

# Sustainability Report

2012-13

GRI G3.1 & EUSS  
Compliant  
A+ Level Report



A Maharatna Company

**Power to grow**  
**responsibly**

**Powering India's Growth**

# Vision

To be the world's largest and best power producer, powering India's growth



# Mission

Develop and provide reliable power, related products and services at competitive prices, integrating multiple energy sources with innovative and eco-friendly technologies and contribute to society

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**Dear Stakeholder,**

I have great pleasure in presenting to you NTPC's Sustainability Report for FY13.

The business philosophy of NTPC is driven by harmonising People, Planet and Power. Sustainability is fundamental to our business ethics.

The first Sustainability Report of NTPC (B+ category as per GRI guidelines) was published for the FY12 and was put up in the public domain. Covering more sustainability parameters compared to the previous report this is an A+ level report.

**Sustaining High Level Performance**

With 18.4% of installed capacity, NTPC accounted for 27.4% of India's total generation during FY13. Our efforts are guided by our vision of being **"World's largest and best power producer, powering India's growth"**.

As a responsible Maharatna\* Enterprise, we are aware of the expectations of our stakeholders and strive to exceed the performance standards expected of us. In the 12<sup>th</sup> Five Year Plan (2012-17), our target is to add 14,038 MW capacity. We have already commissioned over 6,000 MW and have become a 43,019 MW Company.

\*Maharatnas are the 7 largest SoEs of India identified as potential global giants by the Government of India and given special status and with greater autonomy compared to other SoEs.

# Statement of CMD

## from the Chairman's Desk

We are on course to achieve the 12<sup>th</sup> Plan target as work on the remaining capacity is in advanced stages.

NTPC's power generating stations are among the best performing stations in the country. Also, we have turned around under-performing power stations after taking them over. Post-turnaround performance of such stations namely Badarpur in Delhi, Tanda and Unchahar in UP and Talcher Thermal in Odisha compares with the best in the country. These are among the most impressive turnaround stories in the history of the power sector.

The culture of target orientation and transparency has resulted in a robust corporate image of NTPC.

Our achievements have been widely acknowledged not only by way of awards but also in terms of investor confidence.

In February 2013, we garnered over USD 2 billion (₹ 11,469 crore) during the 'Offer for Sale' for disinvestment of 9.5% stakes of the Government of India, which was oversubscribed by 1.7 times, 45% coming from foreign investors.

On the very first day of its launch on December 3, 2013, NTPC's Tax Free Bonds worth ₹ 1,000 crore (~USD 167 Million) were oversubscribed by 3.7 times.

NTPC has been ranked number one Independent Power Producer in the world for the year 2013 in the top 250 Global Energy Companies' list of Platts, a part of the prestigious McGraw Hill Group.

**Promoting Business Sustainability**

The major challenges faced by the power sector include inadequate domestic fuel supply, strained financial health of state utilities, high Aggregate Technical and Commercial (AT&C) losses, delays in land acquisition and environment & forest clearances. We have been able to deal with challenges and sustain our track record of growth and excellence.

We are committed to our mission to ensure reliable power supply at competitive prices.



NTPC has managed to secure the demand side by signing Power Purchase Agreements for more than one lakh MW capacity.

NTPC has been able to raise debt at optimal rates on the strength of its robust financial ratios and strong balance sheet.

NTPC had Coal Supply Agreements (CSAs) already in place for 23,895 MW capacity covering all the NTPC units commissioned up to March 2009. Further, it has signed CSAs for 14,010 MW capacity covering the units commissioned, or to be commissioned between April 2009 to March 2015.

NTPC has presence across the power value chain. Fuel Management is one of the key priorities for us. In the long run NTPC aims to meet about 20% of its coal requirement from its captive mines. 10 Coal mine blocks have been allocated to NTPC and our coal reserves currently stand at about 5 billion tonnes.

A pioneering initiative of utilizing inland waterways for transport of imported coal to a few NTPC power stations has been taken up in order to facilitate coal supply. E-auction route for coal procurement was also adopted for supplementing coal supply efforts.

Customer Focus has been central to NTPC's commercial philosophy. To strengthen its relationship with customers, NTPC has taken up Customer Relationship Management (CRM) as one of the key initiatives.

Under CRM, regular structured interactions with customers take place for getting their feedback and understanding their expectations and requirements. Such interactions provide an opportunity to identify potential areas of support and cooperation, based on which NTPC provides various support services to the customers in technical, managerial, commercial as well as reform initiatives. The overall aim is to promote growth and sustainability of the power sector. During the year 2012-13, a total of 58 such customer support service initiatives were undertaken for various state utilities across the country.

NTPC has taken up policy advocacy regarding various issues related to the sector.

### **Generating Environmentally Sustainable Power**

There has been a growing concern about Green House Gases (GHGs), particularly CO<sub>2</sub>, emitted from thermal power stations located in developing countries. The

Indian power sector has been under global focus in the context of climate change and GHG emissions.

In line with NTPC's environment vision of "Going Higher on Generation – Lowering GHG intensity", NTPC has adopted a multi-pronged approach towards achieving the goal of producing environmentally sustainable power.

NTPC is engaged in technology upgrades, research in CO<sub>2</sub> fixation and tapping low-carbon energy sources while increasing the share of carbon free non-fossil sources in its energy-mix. It is involved as a partner in international efforts in the area of efficiency enhancement and CO<sub>2</sub> mitigation.

NTPC is setting up its projects with high-efficiency and low-emission super-critical and ultra-super critical technology with units of 660 and 800 MW. Three units of 660 MW based on this 'cleaner' technology are already under commercial operation at Sipat and many more are in various stages of development.

NTPC Energy Technology Research Alliance (NETRA), the Research and Development wing of NTPC, focuses on areas of efficiency and availability improvement, cost reduction, climate change and protection of the environment.

NETRA has initiated study on CO<sub>2</sub> fixation at NTPC Faridabad. Additionally, demonstration plant is being set up by NETRA at NTPC Dadri on solar thermal integration with power plant to reduce GHG emission and improve plant efficiency. NETRA also provides high end scientific support services to NTPC Stations towards improvement in availability and energy efficiency with consequent reduction in GHG emission.

NTPC uses state-of-the-art systems in all its plants to assess air and water quality and minimise the impact of its operations on the environment and local community. For monitoring air quality around the power plants on real time basis, 67 Ambient Air Quality Monitoring Stations (AAQMS) have been installed and networked to provide online access of the ambient air quality data to Central Pollution Control Board on a continuous basis.

NTPC has planted more than 19 million trees throughout the country which act as a rich carbon sink. Various water conservation measures have also been taken to reduce water consumption in power generation by using 3 R's (Reduce, Reuse & Recycle) as



the guiding principle. All operating stations of NTPC are ISO 14001 certified for their Environment Management System.

NTPC's GHG emission on per unit generation basis is well below the national average and can be compared with the best among comparable thermal power companies in the world.

### **Towards Greener Energy**

Renewable energy technologies provide environmentally clean sources of power. In India we have unlimited opportunities, particularly in the area of solar energy generation. However, there are issues affecting the harnessing of adequate power from renewable sources, like high cost of electricity and low PLF of the plants. Cost of electricity from renewable sources is higher as compared to conventional sources. For now, the primacy of fossil fuels cannot be ruled out. They are more affordable. However, NTPC believes that renewable energy can be harnessed, along with using the fossil fuel sources.

NETRA is also focussing on areas of renewable and alternate energy sources. Projects on facilitating affordable renewable energy solutions are being taken up.

For development of clean energy, NTPC plans to broaden its generation mix by promoting conventional and alternate sources of energy. NTPC has a target of achieving 1,000 MW renewable energy capacity by 2017.

In the long-term, NTPC plans to have 28 per cent of its 1,28,000 MW capacity by 2032 from non-fossil sources such as new renewables, hydro and nuclear.

### **Promoting Inclusive Growth**

For social inclusion, various initiatives have been taken by NTPC in the area of infrastructure development, healthcare, education, water supply, sanitation and women empowerment.

The Company has set up a number of educational facilities with special focus on skill creation and employability. Mobile Health Clinic facility has been started at stations to provide quality health care at the doorsteps of neighbourhood villagers. In order to improve the quality of life of the neighbourhood community NTPC has taken up various activities for providing safe drinking water and construction of toilets.

During 2012-13, ₹ 79 crore was spent by NTPC on various activities pertaining to CSR and sustainable development. Some of the major activities include installation of bio-methanation plants to generate biogas from biodegradable waste, plantation of more than 3 lakh saplings, reduction of stack SPM emission, taking up environmental studies around power stations.

It is only through dedicated efforts of our employees that we have been able to achieve our goals and make NTPC a robust organisation. NTPC is the only Public Sector Undertaking to figure among ten best employers in a very prestigious survey carried out by 'The Economic Times & The Great Place to Work Institute' in 2013.

I take this opportunity to thank all our stakeholders who have continuously believed in NTPC's capabilities and contributed to its impressive journey.

I assure you that we will continue to measure up to your expectations.

We look forward to your feedback and suggestions on this report to further strengthen our sustainability agenda.



**(Dr. Arup Roy Choudhury)**  
Chairman & Managing Director





**PERFORMANCE HIGHLIGHTS 2012-13**

Awards placed for work of 8521 MW capacity

Commissioned 4170 MW generating capacity, highest ever in a year (Including JVs)

Highest ever Net Profit after Tax of ₹ 12,619.39 crore, an increase by 36.81% over the previous year

Among the lowest cost producer of power with average selling price of ₹ 2.96 per unit.

4830 MW (including JV) - Highest ever commercial capacity declared during the year

100% realization of current bills from customers

Ozone Depleting Substances (ODS)\* reduced by 33 %  
\* (Base Year 2010 - 11)

Generated 232 BU of Electricity, an increase of about 4.5% over previous year.

Commissioned first two solar power plants of 5 MW each at Dadri and Andaman & Nicobar Islands

Highest-ever dividend of ₹ 5.75 per share (total ₹ 4,741.16 crore)

Disinvestment of 9.50% holding by Government of India in the equity of NTPC, thus reducing its holding from 84.50% to 75.00%

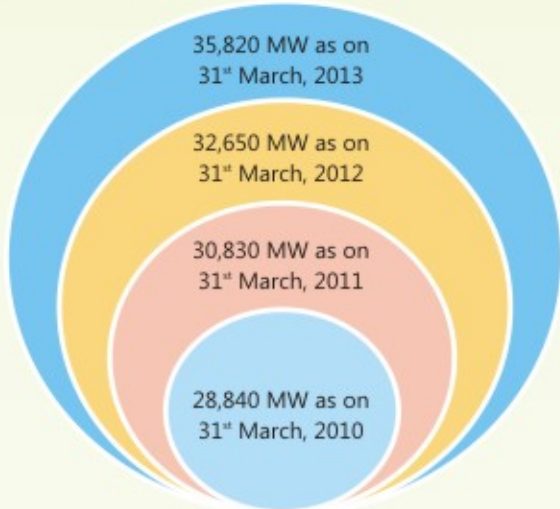
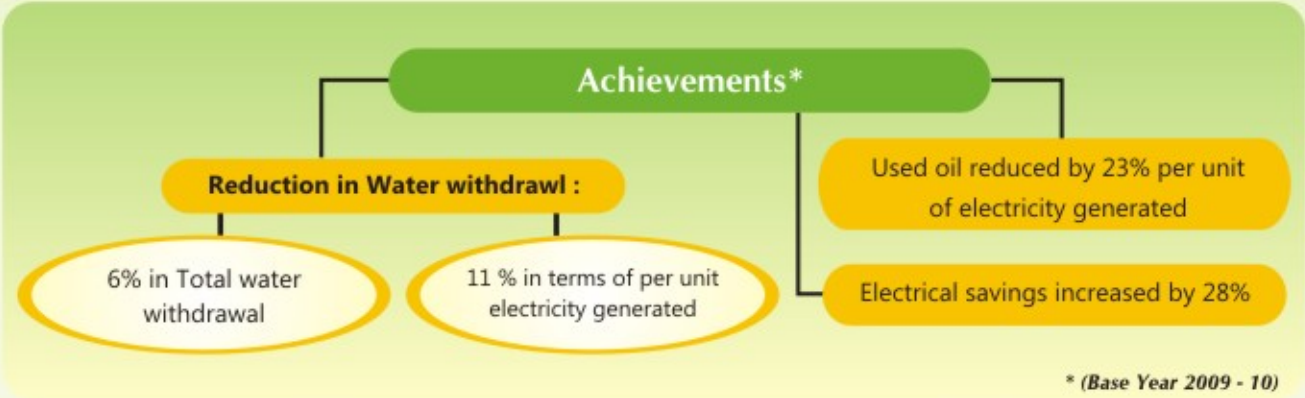
Incurred an expenditure of ₹ 79.53 crores on CSR and Sustainable Development Projects

Maintained PLF of 83% as against all India PLF of 70% despite constraints of fuel availability and financial situation of customers

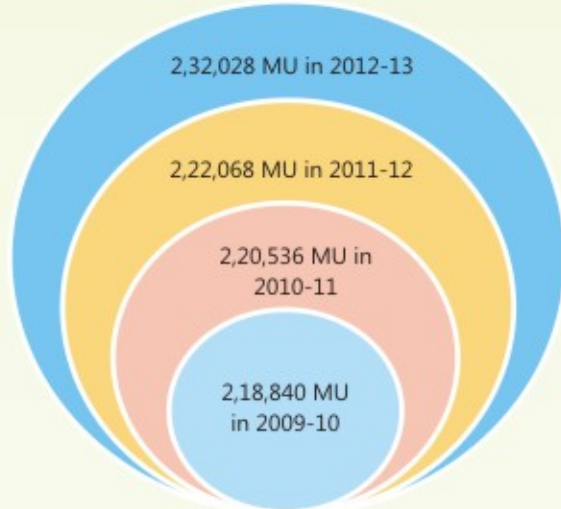
Capital expenditure (CAPEX) of ₹19,926 crore - about 25% higher than the previous year



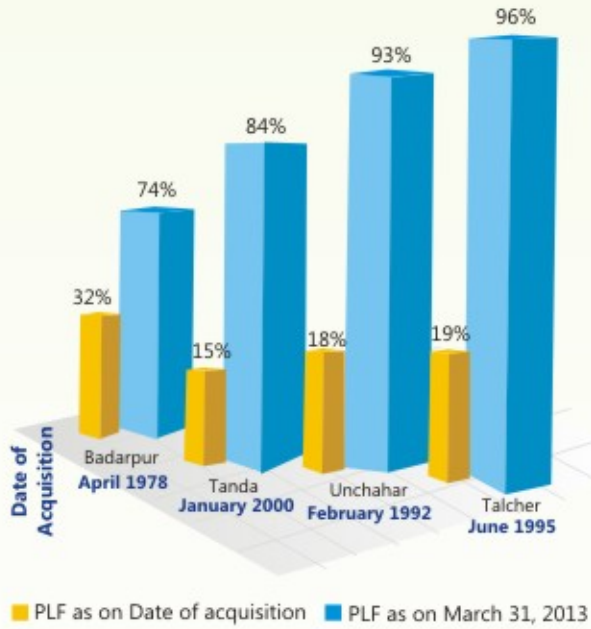




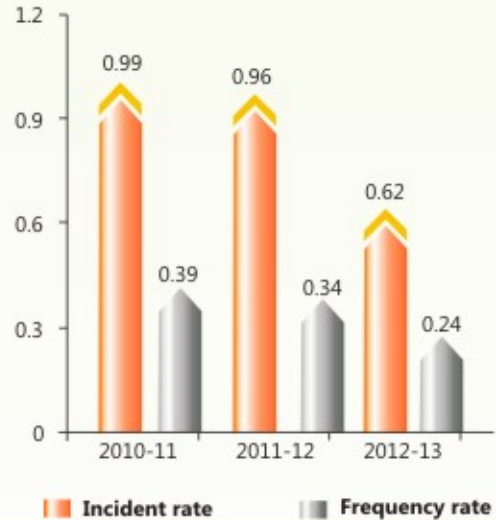
**Installed Capacity (NTPC Standalone)**



**Gross Generation (NTPC Standalone)**



**Turn around of Power plants acquired by NTPC**



**Employee Safety**

**Incident Rate :**  
Total Reportable Accident X 1000 / Avg. Employment in the year

**Frequency Rate :**  
Total Reportable Accident X 10<sup>6</sup> / Total Man Hrs. Worked





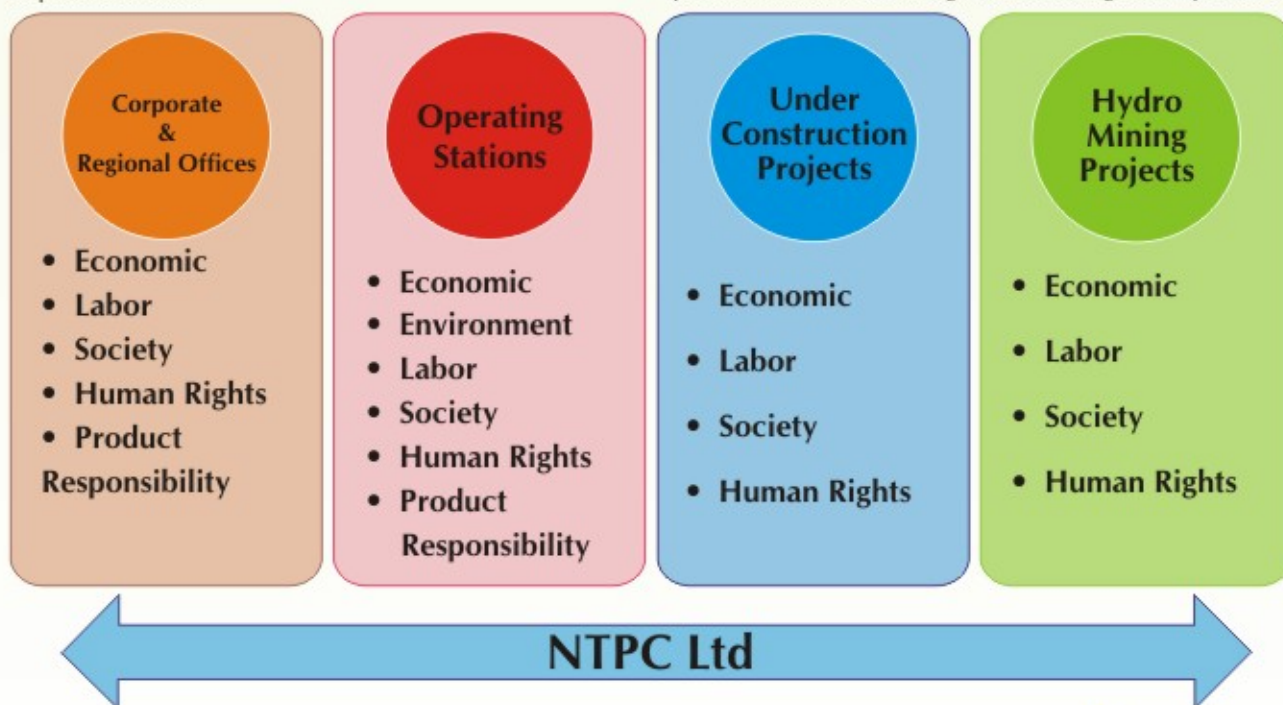
## REPORT PARAMETERS

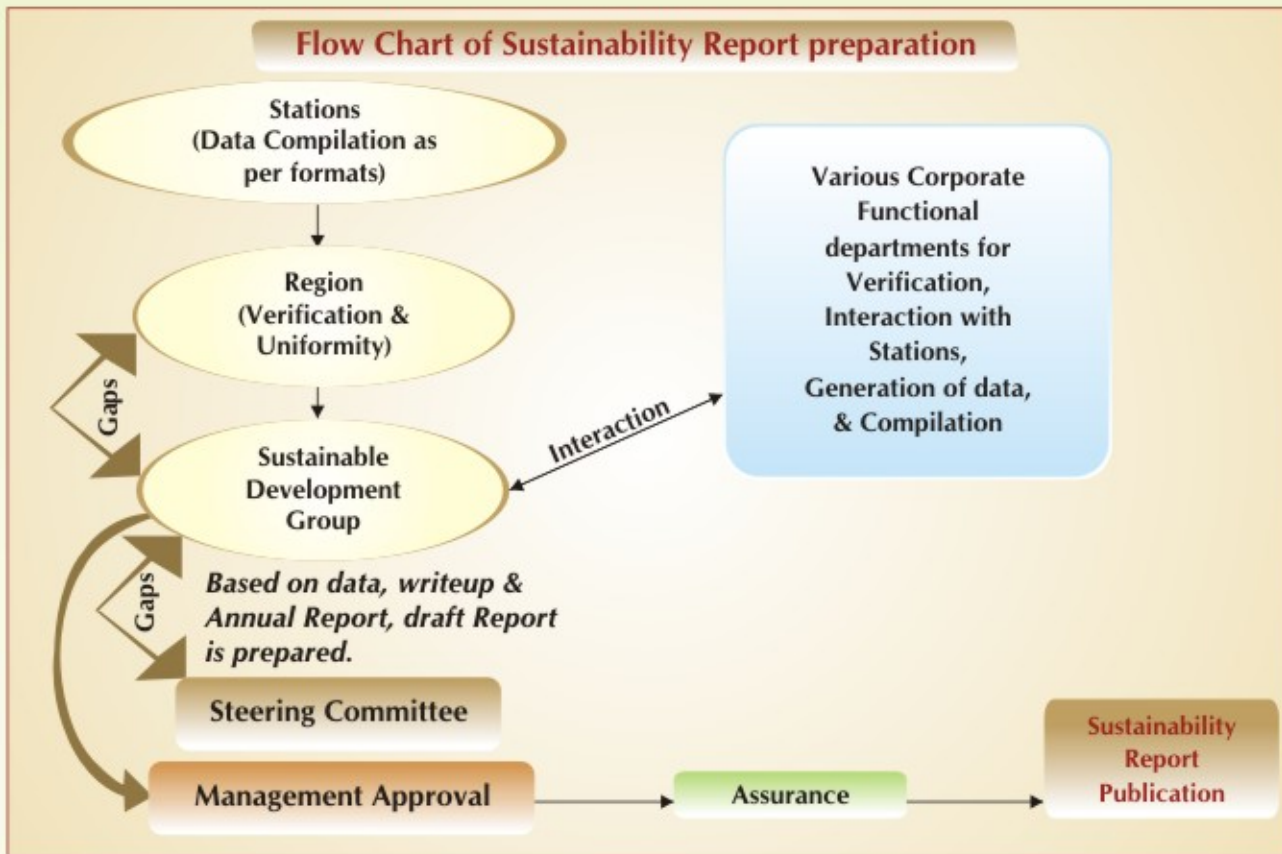
NTPC started its Sustainability Reporting journey with its 1<sup>st</sup> Report “Powering with Care ...” for the financial year 2011-12 based on GRI G3.0 Guidelines. It was a self declared B+ level report. The report was released by Chairman and Managing Director on 21<sup>st</sup> May, 2013.

The current report is NTPC’s 2<sup>nd</sup> Sustainability Report. NTPC is committed to publish sustainability report annually. This report has been prepared in accordance with the Global Reporting Initiative’s (GRI) guidelines (version G3.1) and the “Electric Utility Sector Supplement”. The report conforms to the application level “A” as per GRI application level. The reporting period covered in this report is FY 2012-13 i.e. from April 1, 2012 to March 31, 2013. This Report covers data and information of 21 operating power plants of NTPC. NTPC Mouda, which was declared commercial only on 13.03.2013, has not been included. All these power plants are in India. Subsidiaries and Joint Ventures are excluded from the reporting boundary of the report. Hydro projects, mining projects, under construction projects, corporate offices and regional offices have been included in economic and social indicators (unless otherwise stated) but have been excluded from environmental indicators. The details of inclusion of performance indicators in the report are depicted below :

There is no change in the identified stakeholders from the last report. NTPC has well defined forums for stakeholder consultation with defined frequencies and the same have been used for identifying stakeholder concerns in sustainability context. In addition, the Company is also susceptible to certain risks arising out of various activities undertaken in the normal course of its business. These risks also provide the challenges and opportunities to view the business with a different perspective. These challenges have been identified through an elaborate Enterprise Risk Management (ERM) framework. Based on the relative importance of these challenges and concerns for the organisation and it’s stakeholders, key material sustainability issues have been identified and reported.

Attempts have been made to apply a uniform approach across all NTPC stations for collection of data on performance indicators. Data for performance indicators is collected and processed at individual operating stations as per standard national or international methodologies with a uniform approach of measurement, calculation and analysis. The pictorial representation of “Flow chart of Sustainability Report preparation” is shown in the figure given on next page. If required, necessary variations and assumptions have been made for fair representation of the performance parameter. There is no significant change from previous





report in the scope, boundary or measurement methods applied in this report.

Information on our future plans, strategies, performance targets, business plans etc. is based on current business scenario and involves a certain degree of uncertainty. We shall make all efforts to achieve the intended goals.

A detailed table showing reference to reported GRI indicators has been listed at the end of this report. Principles of National Voluntary Guidelines (NVG) have also been mapped with GRI indicators wherever applicable.

M/s Bureau Veritas Certification (India) Private Ltd. has been engaged by a well defined tendering process for the external assurance of this Sustainability Report. A

copy of the Assurance Statement has been included in the report.

The report is supported with relevant case studies related to few sustainable practices in NTPC.

For any clarification, suggestion and feedback on the report, please contact :

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## ORGANISATIONAL PROFILE

### Primary Brands, Products and Services

NTPC was set up in 1975 to accelerate power development in India. The Company started with coal based power generation and later on also commissioned natural gas based power plants. In pursuit of its vision "To be the world's largest and best power producer, powering India's growth", the Company started diversifying its activities through backward, forward and lateral integration in the entire value chain of power generation business.

### Core Business of Electricity Generation and Capacity Addition

NTPC is generating electricity through its coal and gas based power stations including JV. During the FY 2012-13, the Company generated 232.028 BUs (247 BUs including JVs) of electricity which was 25.57% (27.22% including JVs) of the total power generated in India (without Bhutan import). The total power generated by the Company has registered an increase of 4.49% over the previous year's generation of 222.068 BUs. The total generation contributed by coal stations is 212.329 BUs during the year against generation of 199.054 BUs last year registering a growth of 6.67%.

The total installed capacity of the NTPC Group has increased from 37,014 MW as on 31.03.2012 to 41,184 MW as on 31.03.2013 as tabulated below:

Owned by NTPC	MW
Coal based projects	31,855
Gas based projects	3,955
Renewable Energy Projects	10
<b>Sub-total</b>	<b>35,820</b>
Joint Ventures & Subsidiaries	
Coal based projects	3,424
Gas based projects	1,940
<b>Sub-total</b>	<b>5,364</b>
<b>Total</b>	<b>41,184</b>

To strengthen its core business, NTPC is also involved in the following products & services:

- Power Trading** – Through 'NTPC Vidyut Vyapar Nigam Ltd.' (NVVN), a wholly owned subsidiary of NTPC.
 

During the year 2012-13, the NVVN transacted business with various state electricity boards spread all over the country and traded 8,382 MUs of

electricity in comparison to 8,529 MUs traded in the previous year which is mainly due to transmission congestion resulting in considerable curtailment of open access by the Central Transmission Utility (CTU).

NVVN is the designated nodal agency for purchase of grid connected solar power up to 1,000 MW as a part of phase-I (2009-2013) of Jawaharlal Nehru National Solar Mission (JNNSM) and for sale of such power to distribution utilities after bundling with equivalent megawatt of the unallocated power at the disposal of Govt. of India from NTPC's coal power stations. During the year 2012-13, the company transacted solar energy with various DISCOMS spread all over the country and traded 1,590 MUs of solar bundled power in comparison to 329 MUs traded in previous year.

NVVN has also been designated as the Nodal Agency for cross border power trading with Bangladesh and Bhutan. NVVN has signed a PPA with Bangladesh Power Development Board on 28<sup>th</sup> February, 2012 for supply of 250 MW power from NTPC stations for 25 years.

- Consultancy** – For Domestic and International clients for Engineering Services, Operation & Maintenance Management Services, Project Management Services, Contracts & Procurement Management Services, Quality Management Services, Training & Development Services etc.
 

