



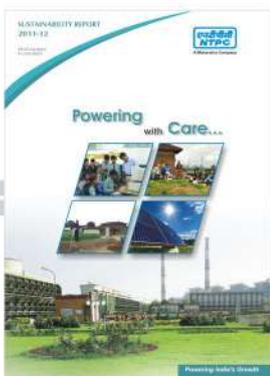
Sustainability Report
FY19



**SUSTAINING GROWTH
CONSERVING RESOURCES**



Our Sustainability Journey



FY12

Sustainability Report
GRI G3
Application Level B

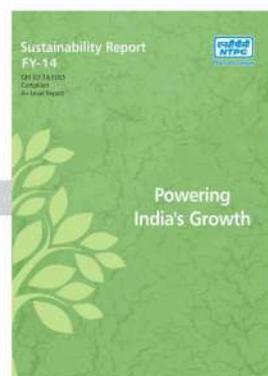
External Assurance
AA1000AS



FY13

Sustainability Report
GRI G3.1 & EUSS
Application Level A+

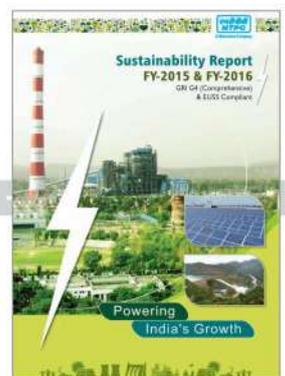
External Assurance
AA1000AS



FY14

Sustainability Report
GRI G3.1 & EUSS
Application Level A+

External Assurance
AA1000AS



FY15 & 16

Sustainability Report
GRI G4 & EUSS
Comprehensive
Type 1 Moderate

External Assurance
AA1000AS



Hon'ble Prime Minister Shri Narendra Modi dedicated Dulanga Coal Mine to Nation while inaugurating Jharksuguda Airport



FY17

Sustainability Report
GRI G4 & EUSS
Comprehensive
Type 1 High Level

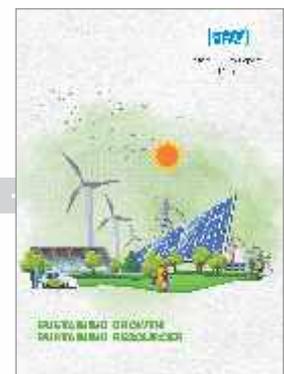
External Assurance
AA1000AS



FY18

Sustainability Report
GRI Standards & EUSS
Comprehensive
Type 2 High Level

External Assurance
AA1000AS



FY19

Sustainability Report
GRI Standards & EUSS
IIRC Framework
Comprehensive
Reasonable

External Assurance
ISAE 3000

Sustainability Highlights

Financial Capital

₹5,400 Crore } dividend paid to shareholders

₹107,408 Crore } Of Net Worth

4.16% } CAGR in Revenue

9.35% } increase in direct economic value created

Manufacturing Capital

55,126 MW } Installed capacity as on 31st March 2019

4% } growth in total generation

5 } NTPC stations figured in top ten performing stations in terms of PLF

1.50% } decrease in per unit coal consumption

No. 1 } Independent Power Producer & Energy Trader in Platts Top 250 Global Energy rankings 2018

Natural Capital

100% } ash utilization achieved at 7 stations. Company-wide 100% utilization targeted by FY21

10 } stations implemented Zero Liquid Discharge initiative

32% } Reduction in generation of non-hazardous wastes

24 TPD } WtE plant commissioned in Varanasi

1st } Flue gas desulfurization unit commissioned at Vindhyachal Stage-V

Human Capital

36,209 man hours of safety training conducted

6.40 average training man-hours per employee

10% increase in electricity generation (MU) per employee

100% employees covered under parental leave scheme

Social Capital

₹285.46 Crore CSR outlay in FY19

0 complaints received from customers as per the Customer Satisfaction Index survey

87% increase over target procurement from MSEs

97.8% of indigenous purchase maintained since FY18

10 Lakh lives impacted in 500 villages and 450 schools

Intellectual Capital

10X strategic leadership development program conducted for 379 middle level executives

49,894 MW consultancy projects taken up by our Consultancy unit

24 x 7 Security Operation Centre to monitor and prevent data threat

₹139 Crore spent on NTPC Energy Technology Research Alliance (NETRA)

About the Report

Scope of the report

The sustainability report of NTPC Limited is in accordance with Global Reporting Initiative (GRI) Standards "Comprehensive" option and incorporates the IIRC framework for the period April 1, 2018 to March 31, 2019. NTPC has defined its capitals and attempted to provide an overview of how it creates value for its stakeholders for FY19. The last sustainability report FY18 was released on February 13, 2019. All reports are available on the company's website <http://ntpc.co.in/en/sustainability/reports-and-policies>. NTPC follows financial year reporting period for Sustainability Report.

Report methodology

For collection of data on performance indicators, a uniform approach is followed across all NTPC stations. Collected data is then processed at

individual operating stations in accordance with universally accepted methodologies following approaches of 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, except if mentioned, wherein applicable. Report content and aspect boundary provided in the report has been reviewed and approved by top management of the company.

Boundary of the report

There are changes in the installed capacity power generation plants during this reporting period. However, there is no change in company structure or ownership of the company. The report covers data and information from Twenty Eight coal/gas stations, Eleven Solar, One Wind and Two Hydro power station including a 8 MW small Hydro at Singrauli 705 MW of

Badarpur TPP station got de-commissioned as being permanently closed w.e.f. October 15, 2018 and NTPC acquired Barauni TPS w.e.f. December 15, 2018. All stations/plants considered in current report are located in India and are under operation. The report includes all entities as mentioned in NTPC consolidated financial statement*, however Joint Ventures (JVs) and Subsidiaries are excluded from the reporting boundary.

Assurance of the report

The report has been independently assured by M/s Ernst & Young Associates LLP, India. A reasonable assurance was conducted in accordance with ISAE 3000 Standards, covering qualitative and quantitative information.

NTPC appreciates feedback from all stakeholders.
For any additional information regarding sustainability report,
please reach out to the addresses 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 - 2410350,
Fax: (+91) 120 - 2410500

Headquarter

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

* <https://www.ntpc.co.in/annual-reports/8842/download-complete-annual-report-2018-19>



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Message from CMD

Dear Stakeholders and Partners,

Sustainability is part of what we do every day, which is why we consider economic, environmental and social aspects in our decision processes. We continue with our approach of producing “reliable and affordable” power and accordingly we have introduced several changes in our business to make our operations sustainable, robust and maintain leadership in the sector.

We are bringing the 7th Sustainability Report, which provides detailed information about our application of ESG criteria at all levels of our business and keeping our sustainability approach up-to-date. This year, the report is prepared in accordance with International Integrated Reporting Council (IIRC) framework and Global Reporting initiative (GRI) standards “Comprehensive” option and the assurance is conducted by E&Y in accordance with ISAE 3000 Standards, covering qualitative and quantitative information. We are one of the very few organizations in India with this level of assurance.

For the past year, we have shown all round performance not only in our business but also on the sustainability front. It is my privilege to inform that NTPC was declared as winner in “Corporate Excellence” category of CII-ITC Sustainability Award 2019. Also, for the year 2018-19, NTPC is the recipient of 'Golden Peacock Sustainability Award' at London Global Convention-2019.

Coming to the business front, NTPC's group installed capacity is 58,156 MW and added 4,240 MW commercial capacity in FY20 till date. We are currently contributing to over 22% of energy requirement of 2nd highest populated country in the world. Tireless efforts are underway for maximizing profitability and increasing operational efficiency thereby increasing the wealth of shareholders.

Robust growth and operational excellence has translated into sound financials. With prudent management of resources, the fundamentals of the company remained strong and are leveraged for further growth and higher returns. In FY19, the company recorded a profit of ₹11,750 Crore which is an increase of over 13.60% as compared to previous year. Similarly, in FY20 for nine-month period we have recorded a profit of ₹8,860 Crore registering an increase of 19.74% on Y-O-Y basis.

To fulfil our vision to become "World's Leading Power Company", we are focusing on increasing our geo-strategic reach. Further, to have optimum fuel mix and reduce our dependency on coal based generation, we are adding renewables more aggressively and will record exponential growth in the coming future. Further, we have also taken a decision not to add any new green field projects in future. To maintain the growth momentum, we are exploring various sustainable business solutions in EV space including hydrogen based energy solutions.

We have taken proactive steps for setting up appropriate governance systems and processes. Transparency, accountability, fairness and intensive communication with stakeholders are integral to our functioning. An example of the highly effective corporate governance practices is the fact that FY17, FY18 and FY19 saw 'Nil' audit observations from CAG (statutory authority), a great feat reflecting utmost transparency and integrity.

In the changing landscape of business environment, we put strong focus on environment and safety. Significant steps are taken to reduce our carbon and water foot print. We are adopting the best technologies available and introducing digitalization in our processes with the prime objectives of safety, efficiency, downtime reduction and O&M cost optimization. I would like to share that we have recently commissioned India's first Ultra Super Critical Unit at Khargone (660 MW). This plant operates at efficiency of 41.5% which is 3.3% higher than the conventional super-critical ones. Significant action has been taken for retrofitting of our Units with environmental compliance equipment like FGD, DSI and combustion modification.

Corporate Social Responsibility has been the prime thrust of NTPC; We are majorly focusing on Water, Sanitation, Health and Education. We keep strong focus on touching lives everyday not only through our business but also through our social responsibility activities. Girl Empowerment Mission (GEM) was organized at 23 locations covering 1900 school girls and inputs were given on academics, health, hygiene, self-defense, yoga and personality development. This will go a long way and help the girl children in fulfilling their aspirations.

I am happy to share that we have launched an initiative of Contract Labour Information Management System (CLIMS) at all our locations which facilitates payment of wages to the workers on the last day of every month directly to their account. The health profile of the workers is also integrated with this system. We have also introduced safety performance of vendors in our contracting system.

With this, I hope, you will find this year's sustainability report useful as it brings a great deal of optimism about the future. I am also happy to share that we are working on bringing integrated reporting from FY20.



GURDEEP SINGH

Chairman and Managing Director

Vision, Mission & Core Values

Vision

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

Mission

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

Core Values

I C O M I T



Integrity
सत्यनिष्ठा



Mutual Respect & Trust
परस्पर आदर एवं विश्वास



Customer Focus
ग्राहक को प्रधानता



Innovation and Learning
नवप्रवर्तन एवं ज्ञानार्जन



Organisational Pride
संगठन पर गौरव



Total Quality and Safety
संपूर्ण गुणवत्ता एवं सुरक्षा

Pan-India Presence



Map not to scale. Includes capacity of under construction plants

- Coal Power Station
- Ongoing Thermal Projects
- Gas Power Stations
- Wind
- Ongoing Hydro Power Projects
- Solar PV
- HydroPower Projects



Corporate Governance

We at NTPC, believe in sustainable corporate growth that emanates from the top leadership down through the organisation to the various stakeholders.

Our corporate structure, business, operations and disclosure practices have been strictly aligned to our Corporate Governance Philosophy. Transparency, accountability, fairness and intensive communication with stakeholders are integral to our functioning. We believe in system driven performance and accord highest priority to these systems in protecting the interests of all our stakeholders.

We blend growth and efficiency with governance and ethics. Our Board of Directors, guided by the mission statement, formulate strategies and policies having focus on optimising value for various stakeholders like consumers, shareholders and the society at large. Besides adhering to provisions of listing agreement we are also following guidelines on Corporate Governance issued by the Department of Public Enterprises, Government of India.

Our diversified experts' Board

Our Board of Directors¹, at present, comprise of six full time Functional Directors and the Managing

Director who is also the Chairman of the company. Functional Directors support the management by providing directions on operational issues, adoption of systems and best practices.

The Company has nine Independent Directors and two Directors nominated by the Union Government. The Independent Directors on the board of the company are appointed by the Government of India through an elaborate procedure of selection which encompasses induction of professionals and experts in relevant field through a "Search Committee". Our company believes that the Independent Directors bring with them the rich experience, knowledge and practices followed in other companies resulting in imbibing the best practices followed in the industry.

Promoting responsible decision making

Our established Code of Conduct is in alignment with the company's vision and values to achieve the mission and objectives. It aims at enhancing ethical and transparent process and promoting ethical and responsible decision making in managing the affairs of the

1. <https://www.ntpc.co.in/annual-reports/8842/download-complete-annual-report-2018-19>

company. The code of conduct² also covers issues relating to insider trading in the company's security.

Our Boards' performance evaluation

The performance of the Board and the Directors is evaluated by the Ministry of Power, which is the administrative ministry for the company. Our established System of Accountability evaluates the performance of the company. The Government has instituted a system of target setting which is agreed to between the company and the Government through a Memorandum of Understanding (MOU). The MOU defines the evaluation criteria in advance on parameters like financial performance, productivity, human resource development, project

implementation, and operational performance in order to have an objective evaluation.

Performance of Functional Directors on the Board is 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.

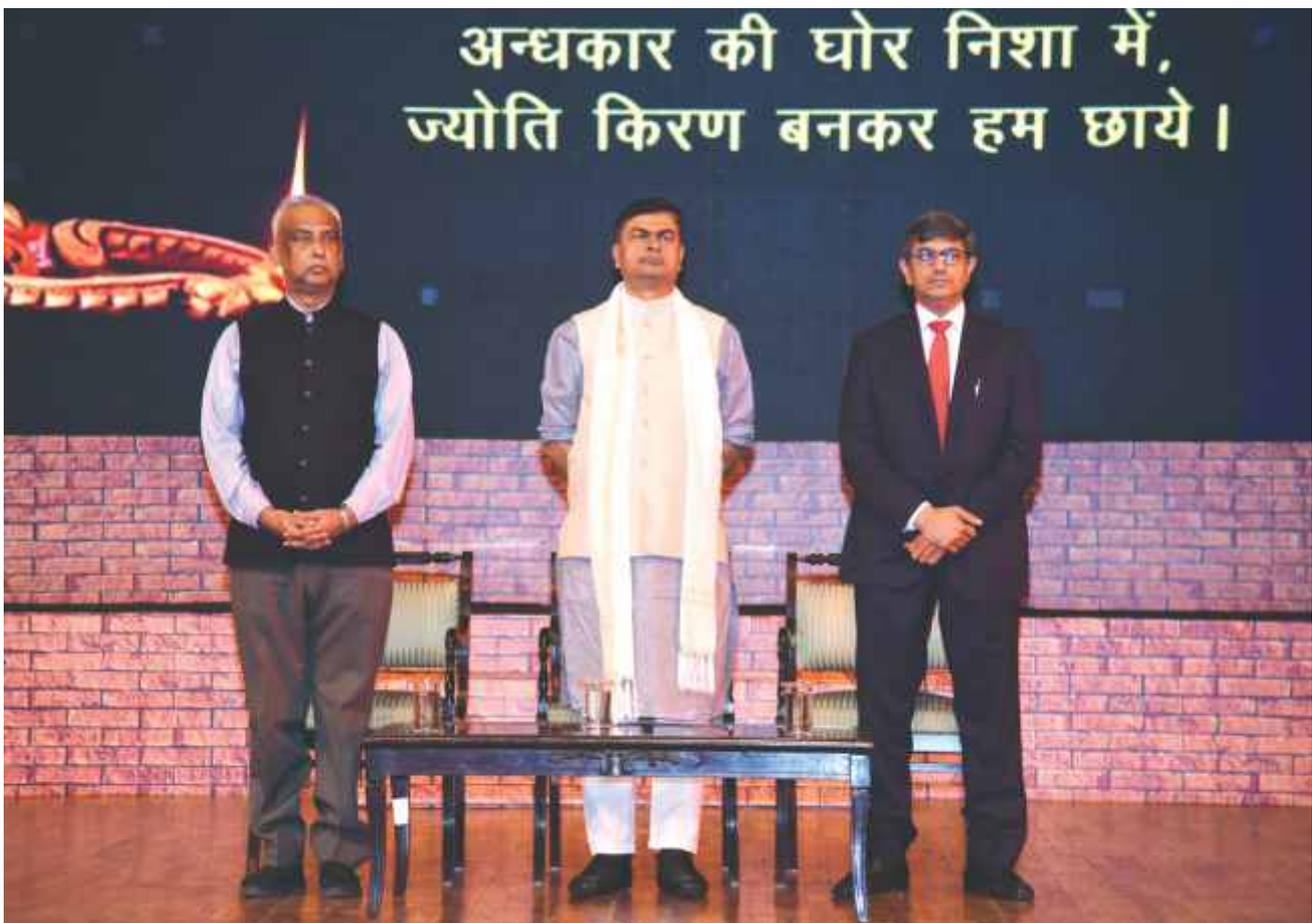
Customer Relationship Management

Our approach to customer relationship management is an essential, company-wide business strategy that we actively put into practice to systematically create and maintain long-term customer relationships. NTPC is highly valued among its customers for its professionalism. Under its Customer Relationship Management (CRM)

programme, the company has started to offer services to customers in select areas such as Operation & Maintenance, R&D, Finance, IT, etc. with the explicit objective of overall power sector growth.

Our Commitment towards Society

NTPC has been a committed and socially responsible corporate citizen since its inception. The company has a dynamic Corporate Social Responsibility-Community Development (CSR-CD) policy for taking up CSR activities in areas adjoining the power stations. At national level "NTPC Foundation" addresses the niche domains of social development through strategic interventions.



Hon'ble MOSP (I/C) Shri R.K. Singh, Secretary (Power) Shri S.N. Sahay and CMD NTPC at NTPC Raising Day Function

²<https://www.ntpc.co.in/investors/code-of-conduct>

Committees of the Board of Directors

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.	Committee for considering the proposal having financial implication beyond provision of the contract	✓		
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	✓		
16.	Committee for supervising Legal Matters	✓		✓
17.	Contract Sub-Committee	✓		

(The terms of reference on committees and details of the members have been given in NTPC's Annual Report FY19)



Senior Management Personnel from prominent Public Sector Enterprises

Policies and systems during FY19 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
3.	Whistle Blower Policy	http://www.ntpc.co.in/sites/default/files/downloads/WhistleBlowerPolicy.pdf
4.	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
5.	Code of Corporate Fair Disclosure Practices for prevention of insider trading	http://www.ntpc.co.in/download/code-corporate-fair-disclosure-practicces-prevention-insider-trading
6.	Related Party Transaction Policy	http://www.ntpc.co.in/download/related-party-transaction-policy-ntpc
7.	Policy for determination of materiality of events or information for disclosure	http://www.ntpc.co.in/sites/default/files/downloads/NTPCPolicyForDeterminationofMaterialityofevents.pdf
8.	Policy on maintenance & preservation of documents	http://www.ntpc.co.in/sites/default/files/DocumentPreservationPolicy.pdf
9.	Policy for determining Material Subsidiaries	http://www.ntpc.co.in/download/policy-determining-material
10.	Dividend Distribution Policy	http://www.ntpc.co.in/sites/default/files/downloads/DividentDistributionPolicyofNTPCLimited.pdf
Director (HR)		
11.	CDA Rules	Policy manual available on NTPC Intranet
12.	Training Policy for Directors of NTPC	http://www.ntpc.co.in/download/training-policy-director-ntpc
13.	Human Right Policy	Policy available on NTPC Intranet
14.	Placement and Transfer Policy	Policy manual available on NTPC Intranet
15.	R&R Policy	http://www.ntpc.co.in/en/corporate-citizenship/r-and-r-policies
16.	Initial Community Development Policy	http://www.ntpc.co.in/download/initial-community-development-policy-2009
17.	Policy for CSR and Sustainability	http://www.ntpc.co.in/download/ntpc-policy-csr-sustainability
18.	Career Development Policy	http://www.ntpc.co.in/en/careers/career-growth-opportunities
Director (Operations)		
19.	Safety Policy	http://www.ntpc.co.in/en/sustainability/health-and-safety
20.	Environment Policy	http://www.ntpc.co.in/en/environment/environment-policy-andmanagement
21.	Water Policy	http://www.ntpc.co.in/sustainability.report-policies/7312/ntpc-water-policy-2017
22.	Ash Policy 2015	https://www.ntpc.co.in/sites/default/files/downloads/AshPolicy2015.pdf
Director (Technical)		
23.	Biodiversity Policy	http://www.ntpc.co.in/sites/downloads/biodiversitypolicy2018.pdf
24.	Rain Water Harvesting Policy	https://www.ntpc.co.in/sites/default/files/downloads/NTPCRainWaterHarvestingPolicy2018.pdf
Director (Comml.)		
25.	Commercial systems & Procedures	http://www.ntpc.co.in/sites/default/files/downloads/procurementandworkpolicy.pdf

Corporate Membership with National & International Organisations

Aspects	Organisation Name
Safety	1. British Safety Council
	2. Institute of Fire Engineers
	3. National Safety Council
	4. National Safety Council, USA
Industry Association	5. Confederation of India Industry (CII)
	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
Human Resource	11. Power HR Forum
	12. Power Sector Skill Council
	13. The Foreign Correspondent's Club of South Asia
	14. Strategic Human Resource Management (SHRM), USA
Infrastructure	15. India Infrastructure Forum
	16. South Asia Forum for Infrastructure Regulation (SAFIR)
Society & Environment	17. United Nation Global Compact (UNGC)
	18. TERI Council for Business Sustainability (CBS)
	19. India Business and Biodiversity Initiatives (IBBI)
Energy	20. Central Board of Irrigation & Power (CBIP)
	21. Electric Power Research Institute (EPRI), USA
	22. Energy Transit on 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
Mining	32. The Mining, Geological & Metallurgical Institute of India

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

operating locations of the company. The status of statutory compliances is reviewed on a quarterly basis by the senior officials of the company.

Internal Control of Governance Structure

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 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.



Central Vigilance Commissioner, Shri K.V. Chowdary inaugurated Vigilance Awareness Week at NTPC in the presence of Shri Rajit Punhani, CVO NTPC and Shri Gurdeep Singh, CMD NTPC



Stakeholder Engagement and Materiality Assessment

“

Creating value for all our stakeholders is at the core of our value chain. We align our operations and business processes to cater to the expectations of our stakeholders, and design our strategy to respond to the priorities of our people – including employees, communities, contractors, customers and vendors. It is our endeavour to engage with them in a continuous, consultative, and constructive approach to be able to seek insights for designing our sustainability strategy.

”



Customer meet of ER-II

This is our seventh sustainability report covering eight years of sustainable operation of NTPC limited. The report developed in line with the Global Reporting Initiative (GRI) Standards and principles of Integrated Reporting based on International Integrated Reporting Council (IIRC) framework. The report is our endeavour to articulate our sustainability approach and transparently communicate our performance. Our report covers sustainability topics relevant to our business as well as our stakeholders in line with principles of stakeholder inclusiveness and materiality.

Data presented in the report is

sourced from respective corporate departments. All calculations and underlying assumptions involved have been explained throughout the report wherever applicable.

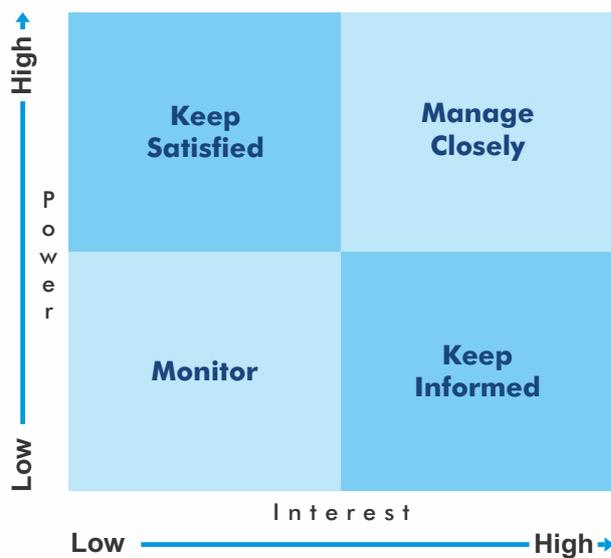
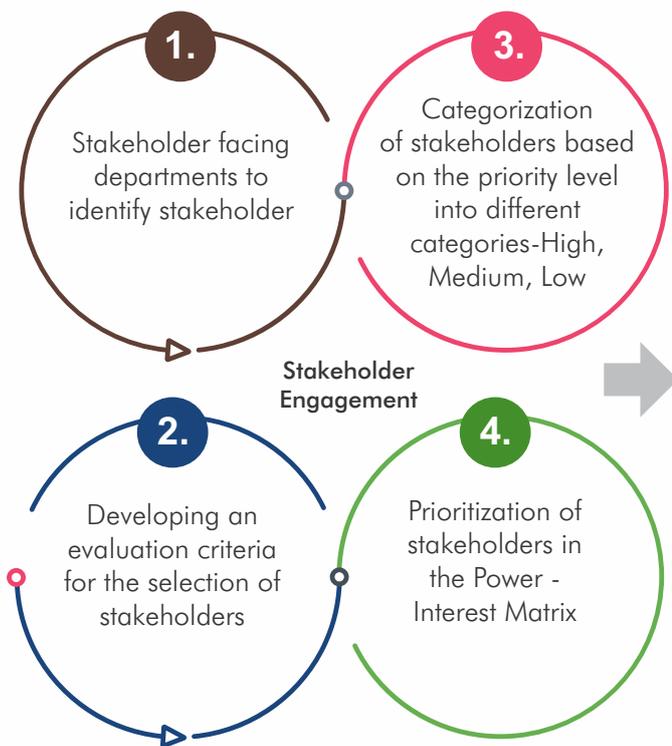
Engagement with our stakeholders

Our Suppliers, Partners, Customers, Investors, Regulators including Government agencies, Employees, Industry Associations, Communities and Partner NGOs represent our key stakeholder groups. Throughout the year, we maintain effective two-way communication with our stakeholders, which allows us to create

sustainable relationships with all of them.

NTPC has a well-defined three layered approach for the identification and prioritization of stakeholders. Firstly, all the relevant stakeholders have been identified based on their interest in NTPC, without any screening criteria. Further, these stakeholder groups have been shortlisted based on selected attributes like contribution, legitimacy, willingness to engage and influence.

These shortlisted stakeholders are then prioritized using a power interest matrix to devise corresponding engagement strategies.



Categorisation of Stakeholder

<p>Contribution</p> <ul style="list-style-type: none"> Sustainability Report Dislosures Participation rate in events organized 	
<p>Legitimacy</p> <ul style="list-style-type: none"> Amount spent on stakeholder (compensation, settlement etc.) Business volume of stakeholder with the organization 	

<p>Influence</p> <ul style="list-style-type: none"> Shareholding pattern of stakeholder Permission/licence/consent requirement from stakeholders 	
<p>Willingness to engage</p> <ul style="list-style-type: none"> Participation in conferences/workshop etc. Degree of response to routine communication 	

Factors for prioritization

Our Stakeholders

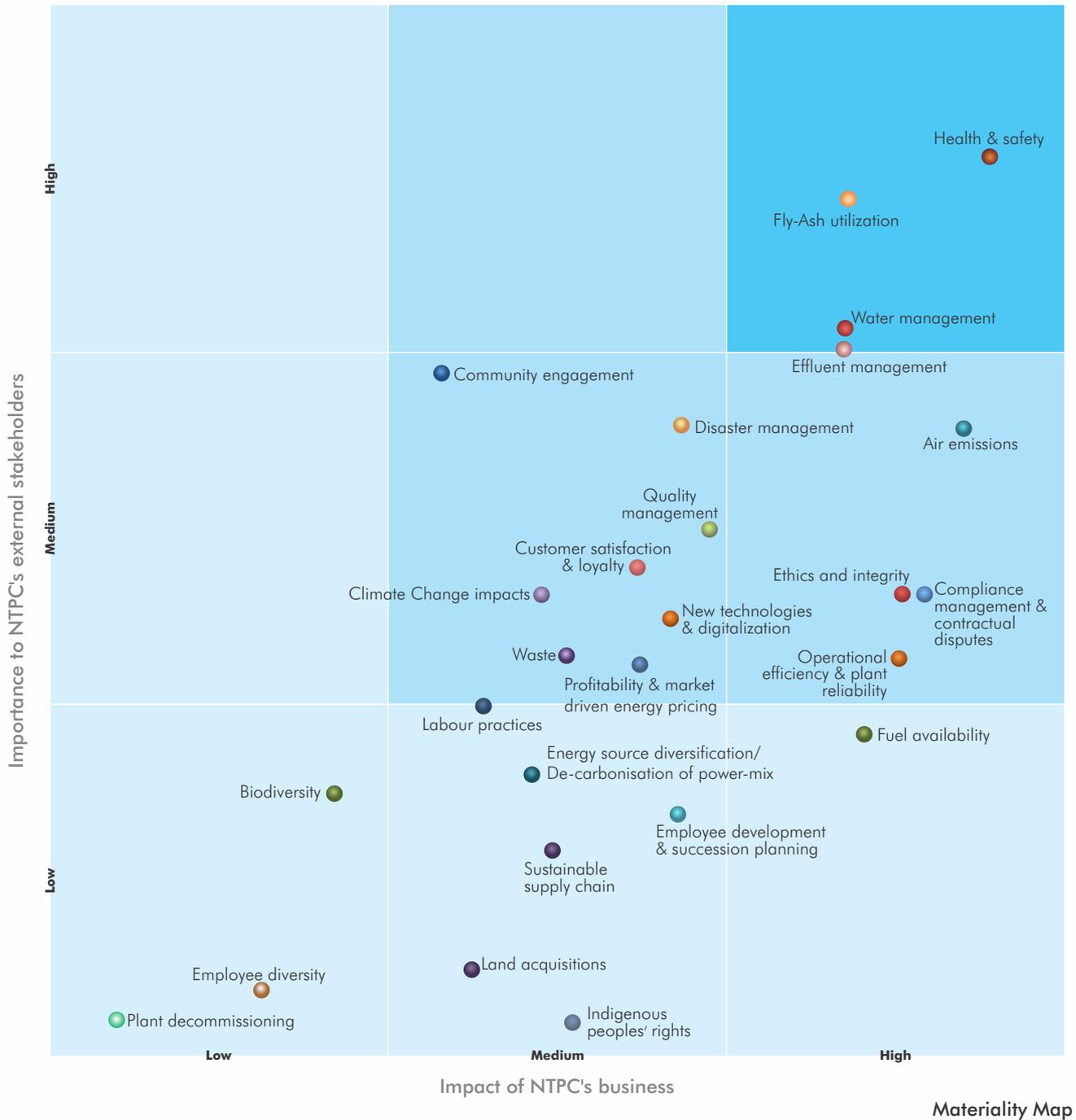
Stakeholder Group	Focus Areas	Modes of Engagement
Government of India	<ul style="list-style-type: none"> • 24x7 affordable power to all • Maximizing infrastructure utilization • Social development • Environment conservation • Promote Govt. schemes (viz. Make in India, Skill India, Swachh Bharat Mission, etc.) 	<ul style="list-style-type: none"> • Secretary level review • Meeting with MoP, DPE, Parliamentary committees, CEA, etc.
Shareholders	<ul style="list-style-type: none"> • Improving Rol • Business sustainability • Risk and governance compliance 	<ul style="list-style-type: none"> • Analyst and investors meeting • Annual general meeting • Review meets with bankers (Domestic and Foreign)
Regulators	<ul style="list-style-type: none"> • Optimum electricity tariff • Compliance with changing business environment 	<ul style="list-style-type: none"> • Public hearing • Statutory audits & inspection • Meeting for clearances, consents and compliances
Employees	<ul style="list-style-type: none"> • Professional growth • Work life balance • Health, safety and security • Adequate remuneration benefits • Timely resolution of grievances 	<ul style="list-style-type: none"> • Participative forums • Communication meetings • Employee surveys • Intranet • Trainings and workshops • Internal magazines
Communities	<ul style="list-style-type: none"> • Infrastructure development • Quality of life • Employment opportunities • Land acquisition and R&R issues 	<ul style="list-style-type: none"> • Public hearings • Village Development Advisory Committee • Public information centers
Customers	<ul style="list-style-type: none"> • Resolving commercial issues • Resolving technical issues 	<ul style="list-style-type: none"> • Regional customer meets • Regional power committees (RPCs) • Commercial meetings/interactions • Technical coordination committee • Operation coordination committee • Business partner meet • Customer support services
Suppliers	<ul style="list-style-type: none"> • Transparent dealings • Timely payments • Fair opportunities 	<ul style="list-style-type: none"> • Pre-bid conference • Suppliers meet • Vendor enlisting • NTPC website
Media	<ul style="list-style-type: none"> • Information sharing • Brand image 	<ul style="list-style-type: none"> • Press releases • Press conferences
Indian Citizens	<ul style="list-style-type: none"> • Community development • Environmental issues • Progressive organization 	<ul style="list-style-type: none"> • Right to information (RTI) Act • NTPC website

Our materiality assessment

In line with GRI framework requirements, we undertook a materiality assessment exercises at 20 locations of NTPC across India, including the corporate office. We have conducted secondary research and interacted with internal stakeholders to arrive at a shortlist of

sustainability topics relevant to our business and our stakeholders. Through this research and communication, 26 sustainability topics were selected. Stakeholder engagement and materiality assessment workshops were conducted with various internal and

external stakeholders. All 26 topics were discussed and stakeholders were asked to rate each of the sustainability topics based on its importance to the stakeholders. The inputs were consolidated and combined to arrive at NTPC's materiality map.



