible Unit Operation by Retrofitting of Condensate Throttling System at Dadri
- Power System Stabilization (PSS) tuning at Dadri
- 110kW AC micro grid project at NETRA
- VFD retrofitting for major Drives for auxiliary power saving

Environmental Performance

- Responsible Consumption
- Energy Management
- Renewable Energy
- Water and Effluents
- Bio-diversity
- Emission
- Waste Management
- Ash Management
- Environmental Compliance

NTPC has revised its environmental policy in 2017 to contribute to greater commitment and sharper focus on environment stewardship. The company is regularly upgrading systems and processes in its power stations for maintaining the emission parameters as per the specified norms of regulatory bodies. Besides the legal compliances of environmental norms, NTPC has adopted an Environmental Management System (ISO:14001, 2008 & 2015) for continual improvement of environmental at its units.

It is also one of few companies in India, and very few globally to have come out with a dedicated Water Policy, recognising the importance of this very precious resource. Also, it has been supplemented by Rain Water Harvesting policy.

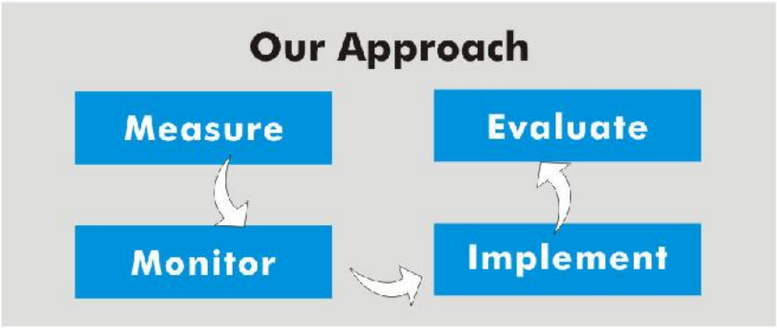
Ash utilization is considered an integral part of process of power generation from NTPC's coal based power stations and the company makes all efforts to maximize its ash utilization on sustainable basis. NTPC has a well-defined "Ash Policy". Ash disposal/utilization also continues to remain key concern amongst all stakeholders.

The company is also committed to conserve the bio diversity around its locations. The company has also developed a Biodiversity Policy to bring more focus on the area. NTPC has also partnered with India Business and Biodiversity Initiatives (IBBI) to learn and implent best practices on biodiversity conservation.

NTPC, Kayamkulam

Responsible Consumption

NTPC follows a comprehensive approach for improving resource efficiency with due focus on the regular evaluation of resource consumption intensity. There has been emphasis on its further improvement through measurement, monitoring, implementation and evaluation of conservation plans. Several steps for improvement in cycle efficiency and reduction of losses have been taken resulting in significant improvement in saving of fuel (Coal & Oil) per unit of energy generated.



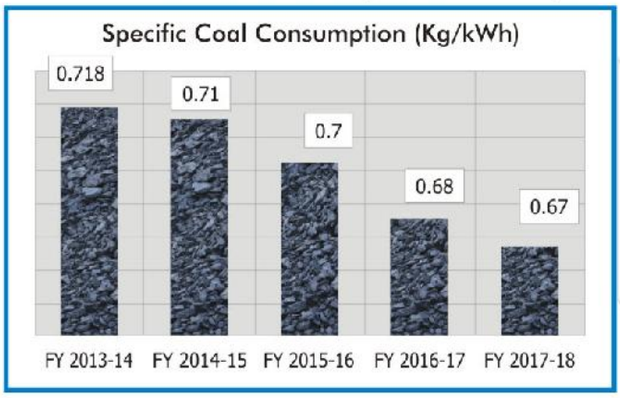
As far as coal is concerned, adoption of higher size units for power generation is leading to efficiency improvement which in-turn is reducing the specific coal consumption. The details of material consumption data are in **Key data at a glance** section of the report.

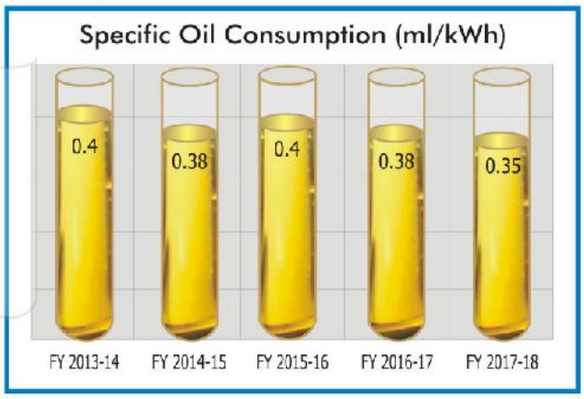
1. Using Agro residue as an alternative Fuel in Conventional Coal Fired Boilers

NTPC has started biomass co-firing project in India at NTPC

PMI, NTPC

The trends for improvement in performance parameters are as below:





Dadri. Co-firing would, not only discourage in-field crop burning abating pollution, but also would reduce consumption of coal and oil significantly.

2. Optimisation of Land Use

NTPC, being a growing company, is focusing on expansion of its existing projects (Talcher Thermal, Singrauli STPP, Ramagundam STPP, Patratu STPP) rather than going for green field project. Land available with existing projects will be used for proposed expansion project thereby reducing NTPC's land foot print.

- Construction of multistory buildings for staff quarters to reduce land requirement in townships (Lara, Darlipalli, Patratu etc.).
- Ash utilization is being increased to reduce land requirement for ash disposal.
- Waste to Energy plants at Varanasi for municipal solid waste is saving several acres of land which would have become land fills.

3. Saving paper, Saving the environment

Inline with the "Digital India" initiative, NTPC has taken a major step towards digitalization by implementation of company wide initiative "PRADIP" to make its offices paperless and save on expensive office space, paper use and protection of environment. It covers more than 270 business processes, which has become paperless. The company is encouraging work environment in which the use of paper is eliminated or reduced by converting documents into digital forms. The following IT systems/automation have been implemented wherein paper usage is NIL:

- Business Dashboards to avoid print out providing all essential details online.
- MIS reports in SAP – Business intelligence with a facility for drill down, avoids use of paper completely.
- Intranet Portal wherein all Notices/Circulars are made available online.
- NTPC "Samvaad" app for sharing stories and communication in digital form, thus saving printing of newsletters etc.
- NTPC "Sampark" app eliminated use of printed telephone directory.
- E-procurement system has reduced paper uses.

About 3.3 Cr. of A4 size papers equivalent to approx. 4000 fully grown trees are being saved annually through paperless office initiative.

Energy Management

NTPC, in its endeavour towards being one of the world's most energy efficient power utilities, is committed to produce electric power in the most efficient manner, keeping in view environmental sustainability and also quality power production at optimum cost. The company keeps on adopting several new technological interventions in its O&M practices to increase the efficiency of the plants thereby reducing the fuel consumption per unit of electricity generated.

1. CenPEEP: A mission toward enhancing efficiency and protecting the environment

Centre for Power Efficiency and Environmental Protection (CenPEEP) is an initiative of NTPC to reduce green house gas emissions from thermal power plants. CenPEEP is also assisting various state electricity utilities in India by demonstrating and adopting improved technologies and practices. The company has initiated the 'Comprehensive Programme' thereby successfully balancing the dual objectives of reducing CO_2 emissions that contribute to climate change and facilitating higher efficiency of power generation.

2. EEMS (Energy & Efficiency Management System)

EEMS system comprising periodic performance testing, analysis and formulation of action plans has been implemented across the company. Highly accurate test instruments and equipments have been procured at stations and being used for performance tests. New stations have been provided with list of test instruments and technical specification for procurement.

3. Energy conservation leading to reduction in Auxiliary Power Consumption (APC)

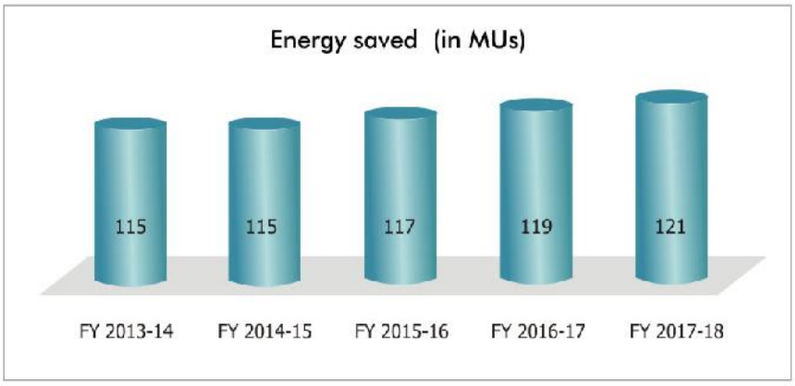
There are many successful APC reduction initiatives across the NTPC's stations/projects.

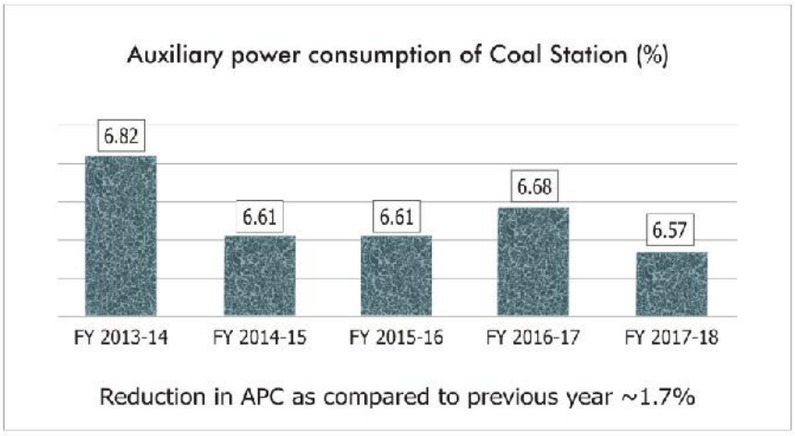
- **Energy Audits:** During FY 2017-18, all stations had conducted Auxiliary Power Consumption Energy Audits. Out of these, 23 stations conducted mandatory energy audit as per statutory requirement under Energy Conservation Act- 2001.
- **LED Drive:** A massive drive has been taken up to replace 1.2 million old bulbs with energy efficient LED lights at NTPC stations. This initiatives will save around 200 MU of energy

LED Illumination at NTPC, Vindhyachal

amounting to Rs. 70 Cr. every year. Already two NTPC stations namely Anta & Faridabad have been completely been fitted with LED bulbs.

- **R&D efforts to reduce Auxiliary Power Consumption:** At Talcher Kaniha station of NTPC, a 400 TR Air Conditioning system has been installed, using waste heat of flue gas instead of electricity or steam. Because of this, there has been reduction in Auxiliary Power of 2.6 MU / year. It is GHG (CFC & HCFC) free thermally driven VAM based System and responsible for reducing 2100 Tonnes of CO_2 per year.
- **Reduction in ID Fan Power/ Flue Gas Duct erosion :**
  - Kahalgaon StI (4*210 MW): ID Fan Power reduced by 120 kW per unit
  - Simhadri StI (2*500 MW): Modification and O/H resulted in reduction of ID fan power by 730 kW per unit
  - Vindhyachal StI (4*210 MW): ID Fan Power reduced by 70 kW per Unit
  - Singrauli StI (2*210 MW): Overall reduction of 30mmWC on account of extensive duct work and CFD based modification, CFD modelling work related saving 90 kW per un
  - Tanda (4*110 MW): ID Fan Power reduced by 100 kW per Unitit





4. Utilization of low grade heat from power plant flue gas for various industrial applications:

A 120 TPD desalination plant using low-grade heat from SG flue gas has been developed in-house and setup at NTPC Simhadri. The plant utilizes waste flue gas heat for DM Water generation from seawater and avoids use of electricity or steam. Flue gas-based Sea Water Desalination plant is an innovative, low carbon intensive desalination system.

5. Performance on PAT (Perform, Achieve and Trade)

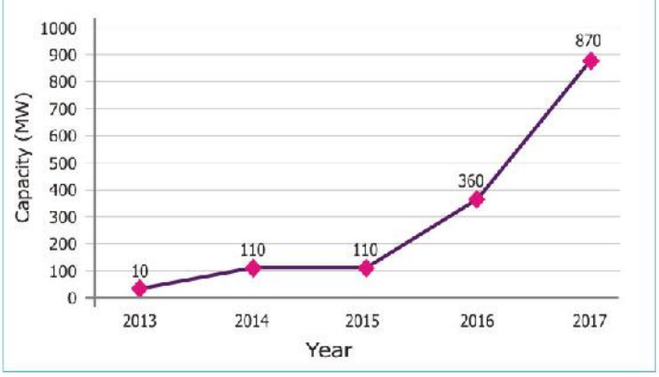
PAT (Perform, Achieve and Trade) is one of the schemes of National Mission on Enhanced Energy Efficiency (NMEEE). It is a market based mechanism to enhance cost effectiveness of improvements in energy efficiency, in energy intensive large industries and facilities, through certification of energy savings that could be traded. BEE (Bureau of Energy Efficiency) is the nodal agency for implementation of PAT.

NTPC has exceeded the targets and earned 170653 ESCerts. One ESCerts is equivolent to one metric

Renewable Energy

ton of oil energy saving and cost. NTPC is taking various steps to make its energy portfolio greener by adding significant capacities of renewable sources. By 2032, the company plans to have 32000 MW capacity through renewable sources constituting nearly 25% of its total power capacity. NTPC has also added significant capacities of small scale hydro-power plants.

Cumulative Solar Generation Capacity



Renewable Energy Project			
Solar Energy			**In MW**
1.	Dadri	Uttar Pradesh	5
2.	Port Blair	Andaman & Nicobar	5
3.	Ramagundam	Telangana	10
4.	TalcherKaniha	Odisha	10
5.	Faridabad	Haryana	5
6.	Unchahar	Uttar Pradesh	10
7.	Rajgarh	Madhya Pradesh	50
8.	Singrauli	Uttar Pradesh	15
9.	Ananthapuram	Andhra Pradesh	250
10.	Bhadla	Rajasthan	260
11	Mandsaur	Madhya Pradesh	250
		Total	**870 MW**
Wind Energy			
1.	Rojmal	Gujarat	50
		Total	**50 MW**
Hydro Energy			
1.	Koldam	Himachal Pradesh	800
2	Singrauli	Uttar Pradesh	8
		Total	**808 MW**

NTPC Bhadla Solar PV Plant

Water and Effluents

NTPC is a responsible user of limited water. It withdraws fresh water from natural surface water sources, such as, rivers, canals, reservoirs, etc. The company does not withdraw water from water bodies that are recognized to be particularly sensitive due to their relative size and intended purpose, or that act as a source of support for endangered species.

None of the water sources being used by NTPC station is adversely affected. The consumption of water is being continually monitored and water efficiency is being improved constantly through 3R principles (Reduce, Reuse & Recycle). NTPC is proactively addressing issues related to water quality and availability through implemention of its Water Policy, which serves as a directive for establishing water management strategies, planning, systems, processes, practices and research initiatives.

Initiatives in Focus

1. Taking cooling water blow down from condenser outlet (hot side)

When water passes through Cooling Tower (CT), there is a loss of water by evaporation, due to which salt concentration increases. To reduce the evaporation loss we are now taking blow down water from hot side of water cycle i.e. condenser outlet instead of cold side of CW to maintain desired Cycle of Concentration (CoC). It is estimated that the saving of make-up water will be of the order of 8-10 m^3/hr at CoC level of 5-6 per 500 MW unit with this practice of hot blow down. With a fleet size of 50,000 MW, this saving would be of the order of 1,00,000 m^3/day.

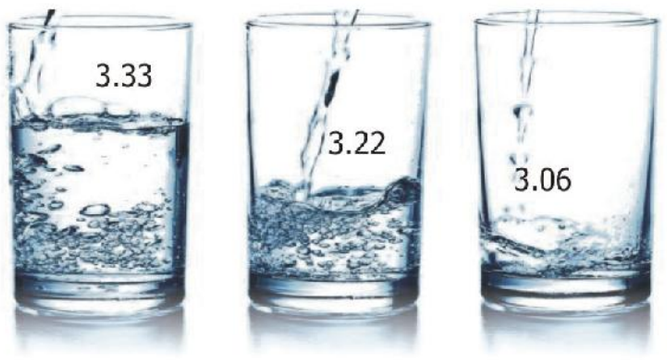
2. Design up gradation for implementation of Zero Liquid Discharge (ZLD) system

Adoption of Zero liquid discharge (ZLD) is a concept where the entire industrial and domestic waste water can be reused after treatment/recycling without discharging a drop of water out side the project boundary in the natural water bodies. Flow meter installation in discharge of effluent/STP/CW blow down are in progress as a part of ZLD schemes. The Zero Discharge plan includes the following major system:

i) Ash Water Re circulation System(AWRS) and Toe Drain Re circulation System (TDR): NTPC stations have installed AWRS and TDR for optimization of water consumption in a closed cycle and achieving the zero liquid discharge from the ash ponds.70% of Ash handling water is recirculated back to plant from ash pond resulting in marginal make-up of only about 200-300 m3/hr for a typical 2x660 MW power station.

ii) Liquid Waste Treatment Plant (LWTP): The effluent generated from various sources in the plant such as Coal Handling Plant, main plant area etc, are collected to central monitoring basin of LWTP. The collected effluent is analysed for quality with in the prescribed norms and re used in suitable applications.

Specific Water Consumption (Lt/kwh)



FY 2015-16 FY 2016-17 FY 2017-18

5% decrease of Specific Water Consumption as compared to previous year

iii) Separate Drainage System for Storm Water and Process Water : Separating Storm Water from Process Water, though a simple solution, goes a long way in segregating pure and contaminated water thus saving fresh water and reducing purification costs. This system will result into uncontaminated storm water which can be used as a top up water source, reduce load on sewerage/effluent treatment plant during the periods of wet weather and optimize performance of the waste water treatment plant.

iv) Sewage Treatment Plants (STPs) in township: The domestic usage of water as per norms is 135 litre per person per day. For 3X800 MW plant, water requirement for the township is 1.7MLD. Out of this about 20% water is absorbed in the system. Balance 80% is treated and taken back into the system for reuse. Thus achieving 100% zero discharge. By this process, the domestic water saved by NTPC is approximately 25 million litre per day.

3. Use of Treated Sewage Water In Power Plants

By making use of treated sewage water from municipality wherever available near vicinity of power plants (within 50kms), a great amount of fresh water can be saved. NTPC is currently making attempts in this noble end eavour for its plants like Dadri, Patratu, Solapur, Mouda and Meja etc. In Solapur, 52 MLD (52000 m^3/day) treated sewage will be used, where as in Dadri 80 MLD (80000 m^3/day). This will result in saving of equal amount of fresh water on earth surface leaving it for priority use like irrigation and drinking. Schemes for other projects are under finalisation.

4. Air Cooled Condenser (ACC)

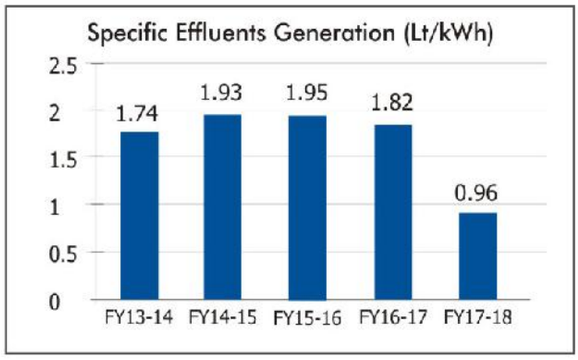
Power plants use huge amount of water as circulating water for cooling of exhaust steam coming out from steam turbines in a closed cycle. However, a certain amount of water goes out of the system as evaporation loss. Air cooled condensers (ACC) technology substitutes the cooling medium for condensers totally from water to air. NTPC has

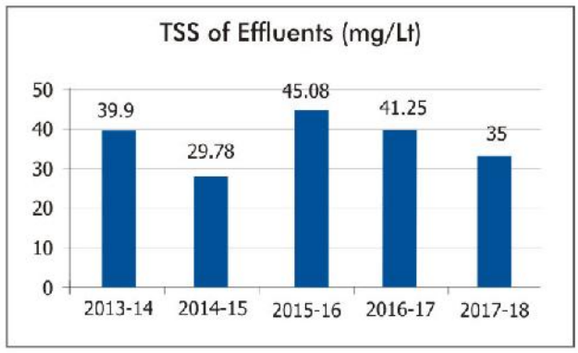
Sewage Treatment Plant (STP), NTPC Mouda

already adopted ACC based super critical units in North Karanpura (3x660 MW) and Patratu (3x800 MW). Water requirement in a typical 3x800 MW ACC based project have drastically come down to approx. 1500m^3/hr compared to about 6500 m^3/hr in a Water Cooled Condenser (WCC) based project of equivalent station capacity, thereby a saving of about 5000m^3/hr achieved.

Most of the stations are designed in closed cycle system. Regarding plant effluent, NTPC has taken proactive approach of making all its power stations to operate with Zero Liquid Discharge (ZLD) progressively in phases as reflected in the effluent quantity in 2017-18.

During the year, no significant oil/ fuel/chemical/hazardous waste spillage have been reported by any NTPC stations.

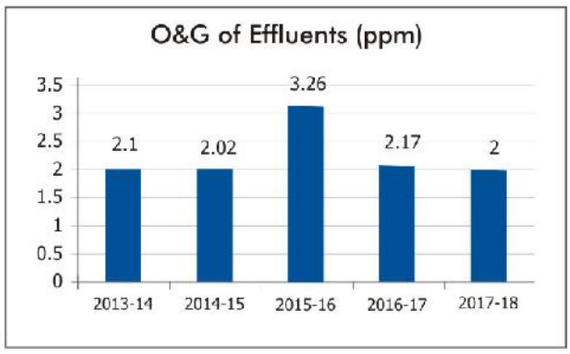




5. Treatment of Effluents

The quantity of effluent generated from ETP and WTP are being monitored on pump running hour basis, however, installation of flow meter is in progress. Quality of effluent is monitored closely.