Consultancy Wing has provided various services like preparation of Feasibility Report for Bangladesh Power Development Board, Bangladesh and site selection, site specific studies and preparation of Feasibility Report for the proposed 2X250 MW Trincomalee Coal Power Project in Srilanka. This Wing is also providing O&M Management Services to 2X120 MW Siddhirganj Peaking Power Plant of Electricity Generation Company of Bangladesh under a World Bank funded contract.
- EPC and Manufacturing** – Through NTPC-BHEL Power Projects Pvt. Limited (NBPPL), a joint venture of NTPC with BHEL. The manufacturing plant of NBPPL is being set up at Mannavaram in Andhra Pradesh for BoP (Balance of Plant) like Coal & Ash Handling Plant. The Company is executing EPC contracts for BoP packages of Palatana Combined Cycle Power plant in Tripura and Namrup Combined Cycle Power Plant in Assam for BHEL. It is also executing BoP including Erection & Commissioning works of the entire plant at Monarchak, Tripura for NEEPCO.
 

electricity in comparison to 8,529 MUs traded in the previous year which is mainly due to transmission congestion resulting in considerable curtailment of open access by the Central Transmission Utility (CTU).



Through TELK (Transformers and Electricals Kerala Limited), another NTPC JV, it is involved in manufacturing and repair of Power Transformers.

- **Training of Power Professionals** - Power Management Institute (PMI) of NTPC at Noida trains not only a large number of professionals from NTPC but also from various SEBs and other power utilities in the country. Participants from various South Asian and Middle Eastern countries have also attended various programmes at PMI.
- **Rural Electrification** - 'NTPC Electric Supply Company Ltd' (NESCL), a wholly owned subsidiary of NTPC, is entrusted with rural electrification works under 'Rajiv Gandhi Grameen Vidyutikaran Yojana' by GoI and is carrying out the implementation of rural electrification work in five States namely Madhya Pradesh, Chhattisgarh, Odisha, Jharkhand and West Bengal.

NESCL has been entrusted with electrification of total 30 projects in 29 districts in above States with a total scope of 14,729 Un-electrified/De-electrified (UE/DE) villages, 20,555 partially electrified (PE) villages and electricity connection to 26.42 lakhs below poverty line (BPL) households. In the FY 2012-13, 22 un-electrified/de-electrified and 2,820 partially electrified villages have been electrified and electricity connections provided to 25,204 BPL households.

### Nature of Ownership & Legal Form

NTPC Limited is a Government Company within the

meaning of Section 617 of the Companies Act, 1956 as the President of India presently holds 75% of the total paid-up share capital. Remaining equity in the company is held by the FIs, FIIs, NRIs, Banks and public at large.

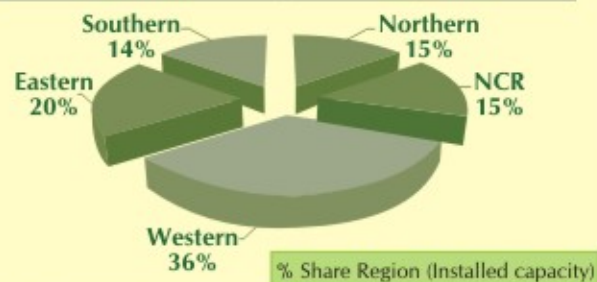
### Markets Served

- NTPC is the largest Power Utility in India. NTPC sells electricity from its various Power Generating Stations located across India to various bulk customers located throughout the country.
- Our customers are various State Electricity Utilities like State Electricity Boards, State Electricity Distribution Companies, SEB Holding Companies, State Power Departments and some specified bulk consumers. The majority of our customers are the electricity utilities owned by state governments.
- Sale of electricity is made through long term Power Purchase Agreements entered with the respective customers for supply of electricity from a specific power station. The Power Purchase Agreements are valid for 25 years, in line with expected life of the plants.
- As per statutory provisions, the tariff for sale of electricity from all the NTPC Power Stations is being determined by the Central Electricity Regulatory Commission.
- NTPC Group has the largest market-share (about 27 percent) in India in the field of electricity generation.

### Pan India Presence



	No. of plants	Capacity MW	Share
<b>NTPC Owned</b>			
Coal	16	31855	77%
Gas/Liquid fuel	7	3955	10%
Solar	2	10	-
<b>Sub-Total</b>	<b>25</b>	<b>35820</b>	<b>87%</b>
<b>Owned by JVs</b>			
Coal	6	3424	8%
Gas	1	1940	5%
<b>Sub-Total</b>	<b>7</b>	<b>5364</b>	<b>13%</b>
<b>Total</b>	<b>32*</b>	<b>41184</b>	<b>100%</b>



\*Operating plants (out of the above list of 32 sites) excluded from the scope of this report are as below :

- All 7 Joint Venture Projects
- NTPC Mouda : Excluded from Environmental Performance Indicators as the plant was declared commercial only on 13.03.2013.
- Two solar PV plants : Excluded from Environmental Performance Indicators as the plants were commissioned on 31.03.2013.

**NB :** NTPC – Dadri (Coal) & Dadri (Gas) have been considered as one power plant. Projects under construction are excluded from the ambit of this report.



## Operational Chart (Subsidiaries and Joint Ventures)



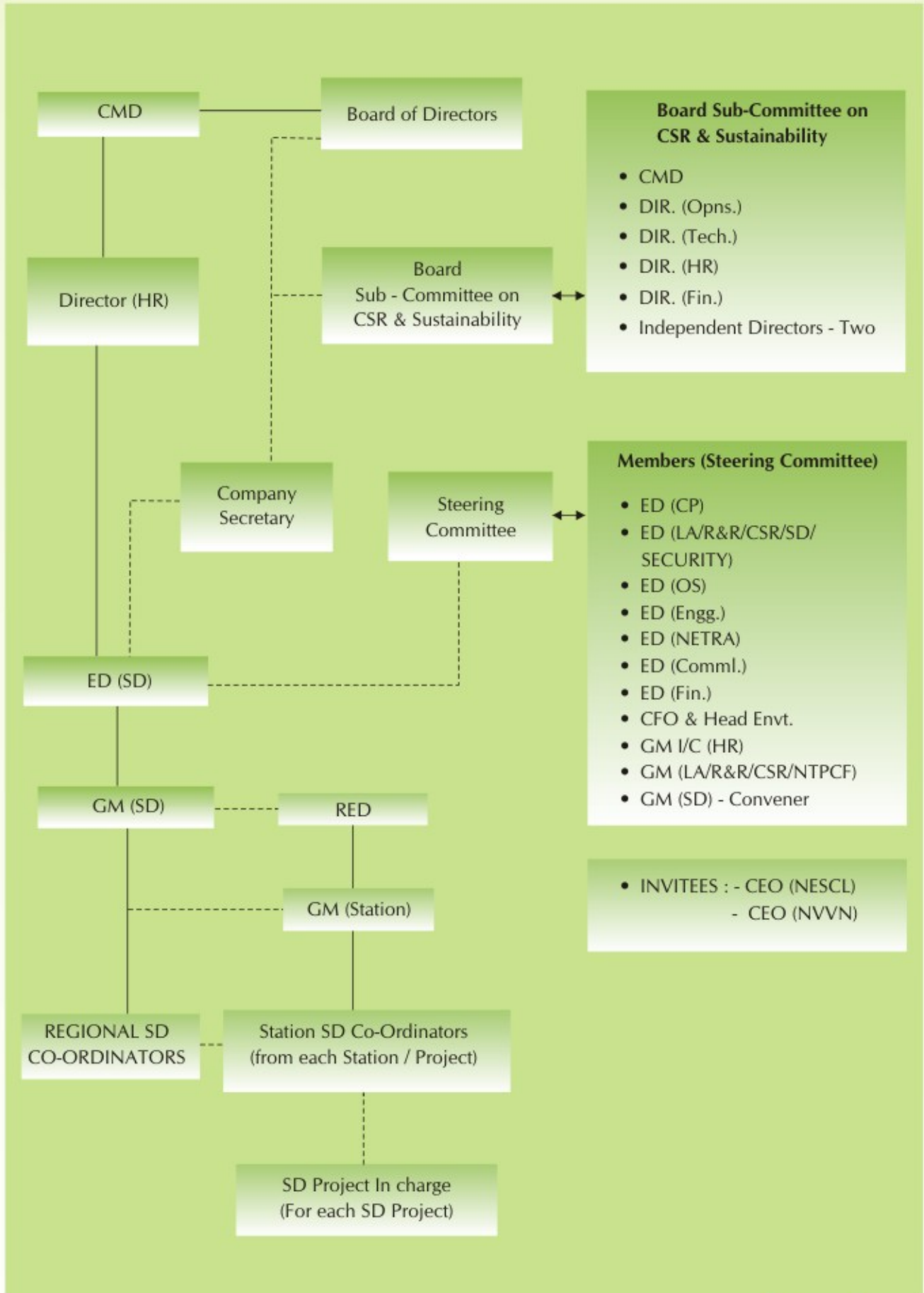
\* NTPC Hydro Ltd. has been merged with NTPC w.e.f. 18.12.2013





## Organizational Setup for Sustainable Development

Organisational Profile

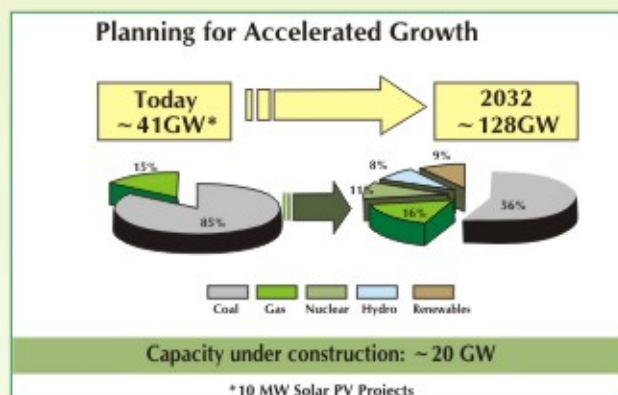




### Significant Changes during reporting period

The Government of India divested 78,32,62,880 number of equity shares (9.50%) of NTPC on 7<sup>th</sup> February, 2013 using the 'Offer for Sale through Stock Exchange Mechanism'. With this, the Govt's holding in NTPC has reduced from 84.50% to 75.00%.

NTPC has added 4,170 MW capacity and the total installed capacity of NTPC group has increased from 37,014 MW to 41,184 MW in the year 2012-13. Details are given below:



Coal Based Power Projects		Renewable Energy Projects		Under JVs (Coal Based)	
Project/ Unit	Capacity (MW)	Project/ Unit	Capacity (MW)	Project/ Unit	Capacity (MW)
Sipat	660	Solar PV Project at Andaman & Nicobar Islands	5	Jhajjar	500
Vindhyachal	1000			Vallur	500
Mouda	1000	Solar PV Project at Dadri	5		
Rihand	500				
<b>Total</b>	<b>3160</b>	<b>Total</b>	<b>10</b>	<b>Total</b>	<b>1000</b>

As on 31<sup>st</sup> March, 2013, the Company's installed capacity and generation vis-à-vis All India capacity and generation are given below :

		All India	NTPC stations	% Share	
Capacity (MW)	Standalone	2,23,344	35,820	16.04	* including Bhutan Import; ** includes 2.60 BU captive
	Including JVs		41,184	18.44	
Generation (BUs)	Standalone	912.06*	232.03	25.44	
	Including JVs		249.59**	27.37	

A list of wholly owned operating stations of NTPC along with their installed capacity (in MW) & Gross Generation (in MU) during 2012-13 is as under :

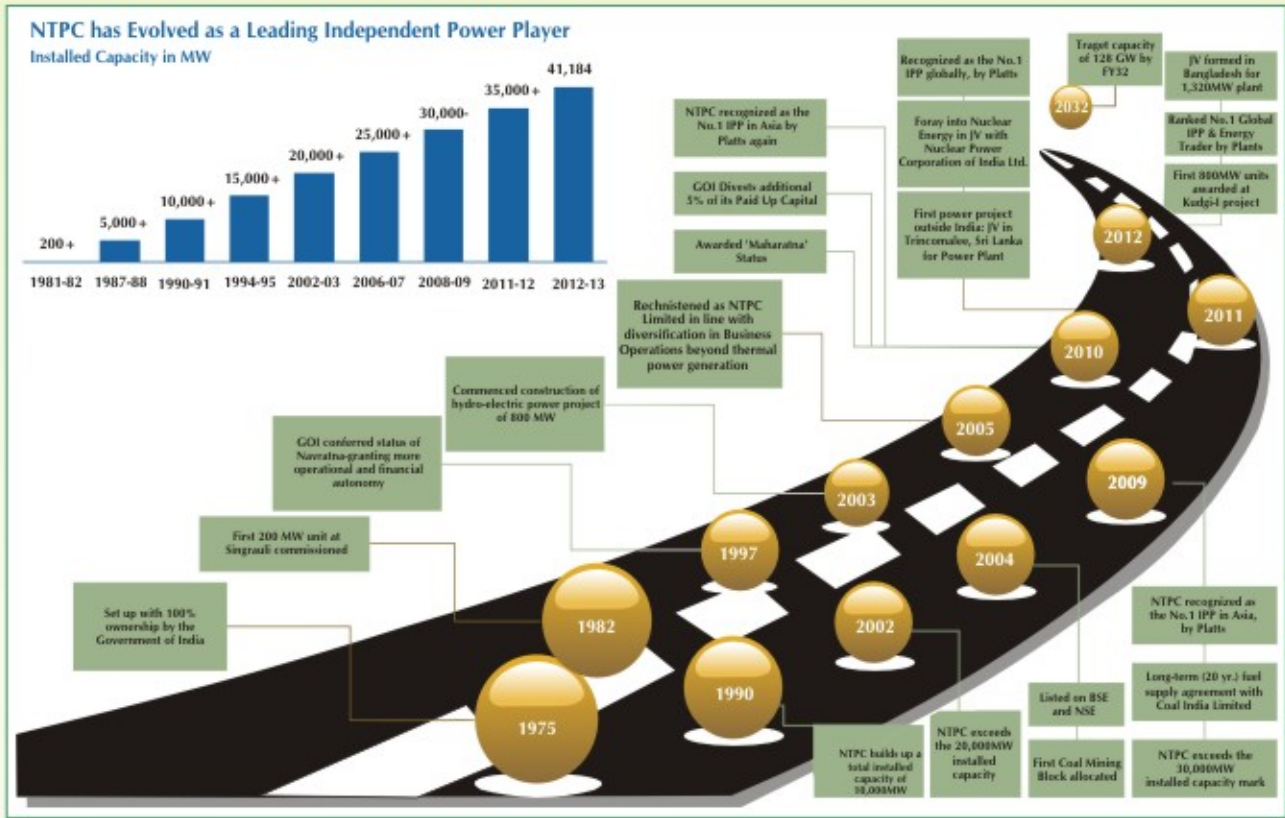
### STATION-WISE CAPACITY & GENERATION 2012-13

STATION	Fuel Type	Capacity (MW)*	Gross Gen.(MU)
<b>Northern Region</b>		<b>5990</b>	<b>44372</b>
Singrauli	Coal	2000	16194
Rihand	Coal	2500	16428
Unchahar	Coal	1050	8528
Tanda	Coal	440	3223
<b>National Capital Region</b>		<b>4837</b>	<b>29421</b>
Badarpur	Coal	705	4556
Dadri	Coal	1820	13094
Anta	Gas	413	2176
Auriya	Gas	652	2775
Dadri	Gas	817	4418
Faridabad	Gas	430	2403
<b>Western Region</b>		<b>12133</b>	<b>71540</b>
Mouda	Coal	1000	14
Korba	Coal	2600	20523
Vindhyachal	Coal	4260	26134

STATION	Fuel Type	Capacity (MW)*	Gross Gen.(MU)
Sipat	Coal	2980	18490
Kawas	Gas	645	2900
Jhanor Gandhar	Gas	648	3479
<b>Eastern Region</b>		<b>7900</b>	<b>51670</b>
Farakka	Coal	2100	11633
Kahalgao	Coal	2340	14707
Talchar-Kaniha	Coal	3000	21450
Talchar-Thermal	Coal	460	3879
<b>Southern Region</b>		<b>4950</b>	<b>35025</b>
Ramagundam	Coal	2600	20785
Simhadri	Coal	2000	12691
Rajiv Gandhi CCPP	Liquid Fuel	350	1549
<b>Total</b>		<b>35810</b>	<b>232028</b>

\* As on 31<sup>st</sup> March, 2013





## CORPORATE OBJECTIVES

*To realize the vision and mission, eight key corporate objectives have been identified. These objectives would provide the link between the defined mission and the functional strategies:*

### □ Business portfolio growth

- To further consolidate NTPC's position as the leading thermal power generation Company in India and establish a presence in hydro power segment.
- To broad base the generation mix by evaluating conventional and non conventional sources of energy to ensure long run competitiveness and mitigate fuel risks.
- To diversify across the power value chain in India by considering backward and forward integration into areas such as power trading, transmission, distribution, coal mining, coal beneficiation etc.
- To develop a portfolio of generation assets in international markets.
- To establish a strong services brand in the domestic and international markets.

### □ Customer Focus

- To foster a collaborative style of working with customers, growing to be a preferred brand for supply of quality power.
- To expand the relationship with existing customers by offering a bouquet of services in addition to supply of power– e.g. trading, energy consulting, distribution consulting, management practices.
- To expand the future customer portfolio through profitable diversification into downstream businesses, inter alia retail distribution and direct supply.
- To ensure rapid commercial decision making, using customer specific information, with adequate concern for the interests of the customer.

### □ Agile Corporation

- To ensure effectiveness in business decisions and responsiveness to changes in the business environment by:
  - Adopting a portfolio approach to new business development.

- Continuous and coordinated assessment of the business environment to identify and respond to opportunities and threats.
- To develop a learning organisation having knowledge based competitive edge in current and future businesses.
- To effectively leverage Information Technology to ensure speedy decision making across the organisation.

### □ Performance Leadership

- To continuously improve on project execution time and cost in order to sustain long run competitiveness in generation.
- To operate & maintain NTPC stations at par with the best-run utilities in the world with respect to availability, reliability, efficiency, productivity and costs.
- To effectively leverage Information Technology to drive process efficiencies.
  - To aim for performance excellence in the diversification businesses.
  - To embed quality in all systems and processes.

### □ Human Resource Development

- To enhance organisational performance by institutionalizing an objective and open performance management system.
- To align individual and organisational needs and develop business leaders by implementing a career development system.
- To enhance commitment of employees by recognising and rewarding high performance.
- To build and sustain a learning organisation of competent world-class professionals.
- To institutionalise core values and create a culture of team building, empowerment, equity, innovation and openness which would motivate employees and enable achievement of strategic objectives.



□ **Financial Soundness**

- To maintain and improve the financial soundness of NTPC by prudent management of the financial resources.
- To continuously strive to reduce the cost of capital through prudent management of deployed funds, leveraging opportunities in domestic and international financial markets.
- To develop appropriate commercial policies and processes which would ensure remunerative tariffs and minimize receivables.
- To continuously strive for reduction in cost of power generation by improving operating practices.

□ **Sustainable Power Development**

- To contribute to sustainable power development by discharging corporate social responsibilities.
- To lead the sector in the areas of resettlement and rehabilitation and environment protection

including effective ash-utilisation, peripheral development and energy conservation practices.

- To lead developmental efforts in the Indian power sector through efforts at policy advocacy, assisting customers in reforms, disseminating best practices in the operations and management of power plants etc.

□ **Research and Development**

- To pioneer the adoption of reliable, efficient and cost-effective technologies by carrying out fundamental and applied research in alternate fuels and technologies.
- To carry out research and development of breakthrough techniques in power plant construction and operation that can lead to more efficient, reliable and environment friendly operation of power plants in the country.
- To disseminate the technologies to other players in the sector and in the long run generating revenue through proprietary technologies.





## ORGANISATIONAL POLICIES

Some of the highlights of NTPC policies on sustainability aspects are given below. These policies provide the insight into the management approach on these aspects:

### Sustainable Development Policy

We at NTPC, commit ourselves to generate and provide reliable power at competitive prices in sustainable manner by optimizing the use of multiple energy resources with innovative eco-friendly technologies thereby contributing to the economic development of the nation, social upliftment of the society and promoting a healthy environment.

In this process, NTPC shall strive to:

- Contribute towards clean and sustainable environment with respect to Land, Water and Air
- Conserve resources by reduction, reuse and recycling
- Initiate and support measures to optimize usage of renewable energy, increase energy efficiency and reduce GHG emissions.
- Support measures for biodiversity conservation by following the practices of protecting, conserving and restoring ecosystems.
- Be transparent, ethical and fair to all stakeholders
- Be supportive in developing and enhancing people's standard of living in and around our business units
- Generate awareness, share knowledge and support training programmes on sustainable development among the employees, communities under its area of influence and public at large

### Environment Policy

#### Principles :

- To achieve and maintain a leader's role in the area of Environment Management in the Power Sector in the country.
- To keep in view the various environmental requirements in all its business decisions.
- To continuously adopt ways and means for Environment Protection and Environment Improvement around its business units.
- To adopt sound Environment Management practices.
- To aim at full compliance with the statutory norms / requirements

### R & R policy

#### Basic Issues and Principles:

- The land that is acquired for power projects is for a public purpose and necessitates Rehabilitation and Resettlement (R&R) of Project Affected Persons (PAPs), a task often accompanied by socio-economic adjustment. The PAPs have to involuntarily face the new social set up.
- The land acquisition and consequent displacement disrupts the traditional social system. The changes in the land use pattern alter the agro-based rural economy and affect the life style of people. This calls for a concerted effort to provide means to ensure sustainable livelihood of these PAPs, considering them as stakeholders.
- The Rehabilitation and Resettlement Plan (R&R Plan) is formulated so that after a reasonable transition period, the affected families improve, or at least regain their previous standard of living, earning capacity and production levels. In case of a one time negotiated settlement is reached for individual R&R benefits and paid accordingly at the time of payment of land compensation itself, or in cases of projects, not requiring any land acquisition Community Development (CD) plan is prepared under the R&R Plan in consultation with stakeholders through VDAC or any other consultative mechanism in force.
- NTPC's involvement in the R&R activities continues until such time as NTPC has taken all actions in accordance with R&R Plan, preparation of Implementation Completion Report (ICR) and evaluation of activities post completion through the conduction of Social Impact Evaluation (SIE) preferably through an outside agency.
- This policy aims at setting up broad guidelines for the formulation of project specific R&R Plans as per the culture/project specific requirements of each project, the categories and the entitlements of R&R benefits.



### Fraud Prevention Policy

The “Fraud Prevention Policy” has been framed to provide a system for detection and prevention of fraud, reporting of any fraud that is detected or suspected and fair dealing of matters pertaining to fraud. The policy will ensure and provide for the following :-

- To ensure that management is aware of its responsibilities for detection and prevention of fraud and for establishing procedures for preventing fraud and/or detecting fraud when it occurs.
- To provide a clear guidance to employees and others dealing with NTPC forbidding them from involvement in any fraudulent activity and the action to be taken by them where they suspect any fraudulent activity.
- To conduct investigations into fraudulent activities.
- To provide assurances that any and all suspected fraudulent activity will be fully investigated.

### Safety Policy

NTPC recognize and accept its responsibility for establishing and maintaining a safe working environment for all its employees. This responsibility arises from:

- Company’s moral responsibility to its employees, to provide the best practicable conditions of work from the point of view of health and safety.
- The obligation to consult with its staff and their representatives to implement policies and procedures developed as a result of discussions.
- Statutory responsibility in respect of health, safety and welfare of employees emanating from relevant legislations such as the Factories Act. The Indian Electricity Act., The Explosive act, The Boiler Act etc.

### Quality Policy

Steering Operations towards sustainable excellence with technical support and guidance for economic and reliable power, adhering to safety and environment friendly strategies with focus on learning , best practices and continual improvement to QMS endeavoring for total customer satisfaction





### Training Policy

#### Objectives :

- Make learning one of the fundamental values of the company
- Ensure value addition through training to the overall business process
- Institutionalize learning opportunities that's supplement work experience
- Integrate organizational and individual development needs
- Enable employees to keep abreast with the latest knowledge and skills and enable them to undertake current and future responsibilities in a more effective manner
- Provide linkages between the different functionaries of training activity
- Provide linkages of training activity with overall Human Resource function

### Policy on HIV-AIDS at Workplace

#### Key Principles :

- Confidentiality
- Non-discrimination
- No pre –selection screening
- Protection of environment
- Reasonable working arrangements / Healthy working environment
- Access to information
- Employee / Community Awareness
- Prevention
- Care & Support

### Community Development Policy

NTPC's long-term CD objectives shall integrate social goals, closely linked with the practice of sustainable development and this shall be in conformity with the corporate and business plan of NTPC, development plans of state and central governments, and the Millennium Development Goals (MDGs)

- NTPC shall strive to improve the standard of living of the PAPs and the community in the target villages through the CD activities and shall maintain a cordial relation with the local authorities and communities through transparency and continued development activities.
- NTPC shall aim to minimize social risks associated with operating stations through the policies described in the document.





## AWARDS AND RECOGNITION

The following awards were received by NTPC during FY 2012-13:

CMD of NTPC receiving Indra Gandhi Rajbhasha Award in the presence of HE President of India Shri Pranab Mukherjee and Shri Sushil Kumar Shinde, Union Home Minister.



NTPC has been honoured with NDTV Business Leadership Award in the Power Sector. Union Finance Minister, Shri Pranab Mukherjee, presented the Award to Shri N.N. Mishra, Director (Operations), NTPC at a function held in Mumbai.



Shri Arup Roy Choudhury, CMD, NTPC has been felicitated at the 27<sup>th</sup> Indian Engineer Congress held in Vigyan Bhawan, New Delhi as an Eminent Engineering Personality by Shri S.L. Garg, President, the Institution of Engineers India.



Shri. A. K. Jha, Director (Technical) received the Golden Peacock Award for 2012



NTPC Limited has been awarded the Pride of India award for its leadership and contribution to the power sector. Award was received by Shri I.J. Kapoor, Director (Commercial)

NTPC has been conferred with the "IEI Industry Excellence Award 2012" in Manufacturing and Processing for overall business excellence and industry practices. The award was received by Shri A. K. Ahuja, ED(CP)





Shri SK Jain, GM (CSR) receiving The Greentech Award 2012 from Shri Bhaskar Chatterjee (Centre) and Shri K. Saran (Left) President of Greentech Foundation at Hyderabad



NSPCL received the BEST EMPLOYER AWARD for 2012-13



- **Ranked #1 IPP in the world in 2012 by Platts-a division of McGraw-Hill companies.**
- **Ranked 337<sup>th</sup> in the Forbes 2012 List of World's 2000 Largest Companies, and 3rd largest in Asia amongst Global Electricity Utilities.**
- **Ranked #3 in India's Best Companies to work for 2012 in a study conducted by Great Place to work and Economic Times.**
- **FICCI Appreciation Plaque for 2011-12 and Golden Peacock Award for 2012 in the area of CSR**
- **'Golden Peacock Global Award for Excellence in Corporate Governance' by World Council for Corporate Governance for the year 2012.**
- **Award for Excellence 2011 - Good Corporate Citizen Award by PHD Chamber of Commerce and Industry.**

#### NTPC's Internal Awards –

- **NTPC Swarn Shakti Award**

The company has well defined schemes under NTPC Swarn Shakti Awards to bring in an inter-unit competitiveness in various areas of activity on annual basis, leading to excellence and perfection. The objective is to induce team spirit amongst all employees of projects and to reward the best performing station in the various areas. Safety , Rajbhasha, Employee Relations, Improvement & Protection of Environment, Project Management, Community Development, Productivity and Best health services awards have been included in the NTPC Swarn Shakti Awards.

- Additionally, various rewards and recognition for employees have been notified under NTPC reward system





**CHIEFMAN & MANAGING DIRECTOR**

Name	Period
S. N. RAJAN	15.02.1972 - 11.08.1980
A. K. RAM	01.08.1980 - 08.02.1989
M. L. SINGH	08.02.1989 - 01.11.1990
RAJAGOPALAN	01.11.1990 - 08.04.1992
S. S. RAM	08.04.1992 - 08.04.1992
RAJENDRA SINGH	01.08.1992 - 11.07.2000
S. K. JAIN	11.07.2000 - 11.07.2000
T. SANKARANARAYANAN	01.08.2000 - 08.04.2009
M. S. SHARMA	01.08.2009 - 08.04.2019
ADITYA KUMAR	01.08.2019 - 01.08.2019





# GOVERNANCE AND ETHICS





## GOVERNANCE AND ETHICS

The Corporate Governance philosophy of the Company is :

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

### Constitution of the Board

NTPC is a Government Company within the meaning of section 617 of the Companies Act, 1956 as the President of India presently holds 75% of the total paid-up share capital.