Our approach to each of the identified materiality topics

Health and safety

GRI and EUSS aspects: Occupational Health and Safety

Safety is inculcated in the core values of NTPC and we give top 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. Unchahar NTPC Safety Academy has been established to provide hands-on training of safety and emergencies.

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 centralized HMS frame work named as Jeevan Rekha.

Fly-Ash utilization

GRI and EUSS aspects: Non-GRI aspect

Sustainable ash utilization is one of the key concerns of NTPC and the Company strives to maximize it. NTPC has introduced Ash Policy in 2015, which addresses the plans & vision for ash utilization in an integrated way from generation to end product. 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 environment to future generations. Besides this, dry fly ash is issued to cement industries and

ash brick manufacturer and on tying up with NHAI and SHA. Pond ash is given for road-construction in considerable quantity. We are also working on developing various value products from ash like geopolymer roads, light weight aggregate, building material etc.

Water and effluent management

GRI and EUSS aspects: Water and Effluents

Being a thermal power major, we recognize 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 reengineering. 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.

CenPEEP is also working towards reduction in specific water consumption in coal and gas stations. All our future stations are envisaged with Air Cooled Condensers which has potential to save 75% of water when compared to conventional cooling system. Cycles of Concentration (CoC) is being increased at all stations for reducing fresh water intake.

Air emissions

GRI and EUSS aspects: Emissions

We go beyond the regulatory compliances to achieve highest standards of emission control by adopting state of the art technolo-

gies. Substantial investment is made towards installation of Flue-gas desulphurisation (FGD) system, De-NOx and retrofitting of

ESP to curb particulate emissions at NTPC stations.

Ethics and integrity

GRI and EUSS aspects: Ethics and Integrity

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 being any case of corrupt practices directly to the notice of Chief Vigilance Officer.

Compliance management and contractual disputes

GRI and EUSS aspects: Environmental Compliance; Socio-economic Compliance

We have robust internal systems and processes in place for smooth and efficient conduct of business. Our systems are designed to ensure regulatory compliances and maintain highest level of corporate governance. Internal environmental

audits of the stations are conducted by expert teams comprising members from CC, RHQs and independent member from other station to ensure compliance and healthiness of environmental control systems. Besides this, all

NTPC stations are ISO14001:2015 certified and therefore periodical external audit of the environmental systems are done by the certification agency.

Operational efficiency and plant reliability

GRI and EUSS aspects: Availability and Reliability; Research and Development; System Efficiency; Access

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 & improvement of current systems, secure and consistent access of information to all enables us to increase our productivity. We are increasing plant reliability through improved scheduling & maintenance,

data analytics, ensuring fuel availability and providing job specific trainings to our workforce. We have initiated a unique voluntary program of GHG emission reduction by establishing 'Center for Power Efficiency and Environmental Protection (CenPEEP)' for CO₂ reductions through sustained efficiency improvements. CenPEEP is instrumental in imple-

mentation of Energy Efficiency Management System (EEMS) consisting of periodic assessments, field tests, performance gap analysis deviations and updation of action plans at all stations. CenPEEP also coordinates implementation of Perform, Achieve & Trade (PAT) scheme. PI based real time programs and dashboards are in use for real time tracking of plant parameters.

Fuel availability

GRI and EUSS aspects: Materials

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 so as to

avoid any fixed charge under recovery. We have strategically ventured into coal mining to ensure the long term fuel security.

Community engagement

GRI and EUSS aspects: Local Communities

Corporate Social Responsibility (CSR) has been synonymous with our core business of power generation. We have dedicated CSR & Sustainability policy in line with Companies Act, 2013 and Department of Public Enterprises (DPE) Guidelines for CSR, which

covers a wide range of activities including implementation of key community based programmes through NTPC Foundation. Our focus areas for CSR & Sustainability activity includes Health, Sanitation, Safe Drinking Water, Education. Further, we have CSR and

Sustainability Committee in place as per the requirements of Companies Act, 2013 and DPE guidelines to formulate, recommend and monitor CSR policy, amount of expenditure to be incurred on the activities specified in the CSR & SD Policy and progress review.

Disaster management

GRI and EUSS aspects: Disaster/ Emergency Planning and Response

We periodically review and monitor our safety and security system to identify new kind of hazards and loopholes and address them in time. We have designed the plant

structure in a way that is resistant to natural calamities. We have also developed location wise specific Disaster Management Plan (DMP) that will reduce the negative

impacts of natural disasters. We conduct appropriate mock drills periodically to build awareness and capabilities of our employees.

Quality management

GRI and EUSS aspects: Non-GRI aspect

System and processes like Quality Assurance are in place to ensure strong performance and quality on all our operational parameters. The model followed for Quality Assurance are in place to ensure that the Plant Reliability is realized through thoughtful planning and building. At

NTPC, we ensure quality starting from raw materials up to erection and commissioning till the electricity we generate. Each item secured for construction is subject to rigorous tests and inspection at the appropriate stages to ensure conformity. Further, we have committed adequate

resources to maintain effective Quality Management System in our business operations. This includes Corporate level Quality Assurance team, Inspection Engineers at various demanding locations and projects.

Customer satisfaction and loyalty

GRI and EUSS aspects: Customer health and safety; Customer privacy; Marketing and Labelling

We continuously endeavour to earn the trust of our customers and to be the most preferred brand. We are taking actions to ensure that we timely

respond to and solve customers' changing energy needs. The NTPC management periodically meets the Senior Management of beneficiaries

from state transmissions and distribution utilities to understand and resolve issues.

Climate Change impacts

GRI and EUSS aspects: Energy; Economic Performance; Emissions

The future competitiveness and progress of the companies are linked to low carbon economy. NTPC has been investing in

processes promoting sustainable growth - enhancing energy efficiency developing low carbon technology, using renewable

energy and reducing stack emissions and sulphur content in flue gas.

New technologies and digitalization, Energy source diversification/ De-carbonisation of power-mix

GRI and EUSS aspects: Research and Development; Energy

Delivering sustainable technology solutions through applied research and provide advanced scientific services for power sector is the need of today because of ever

changing technological climate. NTPC has a dedicated R&D centre named NETRA which keeps on scanning the newer technological developments for its adoption in

NTPC's power generation process, besides independently developing patented technology.

Waste management

GRI and EUSS aspects: Effluents and Waste

As NTPC has a large portion of coal based generation the primary waste is ash. Other 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. Ash is discharged into ash pond in which fugitive ash emission is effectively controlled by maintaining sufficient water layer over disposal ash. Dry fly ash is issued to cement manufacturers and brick manufacturer while pond ash is given for Highway Construction and

Land Fills. Liquid effluent is managed through proper treatment followed by zero discharge of effluents. The scrap and recyclable waste is managed through auction on MSTC e-platform and other solid waste is managed in line with respective rules under EP Act.

Biodiversity

GRI and EUSS aspects: Biodiversity

NTPC is committed to conduct its operations in a way that promotes maintenance of regional biodiversity and the habitat, through a coordinated

& comprehensive program of avoidance, minimization and mitigation of its impacts. Towards achieving this, a specific Biodiversity

Conservation Policy has been enforced in this financial year for creating a sustainable environment.

Profitability and market driven energy pricing

GRI and EUSS aspects: Economic Performance

Electricity consumption is directly proportional to GDP and also has an accelerator effect on GDP. Therefore, the Company is one of

the engines of economic growth of the nation. More the power generation, the prosperity to consume increases, though with a

time lag as distribution network has a low elasticity factor, which is beyond our control.

Labour practices

GRI and EUSS aspects: Labour/Management Relations; Freedom of Association and Collective Bargaining

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 & working hours, provision of training, incentive &

reward schemes and occupational health & safety standards. We have a dedicated Human Rights Policy in place and promote all kind of organizational 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. NTPC has implemented CLIMS for online labour payments.

Employee development, diversity and succession planning

GRI and EUSS aspects: Employment; Diversity and Equal Opportunity; Training and Education

We are continuously reengineering our HR systems to strengthen the relationship between business growth and systematic employee development programmes. 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 the 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.

Sustainable Supply Chain

GRI and EUSS aspects: Procurement Practices; Supplier Environmental Assessment; Child Labour; Forced or Compulsory Labour; Supplier Social Assessment

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

Land acquisitions & Indigenous peoples' rights

GRI and EUSS aspects: Rights of Indigenous Peoples; Local Communities

NTPC is committed to support the populace displaced for execution of its projects and proactively take measures to improve the Socio-economic status of the Project

Affected Families (PAFs). We have R&R (Rehabilitation and Resettlement) policy in place in line with 'The Right to Fair Compensation and Transparency

in Land Acquisition, Rehabilitation and Resettlement Act, 2013' (RFCT LARR Act), Gol to address all R&R related concerns of the affected and project affected families.

Plant decommissioning

GRI and EUSS aspects: Plant Decommissioning

At NTPC, decommissioning of plants are governed by the norms of Ministry of power (MoP).

During the reporting year, 705 MW TPP at Badarpur got decommissioned and was being

permanently closed w.e.f. October 15, 2018.

We have also mapped these sustainability topics to our value chain in order to help us identify and address impacts where they occur.

Sl. no	Our topics	Upstream		NTPC	Downstream	
		Suppliers	Regulators		Customers	Communities/NGOs
1	Health and safety	●	●	●		●
2	Fly-Ash utilization		●	●	●	●
3	Water management		●	●		●
4	Effluent management			●	●	
5	Air emissions		●	●		●
6	Ethics and integrity	●	●	●	●	
7	Compliance management and contractual disputes	●	●	●	●	
8	Operational efficiency and plant reliability			●	●	
9	Fuel availability	●		●	●	
10	Community engagement			●		●
11	Disaster management	●		●		●
12	Quality management	●	●	●	●	
13	Customer satisfaction and loyalty			●	●	
14	Climate Change impacts			●		●
15	New technologies and digitalization	●		●	●	●
16	Waste management	●		●		
17	Biodiversity			●		●
18	Profitability and market driven energy pricing			●	●	
19	Labour practices	●		●		●
20	Employee development and succession planning			●		
21	Energy source diversification/ De-carbonisation of power-mix	●	●	●	●	
22	Sustainable supply chain	●	●	●	●	●
23	Land acquisitions		●	●		●
24	Employee diversity			●		
25	Plant decommissioning	●	●	●	●	●
26	Indigenous peoples' rights			●		●



Risk Management Framework

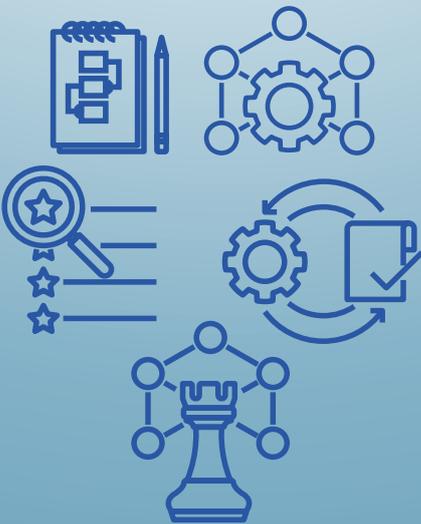
Risk Management at NTPC

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.

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 are then mapped with concerned stakeholders and organisation's priority. These risks are then prioritised and action plans are developed at different levels.

The company endeavours to address these risks in a timely manner and converting them into opportunities, thereby enhancing Company's competitive advantage.



Risk Management Committee	Roles and responsibilities of the Risk Management Committee
a. Director (Projects), Member	Assessment of risks and formulate action plan/ strategies to mitigate them
b. Director (Technical), Member	Implementation of risk management plan/ framework
c. Director (Operations), Member	Monitor and review risk management plan/ framework
d. Head (CP)/ Chief Risk Officer(CRO), Member	Informing the Board about the risk assessed and action required on quarterly basis
e. Regional Executive Director (Coal Mining), Member	Take up any other matter as directed by the Board from time to time.

Risk/ Opportunities	NTPC's Initiatives
Operational Risk	
Controlling air emissions	
<p>Revised GoI environmental norms for thermal power plants require substantial investment in power plants to contain SPM, SO_x, NO_x emissions. Also, government has directed thermal power stations to blend crop residue with coal to curb air pollution in cities due to stubble burning.</p>	<p>NTPC is spearheading the adoption of Flue Gas Desulphurisation at a massive scale and developing solutions for de-NO_x. Biomass co-firing up to 10% is being implemented at thermal units in close proximity to major cities.</p>
Fuel Security	
<p>It has become an area of concern owing to reduction in coal supplies and gradual increase in our fleet size.</p>	<p>NTPC is ensuring fuel security through long-term coal supply agreements. 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.</p>
Succession Planning	
<p>The rapid expansion of the company geographically and business diversification into other streams has created the need for new business leaders across the various verticals. The development of right talent and their timely appointment is an important aspect.</p>	<p>NTPC has instituted various systems and interventions in place for the talent mapping and overall development of all the categories of employees. For junior and middle management levels, 10X programme has been set up. For senior management level Harvard ManageMentor (HMM), Design Thinking program, etc. have been initiated.</p>
Water Availability	
<p>Considering the increasing pressure on the available water resources, water has become a significant risk area. Reducing water availability, its increasing costs and stricter regulatory regime is posing risks to our operations.</p>	<p>Various water conservation initiatives with process improvements and technology adoption have 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.</p>
Strategic Risk	
Integration of Renewables	
<p>Rising climate change concerns are driving us to decarbonised energy transition through increase in share of renewables. Influx of more variable renewable energy sources in the grid would require many coal-based plants to operate in a flexible manner.</p>	<p>We have installed 928 MW of renewables till date and strive to achieve 32 GW of renewables by 2032. 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 flexible operation.</p>
Digitalisation	
<p>In this highly competitive era, digitalisation is enabling faster decision making, reducing costs through automation and rendering long term competitive advantage. Slow adoption to digitalisation has become a major risk area.</p>	<p>A dedicated digitalisation team has been constituted with experts from various business domains of NTPC. NTPC is on the path of digitalisation and has launched notable digital platforms such as PRADIP for business approvals and Suppliers bill payment, CLIMS for online labour payments, CPM & BI for data monitoring and reporting etc.</p>

Risk/ Opportunities	NTPC's Initiatives
<p>Market driven energy pricing</p> <p>The power sector is slowly shifting from a regulatory regime to a market driven regime. The tariffs of new projects are being explored through competitive bidding. Being an asset heavy business model, shifting from a fixed RoI to market based earning leads to uncertainties and risks.</p>	<p>NTPC is well poised to perform in this new era of energy sector - with talented pool of workforce, four decades of leadership experience, rich industry association and public advocacy mechanisms. Till date based on competitive bidding NTPC has won 600 MW of solar power plants.</p>
<p>Contractual disputes</p> <p>With changing legal and regulatory landscape in the country many legal issues emerge with growth in business. As dispute take longer time to settle, the contracts can not be closed in a time bound manner.</p>	<p>Various committees have been formed at site, region and corporate level for fast settlement of pending and new contractual cases. A Dedicated Arbitration cell has also been formulated to work in close coordination with best legal advisors and industry partnership to clear cases on priority.</p>
<p>Business growth and diversification</p> <p>With the rising economic growth attributed to rapid urbanisation and increased industry production, the electricity demand is poised to grow exponentially. 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.</p>	<p>NTPC is looking for opportunities for acquisition of power plants if available at attractive valuations for adding capacity. 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 is looking at overseas opportunities, mainly in Middle East and South East Asia.</p>



Inauguration of Electric Vehicle Charging station

Opportunities, Threats and Challenges

We foresee several opportunities to achieve targets as per our long term corporate plan and contributing towards India's national missions and sustainable development goals 2030. Few of the key focus areas where we have expanded our reach are:



Gol has approved FAMEII (Faster Adoption and Manufacturing of Hybrid and Electric Vehicles) Scheme with total outlay of ₹ 10,000 crore over the period of three years (2019-20 to 2021-22) effective from April 1, 2019. Entry in EV business provides an opportunity to NTPC to help create demand for the electricity generated by its power projects and to keep pace with the fast-changing power sector.

NTPC, by virtue of our growing project management and O&M experience with an expanding power generation portfolio, is looking at overseas opportunities. We have formed a joint venture Company with Bangladesh Power Development Board (BPDB), called Bangladesh India Friendship Power Company Limited (BIFPCL), which is constructing a coal based power plant of 1,320 MW capacity at Rampal (Khulna). NTPC has opened an office in Yangon, Myanmar, which will help exploring opportunities in BIMSTEC countries.

Gol has targeted to achieve 175 GW capacity by 2022, comprising of 100 GW Solar, 60 GW Wind, 5 GW Small Hydro and 10 GW Bio-power (including biomass). Several measures in the renewable energy sector such as (i) Guidelines for Tariff Based Competitive Bidding Process for procurement of power from grid connected solar PV and wind power projects, (ii) Solar-wind hybrid policy are intended to create investment opportunities in the sector. These, coupled with historic lows in solar and wind tariffs have completely transformed business dynamics in the sector. NTPC has started winning several bids for setting up of renewable projects through competitive bidding, which proves its competitive edge.

Revised environmental norms for thermal power plants notified by Ministry of Environment, Forest and Climate Change (MoEF&CC) require modifications in power plants by 2022 to contain to comply the new norms for SO_x and NO_x emission level. The capital deployed in retrofitting plants with environmental compliance equipment is allowed as additional Capex by CERC and once commissioned, we will start earning return on these investments.

Creating Value To Our Capitals



MANUFACTURING CAPITAL



FINANCIAL CAPITAL

“

We create value together with our stakeholders. We have a combination of assets, skills and networks that place us in a strong position to deliver value-based growth. We connect within our network to use the tangible and intangible assets to create and preserve the value sustainably for us and for others.

”



NTPC is Public Sector Undertaking (PSU) that was formed in 1975 under the Companies Act of 1956. It is India's largest energy conglomerate with presence in the entire value chain of the power generation business. Its core business is

generation and sale of electricity. It started its journey through coal based generation and later ventured into hydro and renewable sources to reduce carbon footprint and have diversified fuel mix. The Company has also diversified its business into the

fields of consultancy, power trading, training of power professionals, rural electrification, ash utilization and coal mining. NTPC is one among the 10 PSUs that have been conferred the Maharatna status by the Government of India.

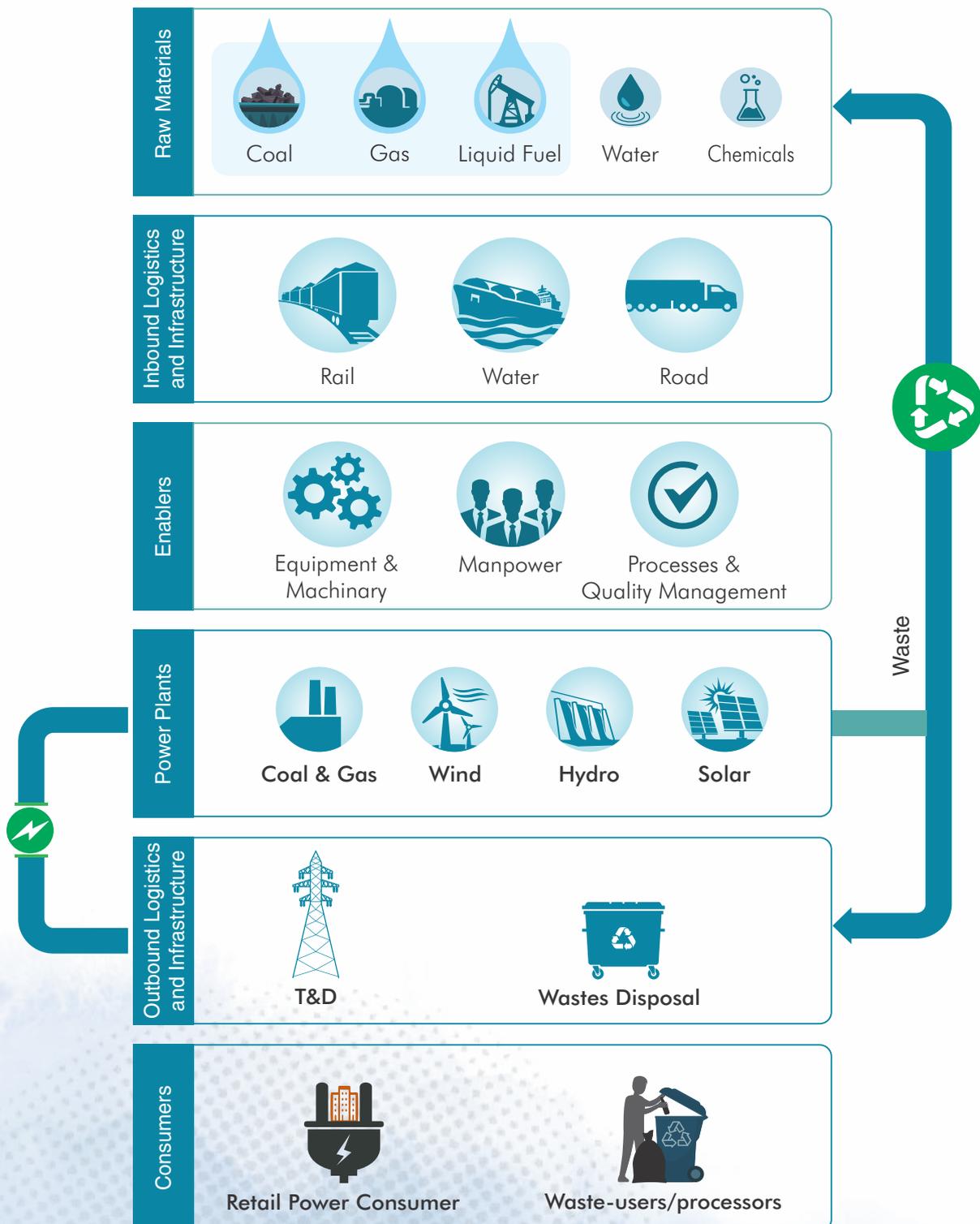
Our value chain

Our business model consists of procuring physical assets, raw materials and human resources for our production processes and subsequent evacuation of power through our intermediate consumer to the end-user. The wastes generated from our processes are either recycled into input materials,

used as raw material for another industry or are disposed / processed as per regulations. We are in the process of forward and backward integration of our core business of power generation through coal mines for captive use, and acquisition of companies

involved in power generation business.

No disruptive changes took place in our supply chain during the reporting year. Incremental changes in our overall business processes are reported in the relevant sections



We are continuously evolving our business model to broaden value creation for our various stakeholders.

Integrated planning and execution is at the core of this evolution from business model to a 'value creation'

model. We base our 'value creation' model on six 'capitals' which serve as a stock for our inputs.

FINANCIAL CAPITAL

This capital refers to the pool of funds available for use by us for asset creation, production processes, and conducting our related operations. This also covers funds generated through operations. Financial Capital covers KPIs like Turnover, Revenue, Profit After Tax amongst others.

MANUFACTURING CAPITAL

This capital is an aggregation of all our physical assets including our power generation stations our mines, equipment, machinery, raw materials and logistical infrastructure.

INTELLECTUAL CAPITAL

This capital represents our intangible knowledge base manifested through our R&D efforts (including our processes, patents, trademarks, copyrights etc), consultancy services, our learning centers, and our process innovation efforts.

HUMAN CAPITAL

This capital refers to our human resources and their compensation, benefits, capabilities, diversity, safety and well-being, career progression.

SOCIAL CAPITAL

This covers our efforts towards establishing, nurturing and maintaining our relationship with our stakeholders, including our vendors & suppliers, customer and communities, amongst others.

NATURAL CAPITAL

This refers to our interactions with the environmental resources during our operations including our management of water, energy and wastes; and the impact of our operations on water, air, soil and biodiversity.

For each of the inputs withdrawn, we add elements of value for our stakeholders through our business processes & functions in tandem

with the external environment and our mission, vision and core values. This is enabled through strategy formulation, risk identification,

resource allocation and periodic performance monitoring.

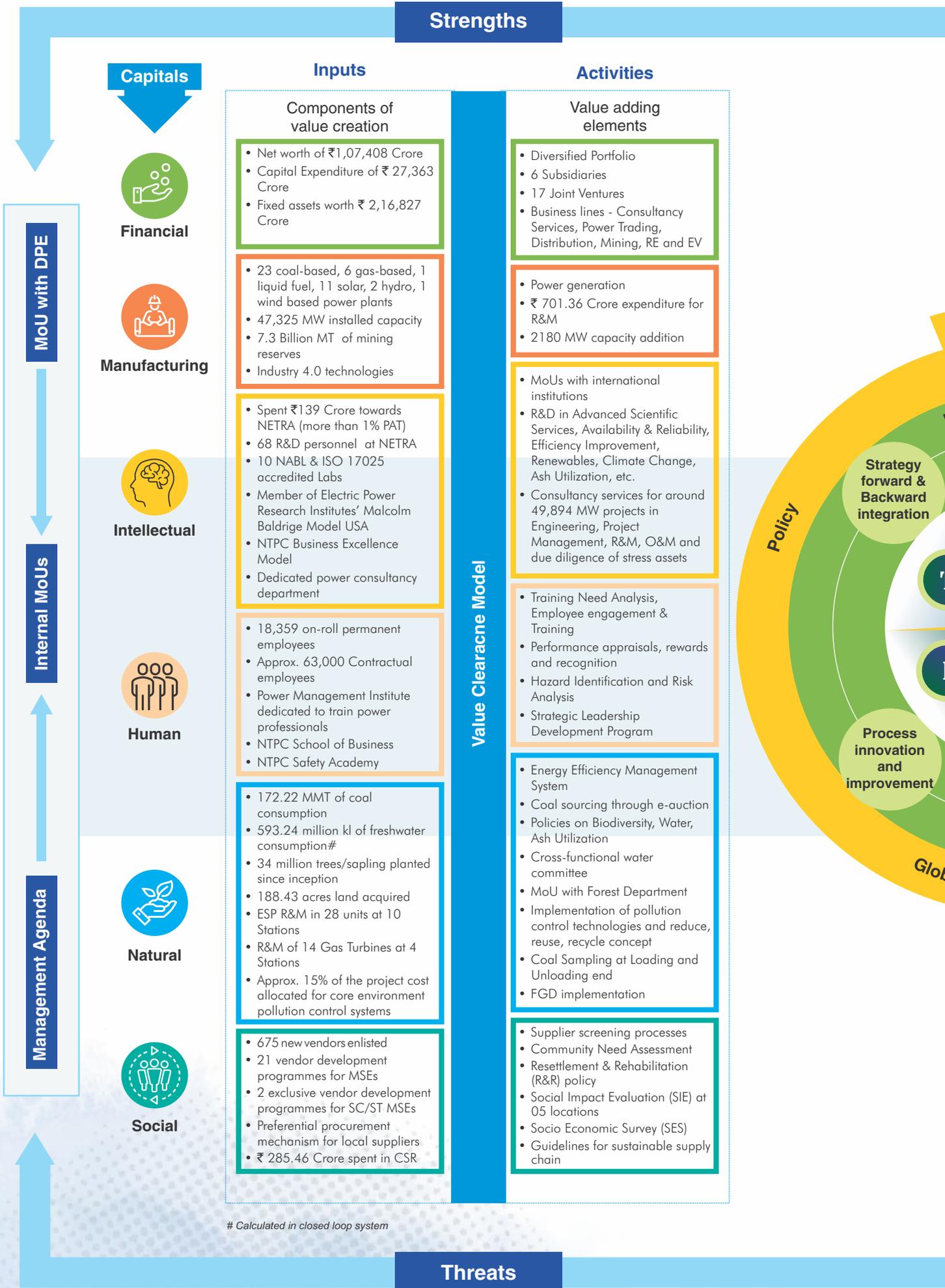
Our Value Creation Model

Our contribution towards the nation is being pursued in response to continuing economic growth in India combined with increasing decarbonisation efforts, speedier diffusion of digitization and decentralization. NTPC's integrated framework is designed to steer action in pursuit of its core values, vision and mission in the face of changing external and internal operating environment. For this, NTPC has adopted the six capitals approach proposed as part of the International Integrated Reporting

Council's <IR> Framework. This integrated framework is designed to determine and pursue action by each function and business to contribute to our transformation and value creation and thereby represent our commitment towards a sustainable future. NTPC conducts continuous monitoring and analysis of its external environment to identify threats and opportunities that may pose any risk to the organization, its strategy and its business model. There are several steps being taken to

mitigate or manage key risks or to create value from key opportunities, including the identification of the associated strategic objectives, strategies, policies, targets and KPI. Based on the regular review of our business activities and outcome with a focus on the organization's outlook we strategize our approach in terms of MOU with government, internal management agenda to mitigate or manage our risks and maximize our opportunities.