Significant reduction in effluent quantity has been achieved through implementation of ZLD. The total quantity and quality of effluents generated in reporting period are as below:



ETP, NTPC Dadri

Biodiversity

NTPC is committed to conduct its operations in a way that promotes the conservation of regional biodiversity, their habitat and ecosystem through a coordinated and comprehensive program of avoidance, minimization and mitigation of its impacts. The company is complying with all criterion of MOEF & CC for establishing new power plant while maintaining adequate distance from eco-sensitive areas like National Parks, Wild Life Sanctuaries, Biosphere Reserves. None of the thermal project sites established by NTPC are located within protected areas or the areas of high biodiversity. As a result, the impacts on IUCN Red List Species and National Conservation List Species and their habitats are highly unlikely. The company has developed Biodiversity policy to have a comprehensive vision and guiding principle for conservation, restoration and enhancement of biodiversity.

NTPC does not maintain transmission line corridors and its projects have not caused fragmentation and isolation (is landization) of any area. Some of the old Projects of NTPC have once through cooling system. However, thermal discharge from these projects are not discharged into protected area/ high biodiversity areas. Proposed and under construction projects will have Zero Liquid Discharge system to prevent impacts on aquatic life.

Afforestation

The Company is undertaking tree plantation covering vast areas of land in and around its projects and till date more than about 33 million trees have been planted throughout the country under accelerated afforestation programme. The afforestation has not only contributed to the creation of additional carbon sinks there by protecting the ecology and environment but also helped in improving the 'aesthetics' of surroundings. The afforestation has not only contributed to the creation of additional carbon sinks thereby protecting the ecology and environment but also helped in improving the aesthetics of surroundings.

NTPC Measures to minimize impacts on bio-diversity

- Preparation and implementation of CAT plan for HEPPs
- Implementation of wildlife conservation and management plan
- Site specific ecological assessment studies, as and when required
- Minimizing the land requirement for power plants during the site selection
- Ecosystem improvements and bio-diversity enhancement through afforestation and creation of water bodies
- Locating the thermal power plants away from protected areas (like National Parks and Wildlife Sanctuaries) or non-protected areas rich in bio-diversity
- Detailed Environmental Impact Assessment study before construction of a project and implementation of environmental management plant (EMP) during construction and operation phases
- Power plants away from protected areas (like National Parks and Wildlife Sanctuaries) or non-protected areas rich in bio-diversity
- Compliance with the siting criteria for thermal power plants published by MOEF at the time of site selection

Tree Plantations by Sanyukta Mahila Samiti

Wildlife Conservation

To minimize the ecological impact of operations of NTPC and to conserve endangered, rare and threatened species in these areas, the company has invested in studies of wild life conservation. It has also supported the state forest department, NGOs, scientific and academic institutes for implementation of wild life conservation plan to protect wild life nearby its units. Some notable wildlife conservation initiatives taken by NTPC have been outlined.

1. Conservation of Great Indian Bustard near Conservation of Marsh Lands and Birds Solapur STPP

Great Indian Bustard (GIB) is a large handsome bird of the short grass plains of the Indian subcontinent. GIB is included in Schedule I of the Indian Wildlife (Protection) Act 1972. GIB has become extinct in 90% of its former range and is now confined to some parts of Rajasthan, Maharashtra, Gujarat, and Andhra Pradesh. The conservation plan includes seasonal biodiversity survey of GIB, survey of predators like wolf etc., village community awareness campaign, impact of pesticides, bustards friendly agriculture practices and mitigation measures for power line collusion of GIB and other large birds etc.

2. Conservation of Marsh Lands and Birds visiting Samaspur Bird Sanctuary and Neighbouring Areas Unchahar

Unchahar project of NTPC is located at a distance of about 8 km from Samaspur Bird Sanctuary. A total of 13 bird species are found in the area. The most abundant bird species in the area are rose ring parakeet, rock pigeon, oriental turtle dove, laughing dove, spotted dove, yellow wattled lapwing, black kite and jungle babbler. Bird species, those were earlier commonly occurring in the area, are grey francolin, Indian peafowl, Indian grey hornbill, Asian palm swift, Egyptian vulture etc. The commonly occurring waterfowl species are whistling teals, common teal, Eurasian wigeon, Gargeney and common pochard. Species such as spot-billed duck, red crested pochard and tufted duck were low in occurrence and were categorized as rare species. The different interventions in conservation plan are: Public Education and Awareness Promotion, Survey and Monitoring,

Operational Sites of high Biodiversity values :

Name of the Stations and location	Position in relation to protected area	Type of Operation	Size of Operation (In Acres)	Bio-diversity protected value	Listing of status
Kahalgaon TPS, Bihar	within 10 km after the project was accorded environmental clearance or constructed as per MoEF notification	Thermal	3373.11	Fresh water ecosystem	All protected areas are nationally declared
Feroz Gandhi Unchahar TPS, UP		Thermal	2197.99	Terrestrial ecosystem	
Koldam HPP, HP		Hydro	3765.07	Terrestrial ecosystem	

Anti–Poaching Measures, Afforestation, Regeneration of Marshes, Grassland and Lakes, Cleaning of Lakes and Removal of Weeds etc.

113 bird species are found in the area. The most abundant bird species in the area are rose ring parakeet, rock pigeon, oriental turtle dove, laughing dove, spotted dove, yellow wattled lapwing, black kite and Jungle babbler. Bird species, those were earlier commonly occurring in the area, are grey francolin, Indian peafowl, Indian grey hornbill, Asian palm swift, Egyptian vulture etc. The commonly occurring waterfowl species are whistling teals, common teal, Eurasian wigeon, Gargeney and common pochard. Species such as spot-billed duck, red crested pochard and tufted duck were low in occurrence and were categorized as rare species. The different interventions in conservation plan are: Public Education and Awareness Promotion, Survey and Monitoring, Anti–Poaching Measures, Afforestation, Regeneration of Marshes, Grassland and Lakes, Cleaning of Lakes and Removal of Weeds etc.

3. Conservation of wildlife nearby Talaipalli Coal Block and MGR

Basic objectives of this conservation plan is to maintain an ecosystem as natural as possible and minimize the impact of mining activities and MGR on wildlife habitat. The following interventions are proposed in conservation plan.

- Fencing of Mining area
- Construction of watch towers and depute watch & ward
- Creation of water holes, salt licks, hideouts
- Soil & water conservation
- Creation of awareness, wildlife camp & training etc.

4. Development of Eco-Parks

Eco-parks are best example of manmade habitation for conservation of ecology. Dadri eco-park developed on ash mound is a unique experiment of conservation of biodiversity through management of waste. The said eco- park at Dadri plant is home for various animals, reptiles, developed by NTPC. Various birds like endangered Lesser Florican, Kingfisher, Sarus Crane, Moortion, Hoopoe, Common sandpiper, Drongo, Sopt Billed duck etc. are found in this park.

The company shall develop an Eco-park at the ash pond of Badarpur plant which would be bigger than the New York city Central park and shall act as "Green Lungs" for National Capital Region.

5. Black Buck Conservation Plan at Meja

India's first conservation reserve for black buck is located at Allahabad's Meja forest division. NTPC Meja STPP is supporting the Forest department for implementation of Black Buck conservation plan.

Black Buck Conservation by MUNPL

Case Study : Conservation of Olive Ridley Turtles by NTPC

About NTPC, Simhadri

NTPC's Simhadri Super Thermal Power Station with an installed capacity of 2000MW is located along the cost of Bay of Bengal near Pittovanipalem Village in Vishakhapatnam district of Andhra Pradesh. Sea water from Bay of Bengal is used to meet the requirement for Cooling water system makeup, ash handling system and coal dust suppression in coal stock yard. The sweet water requirement for this project is drawn from the Yelleru canal.

Risk to Olive Ridley Turtles

Andhra Pradesh coastline is known for the Olive Ridley Turtles (Lepidochelys olivacea) nesting and foraging. As per the IUCN Redlist this species comes under Vulnerable Category. Human interventions in the critical areas may leads to long term impacts to the habitat of Olive Ridley Turtle. Although NTPC Simhadri has no direct interface with the nesting & foraging area of Olive Ridley Turtle, NTPC being an environmentally conscious organization, has taken a proactive step for conservation of Olive Ridley.

Initiative Taken

The Olive Ridley Turtle conservation programme in Andhra Pradesh was started in 2010 with thefocus on involving community and their capacity building to strengthen the conservation efforts. In 2015 NTPC, Simhadri signed a five-year agreement with Andhra Pradesh Forest Department to partner in conservation efforts in the 9 costal districts of Andhra Pradesh. The conservation initiative covers 732 km of coastal area out of total 972 Km long coast of Andhra Pradesh which was identified as a breeding area of the sea turtles.

Under the agreement NTPC committed INR 4.60 Crore support to the conservation initiative in a phase wise manner and so far, INR 3 Crore are already disbursed for this initiative. The activities undertaken in the initiatives are creating awareness within community along the coastal areas, identification of important nesting beaches, development of hatcheries along the nesting beaches, andensuring their security during hatching. The interventions of NTPC, Simhadri supported forest department in aligning the resources for the critical activity and resulted in increasing trend in the hatchings released in the sea water.

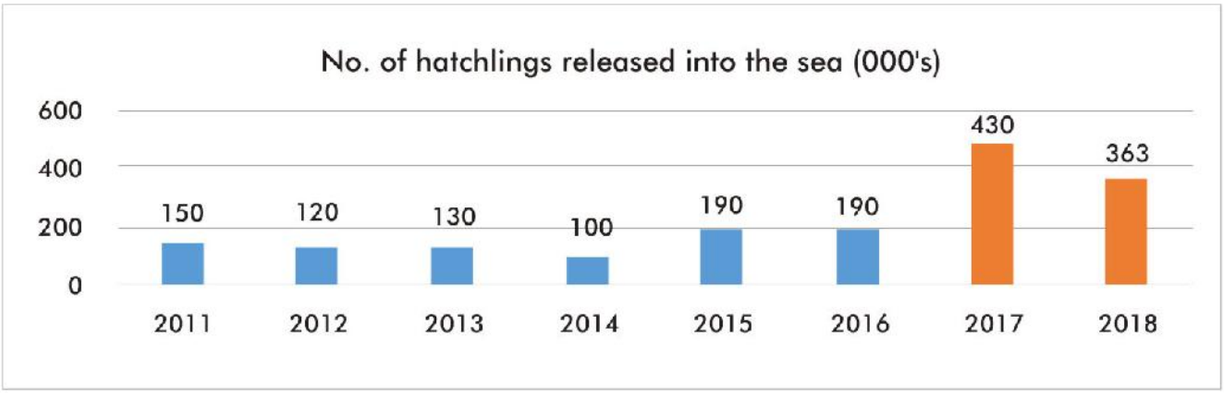
Olive Ridley Turtle Hatchlings making their way to the sea near Vishakhapatnam Cost

Business Case for NTPC, Simhadri

The business cases for NTPC, Simhadri by investing in the Olive Ridley Turtle conservation programme is to continue its operations at Simhadri along with discharging its environmental responsibilities. This will also gain trust of local stakeholders in NTPC through increased engagement activitiesensuring its social license to operate.The support of NTPC Simhadri for the conservation of Olive Ridley Turtle is an important milestone in mainstreaming biodiversity in business decisions. The support is meeting the requirements under India's National Biodiversity Target 6 and 12

Results:

After the involvement of NTPC in year 2015-16 and because of the various efforts taken, community participation in the programme increased which further led to increasing trend in the hatchings released into the sea water, as shown in the table below.



Community and Forest Department officials Releasing Hatchlings into Sea

Emission

NTPC has been continually focussing on addressing the issues of air emissions as part of its environmental management plan. Estimation of CO_2 emission done on the basis of coal consumption and power generation. Amount of other GHG emission is minimal and its impact is negligible. Significant SPM reduction is being achieved at all stations through R&M of ESP. The company manage its emission through:

1. Ambient Air Quality and Emission Monitoring

All NTPC power stations are equipped with Ambient Air Quality Monitoring Stations (AAQMS) to capture the real time data of PM 10, PM 2.5, SOx , NOx and access has been provided to regulators such as CPCB and SPCB. Additional ozone analyser for ambient air are also being provided phase wise at the existing stations. Continuos Emission Monitoring System (CEMS) have been installed recently in various operating stations.

2. Re-adjustment of NTPC's fuel/ power generation mix

In order to reduce its carbon footprint, NTPC plans to gradually reduce its dependence on the fossil fuels by readjusting its fuel/power generation mix.

We intend to include non-fossil fuel based power generation in our portfolio by setting up power plants based on hydro and renewable sources (solar, wind) of energy. Such generation does not have any CO_2 emissions.

3. Introduction of Thermodynamically Efficient Technologies

NTPC has constantly improved the steam cycle parameters of its generating units with consequent improvements in the plant efficiencies and reduction in CO_2 emissions. Heat rates (which are a direct indicator of efficiency at which power is generated) of NTPC power plants have evolved and have shown an impressive improvement since inception of its first unit in 1978, resulting in commensurate reduction in CO_2 emission per unit of power generated.

4. Renovation & Modernization of old power stations

NTPC has taken up extensive renovation and modernization of its old power generating units to maintain/ upgrade their efficiencies. Schemes are also implemented to reduce plant emissions and hence improve their environmental performance to aid sustainable development.

5. Ozone Depleting Substances (ODS)

NTPC is in the process of reducing the consumption of ODS substances by upgraded technologies and systems. More than half of the consumption has been reduced during the year as compared to FY 2013-14.

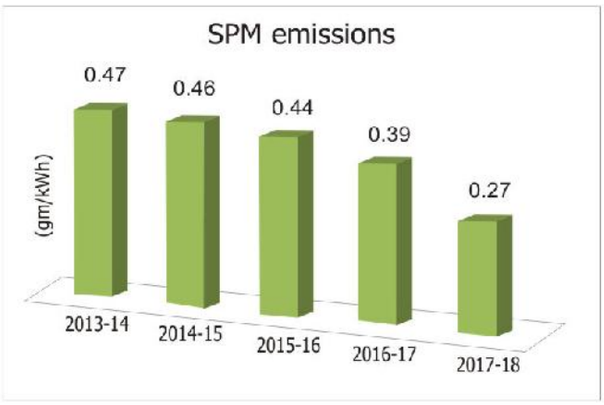
Other new initiatives for reduction in GHG and Pollutant emissions are described below:

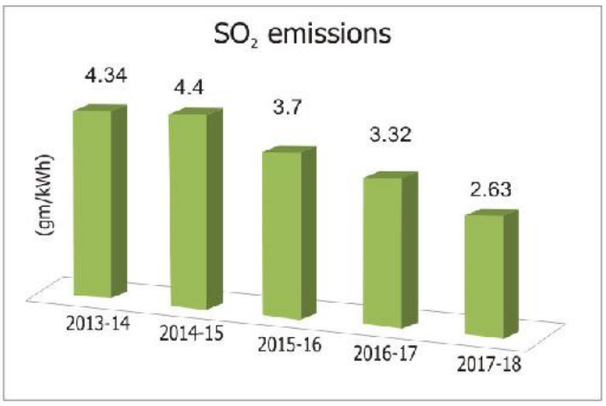
i. Carbon Capture and Utilisation (CCU) activities - Modified amine absorption based process to separate CO_2 from flue gas

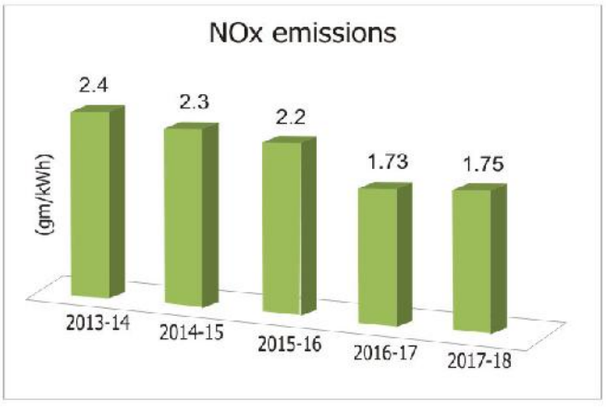
A pilot test facility on new CO_2 absorption technology has been set up by NTPC NETRA for carrying out energy studies on different amines. The experiment is targeted to identify a modified amine which will have 20-25% less energy in stripper column as compared to Mono ethanolamine (MEA) process. A Synthetic flue gas of N_2 and CO_2 mixture is used for experimentation.

It is Indigenously developed technology in collaboration with IIT Guwahati and can be scaled up to 20 lpm flow gas capacity test facility. Energy penalty is

Trends of SPM, SO_2 and NOx are as below:







expected to reduce to 3.0 MJ/kg of CO_2 which is 30% less as that of conventional MEA.

ii. Microalgae based process for utilization of CO_2 in flue gas and conversion into Bio-methane

It is a biological route, in which CO_2 from flue gas is fixed through Micro algae cultivation. The algae, thus grown can further be utilized for the production of useful products. NETRA, in collaboration with IOCL, established a pilot plant for 'Microalgae based process for utilization of CO_2 in flue gases' at NTPC Faridabad and successfully demonstrated the CO_2 fixation through algae.

The conversion of Micro Algae into Bio fuel was found to be techno-economically non- viable. The possibility of Algae conversion into Bio methane along with horticulture and kitchen wastes of NTPC-Faridabad is under consideration.

Benefits include Demonstration of capture and utilisation of flue gas CO_2, Utilisation of organic wastes of NTPC Faridabad viz. kitchen waste and horticulture waste, Efficient and full utilisation of the halt load running existing bio methanation plant of NTPC- Faridabad, in-house generation of kitchen fuel, viz., Biomethane from the waste products of NTPC-Faridabad.

iii. Control of fugitive emission in plant

- At Ramagundam STPP, transportation of ash by rail in covered wagons has been started to prevent fugitive emission during road transportation of ash.
- Beshram plantation (IPOMIA) has been done on the ash dykes which are temporarily abundoned, for controlling fugitive dust.
- HCSD system have reduced the problem of fugitive emissions from ash pond.
- Mechanised cleaning of roads in plants and township has been planned to reduce fugitive emission.

6. Compliance to Revised Emission Norms

NTPC is constantly coming up with new designs of its upcoming plants to comply with new norms. Parallelly, various activities are being taken up for operating and under construction units for meeting revised norms. The company is working to install additional air and water

pollution control system at various projects to comply with the applicable new environmental norms.

- CEMS for monitoring of SOx and NOx in all units on real time basis are being installed and commissioned in addition to the opacity meter installed for monitoring of particulate emission. Installation of real time monitors for pollutants in effluents (EQMS) has also been completed for all its existing projects.
- NTPC has recently introduced analysers for mercury monitoring for both AAQMS and CEMS.
- NTPC has undertaken extensive R&M activities of ESPs for complying to emission limits of particulate matters. High efficiency ESPs with efficiency of the order of 99.97 % with advanced control system have been provided in all coal based stations to keep particulate matter below the prevailing permissible limits. All upcoming new plants are being provided with ESPs designed in such a manner that would cater to the notified future stringent norms.
- The company has already completed tendering for installation of Flue Gas De-Sulphurisation System at 11 projects and stations of total 17,440 MW capacity in order to meet SO_2 emission limits as per new environmental norms. First FGD has been commissioned at Vindhyachal stage – V.
- Selective Catalytic Reduction (SCR) will be required for controlling NOx for which pilot test studies are being undertaken at various NTPC operating

Operational FGD unit, NTPC Vindhyachal

Waste Management

Waste, currently viewed as a menace, can also be a resource. NTPC is taking initiatives for implementing the "Waste to Wealth" concept through Reduce, Reuse and Recycle approach for all waste generated from its operations.

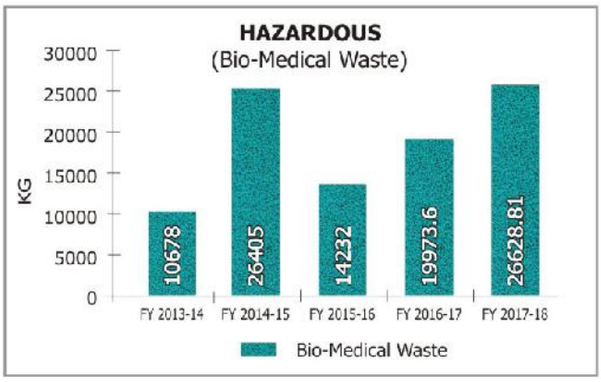
NTPC is not importing and exporting the hazardous waste which comes under Basel Convention-2 Annex I, II, III, and VIII.

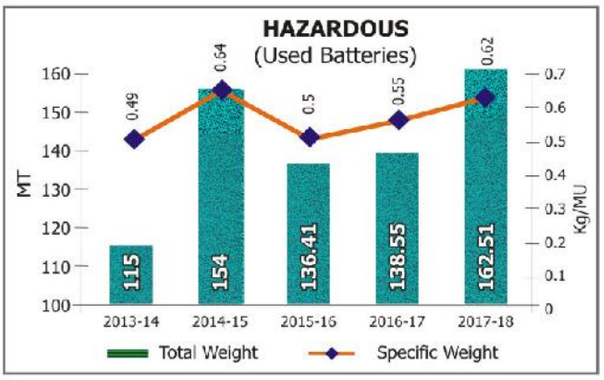
No radioactive waste is generated at NTPC stations.

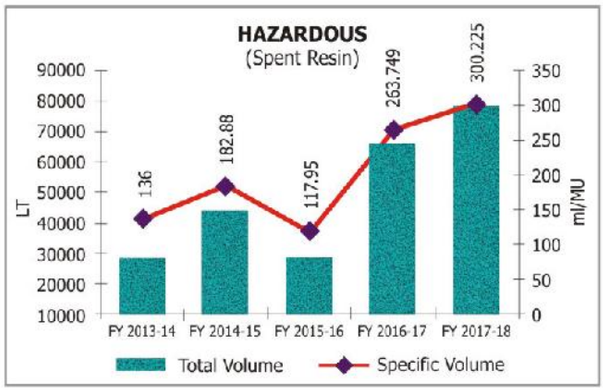
PCB has already been phased out by NTPC, hence we are not consuming PCB in plant operations.