In terms of the Articles of Association of the Company, the strength of our Board shall not be less than four Directors or more than twenty Directors. These Directors may be either whole-time Directors or part-time Directors. The constitution of the Board is as under:

- (i) Seven Functional Directors including the Chairman & Managing Director,
- (ii) Two Government Nominee Directors and
- (iii) Nine Independent Directors as per the requirement of the Listing Agreement.

The Independent Directors have been appointed by the Government of India through a Search Committee constituted for the purpose. The Company has one lady Independent Director on its Board. The Directors bring to the Board wide range of experience and skills.

The Board of directors is the highest governing body headed by Chairman & Managing Director. The combined post of the Chairman & Managing Director ensures single person authority and accountability.



### Sub Committees of the Board

In line with the Companies Act, 1956, the listing agreement, the Maharatna guidelines and applicable rules and regulations, the Board of Directors have constituted the following sub-committees of the Board:

- i) Audit Committee.
- ii) Shareholders’ / Investors’ Grievance Committee.
- iii) Remuneration Committee
- iv) Committee on Management Controls.
- v) Project Sub-Committee.
- vi) Investment / Contribution Sub-Committee.
- vii) Contracts Sub-Committee.
- viii) Committee of Functional Directors for Contracts
- ix) Committee of the Board for allotment and post-allotment activities of NTPC’s Securities
- x) Corporate Social Responsibility and Sustainability Committee
- xi) Committee for Vigilance Matters
- xii) Committee for Mine Development
- xiii) Committee for Review of Mining Activities
- xiv) Committee on Exchange Risk Management

The terms of reference of these committees and details of the members have been given in NTPC’s Annual Report 2012-13, available on the web-link :

[http://www.ntpc.ind.in/index\\_files/download/NTPC%20ANNUAL%20REPORT%202012-13.pdf](http://www.ntpc.ind.in/index_files/download/NTPC%20ANNUAL%20REPORT%202012-13.pdf)

The Corporate Social Responsibility and Sustainability Committee was re-constituted in 2013-14 to approve and review the CSR and SD activities of NTPC. The Committee has the following members :

Chairman & Managing Director	Chairman
Director (Finance)	Member
Director (Operations)	Member
Director (Technical)	Member
Director (Human Resources)	Member
Ms. Homai A. Daruwalla (Independent Director)	Member
Prof. Sushil Khanna (Independent Director)	Member



## Appointment of Directors

All the Functional Directors are appointed by the President of India. The job description, qualification and experience of the functional directors are approved by the Board and are updated from time to time keeping in view the changed scenario in industry.

For appointment of Independent Directors, the Govt. of India has set up a Search Committee. Department of Public Enterprises (Ministry of Heavy Industries & Public Enterprises) has prescribed role and responsibilities of Independent Directors. DPE has prescribed that the Independent Directors shall have experience of not less than 10 years at the level of (i) Joint Secretary and above in the Government; (ii) Chairman & Managing Director/ MD in Corporate Sector; (iii) Professor level in an Academic Institution or professionals of repute like eminent Chartered Accountant/ Cost Accountants at the level of Directors of Institutes/ Heads of Department; (iv) persons of eminence with proven track record from Industry, Business or Agriculture.

### Directors responsible for implementation of Policies / Systems on Sustainable Development Aspects (During 2012-13):

No.	Director(s) Responsible	Policies / Systems
1	All Directors	<ul style="list-style-type: none"> <li>Code of Conduct for Board Members and Senior Management Personnel</li> <li>Core Value</li> </ul>
2	Director (Finance)	All Financial Aspects
3	Director (Operations)	<ul style="list-style-type: none"> <li>Environment Policy</li> <li>Safety Policy</li> <li>Energy Efficiency</li> </ul>
4	Director (Technical)	<ul style="list-style-type: none"> <li>Sustainable Development (SD) Policy</li> <li>New Technologies and Renewable Energy</li> </ul>
5	Director (HR)	<ul style="list-style-type: none"> <li>Human Resource (HR) Policies</li> <li>R&amp;R Policy</li> <li>Community Development (CD) Policy</li> </ul>
6	Director (Commercial)	<ul style="list-style-type: none"> <li>Commercial Systems and Procedures</li> </ul>
7	Chief Vigilance Officer	<ul style="list-style-type: none"> <li>Fraud Prevention Policy</li> </ul>

## Remuneration of Directors

The appointment, tenure and remuneration of whole time functional Directors and CMD are decided by the Government of India. Independent Directors are paid sitting fees at the rate fixed by the Board within the ceiling prescribed under the Companies Act, 1956 for

attending the Board Meetings as well as Committee Meetings. The graded responsibility based performance linked schemes extant in NTPC applies, mutatis mutandis, to functional directors.

The Remuneration Committee of the Board of Directors, inter-alia, decides their Performance Related Payment in accordance with the guidelines prescribed by GoI for all executives including CMD, Functional Directors and non-unionised supervisors.

## Code of Conduct

There is Code of Conduct for Board Members and Senior Management Personnel. This helps to realise the goals emanating from the core principles of Corporate Governance philosophy. It is in compliance with the requirements of Listing Agreement executed with the Stock Exchanges and Guidelines on Corporate Governance for Central Public Sector Enterprises by Department of Public Enterprises. The Code is in alignment with the Company's Vision and Values to help achieve its Mission and Objectives. It aims at strengthening ethics and enhancing transparency in managing the affairs of the Company.

The Code of Conduct for Board Members and Senior Management Personnel provides that they will, inter-alia, act within the authority conferred upon them keeping in view the best interest of the Company and shall act with utmost care, skill, diligence and integrity, fulfill their fiduciary duty, not involve themselves in an offence involving moral turpitude and make necessary disclosures. A copy of the Code of Conduct is available at the website of the Company.

## Conflict of Interests

All agendas placed before the Board are approved by the Director concerned or Finance Director and the Chairman & Managing Director. There is a system of holding monthly functional director level meeting for reviewing the important interdepartmental matters. All the Directors make Disclosure of Interest in Form 24 AA pursuant to Section 297 and 299 of the Companies Act, 1956. No Director of the Company takes any part in the discussion on agenda items in which they are directly or indirectly interested.

## Performance Evaluation of Governance Body

The performance of the Board and the Directors are evaluated by the Ministry of Power, the administrative ministry for the Company. For evaluating the performance of the Company, the Government has instituted a system of target setting, agreed between the Company and the Government through a Memorandum of Understanding (MoU). The actual performance in comparison to the targets set for the year is monitored on a quarterly basis by the Government. At the end of the year, the performance for the whole year is assessed on the basis of parameters like financial



performance, productivity, human resource development activities, project implementation, operational performance etc.

The Chairman & Managing Director and whole time Directors in different functional areas are appointed by the President of India for a period of five years or till the date of superannuation. Extension beyond five year tenure is granted based on the performance of the individual Directors. Further, performance of functional directors on the Board is also evaluated through a performance evaluation system. Under this system, the Directors agree with the Chairman & Managing Director for targets and measures for different key performance areas. A mid –year review of the targets and measures, if required, are incorporated. The performance reports of all Directors are reviewed by the Chairman & Managing Director and forwarded to the administrative ministry for evaluation.

### Corporate Memberships

NTPC participates in various forums and Industry associations such as SCOPE, CII, FICCI, etc. to advocate for the policies which are conducive for sustainable development of power sector. CMD, NTPC was elected Chairman of SCOPE for two consecutive terms of two years each from 2009 to 2013, and is presently Vice Chairman (Asia Pacific and South Asia) of World Energy Council since November, 2011 for 3 years.

NTPC is a member of Global Compact Network, India and confirms its involvement in various CSR activities in line with 10 Global Compact principles. It shares its experience on CSR initiatives with the representatives of the world through “Communication on Progress”.

The list of membership of NTPC in national and international associations and advocacy organizations is given below:

No.	Organisation
1	All India Management Association
2	All India Organization of Employees
3	American Society for Quality
4	British Standards Institute
5	Central Board of Irrigation and Power
6	Centre for Public Sector Studies
7	Coal Preparation Society of India
8	Committee for International Commission on Large Dams (India)
9	Confederation of Indian Industry
10	Corporate Membership of ICSI
11	Delhi Productivity Council
12	Federation of Indian Chambers of Commerce & Industry
13	Forum of the Hydro Power Producers in Satluj Basin

No.	Organisation
14	Global Carbon Capture and Storage Institute, Australia
15	Indian Geo-technical Society
16	Indian Green Building Council
17	Indian Institution of Plant Engineers (IIPE)
18	Indian International Centre
19	Indian Member Committee (World Energy Council)
20	Indian Trust for Rural Heritage and Development
21	International Council of Large Electric System (CIGRE)
22	International Electric Research Exchnage (IERE), Japan
23	International Geosynthetics Society
24	International Tunneling Association (India)
25	National Accreditation Board for Testing & Calibration Laboratories
26	National Safety Council, India
27	National Safety Council, USA
28	Petrotech Society
29	Power HR Forum
30	Shri Ram Centre for Industrial Relations and Human Resources
31	South Asia Forum for Infrastructure Regulation
32	Standing Conference of Public Enterprises (SCOPE)
33	Strategic Human Resource Management (SHRM)
34	The Energy and Resources Institute (TERI)
35	The Foreign Correspondents Club of South Asia
36	The Institute of Internal Auditors of India
37	The Mining, Geological and Metallurgical Institute of India
38	Thought Arbitrage Research Institute
39	UN Global Compact Network
40	World Economic Forum

NTPC is also a member of “TERI –Business Council for Sustainable Development – India (TERI-BCSD)”, the Indian partner of the WBCSD (World Business Council for Sustainable Development), Geneva.

This membership provides it an independent and credible platform to address issues related to sustainable development and for sharing best practices amongst its members in various areas such as energy, climate change, water, sustainable habitat, business responsibility etc.



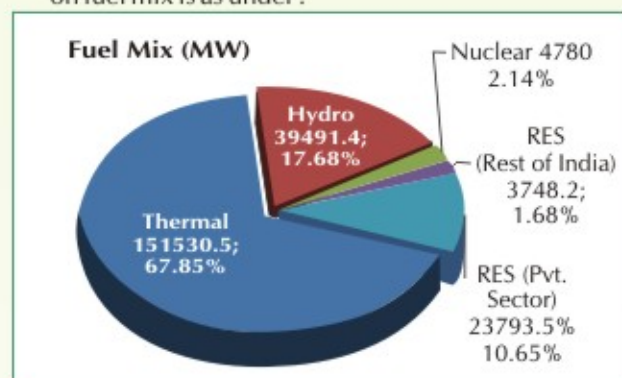


## **POWER SECTOR SCENARIO, ISSUES AND CHALLENGES**



## POWER SECTOR SCENARIO, ISSUES AND CHALLENGES

- The total installed capacity in the country as on 31.03.2013 was 2,23,344 MW with State Sector having a share of 39.9%, followed by Private Sector with 30.8% share and balance 29.3% contributed by Central Sector entities.
- Capacity addition of 20,623 MW during the financial year 2012-13 exceeded the target of 17,956 MW with maximum contribution of 54.6% from Private Sector, followed by 26.2% from Central Sector and 19.2% from State Sector.
- The total installed capacity as on 31.03.2013 based on fuel mix is as under:



(Source: CEA)

- 1,30,221 MW of the installed capacity is based on coal which is 58.31% of all India capacity hence, coal remains the key fuel for power generation.
- The PLF of thermal generating stations (coal & lignite based station) has shown a decline during the financial year 2012-13 vis-a-vis financial year 2011-12.

Sector wise PLF – Thermal (%)

Sector	FY 2012-13	FY 2011-12	Change
Central	79.18	82.01	-2.83
State	65.54	68.35	-2.81
IPP	62.16	67.27	-5.11
Private	75.69	76.19	-0.5
All India	69.93	73.47	-3.54

(Source: CEA)

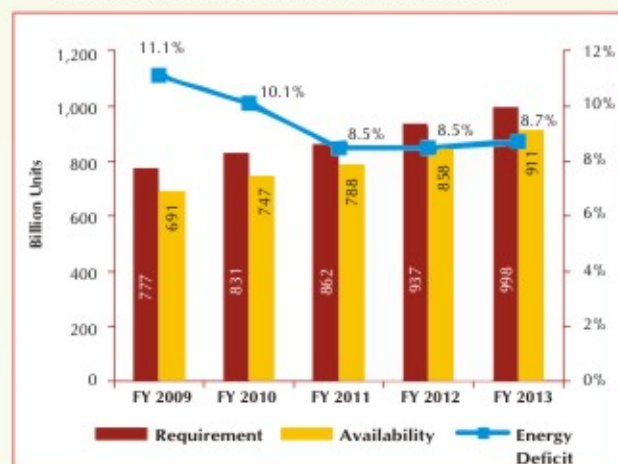
- The total power generation in the country during the financial year 2012-13 registered a growth of 4.01% as compared to last year. Sector wise and fuel wise break-up of generation in BU for the financial year 2012-13 and financial year 2011-12 is as follows:

Sector	FY 2012-13	FY 2011-12	Fuel	FY 2012-13	FY 2011-12
Central	375.97	364.00	Thermal	760.68	708.81
State	347.15	367.96	Hydro	113.72	130.51
Private	184.15	139.65	Nuclear	32.87	32.29
Others*	4.79	5.28	Others*	4.79	5.28
<b>Total</b>	<b>912.06</b>	<b>876.89</b>	<b>Total</b>	<b>912.06</b>	<b>876.89</b>

\*Import from Bhutan

(Source: CEA)

- Of the total all India generation during the financial year 2012-13, the State Sector contributed 38.1%, Central Sector utilities contributed 41.2% whereas Private Sector has contributed 20.2%.
- The demand and supply position during the last five years in the country is indicated as under:



(Source: CEA- power supply position)

- The energy deficit increased marginally in financial year 2012-13 to 8.7% from 8.5% in financial year 2011-12, whereas the peak deficit decreased to 9.0% in year 2012-13 from 10.6% in the previous year.
- The per capita consumption of power in India has increased from 631.40 units in financial year 2005-06 to 879.22 units in financial year 2011-12 (provisional).

(Source: CEA)

### Transmission and Distribution

- Four regional grids have been operating in synchronous mode as a single system and only the southern grid was to be connected to the rest of the system (now connected).





- Total Transmission lines in the country up to March 2013 were 2,74,588 ckt kms.
- The total capacity to transfer power across regions at the end of the XI plan was about 27,750 MW. This is expected to increase by 136% to 65,550 MW by the end of XII plan. *(Source: CEA & Draft 12<sup>th</sup> plan)*
- The financial viability of the distribution system is under severe strain.
- The aggregate losses of utilities selling directly to consumers on subsidy received basis increased from ₹34,728 crore in the financial year 2008-09 to ₹ 43,433 crore in financial year 2009-10. In the financial year 2010-11, these losses stood at ₹ 38,821 crore, a reduction of 10.62% over financial year 2009-10.

*(Source: PFC report on State Power Utilities)*

- Many States have now started to increase tariff in the last couple of years to bridge the revenue gap. The Cabinet has also approved a Financial Restructuring Plan (FRP) for Distribution Companies (Discoms). Effective implementation of the restructuring package during the XII plan would send a powerful signal that the power sector is on the path of financial viability.
- **Rural Electrification** - The Central Government launched a scheme 'Rajiv Gandhi Grameen Vidyutikaran Yojana' (RGGVY) for electrifying all un-electrified villages and hamlets and providing access to electricity to all households. Under RGGVY, over 1 lakh villages have been electrified and over 2 crore connections have been provided to Below Poverty Line (BPL) households up to 15.06.2013.
- **R-APDRP** - Restructured Accelerated Power Development and Reforms Programme (R-APDRP) was approved as a Central sector scheme on 31.07.2008 with total outlay of ₹ 51,577 crore. The focus of R-APDRP is on actual, demonstrable performance in terms of reduction in Aggregate Technical and Commercial (AT&C) losses through technological up-gradation. APDRP and R-APDRP have been successful in bringing down the AT&C losses from 38.86% in 2001-02 to 26.15% in 2010-11. However, losses are still at a higher level and far behind the targeted reduction of AT&C losses to 15%.

*(Source: CEA)*

## A. Plans and Future Outlook

### • XII<sup>th</sup> Plan - Capacity and Generation Targets:

The target for the capacity addition in XII plan has been fixed at 88,537 MW (excluding RES) based on GDP growth of 9 %. The share of the private sector in the additional capacity will be 53 %, followed by

central sector with 30% and state sector with 17% as shown in table below:

Sector	Hydro (MW)	Thermal (MW)	Nuclear (MW)	Total (MW)
Central	6,004	14,878	5,300	26,182
State	1,608	13,922	0	15,530
Private	3,285	43,540	0	46,825
<b>Total (excl. RES)</b>	<b>10,897</b>	<b>72,340</b>	<b>5,300</b>	<b>88,537</b>
RES				30,000
<b>Total (Incl. RES)</b>	<b>10,897</b>	<b>72,340</b>	<b>5,300</b>	<b>1,18,537</b>

*(Source: Draft 12<sup>th</sup> plan)*

The share of new capacity addition during XII plan based on fossil fuel remains high at ~ 82%.

### • Changing Fuel Structure for Power :

The projected change in the fuel mix by 2030 as shown below highlights the huge emphasis being given by government on Clean Energy :

No	Fuel Source	Capacity (%)			Generation (%)		
		2012	2017	2030	2012	2017	2030
1.	Coal	56	57	42	70	69	58
2.	Oil	1	1	0	0	0	0
3.	Gas	9	6	3	7	5	3
4.	Hydro	20	15	13	14	12	11
5.	Renewables	12	17	33	6	9	16
6.	Nuclear	2	4	9	3	5	12
<b>Total Clean Energy</b>					<b>23</b>	<b>26</b>	<b>39</b>

*(Source: Draft 12<sup>th</sup> plan)*

### • Long Term Outlook :

The long term outlook of the sector can be gauged from the following statistics relating to electricity as projected by the 18<sup>th</sup> Electric Power Survey :

Parameters	FY (2021-22)	FY (2026-27)	FY (2031-32)
Electrical Energy Requirement (BU)	1,904.86	2,710.06	3,710.08
Peak Load (GW)	283.47	400.71	541.82
T&D Losses (%)	15.39	15.34	15.29
Load Factor	76.93	76.43	75.93

As reflected above, the demand is set to double from FY 2021-22 to FY 2031-32, indicating huge growth potential of the sector.

## B. Opportunities and Threats for the Sector

### Opportunities

With population and economy growing at a rapid pace and a wide gap between demand and supply,



the Indian power sector offers strong opportunity to industry participants.

**1. Huge Investments envisaged for Power Sector :**

Total investments for the Indian power sector, as projected by the Interim Report of High Level Committee on financing infrastructure, August 2012 for the XII plan, stands at ₹ 17,47,323 crore (including non conventional energy) providing enough opportunity to various entities in the power sector.

**2. Demand for Electricity:** The energy deficit, peak deficit, high T&D (Transmission and Distribution) and AT&C losses and the electricity demand by end of XII<sup>th</sup> plan entails large capacity expansion by Central, State and Private sector players together.

**3. Transmission :** Strengthening of transmission network with emphasis on reduction in AT&C losses is important along with expansion of generation capabilities. The technological innovations for transmission lines of 765 KV and 1,000–1,200 KV are of great relevance to reduce land requirement and transmission losses.

**4. Renewable Energy Sources (RES) :** Out of a target of 4 GW RES capacity addition under Grid Interactive Power, 3 GW has been actually deployed during the financial year 2012-13. Cumulative achievement of RES upto 31.03.2013 is approximately 28 GW. (Source: MNRE Website). 12<sup>th</sup> plan, in line with projections of Ministry of New and Renewable Energy, has planned for ~30 GW capacity addition of grid-interactive renewable power during the period.

captive plants and open access consumers to fulfil their Renewable Purchase Obligations (RPOs). While renewable generators can receive additional revenue, buyers are able to meet obligations without investing into generating capacities. The REC trading in India is picking up gradually.

**5. Hydro Potential – large untapped potential :** The identified hydroelectric potential of the country is above 1,45,320 MW (excluding small hydro projects of less than 25 MW). However, installed capacity of hydro electric projects, as on 31.03.2013, is only 39,491.4 MW. The main reasons for slow development of hydroelectric power are inaccessible potential sites, difficulties in land acquisition, geological surprises, evacuation of power, etc.

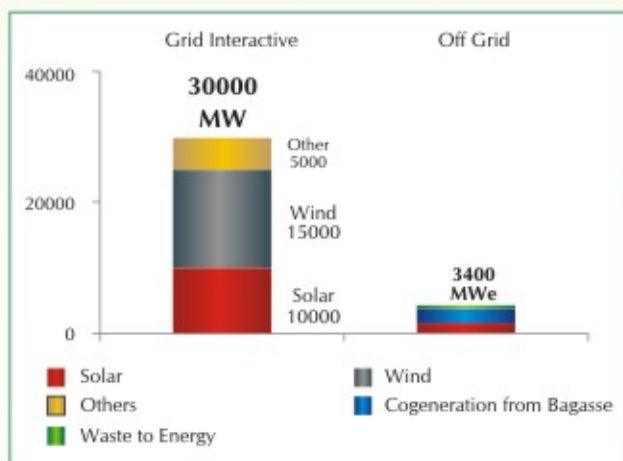
**6. Nuclear Potential :** As on 31.03.2013, Nuclear Power installed capacity was 4,780 MW comprising 2.14% of the total installed capacity of the country. The Indian nuclear power industry is expected to undergo a significant expansion in the coming years due to U.S.-India Civil Nuclear Agreement. This agreement will allow India to significantly enhance its nuclear power generation capacity.

**Threats**

**1. Inadequate Fuel Supply**

Although the pace of creation of generation capacity has picked up considerably, the fuel supply capability has not kept pace and serious fuel supply problems have arisen in the last year of the XI<sup>th</sup> plan. Since approximately 80% of the additional generating capacity will be coal-based, resolution of coal supply to the power plants coming on stream will be crucial. The requirement of coal, lignite & gas for power sector at the end of XII<sup>th</sup> plan period i.e. FY 2016-17 is as under:

**XII plan RES Capacity Addition Projection**



An important initiative by Government to boost RES is introduction of Renewable Energy Certificate Scheme (REC). REC enables distribution companies,

Fuel	Requirement	Availability
Coal	730 MMT	550 MMT
Lignite	46 MMT	46 MMT
Gas/LNG	207 MMSCMD	102 MMSCMD

(Source: Draft 12<sup>th</sup> plan)

The widening gap between demand and supply has to be met by imports. In addition to tapping fuel source or organizing its availability, creating requisite infrastructure for fuel transportation is also being emphasised. The gestation period in the development of mines and even transport facilities is, in some cases longer than the gestation period for setting up of thermal power stations, which further compounds fuel deficit. The non-availability of coal and gas in desired quantity would have an adverse impact on the overall performance of the power sector.



## 2. Financial health of state distribution utilities

The distribution segment, being a revenue generating source, plays a crucial role in the overall functioning as well as the viability of the power sector. Poor financial health of utilities has resulted in under investment in the distribution network causing poor upkeep and maintenance. Effective implementation of the financial restructuring plan during the XII plan would be a positive step towards the path of financial viability.

## 3. Other Key Concerns:

- Difficulty in obtaining environmental approvals and land clearances
- The enhanced compensation for land acquisition in the new Land Acquisition Bill will make the setting up of projects costly.
- Availability of water for power plants and use of new technologies to reduce the requirement of water.

## C. NTPC's Strengths and Concerns :

### Leadership Position in Indian Power Sector

NTPC is ranked no.1 Independent Power Producer and Energy Trader globally in the Platts Top 250 Global energy company rankings -2012. NTPC is also ranked 1<sup>st</sup> in Asia among global electric utilities as per Forbes Global 2000 ranking published in the year 2013. It is also ranked as 384<sup>th</sup> largest company in the world in the Forbes Global, 2013 rankings.

NTPC aspires to be the world's largest and best power producer, with a mission to develop and provide reliable power, related products and services at competitive prices, integrating multiple energy sources with innovative and eco-friendly technologies and contribute to society.

## Strengths

### 1. Operational Performance

The operating performance of the Company has been well above the national average. During the financial year 2012-13, NTPC has generated ~ 27% of the country's total power generation with about 18% of the total installed capacity. Over the years, NTPC has consistently performed at much higher operational efficiency as compared to all India operating performance.

	All India	NTPC		% NTPC share	
		Standalone	Incl. JVs	Standalone	Incl. JVs
Capacity (MW)	2,23,344	35,820	41,184	16.04	18.44
Generation (BU)	912.06*	232.03	249.59**	25.44	27.37

\* - including Bhutan Import of 4.79 BU;

\*\* - includes 2.6 BU captive generation

(Source - CEA)



### 2. Project Management

NTPC has adopted an integrated system for the planning, scheduling, monitoring and control of approved projects under implementation. To coordinate and synchronise all the support functions of project management, it relies on a three-tiered project management system known as the Integrated Project Management and Control System (IPMCS) which integrates its engineering management, contract management and construction management control centers. The IPMCS addresses all stages of project implementation from concept to commissioning.

NTPC has established a state-of-the-art IT enabled Project Monitoring Centre (PMC) for facilitating fast track project implementation. PMC facilitates monitoring of key project milestones and also acts as decision support system for the management. PMC is an integrated enterprise-wide web based collaborative system to facilitate consolidation of project related issues and its timely resolution.

NTPC has successfully effected standardization and bulk ordering of 660 MW and 800 MW units to reduce engineering time and thereby reduce project execution time. Towards this endeavor, NTPC has so far awarded nine 660 MW units at Solapur & Mouda in Maharashtra, Meja in Uttar Pradesh (JV with UPRVUNL) and Nabinagar (JV with BSPGCL) in Bihar; seven 800 MW units at Kudgi in Karnataka, Lara in Chhattisgarh and Gadarwara in Madhya Pradesh.

### 3. Robust Financials

NTPC believes in prudent management of its financial resources and strives to reduce the cost of capital. It has robust financials leading to strong cash flows which are being progressively deployed in generating assets. NTPC has a strong balance sheet coupled with low gearing and healthy coverage ratios. As a result, NTPC has been able to raise resources for its capital expansion projects at very competitive interest rates. NTPC has been accorded AAA rating for domestic loans & bonds from CRISIL, ICRA and CARE.

### 4. Sound Corporate Governance

NTPC's Corporate Governance philosophy is based on conscience, openness, fairness, professionalism and accountability. These qualities are ingrained in its value system and are reflected in its policies, procedures and systems. NTPC not only believes in

adopting best corporate governance systems but also in proactive inclusion of public interest in its corporate priorities and has developed extensive social outreach. In recognition of NTPC's excellence in Corporate Governance, various national and international accolades have been conferred upon it in recent years.

**5. Human Resources**

NTPC has a highly talented team of committed professionals and has been able to induct, develop and retain the best talent. The commitment of the employees is also reflected in terms of financial parameters such as sales/employee, PAT/employee, value added/employee etc. We have a pool of ~ 25,000 employees creating value for the company. Over the years, NTPC has been consistently ranked among the best employers in prestigious surveys. NTPC has a very low executive attrition rate.



**6. Long term PPAs (Power Purchase Agreements) with our Customers & Payment Security Mechanism**

Each of our stations has PPAs with its customers. Almost the entire output of NTPC's power stations has been contracted for, under long-term PPAs. Due to existence of secured payment mechanism and its proactive customer relationship management, NTPC has been able to realize its 100% dues for last 10 consecutive years. Beyond 2016, the sales are secured through supplementary agreements with the customers under which the customers have agreed to create a first charge on their own receivables in our favour and in the event of a payment default, assign such receivables into an escrow account.