Strengths



Capitals



Financial



Manufacturing



Intellectual



Human



Natural



Social

Inputs

Components of value creation

- Net worth of ₹1,07,408 Crore
- Capital Expenditure of ₹ 27,363 Crore
- Fixed assets worth ₹ 2,16,827 Crore

- 23 coal-based, 6 gas-based, 1 liquid fuel, 11 solar, 2 hydro, 1 wind based power plants
- 47,325 MW installed capacity
- 7.3 Billion MT of mining reserves
- Industry 4.0 technologies

- Spent ₹139 Crore towards NETRA (more than 1% PAT)
- 68 R&D personnel at NETRA
- 10 NABL & ISO 17025 accredited Labs
- Member of Electric Power Research Institutes' Malcolm Baldrige Model USA
- NTPC Business Excellence Model
- Dedicated power consultancy department

- 18,359 on-roll permanent employees
- Approx. 63,000 Contractual employees
- Power Management Institute dedicated to train power professionals
- NTPC School of Business
- NTPC Safety Academy

- 172.22 MMT of coal consumption
- 593.24 million kl of freshwater consumption#
- 34 million trees/sapling planted since inception
- 188.43 acres land acquired
- ESP R&M in 28 units at 10 Stations
- R&M of 14 Gas Turbines at 4 Stations
- Approx. 15% of the project cost allocated for core environment pollution control systems

- 675 new vendors enlisted
- 21 vendor development programmes for MSEs
- 2 exclusive vendor development programmes for SC/ST MSEs
- Preferential procurement mechanism for local suppliers
- ₹ 285.46 Crore spent in CSR

Activities

Value adding elements

- Diversified Portfolio
- 6 Subsidiaries
- 17 Joint Ventures
- Business lines - Consultancy Services, Power Trading, Distribution, Mining, RE and EV

- Power generation
- ₹ 701.36 Crore expenditure for R&M
- 2180 MW capacity addition

- MoUs with international institutions
- R&D in Advanced Scientific Services, Availability & Reliability, Efficiency Improvement, Renewables, Climate Change, Ash Utilization, etc.
- Consultancy services for around 49,894 MW projects in Engineering, Project Management, R&M, O&M and due diligence of stress assets

- Training Need Analysis, Employee engagement & Training
- Performance appraisals, rewards and recognition
- Hazard Identification and Risk Analysis
- Strategic Leadership Development Program

- Energy Efficiency Management System
- Coal sourcing through e-auction
- Policies on Biodiversity, Water, Ash Utilization
- Cross-functional water committee
- MoU with Forest Department
- Implementation of pollution control technologies and reduce, reuse, recycle concept
- Coal Sampling at Loading and Unloading end
- FGD implementation

- Supplier screening processes
- Community Need Assessment
- Resettlement & Rehabilitation (R&R) policy
- Social Impact Evaluation (SIE) at 05 locations
- Socio Economic Survey (SES)
- Guidelines for sustainable supply chain

Value Clearacne Model

MoU with DPE

Internal MoUs

Management Agenda

Policy

Strategy forward & Backward integration

Process innovation and improvement

Global

Calculated in closed loop system

Threats

Weaknesses

Outputs

Key impacts

- ₹ 92,180 Crore revenue
- ₹ 90,307 Crore revenue from operations
- ₹ 11,750 Crore PAT
- ₹ 24,644 Crore EBITDA
- ₹ 107,408 Crore net worth

- 274.454 Billion Units Power Generation
- Less than 0.6% of coal consumption was from imported sources.
- 76.81% PLF
- 14.95 Million Units generated per employee

- ₹ 227 Crore business done by Consultancy
- 13 patents granted, 30 patents under process
- 7 copyrights granted
- Innovative projects - Desalination of water, Water conservation, Ash utilization, (W2E) Biomass to CNG

- 0.78% attrition rate
- OHSAS-18001 certification for 19 stations
- 321 training programs conducted by PMI
- 8,699 professionals trained
- 45,987 learning man-days
- 660,120 man hours of training

- Increase of 4.5% in receipt of coal over FY 17-18
- Availability of our gas stations increased to 92%
- 13,000 ha land covered by afforestation & plantation
- 2.59% reduction in specific PM
- 127.52 Million Units of energy saved
- 388.81 Lakh MT ash utilized
- ISO 14001 certification in all stations

- ₹ 1530.7 Crore procurement from MSEs*
- ₹ 25.09 Crore procurement from SC/ST MSEs*
- 10 Lakh lives touched
- 9.61 customer satisfaction index
- 500 villages benefitted
- Over 450 schools benefitted

Outcomes

Impact on stakeholders

- Sustainable cash flows
- Maharatna status
- Excellent MOU rating by Government of India for the year 2017-18 and under approval for year 2018-19
- CAGR of 4.16% in revenues
- ₹ 5,400 Crore dividend to shareholders
- Reduced weighted average cost of borrowings to less than 7%

- No#1 "Independent Power Producer and Energy Trader" in Platts Top 250 Global Energy rankings 2018
- The Dun & Bradstreet Infra Award-2018 for Excellence in Power Generation
- Diversified Portfolio
- Golden Peacock Award for Energy Efficiency to NTPC-Ramagundam
- De-linking business risks & shareholder value enhancement for coal-mining
- 3.26% increase in power generation
- Negligible reliance on imported coal, reduced costs
- 11 Stations including JVs were in the top 25 in the country in terms of PLF

- Study completed for Bottom Ash of 10 nos. of NTPC plants
- Increased availability and improved efficiency
- Reducing radiographic hazards
- Reduction in CO₂ emission
- Water Conservation
- Maximization of Solar Thermal efficiency in Hybrid form
- Environment conservation

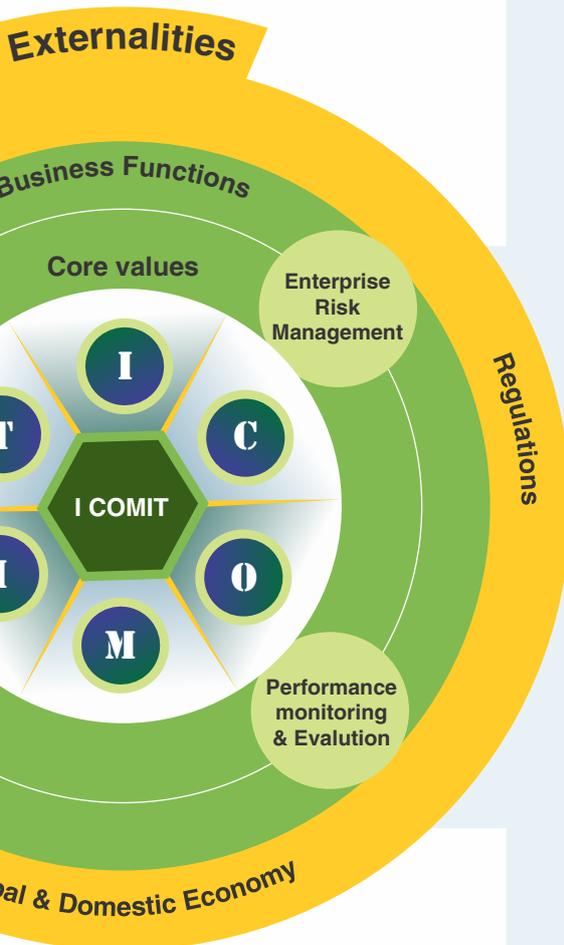
- 9% decrease in Man-MW ratio
- 11% increase in generation/employee
- Conclusion of long-term wage agreement for workmen cadre was successfully completed
- ATD Best 2018 Award, ISTD Award for 2018 and BML Munjal Award 2018 for PMI
- Best Workplaces (19) in Asia 2019 by the Great Place to Work Institute.

- Frost & Sullivan and TERI Sustainability 4.0 Award 2019
- Advancement towards India's NDCs
- ₹ 36.74 Crore savings on account of energy conservation
- ZLD at 10 stations
- 1.3% reduction in specific water consumption
- 3.94% reduction in auxiliary power consumption

- Long-term Fuel Supply Agreements for 169.37 MMT/yr quantity
- 100% realization of current bills
- Cleared contingent liabilities of ₹ 5,822 Crore by settling RNLG procurement dispute
- Membership to various trade and chambers and associations
- Reduction in socio-economic vulnerability of communities
- Capacity building and skill development leading to improved employability of youth/women in the neighborhood of its operations
- Promotion of Make in India, Skill India, Swachh Bharat Mission

*Excluding primary and secondary fuel, steel & cement, the project procurement including R&M packages and procurement from OEM, OES and PAC sources

Opportunities





Financial Capital

Highlights FY19

₹ 91,863.34* crore revenue generated

Economic value retained worth
₹ 13,044.10 crore

₹ 285.46 crore of community investments

Net Profit after Tax (PAT) ₹ 11,749.89 crore

Material Topic(s)

[18]

NVGSEE Principles

[1] [8]

“

Continuing with our growth momentum, we have been allocating significant proportion of our financial resources to capex and also maintaining the diversity of deployment. Our focus on high capital productivity is unwavering and for that efficient operation and maintenance through intense deployment of digitalization, has been an important element of our strategy

”



Financial Capital

Related sustainability topics

- Compliance Management
- Operational Efficiency and Plant Reliability
- Profitability
- Fuel availability
- Climate Change impacts
- Energy source diversification/ De-carbonization of power mix

Risks mapping:

- Fuel Supply
- Delay in execution of projects
- Sustaining efficient plant operations
- New business avenues
- Legal and Regulatory
- Sustaining market share
- Sustaining Realization
- Fluctuation in Exchange Rates
- Financial Resource mobilization at competitive rates

Reference to other frameworks:

- IPIECA: SE11, SE12, SE13, E2, E1
- UNGC Principle: 10
- TCFD
- WBCSD

Relevant GRI indicators:

- 201-1
- 201-2
- 201-3
- 201-4

Relevant SDGs:



NTPC is committed to the highest standards of corporate governance along with rapid growth and performance excellence.

FY19 has been yet another year of achievements recording with a net profit (PAT) of ₹11,749.89 Crore. An interim dividend of ₹ 3.58 per equity share was paid amounting to total of 50.41% of PAT. A robust payment security mechanism led to 100% realization of bills from customers.

NTPC has strong financial systems in place. It believes in prudent management of its financial resources and strives to reduce the cost of capital. NTPC enjoys highest credit - rating assigned by CRISIL, ICRA and CARE. The foreign rating by Fitch, S&P and Moody's are at par with sovereign ratings. NTPC is exploring domestic as well as international borrowing options.

Inline with our business diversification philosophy NTPC is envisag-

ing to provide complete e-mobility solutions. Our Consultancy Wing is executing assignments for various clients and has received orders of ₹227 Crore. NTPC is investing both in backward and forward integration across power value chain.

While ensuring strong financial growth NTPC also commits to inclusive growth. An amount of ₹285.46 Crore was spent towards CSR initiatives, achieving a CSR spend of 2.41%. Around 15% of our project cost on environment pollution control system.

Sustainability at NTPC is driven by two motives - to make fundamental changes in the way we operate our businesses to transform ourselves as the most sustainable power producer and to become more transparent in timely disclosure of our social, environmental and economic performances. To achieve these objectives, we have identified Decarbonization, Water,

Biodiversity, Circular Economy, Safety, Supply chain and Business Ethics as priority sustainability areas and strategizing on them to ensure our business sustainability.

Major activities carried out under this plan included massive plantation of trees and its maintenance, installation of rooftop Solar PV around power stations on public utilities buildings and on schools, vermicomposting/ Bio-Methanation plant/ Paper re-cycling machines. Few activities under bio-diversity conservation taken up are conservation of Olive Ridley Sea Turtles and study on bio-productivity of Gangetic Dolphin at Kahalgaon Station. An expenditure of ₹ 34.42 Crore was incurred on these SD projects during FY19.

Policy and practices adopted for Suppliers and Local Sourcing

Under the Procurement and Works Policy of NTPC, transparent 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. The provision in respect of labour, welfare, safety, etc. are being incorporated in the bidding documents for supply cum erection packages, invited on international, domestic competitive bidding basis.

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.

Direct Economic Value Generated and Distribution

NTPC's operational performance during the FY 19 has resulted in an increase of 9.35% in its direct economic value generated

Particulars	FY 2018-19 (₹ Crore)
Revenues	91,863.34
Sub Total (A)	91,863.34
Operating Cost	61,221.33
Employee Wages & Benefits	4,779.89
Payments to Providers of Capital	9,639.29
Payments to Government	2,889.28
Community investments	289.45
Sub Total (B)	78,819.24
Economic value retained (A-B)	13,044.10

* Detailed information on NTPC's financial performance are provided in the Annual Report FY 2018-19, available on www.ntpc.co.in



Dividend paid to GOI

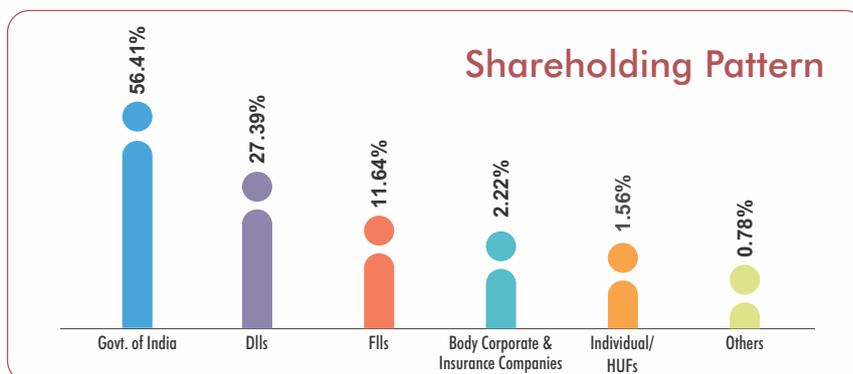


Financial Assistance from Government

NTPC is running on self-sustained basis and is giving regular dividend to the Government of India on its equity. No capital has been invested by the Government of India in NTPC since the year 1999-2000. The Company did not receive any direct government benefit by way of subsidies, grants or royalties.

Benefit Plan Obligation

A defined benefit plan is a post-employment benefit plan other than a defined contribution plan. We pay fixed contribution to the provident fund at predetermined rates to a separate trust, which invests the funds in permitted securities. The contributions to the fund for the year are recognized as expense and are charged to the profit or loss. The obligation of our Company is to make such fixed contributions and to ensure a minimum rate of return to the members as specified by the Government of India.



The gratuity is funded by the Company and is managed by separate trust. Pension scheme at one of the taken over projects is also funded by NTPC and is managed by separate trust. The

Company has PRMS, under which retired employee and the spouse are provided medical facilities in the Company hospitals/empaneled hospitals.



Manufacturing Capital



Highlights FY19

Consistently maintained 15% higher PLF compared to the National average

11 Stations (including JVs) among top 25 in the country in terms of PLF.

2180 MW added to commercial capacity during FY19

7.31 MMT coal extracted from Pakri-Barwadih and Dulanga Mine

Commercial operation started of 660 MW of NTPC Khargone (2X660 MW), India's First Ultra Super Critical Power Station

76.81% PLF at coal stations

95.4% ACQ materialization during FY19 as against 94.8% in FY18

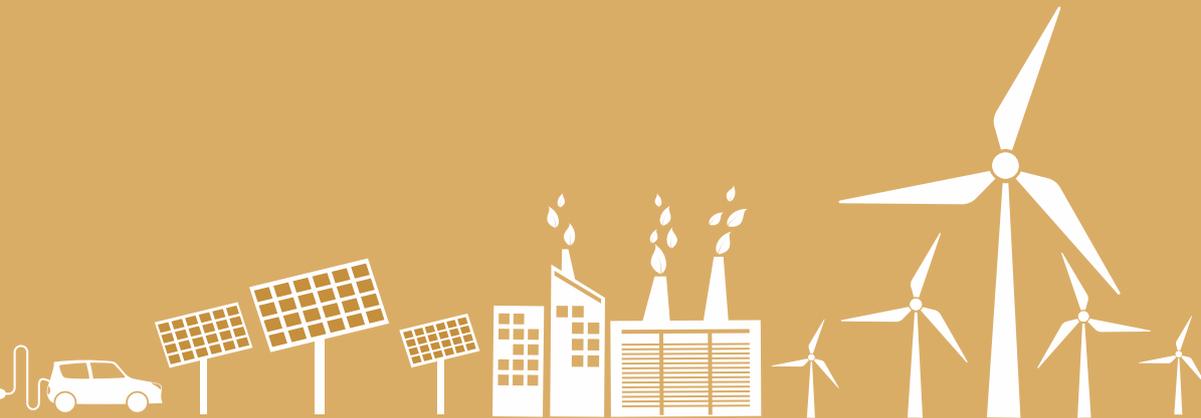
Material Topic(s)

[8] [9] [12]
[23] [25]

“

Our commitment towards performance excellence drives our efforts towards our triple objectives of producing electricity with Low Cost, Low Emission and Highest Safety. Our efforts for innovation in reducing costs, enhancing operational flexibility and in addressing changing customer needs are driven by our organizational priorities.

”



Manufacturing Capital

Related sustainability topics

- Operational Efficiency and Plant Reliability
- Disaster Management
- New technologies and digitalization
- Land acquisition

Risks mapping:

- Acquisition of land
- Sustaining efficient plant operations
- Natural / Manmade disasters
- Coal mining

Reference to other frameworks:

- IPIECA: EII

Relevant GRI indicators:

- 102-4
- G4-EU1
- G4-EU2
- G4-EU3
- G4-EU10
- G4-EU11

Relevant SDGs:



Power Generation

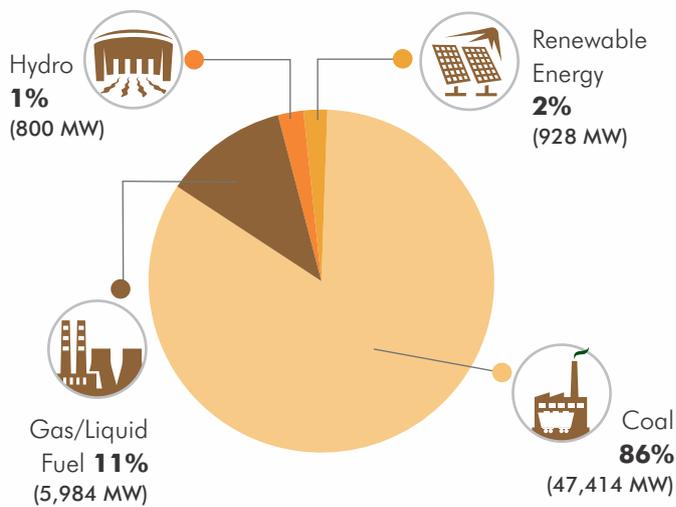
Power generation is our core business activity, and we look to expand our manufacturing assets with a view to creating sustained value for our shareholders. Along with our JVs and subsidiaries, we

have, at present, 52 power stations located in various states of India.

During FY19, we added 2,180 MW to our installed capacity. With this, our installed capacity (including Joint Ventures) touched **55,126 MW** as on March 31, 2019, which

is around 15.48 % of the total installed capacity of India.

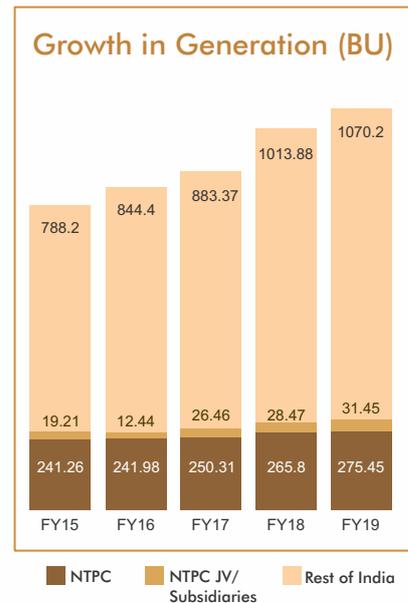
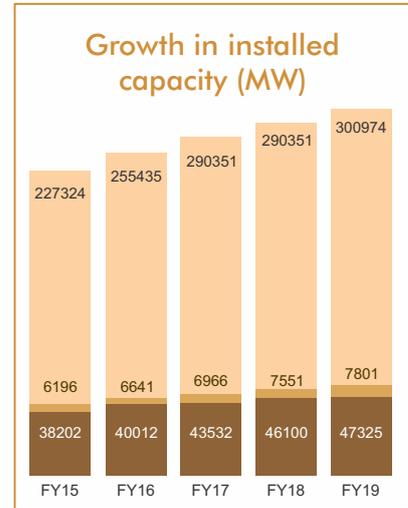
Breakdown by installed capacity as on 31.03.2019



Our total generation grew at 4% in FY19 (Group Generation - 306 BUs; Standalone - 274 BUs) with coal generation growth higher than the national average. Our total power generated including that from our JV companies was around 22.31% of the total electricity generated in the country during FY19.

In FY19, our coal based stations achieved a PLF of 76.81% against the national PLF of 61.07% with average Availability Factor of 87.51% during the year. The total

generation contributed by coal registered a growth of 4.01% over the previous years. Five stations of NTPC figured in the top ten stations list of the country in terms of PLF and six of our coal-based stations achieved PLF more than 85%. For FY19 the Declared Capacity of coal stations was 87.34% while for gas stations it was 92.18%.



76.81% PLF

Over 15% higher than National PLF

Sipat Super Thermal Power Station with a PLF of 91.58% was ranked 2nd in the country

Renewable energy is one of our central focus area. During the reporting year, our renewable electricity generation (including solar, hydro, wind & small hydropower) was 1.54 BUs

We supply electricity from our stations located across India to various bulk customers located throughout the country. Our customers are mainly State Electricity Utilities like State Electricity Boards, State Electricity Distribution Companies, SEB Holding Companies, State Power Departments - who account for around 90% of our electricity sales.

Total Installed Capacity as on FY19 (MW)	
Owned by NTPC	MW
Coal based projects	41,580
Gas based projects	4,017
Renewable Energy Projects	928
Hydro Projects	800
Sub Total	47,325
Joint Ventures & Subsidiaries	
Coal based projects	5,834
Gas based projects	1,967
Sub Total	7,801
Total	55,126

Capacity Addition in FY19



Installed Capacity (MW) and Generation (MU) - Station-wise

Station	Fuel Type	*Gross Capacity (MW)	*Gross Generation (MU)
Northern Region		7,653	47,643
Singrauli	Coal	2,000	14,798
Rihand	Coal	3,000	22,687
Unchahar	Coal	1,550	7,241
Tanda	Coal	440	2,372
Auraiya	Gas	663	545
Eastern Region		10,190	68,957
Farakka	Coal	2,100	14,846
Kahalgaoon	Coal	2,340	16,486
Barh	Coal	1,320	9,845
Barauni	Coal	220	0
Talcher Kaniha	Coal	3,000	21,242
Talcher Thermal	Coal	460	3,605
Bongaigaon	Coal	750	2,932
DBF		3,081	14,194
Dadri Coal	Coal	1,820	10,534
Badarpur	Coal	0	1,400
Dadri Gas	Gas	830	1,662
Faridabad	Gas	432	597

Station	Fuel Type	*Gross Capacity (MW)	*Gross Generation (MU)
Western Region		15,713	99,978
Mouda	Coal	2,320	11,880
Korba	Coal	2,600	20,083
Vindhyachal**	Coal	4,760	37,539
Sipat	Coal	2,980	23,907
Solapur	Coal	1,320	1,944
Anta	Gas	419	551
Kawas	Gas	656	2,499
Gandhar	Gas	657	1,574
Southern Region		7,360	38,564
Ramagundam	Coal	2,600	18,548
Simhadri	Coal	2,000	12,449
Kudgi	Coal	2,400	7,566
Rajiv Gandhi CCP	Liquid Fuel	360	1
Hydro Region		800	3,014
Koldam Hydro	Water	800	3,014
Total***		44,797	2,72,349

*As on 31.03.2019

**As per NTPC, regional location of Vindhyachal is Northern Region

***Excludes 1425.21 MU Solar Power Generation and 870 MW Capacity, 97.59 MU Wind Generation and 50 MW Capacity, 13.74 MU Small Hydro and 8 MW

Our projects having an aggregate capacity of 19,956 MW (including 6,900 MW being undertaken by JVs and subsidiaries) are under implementation at 22 locations in India and abroad. Of this, 18,800 MW is coal-based, 811 MW is hydro and 345 MW is renewables. We are working to broad base our generation mix to ensure long-

term competitiveness, mitigation of fuel risks and promotion of sustainable power development. We plan to increase our overall installed capacity to 130 GW by 2032, of which renewables will constitute 32 GW comprising around 25% of the total capacity. To meet our ambitious targets, we are attempting all avenues for renewable capacity addition and

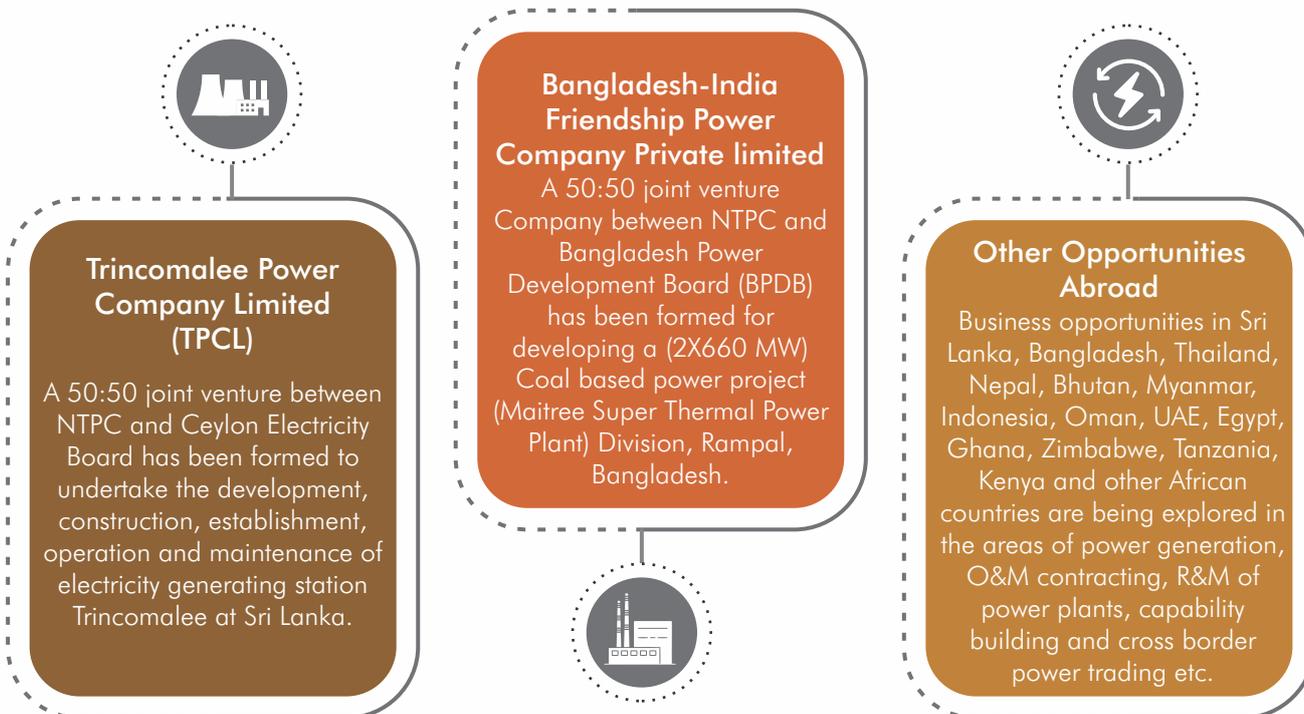
looking beyond conventional large-scale solar / wind parks. We are utilizing roofs of power stations for solar power generation. We are also going ahead with floating solar power generation at reservoirs, which is a step towards avoiding land use and water conservation by reducing surface evaporation.