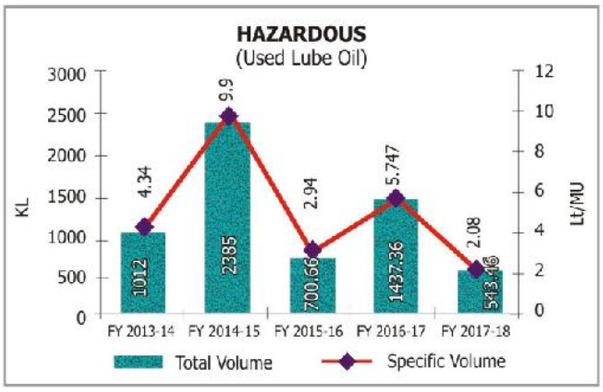
The company has adopted integrated approach to proper handling and disposal of all types of wastes in a scientific manner as detailed below:

S.No.	Type of Waste	Disposal Methods
1	Lube Oil, Transformer oil, used Batteries	Sold to registered recyclers or manufacturer under buy back policy.
2	Ferrous & Nonferrous Scrap	Disposed through E-Auction
3	Hazardous Waste	Non-Recyclable waste sent to Treatment, Storage & Disposal Facility (TSDF) for proper treatment & disposal as per the HWM Rules 2016.
4	Domestic Waste	Domestic waste generated is separated into bio-degradable and non biodegradable category. bio-degradable waste is converted into manure through composting/vermin-composting/ Bio-gas/Bio Methanatic process and Non-Biodegradable waste is disposed at identified landfills.
5	Bio-Medical waste	Disposed through authorised agencies approved by SPCB
6	E-Waste	Disposed through recyclers / dismantlers registered and approved by CPCB / SPCB.





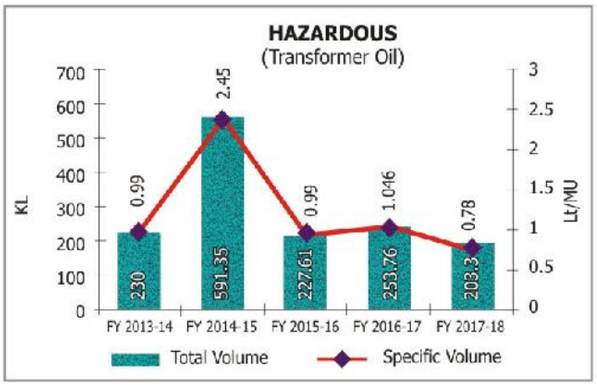




E-Waste Disposal

The rapid advances in technology have resulted in obsolescence of IT and C&I hardware at a very fast rate. Handling and disposal of the E-waste is being effectively done by NTPC to protect environment. The details of the E-waste management and disposal mechanism being followed in NTPC are given below:

- In 2015, NTPC formulated an e-waste management, handling and disposal policy. The periodicity of identification and initiation of disposal action is prescribed as every six months in the policy so that the E- waste is not piled up.
- For PCs and peripherals (i.e IT assets) there is a buy back policy in place as per which employee can opt to buy back the old IT asset on completion of its defined useful life period of three years .
- For all other e-waste, a scrap and surplus identification and disposal committee (SSIDC) is constituted to facilitate quick disposal.



- E-waste is also e-auctioned to authorized collection centers or registered dismantlers or recyclers
- In few cases the old hardware (e-waste) which needs to be replaced, is returned to the producers / suppliers / OEMs through buyback as per purchase orders.
- E-waste (Management) rules 2015 are adhered to by the organization.

Recently, an organization wide drive under the leadership of top management has also been undertaken for disposal of the E-waste and almost all the sites have successfully disposed off the accumulated E-waste.

S.No	Description	Qty.
1.	Total E-waste in Nos (PCs, Printers, UPS, Batteries, Fax Machines, Tel Instruments, misc IT Hardware like Modems, CD/DVD Drives, PCBs, Display Units etc.)	11338
2.	Total E-waste (MT)	787.46

NTPC's foray into Solid Waste Management

Like many of its other initiatives, which is aligned to nation building, NTPC has forayed in the field of solid waste management along with diversification of its energy portfolio into waste to energy. Under the Swachh Bharat Mission, Govt. of India is emphasizing the scientific management of Municipal Solid Waste (MSW) through establishment of 'Waste to Energy' (WtE) plants across India. In order to leverage Government's efforts in this sector, NTPC is actively exploring other opportunities in waste management.

Unveiling of WTE Plant at Varanasi by CMD, NTPC

Changing the landscape of holy city Varanasi

NTPC has sucessfully revamped the 'waste to compost' plant at Kadsada, Varanasi and manging Operation & Maintenance (O&M) of this 600 Tons per Day (TPD) capacity plant. The plant generates about 60-80 TPD of compost. Sanitary land fill facility and leachate treatment facility have also been created at Varanasi to ensure scientific disposal of waste. NTPC has recently commissioned 24 TPD thermal gasification based demo scale Waste to Energy plant at Varanasi. The Municipal Solid Waste (MSW) is first converted to producer gas, which is then used to generate approximately 200 KW of electric power.

Compost Bagging at Waste to Compost plant, Varanasi

Case Study : Utkarsh Nagar Mouda, Zero waste NTPC Township

About NTPC, Mouda

NTPC Mouda, located in Mouda town of Nagpur District is a coal based power plant with the installed capacity of 2320 MW. The township of NTPC Mouda has taken a giant leap towards the Go Green Initiative and established itself as a Zero Waste Township.

Sprawling over an area of 135 acres, NTPC Mouda Township accommodates approximately 2000 residents belonging to every age group, in its various types of Quarters, Guest Houses, Hostels and other buildings. The township has every facilities and amenities to provide comfort to its residents. Employees are living comfortably here in a clean, peaceful and pollution free environment. Since 2017, NTPC Mouda has been practicing integrated waste management and still making continuous efforts to keep its environment clean and green by using Mantra of Reduce, Reuse and Recycle.

Before the Change

But, this was not the case earlier. Due to lack of infrastructure and awareness among residents, there was not any standard mechanism in place for Integrated Waste Management. People didn't use to segregate the waste at source and all of it including non-biodegradable waste were disposed in landfills. Unhygienic environment and overflowing landfills had become a serious issue for the nearby residents.

The Process

Anticipating the burgeoning crisis due to waste, the township administration decided to make the Mouda Township a "Zero Waste Township. The Mouda Township Administration adopted a multi-pronged approach to achieve this target. Firstly, a Quality Circle Team named SANKALP was created to collect the data and identify the gaps within the existing system. The team used data analytics and conducted brainstorming sessions with the employees, workers and municipality to identify the list of interventions required and analyze and compare the advantages and disadvantages of each process to finally create the

Workers with Swachhata Doot Vehicle

roadmap for Integrated Waste Management for NTPC Mouda.

Secondly, after the roadmap was created, the team got indulged wholeheartedly in its successful implementation. The first challenge was to make the segregation of waste at source possible. .Various training programs were being conducted for the Housekeeping workers and employees of Township Administration as well as for the residents of the township for the waste segregation. Short videos on Waste segregation were screened at township auditorium. The Ladies Club of Township had been conducting Nukkad Natak during Swachhata Pakhwada to keep people aware about waste management. Repeated training programs had been conducted to encourage people to participate in Swachhata Pakhwada which lead to positive change in the behavior of people in context to waste management. Keeping in mind the Swachh Bharat Abhiyan of Govt of India, several other awareness program for environment prevention is being conducted regularly by NTPC Mouda for the residents and the people living in nearby villages. These programs include Street Drama, Mass plantation, Essay Writing competitions, slogan competitions etc. to sensitize the people of NTPC Mouda. Shopkeepers in the township area have been encouraged to use paper bags instead of Polythenes. All of these initiatives acted as a catalyst to the drive the waste segregation at source by residents.

Waste bins of blue color for dry garbage and green color for wet garbage have been distributed to each family in the township for the segregation of waste at the source only.

Thirdly, to resolve the issues of waste collection and disposal, the Mouda Township Administration tied up with Mouda Nagar Panchayat. Project Affected People (PAPs) employed as Housekeeping workers were the main strength of the whole program. They were empowered to deny collection of un-segregated waste from the residents and were provided with gloves, uniform etc. to maintain utmost hygiene. Garbage collection vehicles with collecting workers, also known as 'Swachhata Doot" have been deployed in the township area.

Outcome

Finally, because of the combined efforts of all, NTPC Mouda Township has become the Zero Waste Township. Around 500 Kgs of waste is being generated everyday by the Mouda Township. Now all the domestic solid waste is being segregated at source and collected door to door for disposal. Out of which around 250 Kgs of biodegradable waste is being converted into compost and distributed to farmers for free of cost and approx. 250 Kgs of non-biodegradable waste is being sent to recyclers for fine segregation with the help of Mouda Nagar Panchayat.

After implementing the sustainable waste management mechanism, follow up and review is being done to ensure that mechanism is working properly. Township Administration' Employees have regular motivational meetings with housekeeping workers and they also visit to Mouda Nagar Panchayat Officers and other contractors. They also display Educational waste management short films before weekly movies. Monthly meeting is being conducted with the workers to resolve their issues related to work to realize the vision of Govt. of India – CLEAN INDIA 2020. These efforts and hardwork of Mouda Township Administration and residents, under the guidance of NTPC Mouda, proved to be a great success. As a result, Mouda Township has become one of the townships among the all NTPC townships, which have achieved "Zero Waste Township" tag. Zero waste means that the garbage is reused and none of it is sent to the landfill site.

Remarkable changes in behavior in the people of township have been witnessed. NTPC Mouda now meets the compliance of Environment Ministry's revised norms 2016. NTPC Mouda's effort for cleanliness has also resulted in Mouda Nagar Panchayat secureting 54th Rank all over India under Swachhata Sarvekshan 2018.

Ash Management

Sustainable ash utilization is one of the key concerns of NTPC and the Company strives to maximize it. NTPC has introduced Ash Policy 2015, which is a vision document dealing with the ash utilization issue in an integrated way from generation to end of life. This policy aims at maximizing utilization of ash for productive usage along with fulfilling social and environmental obligations, as a green initiative in protecting the nature and giving a better and clean environment to future generations.

During FY-2017-18, 60.31 million tonnes of ash was generated and 53.45% i.e. 32.24 million tonnes of ash had been fully utilized in various areas such as in cement/ concrete, industries, bricks/ blocks making, road embankment construction, ash dyke raising, mine filling, land development works etc. Seven NTPC stations (Badarpur, Dadri, Tanda, Unchahar, Simhadri, Ramagundam and Talcher-Thermal) have achieved more than 100% Ash utilization.

Innovative Measures:

i. Ash Utilisation by NETRA

A road patch (M15) has been constructed at NETRA using 50% bottom ash in place of sand in the cement concrete mixture. It has been estimated that maximum strength of M25 could be attained through this technology. Constituents were coarse aggregate (20 mm and 10 mm), fine aggregate, bottom ash and cement.

ii. Sintered fly ash Light Weight Coarse Aggregates manufacturing at NTPC Sipat

Structural concrete of grade upto M35 can be easily obtained using sintered lightweight aggregate as coarse aggregate. E&C is under progress at the cost of ₹ 39 Cr. at NTPC Sipat. NETRA is setting up light weight aggregate plant with capacity of 50000 m^3/year. Large scale manufacturing plants can be setup at NTPC stations.

iii. Construction of Fly ash based Geo-Polymer concrete road

Fly ash based Geo-polymer concrete road has been constructed successfully at Dadri station first time in the country. The performance highlights of this Geo-polymer concrete road are:

- First concrete road without cement in India.
- No cement, no water curing, bulk fly ash utilisation.
- Negligible CO_2 emission in comparison to high CO_2 emission in cement production.
- High early compressive strength is achieved with in 7 days in comparison to 28 days for normal concrete road.
- Negligible Shrinkage.
- Monolithic and low thermal conductivity .
- Good durability in aggressive environment compared to conventional concrete road.

Rail Loading Facility at NTPC, Ramagundam

Environmental Compliance

NTPC is continuously striving to achieve 100% environmental compliance with technically feasible engineering solutions while maintaining affordability of power. Before commissioning of any project NTPC conducts EIA studies; wherein, an environmental management plan is prepared for mitigation measures of the possible impacts; and management transparently monitors environmental issue during construction as well as operation stage of any station.

Other Environmental aspects

Product and Services

The scope of NTPC is to generate power and to make it available up to its own switch-yard. From switch-yard, the electricity is transmitted for distribution through overhead transmission lines which are out of scope of NTPC. Therefore, environmental impacts of electrical power beyond NTPC switch-yards are not in purview of NTPC.

Also, no packaging material is used in electricity transmission. Impacts of electricity transmission beyond NTPC switch-yards are also not in purview of NTPC.

Supplier Environmental Assessment

NTPC is very sincere to take care of environmental issues and do not have any significant environmental impacts in the supply chain process. However, NTPC follows the procedure of environmental guidelines during the raw material transportation and consumption through the supply chain. There is no negative impact of supply chain on society and environment.

Major suppliers of NTPC are BHEL, Coal India, GAIL and other multinational OEM suppliers and they are bound to comply with Environmental, Human Rights, Economic Society, Labour practice norms as per the regulatory guidelines. The company does not endure any sort of deception found or other misconduct of whatever nature in the tendering process or execution by any of the suppliers.

During the years 2017-18, no major grievances on environmental issue was raised. The localised issues were addressed and resolved.

Environmental Expenditure

Environment protection expenditure for the reporting period FY17-18 is approx. ₹ 729.68 crores. This does not pertain to O&M of pollution control devices like ESP, ETP, STP, Ash Handling systems, DE/DS, CSSP, waste segregation and disposal, etc.

NTPC subscribes to the following environmental regulations, social charters, principles, policies of India

- Water (Prevention & Control of Pollution) Act-1974. And rules and amendments thereof
- Air (Prevention & Control of Pollution) Act 1981, rules and amendments thereof
- Environment Protection Act 1986, rules and amendments thereof
- Environment Impact Assessment notifications 2006 and amendments
- NOC/EC/ CTO of respective stations
- Hazardous Waste Management & Handling Rule 1989 & and amendments thereof
- Bio-medical Waste Management Rules 2016 and amendments thereof
- E-Waste Management & Handling Rules 2016 and amendments thereof
- Solid Waste Management Rules 2016 and amendments thereof
- Orders of Hon'ble NGT, High Courts and Supreme Court thereof
- Public Liability Insurance Act 1991, rules and amendments thereof
- Corporate Responsibility for Environment Protection (CREP)

Social Performance

Human Rights

- Freedom of Association and Collective Bargaining
- Non-discrimination
- Child Labour, Forced and Compulsory Labour
- Indigenous Rights
- Suppliers' Assessment

HR Practices

- Diversity and Equal Opportunities
- Compensation and Benefits
- Employee - Management Relationship
- Occupational Health and Safety
- Training and Development
- Security Practices
- Grievance Mechanism

Product Responsibility

- Customer Focus
- Customer Health and Safety
- Marketing Strategy

Community Development

- CSR Initiatives
- R&R Activities
- Grievance Mechanism
- Public Policy Participation

Human Rights

Respect for human rights, individual dignity and professional conduct is crucial for NTPC operations. NTPC is committed to operate in a manner consistent with the United Nations (UN) Universal Declaration of Human Rights, the 10 UN Global Compact (UNGC) principles and the applicable International Labour Organisation (ILO) Core Conventions on Labour Standards.

NTPC adheres to statutory and regulatory requirements related to payment of wages and benefits. The Company ensures that there is no violation of the rights of employees and provides statutory benefits like Provident Fund and medical facilities. All unionised employees retain the right to exercise the option of collective bargaining. Employees are trained regularly on various aspects of human rights. 47% of employees during FY 2017-18 were trained on Human Rights aspects. As far as issue of Human Rights for external stakeholders is concerned specially with respect to Project Affected Families (PAF), adequate transparency is maintained with a focused approach on consultation and participation. Special provisions for vulnerable communities also find a mention in the relevant policies. In addition to individual benefits, comprehensive community development has also been undertaken. Institutional mechanisms are also in place for Grievance redressal. The company has also developed a dedicated Human Rights policy to bring more focus on the area and to adequately address any possibility of human rights violation. Human rights clauses are included in all significant investment agreements and contracts.

Freedom of association and effective recognition of the right to collective bargaining

The practices with regards to the collective bargaining rights of workmen, are in synchronization with the provisions of Trade Unions Act, the governing statute on the issue.

The workforce in the unionised category has got right to organize, which is creation of a statute. Even the executives have formed associations at almost all the projects/stations level. Regular interactions are held with all the employees/representative bodies at Project, Regional and Apex level. Accordingly, mechanism is in place so as to hold bipartite meetings, which interalia is aimed at getting employee inputs on conditions of employment, despite the fact that electricity generation is an essential service wherein right to strike is prohibited.

Prevention of discrimination at the workplace

NTPC promotes equality and diversity amongst its employees. It has been providing equal opportunity to women employees and minorities at all levels since its inception. Statutory requirements and policy guidelines are adhered to without any discrimination. The company makes no distinction on basis of caste, creed, colour, gender and religion.

There was no incident of discrimination in the reporting period.

Prohibiting child labour and preventing forced and compulsory labour

Company service rules stipulate that minimum age for employment in NTPC is 18 years. The bidding/ contract documents etc. also explicitly prohibit engagement of child labour. Thorough preventive checking is done at the time of issuing gate passes to ensure that no contracting agency deploys child labour in NTPC's works. Further, the security system of NTPC plants ensure no child enters plant premises.

NTPC cherishes freedom of every kind enshrined in the constitution of India including zero tolerance for forced or compulsory labour. The manpower working in NTPC enjoy complete freedom to join and leave the organization as per their own volition. The company not only adheres to international conventions and statutory provisions on employment, but also constantly upgrades its practices on employee engagement, as per emerging scenarios and prevalent best practices.These are extended to the sub-contractors as part of contract documents and its subsidiary and joint ventures are bound to follow Corporate human rights clause. NTPC being a Govt. company is covered under Right to Information

No complaint on human rights, such as child labour, forced labour, involuntary labour, sexual harassment, discrimination, rights of the disabled etc. was pending as on 31.03.2018. However, number of forums are available to all stakeholders to address any violation of rights, including human rights.

Act and all grievances from any common citizen and reference from important stakeholders like Hon'ble MPs, MLAs and Ministers are responded to in a time bond manner. The company ensures compliance to Factories Act and Labour Laws at all its operations through periodic reviews.

Indigenous Rights

NTPC projects have till now been located in such areas where no Indigenous people exist. Hence, the issue of Indigenous rights is not applicable to NTPC. However, NTPC has various provisions for Scheduled Tribes in its social as well as HR policies and actions are taken accordingly.

Suppliers' Human Rights, Labour Practices Assessment

In all contracts /agreements/ dealings that NTPC undertakes with its suppliers, the provisions are incorporated in such a way so that there is no scope or possibilities of human rights violation. Hence only those suppliers who agree to the relevant principles of human right protection are awarded contracts. Also, the suppliers of NTPC in general are big corporates with evidently no history of human rights violation. NTPC has formulated policy and systems to ensure protection of human resource in all operations. The policy covers issues of child labour, force and compulsory labour, non-discrimination, bribery and corruption. NTPC has made the business code of conduct available to all employees, contractors, suppliers etc. at its sites and corporate offices. All the suppliers and contractors are audited on human right practices on regular basis. NTPC also reviews suppliers' labour practices regarding minimum wages, PF, ESI etc. The company does not endure violation of labour laws and human rights.

During the reporting period, NTPC has not identified any human rights violation in the supply chain.

Happy Workforce, NTPC Barh

HR Practices

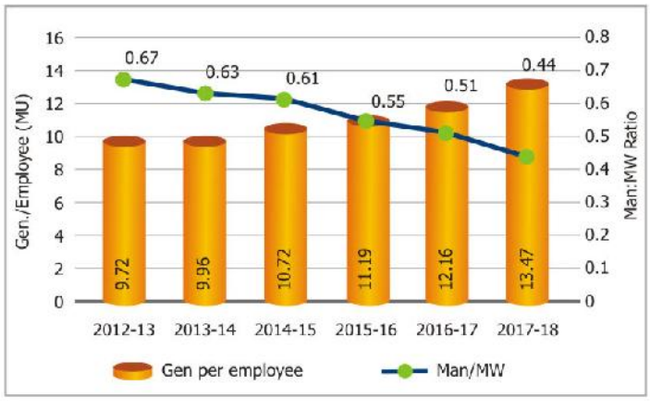
"To enable our people to be a family of committed world class professionals, making NTPC a learning organization."

At NTPC, it begins and ends with people. The company is deeply passionate about ensuring holistic development of all its employees as distinct individuals and good citizens. The Company employs approximately 19,739 employees excluding JVs and subsidiary companies as on March 31, 2018.

The number of workers employed with contractors varies from time to time due to dynamic nature of work. The average number of contract workers in 27 operating station of NTPC, during 2017-18, was about 60,000. The productivity of employees is demonstrated by increase in generation per employee and consistent reduction in Man-MW ratio. Generation per employee was 13.47 MUs during the year. The overall Man-MW ratio improved to 0.44 in FY 2017-18 from 0.51 in 2016-17 excluding JVs/ Subsidiaries.