**7. Low Cost Producer**

Most of NTPC's coal based stations are pit head stations which provide cost advantage to NTPC as compared to its peers. The average cost of tariff for the financial year 2012-13 was ₹ 2.96/kwh. Low average tariff of NTPC ensures lower risk concerning power off-take.

**Risks & Concerns**

To retain the status of sector leader, NTPC has drawn a long term corporate plan to become a 128 GW company by 2032. Ambitious capacity addition program brings a number of challenges for the company. Risks are inherent to any business and are dynamic in nature. NTPC is susceptible to certain risks arising out of various activities undertaken in the normal

course of business. NTPC has adequate measures in place to overcome and manage these risks. These risks also provide the challenges and opportunities to view the business with a different perspective. NTPC has adopted a multi-pronged strategy which includes adoption of new technology such as super-critical units of 660 MW and above, enhanced delegation of power for quick decision making, state-of-the-art project monitoring centre to have on-line monitoring of progress of projects.

In addition, diversification into new areas like coal mining, hydro electric, nuclear power bring challenges which are new to the Company. With its proven execution and operational experience and highly skilled and motivated man power, the Company is geared to take such challenges in its stride.

Sectoral challenges such as fuel risk and poor financial health of discoms are key concerns which may impact the sustainable development of the sector. As far as fuel risk is concerned, NTPC has taken several steps which include development of coal mines in India.

NTPC is implementing the system for coal transportation through waterways for farakka and is planning the same for Kahalgaon and Barh. NTPC has also commissioned two 5 MW solar power projects and has a target of 1000 MW RES capacity by financial year 2016-17, thus, reflecting its resolve to diversify the fuel mix.

Due to the gap between demand and supply in the Indian power sector, there has generally been a stable market for power generation companies in India. NTPC is the largest power utility in India followed by the Maharashtra State Power Generation Company Ltd which has an installed capacity of 10,237 MW and a market share of about ~ 4.5% as on 31.03.2013. (Source – website of Mahagenco).

The Government of India has taken several policy measures which have provided an enabling environment for private investors to participate in power sector. With the entry of private players in power sector, the competition is expected to intensify. However, NTPC is geared to face any competition. With proven in-house engineering capabilities built in the past and wide ranging experience of project execution and a basket of projects to pursue, NTPC is confident that it will be able to retain its leadership position in the industry. Further, its high operational efficiency enables it to sell power at competitive prices and achieve savings. We believe that NTPC's monitoring and maintenance techniques lend it a competitive advantage in an industry where reliability and maintenance costs are a significant determinant of profitability.

The share of private sector capacity has increased to ~ 69 GW which is ~ 31% of the total installed capacity of the country as on March 31, 2013. However, private sector has contributed only ~ 20% of total electricity generation in the financial year 2012-13.





**STAKEHOLDER ENGAGEMENT**





## STAKEHOLDER ENGAGEMENT

NTPC believes in multi stakeholder approach of doing business. Stakeholder engagement helps resolve problems through a proactive rather than a reactive approach. A better understanding of stakeholders results in an easier and more receptive operating environment, performance improvement and is also a source of innovations.

NTPC believes in sustainable growth by managing potential conflict of interests by putting in place a system of checks and balances among various stakeholders. This ensures satisfied customers, willing suppliers and creditors, happy investors, progressive, unified and uplifted community, motivated employees, assured Government and enriched society. NTPC has embedded the code of corporate conduct in each of its systems for environmental, economic and social sustainability.

In NTPC, the stakeholders have been identified on the basis of a rigorous internal analysis. Stakeholder engagement is a part of its business process involving continuous dialogue between the company and one or more of its stakeholders. This process of dialogue is a means for collecting feedback regarding NTPC for assessing stakeholder expectations and deciding the Company's strategies to fulfill these expectations. There is no change in the list of stakeholders identified last year.

### Identified Stakeholders :

1. Government
2. Shareholders & Investors
3. Regulators & Statutory Authorities
4. Employees
5. Neighborhood Communities
6. Customers
7. Suppliers
8. Media
9. All citizens of India

### Government:

NTPC's largest shareholder, the Government of India (GoI) holds 75% of its shares and is one of its most important stakeholders. Ministry of Power (MoP) is the administrative ministry GoI has a system of Five Year Plans for the country's economic development. The five year plan has a component dedicated to power sector. It

identifies the demand supply gap of electricity in the country and also outreach of electricity. Demand projection is carried out in "Electricity Power Survey" by the CEA. Strategies are developed to meet the projected demand by means of capacity addition, mine development, planning for fuel import, augmentation of transmission and distribution networks, manufacturing of equipments, planning for technical manpower etc. Various working groups are formed by the GoI to identify issues, develop strategy and make plans for the Five Year Plan period. The Working Group on Power is further subdivided into subgroups. These subgroups include participation from Government of India, various State Governments, Public Sector Undertakings, Private companies, NGOs etc. NTPC is invited to participate in these subgroups.

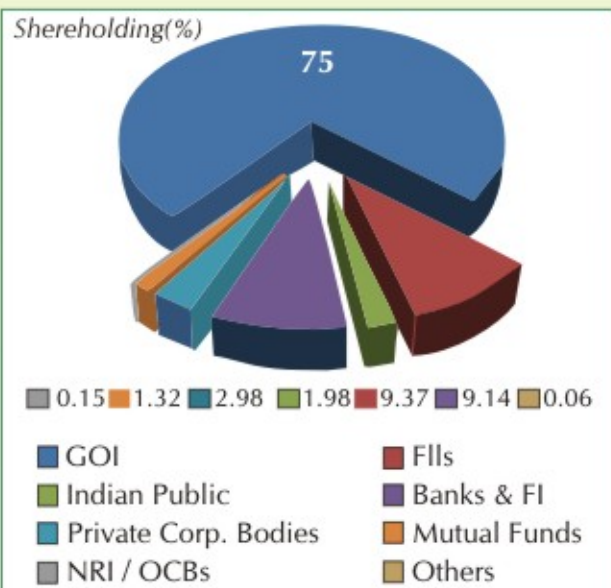
Result Framework Document (RFD) is prepared by the Ministry of Power elaborating the targets derived from the Five Year Plan. This document contains not only the agreed objectives, policies, programs and projects but also parameters and targets to measure progress in implementing them. NTPC signs Memorandum of Understanding (MoU) with Ministry of Power which also helps in achieving the targets of the RFD. This MoU fixes elaborate targets in all aspects of NTPC's business, viz. financial, operational, project execution, CSR and Sustainability, HR Management, R&D etc.

The working of the Company is subject to quarterly reviews by the Government at Secretary level. The Government has also nominated its representatives on the Company's Board and monitors the performance of the Company through various means such as the Parliamentary Committees, Comptroller and Auditor General of India, Ministry of Power, Department of Public Enterprises and the Members of the Parliament. All these agencies give feedback on various facets of operation of the Company. The Company responds to such feedback as per requirement of the various authorities.

### Shareholders and Investors:

NTPC is a Central Public Sector Enterprise with the Government of India being the largest single share holder in the company. 75% of the company's stock is owned by Government of India and the free float of 25% is held by domestic and foreign institutional investors, individuals and others as brought out in the chart :





There are more than 7,50,000 shareholders of NTPC stock reflecting the widespread interest and confidence in the Company. Presently, NTPC is covered by around 50 research analysts. To cater to the needs of the large number of shareholders and analysts, there is a dedicated Investor Services Department (ISD) apart from the Company Secretariat which deals with the statutory compliances and other related matters.

#### Initiatives for small shareholders

*Making use of latest technologies with regard to mapping of bonafide shareholders, we developed a methodology for crediting unpaid dividend after verification from NSDL/CDSL and Payment of unpaid dividend was released to shareholders through supplementary ECS, direct credit and NEFT in consultation with the Share Transfer Agent, M/s Karvy Computershare Pvt. Ltd.,*

*Payment against 50,000 unpaid warrants was released amounting to ₹1.30 crore*

*Another exercise was carried out for employees shareholders to whom unclaimed dividends were sent by matching PAN in benpos data with employees master data. Total amount of unclaimed dividend during 2012-13 was ₹ 6.8 lakh to 322 employee shareholders.*

Investing and financial Community has the following expectations:

- Creation of value
- Transparency and timeliness with regard to economic and financial information
- Corporate Governance and risk management

As a matter of sound corporate governance practice, the Company ensures proper information flow about the working of the Company to the investing community in a transparent way. Close coordination with the executive management ensures that the ISD team is an effective contact point for all capital market participants. By communicating in a targeted,

systematic and transparent manner, NTPC provides the capital market with shareholder-relevant information and cultivate long-term relationships with the target groups so as to increase the trust in the Company.

The various modes adopted for addressing investor concerns and dissemination of information are:

- Annual Analysts and Investors Conference where entire board of the Company meets the analysts and investing community and addresses their queries and concerns about the Company.
- One-on-one meetings of analysts and fund managers with functional directors
- Regular participation in investor conferences and addressing investors' concerns and taking their feedback on the Company.
- Proactively participating in Non-deal domestic and international road-shows to extend reach to a wider array of potential investors.
- Quarterly Conference calls with investors by NTPC management after quarterly financial results to disseminate information behind financial numbers so that prompt updates are available to investors.
- Regular disclosures through Stock Exchanges and Press about any important development in the Company.

NTPC has adopted best practices in Investor Relations and also complies to "Guidelines on Investor Relations" issued by Department of Public Enterprises, Govt. of India. Servicing the equity shareholder is a serious business at NTPC. Actions taken in this regard are :

1. A dedicated section on "Investors" is available on website of the Company giving information on Share Transfer Agent, contact reference of Company Secretary and Investor Services officials. Investor's page on the company's website provides latest announcements, investors presentations, press releases, transcripts of con-calls, annual reports, calendar of important events and investors contact points etc.
2. There is a dedicated e-mail id [isd@ntpc.co.in](mailto:isd@ntpc.co.in) wherein complaints are received and redressed either over the phone or through mail or through post.
3. Karvy Computershare Pvt. Ltd., the share Transfer Agent, has provided a customized package with the URL <http://karisma.karvy.com> wherein NTPC is able to track the complaints sent to Karvy, reply to the investors, download weekly shareholding pattern, buyers, sellers etc.

#### Green Initiatives in Investor Relations management:

NTPC has made use of the recent circulars of Ministry of Corporate Affairs and has started sending annual reports



and other communications to investors through email after taking their consent. This has resulted in huge savings of paper. In 2012-13, the following savings were made:

Nature of Communication	No. of Shareholders to whom e-communication was sent	Savings involved
Annual Report 2012-13	3,47,742	Monetary Savings: ₹1.72 crore (approx)
<b>Dividend Intimations</b>		Around 127 tonnes of paper saved resulting in saving of ~ 3000 trees (taking ~ 24 trees per ton of paper)
Interim Dividend 2012-13	3,07,062	
Final Dividend 2011-12	3,05,088	

**Regulators and Statutory Authorities:**

NTPC interacts with a number of Government agencies and other regulatory bodies for obtaining clearances and licences necessary for setting up and running of its power plants. All such government and local authorities are identified and their requirements are complied as per the systems laid down. As per statutory provisions, the tariff for sale of electricity from all the NTPC Power Stations is being determined by the Central Electricity Regulatory Commission (CERC). NTPC strives to adhere to all such statutory and mandatory rules and regulations and participates in various forums available with these statutory authorities, and also, ensures individual interaction for policy advocacy and for resolving various issues that arise.

**Employees:**

Employees are considered the most valuable assets of NTPC. There are continuous interactions between the management and the employees at the unit level, regional level and apex level. The apex fora for workmen and executives are National Bipartite Committee (NBC) and NTPC Executives Federation of India (NEFI) respectively. The unions, associations, the individual employees and the management have worked with convergence towards developing and sustaining an enabling performance culture in the organization. Meetings and workshops for workmen and executive association are held wherein issues relating to performance and productivity are discussed and addressed. Employee satisfaction, professional and career growth opportunities, social welfare, health, safety and quality of life are some of the issues and interests that are continuously addressed in consultation with the employees. For this purpose

various forums such as Professional Circles, Quality Circles, Safety Committees etc have been formed for regular interaction and feedback from employees.

**Neighborhood Communities:**

As a socially responsible entity, NTPC has always been sensitive to the needs and aspirations of the Project Affected Persons (PAPs) and local community around its power plants. Neighborhood communities affected by the setting up of projects have their concerns, needs, aspirations and requirements. These may be with reference to environment, R&R or any other relevant aspect.

Prior to the start of construction of the project, Public Hearing and Public Consultations are undertaken which are open to general public. They can express their concerns regarding environmental impacts of the project, socio-economic impacts due to acquisition of land and homesteads, rehabilitation and resettlement programmes, expectations from the project, etc. The comments of the general public are recorded and forwarded to MoEF, which takes them into consideration while according environmental clearance for the project. The Company has always tried to give the best possible R&R package for the PAPs in consultation with stakeholders and respective State Governments.



Socio-economic surveys are conducted by professional agencies for understanding the socio-economic issues involved in the area. Public Information Centres (PICs) have been set up at Corporate Centre and at projects to enable local community to get information on various facets of the project and also submit any query or grievance. Village Development Advisory Committees (VDACs) and similar participative mechanisms are created at green field as well as expansions projects to facilitate finalization and implementation of Rehabilitation & Resettlement (R&R) plan. These VDACs are constituted by District administration concerned consisting of representatives of PAPs, Gram Pradhan, Panchayat representative, Block





Development Officer, other representatives of State Government, NTPC, NGOs and CBOs. They meet regularly starting from the formulation of R&R Plan till its completion and closure at projects.

Considering community as an important stakeholder and a partner for life time, this process of consultation is continued even after setting up the plant. NTPC takes up community development activities, in focus areas of basic infrastructure development like sanitation, road, drinking water; primary education; community health; vocational training; women empowerment etc based on specific local requirements and guided by extensive Need Assessment Surveys, consultation with Village Panchayat, Block and District Officials, Village Development Advisory Committee and similar multi-stakeholder mechanisms. Engagement of community in acceptance of specific CSR initiatives inculcates a sense of ownership among people and plays a vital role in smooth and successful implementation of schemes. Local interest groups are an important part of project implementation programme to satisfy the local communities.

### Customers:

NTPC supplies bulk power to 44 Distribution Companies under different agreements (as per list given below)

S No.	Discom	S No.	Discom
1.	APCPDCL	23.	J&K
2.	APEPDCL	24.	JdVVN
3.	APNPDCL	25.	JSEB
4.	APSPDCL	26.	JVVN
5.	APTRANSCO	27.	KPTCL
6.	Arunachal	28.	KSEB
7.	ASEB	29.	MESCOM
8.	AVVN	30.	MeSEB
9.	BESCOM	31.	Mizoram
10.	BRPL	32.	MPPTCL
11.	BSEB	33.	MSEDCL
12.	BYPL	34.	Nagaland
13.	CSEB	35.	NDMC
14.	D&D	36.	NDPL
15.	DNH	37.	PONDY
16.	GESCOM	38.	PSEB
17.	GOA	39.	RVPN
18.	GRIDCO	40.	SIKKIM
19.	GUVNL	41.	TNEB
20.	HESCOM	42.	Tripura
21.	HPSEB	43.	UTC
22.	HVPN	44.	WBSEB

\*Additionally, Power is supplied to PGCIL, DVC, NVVN, Railways & MPAKVNL SEZ & MES.

Right at the planning stage of the Power project, NTPC approaches all State Power Distribution utilities of the Region, to assess their requirement of power and obtain their consent for drawing expected quantum of power from that Power project. 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 willing customers (State Utilities) is being done by Ministry of Power, GoI.

Customer Focus being one of the Core Values of the Company, NTPC has an elaborate system of Customer Relationship Management (CRM), through which it tries to reach out to the customers. Under CRM, regular structured interaction with customers takes place for sharing of feedback, experiences and expectations. The views expressed by the customers are given due importance in formulating future business plans and strategies.

Following are the key features of the NTPC Customer Relationship Management System:

i. **Interactive Forums:** As part of the CRM initiatives, NTPC utilizes the following forums and mechanisms for regular interaction with customers and discussion on general and specific customer related issues including issues related to sectoral development, sustainability, efficiency, environmental protection etc.

- *Regional Power Meet* is organized at regular intervals to provide a platform for interaction with the top level officials of the beneficiaries.
- *Meetings of Regional Power Committee, Commercial Committee, Operation Coordination Committee:* NTPC makes it a point to regularly participate in all Regional Power Committee Meetings, which has representation of all customers of the region.
- *Business Partner Meets* are organized for specific customer to facilitate interaction at working level and provide opportunity to discuss specific issues.
- *Meeting of Regional Executive Directors* with head of customer organizations.
- *Day-to-day interaction* by NTPC Officials posted at SEB headquarters who are designated as *SEB Managers* for understanding the issues of customer utilities.

NTPC makes it a point to regularly participate in all the above meetings, which have representation customers. These meetings provide a forum for feedback regarding concerns and requirements of the customers. The issues are discussed and resolved to the mutual satisfaction of customers and NTPC.

ii. **Customer Support Services:** NTPC offers Support Services to its customers in technical and managerial areas as per requirements of customers. Customer Support Activities in the form of workshops and seminars are conducted in different functional areas



like O&M, Efficiency, HR, IT, Finance, etc. The objective is to share NTPC's expertise and best practices with its customers.

**iii. Providing training to customers at NTPC's training facilities:** Customer officials participate in various technical and managerial training programs being organized at our Power Management Institute, Noida for knowledge update. These training programs are provided free of cost to the customer.

**Suppliers:**

Suppliers are among identified stakeholders of NTPC. A good supplier network and good supplier relations are of utmost importance for successful and timely construction and operation of a plant. Fair, equitable and transparent tendering procedures adopted by NTPC, envisage well structured and systematic measures to address their concerns. These procedures have been made devised incorporating best national and international practices in consultation with major NTPC suppliers. These procedures are regularly updated based on experiences and feedback received from suppliers. In case of all major packages, NTPC organizes pre-bid conferences with prospective suppliers to discuss the latest developments in the relevant areas and appropriately incorporates the inputs in its bidding documents before commencement of the tendering process.

**Media:**

NTPC has remained in the news right since its inception for its brilliant performance, contribution to the sector in society, widespread recognition and awards and interface with a large number of stakeholders. There are structured communications and regular interactions with media, both print and electronic, on various occasions including publication of quarterly results, annual results and other important events. NTPC issues press releases and advertisements on various activities as per requirement. Individual interactions are also held with media as and when required.

**Citizens of India :**

All citizens of India have been identified as stakeholders. CPSEs like NTPC are instruments of socio-economic development and change besides being corporate entities. NTPC generates 27% of the total electricity in the country. Non-availability of power can severely affect the lives of citizens. Besides, all CPSEs fall under the definition of "State" as provided in Article 12 of the Constitution of India. The Right to Information Act 2005 is also applicable to them. Any citizen of India can seek information from NTPC through a simple application under RTI Act 2005.

The RTI Act is being implemented in NTPC in its true spirit since its enactment. The Company has put RTI manual on its website for access to all citizens. NTPC has placed Assistant Public Information Officers (APIOs) at all projects, stations and offices. It has also designated a Central Public Information Officer (CPIO) and an Appellate Authority. 58 RTI applications were pending in NTPC for reply as on 31-03-2012 and 1181 applications were received during FY 2012-13. These applications sought information about various areas such as R&R, CSR, environment, employee grievances and contractual issues. Out of these, 1216 applications were replied during the year 2012-13 and 23 were pending as on 31.03.2013. However, these pending applications have also been replied subsequently as per the provision of RTI Act.



**Stakeholder Engagement Process**

Stakeholder	Engagement Forum	Frequency	Purpose of Engagement	Key Sustainability Concerns Identified
Government of India	Secretary level review	Quarterly	<ul style="list-style-type: none"> <li>• Policy development in line with national priorities</li> <li>• Meeting 5 year national plans,</li> <li>• Target monitoring – Annual MOUs</li> <li>• Compliance with Govt. Directives and Guidelines</li> <li>• Transparency and Governance</li> <li>• Company Performance and its reporting,</li> <li>• Performance Constraints</li> <li>• New initiatives</li> </ul>	<ul style="list-style-type: none"> <li>• Delay in execution of Projects</li> <li>• Sustaining Efficient Plant Operations</li> <li>• Coal Mining (Land Acquisition)</li> <li>• Climate Change</li> <li>• Environmental Issues</li> <li>• Community Development</li> </ul>
	Meetings with MoP, DPE, Parliamentary Committees, CEA etc.	As per requirement		



Stakeholder	Engagement Forum	Frequency	Purpose of Engagement	Key Sustainability Concerns Identified
Shareholders & Investors	Conference Calls	Quarterly	<ul style="list-style-type: none"> <li>Management Vision and future plans</li> <li>Company performance</li> <li>Sustainability Challenges and concerns</li> <li>Growth opportunities of the Company</li> <li>Handling queries of investors, fund managers &amp; analysts</li> <li>To discuss debt requirements</li> </ul>	<ul style="list-style-type: none"> <li>Delay in execution of Projects</li> <li>Sustaining Efficient Plant Operations</li> <li>Sustaining Growth</li> </ul>
	Analyst and Investors Meeting	Annual		
	Annual General Meeting	Annual		
	One on One Meetings and Investor Conferences	Regular		
	Review meets with Bankers (Domestic and Foreign)	Annual		
Regulators (CERC) & Other Statutory Authorities (CAG, MoEF, CPCB / SPCB etc.)	Public hearings	Need based	<ul style="list-style-type: none"> <li>Issues relating to tariffs</li> <li>Optimising cost of electricity</li> <li>Financial Audits &amp; Transparency</li> <li>Obtaining Project clearance,</li> <li>Environment Clearance &amp; Clearance Conditions</li> <li>Obtaining Consents and meeting Consent Conditions</li> </ul>	<ul style="list-style-type: none"> <li>Environmental Clearances</li> <li>Ash Management</li> <li>Compliance with changing environmental norms</li> </ul>
	Statutory Audits & Inspections, Meetings for Clearances, Consents & Compliances	As per statutory provisions; Need based		
Employees	Participative forums, Communication meetings, Employee Climate Surveys, Intranet, Trainings and Workshop, Internal Magazines	As per defined frequency or as per requirement	<ul style="list-style-type: none"> <li>Grievances and feedback</li> <li>Employee Satisfaction</li> <li>Professional Growth</li> <li>Health, Safety &amp; Security Issues</li> <li>Work – Life balance</li> <li>Quality of Life</li> <li>Remuneration and Rewards</li> <li>Actualisation of Core Values</li> </ul>	<ul style="list-style-type: none"> <li>Attracting and retaining skilled and experienced employees</li> <li>Safety &amp; security of people and property</li> </ul>
Neighborhood Communities	Public hearings, VDACs, Public Information Centre	Need based; at least once in a year	<ul style="list-style-type: none"> <li>Rehabilitation &amp; Resettlement Issues</li> <li>Community development issues</li> <li>Environmental Issues</li> <li>Community Grievances</li> </ul>	<ul style="list-style-type: none"> <li>Community Development</li> <li>Land Acquisition</li> </ul>
Customers	Regional Customer Meets	Once in two years for each region	<ul style="list-style-type: none"> <li>Top &amp; Middle level Interactions between Customers &amp; NTPC</li> <li>Resolving Technical Issues</li> <li>Resolving Commercial issues</li> <li>Grid Operation, Scheduling and other related issues</li> <li>Support services to customers on various area of power business</li> </ul>	<ul style="list-style-type: none"> <li>Health of State Utilities</li> <li>Risk of not getting schedule</li> </ul>
	Regional Power Committees (RPCs)	Quarterly		
	1. Commercial Co-ordination Committee			
	2. Technical Co-ordination Committee			
	3. Operation Co-ordination Committee	Monthly		
Business Partner Meet	Yearly			
Customer Support Services	As per requirement			



Stakeholder	Engagement Forum	Frequency	Purpose of Engagement	Key Sustainability Concerns Identified
Suppliers	Pre-bid conference, Suppliers Meet, Vendor Enlisting, NTPC website	Before tendering & Need based	<ul style="list-style-type: none"> <li>Finalisation of Technical specifications</li> <li>Qualifying Requirements of Vendors</li> <li>Sharing latest technological developments in the area</li> <li>Resolving Contractual Disputes</li> </ul>	Inadequate Fuel Supply
Media	Press Releases Press conference	Need based, Event based	<ul style="list-style-type: none"> <li>Information Sharing</li> <li>Brand Image</li> <li>Keeping the general public and community apprised of developments such as new capacity additions, performance and new developments</li> </ul>	Brand Image
Citizens of India	Right To Information (RTI) Act, NTPC website	Continuous	<ul style="list-style-type: none"> <li>Rehabilitation &amp; Resettlement Issues</li> <li>Community Development Issues</li> <li>Environmental Issues</li> <li>Employee Grievances</li> <li>Contractual Disputes</li> </ul>	<ul style="list-style-type: none"> <li>Community Development</li> <li>Environmental Issues</li> </ul>

**Stakeholder participation in the decision making process related to energy planning and infrastructure development:**

As discussed earlier, NTPC’s plans and targets are based on the plans developed by Govt. of India, Planning Commission, Ministry of Power etc. NTPC also participates in various working groups formed during the process of energy planning and infrastructure development. However, before starting a new power plant, other stakeholders are also involved in taking decisions pertaining to environmental issues

The stakeholders in the environmental decision making process include employees and consultants for EIA studies, Expert Appraisal Committee of MOEF, Central Govt. (MoEF), State Governments (SPCB), investors and community.

The process of environmental decision making has the following steps:

1. Selection of environmentally compatible sites, conforming to the guidelines of MoEF (by NTPC employees engaged in environment related work).
2. Approval of draft terms of reference for EIA studies by MoEF, which also serves as site clearance for the project.
3. Undertaking detailed EIA studies by consultants as per TOR approved by MoEF.
4. Public consultation by SPCB based on EIA report in which community and civil society is invited to participate through advertisements in print media and through local publicity.

5. Appraisal and recommendation of the project by Expert Appraisal Committee of MoEF.
6. Approval or rejection of project by MoEF based on the recommendations.
7. Accord of Consent given by SPCBs to Establish and Operate.
8. Environmental appraisal of projects by investors based on EIA reports and clearances granted by MoEF and SPCB.

The above process is aimed at ensuring that :

1. The location of the project is environmentally sustainable and in line with national and regional policies.
2. Construction and Operation of the project will be environmentally safe and adequate measures for pollution control and environment management have been incorporated in the EIA Report.
3. Concerns of local community as well as civil society have been taken into consideration in deciding the future of the project and have also been incorporated in environment management plan.
4. Technical and scientific aspects of the project as also concerns of community have been examined by Expert Appraisal Committee.
5. Clearance is accorded by MoEF in accordance with the legal provisions.

Investment approval of the project is accorded by the Company only after the environmental clearance is granted by MoEF.





# MATERIALITY ANALYSIS



## MATERIALITY ANALYSIS

### Identification of Material Sustainability Issues

#### Risk Management

NTPC has an elaborate Enterprise Risk Management (ERM) framework in place. The Enterprise Risk Management Committee (ERMC) comprises of Executive Directors representing geographically dispersed regions and core functions of the Company. ERMC has been entrusted with the responsibility to identify and review the risks and formulate action plans and strategies for risk mitigation on short-term as well as long-term basis. ERMC has identified a total of 26 key risks as given below:

No.	Key Risks
1	Breach of information security
2	Non-availability/ sub optimal use of ERP
3	Failure to develop technological solutions for operation of plants at high performance
4	Inadequate water availability
5	Sustaining efficient plant operations
6	Reduced generation capacity of ageing plants
7	Risk of not getting schedule
8	Compliance of emission, ash utilization and regulatory norms
9	Inadequate fuel supply
10	Risks related to coal mining
11	Difficulties in acquisition of land
12	Challenges in attracting and retaining skilled and experienced employees
13	Inadequate succession planning
14	Natural/ manmade disasters
15	Threats to safety & security of people & property
16	Delay in execution of projects
17	Risks pertaining to Hydro Projects
18	Sustaining Realization
19	Sustaining market share
20	New business venture risks
21	Fluctuation in Exchange Rates
22	Financial Resource mobilization at competitive rates
23	Mis-statement in financial accounts and reports
24	Inadequate/ non accounting of fixed assets
25	Legal Risks
26	Risks pertaining to subsidiary companies – NVVNL, NESCL and NHL

Out of above 26 key risks during the year 2012-13, the following 9 have been classified as the High/Medium risks for the Company:

#### High Risks:

1. Sustaining efficient plant operations
2. Difficulties in acquisition of land
3. Compliance of emission, ash utilization and regulatory norms
4. Risks relating to coal mining
5. Threat to safety & security of people and property

#### Medium Risks:

1. Delay in execution of projects
2. Inadequate fuel supply
3. Risk of not getting schedule
4. Challenges in attracting and retaining skilled and experienced employees

These areas are being regularly monitored through reporting of key performance indicators of identified risks and exceptions with respect to risk assessment criteria are being reported to the top management. The ERMC meets every quarter to deliberate on strategies to mitigate the risks.