Globalization

To maximize our geostrategic reach, we are actively looking at business opportunities overseas. Our recent joint venture with Bangladesh Power Development

Board (BPDB), called Bangladesh India Friendship Power Company Limited (BIFPCL) and opening of an International office in Myanmar are some of the notable steps in

the same direction. Besides, we are also actively looking at the Middle-East and the African continent for business opportunities.



Trincomalee Power Company Limited (TPCL)

A 50:50 joint venture between NTPC and Ceylon Electricity Board has been formed to undertake the development, construction, establishment, operation and maintenance of electricity generating station Trincomalee at Sri Lanka.

Bangladesh-India Friendship Power Company Private limited

A 50:50 joint venture Company between NTPC and Bangladesh Power Development Board (BPDB) has been formed for developing a (2X660 MW) Coal based power project (Maitree Super Thermal Power Plant) Division, Rampal, Bangladesh.

Other Opportunities Abroad

Business opportunities in Sri Lanka, Bangladesh, Thailand, Nepal, Bhutan, Myanmar, Indonesia, Oman, UAE, Egypt, Ghana, Zimbabwe, Tanzania, Kenya and other African countries are being explored in the areas of power generation, O&M contracting, R&M of power plants, capability building and cross border power trading etc.

Our ancillary services

We envisage enhancing our current presence in the ancillary services. We are planning to make a foray into e-mobility and battery storage, supported by research & development and collaboration with OEM/OES,

research institutes, etc. We have already taken up various initiatives in line with national priorities, including creation of charging infrastructure ecosystem (fast charging stations, battery-swapping infrastructure, etc. at

several locations in major cities and across highways; and implementing e-bus projects (at discussion stage with State Governments, State Transport Undertakings and City administrators).

Raw Materials

Coal and water are our key raw materials. We continuously strive to reduce our specific consumption of raw materials in line with our philosophy of sustainable production and consumption. Optimization of raw material consumption translates into value for our shareholders, as well as our communities, by also optimize our

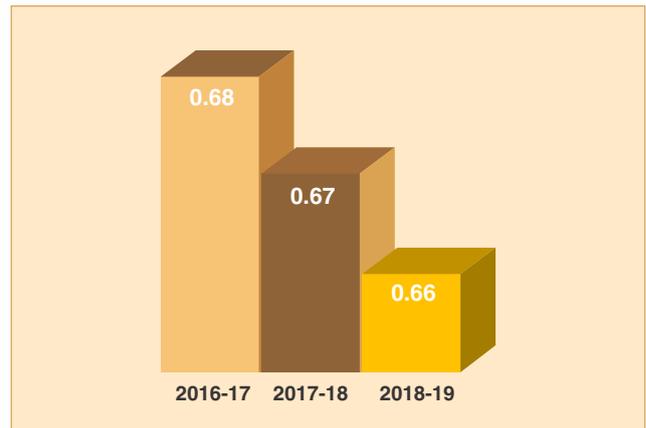
costs of production, and reduces the burden on local resources by minimizing withdrawal and waste generated. During FY19, NTPC sourced about 174.9 Million Metric Tons of domestic coal and 0.8 Million Metric Tons of imported coal.

Apart from coal and water, there are other associated input mate-

rial, which forms a major part of our operations. Like coal and water, these materials are also sourced from nature and so possess the risk of becoming scarce if not consumed judiciously. At NTPC, we take continuous measures for effective and efficient use of our input materials.



Water withdrawal



Per Unit Coal Consumption (kg/kWh)

Coal Mining

NTPC has been allocated 11 coal blocks with estimated geological reserves of ~7 billion tonnes with an estimated mining capacity of 119 million tonnes per annum. With these coal blocks, NTPC aspires to become one of the

largest captive coal mining companies in the country. Director General Mine Safety (DGMS), a Statutory Authority of Govt. of India, has selected Pakri-Barwadiah as one of the two model mines in the country.

6.81 MMT

Coal extracted from Pakri-Barwadiah Mine

0.5 MMT

Coal extracted from Dulanga Mine

Input Material	Lube Oil	Transformer Oil	Chlorine	Ammonia	Alum	HCl	H ₂ SO ₄
Consumption	889.08 kl	243.85 kl	4,656 MT	28,929 MT	11,081 MT	15,769 MT	18,939 MT
Specific Consumption	3.30 l/MU	0.91 l/MU	581.4 kg/MU	62.8 kg/MU	1235.5 kg/MU	1436.3 kg/MU	2037.3 kg/MU

Input Material Consumption during FY19

Fuel Security

We have taken steps for continuous sustainable business operations by ensuring fuel availability and controlling equipment forced outage. With robust all-round performance, we have been able to

retain the "Excellent" rating for the MoU signed with the Government of India again.

To ensure fuel security at its coal-based stations, NTPC has taken various steps like long-term coal

95.4% ACQ

materialization during FY19 as against 94.8% in FY 18.



Sustainable sourcing of Coal by NTPC

supply agreements, MoUs, allocation of Bridge Linkages, coal import.

Eleven of our coal based stations, representing 64% of our coal-based capacity, are linked by MGR/belt conveyor system to coal mines. We have entered into Fuel Supply Agreements (FSAs) with Coal India Limited & Singareni Collieries Company Limited for 172.31 MMTA - sufficient to meet 75% PLF requirement. We have an MoU with Railways for ensuring smooth coal transportation. We have achieved 100% unloading-end weightment of rakes.

We have also made arrangements for meeting the fuel requirement at our gas stations. The gas requirement at our six existing gas-based stations is 16.39 MMSCMD. We have long-term domestic gas/RLNG supply agreements with GAIL for meeting gas demand. The contracted capacity stands at 16.3 MMSCMD.

Further, for mitigating gas shortage, there are arrangements to take Spot RLNG from various domestic suppliers on 'Reasonable Endeavour' basis. All stations except Gandhar have liquid fuel firing facility also and maintain adequate stocks of liquid

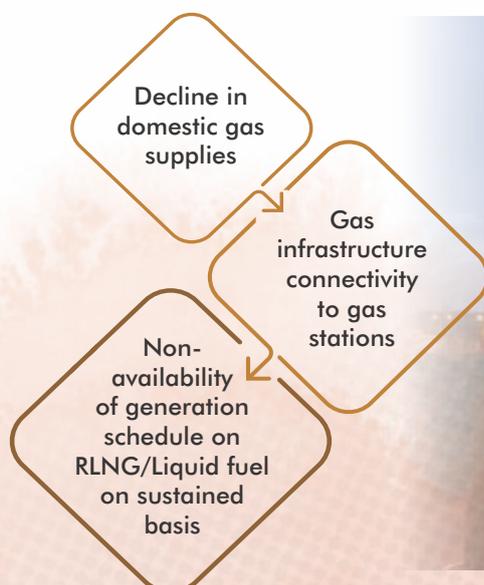
fuel for meeting the grid's power requirement. We have the flexibility of diversion of APM/PMT/Non-APM gas amongst our stations.

Our Naphtha-based station at Kayamkulam (360 MW) has a Naphtha supply agreement with BPCL, which is sufficient to run the plant at 85% PLF.

4.2% increase

in domestic coal receipt over FY18

Issues and challenges in securing gas supplies



Initiatives in Sustainability

NTPC through its state of the art research centre called NTPC Energy Technology Research Alliance (NETRA) is working in various fields like Efficiency Improvement, New & Renewable Energy, Climate

Change & Environmental Protection, Recovery of energy from Waste and Advanced Scientific Services. Below are some of the initiatives taken up by NTPC in the year 2018-19.

New Energy

- Integration of Solar thermal energy with conventional rankine cycle
- Indigenous production of solar floating platforms
- Setting up of solar thermal cooking systems
- Ground source Heat Pump (GSHP) for cooling/ heating application



Clean coal & carbon capture

- CO₂ capture & utilization technologies:
 - CO₂ fixation by micro algae
 - Development of modified amine absorption based process to separate CO₂ from flue gas
- Setting up fly ash based light weight aggregate pilot plant



Energy efficiency

- Utilization of low grade heat from power plant flue gas:
 - Development of HVAC system using low grade heat from steam generator flue gas
 - Design and engineering of steam generator based desalination plant
- Heat rate improvement using Wing-Solar hybrid
- Capacity building in areas like CFD modelling, online performance optimization tools for thermal power stations using artificial neural networks, fuzzy systems etc



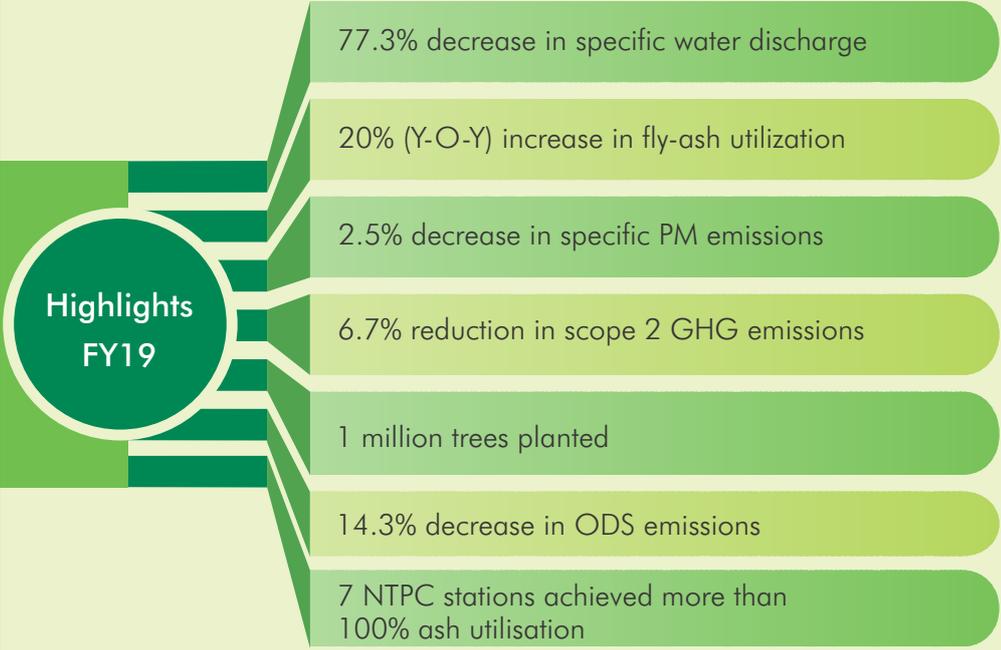
Renewable Energy

- Commissioned 870 MW of solar power projects, and 50 MW of wind based projects on its own
- Won 245 MW of solar projects under tariff based competitive bidding
- Installed roof top solar projects on some of its building roofs, townships and office buildings





Natural Capital



Material Topic(s)
[2] [3] [4] [5] [7] [14] [15] [16] [17] [21]

NVGSEE Principle(s)
[2] [6] [9]

“ For NTPC, environmental sustainability is just a performance matrix, but is intrinsically inter-woven into its long-term growth strategy. In line with our value of sustainable production and consumption of natural resources, we are continuously upgrading our systems to set new global benchmarks in environmental compliance, practices and stewardship. ”



Natural Capital

Related sustainability topics

- Compliance Management
- Climate Change impacts
- Water management
- Air emissions
- Energy source diversification/De-carbonization of power mix
- Biodiversity
- Effluent management
- Waste management
- Fly ash utilization

Risks mapping:

- Compliance of emission, ash utilization and other regulatory norms
- Sustaining efficient plant operations
- Water footprint reduction
- Non-availability/ failure /sub-optimal use of ERP
- Threats to safety & security of people & property
- Natural/ manmade disasters

Reference to other frameworks: IPIECA : E11

Relevant GRI indicators:

- | | | | | | |
|---------|-----------------|-----------------|-----------------|---------|-----------------|
| • 301-1 | • 334-3 | • 306-3 | • 64-EN21 (ADR) | • 302-1 | • 304-4 |
| • 306-4 | • 64-EN22 (ADR) | • 302-2 | • 305-1 | • 306-5 | • 64-EN23 (ADR) |
| • 302-3 | • 305-2 | • 307-1 | • 302-4 | • 305-4 | • G4-E U13 |
| • 303-1 | • 305-5 | • 64-EN11 (ADR) | • 303-2 | • 305-6 | • 64-EN12 (ADR) |
| • 303-3 | • 305-7 | • 64-EN15 (AGR) | • 304-1 | • 306-1 | • G4-EN16 (ADR) |
| • 304-2 | • 306-2 | | | | |

Relevant SDGs:

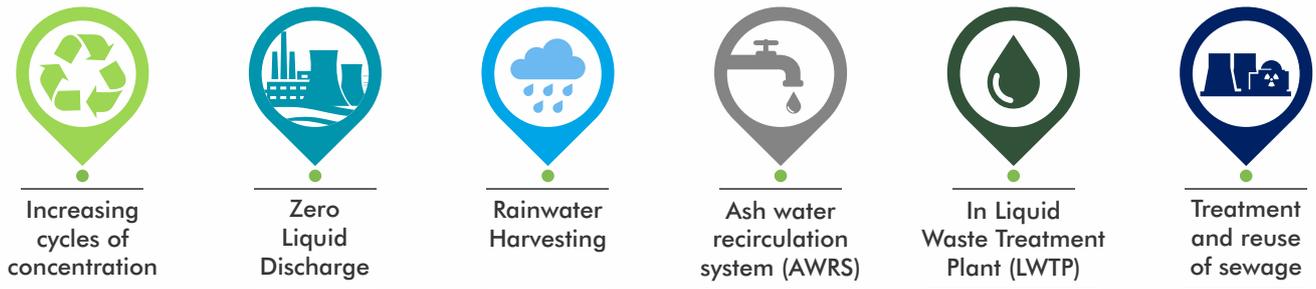


At NTPC, we practice a precautionary approach to address all environmental risks. We have undertaken EIA studies based on which Environmental Management Plans for all stations are prepared and implemented. Our environ-

mental policy focusses on optimum utilization of natural resources, minimization of waste by recycling & reuse and adoption of latest technologies. We regularly upgrade our operations and strive to exceed the norms of

environmental parameters as prescribed by regulatory authorities. All our stations are ISO: 14001:2015 certified. We have also established an environmental grievance mechanism for recording all grievances.

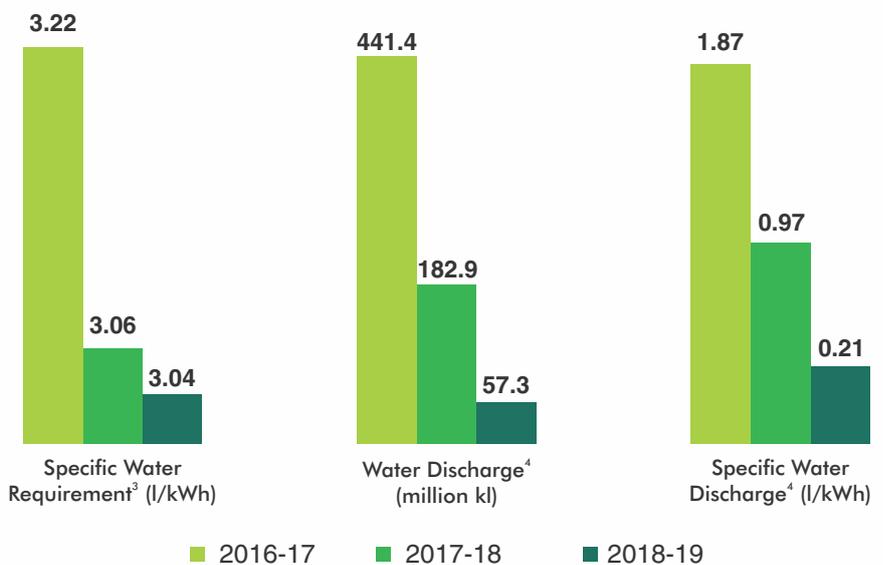
Water & Effluent Management



Our water conservation strategy

At NTPC, water is our prime resource, and we use water in a sustainable manner. We procure our water from State Governments. We monitor and continuously optimize our freshwater consumption using 3R principle (Reduce, Recycle & Reuse). Increasing reuse and recycling of effluents has also led to a decrease in water withdrawal per unit generation.

In Thermal Power Plants, water is recycled in a closed loop, and only make up water is required for ensuring continuous operations.



344.78
million kl of recycled treated water used

6.95
pH

33
mg/lit TSS

1.7
ppm O&G

Water Discharge Quality parameters

5,932 Lakh kl
water withdrawn

3. Calculated on closed loop systems

4. CW discharge of once through systems and coastal plant is not considered in effluent quantity

100% decanted water being used from ash dykes using Ash Water Recirculation System

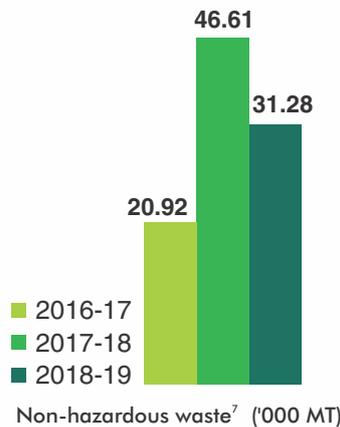
The effluent from various sources are collected for treatment in a Liquid Waste Treatment Plant, and the treated effluent is re-used for ash handling, service water, etc. All⁵ our stations are designed in the closed cycle system and therefore the plant effluent discharge into water bodies is very minimal, with no impact on the related habitats. Where treated effluents are discharged into the natural water-course, it is in conformity with the

regulatory standards. Additionally, we have put in place an Ash water recirculation system (AWRS) to reuse the water from ash pond for ash handling and service water. Further, we are in the process of implementing the Zero Liquid Discharge (ZLD) at all our stations. So far ZLD has been achieved at 10 stations. We have also implemented rain water harvesting systems at all of our locations⁶.

Waste Management

Our integrated approach for waste management comprises of collection, segregation, transportation, processing, recycling, and disposal of various categories of wastes. While the focus is towards optimal utilization of resources requiring only minimum quantities to be disposed off. Where disposal is required, all rules and regulations are complied with. NTPC has always been pursuing the operational excellence path that ensures resource efficiency in terms of reduced material consumption. Our efforts towards waste minimization have led to a

reduction of over 32% in generation of non-hazardous wastes during FY19 as compared to the previous year.



Almost all categories of hazardous wastes have also shown a commendable decrease in generation in absolute as well as per unit generation terms. We have already phased-out use of polychlorinated biphenyl in our operations.

32,661 MT
Municipal waste disposed during FY19



Say No to Plastic - encouraging use of Jute Bags

5. Some of our old stations have once through cooling water system
6. Available at all except five stations where RWH is not possible
7. Includes miscellaneous ferrous and non-ferrous scrap

Maharashtra State Government award for best Solid Waste Management at Mouda in collaboration with Panchayat

We have banned single-use plastic at our locations

4000
Fully grown trees saved
3.3 Cr of A4 size eq. paper saved due to our paperless initiative

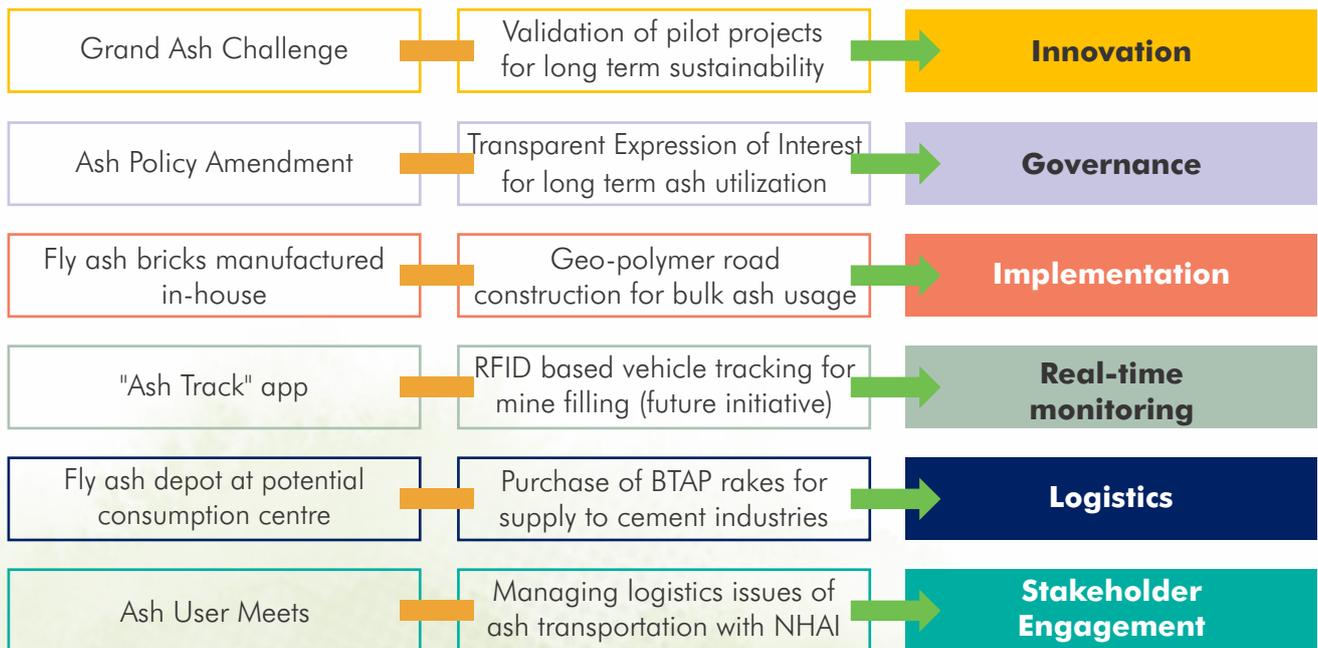
Hazardous wastes generated and their disposal methods

Waste type	Disposal Methods	Unit	Quantity	Reduction (y-o-y)
Lube oil	Sold to registered recyclers	kL	764.3	40.60%
Used Batteries	Manufacturer under buy back policy	MT	86	47.08%
Spent resin	CPCB/SPCB authorised treatment, storage and disposal facilities or through nearby co-processors	kL	17.2	78.06%
Transformer Oil	Sold to registered recyclers	kL	105.6	48.05%
Bio-medical waste	Authorised agencies approved by SPCB	MT	21.6	18.82%
E-waste	Registered & approved recyclers/ dismantlers of CPCB/SPCB	MT	43	-

600 TPD Waste to Compost plant installed at Karsara, Varanasi

We comply with the Hazardous and other Wastes (Management and Transboundary Movement) Amendment Rules, 2019 for transportation of Hazardous wastes. We are also making concerted

efforts towards sustainable ash utilization. Our Ash Policy implemented in serves as our vision document for integrating ash utilization from generation to end product.



Our Ash Management Initiatives

7. Includes miscellaneous ferrous scrap and non-ferrous scrap

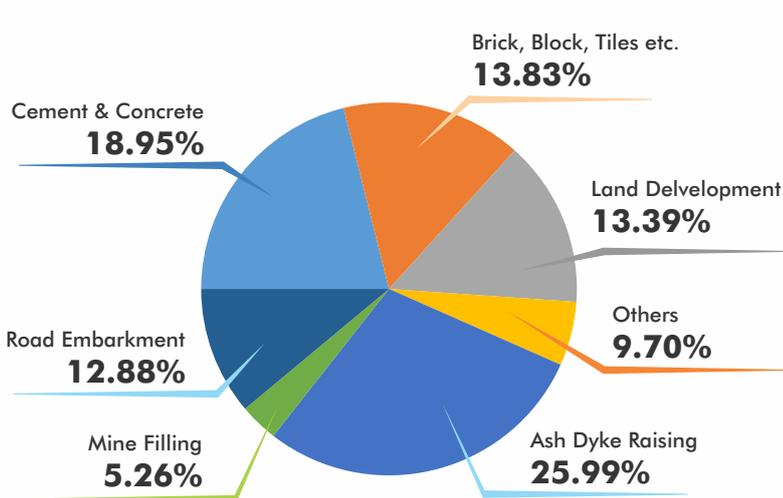
In FY19, seven of our stations achieved 100% ash utilization. We plan to achieve company-wide 100% ash utilization by FY21.

Overall we achieved 63.71% ash utilization, which is an increase of about 20% from the previous year in absolute terms.

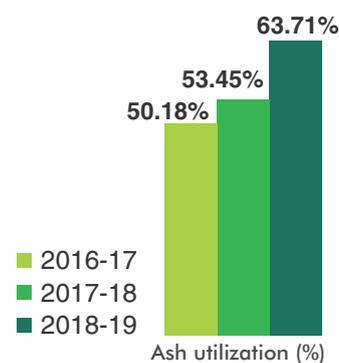
Ash utilization is low at some stations either due to limited ash consuming businesses in the nearby areas, or, overabundance of fly-ash in the area due to multiple thermal power stations in the vicinity. To resolve the issues due to

supply and demand gap, we are in the process of developing fly-ash depots at high consumption centres.

Augmentation of Dry Ash Extraction System at operating stations.

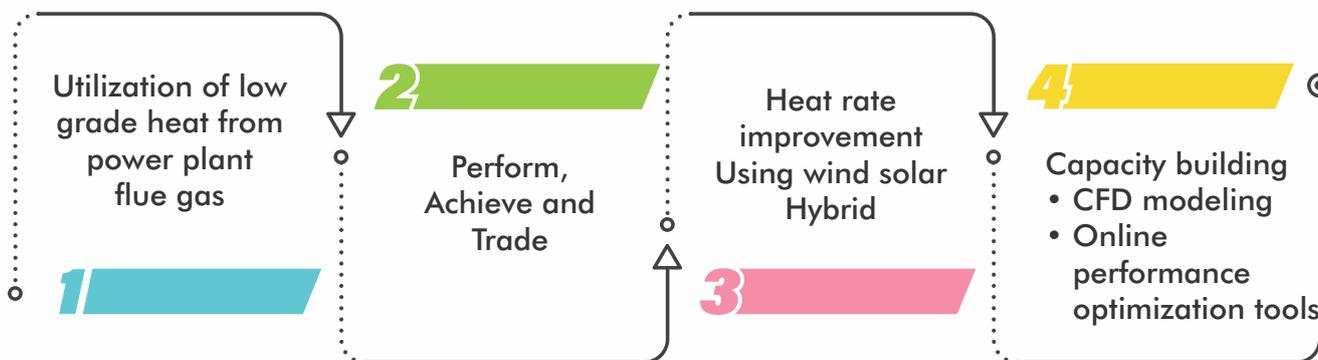


Fly-ash utilization by use (%)



61 Million Tonnes
of ash generated

Energy Management



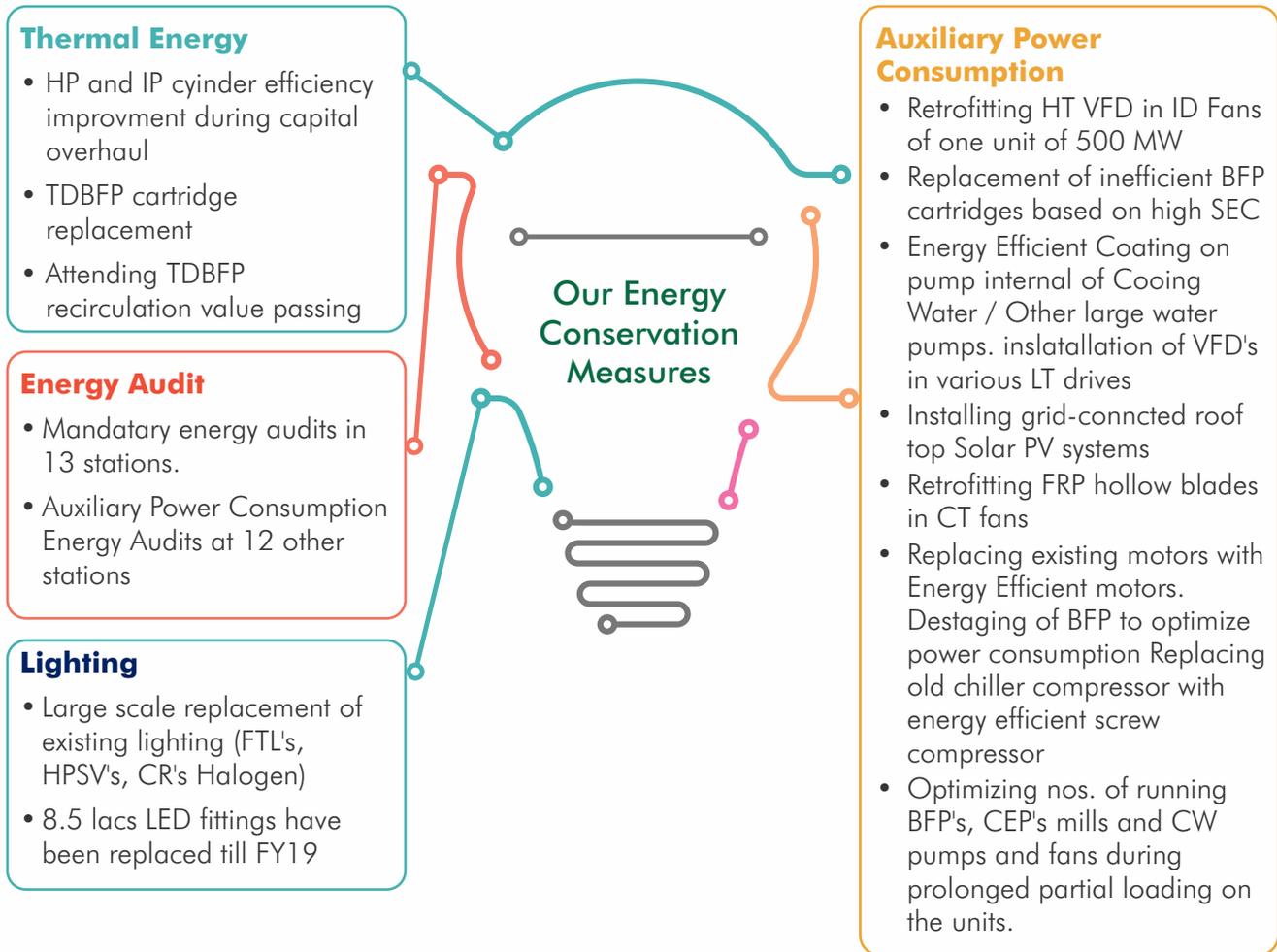
Our Energy Efficiency Initiatives in FY 19

Apart from water, energy is our prime resource, and cost centre. The auxiliary energy consumption has decreased 3.94% over last year. For us, energy conservation is not only a means of reducing our costs, but also a part of sustainable consumption strategy

with a view to conserve national energy reserves. We are in the process of co-firing agro-residues, implementation of Energy and Efficiency Management System, reduction in Auxiliary Power Consumption to further reduce our overall energy consumption.