In NTPC, there is equal opportunity provided to all in hiring, remuneration, access to training etc. without any discrimination on the basis of gender, race, nationality, religion or family status etc. Equal wages and other admissible benefits are paid to all employees and there is no discrimination. Men and women are treated at par in all respects. However, as per regulation, some additional benefits such as maternity leave, special child care leave of 2 years are provided to women employees. Retention rate after parental leave is 100%. Also, the company has launched Sabbatical scheme for employees to provide leave of minium period of 2 years,extendable upto 5 years, to have planned job pauses in order to discharge various personal /social obligations. All executives receive performance feedback during mid-year review and final appraisal as Performance Management System (PMS). The non-executives receive feedback in case of unsatisfactory performance. NTPC has a process in place for induction of the executives including senior management personnel in the company on all India basis after due notification through open advertisements. Hiring of non-executives is done at local (NTPC stations) and regional level with appropriate notifications to the employment exchanges of the expected locations. NTPC does not

Minimum notice period regarding operational changes (location transfer)	Minimum notice period for termination/resignation from service
• **Executive below GM level** : One month	• **Executive:** Three months
• **GM & above:** 7 days or as per requirement	• **Non-executive:** One month Non executives are generally not transferred from one location to other.



hire senior management positions from the local community. They are deputed from corporate office for all locations as per requirement. The wage of a lowest level employee in NTPC is in the pay scale ₹11000 - 24500 (under revision) which is same across all locations, irrespective of the gender and also more than the minimum wage as stipulated by respective state / central government. The minimum wage payment to the contract workers through bank account is also ensured by NTPC through proper verification of documents like payment sheets, PF deposit receipt etc. The remuneration policies for the highest governance body, executives and supervisors are inline with DPE guidelines. The management approach on compensation and benefits is guided by the government guidelines issued from time to time and complies with statutory conditions.

Security Practices

NTPC has a foolproof security system in tune with the Government policy. All the power projects developed by NTPC fall under the critical infrastructure category. A Govt. of India security force CISF is deployed for securing the vital installations in our project sites/power plants. Similarly, ex-servicemen security agencies are deployed in the non-core areas in our sites like offices, townships etc. Though NTPC do not impart any direct training to the referred security personnel, it is understood that they are properly trained in security systems by the Govt. including the Human Rights aspects before their formal induction to the service and also during refresher courses.

Teamwork at NTPC Barh

Diversity and Equal Opportunity

NTPC has been an equal opportunity employer and upliftment of marginalized section of society has always been a key concern for the company. Guidelines and instruction issued by DOP&T/DPE with regard to providing reservation, relaxation, concession and other benefits/ facilities to schedule castes, schedule tribes, other backward classes and person with disabilities are followed in letter and spirit. To ensure due compliance with applicable orders and instruction pertaining to the reservation of vacancies in favour of schedule castes, schedule tribes, other backward classes and person with disabilities and other benefits admissible to them, reservation cell has been setup at Corporate Centre and other locations of NTPC under the direct control of liaison officer. Categorization of employees indicating diversity of employees in NTPC (excluding JV and subsidiaries) is as shown in the table :

Description	No. of Employee in FY 2017-18
Male	18461
Female	1278

Description	No. of Employee in FY 2017-18
Minorities	1493
SC	2971
ST	1345
OBC	3554
PWD	457

Diversity at RLI Centre, Vindhyachal

Compensation and Benefits:

'People before PLF' has always been the guiding mantra of NTPC and employees enjoy the following range of various benefits:

Some of the salient employee benefits are given below:				
Medical Treatment	**Facilities of Higher Studies**	**Contributory Scheme for Post-Retirement Medical Facilities**	**Separation / Insurance Benefits**	**Loans and Advances**
• Free medical treatment to self and dependent family members at company/ empanelled hospitals for both in-patient and out-patient treatment. • Regular medical checkups.	• Study leave. • Incentives for acquiring off-campus additional relevant qualifications. • Long term career oriented education programmes.	• Inpatient and outpatient medical expenses covered, subject to limitations for both, retired employee and spouse.	• Group Personal Accident Insurance • Group Insurance • Leave Encashment • House Building Advance Insurance. • Employee Death Relief Scheme • Gratuity • Provided Fund • Employee Family Economic Rehabilitation • Contributory Pension	• House Building Advance • Multipurpose Advance • Conveyance Advance • Children Education Advance • Household Furnishing Advance • Computer Advance

Note: 1) NTPC does not hire employees on temporary / casual basis.
2) Details of benefit plan obligations and other retirement plan are in page no. 192 - 191 and 251 – 258 of Annual Report 2017-18.

Grievance Mechanism

For addressing the grievances of employees, NTPC has a time bound Grievance Redressal Mechanism for all employees at each project. The employee grievances are also captured through different forums like participative forums, communication meetings, employee organizational climate survey etc.The objectives of the grievances handling system are:

- To settle grievances of the employees in the shortest possible time and at the lowest possible level of authority.
- To provide for various stages so that the aggrieved employees derive satisfaction of communicating his grievances to the highest level.

Employee - Management Relationship

NTPC respects the rights of its employees to freedom of association in accordance with applicable laws. All NTPC employees in the workman (non executive) category (42% of total employee strength) have freedom to associate themselves with various unions to facilitate collective bargaining agreement. All the collective bargaining agreements are inline with the applicable statutes and notice period of 3 weeks is given wherever applicable as per the relevant laws/ agreement.

Following collective bargaining forums have been formalized for regular and structured meetings between management and unions:

Forum	
Apex Level:	**Shop Floor Level:**
National Bipartitie Committee (NBC)	- Shop Level Committee (SLC)
Regional Level:	- Canteen Management Committee (CMC)
Regional Joint productivity Council (RJPC)	- Township Advising Committee (TAC)
Project Level:	- House Allotment Committee (HAC)
Plant Level Committee (PLC)	

Occupational Health and Safety

NTPC recognises its responsibility for maintaining a safe working environment for all its employees and associates. The company has a three tier structure for management of occupational health and safety issue covering station, region and corporate centre. There is 50% of workers' representation in formal joint management committee for safety as per statute. The entire workforce is represented in formal joint management – worker health and safety committees to advise on occupational health and safety programs. One of its key focus areas is effective implementation of health and safety practices inline with its Zero Incident Vision. The vision is to create safer working environment for employees, contractors and customers through rigorous systems, procedures and firm implementations. The corporate environment, health and safety (EHS) policy articulates our commitment towards building a safe work place and defines a protocols to be followed across businesses. The policy is periodically reviewed by the senior management.

Steps towards Zero Incident Vision

For strict compliance & enforcement of safety norms and practices by the contractors, safety clauses are included in General Conditions of Contract/ Erection Conditions of Contract.

System approach followed by adopting and implementing OHSAS 18001/ ISO - 45001.

Height permit and height check list are implemented to ensure safety of workers while working at height.

Adequate numbers of qualified safety officers are posted at all units as per statutory rules/provisions to look after safety of workers.

Detailed emergency plans have been developed and responsibilities are assigned to each concerned to handle the emergency situations.

Mock drills are conducted regularly to check the healthiness of the system and observations are complied with.

To inculcate safety culture various instructions are displayed in the form of posters/hoardings at various vulnerable locations. In house safety films related to different work activities are being screened at site.

Different competitions and campaigns on safety are organized time to time to enhance the safety awareness of employees, contract workers and nearby villagers.

Cross functional safety task force is functional at stations and construction projects to monitor working conditions as well as taking remedial actions.

Installations of state-of-the-art surveillance systems at projects and stations

Regular interactions with MHA, IB and CISF as well as the State and District level authorities to augment the security preparedness in the power installations.

Compulsory medical health check-ups are conducted for al employees Regular medical examinations are conducted for our workers at work place, monitoring their health conditions.

Training programmes for contractors' employees are being conducted at all sites on regular basis covering all relevant topics on Occupational Health and Safety.

Safety training programs and PEP talks are conducted for our workers at site to make them aware about the hazards at work place.

Safety Messages on Display Board

NTPC Safety parameters (Employees and contractors)					
	2017-18	2016-17	2015-16	2014-15	2013-14
Fatalities*	52	11	14	14	15
Frequency Rate	0.32	0.406	0.27	0.30	0.33
Incident Rate (IR)	0.81	1.068	0.65	0.77	0.84
Injury Rate	0.06	0.08	0.05	0.06	0.07
Total Mandays lost	3,08,689	74,261	79,731	85,911	91,216

*Including Unchahar Incident

NTPC Safety parameters (Employees and contractors)						
	NR	DBF	WR	SR	ER	Hydro
Fatalities*	45	1	1	3	2	0
Frequency Rate (FR)	0.20	0.50	0.53	0.02	0.27	0
Incident Rate (IR)	0.52	1.23	1.33	0.45	0.69	0
Injury Rate	0.04	0.10	0.11	0.04	0.05	0
Total Mandays lost	2,71,163	6,029	7,409	18,038	6,050	0
Non – Fatalities	8	6	25	2	13	0

Safety Training		
S.No.	Description of training	Nos. of training
01.	Training for Expansion projects on safety topics	23
02.	Training for Construction and Erection projects on safety topics	23
03.	Training for Gas stations on Safety topics	14

Unchahar Tragedy- Crisis Management

An unfortunate accident took place on 1st November 2017 in the boiler of 6th unit of Unchahar plant in U.P. This caused fatal accidents and burn injuries to the personnel working in the boiler area. Relief measures were immediately taken and all medical facilities were provided to the injured. Ex-gratia compensation was provided to the families of deceased and to the injured personnel.

Humane Side of NTPC During Unchahar Incident (Extension of Medical Help)

The rescue operations were done in close coordination with NDRF Team as well as District and State Government officials. There was immediate deployment of Doctors and Ambulances by NTPC and state authorities to immediately shift the injured to hospitals at Raibareli and Lucknow.

Patients in need of better medical attention were airlifted by Air Ambulances of leading Private Hospitals and Indian Air force (with support from Ministry of Home Affairs and Ministry of Defence) to Delhi at Safdurjung Hospital, AIIMS Trauma Centre, Apollo Hospital and RML hospital. Best possible medical help was extended to the patients under close monitoring of the situation by NTPC officials round the clock.

Sh. R. K. Singh. Hon'ble MoP (I/c) P and N & RE Reviewing Safety System and practices at NTPC Barh

Mitigation of Occupational Safety Risk

Adequate medical facilities have been established at site such as First Aid Centre, Ambulance room and OHC equipped with qualified medical doctors etc. as required under statutory provision. Medical examinations are carried out regularly for identified employees working in hazardous area. Medical examination records are maintained along with strict monitoring of work place hazards like dust/coal dust, gas or vapour, work place illumination, noise level and risks.

Hazard Identification, risk assessment

"Our activities carry various hazards; however, all hazards can be identified"

In line with the above provision in safety policy 2016, a comprehensive HIRAC document was developed for hydro, gas and coal based operating stations. Activities involved in the process of power generation carries various challenges and hazards. An effort has been made to identify postulated hazards associated with the activities related to the power generation. To make a comprehensive hazard identification, input was taken from historical accident and incident data from different (Coal, Gas and Hydro) stations. To enrich this exercise further data of other power utilities were also referred. The hierarchy of controls of hazards followed in preparing this document is elimination of hazard, substitution of hazard, engineering controls, administrative controls and PPEs in respective order.

This document serves as overall input to the stations while preparing station specific HIRAC document. Also this will be useful for capacity building of line executive or new entrants.

Safety policy will only be effective with support from all employees and contractors. Accordingly, every employee is responsible and accountable for safety in his or her work area and activities.

Incident Investigation

The objective is to investigate all accidents in order to examine each case in details and depth to find out the causes of accidents, the extent of losses caused, the circumstances / individuals responsible and to obtain considered recommendations for prevention of recurrences in similar or related nature of accidents.

Workers representation in formal joint management– worker health and safety committees

Workers covered by an occupational health and safety management system

i. The number and percentage of all workers who are not employees but whose work and/or workplace is controlled by the organization, who are covered by such a system that has been internally audited and certified externally is 59,623 nos. and 78.2%.

ii. Occupational health and safety management system covers all Workers.

Participative fora

1. **Safety circle:**
   Safety circle is a small group of employees who regularly meet to identify, analyze and solve problems related to safety and health of their concerned work area. The basic idea behind safety circle is to fully develop the capabilities of the employees in identification of hazards and to improve safety and health in the organization.

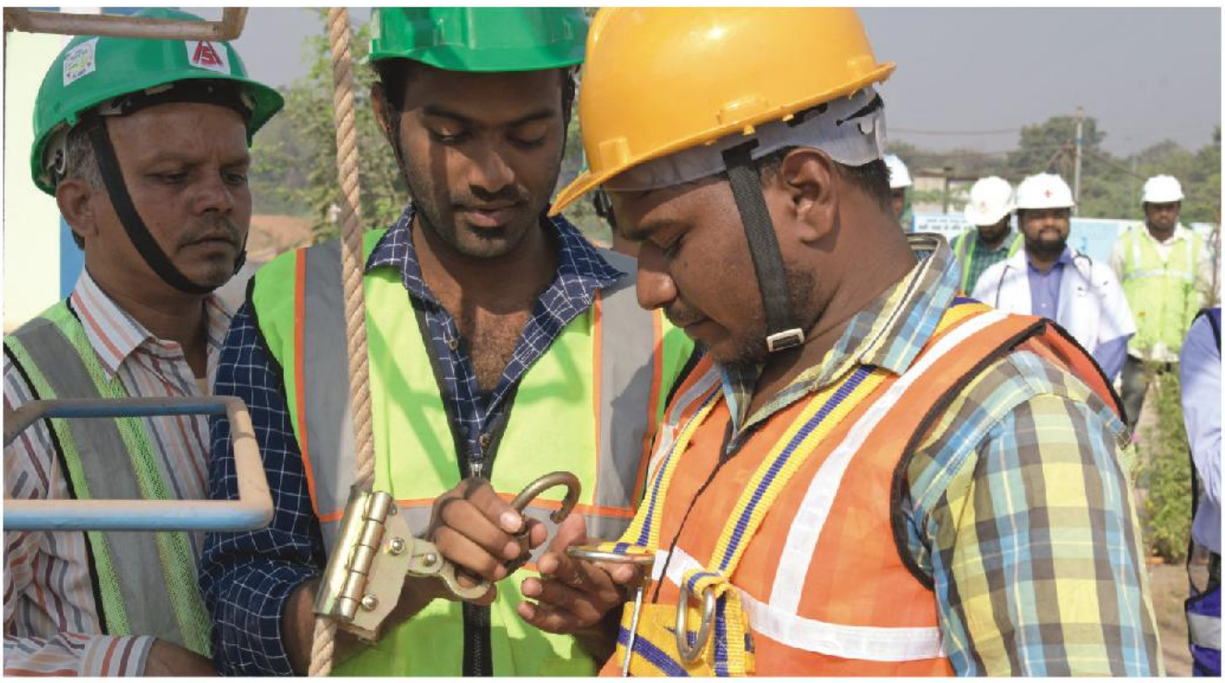
2. **Safety steward scheme:**
   This scheme involve shop floor executives up to E5 level, to reward and recognize their contribution in improving safety.

3. **Safety Task force for construction and O&M:**
   To involve executives of various Departments of the Projects under construction stage, in implementation of safety standards, compliance of statutory requirements, promoting safety awareness, conducting safety audits, inspections etc. in order to make the construction activities free from hazards.

   Safety Task Force is to be constituted on weekly rotation basis for O&M area at each station. This safety task force should be given specific terms of reference along with powers to stop work in case of any unsafe work environment or practice is detected. The members of the task force should be released from their regular duties and fully devoted to Safety for a week.

4. **Safety Committees:**
   Workers participate in safety management through formation of safety committee as per regulatory requirments. provisions are made for .

Health and safety topics are covered in formal agreements with trade unions



NTPC officials Educating Associates on Safety Practices and use of PPE at NTPC Telangana

Training and development

The company has consistently endeavored for attracting, on-boarding, grooming and motivating its man power talent recognising that nurturing the talent leads to competitive advantage. In this process, the company has always endeavored to be in the forefront of creation and dissemination of knowledge. Its sustained performance leadership has, to a large extent, been achieved on the platform of comprehensive learning and development programs for its employees. NTPC's quest to keep the company in tune with emerging business challenges is reflected in its new tag line for learning ***"Learning at speed of business"***.

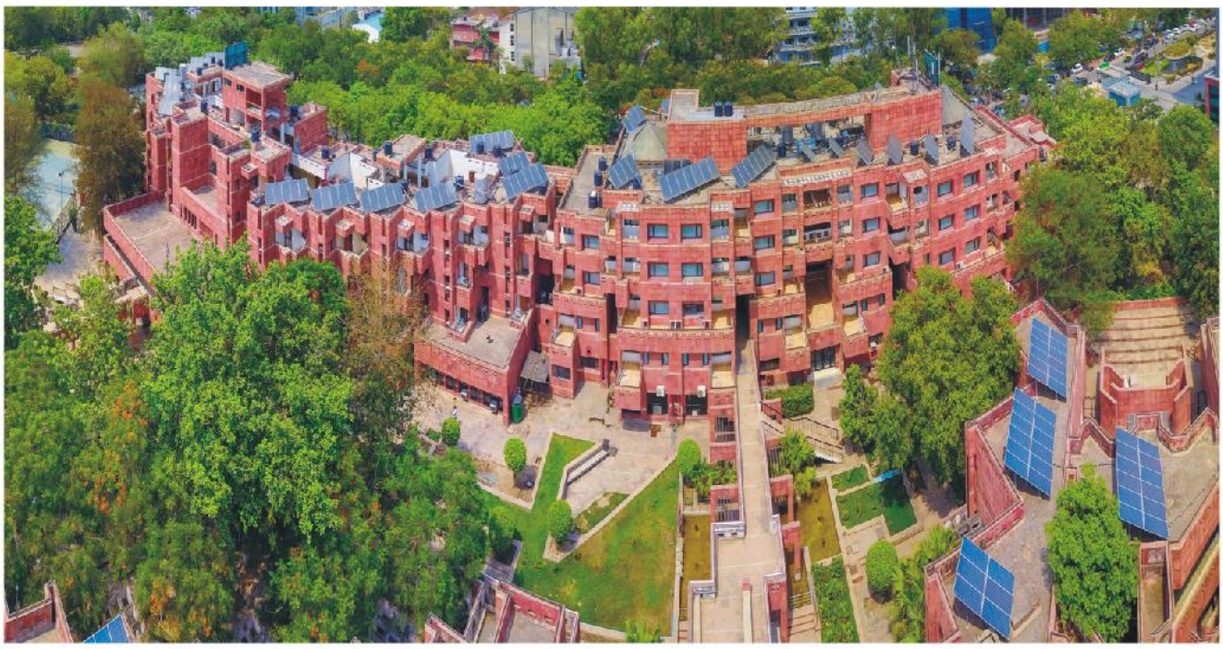
The learning activities are being driven by a comprehensive infrastructure comprising NTPC Power Management Institute (PMI) at the corporate level, six Regional Learning Institutes (RLIs) located strategically in six large power stations of NTPC and Employee Development Centers (EDCs) located at almost all power projects and stations. At the foundation of the learning structure of the company are the EDCs. The EDCs take care of training requirements of non-executives and junior level executives at the projects and stations. The training requirements of middle and senior level executives are catered to by RLIs at regional level and PMI, Noida at the corporate center as the apex learning center.

Together, the PMI, six RLIs and large number of EDCs form a strong learning grid covering the entire human resource of the company. This learning grid enables to provide learning solutions for practically every aspect of the power value chain, covering the strategic, tactical and operational facets right down to the shop floor and learning domains ranging from mining to distribution.

Collective knowledge of highest governance body

Senior management personnel are given trainings on various business and leadership themes. Following programmes have been conducted to develop and enhance the highest governance body's collective knowledge.

- Functional Directors, Executive Directors and General Managers of NTPC were given customized training program at global business schools such as Wharton and Harvard, USA.
- Global strategic management program at Harvard attended by Director (Opn.)



Bird's Eye View of NTPC Power Management Institute (PMI), Noida

- Climate change programme at Harvard Kennedy School attended by CMD

New Initiatives

a) Harvard Manage Mentor (HMM) courses

NTPC has taken online e-Learning courses (2000 Licenses) from Harvard Manage Mentor (HMM), from Harvard Business Publishing.

b) GPiLearn Courses

In the area of e-Learning in Technical domain, NTPC has obtained 1000 licenses from GPiLearn. GPiLearn, founded by GP Strategies is a leading provider of technical training, e-Learning solutions, management consulting and engineering services.

c) Membership of SHRM (Strategic Human Resource Management) for HR executives

NTPC is a member of SHRM. This membership brings a myriad of membership benefits including Current theory, research and practice in strategic human resource management, Annual Conference, Strategic HR Forum, Regional Workshops, Webinars. NTPC has provided 200 HR executives with SHRM memberships for a period of one year from September 2017, to equip them with all possible knowledge of human resources for better performance.

d) E-library

Accessible across all locations on all devices (mobiles, tablets, PC etc). This contains 25000 e-books and 1,000,000 articles / reports and journals.

e) Certificate Programme on Design Thinking (12 weeks) through MIT, Sloan

To promote innovation across the organization, PMI collaborated with MIT, Sloan and facilitated a batch of 25 senior & middle executives to acquire competence in practicing design thinking in their areas of work. Further, more such programmes are planned.

f) Business Book Summary

This is a package which provides summaries of books mainly on business / management themes and is accessible / available to all from anywhere and at any time.

g) Use of Augmented Reality and Virtual Reality (AR&VR) for learning

This is another new endeavour of NTPC Power Management Institute wherein use of Augmented and Virtual Reality (AR & VR) have been brought for a real life like imersive learning experience in a class room setting.