#### Other Sustainability Issues:

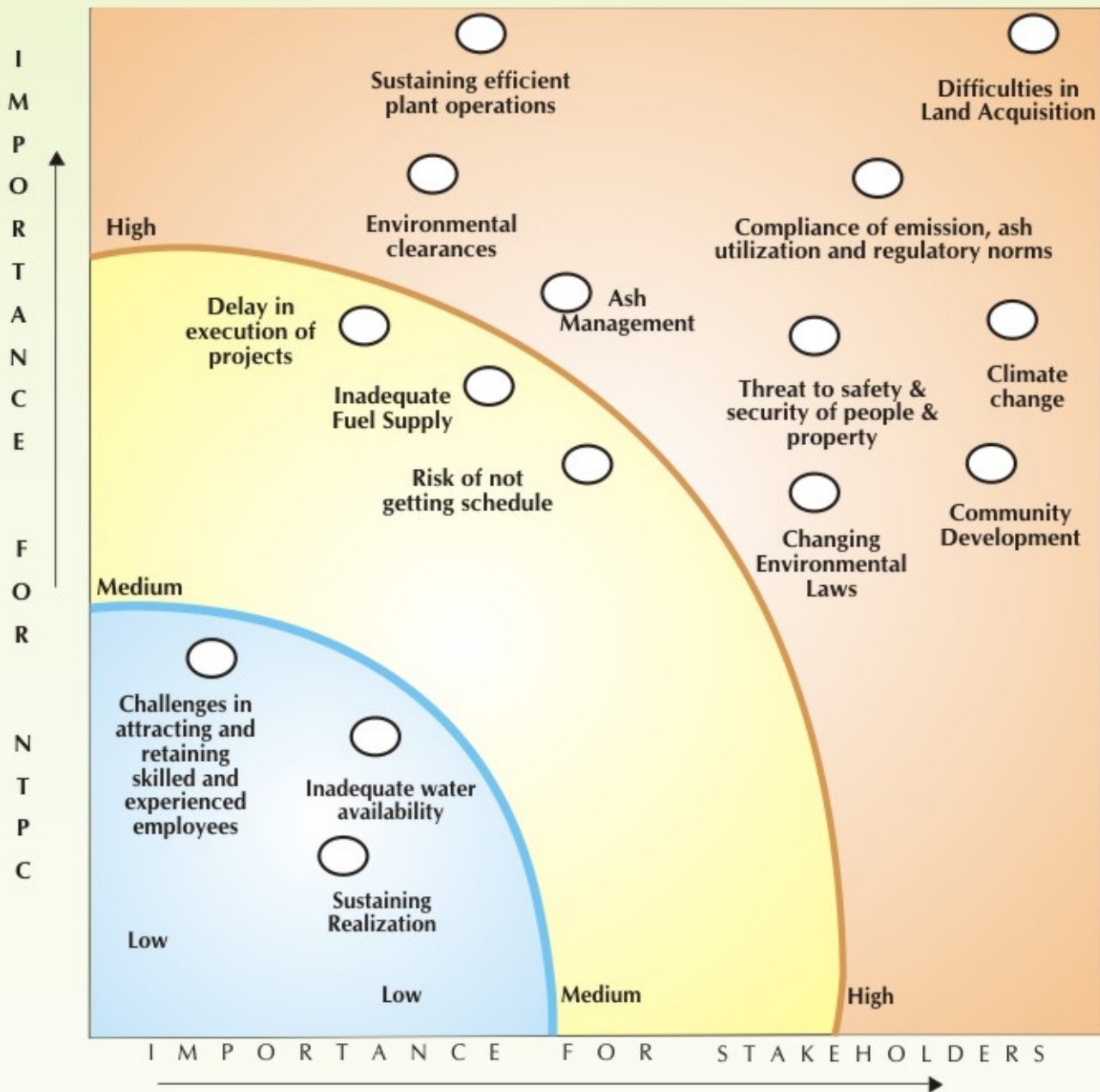
The following additional sustainability issues were identified through stakeholder engagement process :

1. Climate Change
2. Ash Management
3. Changing Environmental Laws
4. Environmental Clearances
5. Community Development



All these risks were subjected to materiality analysis in sustainability context on the basis of importance for the Company and for the stakeholders. The materiality analysis matrix has been depicted in the following figure :





### Management Approach on Sustainability Issues :

The Management approach on various sustainability aspects is clearly reflected in NTPC's vision, mission, corporate objectives and in various specific policies of the organisation, which have already been mentioned in the report. However, the management approach on the identified key material issues is summarized below :

Issue	Sustainability Impact	Management Approach
Environmental Clearances	<ul style="list-style-type: none"> <li>• Difficulty in obtaining environmental approvals</li> <li>• Delay in capacity addition</li> </ul>	<ul style="list-style-type: none"> <li>• Comprehensive EIA Studies</li> <li>• Careful Site Selection</li> <li>• New Technology Adoption</li> <li>• Policy Advocacy</li> </ul>
Changing Environmental Laws	<ul style="list-style-type: none"> <li>• Compliance of emission, ash utilization and regulatory norms</li> </ul>	<ul style="list-style-type: none"> <li>• Enhancing Environmental Performance</li> <li>• Reducing Pollution</li> <li>• Minimizing waste generation</li> <li>• New Technology adoption</li> <li>• Renovation &amp; Modernisation</li> </ul>



Issue	Sustainability Impact	Management Approach
Ash Management	<ul style="list-style-type: none"> <li>Ash dyke availability (MoEF has prescribed only 0.25 acres / MW land for new ash dyke, which is not sufficient)</li> </ul>	<ul style="list-style-type: none"> <li>Policy advocacy to enhance land being provided for ash dykes.</li> <li>Maximise Ash Utilisation</li> <li>Effective Ash Pond Management</li> <li>Use of new technologies for ash disposal &amp; storage.</li> <li>Ash Water Recycling</li> </ul>
Availability of water for power plants	<ul style="list-style-type: none"> <li>Scarcity of Water</li> </ul>	<ul style="list-style-type: none"> <li>Use of new technologies to reduce the requirement of water.</li> <li>Promoting recycle and reuse</li> </ul>
Climate Change issues	<ul style="list-style-type: none"> <li>Global warming</li> <li>Water scarcity</li> </ul>	<ul style="list-style-type: none"> <li>Enhancing energy efficiency</li> <li>Diversification into renewable energy sources</li> <li>Changing product mix ratio</li> <li>New Technology adoption</li> </ul>
Difficulties in acquisition of land	<ul style="list-style-type: none"> <li>Delay in capacity addition</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of R&amp;R Policy</li> <li>Best possible R&amp;R package for the PAPs in consultation with stakeholders and State Government</li> <li>Community Development</li> </ul>
Community Development	<ul style="list-style-type: none"> <li>Inclusive Growth</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of NTPC CD Policy</li> <li>Need Assessment Surveys</li> <li>Taking up specific CSR Projects for the local community</li> </ul>
Safety & Security of people and property	<ul style="list-style-type: none"> <li>Occupational Health &amp; Safety</li> <li>Achieving "Zero Accident" rate</li> </ul>	<ul style="list-style-type: none"> <li>Conducting Safety Audits</li> <li>Implementation of Safety Policy</li> <li>Elimination of all unsafe actions and conditions</li> <li>Need based mobilization of security manpower at projects</li> <li>Up-gradation of security technology</li> <li>Capacity building</li> </ul>
Financial health of State Distribution Utilities	<ul style="list-style-type: none"> <li>Risk of not getting schedule</li> <li>Sustaining appropriate tariff and realisation</li> </ul>	<ul style="list-style-type: none"> <li>Signing of Long Term Power Purchase Agreements (PPAs) with State Utilities for 25 years</li> <li>Minimising cost of electricity production</li> <li>Rebate Schemes for timely payments</li> </ul>
Sustaining efficient plant operations	<ul style="list-style-type: none"> <li>Availability of Power</li> <li>Economic Performance</li> <li>Environmental Performance</li> </ul>	<ul style="list-style-type: none"> <li>Enhancing energy efficiency</li> <li>Advanced overhaul planning</li> <li>Well defined predictive, preventive and corrective maintenance practices</li> <li>Adoption of New Technologies</li> </ul>
Competition	<ul style="list-style-type: none"> <li>Economic Performance</li> <li>Retaining skilled and experienced employees</li> </ul>	<ul style="list-style-type: none"> <li>Long Term Power Purchase Agreements</li> <li>In-house Engineering Capabilities</li> <li>High operational efficiency</li> <li>Competitive Energy pricing</li> <li>Retaining best employer status</li> </ul>
Inadequate fuel supply	<ul style="list-style-type: none"> <li>Availability of Power</li> <li>Sustaining Growth</li> <li>Economic Performance</li> </ul>	<ul style="list-style-type: none"> <li>Signing of Long Term Coal Supply Agreements with Coal Companies valid for 20 years</li> <li>For any shortfall, coal procurement through e-auction, import and bi-lateral agreements with coal companies</li> <li>Backward Integration into coal mining</li> <li>Changing product mix by diversifying into renewable energy sources</li> </ul>
Delay in execution of projects	<ul style="list-style-type: none"> <li>Availability of Power</li> <li>Sustaining Growth</li> </ul>	<ul style="list-style-type: none"> <li>Identification of Critical Project implementation risks.</li> <li>Implementation of Integrated Project Management and Control System (IPMCS)</li> <li>Timely resolution of disputes</li> <li>Standardisation and bulk ordering of 660MW &amp; 800MW Units.</li> </ul>







## LONG, MEDIUM AND SHORT TERM PLANS

NTPC has a system of preparing a long term Corporate Plan outlining the road map to be taken by the Company for achieving its vision. This document serves as reference for developing detailed strategic and implementation plans and helps in measuring achievement against the plans. Corporate plan has a built in feature of mid-course correction through periodic reviews, based on progress measurement and inputs from the environment scanning process. This helps in aligning the goals and strategies with the changes in business environment.

NTPC has drawn an ambitious Corporate Plan up to the year 2032 and expects to become a 128 GW Company with diversified fuel base. The main features of the corporate plan are :

- **Diversified fuel mix:** To reduce its dependence on fossil fuels, NTPC has forayed into hydro, nuclear and renewable energy sources which will also help in reducing the Green House Gas emissions. By 2032, NTPC envisages achieving diversified fuel mix comprising 56% coal, 16% gas, 11% nuclear energy, 9% renewable energy and 8% hydro power based capacity. Thus, by the year 2032, 28% of NTPC's installed generating capacity will be based on carbon free energy sources.
- **Technology roadmap for the period upto 2032:** NTPC has chalked out a long term technology roadmap up to 2032 which involves development, adoption and promotion of safe, efficient and clean technologies for entire value chain of power generation business. Some of the target technologies are :
  - 800 MW super critical units

- IGCC for Indian coal
- Ultra super critical units

For short term plans, NTPC signs Memorandum of Understanding with the parent Ministry viz. Ministry of Power for every financial year. In the MoU, detailed financial targets including CAPEX, Project implementation, Operations, Human Resource Management, R&D, CSR and Sustainability are set and monitored.

Since inception, sustainable power generation has been one of the prime objectives of NTPC. Towards achieving this objective, various measures have been introduced to ensure minimum impact on the environment due to the operation of the power stations. Adoption of higher cycle parameters in 800 MW super critical units will improve power plant efficiency and thereby reduce coal consumption per unit of electricity generation with consequent reduction in CO<sub>2</sub> emissions.

The baseline environmental status forms the basis for predicting and assessing the environmental impacts of the proposed project. Status of various environmental components like air, water, noise, land, flora and fauna, as well as, socio-economic are an integral part of an EIA.

### Targets and Achievements

#### MoU with Govt :

The targets and achievements of some of the relevant sustainability parameters in MoU 2012-13 with Govt. of India and targets as per MoU 2013-14 are as under:

No.	Parameters	MoU 2012-13		MoU Target 2013-14
		Target (Excellent)	Achievement	
1.	Gross Generation (MU)	2,37,000	2,32,028*	2,42,000
2.	Availability Factor – Coal (%)	90	90.2	89
3.	Capacity Addition (including JVs) :			
	i) Coal (MW)	4,160	4,160	1,855
	ii) Solar PV (MW)	—	10	20
4.	Gross Margin (Rs. Crores)	15,409.21	16,777.63	15,896.66
5.	Net Profit / Net Worth (%)	9.81	10.84	8.37
6.	Labour Productivity - PBDIT / Total Employment (Rs. Cr. / Employee)	0.574	0.625	0.669
7.	Expenditure (Rs. Crores) :			
i)	CSR Activities	46.12	69.24	0.6 % of PAT of
ii.)	SD Projects	9.62	10.18	FY 13



No.	Parameters	MoU 2012-13		MoU Target 2013-14
		Target (Excellent)	Achievement	
iii)	R&D	92.24	101.96	1.0 % of PAT of FY 13
8.	Attrition as % of total employees	3.0	1.01	3.0
9.	Employee Training (Days / Employee)	7	7.65	7
10.	Training Budget (% of employee cost)	1.3	1.83	1.3

\*The excellent target for Gross Generation could not be met due to shortage of fuel and non-availability of schedule, factors not entirely in NTPC's control.

**Other Targets :**

No.	Particulars	Targets
1.	Fuel Security	<b>FY 2013-14 :</b> Coal Requirement : 176.0 mt (Million Ton) Expected Domestic Coal Availability : 143.5 mt Import of Coal : 16 mt (eq. domestic coal : 28 mt) From Captive mines : 3 mt Bi-lateral MoU / e-auction : 1.5 mt
2.	Capacity Addition	<b>FY 2013-14 :</b> Coal Based (NTPC) : 1,160 MW Solar PV : 20 MW <b>XII Plan : 14,038 MW</b> <b>Total Installed Capacity by 2032 : 1,28,000 MW</b>
3.	Realisation of Commercial Dues	100 %
4.	Energy Conservation (As per PAT)	<b>FY 2014-15 (Million Ton of Oil Equivalent) :</b> Coal Stations : 0.292 MTOE Gas Stations : 0.027 MTOE Total NTPC : 0.319 MTOE
5.	Renewable Energy (Capacity additions)	<b>FY 2013-14 : 20 MW</b> <b>By 2017 : 1000 MW</b> <b>By 2032 : 28% of installed generating capacity to be based on Carbon free energy sources.</b>
6.	Carbon Footprint Study	<b>FY 2014-15 : At one Station</b> <b>FY 2015-16 : All operating NTPC stations</b>





## SECTOR DISCLOSURES



## SECTOR DISCLOSURES

Over the years, reliability of power plants has improved due to design, manufacturing technology and materials improvement. However, a few unexpected breakdowns still occur which bring about either shut-down or decreased output or de-rating of the machines. With the rapidly increasing fleet size of NTPC, it is becoming imperative to devise new operation and maintenance support strategies using state-of-the-art technologies. Fleet wide monitoring is one of important initiative in NTPC for continually monitoring the reliability and performance characteristics of its stations, so that causes of reduced production can be identified easily and timely action is taken to prevent losses.

### Management Approach and maintenance strategies to ensure availability and reliability of power

In order to sustain the impressive operational efficiency, enhance availability and reliability of electricity generation, the Company has taken the following strategic initiatives :

- With the aim of improving system wide reliability, reducing maintenance costs and outages, SACS (Special Analytics & Computational Services) Centre has been established at the Corporate Office. It provides early warning of equipment problems of remotely located plants using state of the art technologies.
- Use of tools like IDAAS (Integrated Data Acquisition and Analysis System) for on-site efficiency evaluation and math-modeling tools like PEPSE (Performance Evaluation of Power System Efficiencies) for verifying equipment and system efficiencies and gap identification; Steam path audit for estimation of Solid Particle Erosion (SPE) and efficiency of steam turbine components etc.
- Introduction and roll out of RCM (Reliability Centered Maintenance), including REAP (Risk Evaluation and Prioritization).
- Enhancing quality of plant overhauls to target zero forced outage by design.
- Implementation of Overhauling Performance Index (OPI) for systematic and advanced planning of overhauls.
- Setting up a Central Repair Facility at Rihand to undertake in-house repair of large equipment including turbines and HT motors, in order to

improve availability and reliability as well as to reduce downtime of the units.

- Creation of peer group knowledge teams for each equipment to harmonize the best practices at enterprise level.
- Use of a comprehensive Performance Evaluation Matrix (PEM) for relative evaluation of the performance of various power plants covering a set of comprehensive performance indicators to create an environment of in-house challenge and competition.
- Use of PI System and PI System based applications for real time efficiency and loss calculations for ensuring early actions to minimize station losses.

### R & M Program

Renovation and Modernization (R&M) of power plants in the present scenario of severe resource constraint is considered to be one of the best option for bridging the gap between demand and supply of power. R&M schemes are cost effective. R&M is being carried out in some of the units in older NTPC power station for life extension, performance improvements, capacity enhancement, availability improvement and improved environmental compliance.

### Demand side management programs

NTPC is not in the business of Power Distribution and hence does not deal with demand side management directly. However, NTPC's training centre at "Power Management Institute, Noida" conducts educational programs on demand side management. It educates its customers and society in general by offering free participation in such programmes. Special Workshops at customer end are also conducted with the help of eminent faculties to educate the beneficiary discoms under Customer Relationship Management activity.

### Research and Development

NTPC Energy Technology Research Alliance (NETRA) is the Research and Development wing of NTPC and focuses on areas of efficiency and availability improvement, cost reduction, renewable and alternate energy sources, climate change and environment protection. It is also providing scientific support to NTPC stations. During FY 2012-13, a total of ₹ 101.96 Crores was spent on various R & D activities in NTPC. A summary of the R&D Projects taken up during the year are tabulated as follows :



Research Area	Description	Benefits
Utilization of Low Grade Waste Heat of Flue Gas for Air conditioning	Using VAM, the low grade thermal heat from flue gas exit can be gainfully recovered for producing cooling / air-conditioning. The pilot plant of 100TR VAM based air conditioning is under commissioning at NTPC - Ramagundam	<ol style="list-style-type: none"> <li>1. Air conditioning using Waste heat of flue gas</li> <li>2. Green House Gas (CFC &amp; HCFC) free thermally driven VAM based AC system</li> <li>3. Expected Reduction in CO<sub>2</sub> emission is 321 Tonns/Year for the station</li> </ol>
Development of process to upgrade existing induction motor for VFD retrofiting	Developed a cost effective process for upgrading the existing low voltage induction motor for Variable Frequency Drive (VFD) retrofiting and also executed on cooling tower fan at NTPC - Dadri. Being implemented in CT motors of stations	<ol style="list-style-type: none"> <li>1. For one of the combined cycle project, annual energy saving of approx. 1.14 MU is expected.</li> <li>2. Avoided CO<sub>2</sub> emission of 436 Tonns/Year</li> </ol>
Development & installation of Artificial intelligence based real time performance improvement tool	NETRA has developed Energy Intensification and Diagnostic Module (EIDM) a powerful real time Artificial Intelligence (AI) based modelling and optimization software application. The software finds out the optimum conditions to run the unit, while keeping the unit within the specified constraints. It provides boiler efficiency and TG heat rate in real time without any coal and ash sample	<ol style="list-style-type: none"> <li>1. Improvement in Heat Rate &amp; power plant efficiency</li> <li>2. In-house development – customizable - data and knowledge with NTPC</li> <li>3. Model validation and support is possible any time</li> </ol>
CFD simulation of FG ducts to optimize functioning of power plant equipments such as ID Fan, ESP etc.	CFD Analysis of FG ducts for Vindhychal Stage-I 200 MW U#5: APH O/L - ID Fan I/L completed and drawings of guide vanes and modifications have been developed. It optimizes equipments performance by reducing pressure drops, decreasing peak velocity & reducing erosion.	<ol style="list-style-type: none"> <li>1. As per the model analysis, 15 mmwc of gain in pressure drop is expected which will be equivalent to 90 kW of ID fan power.</li> <li>2. The flow difference between inner and outer ESP ducts will reduce from 29% to 9.5% thus improving ESP performance</li> </ol>
Robotic Inspection of LTSH & Economizer tubes by Robotic Inspection System in Boilers during overhauling	NETRA has developed a Robotic Inspection system for inspection of LTSH & Economiser tubes. This system is being used regularly for inspection in different sites of NTPC	Reliability improved and 100% tube inspections possible in shorter period.



# ECONOMIC PERFORMANCE







## ECONOMIC PERFORMANCE

NTPC has strong financial systems in place. It believes in prudent management of its financial resources and strives to reduce the cost of capital. It has robust financials leading to strong cash flows which get being progressively deployed in generating assets. The Company has a strong balance sheet coupled with low gearing and healthy coverage ratios. As a result, the Company has been able to raise resources for its growth at very competitive interest rates. NTPC has been accorded AAA rating for domestic loans & bonds from CRISIL, ICRA and CARE. The Company has also got 'NIL Comments' from Comptroller and Auditor General (CAG) for 4 consecutive years.

NTPC's financial performance was exceptionally strong during the year, with a Profit After Tax (PAT) of ₹ 12,619 crore, an increase of about 37 % over the previous year. The total income stood at ₹ 68,775 crore, a growth of 6%. After accounting for operating cost, employee wages and benefits, payments to providers of capital, payments to government and community investments, the economic value retained has increased from 8,240 in FY 2010-11 to 10,103 in FY 2012-13.

### Mitigating Climate Change Impacts:

Along with the financial top line & bottom line, the Company puts equally sharp focus on the environmental and social bottom lines. The Company is the leader in power generation in India with large coal based capacities. Its vision statement on sustainable energy development is "Going Higher on Generation, Lowering GHG Intensity". Almost all the new coal capacity addition would come through Super Critical Units leading to greater efficiency and reduced impact on the environment and thus promoting sustainable growth.

The focus areas of its research and development wing, NETRA (NTPC Energy Technology Research Alliance) are climate change, new & renewable energy, efficiency improvement, waste management and cost reduction besides providing scientific support to NTPC and external utilities for improving availability, reliability and efficiency.

Environmental concerns underpin NTPC's growth strategy. For mitigating the impacts of climate change, NTPC's approach is given in following table:

- Adoption of Supercritical Units of 660/800 MW, and Setting up of coal fired units with Ultra Supercritical Parameters for increasing cycle efficiency of fossil fuel based units
- Setting up of solar projects and wind farms in addition to hydro power plants and thus increasing share of non-fossil fuel based generation
- Establishment of Indian Coal Based Gasifier & Gas cleaning system for the 100MW IGCC Technology Demonstration Project at NTPC Dadri





Apart from this, NTPC also focuses on using water more efficiently, planting trees, actively participating in Jawahar Lal Nehru Solar Mission and adopting several new technologies, contributing to increased efficiency and greater environmental protection. NTPC green initiatives have been discussed in detail later in the report.

### Policy and Practices adopted for Suppliers

The tendering procedures adopted by the Company envisage a well structured and systematic approach. The objective is to be transparent, fair and just to all suppliers and vendors. 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 for the local supplies made by the bidder in order to encourage Indian bidders and suppliers. Also price preference is granted to indigenous supplies vis-à-vis imported supplies.

For supply cum erection and civil packages bids are invited on international competitive bidding and domestic competitive bidding basis, provisions have also been incorporated in the bidding documents in respect of labour, safety, welfare, statutory provisions, etc.

### Financial assistance from Government

Government of India is the promoter of NTPC and after disinvestments in 2004, 2010 and 2013, the holding of Government of India in NTPC is now 75% of the paid up capital. NTPC is running on self-sustained basis and is giving regular dividend to Govt. of India on its equity. No further capital has been invested by Govt. of India in NTPC since the year 1999-2000. NTPC along with its Joint Ventures and Subsidiaries has pan India presence. Its projects/stations are located in seventeen states of India. NTPC does not receive any direct government benefit by way of subsidies, grants, royalties or tax holidays. Some of NTPC's power plants are covered under exemptions of Section 80IA of Income Tax Act. However, this exemption is available to all companies in the infrastructure sector and is not specific to NTPC.

### Social Investments

The company has always discharged its social responsibility as a part of its Corporate Governance philosophy. It follows the global practice of addressing CSR concerns in an integrated multi stake-holder approach covering the environment and social aspects. A total expenditure of ₹ 69.24 crore was incurred towards Corporate Social Responsibility during the



FY 2012-13, which was 0.75 % (against 0.54% for the FY 2011-12) of the net profit of the previous year. NTPC has committed for providing the following major community infrastructure facilities to the country as part of project development:

- Solapur Power Training Institute (SPTI)
- Augmentation of water supply schemes (Solapur & Joshimath)
- IIT at Raipur
- Medical College and Hospital (Sundergarh, Odisha)
- Construction of Engineering Colleges (Shivpuri, MP and Hazaribagh, Jharkhand)
- Construction of Polytechnic at Dhak /Gopeshwar (Uttarakhand)
- Construction of New ITIs
- Construction / Strengthening of State Highways

NTPC has taken up Decentralized Distributed Generation (DDG) in the vicinity of its existing power stations for assisting Gol in achieving the goal of "Electricity for all" and with an objective of demonstrating a sustainable business model for integrated growth of villages. Such projects are not commercially viable and sustainable unless the entire capital cost is provided as grant. This is essential for making the power supply affordable for the rural community. Grant is funded through funding agencies and the gap between actual capital cost and grant is bridged by NTPC.

Most of the Stations are located in remote rural areas. NTPC undertook CSR activities in the neighborhood of its stations. These activities include providing education, community health, vocational training, women empowerment. NTPC also creates infrastructure such as drinking water facilities, sanitation facilities, roads etc. In addition, Quality Circles (QCs) by NTPC started in neighborhood villages contributed to improvements in various areas. NTPC employees also participated in these activities through Employee Voluntary Organization for Initiative in Community Empowerment (EVOICE).