Electrical Energy Saved (MU)



GHG and Carbon Management

As India's leading power generator, we consider it our ethical responsibility to contribute to the global efforts towards mitigating climate change. We are committed to reducing our Greenhouse Gas (GHG) emissions intensity. Not only have we adopted cleaner and energy-efficient technologies that reduce GHG emissions per unit generation, but we are also diversifying our energy sources.

We have commissioned 24 TPD gasification based demonstration scale Waste to Energy (WtE) plant at Varanasi. The plant generates approximately 200 kW of electric power. Furthering this initiative, we have signed in-principle MoU with Surat and East Delhi Municipal Corporations for setting up state of art WtE plant.

We are also in the process of acquisition of assets like NEEPCO and THDC which will increase our

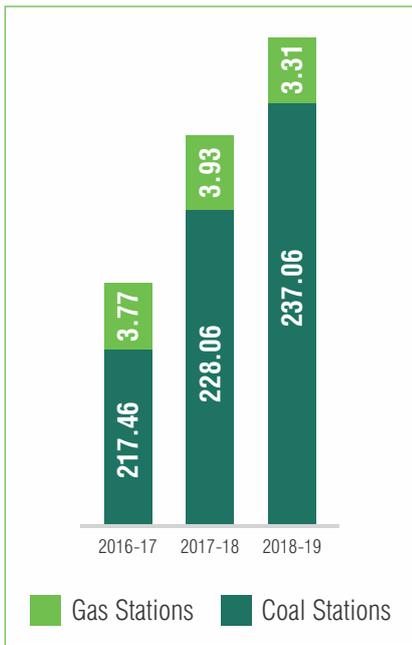


GHG emissions (000' MT)

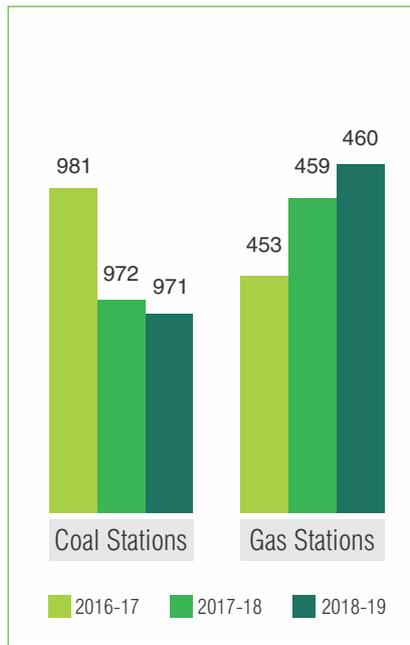
gas and hydro power generation capacities, reducing our future GHG footprint.

NTPC recognizes its responsibility towards using clean fuels and technologies to provide low-carbon electricity at affordable prices and remain committed to supporting India's Nationally Determined Contribution to climate change. As compared to previous years, GHG intensity of our gas stations increased slightly due to partial loading on account of low availability of fuel to gas stations.

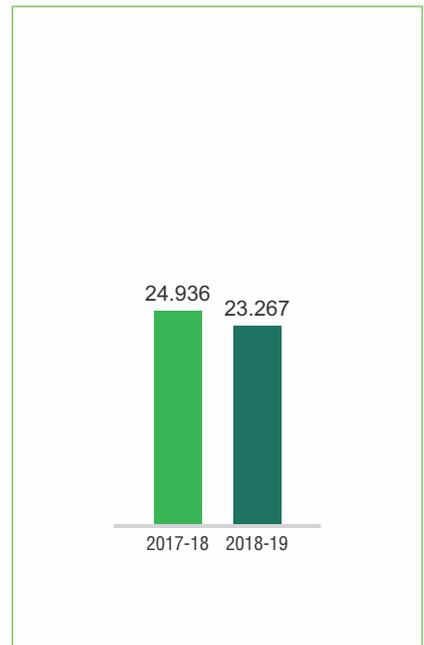
We have developed a strategic and long-term approach to reduce our environmental impact. Our strategy is based on a view to convert climate challenges into opportunities. While on one hand, we are moving aggressively to increase the share of renewables in our portfolio and reduce our per unit energy generation, we are also creating carbon sinks on the other hand to serve the dual benefit of climate change mitigation as well as adaptation.



GHG emissions -
Scope 1 (million MT)



Specific GHG emissions -
Scope 1 (gm/kWh)



GHG emissions -
Scope 2 (000 MT)



FGD Unit at Vindhyachal Super Thermal Power Station

Our climate change strategy



Fuel Diversification

- 1,728 MW non-fossil under power generation capacity
- 30% of our capacity to be non-fossil based by 2032



Efficiency improvement

- 10.6 GW of supercritical generation capacity commissioned
- 10.46 GW of supercritical generation capacity under construction (excluding ultra-supercritical capacity)
- 7.3 GW of supercritical under construction



Renovation and Modernization

- Capital expenditure of ₹ 704.36 crore during FY 19 for R&M of units that have completed 25 years of commercial operation.
- Decommissioning of Badarpur TPP



Plantation

- Memorandums with state authorities to assist India NDC by Planting one million saplings during 2016-26



R&D

- Established NTPC Energy Technologies Research Alliance (NETRA) and earmarked 1% of distributable profits for this venture.
- NETRA worked on research and TDP to mitigate CO2 emissions.

Non-GHG Emissions Management

We have made consistent efforts to reduce emissions using state-of-the-art technologies and monitoring systems. We have installed Continuous Emission Monitoring System (CEMS) in all running units to monitor emissions of Particulate Matter (PM), Sulfur Oxides (SO_x), Nitrogen Oxides (NO_x) in flue gases and real-time data is monitored. We are regularly modifying our power stations for maintaining the environmental parameters as per the norms of regulatory agencies.

We have commissioned a Flue Gas Desulphurisation (FGD) system in Vindhyachal stage-V. Three other FGDs are under commissioning at Bongaigaon, Dadri, and Jhajjar. Out of total 56,000 MW, FGD for more

than 46,000 MW capacity has already been awarded. We are also examining its replication in remaining stations.

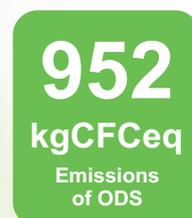
For reducing NO_x emissions, we have taken up pilot projects at its selected stations with SCR and SNCR technologies and are in the process of executing combustion modification at our plants in Jhajjar and Dadri.

We are also continuously undertaking Renovation & Modernisation (R&M) of Electrostatic Precipitators (ESPs)

'000MT		
89	1,203	548
PM	SO _x	NO _x

to consistently bring down emissions of PM from the stacks. We have also started to monitor Mercury emissions from our plants. We are also upgrading our technologies and systems to ensure a reduction in consumption of Ozone Depleting Substances (ODS).

We have already phased out the use of PCBs for the past several years.

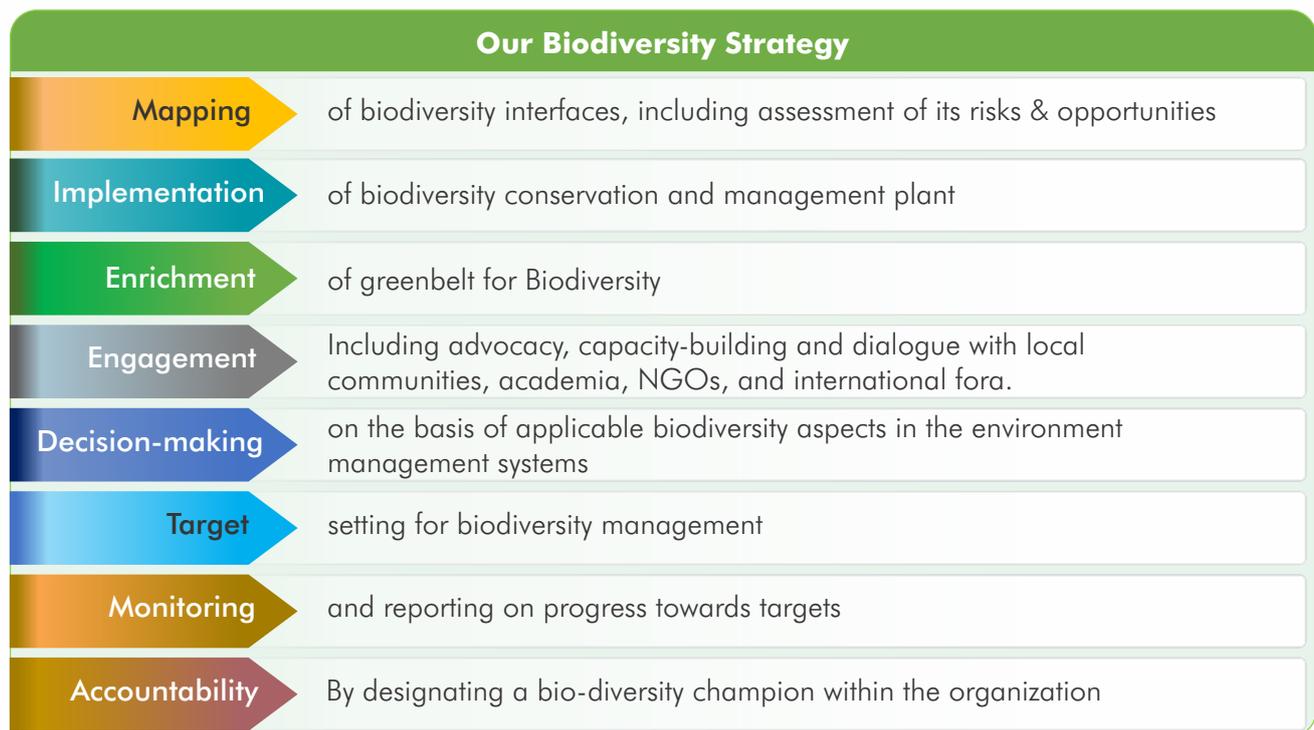


Biodiversity Conservation

At NTPC, we believe that we cannot achieve sustainable growth by compromising on nature. Envisioning a clear and comprehensive goal to preserve our nature, we have developed a dedicated NTPC Biodiversity

Policy in 2018 which clearly states our vision and guidelines for conservation, restoration and enhancement of biodiversity. We understand the importance of our operations to the society and nation's economy, but we are also

cognizant enough to ensure that none of our station location and operation have a significant and irreversible negative impact to protected areas and wildlife sanctuaries.



Conservation of Olive Ridley Turtles

We have a flagship programme towards conservation of Olive Ridley Turtles. The coast of Andhra Pradesh is known for the nesting and foraging of Olive Ridley Turtles - which is a Vulnerable Category species on IUCN's Redlist. Efforts are underway by the Andhra Pradesh Forest Department since 2010 to minimize the impact of human interventions on the critical habitat. We are a proud partner in the efforts of the Forest Department to conserve the habitat of Olive Ridley Turtles by way of a five-year agreement with our Simhadri Station for conservation efforts in 9 coastal districts of Andhra Pradesh covering 732 km of coastal area. Under this initiative, we have committed

₹ 4.6 Crore in a phased manner. Our efforts resulted in increasing trend in the hatchlings released in the sea-water.

Our three-fold conservation plan:

- 1 Identification of nesting beaches
- 2 Development of hatcheries along nesting beaches and ensuring security during hatching
- 3 Capital building of communities to strengthen the conservation efforts

Our wildlife conservation efforts



Development of Ecoparks Dadri



Blackbuck Conservation Meja



Conservation of Great Indian Bustard Solapur



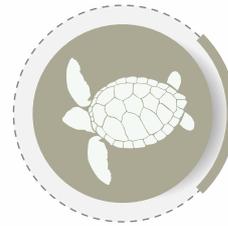
Conservation of Gangetic Dolphin Kahalgaon



Conservation of Marsh lands and birds visiting Samaspur Bird Sanctuary Unchahar



Conservation of Wildlife Tataipalli Coal Block and MGR



Conservation of Olive Ridley Turtle Simhadri

We have not established any thermal power plant within 10 kms of a designated protected area or sanctuary. However, we have taken proactive measures in two cases where near-by areas were designated as sanctuaries after the start of project construction and receipt of environmental clearance to ensure that our operations do not affect the tranquility of these protected areas.

A special scientific study was commissioned to assess the impact of treated effluents from Kahalgaon STPP that are being discharged into a stretch of river Ganges, which was declared as Dolphin Sanctuary after the construction of the project was near completion. The study concluded that the impacts of such discharge on the sanctuary are insignificant.

Even for our Koldam Hydroelectric Power Plant (HEPP), all necessary Forest & Wildlife Clearances have

₹ 226.35 Crore

Contribution for Conservation Activities Forest Department of HP

been obtained and an offset habitat has been created with the help of State Forest Department. Five hundred hectares of land in and around Majithal Wildlife Sanctuary has been acquired and handed-over for Cheer Pheasant (included in vulnerable category of IUCN Red List species) habitat to the Himachal Pradesh (HP) State Government to get it notified as a sanctuary. This land was identified jointly with the Wildlife Wing of the state government.

In addition, another 10 km² wildlife habitat has been identified in consultation with State Forest Department of HP to get it notified as a Sanctuary.

In order to minimize the environmental stress on the aquatic flora and fauna in the downstream of the HEPP, a minimum flow of water is regulated / ensured.

Further, we have taken various voluntary initiatives towards conservation of aquatic and terrestrial wildlife around our operations. Our Simhadri Station in Andhra Pradesh along with the Central Marine Fisheries Research Institute (CMFRI) have joined hands to deploy artificial reefs near the coast. These reefs simulate coral beds, and function as a comfortable habitat for fish and diverse marine organisms. The first deployment of artificial reefs in Andhra Pradesh was successfully done off the Muthalampalem coast.



Our vision of having a healthy ecology around begins from inside of our plants. We give a special thrust to afforestation and green belt development at all our

projects covering vast tracts of land in and around projects. No construction of ash dykes was done near water bodies, river, sea, etc.

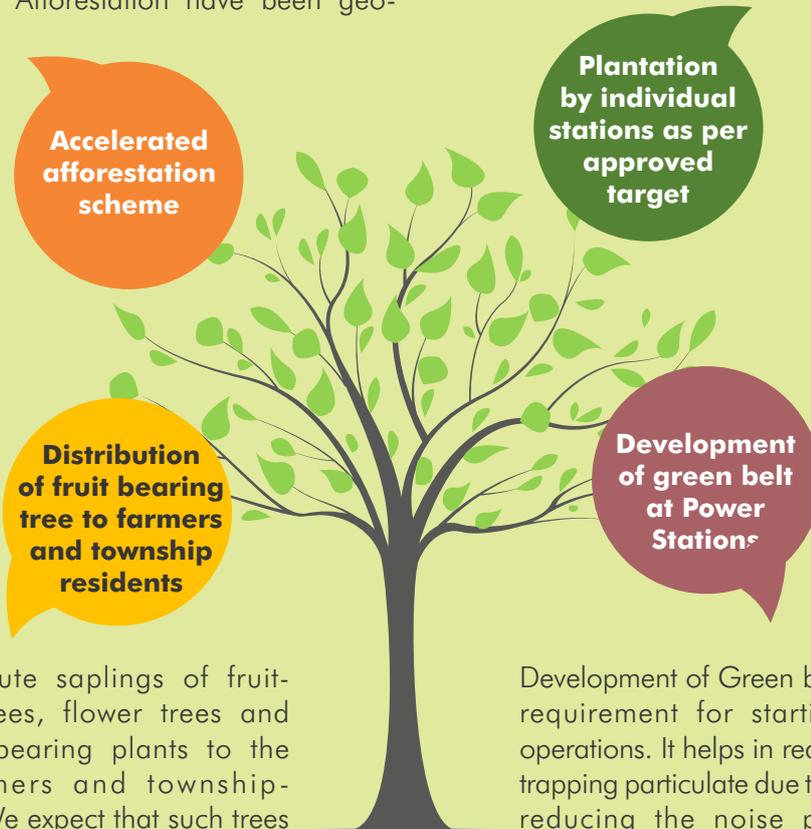
Our afforestation efforts not only add to India's green cover but also perform the role of 'sinks' for the GHG emissions.

₹ 40 Lakhs
Contribution for ex-situ conservation of Cheer Pheasant to Forest Department of HP

34 Million
Trees planted since inception

Under this scheme, we undertook plantations through State Forest Department/ State Forest Corporations via MOU route in Forest/ Government lands. We have engaged a third-party to monitor these plantations for a period of five years. The land parcels under Accelerated Afforestation have been geo-tagged

In order to create additional carbon sinks in line with India's Nationally Determined Contributions, we have decided to plant 10 million trees during 2016-2026, with 1 million trees being planted per year through our various power stations.



We distribute saplings of fruit-bearing trees, flower trees and vegetable-bearing plants to the local-farmers and township-residents. We expect that such trees would act as a source of additional income to the local communities and farmers.

Development of Green belt is a mandatory requirement for starting power plant operations. It helps in reducing pollution by trapping particulate due to plant operations, reducing the noise pollution due to machines in the plant, reducing the temperature in the surrounding and improves the oxygen content of the atmosphere.

Human Capital

Highlights FY19

0.40 Man-MW Ratio achieved

14.95 MUs generation per employee

10X programme setup for junior and middle level management

A biometric labour attendance system CLIMS for contract labour introduced

108,156 Man-Hours on Human Rights Training

25 executives certified in Design Thinking program in partnership with MIT, Solan.

Material Topic(s)

[1] [19]
[20] [24]

NVGSEE Principle(s)

[3] [5]

“

At NTPC, we believe that our success is connected with our people. Employees are the driving force behind our sustained stellar performance over all these years of market ascendancy. As a commitment towards our core values, employees' participation in our management has been made effective based on mutual respect, trust and a feeling of being a progressive partner in growth and success.

”



Human Capital

Related sustainability topics

- Labour practices
- Compliance management
- Employee development and engagement
- Diversity and inclusion
- Health and Safety

Risks mapping:

- Attracting and retaining skilled and experienced employees
- Succession planning

Reference to other frameworks:

- IPIECA: HS1, HS2, HS3, HS5, SE8, SE10, SE15, SE16, SE17, SE18
- UNGC: 1, 2, 3, 4, 5, 6

Relevant GRI indicators:

- 401-1
- 401-2
- 401-3
- 403-1
- 403-2
- 403-3
- 403-4
- 405-1
- 405-2
- 408-1
- 409-1
- G4-10 (ADR)
- G4-11 (ADR)
- G4-EU15
- G4-EU17
- G4-EU18
- G4-LA6 (ADR)
- G4-LA6 (ADR)

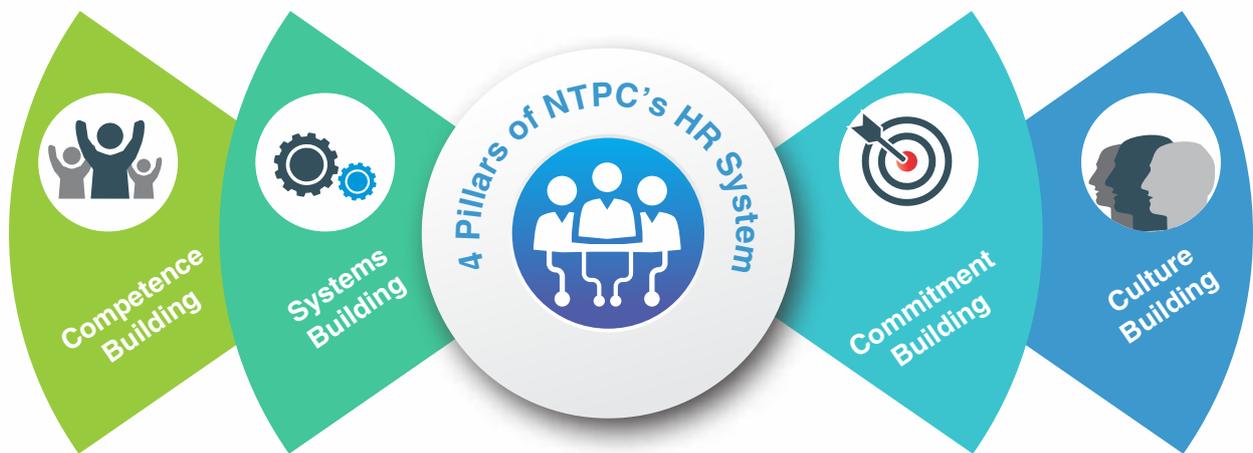
Relevant SDGs:



At NTPC, we take pride on our extremely talented team of committed professionals. NTPC has been able to induct, develop and retain the best talent and has a low executive attrition rate. The HR

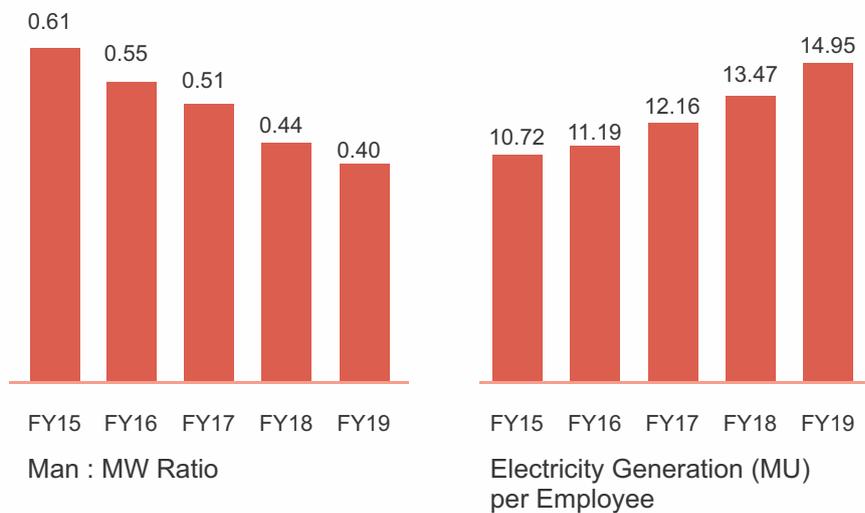
vision of NTPC is "To enable its people to be a family of committed world class professionals, making NTPC a learning organisation." Our HR System is based on four pillars.

Over the years our strong values, commitment and focused system have led us to receive various HR Awards by reputed institutions and consistently featured us among the "Great Places to Work For".



Workforce Snapshot

Our highly qualified and committed employees contribute to our growth. The commitment is also reflected in terms of financial parameters such as sales per employee, value added per employee etc. Our overall Man-MW ratio for FY19 was 0.40 and 0.38 including JVs & Subsidiaries. Power generation per employee was 14.95 MUs during the year.



19,013

Total permanent employee strength of the company

64,079

Total Contractual employee strength of the company

1,244

Total permanent female employee strength of the company

514

Total specially abled employee strength of the company



The breakup of current workforce by gender

Employees at sites (segmented by Region)	FY19
Corporate	1554
North	4326
National Capital (NCR, DBF)	1178
South	2311
East-I	2717
East -II	2073
West -I	1308
West-II	3001
Hydro	280
Mining	265
Total	19,013

Total Employee	FY19	
	Separated	New Hire
Male	40	644
Female	5	67
Total	45	711

Total number of Employee Hired and Separated



Total number of Employee (Segmented by Region)

Equal Opportunity, Diversity and Inclusion

At NTPC, we believe in employee diversity and have a dedicated workforce with diverse talents, perspectives and backgrounds. We recognise and respect the different cultures, origins, races, religions and sexual orientations among our people and do not discriminate any individual based on their religion, gender, caste or disabilities.

Besides equal employment, the workforce is also entitled to the same benefits, training and skill enhancement programs. Men and women are treated at par in all respects. As a part of performance management system, all executives receive performance feedback during mid-year review and final appraisal.

At NTPC, for our full time employees we extend an entire gamut of benefits from paid childcare leave, comprehensive medical care, education, housing, social security to post-retirement medical benefits.



Benefits to full time employees

Parental leaves are applicable for both genders. However, as per regulation, some additional benefits such as maternity leave, and special childcare leave of 2 years are provided to women employees.

NTPC complies with the Minimum Wages Act. The lowest wage of employee in NTPC is same across

all locations of the company irrespective of the gender. The minimum wage payment to the contractor workers bank account is also ensured by NTPC through proper verification of documents like payment sheets, PF deposit receipt etc. The remuneration policies are in line with DPE guidelines.

100%

Eligible employees covered under parental leaves

Most of our Operating Stations are OHSAS 18001 certified

Employee - Management relationship

At NTPC, respect for human rights, individual dignity and professional conduct is crucial for our operations. NTPC is committed to 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. We conduct business in an ethical manner where our workforce is appreciated and valued. Centre of excellence related to HR Practices has been established at Simhadri and Unchahar stations.

We respect rights of our employees to freedom of association in accordance with applicable laws. All NTPC employees non-

executive category have freedom to associate themselves with various unions to facilitate collective bargaining agreement.

The minimum notice period for significant operational changes like location transfer or termination/resignation from service varies between one to three months.

We also ensure safety of our employees at the workplace and strive to maintain a safe and secure culture for our women workforce. To this end, we have Internal Complaints Committee at all our operational locations where complaints against sexual harassment can be registered. This is supported by the Anti-Sexual Harassment Policy which ensures a

free and fair enquiry process. During FY19, three cases were reported, out of which one case was resolved and the other two cases are under process / investigation.

NTPC has a time bound Grievance Redressal Mechanism for all employees. Employee grievances are also captured through different channels like participative forums, communication meetings, employee organizational climate survey, etc.

We ensure that there is no violation of the rights of employees. All employees and contractors are sensitised on Human Rights related topics through structured training programmes.



Interaction of Senior Management with employees

Security Practices

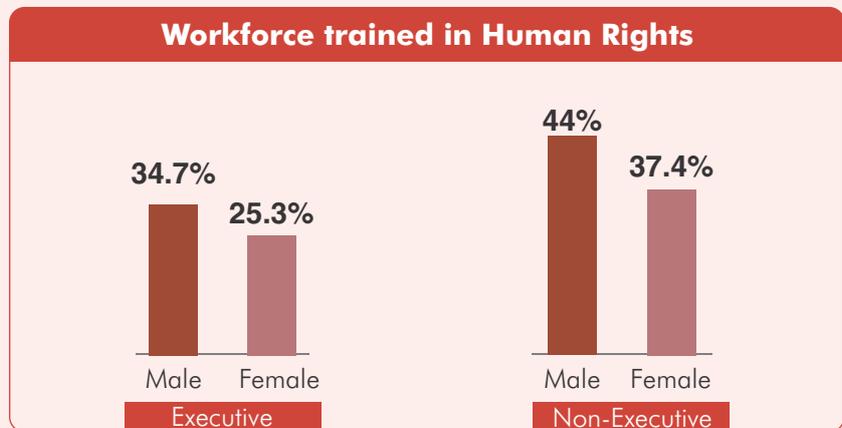
At NTPC we understand our responsibility for establishing and maintaining a secured working environment. This is taken care deployment of CISF as per norms of Ministry of Home Affairs. Similarly, ex-servicemen security agencies are deployed in the non-core areas like project townships, etc. duly sponsored by the

Directorate General of Resettlement, under Ministry of Defence, as per norms set by the DPE. Gol imparts training and refresher courses to these personnel in security systems and Human Rights aspects before their formal induction to the service. Concrete steps are being taken for upgrading surveillance systems at

all projects / stations by installing state-of-the-art security systems.

We have introduced Contract Labour Information Management System (CLIMS), a biometric labour attendance system for contract labours. Besides improving security this has also helped in monitoring labour payments and benefits.

Issues related to Human Rights of external stakeholders specifically Project Affected Families (PAF), is handled with adequate transparency maintaining a focused approach on consultation and participation. Our policies make special provisions for vulnerable communities. In addition to individual benefits, a comprehensive community development is also undertaken. Institutional mechanisms are also in place for Grievance Redressal. Human rights clauses are included in all significant investment agreements



and contracts.

NTPC regularly conducts monitoring of compliance with regulations as well as internal policies. During the

reporting year, no complaints on Human Right related issues like child labour, forced labour, etc.

Key Highlights:



None of its operations were found to have risk of child, forced or compulsory labour during the reporting period

There was no incident of discrimination in the reporting period

No cases on human labour, involuntary labour, rights of the disabled etc. were reported during FY19



People before PLF

People before PLF (Plant Load Factor)' is the guiding philosophy behind the entire gamut of HR policies at NTPC. We value our employee and believe that the quality of benefits for our employees is one of the motivation factor in improving employee retention and enhancing their productivity.