Need for such platform arose from the fact that each location of the company has machines of specific design. Training our executives on several different designs would require sending them physically to several locations entailing high cost, time and safety risk. Moreover, machines in running condition may not be always accessible for learning at plant locations. In such situations, the use of Augmented Reality (AR), Virtual Reality (VR) and Mixed Reality (MR) for L&D has been adopted by the company. AR, VR and MR provide immersive learning experience to our employees.

h) Young Leadership Development Initiative (10-module training programme- 10 X)

The company launched a unique program titled "Leading and delivering enterprise results (LEADER -10X)" for fast-tracking the development of outstanding talent in the organisation. Under this initiative, high performing and high potential young executives at junior and middle management levels are hand-picked by their Business Unit Heads or Regional Executive Directors or Functional Executive Directors and nominated to this innovatively designed program. The objective of this intervention is to expose middle level brilliant executives working in various areas like Construction, Erection, Operations & Maintenance, Commercial, Finance, Contracts, Human Resources, etc., to advanced learning of cross functional subjects, tools and techniques that are essential

New Joinees Undergoing on Job Training at NTPC Sipat

for taking critical long-term business decisions. The chosen executives are required to undergo intensive training on ten identified discrete themes, staggered over a period of six months.

i) NTPC PMI Eminent Speaker Series

Eminent personalities from different walks of life, renowned thought leaders and achievers are invited to deliver motivational talks / speak on their work, life and teachings. The talks are beamed live to all company locations (projects / stations / offices) of NTPC. This enables our entire workforce as well as their families to participate in it simultaneously. At least one such eminent personality is invited every quarter. The idea is to motivate, inspire employees and their families to give their best both as persons and as professionals.

j) Holistic well being

Realizing the fact that holistic well being is key to employee productivity, growth and health, NTPC has introduced several programmes which address learnings at mind, body and soul level. These holistic well being (physical, mental and spiritual) programmes are conducted through top institutions like Isha Foundation, Art of Living, Swami Sukhbodhan and, Brahma kumaris etc.

k) Programs for associated stakeholders

Some of our key interventions in this area are as below

- Leadership program for principals of schools situated in NTPC townships
- Navchetna- Program for the parents of differently abled children
- Program on Basic Life Support for medical staff, doctors, CISF, spouses of employees
- Programs for contract workers

During FY17-18, we have conducted 237 training programs, covering nearly 7,272 professionals, resulting in a total of approximately 38046 learning man-days in PMI alone. All EDCs and RLIs have also conducted several interventions resulting in a total of 1,53,272 man-days of L&D delivered across the company in the year 2017-18.

Details of average hours of training conducted during FY 2017-18 are tabulated below:

Description	Gender	Total Nos.	Total mandays	Total Hours of training Imparted	Average no. of hours of training per Employee
Executives	Male	8,231	66,167	3,97,002	48.23
	Female	528	4041	24,246	45.92
Non-Executives	Male	4,640	22,023	1,32,138	28.48
	Female	287	1,391	8346	29.08
	Total	**13,686**	**93,622**	**5,61,732**	**41.04**

Performance Management System (PMS)

Company offers ample opportunity to its employees to work at different locations based on preference, career needs and organizational requirements. With varied exposure, there is sufficient platform for the employees to gain wide experience. NTPC has established a Performance Management System (PMS) for aligning the employee performance with the company's goals and targets. Under PMS, all the executives finalize performance targets at the beginning of the year. Performance feedback is provided during mid-year review and during final appraisal held annually. The non-executives are also given feedback regarding their performance. With a view to reward high performers, NTPC has introduced a performance related incentive scheme.

Performance feedback is provided during mid-year review and during final appraisal held annually. The non-executives are also given feedback regarding their performance. With a view to reward high performers, NTPC has introduced a performance related incentive scheme.

Convocation Ceremony of NTPC Business School (NSB) Graduates at PMI, Noida

Product Responsbility

NTPC values its relationship with the customers and recognizes customer focus as one of the core values of the company. NTPC sells electricity from its Power Generating Stations located across India, to various bulk customers spread throughout the country. Its customers are mainly State Electricity Utilities like State Electricity Boards, State Electricity Distribution Companies, SEB Holding Companies and State Power Departments, who account for around 90% of the sale of electricity. NTPC supplies bulk power to
52 utilities (including Discoms, PGCIL, DVC, NVVN, Railways, Bangladesh etc.) under different agreements.

While taking up any new power project, it studies the power demand-supply situation in a state/ region. While analyzing the project viability, the applicable regulatory norms and other policies are taken into account.

Customer Focus

NTPC has taken up Customer Relationship Management (CRM) initiatives to strengthen its relationship with its customers. Under the CRM initiatives, the company has undertaken several structured activities with the objective of sharing customer experiences, capturing the feedback and customer expectations. Based on the feedback received, it provides its customers with various support services, identifies potential areas of cooperation and shares best practices with the customer utilities. The Company has also put in place Customer Satisfaction Index (CSI) survey scheme, to gather customer's feedbacks through a survey and respond to their requirements. As per CSI survey conducted in 2017-18, there are no complaints as such from customers. However, as part of the tariff determination process under the overall Regulatory System, different cases have been filed by NTPC against CERC / Customers or filed at the Appellate Tribunal / Courts by different Beneficiaries against NTPC / CERC.

Customer Health and Safety

NTPC is not directly involved in the businesses of transmission and distribution. However, as a responsible power generation company, it offers technical and managerial support services to its customers as per their requirement. Various customer support activities in different areas, including, health and safety aspects, are extended to the customers in the form of workshops and seminars.

As per the requirements of the people around, NTPC takes due care in displaying safety instructions in the local languages. Electricity, the sole product of NTPC cannot be labelled due to its intrinsic nature. However, NTPC has been complying with the Grid Code and Grid standard- national and

Description	FY 2015-16	FY 2016-17	FY 2017-18
Cases with Appellate Tribunal For Electricity (APTEL)	9	31	44*
Cases in Supreme Court	33	29	28*

*Total 72 cases as on 01.06.2018

No incidence of non-compliance with regulations and voluntary codes concerning the health and safety impacts of product and services identified during their lifecycle.

Marketing Strategy

NTPC is not in the business of power distribution, and so, it does not directly deal with the end consumers. However, its training centre, Power Management Institute (PMI), Noida, conducts educational programmes on demand side management and provide a platform to interact with consumers. Special Workshops at customer end are also conducted with eminent faculties to educate beneficiary Discoms in this area under Customer Relationship Management activity.

No incidence of non-compliance pertaining to marketing and communication including advertising, promotion and sponsorship during the reporting period

No monetary fine for non-compliance with laws and regulations concerning the provision and use of products during the reporting period

Complied with all the laws and regulations concerning provision and use of products and services

Joint Working Group Meeting

Community Development

NTPC considers its corporate social responsibility as an integral part of its corporate objectives and is taking various efforts towards the social well-being of its neighbourhood communities. The company's commitment towards serving the communities is governed by its R&R, ICD, CSR and Sustainable Development policies. NTPC's CSR initiatives strive to enhance value creation in the society and community. During the year more than 500 villages and more than 450 schools have been benefitted by NTPC's various CSR initiatives at different locations touching the lives of around 10 lacs people. NTPC, being a member of Global Compact Network, India, confirms its involvement in various CSR activities in line with 10 Global Compact principles and shares its achievements with the representatives of the world through Communication on Progress (COP). It submits COP to United Nations Global Compact on regular basis. CSR & Sustainability projects/activities are generally formulated based on Need Assessment Surveys (NAS) and/or inputs from Panchayat, District Administration, neighbourhood community and various stakeholders including public representatives, Village Development Advisory Committee (VDAC) and other participatory forums etc. Normally NAS is conducted once in every 05 years for each of the location.

OBJECTIVES

- **To lead the sector in environment protection including effective ash utilization, peripheral development and energy conversation practices**
- **To lead the sector in the area of resettlement and rehabilitation**
- **To contribute to sustainable power development by discharging corporate social responsibility**

Smiling Faces at NTPC, Singrauli

CSR Initiatives

A list of the major activities taken up by NTPC on various fronts during FY 2017-18 are as follows:

Women Empowerment

- More than 2800 women were imparted training in various vocational courses like sewing, beautician, food processing etc for self-employability. Tool kits & sewing machines were provided to the successful trainees.
- Bicycles were distributed to about 570 government school going girls for promoting girl child education.
- Self defence training were imparted to school going girl students.

Art, Culture and Sports

- Preservation and conservation of three monuments [Group of Monuments, Mandu (MP), Excavated site at Vikramshila (Bihar), and Archaeological site, Lalitgiri (Odisha)] in association with Archaeological Survey of India (ASI) and National Culture Fund (NCF) have been taken up.
- Support was provided to Society for Development of Rural Literature under NTPC CSR for Purvasha Folk and Tribal Art Museum, near Chilika Lake, Odisha for protection and promotion of heritage of dying art forms of Odisha.
- To promote traditional art and culture, NTPC has taken up various art & culture activities covering more than 140 villages at various locations.
- Rural Sports Meet and various sports events were organised at more than 260 schools in 230 villages at various locations.

Education

- Construction of facilities for tribal school in Chapaki, Distt Sonebhadra (U.P.) have been taken up.
- 37 schools run by NTPC are providing education to about 25,000 students of neighbourhood areas.
- Free residential coaching and mentoring are being provided to girl students for admission in IITs, NITs and prestigious Engineering Institute by setting up NTPC- ALL Girl Super 30 at Varanasi, UP.
- Running Mobile Science labs in schools in vicinity of Darlipalli and Pakri Barwadih coal mining Project & Kahalgaon power station annually benefitting about 12500 students from 62 schools
- Solar lanterns have been distributed to nearly 1500 students
- 280 schools covering more than 70,000 students around NTPC have been provided with uniforms, books, stationery, bags and provision of solar power, dual desk benches, play equipments.

- In order to encourage and motivate children and youth from neighbourhood villages of NTPC Projects /Stations for higher studies, NTPC has launched its flagship program 'NTPC Utkarsh' - Merit Scholarship that has benefitted 505 students during 2017-18 who are pursuing X, XII, ITI, B. E/B.Tech and MBBS studies.

Health

- Support were provided for combating cancer by creating infrastructure & equipment at National Cancer Institute Nagpur and AIIMS New Delhi.
- Construction of Eye Hospital at Dadri, Gautam Budhha Nagar, UP has been taken up.
- Development of King George Hospital, Visakhapatnam has been started.
- Mobile Health Clinics operational at 6 NTPC stations providing health care facility at doorsteps to more than 80,000 patients.
- More than 200 Medical Health check-up, family planning and eye camps as well as more than 150 health & sanitation awareness camps were organized at various locations.
- Health related infrastructure support were given to PHCs, CHCs and District Hospitals
- Regular health related initiatives have been started in the communities around NTPC stations benefitting close to 300 villages and more than 4,00,000 individuals
- More than 3200 surgeries for eye cataract, family planning and minor surgeries were performed.
- Animal Health Camps & other animal health related activities were organised in 65 villages.
- Directly Observed Treatment cum Designated Microscopy Centre (DOTs cum DMC) with Mobile ambulance facilities are being operated at 12 NTPC hospitals under Revised National Tuberculosis Control Programme (RNCTP) that cater to villages upto 25-30Km

Sanitation

- Support was provided for developmental & beautification works at Charminar Hyderabad, under 'Swachh Iconic places Project' of Govt. of India.
- Intensive awareness and cleanliness campaign through various activities were organised in Projects/ Stations/ Offices to bring mass-awareness among employees, associates and family members.
- Nukkad natak, debates, slogan competitions, essay competitions, painting competitions, walkathon etc. were organized to spread awareness about cleanliness amongst employees and other stakeholders
- 1940 individual household toilets were constructed towards for creating an open defecation free society
- Community toilets at 19 locations were constructed including two public Toilet Complexes in the Kathua district of Jammu & Kashmir.
- Pilot project for Mechanized Cleaning of 14 wards in Varanasi

- In order to promote menstrual hygiene among girls, sanitary napkin manufacturing units are set up at NTPC Sipat & Ramagundam, the product is distributed free of cost to the adolescent girls of govt schools

Infrastructure strengthening

- More than 2100 Solar Street Lights and 11 centralized solar lighting system were installed for various locations in the neighbourhood of NTPC stations in order to promote use of renewable energy
- Taking up construction of Community Hall in Vivekanand College, Tundi in Dhanbad, Jharkhand
- Construction of 22 Community Centres, installation of 312 High Mast Lights & about 170 Street Lights, construction & repair of about 53 kms of roads in the villages and other infrastructural developmental activities at various locations covering close to 150 villages were completed.

Provision of drinking water

- IBore wells and Electric pump sets were installed for 220 scheduled tribe farmers at Nagram village Telangana
- 390 hands pumps were installed at various locations near NTPC operations
- More than 107 tube wells/ bore wells, 25 RO plants, construction of about 25 underground water tank and piped drinking water scheme for 14 villages and distribution of 1000 water filters/coolers were provided in various villages/schools near NTPC operations
- During extreme summers water supply through water tankers provided relief to water scarce village in the vicinity of NTPC locations.
- Renovation and restoration of about 5 water bodies have been taken up.

Imparting vocational skills

- Skill trainings were provided to youth in various ITI trades in 18 adopted & 8 New ITIs at various locations in collaboration with the State and Central Governments
- Skill development and Pachkarma treatment center were created
- Regular vocational training in various trades like Electrical Repairing, Mobile Repairing, Motor Rewinding, Welding, Car Driving including obtaining LMV driving license, computer Training etc. were provided to more than 5000 youths around NTPC stations covering more than 200 villages
- Construction of Industrial Training Institute have been taken up at Ganjam District, Odisha

Caring for Divyang

With a view to focus on its role as a socially responsible and socially conscious organization, NTPC works towards the integration of specially-abled people into mainstream society through various programmes. These programmes encompass rehabilitation, employment, training, education, consultation to maximise their potential, and to help them to be self- reliant and independent. The company undertakes these initiatives through NTPC Foundation. Some of the initiatives undertaken/ being undertaken by the NTPC during FY 2017-18 are as follows:

- Provision for IT education to physically & visually challenged students at Information and Communication Technology (ICT) centres established at Delhi University and four Govt. Blind Schools, Ajmer, Lucknow, Thiruvananthapuram, Mysore, Guwahati University, Guwahati and Devi Ahilya Vishwavidyalaya, Indore.
- Disability Rehabilitation Centres (DRC) have been established at NTPC Tanda, Rihand, Korba, Dadri and Bongaigaon in collaboration with National Institute for the Orthopaedically Handicapped (NIOH), which has benefited about 3000 physically challenged people.

NFNDRC Centre at NTPC Korba

R&R Activities

R&R activities comprising of Rehabilitation, Resettlement and Community Development (CD) activities are finalised after extensive consultation with Project Affected Persons (PAPs), district administration and the local opinion makers to make the decisions more inclusive. To facilitate consultation and participation of PAPs, a forum namely 'Village Development Advisory Committee (VDAC)/other similar forum is constituted by the district administration with members from PAPs, district administration, local opinion makers and NTPC officials. The Deputy Collector chairs VDAC meetings and minutes of meeting is issued subsequently by the district administration to make the decisions more acceptable to all. VDAC is the forum where discussions/decisions regarding R&R Plan finalisation, implementation, monitoring and grievance redressal are done in presence of the project affected persons. RFCT LARR Act, 2013 has a provision of 'R&R Committee' formation, which provides a forum for consultation and participation of stakeholders.

Implementation of R&R activities are monitored continuously by NTPC on monthly basis by Head of the Project. Monthly report is generated by the project as per the format approved by the Corporate R&R team. Mid way correction in the R&R Plan as desired by the district administration is considered. Regular audit of R&R activities is done by the Corporate R&R for timely completion as per the approved Plan. Bottlenecks, if any, are highlighted and resolved timely.

After implementation of R&R activities under R&R is completed, a Social Impact Evaluation (SIE) is carried out through an external agency. The SIE agency interacts with the PAPs and considering their feedback SIE report is finalized. Thus, the affected persons are again consulted on completion of the work and their further views, if any, are documented which are addressed subsequently during implementation of CSR activities .

To maintain transparency and keep PAPs informed, NTPC establishes Public Information Centre (PIC) at projects where relevant documents are kept for reference for the period of formulation and implementation of R&R Plan / Scheme. PAFs are encouraged to register their queries / grievances at PIC. The R&R staff are available at PICs for interacting with PAFs. The PIC functions till completion of R&R Plan / scheme.

Mitigating Negative Impacts

During the consultation for finalisation of R&R activities in VDAC meetings, all potential negative impacts on local communities are highlighted by the stakeholders and their mitigatory measures are

R&R Colony, NTPC Daripalli

planned accordingly and included in R&R Plan.

During Social Impact Assessment (SIA) as per RFCT LARR Act, 2013 for a project, all benefits and potential adverse effects, if any, due to setting of the proposed project is analysed by a third party and appropriate decision is taken by the administration for mitigation of the adverse effect.

The Company has always tried for the best possible R&R package for the PAPs based on respective State Government R&R Policy and Government of India Guidelines/ LARR Act or as decided in Village Development Advisory Committees (VDAC) other similar meetings/ forums of participative mechanism. The stakeholders are mainly Public interest groups affected by the setting up of projects including the neighbouring communities. The initial baseline survey conducted under socio economic studies (SES)/ social Impact Assessment (SIA) carried out by concerned State Government, prepares a basis for initial stakeholder identification, public interest groups affected by the setting up of projects to address their concerns, need, aspirations and requirements and take adequate mitigation measures.

The process of Public Hearing (under MOEF & CC procedure for grant of Environment Clearance) and Public Consultations are undertaken prior to the start of construction of the project which are open to general public, during which they can express their concerns regarding environmental impacts of the project, socio-economic impacts due to acquisition of land and homesteads, rehabilitation and resettlement programmes, expectations from the project, etc. The comments of the general public are recorded and forwarded to MOEF & CC, which takes them into consideration while according environmental clearance for the project.

To address social issues at exploratory stage of its prospective Greenfield/Expansion projects and to win the confidence of local population of such projects by way of building positive image of the company, NTPC enters the area by initiating actions in line with its 'Initial Community Development (ICD) Policy, soon after land and water commitments are received from the respective State Governments for setting up a project.

NTPC has re-aligned its new R&R Policy 2017 in line with RFCT LARR Act, 2013. It has also has retained the earlier Policy's Community Development provisions for the affected villages and near by areas towards their socio-economic development, over & above the provisions of new Land Acquisition R&R Act.

Public Information Centre (PIC)

To disseminate information on the project, PICs at Corporate Centre and projects house an array of documents such as survey reports, action plans, land records, policy, etc. The PAPs are able to get information on various facets of the project and also can submit any query or grievance.

Consultative Mechanisms

Village Development Advisory Committees (VDACs)/ similar participative mechanisms facilitate finalization and implementation of RAPs in a participative manner. The representatives of PAPs, Gram Pradhan, Panchayat representative, Block Development Officer, other representatives of State Government NTPC and NGOs / CBOs, constitute RAP. They are involved in every stage of formulation, implementation and completion.

Implementation Facilitation and Evaluation

The implementation of RAP is facilitated and evaluated periodically during the implementation of R&R plan by Regional Head Quarter and Corporate R&R Group. Project Planning & Monitoring (PP&M) also keeps track of RAP implementation progress through Project Review Team (PRT) meetings regularly.

NTPC adopts the following principles and strategies for addressing the R&R issue:

- Minimizing the land requirement through compact and efficient layout of plant, township and other facilities.
- Minimizing the acquisition of prime agriculture land and other assets to the extent possible and avoiding acquisition of the homesteads
- Sharing information and carrying out consultations through formal mechanism of Public Information Centre (PIC) and Village Development Advisory Committee (VDAC) or similar consultative mechanism during the implementation of R&R Plan.
- Conducting Socio Economic Survey (SES)/ Social Impact Assessment (SIA) through a professional agency to collect detailed demographic details of the area and people which makes basis for the preparation of R&R Plan.
- All PAPs residing in, working, doing business or cultivating land or having rights over resources within the project area as per the categorization and provisions for eligibility in the policy are entitled for compensation for their lost assets as per the law of land and as per livelihood loss, sufficient to assist them to improve or at least regain their previous standard of living.
- Formulating a comprehensive Community Development Plan in consultation with stakeholders and District administration mainly in the area of education, Health, drinking water, sanitation, infrastructure, women empowerment, etc in the periphery of the project site.

Transforming Lives Through Rural Electrification

Creating Employment Opportunities for PAP

There are economic opportunities for the local suppliers arising out of the need for goods and services by NTPC projects. Many indirect benefits are available to project affected families as additional facilities, over and above the entitlements. Project Affected Persons are given preferences for following opportunities of projects and townships:

- Employment with contracting agencies
- Allotment of Shops, Kiosks in township
- Award of petty contracts
- Vehicle hiring in projects

All local infrastructure services at NTPC plant as well as offices are met through outsourcing of local suppliers which amount to 5 to 10 % contract value at stations

Grievance Mechanism

As far as R&R is concerned, in every project, a consultative mechanism comprising of representatives of PAPs, State Government & NTPC is constituted for formulation, implementation and Grievance Redressal System of R&R Plan. NTPC addresses grievance of PAPs as per Policy provisions at the project level.

Participation of Panchayat, community & local authorities is encouraged during planning.

implementation & monitoring of CSR & Sustainability projects, acceptance and support. The key issues addressed during consultations, meetings, implementation wherein community feedback are received and addressed.

In every project, a Village Development Advisory Committee (VDAC) comprising of representatives of PAPs, State Government & NTPC are formed. Any PAP, if aggrieved for not being offered the admissible benefit as provided under R&R Policy, may first move, by petition for redressal of its grievance to the VDAC. In case the aggrieved PAP is not satisfied by the action taken by the VDAC, he/she may appeal to the Head of the Project.

NTPC shall provide written reply to the grievance of PAPs within 30 days from the receipt of the grievance. In case the aggrieved PAP is still not satisfied by the action taken by the Head of the Project, he may appeal to the Executive Director of the region, whose decision, however, will be final and binding.

NTPC endeavours to achieve the objectives of R&R/CD Plan by the time R&R implementation is completed.

Public Policy Participation

The public policy advocacy, at NTPC, encompasses a wide range of activities. NTPC is a corporate member of various national & international organizations, and participates in these forums for issues pertaining to public policy. The company takes up the issues for policy advocacy conducive to sustainable development of the Power sector. Being in the electricity generation business, NTPC shares its experiences and views on key public policy issues, such as Electricity Tariff Regulations, Electricity policy, Grid Code etc., with relevant authorities as and when required. The advocacy includes capacity building, relationship building, networking, and leadership establishment.

The company does not give any contribution (in-kind or in-cash) to political parties, politicians and related institutions. Due care is taken to ensure that the company complies with all the statutory requirements from time to time. There has never been an instance of non-compliance with laws and regulations pertaining to workplace discrimination, Corruption, fraud etc. No fines or penalties were imposed on NTPC during the reporting period..