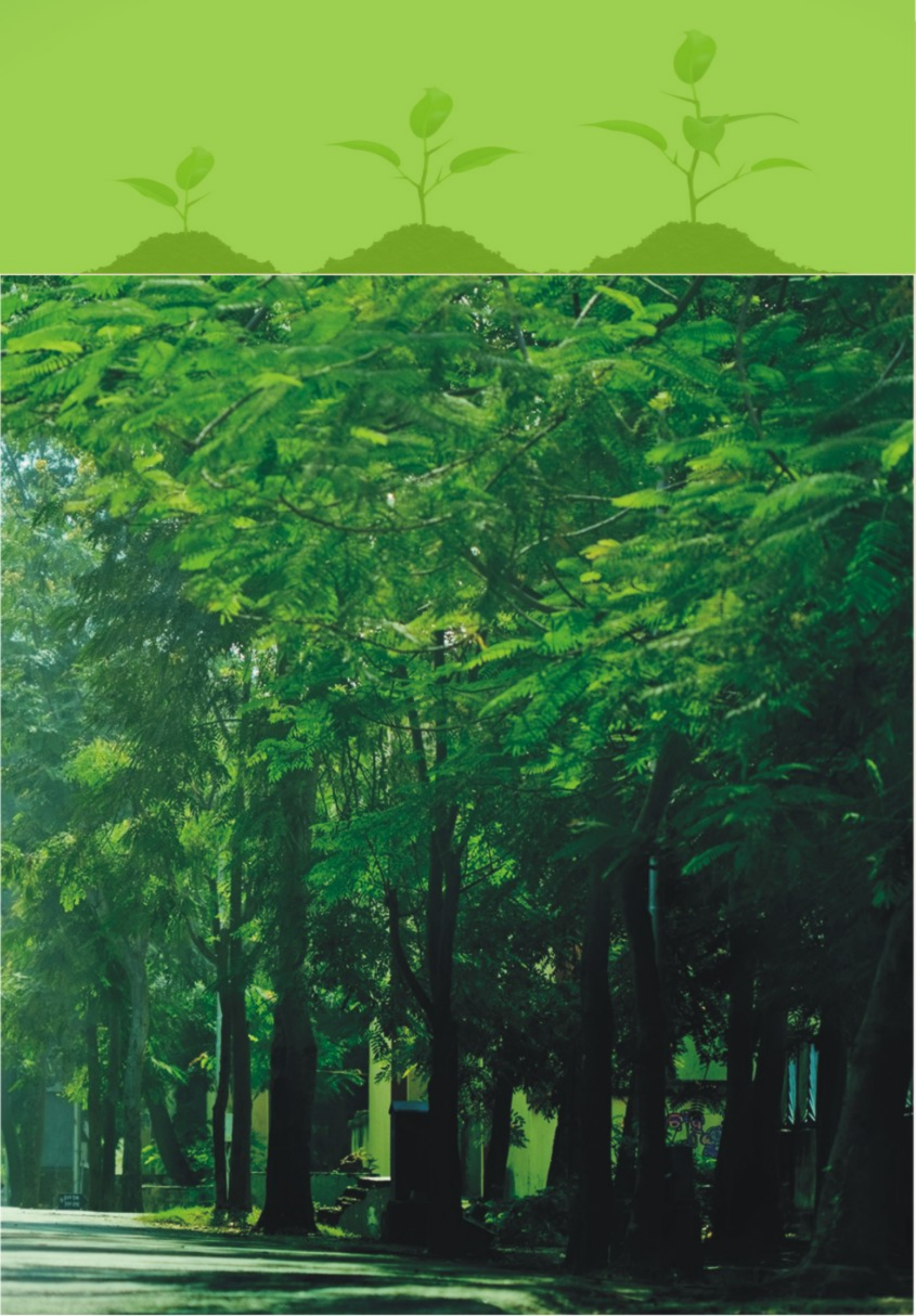
*NTPC had signed a MoU with Archeological Survey of India (ASI) and National Culture Fund (NCF) for financial support for preservation and conservation of 3 monuments groups • Group of Monuments at Mandu (MP), • Excavated site at Vikramshila (Bihar) • Archaeological site, Lalitgiri, Dhauri (Odisha).*

*The preservation & conservation works are in progress at Group of Monuments, Mandu. For the other two sites, plans have been prepared and work will start soon.*



# ENVIRONMENTAL PERFORMANCE







## ENVIRONMENTAL PERFORMANCE

NTPC has been carrying out its business activities with a sense of responsibility towards environment protection and has designed its power plants and environmental protection systems with due consideration to emerging requirements. Emissions from thermal power plants has been under greater scrutiny due to increased awareness among people about the environment. With the growing awareness, the thermal power stations are open to greater attention by public at large and by other stakeholders. NTPC proactively looks at the same as an opportunity for a better environmental performance especially in the area of emission reduction, as well as, resource conservation. This will translate into increased sustainability for future operations and a better relationship with stakeholders and society at large.

Issue of GHG emission from thermal power plants has been under special attention nationally and internationally. Being among the first utilities in India to introduce 500 MW units and super critical units, NTPC is faring way ahead of other major power producers in India and abroad in terms of CO<sub>2</sub> emission per unit generation. This is due to its sound operational practices, coupled with introduction of state-of-the-art technologies. In order to reduce Stack SPM emissions from old units, massive renovation and modernization work of old ESPs is underway. New ESPs are being designed in line with the new environmental norms for SPM emission.

NTPC understands the need to conserve water as it is one of the most precious natural resources. Power plant water cycle is designed with the concept of 3R's (Reduce, Recycle and Reuse) to minimize water consumption. New plants are operating with a Cycle of Concentration (CoC) of around 5 to reduce blow down water. Retrofitting has been done to increase CoC and reduce blow down from cooling towers. Water cycles are also being designed to achieve maximum recirculation and reuse of water, thereby reducing water consumption.

Central Pollution Control Board had initiated an exercise to identify polluted industrial clusters or areas in the country, in order to take concerted action and to improve the current status of their environmental components, such as air and water quality, ecological damage, and visual environmental conditions. Some of NTPC stations have fallen in such zones. These plants are - Singrauli, Rihand, Vindhyachal, Talcher Thermal, Talcher Kaniha, Badarpur, Faridabad and Simhadri. Respective states have prepared specific action plans to

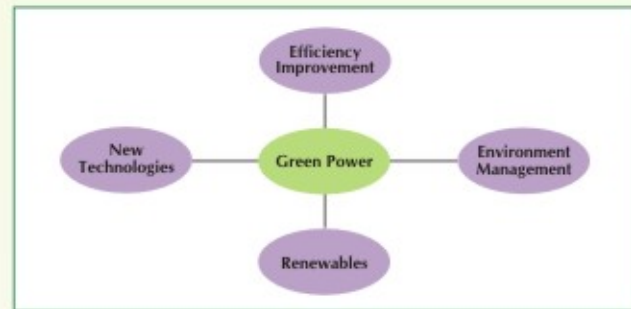
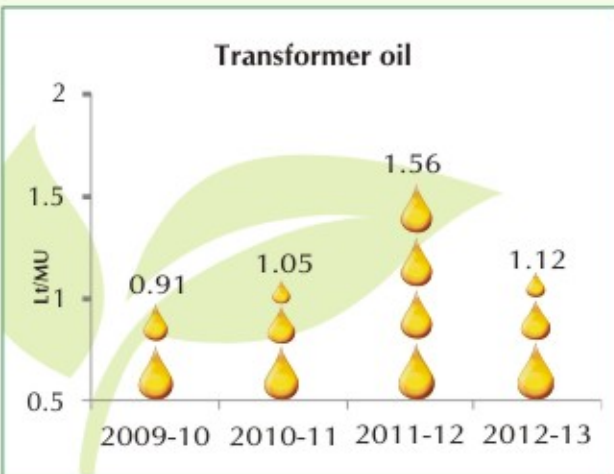
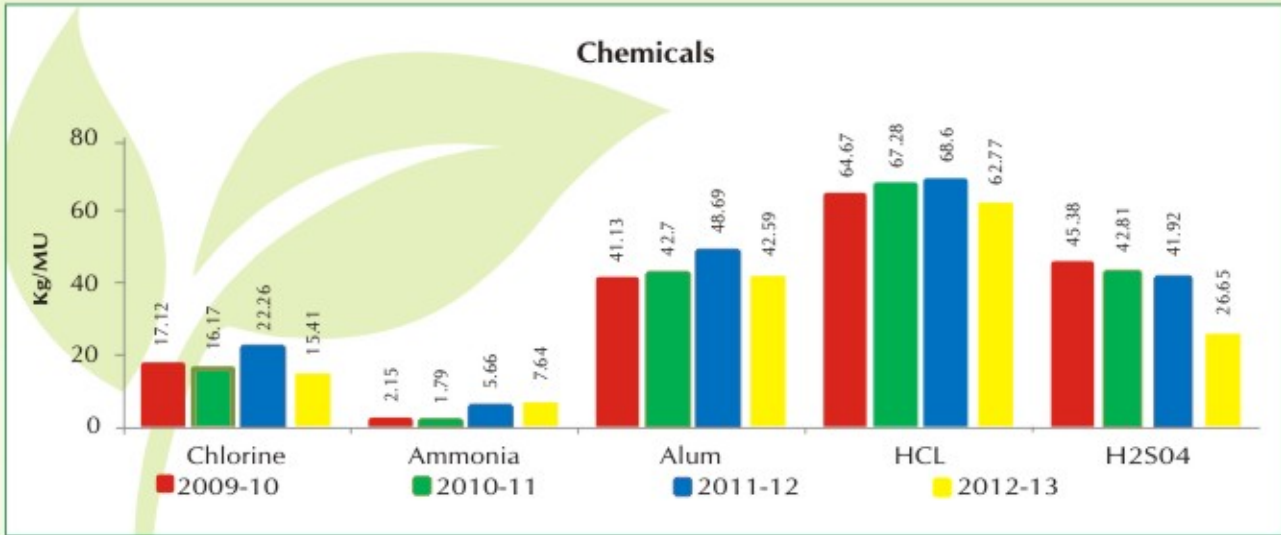
combat pollution problem in these clusters and have issued directives to all industries located therein to adhere to these action plans and on occasions sought bank guarantees to back up adherences. Wherever directives were issued by State Pollution Control Board to any NTPC station, corrective actions have been taken and satisfactory compliance and acceptance of the respective authority has been ensured. Further, for improving the environmental conditions of these critically polluted areas, respective SPCBs have revised the statutory environmental norms applicable to these areas. These revised norms pose challenges at stations due to various factors such as design constraints, space limitations, prolonged shutdowns, non availability of original equipment supplier etc. These issues are being addressed and NTPC has already initiated necessary actions to comply with such requirements in respective plant. Extensive design and technology review of these stations was undertaken for taking up retrofitting measures. NTPC undertook the challenging task to look for least cost, technically feasible engineering solutions for minimising its impact on cost of generation. Implementation of time bound action plans are in progress and for some of the plants the plans have also been backed up with Bank Guarantees. Details of Bank Guarantees submitted by NTPC are as below:

No.	Station	Amount of Bank Guarantee (as on 31.03.2013)
1.	Korba	₹ 27.5 Crore
2.	Vindhyachal	₹ 10 Lakhs
3.	Singrauli	₹ 20 Lakhs
4.	Simhadri	₹ 1.25 Crore
5.	Talcher Thermal	₹ 20 Lakhs

### Material Consumption

Thermal Power generation primarily requires fuel (viz. coal, gas, naphtha) and water as main raw material. These have been covered later in the report under energy and water sections. However, various types of oils & lubricants and other chemicals and gases such as Alum, Chlorine, Hydrochloric acid (HCl), Sulphuric Acid (H<sub>2</sub>SO<sub>4</sub>), Ammonia (NH<sub>3</sub>) and Hydrogen (H<sub>2</sub>) etc are also required for its day to day operations. Most of these materials are completely consumed in the process of electricity generation and hence cannot be recycled. NTPC does not use any significant recycled material.





### Energy Consumption – Direct & Indirect

Coal and Gas are main raw materials for NTPC and are used as fuel for power generation. Since Actual Calorific Value (ACV) of these fuels is a deciding factor for its specific consumption, therefore, higher the calorific value, lower is its specific consumption. Efficient use of these resources is a main focus area for NTPC. During the year 2012-13, coal consumption has increased due to decrease in actual calorific value of coal, which has been deteriorating since last decade. Despite these limitations, NTPC has accounted for 27.37% of India's power output with only 18.44% of the total generation capacity. Also NTPC coal stations have achieved an average PLF of 83.08% as against all India PLF of 69.95% with six stations recording more than 90% PLF.

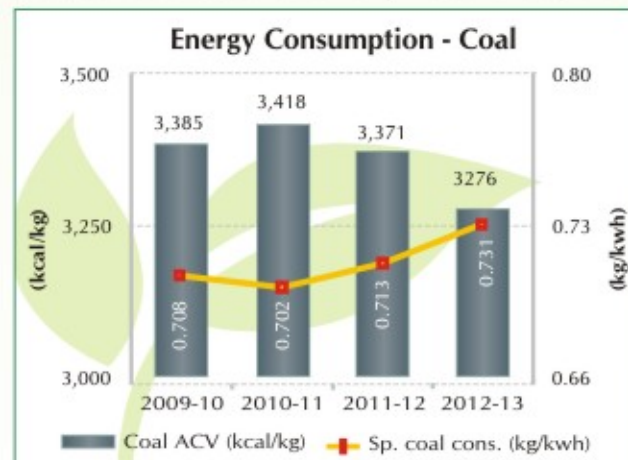
However, the used oil, batteries, waste scrap etc generated in the plants are being sold to registered recyclers for recycling. NTPC has phased out the use of Poly-Chlorinated Bi-phenyls (PCBs) in its operations and does not use any PCB now.

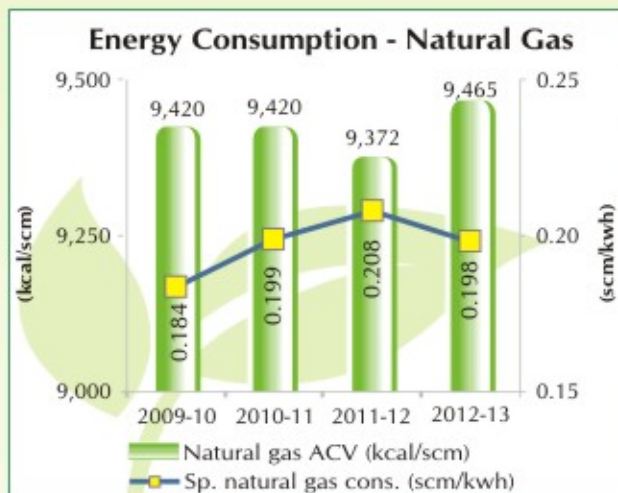
NTPC takes due care to reduce the consumption of these materials. The consumption of water treatment chemicals depend upon the intake water quality which is continuously deteriorating. The consumption of other materials also vary based on specific requirements and change in total generation, plant load factor etc.

### Energy Management

NTPC in its endeavour towards being one of the world's most energy efficient power utilities, is committed to produce electric power in the most efficient manner, keeping in view environmental sustainability as also quality power production at optimum cost.

NTPC has a four pronged approach for generation of "Green Power" :





Internal Energy requirement of power plants is measured in terms of Auxiliary Power Consumption (APC) which has increased from 6.75 % (during 2011-12) to 6.84 % this year in case of coal stations due to lower PLF, poor coal quality etc.

Due to less availability of generation schedule from the beneficiary states, NTPC gas stations were forced to register Less Generation and higher Auxiliary Power Consumption.

**New Technology Absorption :**

New technology initiatives in NTPC include :

- a. Adoption of supercritical technology with steam parameters (247 Kg/cm<sup>2</sup> / 537 deg. C / 565 deg C) in 660 MW units at Sipat (Stage-I) and Barh (Stage-I).
- b. Adoption of super critical technology in eleven 660 MW units at 5 ongoing projects with still higher steam parameters (247 Kg/cm<sup>2</sup> / 565 deg. C / 593 deg C).
- c. Adoption of super critical technology in large size units of 800 MW at 3 ongoing and one upcoming projects. This will have an efficiency gain of about 5.79% over a conventional sub-critical 500 MW unit.
- d. Increase of reheat temperature to 565 deg C in all new sub-critical 500 MW Units (resulting in about 0.7% gain in efficiency)
- e. Other new technologies targeted are :
  - Coal Fired Units with Ultra Supercritical Parameters targeting efficiency comparable to the best available technology in the world.
  - Integrated Gasification Combined Cycle (IGCC) Technology Demonstration Plant (TDP) of 100 MW suited for high ash containing Indian coal,

which has been planned at NTPC Dadri in two stages

- Under National Mission on Clean Coal (Carbon) Technologies, NTPC, BHEL and Indira Gandhi Centre for Advanced Research (IGCAR) have entered into MoU for indigenous development of advance ultra super critical technology which will have enhanced efficiency of around 46% and about 20% less CO<sub>2</sub> emission as compared to conventional 500 MW sub-critical thermal power plant.

**Other Green Initiatives at NTPC :**

- i. Two Solar PV projects viz. 5 MW solar PV Power Projects at NTPC – Dadri and 5 MW solar PV Power Project at Port Blair had been registered with UNFCCC CDM Executive Board.
- ii. Another two projects viz. 5 MW solar PV Power Project at NTPC Faridabad and 8 MW Small Hydro Power Project at NTPC- Singrauli are in advanced stage of validation and are likely to be submitted shortly to UNFCCC CDM Executive Board for registration.
- iii. Seven CDM Projects viz. Tapovan Vishnugad HEPP, Energy Efficiency Project at NTPC-Singrauli, Energy Efficiency Project at NTPC-Dadri, Small Hydro Power Project at NTPC-Singrauli, 5MW Solar PV Power Project at NTPC-Dadri, 5MW Solar PV Power Project at NTPC-Faridabad & 5MW Solar PV Power Project at Port Blair (A & N) have got Host Country Approval (HCA) from National CDM Authority.
- iv. The methodology prepared by NTPC viz. “Consolidated base line and monitoring methodology for new grid connected fossil fuel fired power plants using less GHG intensive technology” for Super Critical Technology has been approved by “United Nations Framework Convention on Climate Change (UNFCCC)” under ‘Approved Consolidated Methodology 13 (ACM0013)’.
- v. NTPC had initiated a voluntary, formal efficiency improvement program with establishment of Center for Power Efficiency & Environmental Protection (CenPEEP) to save national resources and reduce the cost of energy. The Centre works on GHG emission reduction through efficiency & reliability improvement. Various activities undertaken by CenPEEP in the area of Energy Efficiency

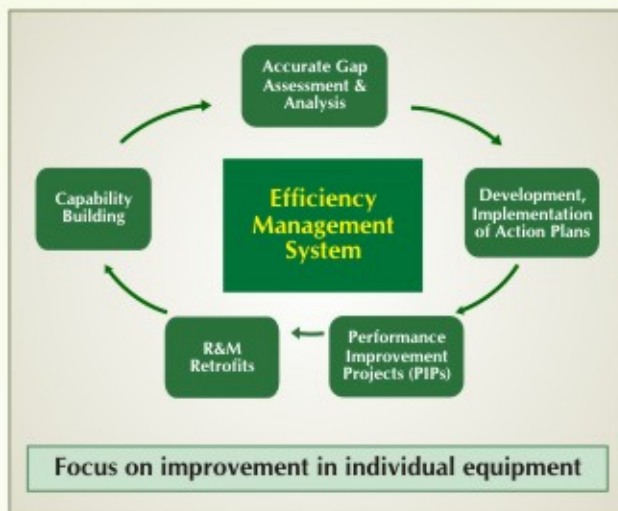


improvement are given on the website [www.ntpc.co.in](http://www.ntpc.co.in).

### Energy Efficiency :

Energy Efficiency Management System program, adopted in NTPC, focuses on restoration & sustenance of equipment performance through a systematic heat rate improvement program cycle which comprises of following steps :

- Assessment of major heat rate gap areas,
- Development and implementation of Heat Rate Improvement Plans,
- Implementation of new techniques for HR gap assessments
- HR improvements including equipments / instrument up gradation and
- Skill & Knowledge development for self sufficiency & sustainability



### Knowledge Based Maintenance System

For high efficiency operation, power generating units have to operate at high loading factors and start ups and shutdowns have to be minimized. This necessitates high reliability of machines. High efficiencies can be achieved only on platform of high reliability. Reliability improvement and efficiency improvement programs need to be integrated. The figure above describes the reliability road map being followed in NTPC.

The efficiency related, suitable maintenance plans and diagnostic tasks are to be defined in maintenance strategy to identify gaps in efficiency and actions for mitigation and periodic preventive actions are taken to recover losses. Investments are prioritized based on their probability, impacts and paybacks.

### Initiatives for Energy Conservation

Some of the important energy conservation measures taken during the year 2012-13 in different areas are as under:

#### Energy Audits

During 2012-13, 80 energy audits were carried out at different NTPC stations in the areas of auxiliary power consumption, water balance, cooling water system, thermal insulation, compressed air, coal handling plant, milling system, air conditioning, ash handling system, waste heat recovery boiler performance, lighting etc.

#### Auxiliary Power Consumption

Some of the areas where energy conservation measures were taken for reducing APC are :

- Replacement of inefficient BFP cartridge and attending BFP recirculation values and attending duct leakages / APH seal replacement at various projects,
- Flue gas duct modification using CFD at Tanda,
- Offline GT compressor washing during opportunity shutdown at gas stations,
- Application of efficiency improvement coating on cooling water / other pump internals and installation of VFD's various LT drives at various projects
- Optimization of operation of CW pumps, clarified water pumps & cooling tower fans and optimizing DP across feed regulating station at various projects.

#### Lighting

- Replacement of conventional general lighting service (GLS) lamps and conventional fluorescent tube light (FTLs) with compact fluorescent lamp (CFLs) / efficient TL at various projects.



- Replacement of high pressure sodium vapor (HPSV) / Halogen / FTL street lighting fixtures with LED light fixtures at Kayakulam, Talcher Kaniha, Dadri and Kawas.

**Heat Energy**

- Attending / upgrading thermal insulance at Rihand, Auraiya, Gandhar and Kayamkulam,
- Attending HP heaters leakage at Rihand,
- Replacement of turbine seals at Ramagundam,
- Attending to high energy drains at Rihand and Simhadri.

**Other Measures**

- Installation and commissioning of Online Energy Management System to closely monitor the energy consumption on real time basis
- Energy saving in solar water heating system in guest house and executive trainees hostels
- Use of video conferencing instead of tours to other locations, wherever possible

A provision of ₹ 17.37 crore has been kept in FY 2013-14 for different energy conservation schemes like :

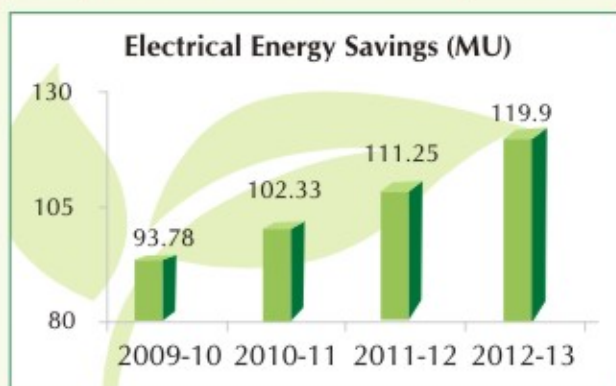
- Installation of VFD in HT drives

- Grid interactive roof-top SPV plant
- Vapor absorption system for Air Conditioning
- Energy efficient lighting

**Impacts of Energy Conservation Measures:**

The following measurable energy savings were achieved during FY 2012-13:

S.No.	Area/Activities	Energy Savings
1	Electrical (MU)	119.9 MU
2.a	Heat Energy (equivalent MT of coal)	9,366 MT
2.b	Heat Energy (equivalent MCM of Gas)	1.967 MCM
2.c	Heat Energy (equivalent KL of Naptha)	253 KL





### PAT: Perform, Achieve and Trade

India has adopted a voluntary program to reduce the carbon foot print of the country by reducing the country's carbon intensity by 25% over 2005 levels by year 2020. Government of India launched National Action Plan on Climate change in order to have a concerted action to address the issue of climate change. The Plan outlines 8 Missions including National Mission on Enhanced Energy Efficiency (NMEEE) for energy efficiency improvement in industries.

**PAT (Perform, Achieve and Trade) is a market based mechanism under NMEEE to enhance cost effectiveness of improvements in energy efficiency in energy intensive large industries and facilities, through certification of energy savings that could be traded.**

Nine energy intensive industrial sectors are considered as designated consumers under Energy Conservation Act 2001: Cement, Pulp & Paper, Steel, Textile, Fertilizer, Chlor-alkali, Aluminum, Power generation, and Indian Railway.

**PAT is multicycle program. The first Cycle of PAT has started from April, 2012 and will complete in March 2015. In first cycle (2012-15), 6.686 million tons of oil equivalent fuel saving is expected through 8 identified sectors. BEE (Bureau of Energy Efficiency) is the nodal agency for implementation of PAT.**

#### PAT Scheme in Power Sector

Thermal power sector is one of the sectors identified for PAT implementation and 144 thermal & gas power plants are identified as designated consumers, including all the coal & gas power stations of NTPC.

The current operating performance of a unit is compared with its own performance in the baseline year and improvement targets are assigned. For each of the 22 stations of NTPC, a mandatory specific energy saving target has been specified and the improvement is to be demonstrated in the target year.

In PAT scheme, energy savings are measured in term of Net Heat Rate. Base line period for target setting of net heat rate (NHR) in first PAT cycle has been taken as 2007-08, 2008-09 & 2009-10 and average performance of the station during this period has been taken as reference. Target NHR, to be achieved in 2014-15, is based on the gap between the baseline performance and design net heat rate and has been set as per Table given below. Each station irrespective of its performance level in the baseline years has been assigned specific improvement target.

Variation in Station NHR from Design NHR	Reduction Target for % deviation in the NHR	% Reduction Target in Station NHR
Up to 5%	10%	0.1 to 0.5
More than 5% and up to 10%	17%	0.85 to 1.7
More than 10% and up to 20%	21%	2.1 to 4.2
More than 20%	24%	4.8 and above

#### PAT Targets for NTPC Stations

This PAT program has made efficiency improvements mandatory for all the designated consumers. PAT targets of NHR improvement for the NTPC stations vary from 9 to 66 kcal/kwh for coal stations and 3 to 27 kcal/kwh for gas stations. NTPC units have already achieved high efficiency and operation levels, any further increase in efficiency targets require major technological interventions as NTPC parameters have already been optimized. NTPC share in reduction in energy consumption in terms of MToE is about 10% of the total power sector target.

#### Trading of ESCerts

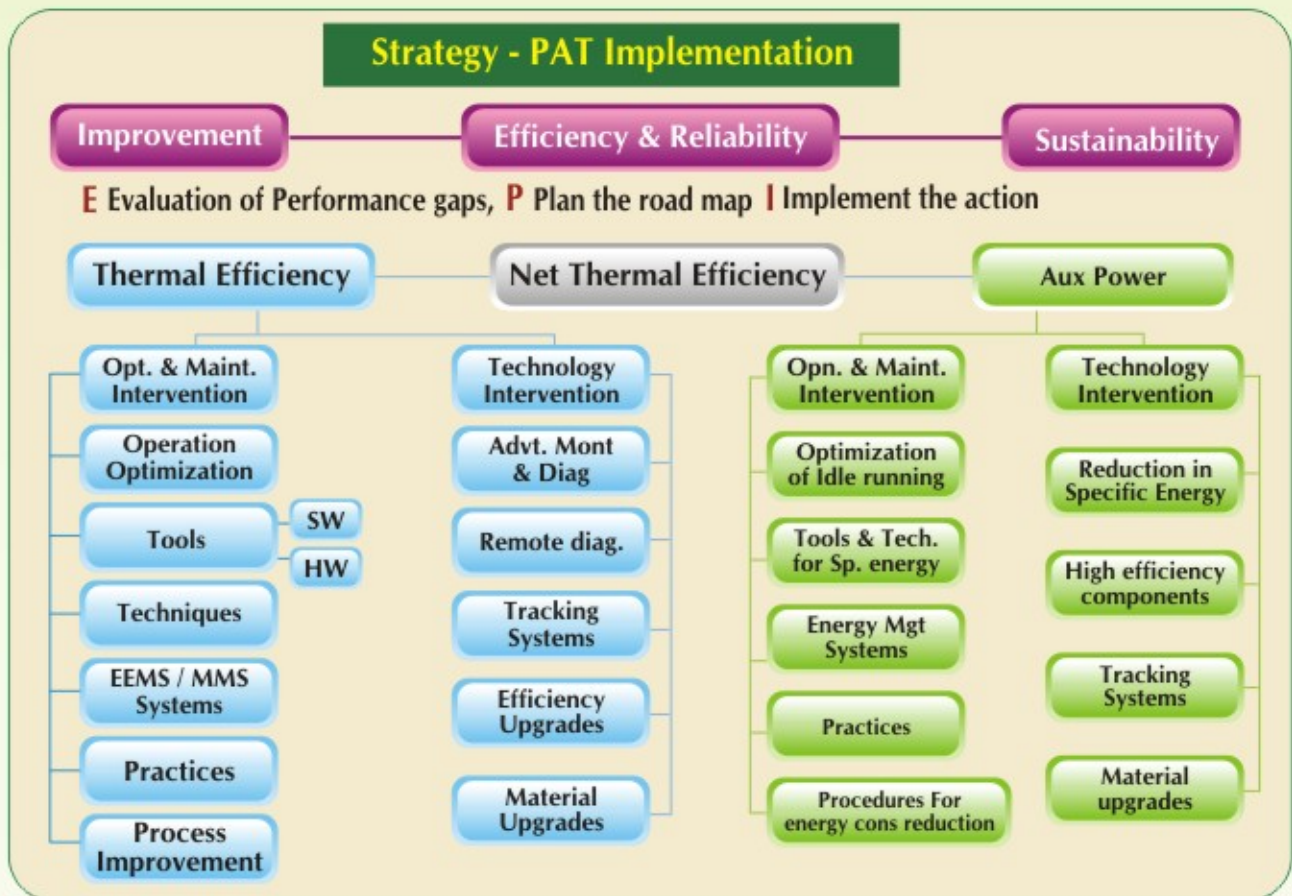
An ESCert will be an instrument issued by Ministry of Power/BEE for **one ton of oil equivalent of energy savings** achieved by the designated consumer, over and above the target savings. ESCerts will be issued by BEE after verification of improvement by accredited auditor after completion of target year. Each certificate will be a unique tradable commodity.