At NTPC, regular feedback is taken

from employees by conducting annual employee satisfaction surveys through external agencies. The purpose is to seek employee feedback on various systems such as satisfaction w.r.t. safety and security, grievance-handling mechanism, organization commitment, monetary benefits, job satisfaction, welfare facilities,

recognition and appreciation among others. The valuable feedback helps us improve our systems.

We have introduced the work-from-home policy for our employees on pilot basis to increase employee motivation, convenience to work and better management of work/life balance.

Talent Management

We believe in holistic development of not just our product but also of our employees to give them an edge for their personal and professional growth. We have been able to sustain emerging leadership through comprehensive learning and development programs. Our quest to keep the organization in tune with the emerging business is reflected in our new tag line for learning "**Learning at speed of business**".

Our commitment towards a dedicated and comprehensive learning approach is driven by:

- **Power Management Institute (PMI), an Apex L & D Centre at the corporate level.**
- **Six Regional Learning Institutes (RLIs)**
- **Employee Development Centers (EDCs) at each operating station**

The effective chain of PMI, RLIs and EDCs provided an effective learning grid to the employees.

We also promote international training and development opportunities for our employees. We have successfully partnered with several eminent international educational institutions like Harvard Business School, Wharton Business School, etc. on various subjects matters.

Our collaborations for holistic development:

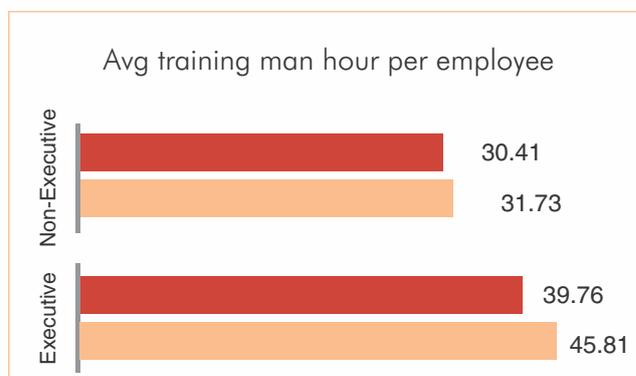
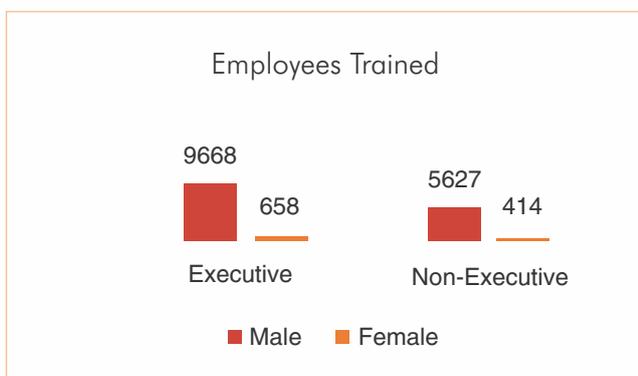
- ISHA Foundation
- Art of Living
- Swami Sukhbodhan
- Brahma Kumaris

Key Highlights

- Channeling innovation across organization through various collaboration and certification like:
 - Harvard manage Mentor- 2000 licenses
 - GPiLearn Courses- 1000 licenses
 - Strategic Human Resource Management- 200 memberships
 - E-Library- 25000 ebooks
- Certification program for 25 executives in Design Thinking program in partnership with MIT, Solan
- Introduction of advanced program augmented with reality and virtual reality effects for classroom development programs to provide more dynamic and enthralling learning experience
- Young Leader Development initiative for handpicked potential young executives to learn advanced cross functional subjects' tools and technologies
- Platform like NTPC PMI Eminent Speaker Series for employees to hear the experiences of eminent personalities from different walks of life
- National School of business for diploma courses in energy management being run at PMI, Noida in association with IIM, Ahmedabad
- NTPC adopted 18 nos. of ITI's and 8 nos. new ITI's colleges across India for skill development programmes in various trades
- NTPC managing the institute at IIIT, Raipur and Medical college at Sundergarh, Odisha with appropriate funding.

Training Highlights

FY 2018-19



Occupational Health and Safety

We are committed in our approach to providing a safe and healthy work environment to all our employees and contract workers. Organizational safety is a part of our core values. Thus, we precisely inculcate safety awareness among our workforce. Striving for zero-incidence at our workplace, we have a regulated set of procedures and safety rules for all our work stations which has to be mandatorily followed for all business operations.

Our robust occupational health and safety management system implemented at all our operating stations and projects covers 100%

of our workforce including contract workers.

Every year, internal safety audits by

Safety Officers and external safety audits by reputed organizations are carried out as per statutory requirements for each Project / Station.

Our safety Principles

- Hazards can be identified
- Every job shall be done safely
- Visible demonstration of responsibility and accountability for safety
- Right procedures and actions to control risks
- Trained and committed team for incident-free operations
- Compliance to all applicable safety regulations

In accordance to our safety principles, we have developed a comprehensive and centralized Hazard Identification, Risk Assessment and Control (HIRAC) document for our Coal, Gas, and Hydro stations. Station-specific HIRAC documents are prepared to identify site-specific risks and control procedures. Strategy for safety implementation is made in the form of Operation Guidance Notes (OGNs), Local Management Instructions (LMIs), Job Safety Analysis (JSAs) and Disaster Management Plan (DMP). We promote collaborative and participative approach by fostering employee participation, consultation, and communication on health and safety aspects. To be able to effectively carry forward and institutionalize such participatory

approach across all levels and functions, training programs for our employees and contractors' are conducted on a regular basis. Every year, concerted efforts are made to ensure that 80-90% of our workforce undergo such training. During FY19, we have conducted over 46 training programs and workshops on safety for our employees and contractors. To work towards continuous awareness for emergency response procedures, we have successfully established Unchahar-NTPC Safety Academy where our employees and stakeholders are provided hands-on training on safety and emergencies. A safety committee at each of our operating stations has been constituted as per the Factories Act. Annual medical examination of

our employees working in hazardous areas is conducted. To minimize such risks, regular monitoring of the workplace for hazards like dust / coal dust, gas / vapor, illumination, noise-level is carried out. NTPC owned hospitals provide round the clock service to its employees and their dependents across locations. We have empanelled with 250+ specialty and super specialty hospitals in over 25 cities/towns. Ambulances equipped with Advanced Life Support systems are available at power stations to cater to medical emergencies. Preventive health checkup of all employees is done annually. Awareness programs by specialists on medical & lifestyle subjects are conducted regularly.



For FY 2018-19, we have invested 6,034 learning man-days on 270 training programs covering 5,855 professionals

Safety Highlights FY 2018-19

- Total Man hours of training - 36,209 hours
- Average training Man-hours per employee - 6.40
- Four of NTPC stations are going for international level NOSA accreditation in Safety and Environment.

	Frequency Rate of fatalities*	No. of high consequence injuries	Rate of high consequence injuries	No. of injuries	*Frequency Rate of injuries	Man days Lost	Hours Worked
NTPC	0	Nil	Nil	7	0.19	123	3,66,94,392
Contractor	0.04	Nil	Nil	43	0.29	37,510	14,84,18,096

*The rate have been calculated based 10,00,000 hours worked

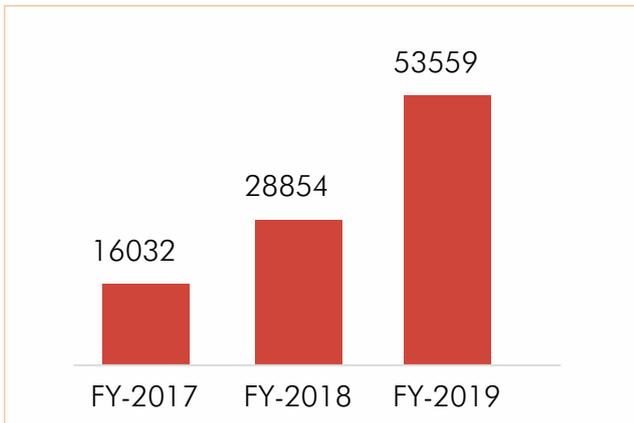
We have a formal process for investigation of all accidents to assess the cause, extent of loss and recommendation for prevention. There is a robust incident reporting system across NTPC which is

closely monitored in terms of Lead and Lag indicators. Since activities representing Lead indicators are proactive in nature, NTPC gives due importance in promoting such activities. They help in identifying

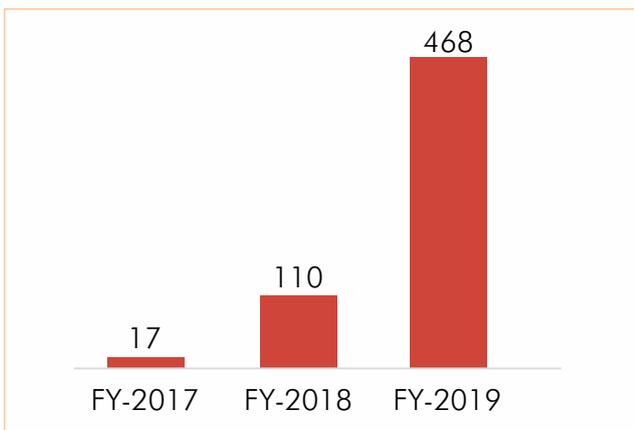
potential hazard in terms of unsafe condition unsafe act and eliminates. This gives the right direction of the company in improving safety culture towards progressing to incident free work place.



Shri R.K. Singh Hon'ble MoP (I/C) reviewing NTPC Barh

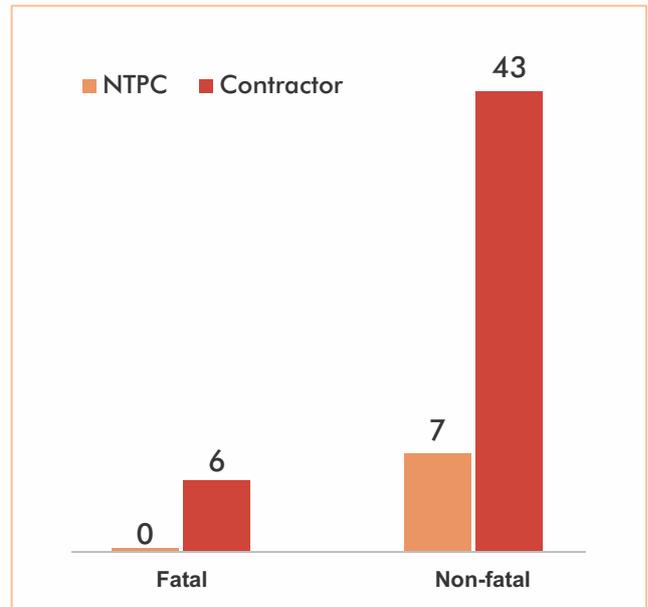


Lead Indicator – Deviation Reporting



Lead Indicator – Near Miss Reporting

No incident of work-related ill health or occupational disease case were recorded during the reporting year. Further, no legal cases or potential risks related to health and safety including diseases and judgments



Total Reportable Injuries
(for operating stations only under factory act)

affecting members of the public were recorded. In line with our long-term goals, we have established effective engineering controls at all our stations to indicate and monitor emergency situations at our sites. Detailed emergency plans have been developed at all stations as per statutory provisions and responsibilities are assigned to all concerned to handle emergency situations. We conduct regular mock-drills at our stations and observations / suggestions, pursuant to such drills are complied with. We are also conducting regular awareness programs on disaster management.



Social Capital



Highlights FY19

Highest MSE procurement & 2nd highest for SC/ST MSE procurement in FY19 amongst Maharatna PSUs

97.8% indigenous purchase in value

31% increase in procurement from MSEs from last year

₹ 285.46 Cr spent during FY19 towards CSR activities

19 States and 500 villages covered through our CSR works

10 Lakh lives touched through CSR works

All Girls Super 30 at Varanasi setup

Launched Girl Empowerment Mission (GEM)

Material Topic(s)

[6] [10] [11]
[13] [22]
[23] [26]

NVGSEE Principles(s)

[2] [4] [7]
[8]



At NTPC, we put our partnerships ahead of profits. We consider people, and not production as the corner-stone of our growth story. We work to ensure our progression remains people-driven and people-centric. We strive for equitable, inclusive, sustainable and simultaneous growth for our communities, customers and suppliers.





Social Capital

Related sustainability topics

- Ethics and Integrity
- Customer satisfaction and loyalty
- Indigenous people's rights
- Sustainable supply chain
- Disaster management
- Land acquisition
- Community engagement

Risks mapping:

- Regulatory & legal
- Safety, security of people and property
- Natural / manmade disaster
- Sustaining realisation

Reference to other frameworks:

- IPIECA: HS4, SE1, SE2, SE3, SE4, SE5, SE6, SE7, SE9, SE13, SE14
- NVG Principle : 2, 4, 7, 8
- WBCSD

Relevant GRI indicators:

- | | | |
|---------|-----------|-----------|
| • 204-1 | • 414-1 | • 417-2 |
| • 205-1 | • 414-2 | • 417-2 |
| • 205-2 | • 416-1 | • 419-1 |
| • 205-3 | • 416-2 | • G4-EU22 |
| • 308-2 | • G4-EU25 | • 413-2 |

Relevant SDGs:



We endeavour to meet the expectation of our Customers, Vendors, Regulators and Communities. Our Commercial, C&M, CSR and R&R functions are at the forefront of our interactions with most stakeholders.



Pillars of our Customer Relationship Management

Our Customers

We recognize Customer centricity as one of our core values. We have an elaborate system of Customer Relationship Management (CRM), through which we reach out to our customers to collect their valuable feedback / experiences / expectations using regular structured interactions.

As per the Customer Satisfaction Index (CSI) survey conducted in FY19, there are no complaints 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.

As a responsible power producer, we offer technical and managerial support services to our clients to the best of our capabilities, as required, even though we are not directly involved in the businesses of transmission and distribution.

We offer various customer support activities in different areas, including health and safety aspects to the customers in the form of workshops and seminars.

We take due care in displaying safety instructions in the local languages. Electricity, our sole product cannot be labelled due to its intrinsic nature. However, NTPC has been complying with the Grid Code and Grid standard - national and international - wherever applicable.

No incidence of non-compliance with regulations and voluntary codes concerning the health and safety impacts of our product and services during their lifecycles, was reported. No complaints have been received concerning breaches of customer privacy, neither have any leaks, thefts, or losses of customer data been identified during FY19.

Our marketing strategy is managed by our commercial function.

It analyses the demand and supply situation in the region and markets the power from the new proposed projects. Based on the consent received, Power Purchase Agreements are signed with the state power utilities. Allocation of power from the new generating station to the respective State Utilities is done by the Ministry of Power, Government of India.

Given the recent thrust on renewable energy generation in the country, there is a scenario of reduced generation from coal/gas plants. Our commercial function makes the un-requisitioned surplus power available to interested consumers through Power Exchange or bilateral agreement. We have created an online portal with direct connectivity to customers / beneficiaries and Regional Load Despatch Centres (RLDCs) for ease of transactions.

During FY19, no non-compliance concerning marketing communications was reported.



Micro & Small Enterprises Vendor Meet at NTPC Faridabad

Our Suppliers

We believe in maintaining transparency in our procurement process. We have a dedicated Shared Services Centre (SSC) for procurement that provides a uniform platform for gathering requirements and coordination at centralized levels. The platform provides better control and compliance with various policies and guidelines. Currently, there are 9 shared service centres catering to the procurements of over 30 of our sites.

As a result of the SSC, we are able to screen all our vendors on a continuous basis for any negative impacts on the environment, society or any potential human rights violations.

We practice a fair, equitable and transparent tendering procedure. Human Rights provisions are built in our bidding documents for supply-cum-erection and civil packages invited on competitive bidding basis covering our suppliers and contractors.

All our supply chain partners are committed to ensure no instances of child labour or forced labour.

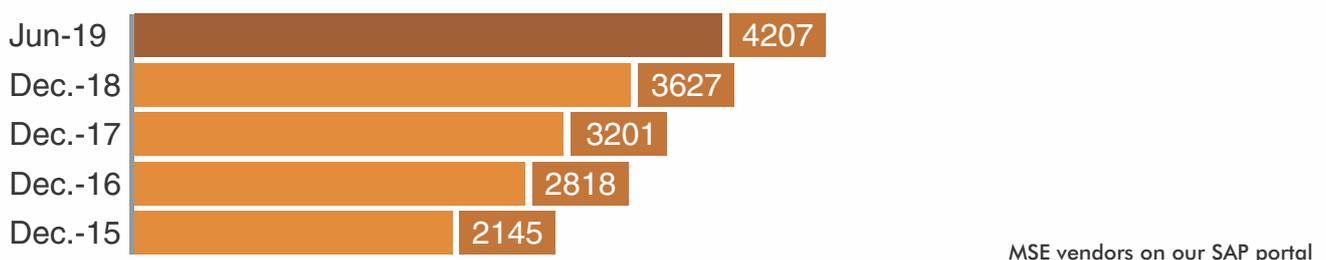
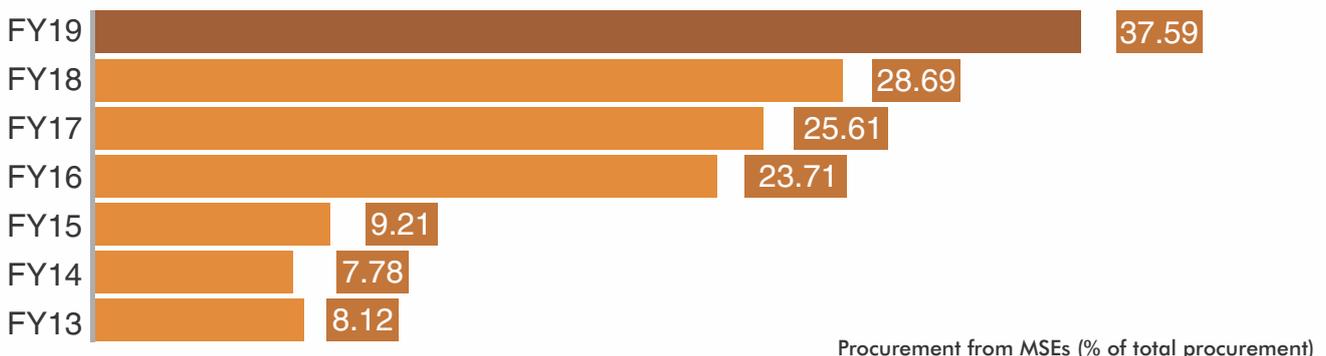
We have a defined set of policies and frameworks to ensure that no human rights of indigenous local communities are violated throughout our supply chain.

We continue to promote procurement from MSEs, and our Public Procurement Policy defines an annual target for procurement from MSEs. To encourage participation in tender for local & MSEs, the company has taken various initiatives like EMD exemption, tender document fee exemption and purchase preference of 15%. We have developed a dedicated MSE vendor registration portal for collating vendor database for items reserved exclusively for procurement from MSEs.

We actively solicit feedback from our vendors to continuously improve our vendor management systems.

During FY19, we have engaged with our potential MSE vendors through 21 vendor development programs. Two of these programs were exclusively organized for SC/ST MSE entrepreneurs. We have established a dedicated cell to expedite and resolve complaints on 'MSME SAMADHAN'.

As a result, over the years, we have witnessed a steady increase in our MSE procurement. In the FY19, we exceeded our target of 20% procurement from MSEs by over 87%. During the same period, we spent ₹ 25.09 Crore for procurements from MSEs owned by SC / ST entrepreneurs. We have witnessed 13%* increase in the number of MSE vendors on our SAP portal. As on date, there is no vendor complaint pending action at our end.



* Estimated between Dec. 2017 and Dec. 2018



Ambulance for villagers being flagged off by Hon'ble MoSP (I/C) Shri R.K. Singh

We are also on-board the Trade Receivable electronic Discounting System (TReDS) through M1Xchange, and trade receivables worth ₹3.7 Crore have been paid through M1xchange till now.

To encourage Indian bidders and suppliers, provisions regarding price preference and deemed export benefits are stipulated in the

bidding documents as per the extant policy of Government of India. Our procurement process promotes indigenous goods and since FY18 we have been consistently able to maintain the value of our indigenous purchase at 97.8% of the total purchase.

We also give a preference to Project Affected Persons (PAPs) for

award of petty contracts etc., for supplying goods and services.

₹ Crore

	Indigenous purchase	Imported purchase
FY18	3,847.80	85.97
FY19	4,894.05	108.54

Our Regulators

Being a centralized institution, our policy framework is developed by the Government of India.

We are governed and regulated by the Central Electricity Regulatory Commission (CERC). The CERC also determines the electricity tariffs for our stations. We discuss

issues, opportunities, and policies for the simultaneous growth of our organization as well as the national economy through periodic regulator meets.

We are committed to comply with all regulatory compliances. In FY19 we have had no cases of

finances, penalties and warning against us for non-compliance to regulations. At the end of FY19, 4,137 legal cases were pending against us in courts. We do not support, in cash or in-kind, any political party or their members and related institutions.

Our Communities

At NTPC, our operations extend in the direction of creating societal value. Our spirit of caring and sharing is embedded in our mission statement and this is manifested through constant engagements with our nearby communities. We also undertake activities in different parts of the

country to supplement the Government of India's efforts in line with the principles of inclusive growth. In FY19, our CSR initiatives were spread in 19 states of India. Thus, we go beyond mere compliance with CSR expenditure regulations

Our policy for CSR & Sustainability

is in line with Companies Act, 2013 and Department of Public Enterprises (DPE) Guidelines for CSR. We design and shortlist our CSR portfolio based on a participative, bottom-up and consultative process. We promote participation of women representatives, backward communities, public representatives

(elected/ nominated) and Village Development Advisory Committee (VDAC). We also conduct Need Assessment Surveys (NAS) every five years to design customized community development solutions

We have a Corporate Social Responsibility and Sustainability Committee to oversee the CSR activities.

Our NTPC Foundation is engaged in serving & empowering the physically challenged and economically weaker section of the society. Current activities are providing IT education to physically & visually challenged students, establishing Disability Rehabilitation Centres (DRC) and operating Directly Observed Treatment cum Designated Microscopy Centre (DOTs cum DMC) with Mobile ambulance facilities.

R. K. Singh @RajKSinghIndia
 Congratulations to the students of @ntpclimited's 'Super 30 Girls' coaching programme for qualifying JEE-2019. JEE is a very prestigious exam and NTPC's initiative to coach girls from economically weaker families is laudable.

5 students of NTPC's 'Super 30 Girls' coaching programme crack JEE

OUR BUREAU
 New Delhi, June 17
 Five students of NTPC's 'Super 30 girls' programme have cracked the JEE (Advanced) exam 2019.

The objective of the year-long residential programme is to coach students from economically weaker families for the IIT-JEE.

The initiative rolled out jointly with the Centre for Social Responsibility and Leadership (CSRL), NTPC bears the cost of boarding, lodging and coaching of the girls from under-privileged families, said the statement.

Started on July 1, 2018, the programme had 25 girls, selected from various government schools in Varanasi and Lucknow, studying at the 'NTPC Super 30 Girls' centre in Varanasi.

NTPC Northern Region headquarters in Lucknow and CSRL, New Delhi, had signed an MoU for the ₹77.03 lakh programme for 30 girls selected from families living in the vicinity of NTPC plants in the northern region.

During the tenure of the project, the students were provided training for entrance examinations (IIT/JEE/NET) that would help them gain admission to institutes of eminence.

The goal is to prepare students from economically weaker sections for the entrance test.



Girl Empowerment Mission

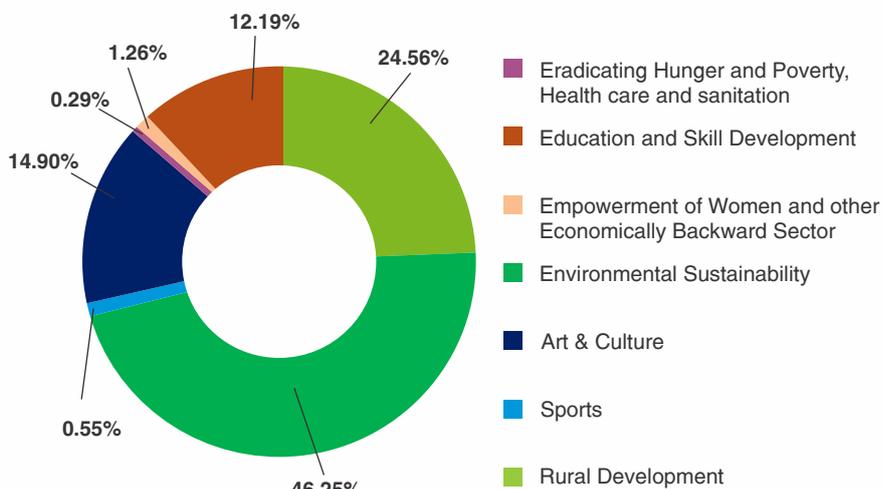
₹ 285.46 Crore

Spent towards CSR initiatives In FY19

In line with the priorities defined by Gol over 70% of CSR outlay was spent towards Education & Skill Development, eradication of Hunger & Poverty and Healthcare & Sanitation.

One of our most prominent initiative is our Flagship Program Girl Empowerment Mission (GEM) targeted for the empowerment of the girl child.

Every alternate year, we conduct a third-party Social Impact assessment for all our major CSR activities.



Expenditure in thematic areas of our CSR



Monitoring

- Timely completion of activities
- Regular reviews done at Unit Level, bottlenecks are identified and remedial measures are taken
- Periodic MIS on status and issues of CSR & Sustainability activities is put up to appropriate level, intervention is sought wherever required, regional level reviews facilitate senior management support
- Review of companywide CSR & Sustainability activities and budget utilization done at Corporate level



Evaluation

- Effectiveness of CSR & Sustainability programme is assessed through both internal & external evaluations
- Internal Audits conducted to verify effectiveness of implementation
- Social Impact Evaluation (SIE) done through credible External Agencies
- Findings of SIE form the basis for initiating corrective actions and formulating future schemes



Reporting

- CSR & Sustainability activities disseminated to the stakeholders through Company's Annual Report, Sustainability / Business Responsibility Report and uploading Communication on Progress by uploading on UNGC Website

Mechanism to minimize and address grievances

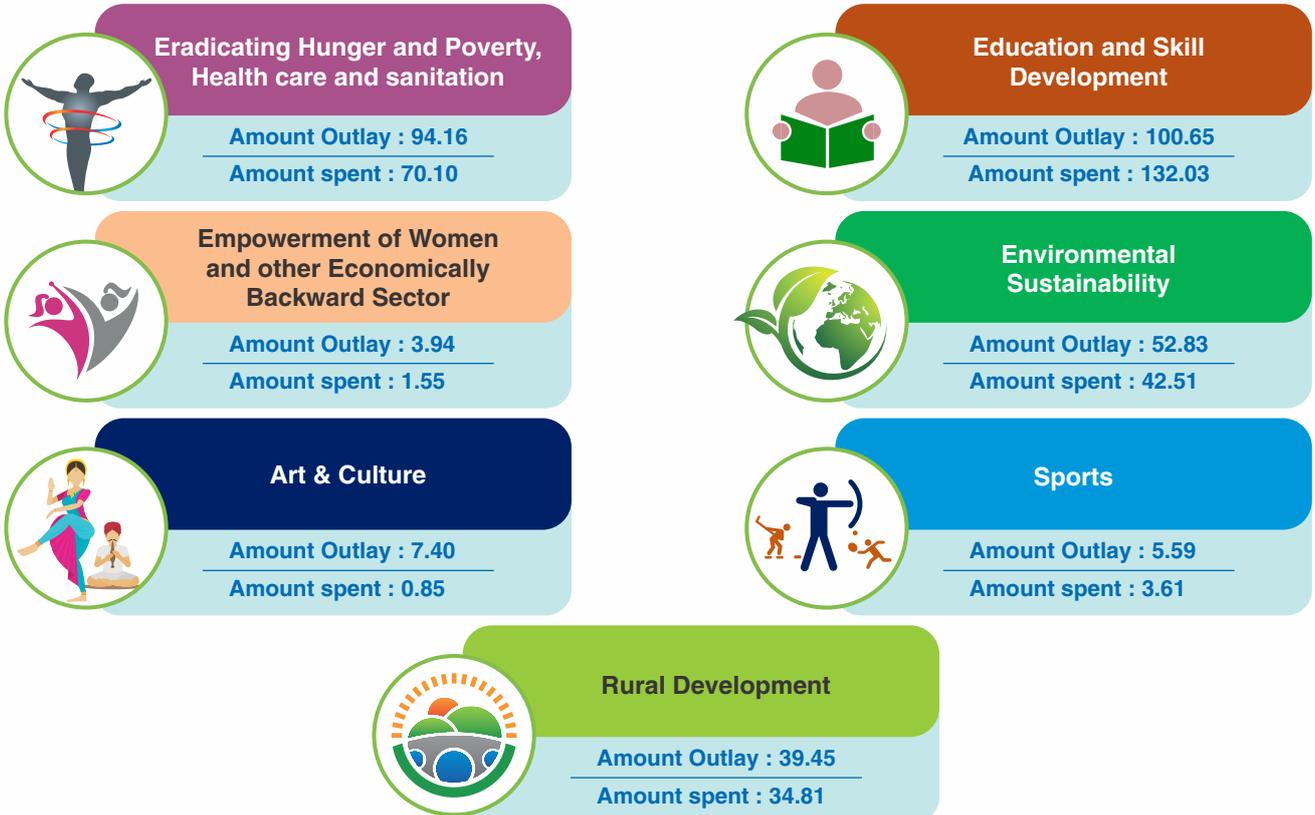


Inauguration of GEM at Ramagundam by CMD NTPC



Empowering Young Girls

All Values in ₹ Crore



CSR outlay for FY19

Our CSR Repertoire, FY 19



Education

- 34 schools run by NTPC predominantly
- Benefitting more than 22,000 students of neighbourhood areas
- Distribution of educational tab. PCs having stud, material of standard VIII to X to resource poor students of standard VIII in selected schools in Mumbai
- **NTPC Utkarsh** : 7300 Merit Scholarship per year for secondary, high school, and engineering & medal science studies

Sanitation

- Construction of 160 individual household toilets and 34 community toilets.
- Pilot Project for Mechanized Cleaning of 14 wards in Varanasi
- Revival of Municipal Solid Waste Processing Plant, Varanasi.
- Sanitary napkin manufacturing units at NTPC Sipat & Ramagundam

Empowerment

- About 1400 women imparted training in various vocational courses like sewing, beautician, food processing etc. for self-employadlity.
- Tool kits & sewing machines provided to the successful trainees
- 600 bicycles distributed to school going girls of government schools

Environmental Sustainability

- Installed five solar water heaters in the hostels in government residential schools
- Financial assistance for development of Brahma Jahari Forest in Chaurruha in Mathura, UP.
- Took up revival and rejuvenation of all water bodies of South Solapur

Arts & Culture

- Supported development of Purvasha Folk and Tribal Art Museum near Chilika Lake, Odisha
- Developmental & beautification works at Charminar, Hyderabad under 'Swachh Iconic places Project' of Government of India
- Fuming National Ranking Archery Tournaments and National Archery championships
- Supported promotion of rural sports - events covering about 100 villages & about 70 schools at various locations



Drinking Water

- 114 hand pumps, 119 tube wells /bore wells, 22 RO plants/water ATMs installed
- 833 water filters/coolers distributed in schools
- Water tankers for supply during extreme summers
- Piped drinking water schemes in over 65 villages
- Water related works in around 80 villages

Specially-abled persons

- Distribution of equipment and appliances to about 365 specially abled persons
- Inclusive education & vocation training benefitting specially abled persons in 45 villages across NTPC locations

Health

- Mobile health clinic at eight locations, catering to over 1 lakh patients
- 510 medical health check-up camps at various locations & 500+ surgeries done
- Regular health related initiatives in surrounding communities 275 villages & 2,40,000 individuals benefitted
- Set up Burn Units at AIIMS Patna & Bhubaneswar & King George Medical University, Lucknow
- Constructed Eye Hospital at Dadri, UP and an operating room complex at Eye Hospital in Bhubaneswar.