NTPC's new initiatives to improve employability of PAPs and local

- Setting up of new ITIs
- Adopting existing ITIs
- Adopting Engineering Colleges

NTPC initiatives

R&R of PAPs with the objective that the PAP improves or at least regain their previous standard of living.

Impact Assessments during SIA and EIA

R&R Plan is formulated and implemented under close monitoring of respective State Government and VDAC or similar consultative mechanism.

The R&R Plan implementation is an ongoing process. Land compensation and R&R grants disbursement were in active mode mainly in Darlipalli, North Karanpura, Solapur, Tanda-II thermal power projects and Pakri- Barwadih, Dulanga and Talaipalli coal mining projects in 2017-18.

Case Study : Prosperity Through Improvement In Irrigation Facilities

About

Nagaram village of Rajanna Sircilla District, Telangana is an underdeveloped tribal village. The village is dominated by SC/ST and marginal farmers and the majority of the community practice agriculture for sustenance. The village is characterized by scanty rainfall, drought and unavailability of water irrigation facility, thus further marginalizing the farmers.

The Process

NTPC identified SC/ST farmers through local administration and helped them in installing 85 motorized community bore wells in different locations of Nagaram village. The locations were identified in consultation with Village Sarpanch, District administration and Executive Engineer, Rural Water Works thus benefitting 219 SC/ST and marginal farmers. Now with the availability of year round irrigation facilities the farmers are no more marginalized, they are now able to produce 2 crops per year.

Result

The results are quite encouraging as described

- Increase in paddy production from 400 qtl to 2200 qtl per acre
- Start of production of 90 qtl of pulses per acre.
- Start of production of 5000 kg of vegetables per acre.
- Fodder production has jumped from 15 tons/acre to 100 tons /acre thereby increasing income from milch cattles.
- There is fivefold increase in annual income of farmers due to availability of better irrigation facilities enabling them to live decently. The farmers are now able to cultivate about 90 acres of land as compared to earlier 20 acres of cultivation which was dependent on monsoons. A small effort has changed the life of people of Nagaram village and improved their quality of life.

Farmers with NTPC officials at Nagaram Village

Key Data at a Glance

Economic Indicators:

Particulars	FY 2013-14 (₹ In Crores)	FY 2014-15 (₹ In Crores)	FY 2015-16 (₹ in Crores)	FY 2016-17 (₹ in Crores)	FY 2017-18 (₹ in Crores)
A: Direct Economic Value Generated					
Revenues	74,507.95	75,176.22	72,009.16	79,342.30	85,207.95
Sub Total (A)	74,507.95	75,176.22	72,009.16	79,342.30	85,207.95
B: Direct Economic Value Distributed					
Operating Cost	50,031.33	53,398.59	48,831.77	52,163.61	55,871.19
Employee Wages & Benefits	3,867.99	3669.78	3,609.32	4,324.60	4,734.67
Payments to Providers of Capital	7,147.74	4805.00	5,992.60	7,192.23	8,024.53
Payments to Government	3,664.00	819.06	268.14	3,464.31	2,681.38
Community investments	120.21	125.91	489.89	273.35	247.09
Sub Total (B)	64,831.27	62,818.34	59,191.72	67,418.10	71,558.86
Economic Value Retained (A-B)	9,676.68	12,357.88	12,328.92	11,749.33	12,448.63
C: Employee remuneration and other benefits					
Nos. of Employees (year-end)	23,411	22,496	21,633	20,593	19,739
Average Salary, Wages and Benefits per Employee per Annum (₹)	18,28,865	17,61,375	18,60,648	24,22,597	27,12,129
Average Cost of other Benefits per Employee per Annum (₹)	2,70,514	3,51,337	3,65,955	3,39,398	4,27,457
Average Cost of Employee Remuneration & Benefits per Annum (₹)	20,99,379	21,12,712	22,26,603	27,61,995	31,39,586

Environmental Indicators:

	Name of Indicator	Unit	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
	Non- Renewable Material Used						
Input Material	Lube Oil	KL	1,192.2	1,599	1,073.30	980.12	2142
		Lt/MU	5.12	6.64	4.49	3.92	8.22
	Transformer Oil	KL	410	276	395.95	395.843	410
		Lt/MU	1.76	1.15	1.66	1.58	1.57
	Chlorine	MT	4,317	4,267	4,537	5,460.48	5,525.59
		Kg/MU	18.53	17.70	18.99	21.83	21.22
	Ammonia	MT	550	455	2974	3,869.39	10,606.93
		Kg/MU	2.36	1.89	12.45	15.47	40.74
	Alum	MT	10,672	11,165	8,900	10,549.324	11,935.63
		Kg/MU	45.81	46.30	37.27	42.18	45.84
	HCl	MT	13,784	14,758	14,030	44,657.658	14,962.68
		Kg/MU	59.16	61.20	58.74	178.57	57.47
	H_2SO_4	MT	10,392	11,703	13,946	16,923.993	18,911.01
		Kg/MU	44.60	48.53	58.39	67.67	72.63
	Hydrogen	MT	39.46	37.18	37.42	41.83	42.05
		gm/MU	165.22	155.67	156.68	167.26	161.50
	Direct energy consumed						
Energy	Coal	MMT	158.2	162.1	160.6	162.50	168.95
		Kcal/Kg	3,334	3,368	3,408	3,527	3,555
		TJ	22,08,839	22,82,083	22,87,818	23,95,714	25,12,983
		Kg/Kwh	0.718	0.71	0.70	0.68	0.67
	Natural Gas	MMSCMD	6.88	6.44	5.21	5.16	5.345
		Kcal/SCM	9,400	9,354	9,428	9,347	9,364
		TJ	98,830	91,908	74,942	73,585	76,301
		SCM/Kwh	0.200	0.203	0.214	0.22	0.22
		MT	1,66,790	1,44,577	26,854	2,882	4,283
	Naptha	Kcal/Kg	11,385	11,376	11,341	11,238	11,295
		TJ	7,950	6,875	1,273	135	202.4
		KL	34,733	23,246	15,862	21,545	27,557
	LDO	Kcal/KL	9,098	9,476	9,467	9,333	8,909
		GJ	1,323	921	628	841	1,027
		KL	53,116	63,407	76,943	68,354	59,725
	HFO	Kcal/KL	9,838	9,896	9,893	9,869	10,031
		GJ	2,187	2,623	3,182	2,820	2,506

	Name of Indicator	Unit	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Energy	Specific Oil Consumption	ml/Kwh	0.40	0.38	0.40	0.38	0.35
	HSD	KL	434	1241	388	97	3,118
		Kcal/KL	8,760	9,050	8,992	9,042	9,081
		GJ	16	47	15	3.67	118.47
Sector Disclosures-coal stations							
Energy	Installed Capacity	MW	33,015	33,615	34,175	35,885	40,355
	Commercial Generation	MU	2,20,411	2,29,550	2,29,954	2,37,735	2,51,561
	Net Energy Export	MU	2,05,198	2,13,623	2,14,392	2,21,568	2,34,751
	PLF	%	81.50	80.2	78.6	78.6	77.90
	Cycle Efficiency	%	35.88	36.04	36.05	35.63	35.97
	Planned Outage	%	4.2	5.4	4.7	4.2	4.67
	Forced Outage	%	2.8	2.54	2.77	2.3	3.05
	Availability Factor	%	90.3	88.3	88.1	88.8	88.68
Sector Disclosures-Gas stations							
Energy	Installed Capacity @	MW	4,017	4,017	4,017	4,017	4,017
	Commercial Generation	MU	12,569	11,588	8,870	8,594	8,815.36
	Net Energy Export	MU	12,222	11,256	8,594	8,330	8,542.22
	PLF	%	35.7	32.9	25.1	24.4	25.05
	Cycle Efficiency	%	42.57	42.38	41.81	42.01	41.32
	Planned Outage	%	3.7	5.6	1.8	3.71	3.43
	Forced Outage	%	0.46	0.51	0.03	0.28	0.28
	Availability Factor	%	47.4	45.9	36.5	36.1	37.53
	@For gas based power projects, earlier the capacity was indicated based on Net Guaranteed Output as per Main Plant Specifications. It has been revised to capacity at Generator Terminal w.e.f. 01.04.2014.						
Sector Disclosures – Solar Stations (RE)							
Energy	Installed Capacity	MW	75	110	110	620 MW	870
	Commercial Generation	MU	13.289	123.8	162.649	531.1	1,219.503
	PLF	%	12.56	14.32	16.83	17.83	18.19
Sector Disclosures – Hydro Stations							
Energy	Installed Capacity	MW	----	----	----	800	800
	Commercial Generation	MU	----	----	----	3,225	3,313.63
	PLF	%	----	----	----	46.02	47.28

	Name of Indicator	Unit	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
	Total						
Energy	TOTAL Commercial Generation (Coal+Gas)	MU	2,32,980	2,41,138	2,38,824	2,46,329	2,60,376
Energy	Total Net Generation (Coal+Gas)	MU	2,17,421	2,24,879	2,22,986	2,30,898	2,43,293
Energy	Total Gross Generation *(Coal+Gas+ Solar+Hydro)	MU	2,33,284	2,41,139	2,39,506	2,50,085*	2,64,909.493
	Auxiliary Power Consumption						
Energy	Coal Stations	MU	15,029	15,180	15,210	15,874	16,530
Energy		%	6.82	6.61	6.61	6.68	6.57
Energy	Gas Stations	MU	351	316	261	251	261
Energy		%	2.80	2.73	2.95	2.92	2.96
Energy	Hydro	MU	-	-	-	-	22.63
Energy		%	-	-	-	-	0.68
	Energy Saved						
	Electrical	MU	115.1	115.4	116.9	118.6	120.5
	Heat Energy (Equivalent MT of coal)	MT	11,678	2,100	7,406	46,178	74,859
	Heat Energy (equivalent MCM of Gas)	MCM	-----	1.558	0.085	-----	0.091
	Heat Energy (equivalent KL of Naptha)	KL	-----	---------		-----	0.0
	Water						
Water	Specific Water Consumption	Lt/Kwh			3.33	3.22	3.06
	Stack Emission (All Stations)						
Emissions	SPM	MT	1,03,016	1,09,573	1,01,722	98,071	88,830
Emissions	Specific SPM**	gm/Kwh	0.47	0.46	0.44	0.39	0.27
Emissions	SO_2	MT	9,42,700	10,47,914	8,46,003	8,32,362.2	9,59,902
Emissions	Specific SO_2**	gm/Kwh	4.34	4.4	3.7	3.32	2.63
Emissions	NOx	MT	5,22,375.0	5,56,351	4,96,262	4,32,876.7	4,82,410
Emissions	Specific NOx**	gm/Kwh	2.40	2.3	2.2	1.73	1.75

** Based on Net generation

	Name of Indicator	Unit	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
	Direct Greenhouse Emissions (Scope-1)						
Emissions	CO_2 (Coal Stations)	MT	19,22,28,262	20,61,08,871	22,34,00,199	21,74,55,761	22,80,61,009
Emissions	CO_2 emission intensity (Coal Stations)**	Gm/Kwh	973	968.9	970.50	981.44	972
Emissions	CO_2 (Gas Stations)	MT	88,08,232	69,42,090	82,71,286.2	37,66,734	39,25,755
Emissions	CO_2 emission intensity (Gas Stations)**	Gm/Kwh	459	553.3	455	452.71	459
	** Based on Net generation						
	Indirect Greenhouse Emissions (Scope-2)						
Emissions	Renewable Energy consumed	mWh	-	-	-	-	566.60
Emissions	Non renewable Energy consumed	mWh	-	-	-	-	30410.50
Emissions	Total scope 2 emission	MT	-	-	-	-	29498
	Ozone Depleting Substances						
Emissions	ODS	CFC-11 equivalent (Kg)	2,404	1,747.21	1,099.03	1,026.56	1,084.89
	Non Hazardous						
Water Material	Misc. Ferrous Scrap	MT	26,271	18,109	15,268.76	20,207	44,305.72
Water Material		mg/Kwh	114.69	75.22	63.93	80.79	169.65
Water Material	Non Ferrous Scrap	MT	893	2,077	2,385.6	714.667	2,304.97
Water Material		mg/Kwh	3.83	8.6	9.98	2.8577	8.82
	Hazardous						
Water Material	PCB	MT	0	0	0	0	0
Water Material	Used Batteries	MT	115	154	136.41	138.55	162.515
Water Material		Kg/MU	0.49	0.64	0.506	0.554	0.62
Water Material	Spent Resin	Lt	27,880	44,024	28,170	65,900	78,405
Water Material		ml/MU	136	182.88	117.95	263.749	300.225
Water Material	Used lube oil	KL	1,012	2,385	700.66	1,437.36	543.46
Water Material		Lt/MU	4.34	9.9	2.94	5.747	2.08
Water Material	Transformer Oil	KL	230	591.35	227.61	253.76	203.30
Water Material		Lt/MU	0.99	2.45	0.99	1.046	0.78
Water Material	Bio-medical waste	Kg	19,565	26,405	14,232	19,973.6	26,628.81

Name of Indicator	Unit	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Parental Leave						
Total number of employees that took parental leave	Male	-	-	-	-	717
	Female	-	-	-	-	91
Total number of employees that returned to work in the reporting period after parental leave ended	Male	-	-	-	-	717
	Female	-	-	-	-	91
Total number of employees that work after returned to parental leave ended that were still employed 12 months after their return to work	Male	-	-	-	-	717
	Female	-	-	-	-	91
Return to work rate	Male	-	-	-	-	100%
	Female	-	-	-	-	100%
Retention rate	Male	-	-	-	-	100%
	Female	-	-	-	-	100%
		Employee Turnover				
Gender Diversity	Male	154	237	217	222	128
	Female	20	18	27	21	11
Age Diversity	=<30 yr	143	115	144	140	71
	30<50 yr	28	57	45	53	39
	>=50 yr	3	83	55	50	29
Region Wise Turnover	CC	9	44	40	49	52
	NORTH	24	71	59	48	17
	NATIONAL CAPITAL	7	18	14	20	3
	SOUTH	18	9	16	49	17
	EAST - I	21	28	26	12	14
	EAST - II	16	21	19	23	13
	WEST - I	25	24	24	12	10
	WEST - II	38	28	19	25	8
	HYDRO	13	5	6	4	5
	MINING	3	7	4	1	0
	TOTAL	174	255	227	243	139
Attrition Data	CC	0.47	1.98	1.77	2.24	2.89
	NORTH	1.29	1.33	1.13	0.94	0.36
	NATIONAL CAPITAL (DBF)	0.53	0.75	0.80	1.04	0.22
	SOUTH	1.28	0.39	0.70	1.93	0.71

Name of Indicator	Unit	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Attrition Data	EAST - I	1.33	0.87	0.84	0.78	0.52
	EAST - II	1.47	0.93	0.84	1.07	0.62
	WEST - I	2.98	1.76	1.50	0.69	0.74
	WEST - II	1.79	1.01	0.68	0.87	0.27
	HYDRO	3.43	1.20	1.55	1.09	1.37
	MINING	1.54	3.95	2.38	0.58	0
	TOTAL*(Excel JV & Subsidiary)	1.37	1.13	1.04	1.11	0.70
Gen/ Employee	MU	9.96	10.72	11.19	12.16	13.47
Man/MW*	Ratio	0.63	0.61	0.55	0.51	0.44
Training imparted to employees (Nos)						
Executives	Male	9,479	7,766	7,322	8,576	8,231
	Female	705	420	393	530	528
Non-Executives	Male	9,718	8,896	8,439	5224	4,640
	Female	573	458	451	318	287
Total		20,475	17,540	16,605	14,648	13,686
Average no. of hours training per employee(PMI)						
Executives	Male	47.56	52.46	51.42	35.01	48.23
	Female	47.66	56.14	50.27	35.77	45.92
Non-Executives	Male	47.57	49.81	50.97	29.73	28.48
	Female	47.57	50.94	48.63	29.45	29.08
Total		47.57	51.17	51.09	33.03	41.04
Vigilance						
No. of Training Conducted in various stations	No.	19	41	51	21	25
Safety						
Reportable Accident*	Fatal	15	14	14	11	52
	Non Fatal	28	31	27	61	54
Total Workforce* (Regular+Contract)	No.	51,294	58,732	62,597	67,414	76,245
Total Man hours	Hrs	12,17,35,030	14,94,70,965	15,22,45,904	17,72,89,902	19,08,87,640
Total Man Days Lost	Days	91,216	85,911	79,731	74,261	3,08,689
Frequency Rate(FR)		0.33	0.30	0.27	0.406	0.32
Incident Rate(IR)		0.84	0.77	0.65	1.068	0.81
Injury Rate (IR)		0.07	0.06	0.05	0.0812	0.06
Occupational Disease Rate		0	0	0	0	0

Percentage of employees eligible to retire attaining age of 60 years in the next 5 and 10 years broken down by job category and by region.

Name of Indicator	Unit	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Retirement in 5 years						
CC	Executives	18.64	24.48	25.34	23.14	29.52
	Non- Executives	30.91	31.25	31.52	35.65	37.46
EAST - I	Executives	14.38	17.36	19.91	19.21	26.12
	Non- Executives	21.25	19.95	22.48	23.16	31.23
EAST - II	Executives	10.86	11.97	13.86	15.16	16.74
	Non- Executives	33.57	32.77	29.73	29.42	26.75
HYDRO	Executives	12.14	8.82	13.33	15.86	16.50
	Non- Executives	17.54	11.11	12.07	7.14	10.91
MINING	Executives	10.26	12.42	12.99	15.29	18.93
	Non- Executives	5.88	12.5	14.29	14.29	14.28
NATIONAL CAPITAL	Executives	19.54	23.38	24.36	25.09	30.18
	Non- Executives	32.78	34.63	32.05	31.91	31.37
NORTH	Executives	17.29	18.82	22.56	24.33	29.33
	Non- Executives	37.13	35.63	39.45	39.68	43.95
SOUTH	Executives	22.18	26.58	28.71	21.88	29.68
	Non- Executives	28.97	29.98	33.64	29.32	37.03
WEST - I	Executives	11.34	13.5	16.72	15.57	22.40
	Non- Executives	8.56	9.78	10.62	13.98	15.03
WEST - II	Executives	16.25	18.07	19.7	20.54	22.73
	Non- Executives	24.83	27.34	28.29	28.33	28.53
Retirement in 10 years						
CC	Executives	25.14	49.87	49.11	18.67	50.93
	Non- Executives	30.65	69.6	70.2	38.8	79.34
EAST - I	Executives	20.27	38.26	40.08	19.82	44.48
	Non- Executives	33.25	50.6	55.35	32.92	62.54
EAST - II	Executives	15.36	29.34	29.9	17.06	32.23
	Non- Executives	17.14	48.44	44.13	13.6	41.71
HYDRO	Executives	12.40	23.97	27.27	16.83	31.06
	Non- Executives	8.77	15.87	17.24	3.57	14.54
MINING	Executives	14.36	26.09	27.92	15.29	30.58
	Non- Executives	29.41	18.75	21.43	0	21.43
NATIONAL CAPITAL	Executives	23.66	47.14	46.29	17.75	47.44
	Non- Executives	24.66	63.52	62.08	33.85	69.34
NORTH	Executives	24.76	42.07	44.78	19.78	48.56
	Non- Executives	36.21	67.7	74.05	29.42	73.49
SOUTH	Executives	23.88	49.58	47.7	14.59	43.37
	Non- Executives	35.60	62.01	63.27	25.57	57.96
WEST - I	Executives	20.64	34.93	35.98	15.27	35.79
	Non- Executives	17.12	33.91	41.37	34.94	45.09
WEST - II	Executives	19.51	41.41	39.75	16.96	38.42
	Non- Executives	30.60	53.06	54.07	20.54	47.01

Awards & Accolades

Company Rankings and HR Awards

Second Prize of National Energy Conservation Award-2017 to NTPC - Mouda

NTPC- Mouda has bagged Second prize at National Energy Conservation Award-2017 in thermal Power Station Category. Hon'ble the President of India, Shri Ram Nath Kovind presented the award during the National Energy Conservation Day function held in New Delhi on 14th December, 2017. Shri Raj Kumar, GGM (Mouda) for excellence in Energy Conservation and Management, received the award. Shri R. K Singh, Hon'ble Minister of State (Independent Charge) for Power and New & Renewable Energy and Secretary to Govt. of India, Ministry of Power and senior officials of the Ministry and Bureau of Energy Efficiency were present on the occasion.

NTPC Bags Four Awards at the Scope Corporate Communication Excellence Awards 2017

NTPC Bagged four awards at the Annual SCOPE Corporate Communication Excellence Awards 2017, which included 1st Prize in Innovative Stakeholder Interface, 2nd Prize in Brand Building through Inclusive Growth Initiatives and Crisis Handling and commendation certificate for the Best Corporate Communication (Internal) today. Shri Saptarshi Roy, Director (HR) received the awards from Col Rajyavardhan Rathore, Union Minister of State for Information and Broadcasting, Govt of India. Shri Arun Kumar, Secretary, Ministry of Mines and senior office bearers of SCOPE were also present. Many private and public sector organisations were also awarded on the occasion.

Healthy Workplace Platinum category Award 2017

AROGYA WORLD HEALTHY WORKPLACE CONFERENCE & AWARDS 2017

SCOPE award for RTI Act 2005

NTPC has been given SCOPE Award for RTI Act 2005 Compliance at SCOPE Meritorious Awards. The Award was received by Shri Gurdeep Singh, CMD, NTPC from Shri Pranab Mukherjee, President of India at a function held in New Delhi on 11th Apri, 2017. Shri Anant Geete, Union Minister of Heavy Industries and Public enterprises and Shri Babul Supriyo, Minister of State for Heavy Industries and Public Enterprises were present.