**For ESCerts calculation, the targets have been converted to 'ton of oil equivalent'. For NTPC, in terms of oil equivalent, targets are 0.292 million ton of oil equivalent (MTOE) for coal stations and 0.027 mtoe for gas stations, the total for NTPC being 0.319 MTOE.**

#### PAT Implementation Strategies:

NTPC has an established system to continuously track plant performance for improvements & sustainability. However the quantum of improvements envisaged in PAT is much higher. This calls for identification of new thrust areas for Heat Rate and APC improvement, development & implementation of action plans and sustenance of improvements.





### Renewable Energy Projects

In NTPC, Renewable energy (RE) is being perceived as an alternative source of energy for promoting sustainable energy development. Renewable energy technologies provide not only electricity but offer an

environmentally clean and low noise source of power. NTPC plans to broad-base its generation mix by evaluating conventional and alternate sources of energy for ensuring long term competitiveness and mitigating fuel risks. The status of various Renewable Energy projects in NTPC is as under:

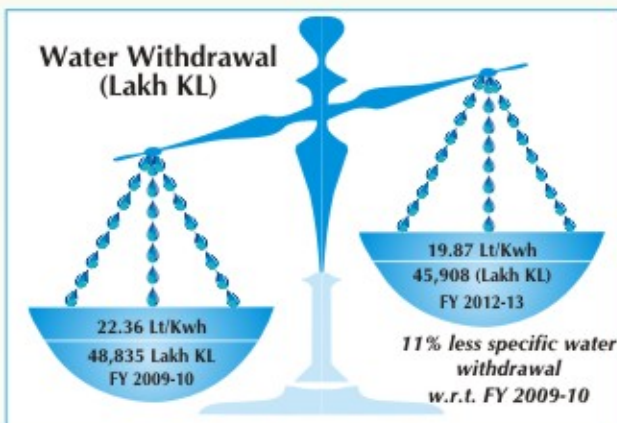
Status of Solar Projects 2012 - 13	
<b>Commissioned – 10MW</b>	<b>Under Execution – 100 MW</b>
<ul style="list-style-type: none"> <li>Dadri – 05 MW</li> <li>Port Blair – 05 MW</li> </ul>	<ul style="list-style-type: none"> <li>Ramagundam -10 MW</li> <li>Unchahar -10 MW</li> <li>Talcher Kaniha – 10 MW</li> <li>Faridabad – 05 MW</li> <li>Rajgarh – 50 MW</li> <li>Singrauli -15MW</li> </ul>
Status of Small Hydro Projects 2012 - 13	
<b>Under Execution – 8 MW</b>	<b>Financial Appraisal of DPR under process -03 MW</b>
Singrauli – 8 MW	Rihand – 03 MW
Status of Wind Power Projects – 80 MW (Under Award Process) 2012 -13	
<ul style="list-style-type: none"> <li>Karnataka- 40 MW</li> <li>Maharashtra – 40 MW</li> </ul>	
<b>Geothermal based Power Projects –</b> MoU with Chhattisgarh Govt for geothermal power project at Tattapani.	
<b>Distributed Generation (DG) –</b> MoU with Swiss Agency for Development and Cooperation to plan and implement Renewable Energy and Distributed Generation projects. Main focus is on biomass gasification including two stage gasifier, small hydro & solar energy and sustainability of the DG projects	



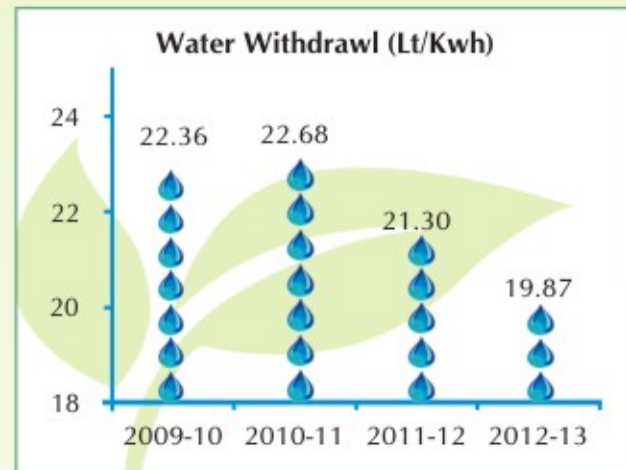
## Water Management

To conserve water and control the quality of effluents, NTPC has implemented various water conservation measures in power plants by using 3 R's (Reduce, Recycle & Reuse) as guiding principle. Fresh water is withdrawn from natural surface water resources such as rivers, reservoirs etc. Small quantity of water is drawn from underground water sources at NTPC-Dadri during canal closure periods. NTPC takes care not to withdraw water from water bodies that are recognized to be particularly sensitive due to their relative size and purpose or which act as a source of support for endangered species. The water intake body is not getting adversely affected at none of NTPC stations. The consumption of water is being monitored and water use efficiency is being improved owing to the initiatives at the stations such as:

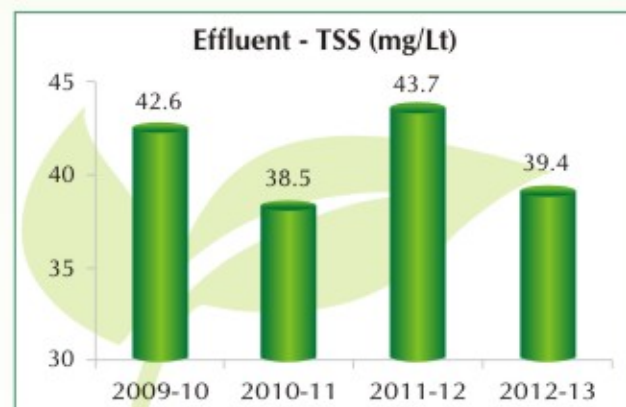
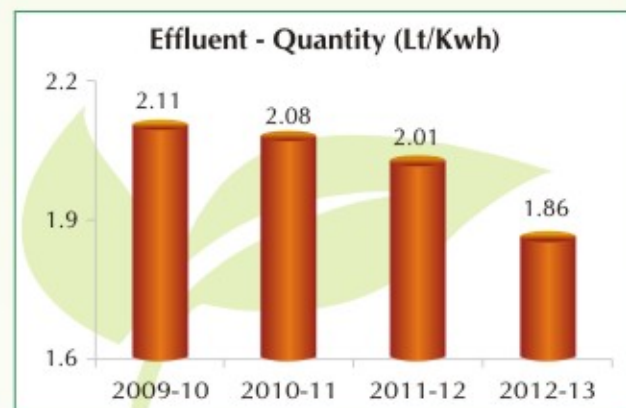
- i. Repeated use of water in the process, increasing the cycle of concentration (CoC) upto 5.
- ii. The effluent from ash pond is recirculated back to the station for further ash sluicing to the ash pond thus saving a lot of fresh water.
- iii. Treated water from Effluent Treatment Plants (ETP), Sewage Treatment Plants (STP) and Ash Water Recirculation System (AWRS) is used for other purposes such as service water, horticulture etc., thus reducing the requirement of fresh water and minimising the discharge of effluents.



NTPC strives to minimise the amount of fresh water it consumes by re-using and recycling as much water as possible in its processes. Further, AWRS is under construction in old NTPC plants like Singrauli, Tanda and Talcher Thermal plants. Total water withdrawal by NTPC in 2012-13 for 21 operating stations was 45,908 lakh kl which shows an impressive 11 % reduction in specific water consumption (per kwh) as compared to that in 2009-10.



While adhering to the concept of water conservation, NTPC has been actively pursuing the goal of zero waste water discharge. The major treatment systems involved are Effluent Treatment Plants (ETP), Sewage Treatment Plants (STP) and Ash Water Recirculation Systems (AWRS) to recycle, reuse and conserve the precious water inside the plant to the extent possible. The effluents from various points in the plant such as coal handling area, main plant area including service water effluents are brought to central monitoring basin of Liquid Waste Treatment Plant (LWTP) and then the combined effluent is treated. Treated effluent quality is maintained within prescribed norms as applicable and no significant impact is envisaged due to discharge of treated waste water.





### Biodiversity Conservation

NTPC is committed to minimise impacts on biodiversity through :

- minimising the land requirement for power plants,
- complying with the siting criteria for thermal power plants published by MoEF at the time of site selection,
- as far as possible, locating the power plants away from protected areas like national parks and wildlife sanctuaries or non-protected areas rich in biodiversity,
- avoiding acquisition of forest land for the project, as far as possible,
- detailed environmental impact assessment study before construction of a project and implementation of environmental management plan during construction and operation phases,
- site specific ecological assessment studies, as and when required and
- ecological improvements and habitat enhancement through afforestation and creation of water bodies.

NTPC gives special thrust to afforestation and green belt development at all its projects, covering vast tracts of land in and around NTPC projects. At some of the projects like Rihand and National Capital Power Project, Dadri, NTPC has converted barren stretches of

land into lush green environments. Greenery in plant area is maintained by way of greenbelt all around project, buffer zones around sensitive areas, thick plantation, lawns, flowering plants and afforestation in all available spaces. Artificial water lagoon and soil mounds are also created wherever possible which provide shelter and protection to migratory birds and wild life.

At NTPC – Dadri, “Green Cover Assessment Study” is in progress. None of the project sites established by NTPC were located within 10 km. of the protected areas or the areas of high biodiversity outside the protected areas. The impacts on IUCN Red List Species and National Conservation List Species and their habitats are highly unlikely. Therefore, no offset habitats were created.

The construction and operation of power plants and associated facilities have no direct or indirect impacts on the biodiversity. NTPC has planted more than 3 lakh trees in FY 2012- 2013. The afforestation has not only contributed to the aesthetics but also has been serving as a 'sink' for the emissions from the station and thereby protecting the quality of ecology and the environment in and around the projects. Also, the green areas along with the water reservoirs and lakes attract a wide variety of fauna, including birds and act as their habitats.

All NTPC Stations have effluent management systems including facilities for treatment, recycle and reuse of liquid effluents, which has resulted in significant reduction in water requirement as well as effluent



*In case of following three projects, wildlife sanctuaries were declared near the projects (within 10 km) after the project was accorded environmental clearance or constructed:*

- *In case of Kahalgaon Station, the stretch of Ganga river adjacent to the project was declared as a sanctuary by State Govt. after the project was accorded environmental clearance by Ministry of Environment and Forests and the construction of the project was nearing completion.*
- *In case of Badarpur Thermal Power Project, Okhla Bird Sanctuary and Asola Bhatti Wildlife Sanctuary were declared as sanctuaries by State Govts. (Uttar Pradesh and Delhi Govts. respectively) after almost a decade of commissioning of the project.*
- *In case of Feroz Gandhi Unchahar Thermal Power Station, Samaspur Bird Sanctuary was established by State Govt. in 1987 much after the project construction was started by UP State Electricity Board in 1981. NTPC took over the project in 1992.*

*However, none of the above projects/ any part of them are located within the sanctuary.*

generation. Treated effluents conforming to the regulatory standards are discharged into the natural water source. Treated effluents from none of the NTPC Power Stations, except Kahalgaon, are discharged into any protected water body. However, in case of Kahalgaon, the treated effluent is discharged into a stretch of river Ganga, later on declared as sanctuary when the project was near completion. NTPC undertook a special scientific study to ascertain the impact of discharge of effluents into river Ganga and it was concluded that the impacts are insignificant.

#### **Some of the other scientific studies being undertaken at NTPC plants are:**

- Post operational Environment Impact Assessment study to assess the impact of plant operational activity on the ambient air, land and water within the plant vicinity.
- Environment Cost Benefit study has been conducted to assess tangible and intangible benefits measures undertaken in NTPC and enhancing the effectiveness of environmental measures in future.

In NTPC Kahalgaon and Rihand broadly a large number of medicinal plants have been planted along with other species of trees, such as *Azadirachta Indica* (Neem), *Ficus Religiosa* (Peepal), *Madhuca Indica* (Mahua), *Polyalthia Longifolia* (Ashok), *Delbergia Sissoo* (Shisham), *Tectona Grandis* (Teak), *Mangifera Indica* (Mango), *Eucalyptus Delonix Regia* (Gulmohar), *Pongamia* (Karanj), *Jatropha Sp.*, *Syzygium Cumini* (Jamun), *Psidium Guajava* (Guava), *Ficus Benghalensis* (Bargad), *Thevetia Peruviana* (Kaner, Oleander), *Neolamarckia Cadamba* (Kadam), *Roystonea Regia* (Royal Palm) etc.

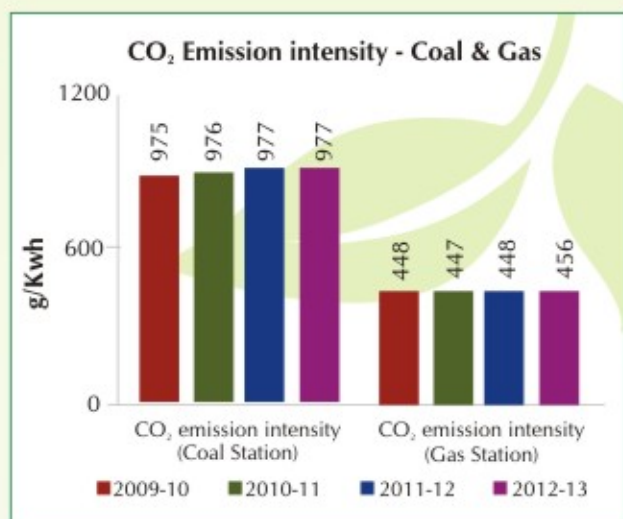
*Anta Gas Power Station follows an environment management policy where in afforestation is an integral part. Anta Gas Power Station has planted a total of 2.85 lakh trees over a period of time of which 2.04 lakh plants stand tall and green. Green belts have been developed in and around the plant, township and nearby area. The surrounding area has poor plantation due to extreme seasonal temperature, long dry spells and short wet season. The surrounding area had primarily Acacia species at the time of acquisition of land but now has more than 40 species of trees and shrubs including a number of medicinal plants such as Neem, Maulsari, Arjun, Amaltash, Cassia, Jamun, Harsingar, Peepal, Bael etc.*

#### **Air Emissions**

Since past few years, NTPC has been adding generation capacity at an unprecedented pace. However, utmost attention is given to control or reduce emission loads. All new plants are equipped with futuristic environment preparedness for reduction of GHG emissions level by enhancing efficiency levels.

In old plants, massive R&M activities are being taken up to improve efficiency levels and to add useful life to the main plant as well as environment protection equipments such as ESPs etc. so as to reduce fuel consumption and emission levels. All our stations monitor significant air emission parameters in the flue gases emitted from the stack such as carbon dioxide

(CO<sub>2</sub>), particulate matter (PM), sulfur-di-oxide (SO<sub>2</sub>) and oxides of nitrogen (NO<sub>x</sub>) on a regular basis, to ensure compliance with the regulatory requirements. NTPC is now taking steps to provide Continuous Emission Monitoring System (CEMS) with latest technology to monitor these emissions in flue gases on real time basis.

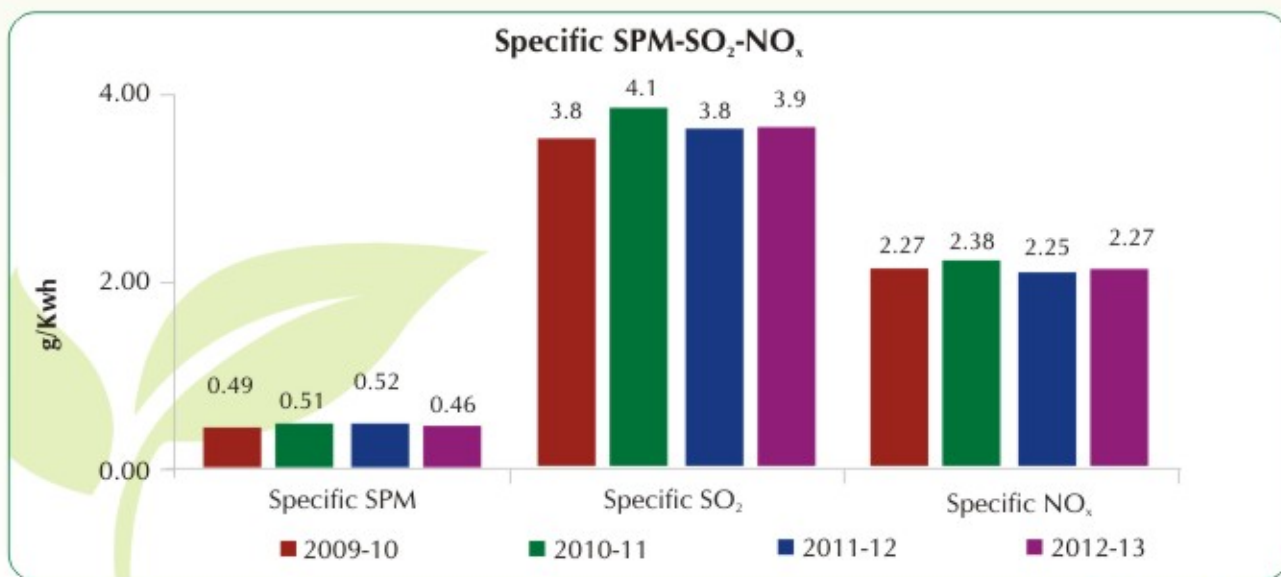


In order to monitor key environmental parameters of Ambient Air continuously on real time basis, automation in monitoring techniques has been taken up in NTPC. The Company has already installed 67 Ambient Air Quality System equipments to monitor air quality. All our Stations are equipped with advanced Environmental Protection and Pollution Control Systems such as High Efficiency Electrostatic Precipitators with efficiency of the order of 99.99% in its coal based units and Flue Gas Conditioning (FGC) system with ammonia dozing at our old units which are helping in reduction of SPM emissions below statutory

limits even when coal quality deteriorates. Performance of ESPs in plants like Korba ( St-I & II), BTPS (St-II), Rihand (St-I), Talcher Thermal (St-II), Talcher Super (St-I) are being augmented by addition of fields, replacement of advanced ESP energisers and Controllers.

Although NO<sub>x</sub> emission from coal based power plants is not regulated, **NTPC boilers design specifications meet World Bank standard of 260 gm/GJ emission levels.** NO<sub>x</sub> emissions are further reduced by Dry / Wet De-NO<sub>x</sub> systems in gas based plants, low NO<sub>x</sub> burner and over fire dampers and optimization of fuel /air ratio in coal based power plants. SO<sub>2</sub> emissions from coal combustion mainly depend on the sulfur content in the coal unlike the emissions of CO<sub>2</sub> and NO<sub>x</sub>. As Sulfur content in Indian coal is much lower compared to imported coal, SO<sub>2</sub> emissions and dispersion are well within statutory limits. However, keeping futuristic requirement in mind, space has been provided for Flue Gas Desulfurisation units. Sweetened gas has been used in Gas based power plants for low SO<sub>2</sub> emission.

Thermal Power Plants emit CO<sub>2</sub>, a Green House Gas. Various steps are being taken across the globe to reduce CO<sub>2</sub> emission intensity from coal based power plants. In NTPC, efforts are being made towards adoption of lower exit-flue-gas-temperature, introduction of sophisticated online coal flow measurements and variable orifice for coal flow controls, coal flame monitoring systems and tools like Performance Analysis Diagnostic and Optimization systems and Combustion optimization systems. In order to reduce CO<sub>2</sub> emissions, NTPC carries out Renovation and Modernisation (R & M) and Retrofitting and Upgradation of pollution control facilities in its existing units.

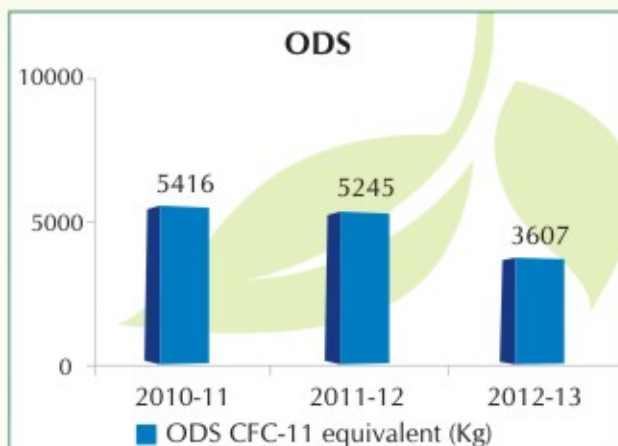


NTPC has adopted advanced and high efficiency technologies such as super critical boilers for the Greenfield projects like Barh, Solapur, Kudgi, Meja, Lara etc. The Company is also designing its upcoming plants for use of beneficiated coal and imported low ash coal. NTPC plants are among the best in terms of GHG intensity not only in India but also in the global power generation companies. In terms of CO<sub>2</sub> emission per unit of electricity generated, NTPC plants, on an average, are already operating at around 8-10% lower CO<sub>2</sub> emissions than the national average of similar type of units in India. Further, the impact of its Super Critical Units on CO<sub>2</sub> reduction will be reflected in coming years.

There are no indirect GHG emissions, as no electricity was purchased by NTPC during FY 2012-13 in the 21 operating stations. Emissions of other GHG will be reported after carbon footprint study is completed in FY 2015-16.

### Ozone Depleting Substances

NTPC has been putting sincere efforts not only to reduce the consumption of ozone depleting substances but has also taken measures to replace these ODS with other eco friendly substitutes in a phased manner. During the year, we consumed ozone depleting substances amounting to 360 Kgs of CFC-11 equivalent which is a reduction of 33 % as compared to the year 2010-11. Proper care is taken through planned maintenance for arresting leaks of ozone depleting substances from air conditioning systems so that consumption of HCFC is minimized.

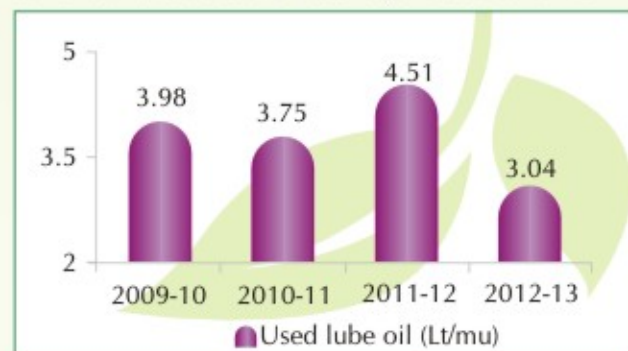


NTPC -Kawas has taken up a programme of phasing out of Halon Fire Protection system and Freon based cooling systems. Vapour absorption machines have been installed at few stations to replace HCFC based air conditioner for unit control rooms. Talcher Super Thermal Power Station is reducing use of CFCs by replacing the conventional vapour compression based air conditioning units with water-lithium bromide based chiller units.

### Waste Management

NTPC is committed to proper handling and disposal of waste materials. Various types of wastes such as municipal wastes, metal scrap, hazardous wastes, bio-medical wastes are being generated in NTPC plant, hospital and the township.

Hazardous waste is disposed to government authorised dealers, in accordance with applicable legislation. i.e. "Hazardous Waste (Management & Handling) Rules, 1989 (as amended in 2008)". Recyclable wastes and non recyclable waste are suitably handled. The Hazardous recyclable wastes are being sold to authorized recyclers and non recyclable wastes are sent to the State Pollution Control Board approved Common Treatment, Storage and Disposal Facility (TSDF), or stored in properly identified places or hazardous waste pits. Small amount of bio-medical waste is generated at NTPC hospitals which are being disposed off as per "Bio-medical Waste (Management & Handling rules-2003)" issued by MoEF. 10,678 kg of bio-medical waste was treated and disposed off in NTPC during FY 2012-13. No radioactive waste is generated at NTPC.



No.	Waste	Disposal Method
a.	Lube oil, Transformer oil, Batteries	Sold to registered recyclers or under buy-back arrangement.
b.	Ferrous / Non-Ferrous Scrap	Disposed through e-Auctions
c.	Hazardous Waste	- Non recyclable waste is sent for Treatment, Storage and Disposal Facility wherever possible - NTPC is a member to the TSDF Facilities in states, wherever available.
d.	Domestic Waste	- Waste is segregated into biodegradable & non-biodegradable. - Biodegradable waste is converted into manure through composting/vermi-composting. - Non biodegradable waste is being disposed off at identified place.
e.	Bio-Medical Waste	Disposed through authorised agencies approved by SPCB

Two Bio-methanation plants have been installed at Dadri and Kayamkulam during 2012-13 with capacities of 500 kg and 100 kg per day respectively. The biogas generated is used for cooking purposes in Guest House and Canteen.



### Bio Methanation Plant at NTPC Kayamkulam

Bio Methanisation is the right technology choice for safe disposal of bio degradable waste produced everyday at the plant canteen.

As a proactive initiative, a Bio Methanisation Plant (BMP) of 100Kg capacity has been installed and commissioned at the plant canteen which utilises food waste and generates bio gas for cooking. This reduces the consumption of LPG cylinders.

The average bio-degradable waste generated per day is about 50 kg, which generates approximately 6 m<sup>3</sup> of gas. On a monthly basis about 75 kg of gas is produced from this plant, which saves approximately 4 commercial LPG cylinders. The 10-15% slurry generated is used as a substitute for organic fertiliser in horticulture.

### Ash Management

In India, coal as a fuel would remain the main source for power generation. The prime concern for coal based power plants is the quality of Indian coal, which has low calorific value and high ash content (about 30-45%). Large numbers of mega/ ultra mega power plants are at various stages of construction. It is expected that ash production in the country would increase from current level of 180 million tonnes per annum to 250 million tonnes per annum by the year 2017. Disposal of this ash in ash ponds would require huge areas. MoEF has prescribed only 0.25 acres / MW land for new ash

dykes, which is not sufficient. Availability of space for ash disposal in ash dykes has already become a challenge at many existing stations of NTPC like Singrauli, Korba, Simhadri and Talcher (K). Other expansion projects such as Vindhyachal, Tanda, Farakka and Rihand may also face similar challenges. We are trying to mitigate the same through our efforts towards ash utilization.

Ash dykes in NTPC are engineered to ensure that all safety and environmental issues are addressed at design stage itself. Multi-lagoon ash ponds with provision of over flow lagoons and ash slurry pipeline garlanding arrangement for change over of ash slurry feed points have been provided for effective settlement of ash particles. Water sprinklers have been provided, wherever necessary for spraying water in dried up portion of lagoons for control of fugitive dust. Specific ash dyke raising plans for individual stations are prepared well in advance keeping in mind the expected ash generation and its utilisation potential at that station.

### Ash Utilization

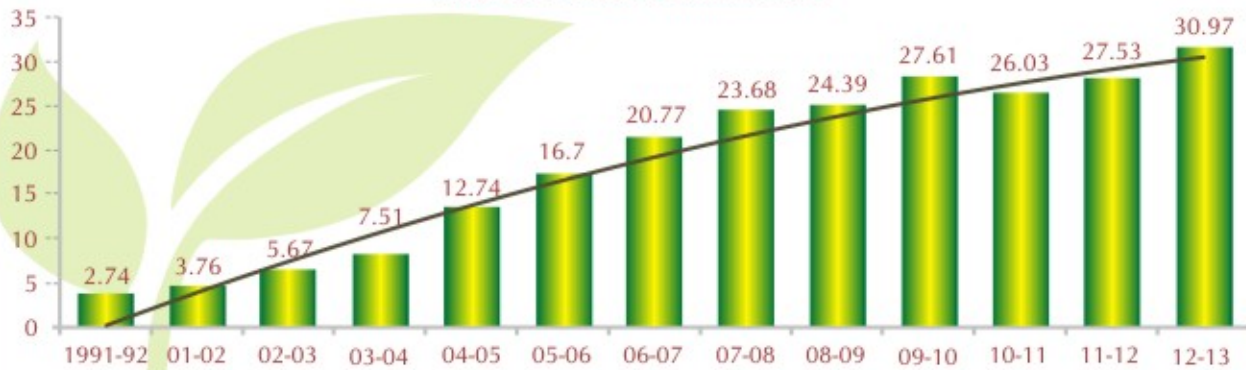
Sustainable ash utilization is one of the key concerns at NTPC. The Company strives to maximize ash utilization by increasing the quantity of fly ash issued to cement and other industries, creating rail loading facility, entering into agreement or tie-up with cement and other ash user industries etc. Saturation of certain areas of ash utilization like land development in the vicinity of thermal power plants, lack of opportunities for ash utilization at remotely located pithead stations and growing number of coal based power stations would make it more difficult for power plants to enhance fly ash utilization. Hence, options of void filling of abandoned mines and backfilling of operating mines with ash along with overburden are being explored and pursued at NTPC pit head stations for sustainable ash utilization.