Skill Development

- Supported skill development & Pachkarma treatment centre in New Delhi
- Trained youth in Industrial Training Institute (ITI) trades in 18 adopted & 8 new ITIs
- Set up ITI at Ganjam District, Odisha
- Regular vocational training in various trades covered about 60 villages, benefitting close to 10,000 youths
- Supporting "Skill India Mission" with focus on eastern region 5700 youth trained

Infrastructure Strengthening

- 1102 solar street lights & 262 solar high-mast lights installed in UP
- Six mini solar power plants installed for community
- Community Hall construction started in Vivekanand College, Tundi, Dhanbad, Jharkhand
- Construction of ghats with sheds, RCC sitting

- benches and one high-mast light at three locations in Basti, UP
- Construction of Community Hall in Village Brahmani, Nagar, Maharashtra
- 27 community centres constructed
- Construction & repair of about 40 kms roads

Resettlement & Rehabilitation (R&R)

We strive to avoid disagreements with our communities and address social issues at the exploratory stage of the projects itself. As a part of our decision-making process, we have developed an R&R policy. Our Resettlement & Rehabilitation (R&R) policy covers community development (CD) activities - which are initiated as soon as a project is conceived.

We are sensitive towards the needs of the Project affected Persons (PAPs) and our R&R policy guides us to provide the best possible R&R package.

We have established Public Information Centres/ R&R Offices to disseminate useful information sought by the villagers. Other useful information is also communicated through notices, pamphlets, letters, etc.

Land compensation and R&R grants disbursement were in active mode mainly in Darlipalli, North Karanpura, Tanda-II thermal power projects and Pakri- Barwadih, Dulanga and Talaipalli coal mining project in 2018-19.

As a result of our sincere efforts, no significant actual and potential negative impacts on local communities were identified/ reported, and no grievances about impacts on society were filed during the reporting period. There were no incidents of violations involving rights of indigenous peoples.





R&R initiatives NTPC Gadawara

Salient Features of our R&R efforts

Minimize R&R issues proactively at the time of project exploration

Involves redesigning layout to minimize acquisition of homesteads and agricultural land, optimization of plant layout and reduction in land requirement, etc.

Grievance Redressal System

We have set up dedicated R&R groups which operate at Projects, Regional Headquarters and the Corporate Centre.

Our new R&R policy

The policy is in line with The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013 and mandates minimum R&R entitlements and compensation to be fulfilled.

Best possible R&R package

All PAPs, as per categorization, eligibility and policy provisions are compensated for the loss of their assets and livelihood with the aim to help them regain their previous standard of living, at the least.

Actions in line with our Initial Community Development (ICD) Policy

We conduct Socio Economic Survey (SES)/ through professional agencies on the basis of which R&R Plans are prepared.

Formulate comprehensive Community Development Plan

This is done in consultation with the relevant stakeholders and District administration. To facilitate

effective participation, consultation and transparency with the stakeholders, we set up Public Information Centres (PICs) and Village Development Advisory Committees (VDACs) and other similar participative mechanisms



Intellectual Capital

Highlights FY19

10 NABL ISO 17025 accredited Labs under NETRA

215.96 Crore revenue from consultancy services

51.42 Crore expenditure towards R&D during FY 18-19

13 patent granted

1% of PAT for R&D activities

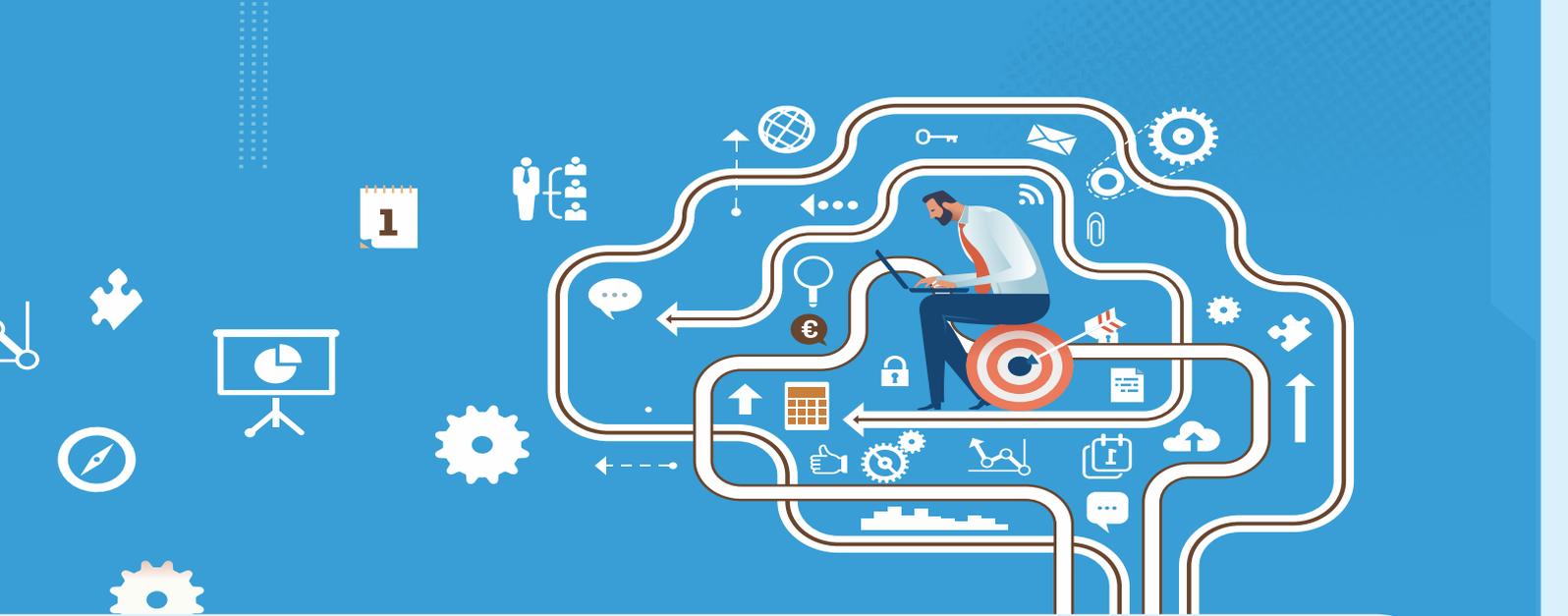
Material
Topic(s)

[15]

“

At NTPC, our research and development (R&D) initiatives are in sync with our overall business portfolio. As a leading player in the world energy sector, we recognize the need of adapting to emerging technologies and upgrading the technologies through R&D.

”



Intellectual Capital

Related sustainability topics

- Quality Management
- New technologies and digitization

Risks mapping:

- Develop technological solutions for operation of plants at high performance
- Breach of information security

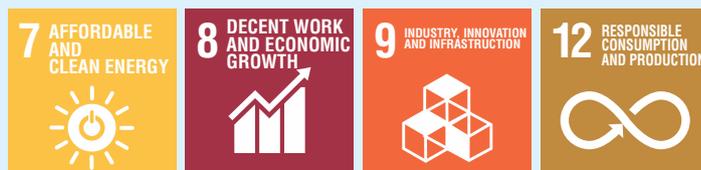
Reference to other frameworks:

- UNGC : 9

Relevant GRI indicators:

NA

Relevant SDGs:



Research & Development



A view of NTPC NETRA

Our research and development (R&D) initiatives are driven by the need of adapting to emerging technologies. NTPC have assigned 1% of PAT for R&D activities focused to address the major concerns of the sector as well as the future technology requirements of the sector.

In this effort, in 2009 we established NTPC Energy Technology Research Alliance (NETRA) as state-of-the-art center for research, technology development and scientific services. NETRA collaborates with leading institutes, technology players and service providers both at national and international level.

51.42 Crore
Research expenditure
charged to revenue
during FY19

A Research Advisory Council (RAC) comprising of eminent scientists and experts from India and abroad has been constituted to steer NETRA for high end research. In-house Scientific Advisory Council (SAC) has also been constituted to provide directions for improving plant performance & reducing cost of generation.

Amongst various initiatives NETRA organized Grand Ash Challenge contest. Three ideas were selected to maximize Ash Utilization.

- Nano Concrete aggregates
- Artificial sand
- Fly ash-gypsum plaster

NETRA also developed technology for sea water desalination treatment using waste heat from flue gas from the power plant. MoU with IRCTC has been signed for setting up a packaged drinking water facility at Simhadri Station.



NETRA Focus Areas

Collaborations

1

Academics

IIT-B, IIT-K, IIT-Kh, IIT-M, IIT-D, IISc, NIT-Calicut, IIT-R, INST-Mohali, Thapar, Jadavpur etc.

2

International

DLR-Germany, ISE-Fraunhofer-Germany, Curtin University, NEIL-USA, Tokyo Univ-Japan etc.

3

R&D Institutions & Industry

ONGC,PGCIL,I0CL,CIPET, ISRO, CGCRI, CMERI, IGCAR, CBRI, NCCBM, ARCI-Hyd, AMPRI, TERI-Delhi, MIDHANI, CPRI etc.

NETRA laboratories are ISO 17025 accredited and provide high end scientific services to all NTPC

stations as well as many other utilities. NETRA NDT laboratory is also recognized as Remnant Life

Assessment Organization under the Boiler Board Regulations,1950.



R&D at NTPC NETRA

13

Patent
Granted

30

Patent under
process of grant

07

Copyright
granted

Learning & Development



NTPC Power Management Institute, Noida

NTPC runs a state-of-the-art Power Management Institute (PMI), an apex learning and development (L&D) centre, at NOIDA. The L&D centre is actively engaged in making our people future ready in terms of technology, business acumen and leadership. PMI also delivers programmes to Power Sector companies from South Asia, Gulf and Africa.

PMI trained 4,000 executives in management learning through HMM and 1,000 in power plant technical skills through licenses from General Physics (GPiLearn).

Diverse e-Learning resources complement the learning needs

across demographic spectrum at NTPC.

The L&D programs are designed after a multi dimensional 'Training Need Analysis' (TNA).

To ensure continuity in leadership pipeline, 379 middle level executives were given rigorous inputs under 2 weeks strategic leadership development program (10X).

In pursuance of global competence a batch of senior executives (GMs/ EDs) attended Harvard Business School to learn from some of the best trainers in the world.

Further, NTPC promotes NTPC

Education and Research society (NEARS) under which NTPC School of Business (NSB) provided two AICTE approved programmes namely, 'Post Graduate Diploma in Management' (Executive) and 'Post Graduate Diploma in Management' (Energy Management) with academic support from IIM, Ahmedabad.

Consultancy Services

Accredited with ISO 9001:2008 certification, our Consultancy division offers services “From Concept to Commissioning and beyond” and undertakes consultancy and turnkey project contracts for domestic and

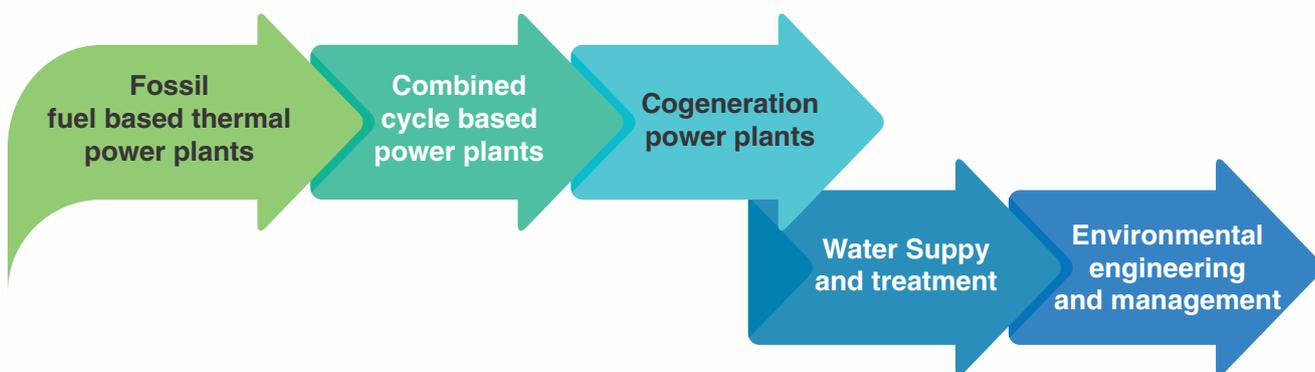
international clients. Backed with vast pool of technically qualified manpower and excellent infrastructure our Consultancy delivers qualitative and cost effective solutions in line with global standards.

We are looking ahead for future business opportunities in areas such as Solar & Renewable power projects and O&M for power plants.

215.96 Crore

Revenue from consultancy services during FY19

Registered as a consultant with several leading international development and financial institutions such as The World Bank, The Asian Development Bank, The African Development



Services related to infrastructure sector business



H.E. Kondi Mani, Charge d' Affaire, Embassy of Togo handed over the Letter of Engagement for Development of Solar Projects in Togo to Shri Gurdeep Singh, CMD, NTPC in the august presence of Shri R.K Singh, MoSP (I/C)

Digitization

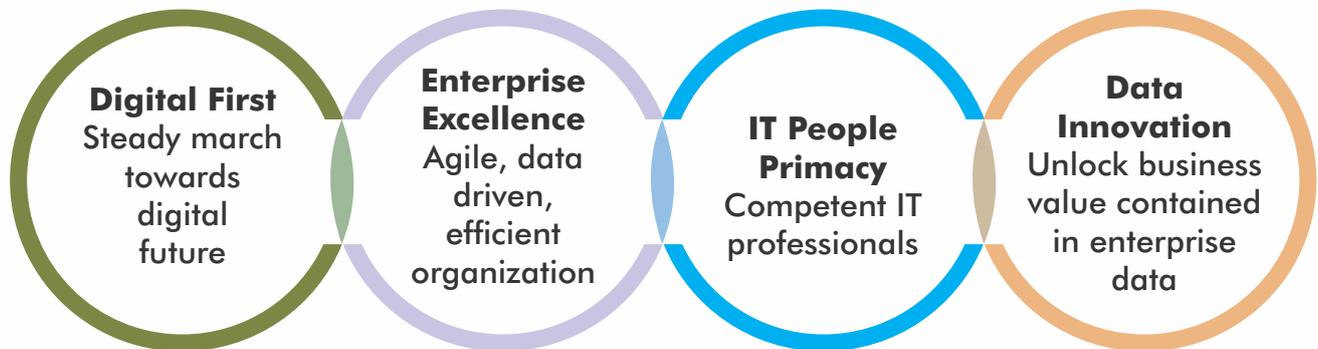
In line with its Corporate Plan-2032 NTPC has developed its IT strategy focused on four strategic themes.

The IT Strategy aims to achieve 100% Paperless Office, Data Analytics for decision making, induction of new technology such as IOT, AI, Machine learning etc.

In line with the "Digital India" initiative NTPC has taken measures towards digitization by implementation of various initiatives like:

1. Successful implementation of "Project PRADIP" for digitization of documents and paperless processes.
2. Implemented Enterprise Resource Planning (ERP) application to integrate all our business functions.
3. Non-ERP web and mobile based applications have been developed for improved efficiency and transparency.
4. A 24x7 Security Operation Centre (SOC) is in operation to monitor all data traffic and to prevent cyber-attack or data theft.

NTPC's data centres at Noida and Hyderabad are ISO 27001 certified for security compliance.



Strategic Themes



Looking Forward

We, NTPC, a market leader in power generation, supplying around 22% of the country's electricity and thus play a key role in India's economic activity. As a state-owned utility, our priority is to provide affordable and reliable power and support for country's rapid developing economy. We have a diversified portfolio of coal, gas, solar, wind, hydro and small hydro-based power plants and has integrated both backwards and forward into coal mining and power trading.

As part of our long-term corporate plan, we have targeted to achieve total installed capacity of 130 GW by 2032, to be implemented through development of greenfield & brownfield projects, collaborations and acquisitions. The capacity 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. Therefore, by 2032, non-fossil fuel based generation capacity shall make up nearly 30% of our company's portfolio.

We do envisage enhancing our current presence in consultancy, power trading and ancillary services. We are also planning to make a foray into electric mobility and battery storage, supported by research & development and collaboration with OEM/OES, research institutes etc.

Inorganic Growth Opportunities

We are looking for suitable opportunities for acquisition of power plants to fulfil our growth target, after techno-commercial due diligence and appropriate valuation. We have acquired Barauni Thermal Power Project from Bihar State Power Generation Company Limited (BSPGCL) where two units of 110 MW each are in commercial operation and two units of 250 MW each are under construction. We have also acquired 100% stake in Kanti Bijlee Utpadan Nigam Limited (KBUNL) and Nabinagar Power Generating Company Limited (NPGCL).

Renewable Energy

With 928 MW of renewable installed capacity, we have ventured into large-scale deployment of RE assets and is committed to add 10 GW of own renewable power capacity by 2022. We are also assisting the Gol in its National Solar Mission. Currently, 345 MW solar capacity is under construction.

Off-take and realisation

We firmly believe that with structural reforms in the distribution segment through UDAY Scheme and SAUBHAGYA, proposed amendments in Tariff Policy, economic growth of the country and improving standard of living, the power demand will pick-up. We had, for the 16th consecutive year, realized 100% of its dues and is confident of maintaining its track record in future also. Further, with extension of Tri-partite Agreements by most of the states, the risk of realization is mitigated to a great extent.

Key Data at a Glance

Name of Indicator	Unit	FY 17	FY 18	FY 19
Direct energy consumed				
Coal	MMT	162.50	168.95	172.22
	Kcal/Kg	3527	3,555	3626
	Kg/Kwh	0.68	0.67	0.66
Natural Gas	MMSCMD	5.16	5.345	4.65
	Kcal/SCM	9347	9,364	9,365
	SCM/Kwh	0.22	0.22	0.23
Naptha	MT	2882	4,283	5,887
	Kcal/Kg	11,238	11,295	11,248
LDO	KL	21,545	27,557	42,626
	Kcal/KL	9,333	8,909	9,521
HFO	KL	68,354	59,725	56,254
	Kcal/KL	9,869	10,031	9857
Specific Oil Consumption	ml/Kwh	0.38	0.35	0.38
HSD	KL	97	3,118	9561
	Kcal/KL	9,042	9,081	9,054
Hydrogen	MT	41.83	42.05	43.6
Auxiliary Power Consumption				
Coal Stations	MU	15,874	16,530	17222
Gas Stations	%	6.68	6.57	6.58
	MU	251	261	238
	%	2.92	2.96	3.20
Hydro	MU	-	22.63	16.36
	%	-	0.68	0.54
Total	MU	16,125	16,814	17,476
Energy Saved				
Electrical	MU	118.6	120.5	127.52
Heat Energy (Equivalent MT of coal)	MT	46,178	74,859	22474
Heat Energy (equivalent MCM of Gas)	MCM	--	0.091	0.122
Heat Energy (equivalent KL of Naptha)	KL	-----	0.0	0.0
Total energy saved	TJ	1874	2303	1615

Name of Indicator	Unit	FY 17	FY 18	FY 19
Water consumed				
Total Drawn for closed cycle stations	Lt/Kwh	3.22	3.06	3.04
Stack Emission (All Stations)				
SPM	MT	98,071	88,830	88948.491
Specific SPM**	gm/Kwh	0.39	0.27	0.263
SO ₂	MT	8,32,362.2	9,59,902	12,03,030.042
Specific SO ₂ **	gm/Kwh	3.32	2.63	3.383
NO _x	MT	4,32,876.7	4,82,410	547768.527
Specific NO _x **	gm/Kwh	1.73	1.75	1.772
Direct Greenhouse Emissions (Scope-1)				
CO ₂ (Coal Stations)	MT	21,74,55,761	22,80,61,009	23,70,63,452
CO ₂ (Gas Stations)	MT	37,66,734	39,25,755	33,05,721
Total Scope 1 emission	MT	22,12,22,495	23,19,86,764	24,03,69,173
Scope 1 Emission Intensity***	gm/kwh	883.79	872.79	875.82
Indirect Greenhouse Emissions (Scope-2)				
Renewable Energy consumed	MWh	-	566.60	720.75
Non-renewable Energy consumed	MWh	-	30410.50	28375
Total scope 2 emission	MT	-	24936.61	23267.50
Ozone Depleting Substances				
ODS	CFC-11 equivalent (Kg)	1,026.56	1,084.89	952.00
Non-Hazardous Wastes				
Misc. Ferrous Scrap	MT	20,207	44,305.72	29124.67
	mg/Kwh	80.79	169.65	108.919
Non Ferrous Scrap	MT	714.667	2,304.97	2154.44
	mg/Kwh	2.8577	8.82	24.221
Hazardous Wastes				
PCB	MT	0	0	0
Used Batteries	MT	138.55	162.515	86
	Kg/MU	0.554	0.62	0.32
Spent Resin	Lt	65,900	78,405	17200
	ml/MU	263.749	300.225	64.32
Used lube oil	KL	1,437.36	543.46	764.3
	Lt/MU	5.747	2.08	2.858

** Based on Net generation

***Based on gross generation from all sources

Name of Indicator	Unit	FY 17	FY 18	FY 19
Transformer Oil	KL	253.76	203.30	108.5
	Lt/MU	1.046	0.78	0.40
Bio-medical waste	Kg	19,973.6	26,628.81	21737.25
Main Plant Effluents				
Quantity (Excluding once through CCW of Farakka & Singrauli)	KL	44,13,83,412.4	18,27,70,614	56859131
	Lt/Kwh	1.82	0.968	0.22
pH	pH	7.3	7.5	6.95
TSS	mg/Lt	41.25	35	33
O&G	ppm	2.17	2.0	1.7
Ash Management				
Ash generated	Lakh Ton	584.60	603.13	610.32
Total Ash utilized	Lakh Ton	295.70	322.36	388.8
	%	50.58	53.45	63.7%
Land Development	Lakh Ton	29.72	46.68	52.06
	%	5.08	7.74	13.39
Issue to cement & other industry	Lakh Ton	53.37	58.69	73.68
	%	9.13	9.73	18.95
Ash Dyke Raising	Lakh Ton	80.98	79.41	101.03
	%	13.85	13.17	25.99
Bricks	Lakh Ton	42.51	45.25	53.79
	%	7.27	7.50	13.83
Roads/Rail Embankment	Lakh Ton	30.24	31.50	50.09
	%	5.17	5.22	12.88
Mine filling	Lakh Ton	26.55	31.66	20.44
	%	4.54	5.25	5.26
Others	Lakh Ton	32.33	29.18	37.72
	%	5.53	4.84	2.7

Name of Indicator	Unit	FY 17	FY 18	FY 19
Parental Leave				
Total number of employees that took parental leave	Male	-	717	731
	Female	-	91	30
Total number of employees that returned to work in the reporting period after parental leave ended	Male	-	717	731
	Female	-	91	30
Total number of employees that returned to work after parental leave ended that were still employed 12 months after their return to work	Male	-	717	732
	Female	-	91	30
Return to work rate	Male	-	100%	100%
	Female	-	100%	100%
Retention rate	Male	-	100%	100%
	Female	-	100%	100%
Employee Turnover				
Gender Diversity	Male	222	128	40
	Female	21	11	5
Age Diversity	= <30 yr	140	71	19
	30 < 50 yr	53	39	11
	> = 50 yr	50	29	15
Region Wise Turnover	CC	49	52	2
	NORTH	48	17	12
	NATIONAL CAPITAL	20	3	5
	SOUTH	49	17	8
	EAST - I	12	14	6
	EAST - II	23	13	4
	WEST - I	12	10	4
	WEST - II	25	8	4
	HYDRO	4	5	0
	MINING	1	0	0
	TOTAL	243	139	45

Name of Indicator	Unit	FY 17	FY 18	FY 19
Attrition Data	CC	2.24	2.89	0.13
	NORTH	0.94	0.36	0.28
	NATIONAL CAPITAL (DBF)	1.04	0.22	0.42
	SOUTH	1.93	0.71	0.35
	EAST - I	0.78	0.52	0.22
	EAST - II	1.07	0.62	0.19
	WEST - I	0.69	0.74	0.31
	WEST - II	0.87	0.27	0.13
	HYDRO	1.09	1.37	0
	MINING	0.58	0	0
	TOTAL* (Excel JV & Subsidiary)	1.11	0.7	0.24
Generation / Employee	MU	12.16	13.42	14.95
Man/MW*	Ratio	0.51	0.44	0.40
Training imparted to employees (Nos)				
Executives	Male	8,576	8,231	9,668
	Female	530	528	658
Non-Executives	Male	5224	4,640	5,627
	Female	318	287	414
Total		14,648	13,686	16,367
Average no. of hours training per employee (PMI)				
Executives	Male	35.01	48.23	45.81
	Female	35.77	45.92	39.76
Non-Executives	Male	29.73	28.48	31.73
	Female	29.45	29.08	30.41
Vigilance				
No. of Training Conducted in various stations	number	21	25	46

Name of Indicator	Unit	FY 17	FY 18	FY 19
Safety				
Reportable Accident*	Fatal	11	52	6
	Non- Fatal	61	54	50
Total Workforce* (Regular + Contract)	number	67,414	76,245	79180
Total Man hours	hrs.	17,72,89,902	19,08,87,640	18,51,12,488
Total Man Days Lost	days	74,261	3,08,689	37,633
Frequency Rate(FR)	-	0.406	0.32	0.30
Incident Rate(IR)	-	1.068	0.81	0.71
Injury Rate (IR)	-	0.0812	0.06	0.06
Occupational Disease Rate	-	0	0	0
Retirement in 5 years				
(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.)				
CC	Executives	23.14	29.52	26.46
	Non- Executives	35.65	37.46	32.02
EAST - I	Executives	19.21	26.12	29.95
	Non- Executives	23.16	31.23	33.36
EAST - II	Executives	15.16	16.74	17.77
	Non- Executives	29.42	26.75	22.14
HYDRO	Executives	15.86	16.5	19.38
	Non- Executives	7.14	10.91	7.55
MINING	Executives	15.29	18.93	18.55
	Non- Executives	14.29	14.28	29.41
NATIONAL CAPITAL	Executives	25.09	30.18	30.69
	Non- Executives	31.91	31.37	31.27
NORTH	Executives	24.33	29.33	31.71
	Non- Executives	39.68	43.95	43.71
SOUTH	Executives	21.88	29.68	29.76
	Non- Executives	29.32	37.03	33.10
WEST - I	Executives	15.57	22.4	22.00
	Non- Executives	13.98	15.03	17.32
WEST - II	Executives	20.54	22.73	24.62
	Non- Executives	28.33	28.53	29.05

*For Operating Stations

Name of Indicator	Unit	FY 17	FY 18	FY 19
Retirement in 10 years				
CC	Executives	18.67	50.93	43.16
	Non- Executives	38.8	79.34	56.74
EAST - I	Executives	19.82	44.48	45.57
	Non- Executives	32.92	62.54	60.87
EAST - II	Executives	17.06	32.23	33.04
	Non- Executives	13.6	41.71	37.88
HYDRO	Executives	16.83	31.06	30.40
	Non- Executives	3.57	14.54	15.09
MINING	Executives	15.29	30.58	30.65
	Non- Executives	0	21.43	41.18
NATIONAL CAPITAL	Executives	17.75	47.44	46.72
	Non- Executives	33.85	69.34	70.90
NORTH	Executives	19.78	48.56	48.35
	Non- Executives	29.42	73.49	66.88
SOUTH	Executives	14.59	43.37	41.46
	Non- Executives	25.57	57.96	52.62
WEST - I	Executives	15.27	35.79	33.63
	Non- Executives	34.94	45.09	42.91
WEST - II	Executives	16.96	38.42	39.42
	Non- Executives	20.54	47.01	42.29

Particulars	FY 17 (₹ in Crore)	FY 18 (₹ in Crore)	FY 19 (₹ in Crore)
A: Direct Economic Value Generated			
Revenues	79,167.43	84,007.49	91,863.34
Sub Total (A)	79,167.43	84,007.49	91,863.34
B: Direct Economic Value Distributed			
Operating Cost	52,163.61	55,871.19	61221.33
Employee Wages & Benefits	4,324.60	4,734.67	4779.89
Payments to Providers of Capital	7,192.23	8,024.53	9639.29
Payments to Government	3,464.31	2,681.38	2889.28
Community investments	273.35	247.09	289.45
Sub Total (B)	67,418.10	71,558.86	78819.24
Economic Value Retained (A-B)	11,749.33	12,448.63	13044.10
C: Employee remuneration and other benefits			
Nos. of Employees (year-end)	20,593	19,739	18359
Average Salary, Wages and Benefits per Employee per Annum (Rs)	24,22,597	27,12,129	2938007
Average Cost of other Benefits per Employee per Annum (Rs)	3,39,398	4,27,457	487217
Average Cost of Employee Remuneration & Benefits per Annum (Rs.)	27,61,995	31,39,586	3425224

Awards And Achievements



NTPC Awarded by Golden Peacock Award for Sustainability

NTPC has been adjudged as the winner of the Golden Peacock Award for Sustainability for the year 2019. The Award ceremony was held in London (UK) on 14.11.2019 during 19th International Conference on Corporate Governance & Sustainability. The award was received by Sh. Biswarup Basu, CGM (SSEA) & Vikash Kumar, DM (SD). The award was conferred by Institute of Directors (IOD), India.