NTPC best in PSU - Great Places to Work 2017

In a study carried out by Great Place to Work and The Economic Times, NTPC has been recognized for being among the best in the Industry - Public Sector Company to work for the year 2017 on 1st July 2017. NTPC is overall ranked 38 among 100 organizations across the country who participated in the assessment of the study - "India's Best Companies to Work for 2017". The award was received by Shri S Roy, Director (HR) in a function held in Mumbai

India Pride Award for NTPC

NTPC, the largest power utility of country has been awarded for 'Excellence in Maharatna' Category at India Pride Awards by Dainik Bhaskar on 28th March 2018 in New Delhi. The Award was received by Shri A. N. Verma, Executive Director (HR) from Shri Dharmendra Pradhan, Hon'ble Union Minister of Petroleum and Natural Gas, Skill Development & Entrepreneurship and
Shri Shivraj Singh Chouhan, Hon'ble Chief Minister of Madhya Pradesh.

NTPC receives the prestigious ATD Best 2017 Award

TPC has received the prestigious Association for Talent Development (ATD) Best 2017 Award - a globally respected award in the Learning & Development and Talent Development space. This global award is conferred by the ATD USA to the organisations that demonstrate enterprise-wide excellence in L&D and Talent Development area. 40 organisation across the globe were conferred the award this year.

NTPC ranked 18th in this list. Shri A. K. Bhatnagar, ED (PMI) and Shri D. M. R. Panda, AGM (CMD Sectt.) received the award on behalf of NTPC in a glittering ceremony held at Washington DC on 5th October, 2017.

NTPC Corporate Communication Wins PRCI Award

NTPC bags a total of 10 awards at the 'PRCI Annual Collateral awards 2018'. Here is the list of winners category wise -

NTPC Corporate Centre –

Gold for motivational communication

Silver for e-magazine

Bronze for crisis communication

NTPC SRHQ -

Gold for Corprate Film (Solar)

NTPC- NPGC

Brochure - Appreciation Award

NTPC Vindhyachal –

Gold for Public Service Advertisement

Silver for Start-up Idea of the Year

NTPC Rihand -

Silver for Rural or Development Communication

Bronze for Govt. Communication

NTPC WRHQ-I

Bronze - E newsletter

The awards were presented recently in Pune by Shri Dilip Kamle, Hon'ble Minister for Social Justice & Excise and Shri Sandeep Garg, Commissioner, Income Tax, Govt. of Maharashtra. The awards were received by the respective PR professionals of NTPC. Various private/public organizations/advertising agencies/PR agencies participated in the awards.

BML Munjal Award 2018 (Sustained Excellence Category)

BML MUNJAL AWARDS
Business Excellence through Learning & Development

Dun & Bradstreet award to NTPC in the Power Generation category on 02.11.2017

NTPC Limited was presented with the Dun & Bradstreet award in the Power Generation category at a glitering event held at Mumbai on 2nd November, 2017. The award was presented by Shri Nitin Gadkari, Honourable Union Minister of Road Transport & Highways, Shipping and Water Resources, River Development & Ganga Rejuvenation, Govt of India. Shri P. Srinivas, GM (OS) NTPC, WRIHQ, Mumbai received the award on behalf of NTPC.

Dun & Bradstreet, the world's leading knowledge provider has been consistently tracking crucial sectors of the indian economy for over two decades. As a part of this endeavour, Dun & Bradstreet has instituted the Infra Awards to recognize the achievements of India's leading infrastructure companies.

First Prize of National Energy Conservation Award-2017 to NTPC KAWAS

NTPC Kawas has bagged first prize of the National Energy Conservation Award-2017 in Gas Power Station Category. Hon'ble the President of India, Shri Ram Nath Kovind presented the award during the National Energy Conservation Day function held in New Delhi on 14th December,2017. The award was received by Shri C V Subramanian, General Manager (Kawas Gas Power Project) for excellence in Energy Conservation and Management. Shri R. K Singh, Hon'ble Minister of State (Independent Charge) for Power and New & Renewable Energy and Secretary to Govt. of India, Ministry of Power and senior officials of the Ministry and Bureau of Energy Efficiency were present on the occasion.

ATD BEST Award 2017 & 2018

atd BEST

atd Association for Talent Development

GRI Standard Content Index

GRI Standard	Disclosure Name	Description of Disclosure	Page Number	Reason for Omission	External Assurance
GRI 102: General Disclosures 2016					
1. Organizational profile	102-1	Name of the organization	07		Yes
	102-2	Activities, brands, products, and services	08		Yes
	102-3	Location of headquarters	Initial Page		Yes
	102-4	Location of operations	15		Yes
	102-5	Ownership and legal form	07		Yes
	102-6	Markets served	83		Yes
	102-7	Scale of the organization	Initial Page		Yes
	102-8	Information on employees and other workers	99		Yes
	102-9	Supply chain	13		Yes
	102-10	Significant changes to the organization and its supply chain	Initial Page		Yes
	102-11	Precautionary Principle or approach	22		Yes
	102-12	External initiatives	07		Yes
	102-13	Membership of associations	23		Yes
2. Strategy	102-14	Statement from senior decision-maker	Initial Page		
	102-15	Key impacts, risks, and opportunities	24-25		Yes
3. Ethics and integrity	102-16	Values, principles, standards, and norms of behavior	21		Yes
	102-17	Mechanisms for advice and concerns about ethics	21-22		Yes
4. Governance	102-18	Governance structure	17		Yes
	102-19	Delegating authority	20		Yes
	102-20	Executive-level responsibility for economic, environmental, and social topics	20		Yes
	102-21	Consulting stakeholders on economic, environmental, and social topics	26-30		Yes
	102-22	Composition of the highest governance body and its committees	19		Yes
	102-23	Chair of the highest governance body	17		Yes
	102-24	Nominating and selecting the highest governance body	17		Yes
	102-25	Conflicts of interest	18		Yes
	102-26	Role of highest governance body in setting purpose, values, and strategy	20		Yes
	102-27	Collective knowledge of highest governance body	78-79		Yes
	102-28	Evaluating the highest governance body's performance	17		Yes
	102-29	Identifying and managing economic, environmental, and social impacts	19		Yes
	102-30	Effectiveness of risk management processes	24-25		Yes

GRI Standard	Disclosure Name	Description of Disclosure	Page Number	Reason for Omission	External Assurance
GRI 102: General Disclosures 2016					
	102-31	Review of economic, environmental, and social topics	19		Yes
	102-32	Highest governance body's role in sustainability reporting	Initial Page		Yes
	102-33	Communicating critical concerns	24		Yes
	102-34	Nature and total number of critical concerns	24		Yes
	102-35	Remuneration policies	18		Yes
	102-36	Process for determining remuneration	18		Yes
	102-37	Stakeholders' involvement in remuneration	18		Yes
	102-38	Annual total compensation ratio	18		Yes
	102-39	Percentage increase in annual total compensation ratio	18		Yes
5. Stakeholder engagement	102-40	List of stakeholder groups	26		Yes
	102-41	Collective bargaining agreements	68		Yes
	102-42	Identifying and selecting stakeholders	26-30		Yes
	102-43	Approach to stakeholder engagement	26-30		Yes
	102-44	Key topics and concerns raised	28-30		Yes
6. Reporting practice	102-45	Entities included in the consolidated financial statements	Initial Page		Yes
	102-46	Defining report content and topic Boundaries	Initial Page		Yes
	102-47	List of material topics	31-36		Yes
	102-48	Restatements of information	Initial Page		Yes
	102-49	Changes in reporting	Initial Page		Yes
	102-50	Reporting period	Initial Page		Yes
	102-51	Date of most recent report	Initial Page		Yes
	102-52	Reporting cycle	Initial Page		Yes
	102-53	Contact point for questions regarding the report	Initial Page		Yes
	102-54	Claims of reporting in accordance with the GRI Standards	Initial Page		Yes
	102-55	GRI content index	01		Yes
	102-56	External assurance	158-163		Yes
Material Topics					
GRI 201: Economic performance					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	31-36		Yes
	103-2	The management approach and its components	31-36		Yes
	103-3	Evaluation of the management approach	31-36		Yes

GRI Standard	Disclosure Name	Description of Disclosure	Page Number	Reason for Omission	External Assurance
GRI 201: Economic performance 2016 distributed	201-1	Direct economic value generated	38		Yes
	201-2	Financial implications and other risks and opportunities due to climate change	47		Yes
	201-3	Defined benefit plan obligations and other retirement plans	73		Yes
	201-4	Financial assistance received from government	40		Yes
GRI 203: Indirect Economic Impacts					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	33-36		Yes
	103-2	The management approach & its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
GRI 203: Indirect Impacts 2016	203-1	Infrastructure investments and services supported	39		Yes
	203-2	Significant indirect economic impacts Economic	93		Yes
GRI 204: Procurement practices					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	33-36		Yes
	103-2	The management approach & its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
GRI 204:Procurement practices 2016	204-1	Proportion of spending on local suppliers	14		Yes
GRI 205: Anti-corruption					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach & its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
GRI 205: Anti-corruption 2016	205-1	Operations assessed for risks related to corruption	22		Yes
	205-2	Communication and training about anti-corruption policies and procedures	22		Yes
	205-3	Confirmed incidents of corruption and actions taken	21		Yes
	308-2	Negative environmental impacts in the supply chain and actions taken	66		Yes
GRI 301: Materials					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach and its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
GRI 301: Materials 2016	301-1	Materials used by weight or volume	95		Yes
	301-2	Recycled input materials used	95		Yes
	3013	Reclaimed products & their packaging materials	NA		

GRI Standard	Disclosure Name	Description of Disclosure	Page Number	Reason for Omission	External Assurance
GRI 302: Energy					
GRI 103: Management Approach 2016 GRI 302: Energy 2016	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach and its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
	302-1	Energy consumption within the organization	95-96		Yes
	302-2	Energy consumption outside of the organization	95-96		Yes
	302-3	Energy intensity	95-96		Yes
	302-4	Reduction of energy consumption	95-96		Yes
	302-5	Reductions in energy requirements of products and services	95-96		Yes
GRI 303: Water					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach and its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
GRI 303: Water 2016	303-1	Water withdrawal by source	49		Yes
	303-2	Water sources significantly affected by with drawal of water	49-50		Yes
	303-3	Water recycled and reused	49-50		Yes
GRI 304: Biodiversity					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach & its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
GRI 304: Biodiversity 2016	304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	54		Yes
	304-2	Significant impacts of activities, products, and services on biodiversity	54		Yes
	304-3	Habitats protected or restored	53-54		Yes
	304-4	IUCN Red List species & national conservation list species with habitats in areas affected by operations	52		Yes
GRI 305: Emission					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach and its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
GRI 305: Emissions 2016	305-1	Direct (Scope 1) GHG emissions	98		Yes
	305-2	Energy indirect (Scope 2) GHG emissions	98		Yes
	305-3	Other indirect (Scope 3) GHG emissions	59		Yes
	305-4	GHG emissions intensity	98		Yes
	305-5	Reduction of GHG emissions	98		Yes

GRI Standard	Disclosure Name	Description of Disclosure	Page Number	Reason for Omission	External Assurance
	305-6	Emissions of ozone-depleting substances (ODS)	98		Yes
	305-7	Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	97		Yes
GRI 306: Effluents and waste					
GRI 103: Management Management Approach 2016	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach & its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
GRI 306: Effluents and waste 2016	306-1	Water discharge by quality and destination	51		Yes
	306-2	Waste by type and disposal method	60		Yes
	306-3	Significant spills	51		Yes
	306-4	Transport of hazardous waste	60		Yes
	306-5	Water bodies affected by water discharges	49		Yes
GRI 307: Environment Compliance					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach and its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
GRI 307: Environmental Compliance 2016	307-1	Non-compliance with environmental laws and regulations	66		Yes
GRI 401: Employment					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach and its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
GRI 401: Employment 2016	401-1	New employee hires and employee turnover	99-100		Yes
	401-2	Benefits provided to full-time employees that are not provided to temporary or parttime employees	73		Yes
	401-3	Parental leave	99		Yes
GRI 402: Labor Management relations					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach and its components	33-36		Yes
	103-3	Evaluation of the management approach	73		Yes
GRI 403: Occupational Health & Safety					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach and its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
GRI 403:Occupational health and safety 2016	403-1	Workers representation in formal joint manage -ment worker health and safety committees	77		Yes

GRI Standard	Disclosure Name	Description of Disclosure	Page Number	Reason for Omission	External Assurance
	403-2	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	75		Yes
	403-3	Workers with high incidence or high risk of diseases related to their occupation	76		Yes
	403-4	Health and safety topics covered in formal agreements with trade unions	77		Yes
GRI 404: Training and Education					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach and its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
GRI 404: Training and Education 2016	404-1	Average hours of training per year per employee	81		Yes
	404-2	Programs for upgrading employee skills and transition assistance programs	79-80		Yes
	404-3	Percentage of employees receiving regular performance and career development reviews	81		Yes
GRI 405: Diversity and Equal opportunity					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach and its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
GRI 405:Diversity and Equal opportunity 2016	405-1	Diversity of governance bodies and employees	72		Yes
	405-2	Ratio of basic salary and remuneration of women to men	72		Yes
GRI 408: Child labor					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach and its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
GRI 408: Child labor 2016	408-1	Operations and suppliers at significant risk for incidents of child labor	69		Yes
GRI 409: Forced or compulsory labor					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach and its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
GRI 409: Forced or Compulsory labor 2016	409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	69		Yes
GRI 413: Local Communities					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach & its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes

GRI Standard	Disclosure Name	Description of Disclosure	Page Number	Reason for Omission	External Assurance
GRI 413: local communitie 2016	413-1	Operations with local community engagement, impact assessments, and development programs	89-91		Yes
	413-2	Operations with significant actual and potential negative impacts on local communities	89-91		Yes
GRI 414: Supplier social assessment					
GRI 103: Management	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach & its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
GRI 414: Supplier social assessment 2016	414-1	New suppliers that were screened using	69		Yes
	414-2	Negative social impacts in the supply chain social criteria	89-90		Yes
GRI 416: Customer health and safety					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach & its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
GRI 416: Customer health and safety 2016	416-1	Assessment of the health and safety impacts of product and service categories	82		Yes
	416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	82		Yes
GRI 417: Marketing and labeling					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic & its Boundary	NA		
	103-2	The management approach & its components	NA		
	103-3	Evaluation of the management approach	NA		
GRI 417: Marketing and Labeling 2016	417-1	Requirements for product and service information and labeling	NA		
	417-2	Incidents of non-compliance concerning product and service information and labeling	83		Yes
	417-3	Incidents of non-compliance concerning marketing communications	83		Yes
GRI 419: Socio-economic compliance					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic & its Boundary	33-36		Yes
	103-2	The management approach & its components	33-36		Yes
	103-3	Evaluation of the management approach	33-36		Yes
GRI 419: Socio economic compliance 2016	419-1	Non-compliance with laws and regulations in the social and economic area	91-92		Yes

GRI Standard Index: EUSS Compliant

NDARD DISCLOSURES FOR THE ELECTRIC UTILITY SECTOR (EUSS)					
General Standard Disclosures	**Description of Disclosures**	**Section reference**		**Omissions (if any)**	**External assurance reference**
		Section Name	**Page Number**		
Organizational Profile					
G4-10 (ADR)	Total contractor workforce	Social Performance	70		Yes
G4-11 (ADR)	Percentage of contractor employees working for the organization covered by collective bargaining agreement by country or regulatory regime	Social Performance	68		Yes
G4-EU1	Installed capacity, broken down by primary energy source and by regulatory regime.	Organization's Profile	10		Yes
G4-EU2	Net energy output broken down by primary energy source and by regulatory regime.	Organization's Profile	10		Yes
G4-EU3	Number of residential, industrial, institutional and commercial customer accounts.		NA	NTPC is not the business of power distribution and so, it does not directly deal with the demand side management. Hence, the disclosures is not applicable to the organization	
G4-EU4	Length of above and underground transmission and distribution lines by regulatory regime.		NA		
G4-EU5	Allocation of CO2 emissions allowances or equivalent, broken down by carbon trading framework.	Environmental Performance	47		Yes
Economic					
Availability and Reliability					
G4-DMA	Management approach	Social Performance	82		Yes
G4-EU10	Planned capacity against projected electricity demand over the long term, broken down by energy source and regulatory regime.	Social Performance	96		Yes
Demand-Side Management					
G4-DMA	Management approach	Social Performance	83		Yes
Research and Development					
G4-DMA	Management approach	Materiality Analysis	35		Yes

NDARD DISCLOSURES FOR THE ELECTRIC UTILITY SECTOR (EUSS)

General Standard Disclosures	Description of Disclosures	Section reference		Omissions (if any)	External assurance reference
		Section Name	Page Number		
Plant Decommissioning					
G4-DMA	Management approach	Materiality Analysis	36		Yes
System Efficiency					
G4-EU11	Average generation efficiency of thermal plants by energy source and by regulatory regime.	Organizational Profile	9-10		Yes
G4-EU12	Transmission and distribution losses as a percentage of total energy		NA	The company is not directly involved in the business of transmission and distribution.	
Environmental					
Material					
G4-DMA	Management approach	Environmental Performance	44		Yes
G4-EN11 (ADR)	Materials used by weight or volume	Key Data at a Glance	95		Yes
Water					
G4-DMA	Management approach	Environmental Performance	49		Yes
G4-EN8 (ADR)	Total water withdrawal by source	Environmental Performance	49		Yes
Biodiversity					
G4-DMA	Management approach	Materiality Analysis	36		Yes
G4-EN12 (ADR)	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas	Environmental Performance	52-54		Yes
G4-EU13	Biodiversity of offset habitats compared to the biodiversity of the affected areas	Environmental Performance	52-54		Yes
Emissions					
G4-EN15 (ADR)	Direct greenhouse gas (GHG) emissions (scope1)	Key Data at a Glance	98		Yes
G4-EN16 (ADR)	Energy indirect greenhouse gas (GHG) emissions (scope 2)	Key Data at a Glance	98		Yes
G4-EN21 (ADR)	NOx, SOx, and other significant Air Emissions	Key Data at a Glance	97-98		Yes

General Standard Disclosures	Description of Disclosures	Section reference		Omissions (if any)	External assurance reference
		Section Name	Page Number		
Effluents and Waste					
G4-DMA	Management approach	Environmental Performance	60		Yes
G4-EN22 [ADR]	Total water discharge by quality and destination	Environmental Performance	51		Yes
G4-EN23 [ADR]	Total weight of waste by type and disposal method	Environmental Performance	60		Yes
Social					
Labour Practice and Decent Work					
Employment					
G4-DMA	Management approach	Social Performance	70		Yes
G4-LA1 [ADR]	Total number and rates of new employee hires and employee turnover by age group, gender, and region	Key Data at a Glance	99-100		Yes
G4-EU15	Percentage of employees eligible to retire in the next 5 and 10 years broken down by job category and by region	Key Data at a Glance	101		Yes
G4-EU17	Days worked by contractor and subcontractor employees involved in construction, operation & maintenance activities	Key Data at a Glance	100		Yes
G4-EU18	Percentage of contractor and subcontractor employees that have undergone relevant health and safety training	Social Performance	75		Yes
Occupational Health and Safety					
G4-LA6 [ADR]	Type of injury and rates of injury, occupational diseases, ost days, l and absenteeism, and total number of work related fatalities, by region and by gender	Social Performance	75		Yes
Human Rights					
Freedom of Association and Collective Bargaining					
G4-DMA		Social Performance	68		Yes
Society					
Local Communities					
G4-DMA		Social Performance	89		Yes
G4-EU22	Number of people physically or economically displaced and compensation, broken down by type of project	Social Performance	90		Yes

General Standard Disclosures	Description of Disclosures	Section reference		Omissions (if any)	External assurance reference
		Section Name	Page Number		
Disaster/Emergency Planning and Response					
G4-DMA	Management approach	Materiality Analysis	34		Yes
Product Responsibility					
Customer Health and Safety					
G4-DMA	Management approach	Social Performance	82		Yes
G4-EU25	Number of injuries and fatalities to the public involving company assets including legal judgments, settlements and pending legal cases of diseases	Social Performance	82		Yes
Access					
G4-DMA	Management approach	Social Performance	82		Yes
G4-EU26	Percentage of population unserved in licensed distribution or service areas	NA		NTPC's core business is generation of electricity and the company is not directly involved in the business of transmission and distribution. Hence, this indicator is not applicable to the organization.	
G4-EU27	Number of residential disconnections for non-payment, broken down by duration of disconnection and by regulatory regime		NA		
G4-EU28	Power outage frequency		NA		
G4-EU29	Average power outage duration		NA		
G4-EU30	Average plant availability factor by energy source and by regulatory regime	Key Data at a Glance	96		Yes
Provision of Information					
G4-DMA	Practices to address languages, culture, low literacy and disability related barriers to accessing and safety using electricity and customer support services	Social Performance	82		Yes

Glossary

Abbr.	Details
A&N	Andaman & Nicobar
AAQMS	Ambient Air Quality Monitoring Station
ACE	Air Cooled Condenser
ACV	Actual Calorific Value
ADB	Asian Development Bank
AFGC	Ammonia Flue Gas Conditioning
AMP	Advanced Management Programme
APC	Auxiliary Power Consumption
APH	Air Pre Heater
APIO	Assistant Public Information Officer
APM	Administrative Price Mechanism
APTEL	Appellate Tribunal for Electricity
ASCI	Administrative Staff College of India
ASI	Archaeological Survey of India
AT&C	Aggregate Technical and Commercial
AWRS	Ash Water Recirculation System
BCSD	Business Council for Sustainable Development
BD	Business Development
BEE	Bureau of Energy Efficiency
BFP	Boiler Feed Pump
BG	Bank Guarantee
BHEL	Bharat Heavy Electricals Ltd.
BOP	Balance of Plant
BP	Basic Pay
BPL	Below Poverty Line
BRICS	Brazil Russia India China and South Africa
BTPS	Badarpur Thermal Power Station
BU	Billion Units
CAG	Comptroller and Auditor General of India
CAGR	Compounded Annual Growth Rate
CAPEX	Capital Expenditure
CARE	Credit Analysis and Research Ltd.
CBIP	Central Board of Irrigation & Power
CBOs	Community Based Organisations
CC	Corporate Center