NTPC felicitated in Frost & Sullivan and TERI Sustainability 4.0 Awards 2019

NTPC has been felicitated for bagging the Frost & Sullivan and TERI Sustainability 4.0 Awards 2019 under the “Challengers Award - Mega Large Business, Process Sector category” at the award ceremony held in Mumbai on 12th June, 2019. The award was received by Shri P K Sinha, ED (SSEA) and Shri Pradeep Kumar, AGM, Sustainable Development.



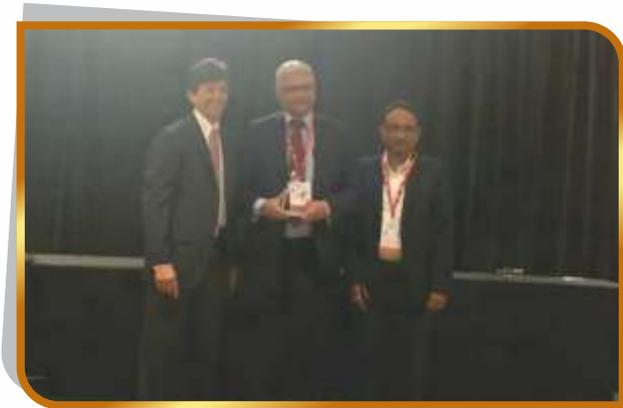
NTPC Awarded by CBIP as Best Performing Power Utility

NTPC has been awarded as the Best Performing Utility of the Country in Thermal Power Sector by Central Board of Irrigation and Power (CBIP) at a function held in New Delhi on 4th January, 2019



NTPC Awarded for Excellence in Power Generation

NTPC has bagged the Dun & Bradstreet Corporate Awards 2018 in Power Generation Category at a function held in New Delhi on 24th July, 2018. The award was presented by Shri Bibek Debroy, Chairman, Economic Advisory Council to the Prime Minister and Member, NITI Aayog, Government of India to Shri Prakash Tiwari, Director (Operations). Shri Manish Sinha, Managing Director - India, Dun & Bradstreet was also present.



NTPC PMI bags ATD Award 2018, Global Award second in succession

NTPC PMI recently has won the globally recognised ATD Best Award 2018. Association for Talent Development (ATD), headquartered in Virginia, USA is the world's largest association dedicated to the field of talent development.



NTPC-NETRA bags FICCI Water Award

NTPC-NETRA, received FICCI Water Award (3rd position) at India Industry water conclave, on sustainable Water Management , under Technology Innovation category for development of low cost seawater desalination process using waste heat from flue gas at Simhadri Power plant.



NTPC Ranked one of the Best Workplaces in Asia -2019

NTPC is one of the Best Workplaces (19) in Asia 2019 in the category of the "25 Best Large Workplaces in Asia, 2019" by the Great Place to Work Institute. Great Place to Work has identified the top organizations that have successfully created high- trust, high-performing cultures in the Asia/Pacific and Middle East regions. The annual list recognizes companies in three categories: Small & Medium Organizations (20-500), Large Organizations (501 +) and Multinational Organizations.



NTPC Talcher Kaniha and Jhanor bagged National Safety Award

Talcher Kaniha and Jhanor received the Prestigious National Safety Award from Govt. of India, New Delhi on 17.09.2018. It bagged the National Safety Award as winner under Scheme of Accident-Free Year for the year 2016. Shri A K Tripathy, GM(O&M) Talcher Kaniha received the award from Shri Santosh Kumar Gangwar, Honourable Minister of State (Independent Charge) for Labour & Employment, Govt. of India.



NTPC has been felicitated at the Economic Times' 5th Annual Summit -"Power Focus"

NTPC has been felicitated at the Economic Times' 5th Annual Summit -"Power Focus" for its remarkable contribution to the power sector.



NTPC bags the AIMA's Champion's Trophy 1st Edition of the Corporate Management Olympiad 2018-19

NTPC bagged the All India Management Association's Champion's Trophy of 1st Edition of the Corporate Management Olympiad 2018-19 on 22nd January, 2019. Shri Anurag Singh, Shri Vivek Kumar Gupta and Shri Dipankar Padhi from Business Development won Gold in the Business Simulation Round and Shri Madhurjya Singha Lahkar, Corporate Communications and Shri Jay Prakash Gupta, PP&M won Gold in the Case Study Category (Creating Sustainable Brands in Digital World).



NTPC Gets Best Performance Award for PSUs on Central Public Procurement Portal

NTPC has been awarded the Best Performance Award in Public Sector Units based on electronic tendering on GePNIC portal carried out in the FY 2017-18 at the 2nd National Workshop on CPPP on 21st January 2019.



NTPC Wins ISTD National Award for Innovative Training Practices 2016-17

NTPC Power Management Institute (PMI) has won the ISTD National Award for Innovative Training Practices 2016-17. The award trophy and citation was received by team NTPC comprising Shri P K Sinha GM (PMI), Shri AK Tripathi and K V Prasad AGMs (PMI) in a ceremony held in Chennai on 8 June 2018.



NTPC awarded the prestigious SKOCH award

NTPC has been awarded the prestigious SKOCH Order of Merit for top Corporate Social Responsibility projects in India. The award was presented on 19th September, 2018 at New Delhi and was received by G. Sridhar, AGM (CSR)



Prestigious CSR Award to NTPC

NTPC Ltd. has been conferred with "Dainik Jagran CSR Awards 2019" in Education Category in a glittering function in New Delhi on 27th February 2019. The award was received by Shri M.S.D. Bhattamishra, ED(CSR/R&R) and Shri D.K. Patankar, GM (CSR/R&R). The Award was given by Shri Manoj Sinha, Hon'ble Minister of State (I/C) for Communication and Minister of State for Railways.

NTPC Awarded for Financial Excellence

NTPC, has been awarded for Overall Best Financial Performance by Governance Now at the 5th PSU Awards ceremony held in Delhi on 27th February, 2018. Shri K.P. Gupta, ED (Finance, Law & Company Secretary) and Shri Aditya Dar, General Manager (Finance) NTPC received the award.

NTPC Rank in Forbes

NTPC has been ranked 512 in Forbes Global 2000 2018 on the latest list that ranked the companies based on revenues, profits, assets and market value

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413-1	Operations with local community engagement, impact assessments, and development programs	69-76			
413-2	Operations with significant actual and potential negative impacts on local communities	69-76			
Supplier Social Assessment					
414-1	New suppliers that were screened using social criteria	68-69			
414-2	Negative social impacts in the supply chain and actions taken	68-69			
Public Policy					
415-1	Political contributions	69			

GRI Standard	Disclosure	Page number (s) and/or URL(s)	Omission		
			Part omitted	Reason	Explanation
Customer Health and Safety					
416-1	Assessment of the health and safety impacts of product and service categories	17-67			
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	67			
Marketing and Labelling					
417-1	Requirements for product and service information and labelling	Not Applicable		NTPC's main product is electricity. Labelling is not applicable to the same.	
417-2	Incidents of non-compliance concerning product and service information and labelling	67			
417-3	Incidents of non-compliance concerning marketing communications	67			
Customer Privacy					
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	67			
Socio-economic Compliance					
419-1	Non-compliance with laws and regulations in the social and economic area	69			

GRI Sector specific disclosures (EUSS)

GRI Standard	Disclosure	Page number (s) and/or URL(s)	Omission		
			Part omitted	Reason	Explanation
Sector specific disclosures (EUSS)					
Organization profile					
EU1	Installed capacity, broken down by primary energy source and by regulatory regime	44-50			
EU2	Net energy output broken down by primary energy source and by regulatory regime	44-50			
EU3	Number of residential, industrial, institutional and commercial customer accounts	44-50			
EU4	Length of above and underground transmission and distribution lines by regulatory regime	Not Applicable	NTPC is not in the business of distribution		
EU5	Allocation of CO2 emissions allowances or equivalent, broken down by carbon trading framework	Not Applicable	None of the stations covered under the project boundary are covered under any Co ₂ emissions allowances		
GRI 200 - Economic					
Availability and Reliability					
G4-DMA	Management approach to ensure short and long-term electricity availability and reliability	14-18			
EU10	Planned capacity against projected electricity demand over the long term, broken down by energy source and regulatory regime	44-50			
Demand-Side Management					
G4-DMA	Demand-side management programs including residential, commercial, institutional and industrial programs	14-18			
Research and Development					
G4-DMA	Research and development activity and expenditure aimed at providing reliable electricity and promoting sustainable development	14-18			
Plant Decommissioning					
G4-DMA	Provisions for decommissioning of nuclear power sites	14-18			
System Efficiency					
EU11	Average generation efficiency of thermal plants by energy source and by regulatory regime	44-50			
EU12	Transmission and distribution losses as a percentage of total energy	Not applicable			The Company is not directly involved in the business of transmission and distribution

GRI Standard	Disclosure	Page number (s) and/or URL(s)	Omission		
			Part omitted	Reason	Explanation
GRI 300 - Environment					
Materials					
G4-DMA	Describe long-term strategy for managing and phasing out high level and low level in-service PCBs	51			
G4-EN1 (ADR)	Report in-use inventory of solid and liquid high level and low level PCBs contained in equipment	51,86			
Water and Effluents					
G4-DMA	Describing the criteria for managing maximum/minimum flow of surface water and volume of ground water and how these are determined and maintained.	45,46			
G4-EN8	Report overall water usage for processing, cooling and consumption in thermal and nuclear power plants, including use of water in ash handling and coal cleaning	45,45			
Biodiversity					
G4-DMA	Report approaches for pest and vegetation management along transmission and distribution corridors	Not applicable			
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	52-54			
EU13	Biodiversity of offset habitats compared to the biodiversity of the affected areas	52-54			
Emissions					
G4-EN15	Direct greenhouse gas (GHG) emissions (scope 1) Report CO2 per MWh, broken down by regulatory regime, for: <ul style="list-style-type: none"> • Net generation from all generating capacity; • Net generation from all fossil fuel generation; and • Estimated net delivery to end users. This includes emissions from own generation 	49-51			
G4-EN16	Energy indirect greenhouse gas (GHG) emissions (scope 2) Report CO2 per MWh, broken down by regulatory regime, for: <ul style="list-style-type: none"> • Estimated net delivery to end users. This includes emissions from purchased power. 	49-51			
G4-EN21	NO _x , SO _x , and other significant air emissions Report emissions per MWh for: <ul style="list-style-type: none"> • Net generation from all generating capacity; • Net generation from all combustion power plants 	51			

GRI Standard	Disclosure	Page number (s) and/or URL(s)	Omission		
			Part omitted	Reason	Explanation
Effluents and Waste					
G4-DMA	Describe the management strategy and storage methods for different types of radioactive nuclear waste, including: <ul style="list-style-type: none"> • Temporary and permanent storage; • Environmental, health and safety impacts of radioactive nuclear waste; and • Security measures according to the applicable management standards/ legislative framework. 	45-48			
G4-EN22	Total water discharge by quality and destination. Include thermal discharges as part of the total volume of planned and unplanned water discharges	45-48			
G4-EN23	Total weight of waste by type and disposal method. <ul style="list-style-type: none"> • Include PCB waste as part of the total weight of hazardous and non-hazardous waste. • Report on nuclear waste using IAEA definitions and protocols. • Report mass and activity of spent nuclear fuel sent for processing and reprocessing per year. In addition, report radioactive waste produced per net MWh nuclear generation per year 	45-48			
GRI 400 - Social					
Employment					
G4-DMA	Programs and processes to ensure the availability of a skilled workforce	55-64			
G4-LA1	Total number and rates of new employee hires and employee turnover by age group, gender, and region. For the employees leaving employment during the reporting period, provide the average length of tenure of employees leaving broken down by gender and age group.	55-64			
EU15	Percentage of employees eligible to retire in the next 5 and 10 years broken down by job category and by region	55-64			
EU17	Days worked by contractor and subcontractor employees involved in construction, operation & maintenance activities	55-64			
EU18	Percentage of contractor and subcontractor employees that have undergone relevant health and safety training	55-64			
Occupational Health and Safety					
G4-LA6	Type of Injury and rates of injury occupational diseases, lost days and absenteeism and total number of work related fatalities by region and by gender	55-64			

GRI Standard	Disclosure	Page number (s) and/or URL(s)	Omission		
			Part omitted	Reason	Explanation
	Report on health and safety performance of contracts and subcontractors working onsite on behalf of the reporting organization off site				
Freedom of Association and Collective Bargaining					
G4-DMA	Report on management mechanisms to address the right to organize, right to bargain and right to strike or instances of lock out, given the context of the industry's need to ensure continuous provision of essential services	55-64			
Local Communities					
G4-DMA	Stakeholder participation in decision making processes related to energy planning and infrastructure development	69-76			
EU22	Number of people physically or economically displaced and compensation, broken down by type of project	69-76			
Disaster/ Emergency Planning and Response					
G4-DMA	Contingency planning measures, disaster/emergency management plan and training programs, and recovery/restoration plans	17, 63-64			
Customer Health and Safety					
G4-DMA	For electric utilities the following categories should also be assessed: • Resource planning • Generation • Transmission • Distribution • Use	17, 67			
EU25	Number of injuries and fatalities to the public involving company assets, including legal judgments, settlements and pending legal cases of diseases	67			
Access					
G4-DMA	Programs, including those in partnership with government, to improve or maintain access to electricity and customer support services	6, 67			
EU26	Percentage of population unserved in licensed distribution or service areas	Not Applicable		NTPC's score business is generation of electricity and the company is not directly involved in the business of transmission and distribution	
EU27	Number of residential disconnections for non-payment, broken down by duration of disconnection and by regulatory regime	Not Applicable			
EU28	Power outage frequency	Not Applicable			
EU29	Average power outage duration	Not Applicable			
EU30	Average plant availability factor by energy source and by regulatory regime	Data pending			
Provision of Information					
G4-DMA	Practices to address language, cultural, low literacy and disability related barriers to accessing and safely using electricity and customer support services	Not applicable			

*<https://www.ntpc.co.in/annual-reports/8842/download-complete-annual-report-2018-19>

List of Abbreviations

ACQ	Annual Contracted Quantity	DPE	Department of Public Enterprise
AGM	Additional General Manager	DRC	Dispute Resolution Committee
AM	Ash Management	EBIDTA	Earnings before interest, taxes, depreciation, and amortization
ATD	Association for Talent Development	EIA	Environment Impact Assessment
AWRS	Ash Water Recirculation System	EOC	Engineering Office Complex
BD	Business Development	ESP	Electro Static Precipitator
BE	Business Excellence	EUSS	Electric Utilities Sector Supplement
BIFPCL	Bangladesh-India Friendship Power Company (Pvt.) Limited	FGD	Flue Gas Desulphurization
BPDB	Bangladesh Power Development Board	FICCI	Federation of Indian Chambers of Commerce and Industry
BSE	Bombay Stock Exchange	FII	Foreign Institutional Investors
BU	Billion units	FM	Fuel Management
CAGR	Compound Annual Growth Rate	FT	Fuel Transportation
CBIP	Central Board of Irrigation & Power	GDP	Gross Domestic Product
CD	Community Development	GEM	Girl Empowerment Mission
CEA	Central Electricity Authority	GHG	Greenhouse Gases
CEMS	Continuous Stack Emission Monitoring System	GM	General Manager
CEO	Chief Executive Officer	GoI	Government of India
CFD	Computational Fluid Dynamics	GRI	Global Reporting Initiative
CFO	Chief Financial Officer	GSHP	Ground Source Heat Pump
CGM	Chief General Manager	GW	Giga Watts
CII	Confederation of Indian Industry	HIRAC	Hazard Identification, Risk Assessment and Control
CMD	Chairman & Managing Director	HP	Himachal Pradesh
CoC	Code of Conduct	HQ	Headquarters
CPSE	Central Public Sector Enterprises	HR	Human Resource
CRM	Customer Relationship Management	HUF	Hindu Undivided Family
CSI	Customer Satisfaction Index	HVAC	Heating, Ventilation and Air Conditioning
CSR	Corporate Social Responsibility	IAS	Indian Administrative Services
CVO	Chief Vigilance Officer	IIRC	Internation Integrated Reporting Council
DCS	Distributed Control System	IPIECA	International Petroleum Industry Environmental Conservation Association
DII	Domestic Institutional Investors	IR	Integrated Reporting
DLCMP	Dulanga Coal Mining Project	ISAE	International Standard on Assurance Engagements

ISO	<i>International Organization for Standardization</i>	PAP	<i>Project Affected People</i>
ISTD	<i>Indian Society for Training and Development</i>	PAT	<i>Profit After Tax</i>
IT	<i>Information Technology</i>	PCP	<i>Power Cycle Piping</i>
ITI	<i>Industrial Training Institute</i>	PLC	<i>Programmable Logic Controller</i>
IUCN	<i>International Union for Conservation of Nature</i>	PLF	<i>Plant Loading Factor</i>
JV	<i>Joint Venture</i>	PMI	<i>Power Management Institute</i>
L&D	<i>Learning & Development</i>	PMS	<i>Performance Management System</i>
LODR	<i>(Listing Obligations and Disclosure Requirements)</i>	PP&M	<i>Project Planning & Motioning</i>
MGMI	<i>Metallurgical Institute of India</i>	PRCI	<i>Public Relations Council of India</i>
MMSCMD	<i>Million standard cubic feet per day</i>	PSE	<i>Public Sector Enterprise</i>
MMU	<i>Mobile Medical Units</i>	PSU	<i>Public Sector Undertaking</i>
MoP	<i>Ministry of Power</i>	PV	<i>Photo Voltaic</i>
MoU	<i>Memorandum of Understanding</i>	QA&I	<i>Quality Assessment & Improvement</i>
MSME	<i>Micro, Small and Medium Enterprises</i>	R&D	<i>Research & Development</i>
MT	<i>Metric Tonnes</i>	R&M	<i>Renovation & Modernization</i>
MU	<i>Million units</i>	R&R	<i>Rehabilitation and Resettlement</i>
MW	<i>Mega Watt</i>	RAC	<i>Research Advisory Council</i>
NCR	<i>National Capital Region</i>	RMC	<i>Ready Mix Concrete plants</i>
NETRA	<i>NTPC Energy Technology Research Alliance</i>	RTI	<i>Right To Information Act</i>
NGO	<i>Non Government Organization</i>	SAARC	<i>South Asian Association for Regional Cooperation</i>
NHAI	<i>National Highways Authority of India</i>	SDG	<i>Sustainable Development Goals</i>
NITI	<i>National Institution for Transforming India</i>	SEBI	<i>Securities and Exchange Board of India</i>
NSDC	<i>National Skill Development Corporation</i>	SEC	<i>Specific Energy Consumption</i>
NSE	<i>Natioanl Stock Exchange</i>	SEEM	<i>Society of Energy Engineers and Managers</i>
NTPC	<i>National Thermal Power Corporation</i>	SHA	<i>State Highway Authority</i>
NVG	<i>National Voluntary Guidelines</i>	SSEA	<i>SD/Safety/EMG/AM</i>
O&M	<i>Operations & Maintenance</i>	TCFD	<i>Task Force on Climate-related Financial Disclosures</i>
OCI	<i>Other Comprehensive Income</i>	TPCL	<i>Trincomalee Power Company Ltd</i>
ODF	<i>Open Defecation Free</i>	UNGC	<i>United Nations Global Compact</i>
ODS	<i>Ozone Depleting Substances</i>	UP	<i>Uttar Pradesh</i>
OEM	<i>Original Equipment Manufacturer</i>	USA	<i>United States of America</i>
OHSAS	<i>Occupational Health and Safety Assessment Series</i>	WBCSD	<i>World Business Council for Sustainable Development</i>
OS	<i>Operation Services</i>	ZLD	<i>Zero Liquid Discharge</i>

Girl Empowerment Mission (NTPC - GEM)



This is the story of Sapna Kumari, age 10, living in Dorahar, a small village in Sonbhadra district, Uttar Pradesh. A resident of Dorahar Punarwas, Sapna is the youngest of six siblings.

She participated in the programme "GEM" and underwent a month long residential workshop at NTPC, Rihand. As part of the workshop, she underwent various courses including personality development, health & hygiene, self-defense, supplement to the curriculum and other relevant areas.

For many girls, a month long GEM programme was the best time they had ever in their lives till now, Sapna is one among them. She never celebrated her birthday. In GEM, for the first time she has been facilitated to cut a cake and felt super happy & joyful while sharing her memories. Sapna was one of the 10 girls who was selected for NTPC support in DAV school, Rihand for higher studies.

NTPC undertook a one-month residential summer workshops for about 400 girl children in the age

“

I knew that I would never get an opportunity to study in English medium school as my family is not much strong financially. But because of GEM programme, I got this chance. My parents feel so proud of me and are so happy because out of all the siblings I am the first one to study in an English medium school."

”

group of 10-12 yrs through its Flagship Program Girl Empowerment Mission (GEM) wherein interventions were taken to make the girls self-reliant and confident in all walks of life. The girls were chosen from various Govt schools in villages surrounding NTPC power stations in Singrauli,MP and Sonbhadra,UP, both aspirational districts.

All the girls were exposed to a unique and life long experience wherein various activities were undertaken for developing their confidence and social skills, group working. They were shown movies on social issues, puppet shows, also participated in music and dance classes, theatre etc

The workshop also had outdoor activities like yoga and sports for an overall development of the girls. The outdoor activity also had self-defense classes for girls, a need of an hour.



Out of the 400 girls in Rihand Singrauli & Vindhyaachal, 30 meritorious girls were selected, for admission in NTPC township schools and got the opportunity to study in best of the available English Medium schools. The cost of studies of these 30 girls upto 12th std will be borne by NTPC. After wards they would be assimilated into other existing NTPC programs of coaching and Utkarsh Scholarships.

All the 400 girls are regularly monitored and a winter workshop is again held for them during winter break

every year. NTPC is planning to support all the participant girls from time to time through coaching and mentoring. The huge success of flagship program has motivated NTPC to organize the GEM Workshop on a mega level during next financial year covering more than 20 locations and about 1800 girls. The program is envisaged to expand year-by-year benefitting around 2800 girls yearly on a perpetual basis.



Independent assurance statement

The Board of Directors and Management

NTPC Limited
NTPC Bhawan, Scope Complex 7, Institutional Area,
Lodhi Road, New Delhi – 110003

Ernst & Young Associates LLP (EY) was engaged by NTPC Limited (the ‘Company’) to provide independent assurance

on its annual Sustainability Report (the ‘Report’) for the Financial Year 2018-19. The development of the Report is based on the Global Reporting Initiative (GRI) Sustainability Reporting Standards (‘GRI standards’) and <IR> Integrated Reporting Framework by International Integrated Reporting; its content and presentation is the sole responsibility of the management of the Company. EY’s responsibility, as agreed with the management of the Company, is to provide independent assurance on the report content as described in the scope of assurance. Our responsibility in performing our assurance activities is to the management of the Company only and in accordance with the terms of reference agreed with the Company. We do not therefore accept or assume any responsibility for any other purpose or to any other person or organization. Any dependence that any such third party may place on the Report is entirely at its own risk. The assurance report should not be taken as a basis for interpreting the Company’s overall performance, except for the aspects mentioned in the scope below.

Scope of assurance

The scope of assurance covers the following aspects of the Report:

- Data and information related to the Company’s sustainability performance for the period 1st April 2018 to 31st March 2019;
- The Company’s internal protocols, processes, and controls related to the collection and collation of sustainability performance data;
- Verification of sample data and related information through consultations at the Company’s Head Office in New Delhi and site visits to the following locations:
 - Selected NTPC Plants
 - Unchahar, Uttar Pradesh
 - Mauda, Maharashtra
 - Dadri, Uttar Pradesh
- Review of data on a sample basis, at the above-mentioned locations, pertaining to the following General Disclosures and Specific Disclosures of the GRI Standards:

General Disclosures:

- Organizational Profile (102-1 to 102-13)
- Ethics and Integrity (102-16, 102-17)
- Stakeholder Engagement (102-40 to 102-44)
- Strategy (102-14, 102-15)
- Governance (102-18 to 102-39)
- Reporting Practice (102-45 to 102-56)

Specific Disclosures:

- Environmental Topics:
 - Materials (301-1 to 301-3)
 - Water and effluents (303-1 to 303-5)
 - Emissions (305-1 to 305-7)
 - Supplier Environmental Assessment (308-1 to 308-2)
 - Energy (302-1 to 302-5)
 - Biodiversity (304-1 to 304-4)
 - Effluents and Waste (306-1 to 306-5)
- Social Topics:
 - Employment (401-1, 401-3)
 - Occupational Health and Safety (403-1 to 403-10)
 - Diversity and Equal Opportunity (405-1 to 405-2)
 - Freedom of Association and Collective Bargaining (407-1)
 - Forced of Compulsory Labour (409-1)
 - Rights of Indigenous People (411-1)
 - Local Communities (413-1 to 413-2)
 - Public Policy (415-1)
 - Market and Labelling (417-1 to 417-3)
 - Labour Management Relations (402-1)
 - Training and Education (404-1 to 404-3)
 - Non-discrimination (406-1)
 - Child Labour (408-1)
 - Security Practices (410-1)
 - Human Rights Assessment (412-1 to 412-3)
 - Supplier Social Assessment (414-1 to 414-2)
 - Customer Health and Safety (416-1 to 416-2)
 - Customer Privacy (418-1)

Limitations of our review

The assurance scope excludes:

- Operations of the Company other than those mentioned in the 'Scope of Assurance';
- Aspects of the Report and data/information other than those mentioned above;
- Data and information outside the defined reporting period i.e. 1st April 2018 to 31st March 2019;
- The Company's statements that describe expression of opinion, belief, aspiration, expectation, aim or future intention provided by the Company;
- Data and information on economic and financial performance of the Company
- Qualitative statements describing the performance of the Company;

Assurance criteria

The assurance engagement was planned and performed in accordance with the International Federation of Accountants' International Standard for Assurance Engagements Other than Audits or Reviews of Historical Financial Information (ISAE 3000). Our evidence-gathering procedures were designed in line with the Company's requirement to obtain a 'Reasonable' level of assurance (as set out in ISAE 3000) on reporting principles, as well as conformance of sustainability performance disclosures as per GRI Standards.

What we did to form our conclusions

In order to form our conclusions we undertook the following key steps:

- Interviews with select key personnel and the core team responsible for the preparation of the Report to understand the Company's sustainability vision, mechanism for management of sustainability issues and engagement with key stakeholders;
- Interactions with the key personnel at the Company's plants to understand and review the current processes in place for capturing sustainability performance data;
- Physical audits at the Company's corporate office and sites as mentioned in the 'Scope of Assurance' above;
- Review of relevant documents and systems for gathering, analyzing and aggregating sustainability performance data in the reporting period;

Our Observations

The Company has demonstrated its commitment to sustainable development by reporting its performance on economic, environmental and social aspects for FY 2018-19. The Report has been developed as per the GRI Standards, and includes a description of the stakeholder engagement process, materiality analysis and the key

material topics. Content of the report is also aligned with IR Guiding Principles and IR Content Elements. There is scope for improving the internal data controls, documentation management and method of calculation/estimation for the said indicators and coverage. Detailed observations and areas of further improvement wherever identified have been brought before the attention of the management of the company and have been detailed in management letter, which forms an integrated part of the engagement.

Our Conclusions

On the basis of our reviews carried out as per 'Assurance Engagement of ISAE 3000', we conclude that in our opinion, the Report has been prepared in line with the material issues identified by the Company as per the GRI Standards and the IR Framework.

Our assurance team and independence

Our assurance team, comprising of multidisciplinary professionals, has been drawn from our climate change and sustainability network and undertakes similar engagements with a number of significant Indian and international businesses. As an assurance provider, EY is required to comply with the independence requirements set out in International Federation of Accountants (IFAC) Code of Ethics¹ for Professional Accountants. EY's independence policies and procedures ensure compliance with the Code.

for **Ernst & Young Associates LLP**



Chaitanya Kalia
Partner

Date : 30.01.2020
Mumbai

NTPC is committed to establish a strong baseline of sustainable practices so as to provide maximum opportunities and growth to our stakeholders with an optimised use of resources available to us.





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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