Abbr.	Details
CCP	Combined Cycle Plant
CD	Community Development
CDA	Community Development Authority
CDM	Clean Development Mechanism
CDSL	Central Depository Services (India) Limited
CEA	Central Electricity Authority
CEMS	Continuous Emission Monitoring System
CenPEEP	Centre for Power Efficiency & Environment Protection
CEO	Chief Executive Officer
CERC	Central Electricity Regulatory Commission
CFC	Chlorofluoro Carbons
CFD	Computational Fluid Dynamics
CFL	Compact Fluorescent Lamps
CFO	Chief Forest Officer
CIC	Cluster Innovation Centre
CIGRE	International Council of Large Electric Systems
CII	Confederation of Indian Industry
CIL	Coal India Limited
CISF	Central Industrial Security Force
CMC	Canteen Management Committee
CMD	Chairman and Managing Director
COC	Cycles of Concentration
COP	Communication on Progress
CP	Corporate Planning
CPCB	Central Pollution Control Board
CPIO	Central Public Information Officer
CPSE	Central Public Sector Enterprise
CREDA	Chattisgarh State Renewable Energy Development Agency
CRISIL	Credit Rating Information Services of India Ltd.
CRM	Customer Relationship Management
CRO	Chief Risk Officer
CSA	Coal Supply Agreement
CSI	Customer Satisfaction Index
CSR	Corporate Social Responsibility
CTU	Central Transmission Utility

Abbr.	Details
CVO	Central Vigilance Officer
CW	Cooling Water
D&B	Dun & Bradstreet
DA	Dearness Allowance
DC	Designated Commission
DDCMIS	Distributed Digital Control Monitoring and Information System
DGH	Directorate General of Hydrocarbons
DISCOMs	Distribution Companies
DM Water	Demineralised Water
DMC	Designated Microscopy Centre
DNV	Det Norske Veritas
DOT	Directly Observed Treatment
DPE	Department of Public Enterprises
DRCs	Disability Rehabilitation Centres
DSIJ	Dalal Street Investment Journal
DSM	Demand Side Management
EA	Electricity Act
EPI	Economic Performance Indicator
ECBC	Energy Conservation Building Code
ECS	Electronic Clearing Service
ED	Executive Director
EDC	Employee Development Centre
EIA	Environmental Impact Assessment
EMC	Enhancing Managerial Competence
EMS	Environmental Management System
EN	Environmental Performance Indicator
EOC	Engineering Office Complex
EPC	Engineering Procurement Construction
EPS	Electric Power Survey
ER	Eastern Region
ERM	Enterprise Risk Management
ERMC	Enterprise Risk Management Committee
ERP	Enterprise Resource Planning
ES Certi.	Energy Saving Certificates
ESP	Electrostatic Precipitator
ETP	Effluent Treatment Plants

Abbr.	Details
EUSS	Electric Utility Sector Supplement
EVOICE	Employees Voluntary Organization for Initiative in Community Empowerment
FAPPC	Fly Ash Portland Pozzolana Cement
FGC	Flue Gas Conditioning
FICCI	Federation of Indian Chambers of Commerce and Industry
FIIs	Foreign Institutional Investors
FIs	Financial Institution
FRP	Financial Restructuring Plan
FSA	Fuel Supply Agreement
FTL	Fluorescent Tube Light
FY	Fiscal Year
GCN	Global Compact Network
GCV	Gross Calorific Value
GDP	Gross Domestic Product
GHG	Green House Gases
GJ	Giga Joules
GM	General Manager
GOI	Government of India
GPP	Gas Power Plant
GPTW	Great Place to Work
GSAs	Gas Supply Agreements
GSI	Geological Survey of India
GT	Gas Turbine
GW	Giga Watt
HAC	House Allotment Committee
H_2	Hydrogen
H_2SO_4	Sulphuric Acid
HCA	Host Country Approval
HCFC	Hydro ChloroFluoro Carbon
HCl	Hydrochloric acid
HFO	Heavy Fuel Oil
HIV	Human Immunodeficiency Virus
HMLs	High Mast Lighting
HPGCL	Haryana Power Generation Corporation Limited
HPSV	High Pressure Sodium Vapours Lamps

Abbr.	Details
HQ	Head Quarters
HR	Human Resources
HR	Human Right
HVDC	High Voltage Direct Current
HW	Hardware
IB	Intelligence Bureau
ICD	Initial Community Development
ICRA	Investment Information and Credit Rating Agency
ICT	Information and communication Technology
ICU	Intensive Care Unit
IDAAS	Integrated Data Acquisition and Analysis System
IFRF	International Electric Research Exchange
IGCAR	Indira Gandhi Centre for Advanced Research
IGCC	Integrated Gasification Combined Cycle
IGP	Inspector General of Police
IIPE	Indian Institute of Plant Engineers
IMS	Integrated Management System
IOCL	Indian Oil Corporation Limited
IPGCL	Indraprastha Power Generation Corporation Ltd.
IPMA	International Project Management Association
IPMCS	Implementation of Integrated Project Management and control system
IIP	Independent Power Producers
ISD	Investor Service Department
ISO	International Organization for Standardization
IT	Information Technology
ITES	Information Technology Enabled Services
ITIS	Industrial Training Institutes
ITRHD	Indian Trust for Rural Heritage and Development
JNNSM	Jawaharlal Nehru National Solar Mission
JV	Joint Ventures
Kg	Kilograms
KI	Kilo Litres
km	Kilometer
kwh	Kilo watt hour
kwp	kilo watt peak
LED	Light Emitting Diode

Abbr.	Details
LPG	Liquified Petroleum Gas
LOA	Letter of Award
LWA	Light Weight Aggregate
LWTP	Liquid Waste Treatment Plant
M&V	Measurement and Verification
MCM	Million Cubic Metre
MDGS	Millennium Development Goals
MDI	Management Development Institute
MF	Mutual Funds
MGR	Merry go round
MHA	Ministry of Home Affairs
ml	Milli litre
MOP	Ministry of Power
MMSCMD	Million Metric standard cubic meter per day
MNRE	Ministry of New & Renewable Energy
MOEF	Ministry of Environment and Forests
MOU	Memorandum of understanding
NBPPL	NTPC BHEL Power Project Limited
NCF	National Culture Fund
NCR	National Capital Region
NCTPP	National Capital Thermal Power Plant
NCYM	National Competition for Young Managers
NECL	North Eastern Coalfields Limited
NEFT	National Electronic Funds Transfer
NELP	New Exploration Licensing Policy
NESCL	NTPC Electric Supply Company Limited
NETRA	NTPC Energy Technology Research Alliance
NFCH	National Foundation for Communal Harmony
NGOs	Non Governmental Organizations
NHR	Net Heat Rate
NH_3	Ammonia
NIOH	National Institute for the Orthopedically Handicapped
NIT	Notice Inviting Tender
NMEEE	National Mission on Enhanced Energy Efficiency
NEFI	NTPC Executives federation of India
NRIs	Non Resident Indian

Abbr.	Details
NO_2	Nitrogen Dioxide
NOX	Oxides of Nitrogen
NR	Northern Region
NOCET	NTPC Open Competition for Executive Talent
NJPC	NTPC Joint Productivity Council
NSDL	National Security Depository Limited
NSPCL	NTPC SAIL Power Company Pvt. Limited
NVG	National Voluntary Guidelines
NVVN	NTPC Vidyut Vyapar Nigam Ltd
O&G	Oil & Grease
O&M	Operations and Maintenance
OBC (CL+NCL)	Other Backdward Class (Creamy Layer+No Creamy Layer)
ODP	Ozone Depleting Potential
ODS	Ozone Depleting substances
OHSAS	Occupational Health and Safety Assessment System
OS	Operation Services
OTSS	One Time Settlement Scheme
PADO	Performance Analysis & Diagnostic Optimization
PAF	Plant Availability Factor
PAPs	Project Affected People
PAT	Perform, Achieve and Trade
PAT	Profit After Tax
PBDIT	Profit Before Depreciation Interest and Tax
PC	Professional Circles
PDCRVM	Polarisation Deplolarisation Current-Recovery Voltage Measurement
PE	Partially Electrified
PEM	Performance Evaluation Matrix
PEPSE	Performance Evaluation of Power System Efficiency
PFC	Power Finance Corporation
PHCs	Primary Health Centre
PhD	Doctor of Philosophy
PI	Process Interface
PICs	Public Information Centre
PLC	Plant Level Committee

Abbr.	Details
PLF	Plant Load Factor
PM	Particulate Matter
PMC	Project Monitoring Committee
POP	Persistent Organic Pollutants
PMI	Power Management Institute
PMS	Paryavaran Monitoring System
PPA	Power Purchase Agreements
PPEs	Personal Protective Equipments
PR	Product Responsibility
PSDF	Power System Development Fund
PSE	Public Sector Enterprise
PSU	Public Sector Undertaking
PV	Photo Voltaic
Q4E	Quest for Excellence
QC	Quality Circle
QCFI	Quality Circle Federation of India
QMS	Quality Management System
QPR	Quarterly Progress Report
3R's	Reduce, Recycle & Reuse
R&D	Research & Development
R&R	Resettlement and Rehabilitation
RAC	Research Advisory Council
RAP	Rehabilitation Action Plan
R-APDRP	Re-Stuctured-Accelerated Power Development & Reforms Program
RCM	Reliability Centered Maintenance
RED	Regional Executive Director
REDC	Renewable Energy and Distributed Generation
RES	Renewable Energy Sources
RFD	Result Framework Document
RFID	Radio Frequency Identifier
RGCCP	Rajiv Gandhi Combined Cycle Power Project
RGGVY	Rajiv Gandhi Grameen Vidyutikaran Yojna
RJPC	Regional Joint Productivity Council
RLDC	Regional Load Dispatch Centers
RNTCP	Revised National Tuberculosis Control Programme
RO	Reverse Osmosis

Abbr.	Details
RPCs	Regional Power Committees
RPO	Renewable Purchase Obligation
RTI	Right to Information
SA-8000	Social Accountability-8000 Standard
SAC	Scientific Advisory Council
SACS	Special Analytical and Computational Sciences
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SC	Scheduled Caste
SCCL	Singareni Collieries Company Limited
SCOPE	Standing Conference of Public Enterprises
SD	Sustainable Development
SEB	State Electricity Board
SEBI	Stock Exchange Board of India
SERC	State Electricity Regulatory Commission
SES	Socio Economic Survey
SHRM	Strategic Human Resource Management
SIE	Social Impact Evaluation
SLC	Shop Level Committee
SMILE	Strategic Management Initiative for Leadership Effectiveness
SO	Society Performance Indicators
SO_2	Sulphur Dioxide
SPCB	State Pollution Control Board
SPM	Suspended Particulate Matter
SR	Southern Region
ST	Scheduled Tribes
STCS	Solar Thermal Cooking System
STP	Sewage Treatment Plant

Abbr.	Details
STPP	Super Thermal Power Plant
SW	Software
T&D	Transmission and Distribution
TAC	Township Advisory Committee
TANGE	Tamil Nadu Generation and Distribution
TEKL	Transformers and Electricals Kerala Limited
TERI	The Energy and Resources Institute
TL	Tube Light
TOR	Term of Reference
TSDF	Treatment Storage and Disposal Facilities
TSS	Total Suspended Solids
UE/DE	Un-Electrified/De-Electrified
UMPP	Ultra Mega Power Project
UN	United Nations
UNGC	United Nations Global Compact
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States agency for International Development
VAM	Vapour Absorption Machine
VDAC	Village Development Advisory Committees
VFD	Variable Frequency Drive
WBCSD	World Business Council for Sustainable Development
WCC	Water Cooled Condenser
WEC	World Energy Council
WHRB	Waste Heat Recovery Boiler
WR	Western Region

Independent Assurance Statement

To,

The Management of NTPC Limited,
NTPC Bhawan, Scope Complex 7, Institutional Area,
Lodi Road, New Delhi - 110003

Broad Objective of the Engagement

Deloitte Touche Tohmatsu India LLP ("Deloitte") has been engaged by the management of the NTPC Limited ("NTPC" or "the Company") to undertake review and issue an independent assurance statement ("Type II, High Level") on the Company's Annual Sustainability Report 2017-18 ("the Report").

Reporting Criteria

NTPC Limited applies its sustainability performance reporting criteria, derived from the 'In-accordance Comprehensive' option as per Sustainability Reporting Standards of GRI including the electric utilities sector disclosures.

The sustainability performance disclosures as per the GRI Standards 2016, subject to assurance are listed below.

General Disclosures	Topic Specific Disclosures - Economic
• **Organizational Profile:** 102-1 to 102-8, 102-11 to 102-13 • **Strategy:** 102-14 & 102-15 • **Ethics and Integrity:** 102-16 • **Governance:** 102-18 to 102-20, 102-22 to 102-25, 102-27, 102-32 to 102-34 • **Stakeholder Engagement:** 102-40 to 102-44 • **Reporting Practice:** 102-45 to 102-56 Management Approach: 103-1 to 103-3	• **Economic Performance:** 201-1 and 2013 • **Indirect Economic Impact:** 203-1 and 203-2 • **Anti-Corruption:** 205-1 to 205-3 • **Anti-competitive behaviour:** 206-1
Topic Specific Disclosures- Environment	**Topic Specific Disclosures- Social**
• **Materials:** 301-1 • **Energy:** 302-1, 302-3 • **Water:** 303-1 • **Biodiversity:** 304-1 and 304-3 • **Emissions:** 305-1, 305-4 to 305-7 • **Effluents and Waste:** 306-1, 306-2 • **Environmental Compliance:** 307-1	• **Employment:** 401-1 and 401-2 • **Labor/Management Relations:** 402-1 • **Occupational Health and Safety:** 403-1, 403-2 • **Training and Education:** 404-1 to 404-3 • **Diversity and Equal Opportunity:** 405-1 • **Non-Discrimination:** 406-1 • **Child Labor:** 408-1 • **Forced or Compulsory Labor:** 409-1 • **Local Communities:** 413-1

Limitation and Exclusions

The GRI disclosures not mentioned in the above table are excluded from the scope of assurance. Our work was limited to the Company's solely owned operational power generation facilities and offices located in India. Performance data related to Subsidiaries, Joint Ventures ("JVs"), Company's under-construction projects, coal-mines were excluded from the assurance activity. Following aspects, were also excluded from the scope of assurance.

- Data and information related to activities outside defined reporting period or scope
- Company's position statements (including any expression of opinion, belief, market share, aspiration, expectation, aim or future intention provided by the company and assertions related to Intellectual Property Rights (IPRs) and other competitive issues)
- Historic text which was unchanged from previous years and did not relate to ongoing activities
- Financial data taken from the Company's 42nd Annual Report 2017-18 which is audited by a third party, including but not limited to any statements relating to tax, sales and financial investments
- Appropriateness of commitments and objectives chosen by the Company
- Any comparison in any form of performance related to any of the SPIs of FY 2017-18 with SPIs of other financial years
- Design standards, features or technical assessment of the capacity, efficiency and efficacy of the technologies or utilities of the Company
- GRI Standard disclosure topics in the report other than those mentioned in the above section.

This independent assurance statement should not be relied upon to detect errors, omissions or misstatements that may exist.

Assurance Procedures

Our multi-disciplinary team of sustainability professionals and assurance specialists carried out the assurance activities. Type- II High level of assurance, necessitated review of processes, systems and competencies applied to compile data in different aspects of sustainability disclosures.

Our procedures were designed to obtain sufficient and appropriate evidence in order to determine that the selected performance information is not materially misstated. We undertook following activities as part of the assurance engagement:

- Interviews with NTPC personnel responsible for data collection, collation and reporting
- Verification of disclosures through site visits to operational locations as specified in the project boundary. It also included test of data, analytical procedures, review of records and documentation submitted by the company to arrive at the Sustainability performance indicator ("SPIs") data presented in their Report. We visited below

mentioned NTPC locations and were free to choose sample as per our professional judgement:

  - Corporate office, CGO Complex, New Delhi
  - Engineering office, Noida, Uttar Pradesh
  - Koldam, Himachal Pradesh
  - Dadri, Uttar Pradesh
  - Faridabad, Haryana
  - Ramagundam, Telangana
  - Vindhyachal, Madhya Pradesh
  - Power Management Institute (PMI), Noida, Uttar Pradesh
  - Energy Technology Research Alliance ("NETRA"), Greater Noida, Uttar Pradesh
- Evaluation of internal systems and processes, including their internal controls used for data collection and reporting of the specific standard disclosures of material topics
- Assessment of stakeholder engagement process through personal interviews and review of relevant documentation
- Review internal approach towards risk identification and mitigation based on response received from key stakeholders
- Assessment of data reliability and

accuracy through traceability of source documentation

- Evaluation of the draft Report and GRI Index against requirement of GRI Standards
- Feedback on the draft Report in accordance with scope of assurance

Our assurance procedure broadly included assessment of risks related to material misstatement, if any, of SPIs related to material topics and disclosures in the Report. We have not provided assurance to the approach and methodology used for populating sustainability performance disclosures. We have not carried out investigation or forensic exercise as part of this engagement .

Adherence to AA1000AS Principles

Inclusivity	NTPC has identified various key stakeholder groups and the engagement mechanism for each of them along with their specific priorities. NTPC conducts stakeholder engagement exercise for its key stakeholders through which it expresses its intent of engagement with stakeholders and responds to their expectations and concerns. As per the information provided by NTPC we are not aware of any matter that would lead us to conclude that NTPC has not applied the inclusivity principle for its key stakeholder groups. However, NTPC may improvise the process of feedback collection from its key stakeholders on overall sustainability strategy around the company
Materiality	NTPC has used the same materiality assessment exercise that was previously carried out, as it was deemed to continue to be appropriate and relevant to the business. NTPC has made efforts to streamline its annual sustainability reporting to ensure greater accessibility of content and focus on what is most important to stakeholders. However, based on our review of the materiality assessment exercise adopted by NTPC, we identified that the material topics were identified based on internal risk assessment for the company. The same is not inline with the requirement of materiality analysis as per GRI Standards. Hence, we recommend NTPC to undertake materiality assessment exercise afresh next year in accordance with the GRI Standards to update its material topics and ensure relevance
Responsiveness	Based on our review, nothing has come to our attention that causes us to believe that NTPC has not demonstrated its commitment to understand stakeholders concerns, as evident from its various stakeholder engagement mechanisms, which have been applied at select corporate, regional and facility levels

Conclusions

Based on our discussions with relevant internal and external stakeholders of NTPC; documents and records made available to us; information and explanations provided to us by NTPC; and consultations with the local communities in connection with CSR Projects, material errors or misstatements identified during the engagement were corrected before the report was published.

Based on our assurance procedures and in line with the boundary, scope and limitations, we conclude that the selected sustainability parameters and disclosures presented in the Report by NTPC are fairly represented.

Recommendations

NTPC may consider to implement following recommendations:

1. Conduct materiality assessment exercise afresh in accordance with requirement of the GRI Standard's reporting principle (GRI 101: Foundation)
2. Enhance traceability of information by bringing betterment in SPI related documentation maintained at operational locations
3. For water and non-GHG emission disclosures, bring uniformity in accounting and reporting of SPIs across operational locations. The company may consider realigning internal monitoring mechanism to report total water withdrawal quantity as per the GRI Standard (GRI 303: Water). At present, the company reports water consumption quantity only for closed cycle operational facilities
4. Make provisions to proactively measure oil and chemical spills and maintain documentation on spill management at operational locations. The company may consider to implement annual or biannual third party environmental audits for proactive identification of environmental risks related to its operational facilities
5. Undertake independent assessment to understand impact of operation on biodiversity in nearby operational facilities
6. Provide focused training on human rights policies to employees, associates and security staff
7. Initiate a process to undertake environmental and social supplier assessments for significant suppliers
8. Best practices adopted in certain plants can be replicated across other plants through creation of intra company knowledge sharing platform

Areas of further improvement wherever identified have been brought before the attention of the management and observations have been provided in the management report which has been separately submitted to NTPC.

Responsibility of NTPC Ltd

The Company's management is responsible for the following:

- Information and its presentation in the Report
- Identification and engagement with stakeholders
- Identification of key issues
- Presentation of information and establishing and maintaining relevant and appropriate performance management systems and internal framework to facilitate collection, calculation, aggregation and validation of the data with respect to GRI Standards based SPIs, included in the reported and reported to us for obtaining assurance Deloitte was not involved in drafting of the report.

Our Responsibility

In accordance with the terms of our engagement, this Assurance Statement is solely to NTPC. To the full extent of NTPC for our work or for the opinion that we have formed on the basis of work carried out by us. We have no duty of care or any liability to any third party and cannot accept any responsibility for reliance by them, in acting or refraining from acting on the contents of our Assurance Statement. Any queries

that may arise by virtue of this independent assurance opinion statement or matters relating to it should be addressed to NTPC only.

Extent permitted by law, we do not accept or assume any responsibility to anyone, other than the management of NTPC for our work or for the opinion that we have formed on the basis of work carried out by us. We have no duty of care or any liability to any third party and cannot accept any responsibility for reliance by them, in acting or refraining from acting on the contents of our Assurance Statement. Any queries that may arise by virtue of this independent assurance opinion statement or matters relating to it should be addressed to NTPC only.

Our Independence and Competencies in Providing Assurance

Our team consisted professionals having relevant experience in providing assurance of sustainability indicators and sustainability reports. We have complied with Deloitte's independence policies, which addresses the requirements of the IFAC Code of Ethics for professional accountants in the role as independent auditors. We also confirm that we have maintained our independence in the report and there were no events or prohibited services related to the assurance engagement which could impair our independence.

Shubhranshu Patnaik
(Partner)

Deloitte.

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NTPC

A Maharatna Company

NTPC Limited

(A Govt. of India Enterprise)

NTPC Bhawan, Core-7, SCOPE Complex,
7, Institutional Area, Lodhi Road,
New Delhi-110003

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