**Ash Utilization (million MT)**



### **Installation of Ash Brick Manufacturing Units at NTPC Vindhyanager**

The disposal of fly ash generated from coal based Stations of NTPC is a matter of concern, as it constitutes a major portion of the coal burnt daily. Utilisation of fly ash in manufacturing fly ash bricks, which are light weight and cost less than conventional bricks, has given an added opportunity to consume a portion of this solid waste as a useful end product.

The added advantage of using fly ash in brick manufacturing is preservation of soil. This will also boost the infrastructure development by providing cheap and reliable ash bricks, without any environmental impact.

Vindhyachal Super Thermal Power Project, which already had 4 brick manufacturing units, installed 3 more such units in FY 2012 - 13 as a Sustainable Development Project. Each unit has a capacity of producing 1500 bricks per hour. Apart from fly ash, other raw materials required are sand and cement.

Ash: sand: cement:: ~ 50-60 : 32-40 : 8-10%





**Areas of Ash utilization**

- Mine filling
- Roads & Railway Embankments
- Low lying land/wasteland development
- Cement & Concrete
- Ash based Bricks - Till 2012-13, 71.3 cr bricks have been manufactured while 6.12 cr in FY 2012-13 only.
- Ash based Blocks, Tiles at NTPC Dadri.
- Agriculture- It increases the yield by 15% to 40 % depending on the crop
- Bottom ash as a replacement of sand

In the year 2012-13, total 56.29 million tonnes ash was produced by NTPC’s coal based power plants. Over the years, the Ash Utilization level has reached from a meagre 0.3 million tonnes in 1991-92 to 30.97 million tonnes in 2012-13, which is about 55.02% of total ash production

The fly ash generated at NTPC stations is ideal for use in manufacture of cement and asbestos industry, ready mix concrete plants (RMC), road embankment, mine filling, ash dyke raising and land development. 10.74 million tonnes of ash has been issued to cement, RMC and other industries in FY 2012-13.

Besides, fly ash bricks manufacturing units have been set up at all stations. NTPC uses only ash based bricks and Fly Ash Portland Pozzolana Cement (FAPPC) in most of its construction activities in all expansion projects as well as in green field projects. Many fly ash brick plants have come up near NTPC Dadri, Vindhyachal, Simhadri, Ramagundam, Sipat, Korba, Talcher- Kaniha areas, progressively increasing the utilization of ash and ash based products. NTPC has also set up mega capacity ash bricks manufacturing plants at Sipat and Dadri stations.

Year	2012-13	Cumm. upto 2012-13
<b>Fly ash Bricks Manufactured</b>	6.12 Cr	71.3 Cr

NTPC has adopted user friendly policy guidelines on ash utilisation. In order to motivate entrepreneurs to come forward with ash utilisation schemes, NTPC organizes workshops and lectures for engineers and potential users, makes documentary films and offers several other facilities and incentives. NTPC also offers all types of ash viz. Dry Fly Ash / Pond Ash / Bottom Ash along with infrastructure facilities enabling evacuation of ash free of cost, wherever feasible.



Fly ash is being sold at Dadri, Badarpur, Unchahar, Ramagundam, Kahalgaon and Farakka by NVVN (a wholly owned subsidiary of NTPC) to cement and other industries. At other thermal power plants of NTPC, presently fly ash is being issued free of cost to all users. Fly ash is also being issued free of cost at all NTPC thermal power plants to fly ash bricks, blocks and tiles industries. To prevent pollution, fly ash is being pneumatically unloaded and issued in closed tankers and bulkers to cement and other industries. For brick, block and tiles industries, fly ash is issued in moist condition and transported after covering it properly. For ensuring ash utilization, users from brick, block and tiles industries have to submit user certificate to the station.

### Compliance

There is no incidence of fines or monetary sanctions issued by any regulatory agency on environmental issues during the year. However, some of the NTPC power stations viz. Korba, Vindhyachal, Simhadri Talcher Thermal and Singrauli, were issued specific directives to make action plan for mitigation, backed by Bank Guarantee (BG).

NTPC is bound by the environmental laws and regulations, promulgated from time to time by the authorities concerned and is continuously looking for least cost, technically feasible engineering solutions for ensuring compliance of these specific directives. Frequent revision of these environmental norms and introduction of new norms, even in case of old stations, require retrofitting and upgradation of related equipments in old units and stations.

No significant oil spill has been reported during the year [More than Half a drum (100 Litres) of oil is considered significant at one particular location and in one instance].

### Environmental Expenditure

Environmental protection expenditure for the reporting period (2012-13) was about ₹ 121.4 crore. The money was spent on preventive environment management activities such as setting up and maintenance of facilities for effluent and solid waste management, environment monitoring & reporting, biodiversity conservation efforts and upgradation & sustenance of environment management systems. Environment cost benefit study is underway at NTPC Kawas to assess efficacy of expenditure done on environment protection.



# SOCIAL PERFORMANCE





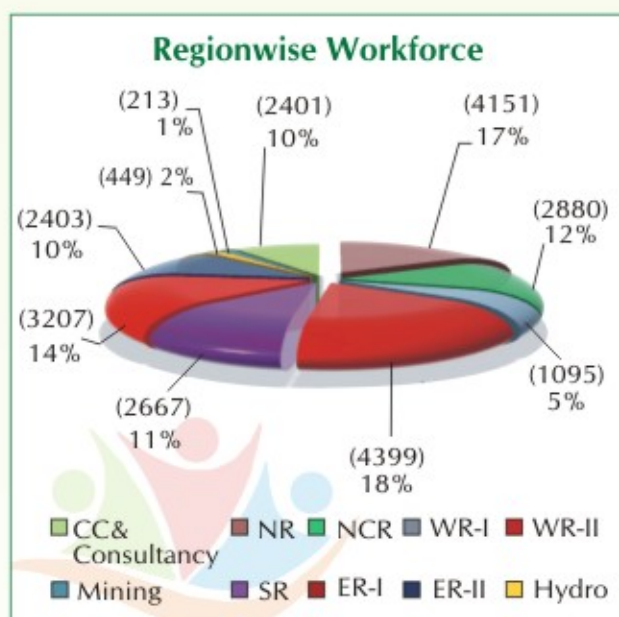


## LABOUR & WORKFORCE PRACTICES

### Employment

The Company takes pride in its employees who are its greatest resource and asset. Employees are the most important stakeholders of the Company and are at the core of its performance and success. As a commitment towards the Company's core values, employees participation in management has been institutionalised based on mutual respect, trust and the feeling of being a progressive partner in growth and success. NTPC had a highly motivated and competent regular workforce of 23,865 employees as on 31.03.2013 (excluding joint ventures and subsidiaries). For the year 2012-13, the gender wise break up of male employees reveals that the no. of males executives were 11,761 and male non-executives were 10,637. Like wise, the number of female executives were 827 and of female non-executives were 640. NTPC does not hire employees on temporary or casual basis.

Region wise employee strength as on 31.03.2013 is as below:

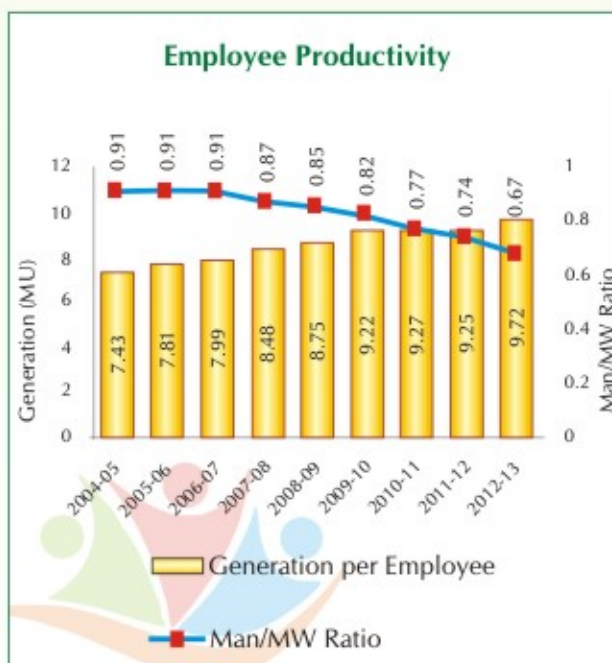


In NTPC, all employees play a critical role in the growth of the Company and there is equal opportunity provided to all of them in hiring, remuneration, access to training without any discrimination on the basis of gender, race, nationality, religion, or family status etc. People practices of NTPC are aimed to attract and retain

the best talent and contribute to their professional and personal growth. The employees of the Company are classified as Executives and Non-Executives. Induction of executives in the company is on all India basis duly notified through press advertisements, campus interviews etc. No substantiated incidence of discrimination was reported in 2012-13.

Hiring of non-executives is done at the local and regional levels with appropriate notification to the employment exchanges of the respective location. The wages of lowest level employee in NTPC, W-0, are same across all locations of NTPC, which is much above the minimum wages as stipulated by respective State Governments.

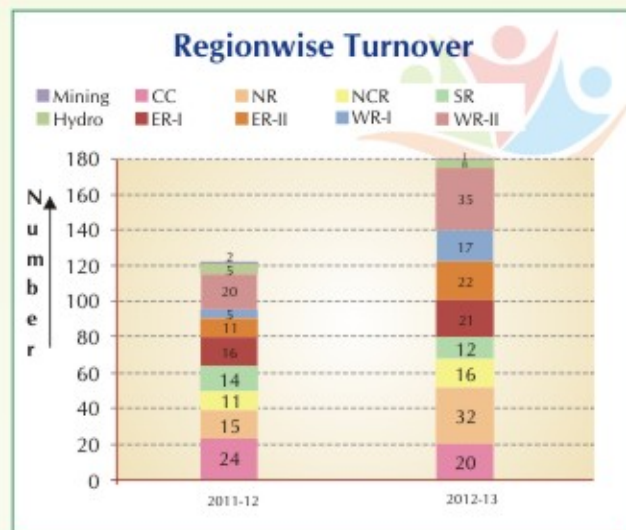
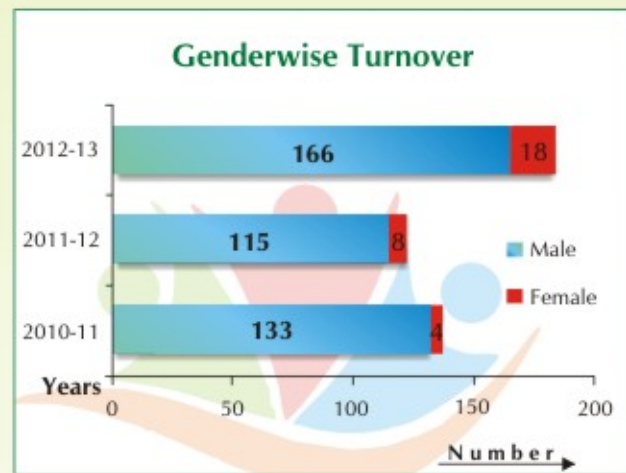
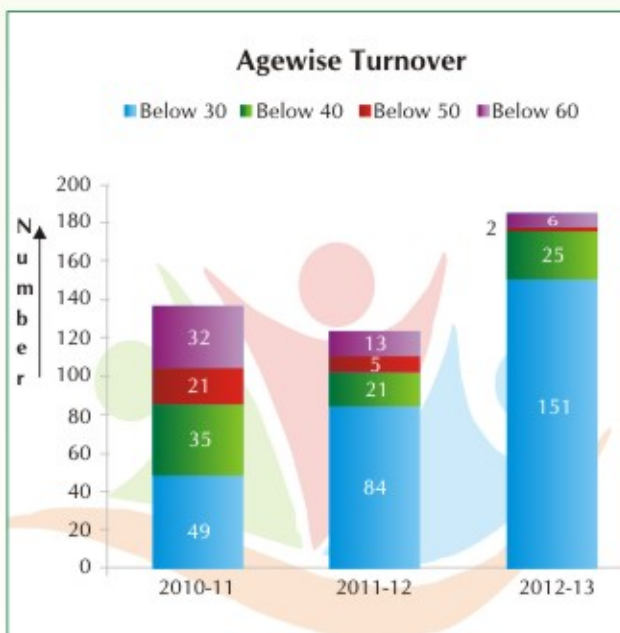
The number of workers employed with contractors varies from time to time due to dynamic nature of work. The average number of contractors' workers in 21 operating stations of NTPC, during 2012-13 was about 28000. Productivity of employees is demonstrated by increase in generation per employee and consistent reduction of Man-MW ratio year after year. Overall Man-MW ratio for the year 2012-13 was 0.67 (excluding JV/ Subsidiaries). Generation per employee was 9.72 MUs during the year based on generation of NTPC stations.



NTPC has a highly talented team of committed professionals and has been able to induct, develop and retain the best talent. The commitment of the employees is also reflected in terms of financial parameters such as sales per employee, PAT per employee, value added per employee etc. NTPC has a very low attrition rate. The attrition rate of the NTPC executives (including Executive Trainees and those posted in JVs and Subsidiaries) during the year was 1.46%. The turnover of Non-executives is small.

There is no difference on account of gender as regards salary and benefit structure in NTPC. However, as per regulation, there are some additional benefits such as maternity leave provided to women employees. A Special Child Care Leave of two years is provided for women employees which is beyond the statutory obligation of the company. ESOP (Employee Stock Option) is not a part of employees perks in NTPC. The retention rate after parental leave is 100%. Over the years, NTPC has been consistently ranked among best employers in prestigious surveys.

*The attrition rate of the NTPC Executives during the year: 1.46%.*



Percentage of employee due to retire in the next 5 and 10 years are as below:

Region	Retirement in next 5 yrs		Add retirement in next 10 yrs	
	Executives	Non-Executives	Executives	Non-Executives
CC	15.81%	28.92%	25.33%	27.47%
NR	13.33%	31.27%	25.09%	38.12%
NCR	17.92%	34.50%	22.09%	20.69%
WR1	10.69%	6.41%	19.29%	18.86%
WR2	13.95%	22.53%	20.23%	30.02%
SR	20.00%	24.39%	25.07%	37.73%
ER1	13.25%	18.02%	18.82%	30.86%
ER2	10.70%	32.06%	13.05%	20.18%
HYDRO	10.45%	23.40%	11.44%	12.77%
MINING	8.29%	5.00%	12.44%	20.00%

### Benefits to Employees

NTPC offers a range of attractive benefits to its employees and their families through various benefit

schemes. Some of the benefits provided to regular employees are:

Benefits provided to regular employees		
1.	Medical Treatment	Free medical treatment to self and dependant family members at company/ empanelled hospitals for both in-patient and out-patient treatment; Regular medical check-up.
2.	Facilities for higher studies	- Study leave - Incentives for acquiring off campus additional relevant qualifications - Long term career oriented education programmes
3.	Contributory scheme for Post Retirement Medical Facilities	- Inpatient and out patient medical expenses covered subject to limitations for both, retired employee and spouse, or for spouse, if employee has died while on rolls of the Company
4.	Separation / Insurance Benefits/ Other Benefits	- Group Personal Accident Insurance - Group Insurance - Leave Encashment - House Building Advance Insurance - Employee Death Relief Scheme - Gratuity - Provident Fund - Employees Family Economic Rehabilitation scheme - Contributory Pension
5.	Loans and Advances	- House Building advance - Multipurpose Advance - Conveyance Advance - Children Education Advance - Household Furnishing Advance

### Employee-Management Relationship

The Company upholds and supports the freedom of association of its employees by recognizing and encouraging the right of collective bargaining. Both, employees and management complement each other's efforts in furthering the interest of the company as well as its stakeholders, signifying and highlighting over-all harmony and cordial employee relations prevalent in the Company. All NTPC employees in the workman category have freedom to associate themselves with various unions and all the unionized category employees are covered by collective bargaining agreement. These collective bargaining agreements are in line with the applicable statutes and resultantly, notice period (21 days), wherever applicable, is given as per the relevant laws. Around 46 % of the total manpower is presently covered under recognized unions.

**No incidence of violation of freedom of association was reported during 2012-13. There was no incidence of unrest in the Company during the year.**

Both Management and Unions are committed to create healthy and safe working environment for all employees as per Memorandum of Agreement on Wage Revision with Trade Unions.

### Occupational Health and Safety

Occupational Health and safety at workplace is one of the prime concerns of NTPC Management and utmost importance is given to provide safe working environment and to create safety awareness among the employees. NTPC recognizes and accepts its responsibility for establishing and maintaining a safe working environment for all its employees and associates. The Company takes all such steps which are reasonably practicable to ensure best possible conditions of work. NTPC has a 3-tier structure for management of Occupational Health and Safety, covering "Stations/Projects", "Regions" and "Corporate Centre".

NTPC believes in "Zero Accidents" approach. The steps taken in this direction are:

- Generation of "Clean Power" and also "Accident free Power" by using state-of-the-art technology, use of cleaner fuel, world class operation and maintenance practices and excellent housekeeping.
- Playing a Leader's Role in the creation of safety consciousness among employees and stakeholders by conducting various training programmes, awareness programmes and road shows.
- Using systems approach by adopting and implementing ISO-14001, ISO 9001-2000, OHSAS-18001, 5S, Six Sigma, Benchmarking etc. as per International Norms and getting certified by world class certification agencies

**Through our continuous efforts in safety, frequency rates have come down considerably during previous years. Many of our plants have been awarded prestigious safety awards conferred by various Institutions/Bodies like Ministry of Labour and Employment-Govt. of India, National Safety Council, Institution of Engineers (India) etc. in recognition of implementing innovative safety procedures and practices and reducing accidents.**

- Participation in onsite & offsite emergency plans and playing a Leader's Role among neighbouring industries in association with State Government.
- Regular plant inspection and review with Head of Project are being undertaken. Internal safety audits by safety officers of NTPC and external safety audits







by reputed organizations are carried out at each Project/Station every year. Recommendations of auditors are regularly reviewed and complied with. Cross Functional Safety Task Forces are functional at all sites to monitor unsafe working conditions and taking remedial actions.

- Height permit and height check list are implemented to ensure safety of workers while working at height.
- Adequate numbers of qualified safety officers are posted at all units as per statutory rules and provisions to look after safety of men and material. For strict compliance and enforcement of safety norms and practices by contractors, safety clauses are included in General Conditions of Contract.

To mitigate the on-site emergencies at all operating stations, effective engineering controls are provided to indicate and handle emergency situation. Detailed emergency plans have been developed and responsibilities have been assigned to all concerned to handle the emergency situations. Regular mock drills are conducted as per statutory requirement to check the healthiness of the system and observations are complied with. Awareness program are also conducted.

100% workforce is represented in formal joint management-worker health and safety committees to help monitor and advise on occupational health and

safety programmes. Through continuous efforts in safeguarding the employees, accident rate has come down as compared to last year. Health awareness and check-up camps were organized routinely at the plant. NTPC also provided education, counselling, training, aids and appliances on health aspects at all stations, which benefitted employees, their family members, school children and villagers. As a policy, annual comprehensive health checkups for the employees above the age of 45 years and once in two years for the employees in the age group of 40-45 are taken up. These annual checkups have led to timely diagnosis of diseases and life style changes of many employees. No occupational disease has been reported in NTPC during the reporting period 2012-13.

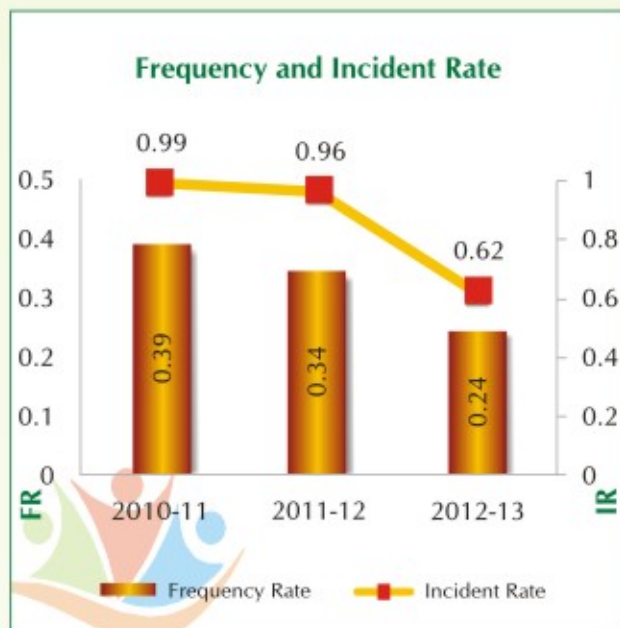
Training programmes for contractors' employees are being conducted at all sites on regular basis covering all relevant occupational health and safety aspects. The percentage of employees undergoing such trainings is about 70-80% every year.

Total full time equivalent days put in by the workers of the contractors involved in plant activities are about 76 lakh mandays.

Accident data for the year at 21 operating stations is given in key data at a glance. There were no fatalities of female employees during the reporting period.



NTPC has an elaborate monitoring mechanism for all safety incidents across its operations. Periodic performance reviews at the apex level helps in reducing the safety incidents on a continuous basis. During the year 2012-13, NTPC recorded an injury rate of 0.047 per 100 workforce. In FY 2012-13, the frequency rate and incident rate reduced to 0.24 and 0.62 as compared to 0.34 and 0.96 respectively in FY 2011-12. NTPC strives to improve upon its safety performance to ensure a safe working environment.



Region wise safety data in 2012-13 is as under:

No.	Region	Total Reportable		Total mandays lost	FR	IR
		Fatal*	Non-Fatal			
1	NCR	2	6	12590	0.5	1.17
2	ER I	0	2	76	0.14	0.34
3	ER II	1	1	6081	0.15	0.36
4	WR I	0	0	0	0	0
5	WR II	2	5	12255	0.17	0.52
6	NR	3	0	18000	0.14	0.36
7	SR	2	5	12286	0.45	1.12
<b>Total</b>		<b>10</b>	<b>19</b>	<b>61288</b>	<b>0.24</b>	<b>0.62</b>

\* For NTPC employee - NIL

**Frequency Rate (FR)** = Total Reportable Accident X 10<sup>6</sup> / Total Man Hrs. Worked

**Incident Rate (IR)** = Total Reportable Accident X 1000 / Avg Employment in the year

### Training and Awareness

NTPC has conducted various safety awareness programmes conducted by in-house and external faculty to educate the workforce including workers of contractors through class room lectures. Apart from the class room training and lectures, pep-talks are conducted at work locations with job specific safety precautions regularly. Several educational, training, counseling, prevention and risk control programs are also in place to assist employees and their family members regarding serious diseases.

The contractors' labour (unskilled, semi skilled and skilled) is imparted with various skill development





trainings organized by NTPC. Mandatory medical tests before engagement in Power Station and project are followed before issuing of gate pass to the contracting agencies. Trainings on first aid programme are also organized.

For new employees, safety induction training is imparted before they are deployed in the power station. For other regular employees, safety training is imparted based on training need analysis and job requirement etc. Safety training to contract workers is imparted as and when required on different safety subjects.

Employees are also sponsored for outstation safety training programmes organized by reputed safety organizations like National Safety Council, Institution of Engineers (India), etc. Safety training programs are also organized for ladies as well as for the school children of the NTPC township as well as in the vicinity.

To motivate employees and their families, NTPC celebrates National Safety Day, Safety Month, Fire Services Week etc., every year. As in-house training institutions, Power Management Institute (PMI) and its associated Employee Development Centers (EDCs) continuously strive to support capability development through training not only for NTPC employees, but also for the employees of other power utilities in the country. PMI is an institute accredited by CEA for capability development in the sector. Presently, the power sector business environment in our country is changing with the introduction of supercritical technology on the one hand and scarcity of domestic fuel on the other, alongwith rapid changes in the economic and political

scenarios. As per the 12<sup>th</sup> Plan Working Committee report, there is an estimated requirement of about four lakh additional trained manpower for the projected capacity addition in power sector. The new generation has diversified interest, and motivating them for working in the sector needs special approach. In this background, the challenges before PMI and the EDCs are:

1. Gearing up for imparting training in Supercritical / Ultra-supercritical technology for a large number of new entrants in the sector and refreshing the existing manpower with new technology.
2. Generating and sustaining adequate motivation among the new entrants in the sector.
3. Developing strategic leadership for the sector in the changing business scenario.
4. Enabling all the EDCs to be an accredited training institution, so that they are part of the total capability building process.

#### Achievements in FY 2012-13

- Launching of Project 'UDAAN' by PMI - a special initiative of the Ministry of Home Affairs for capability building of youths from Jammu & Kashmir.
- 38 number of sponsored programmes conducted including programme for AES Srilanka, Doosan Korea and Zimbabwe Power Corporation.
- Rolling out of training system in ERP for all projects/stations/regional HQs of NTPC.
- Conducting 8 number of programmes through video conference and web conference.

Programme	Education/ Training		Counselling		Prevention/ Risk control		Treatment	
	Yes	No	Yes	No	Yes	No	Yes	No
Workers	✓		✓		✓		✓	
Workers Families	✓		✓		✓		✓	
Community Members	✓		✓		✓		✓	



In line with its objective of being a learning organization, NTPC has continuously promoted training and development of not only its own employees but also other professionals of the power sector. We allocate high priority to employees' training. We consider this a key requirement for the achievement of our HR vision in a sustainable manner. Knowledgeable, committed and experienced employees are our biggest asset. In this effort, NTPC has endeavoured to continuously upgrade the training infrastructure of both Power Management Institute (PMI) at the corporate level as well as the Employee Development Centres (EDCs) at the sites. The training imparted is always in tune with emerging needs in diverse areas like nuclear power, coal-mining, hydropower, super-critical technology, renewable energy etc. For this purpose every year some new programmes are included in the annual training calendar. Apart from this, the usual programmes include managerial topics, power station operation & maintenance, project construction, erection & commissioning and information technology..

The breakup for average hour of training for FY 2012-13 per employee by employee category is given in key data at a glance.

At NTPC, taking care of employees' intellectual and growth needs and promotion of a cohesive work culture is high priority. Employees are given the opportunity to work at different locations based on preference, career needs and organizational requirement. All the executives receive performance feedback during mid year review and final appraisal as per the Performance Management System. The non-executives are also given feedback regarding their performance. With a view to differentiate performance and reward high performers, NTPC has introduced a performance related incentive scheme.

The training requirements of our employees are assessed based on role, domain and individual needs. The training institute regularly analyses the effectiveness of training programme and comments from participants. NTPC training policy envisages minimum 7 mandays of training per employee per year.

NTPC invests in training and development to enable all employees to perform to the best of their ability and to support their career progression. The Company attracts and retains the best and the brightest people and helps them develop their potential. In 2012-13, it imparted 33,217 mandays of learning and development to 11,794 employees at all levels for skill management and life long learning.

NTPC, for the first time, conducted an all-women executives training programme titled 'Let's Cherish

Womanhood' on the issues and challenges of women executives in managing home and office together.

NTPC also took the initiative of taking training programmes to the doorstep of the site employees.

In collaboration with Corporate Centre-IT group and CenPEEP department, 'Efficiency Overview and Perform Achieve and Trade Legislation' programme was launched through Web Conferencing.

In order to promote holistic well-being of employees and their families, Pranic Healing was started through Holistic Wellness Foundation of NTPC.

NTPC has tied up with reputed institutes like MDI Gurgaon, IMI Delhi, IIT Delhi, BITS Pilani for providing opportunities to the interested employees to upgrade their skills and knowledge. For mid level executives, there is one year MBA program at MDI Gurgaon and IMI Delhi, which includes a foreign stint. The customized M.Tech. program in Power Engineering through IIT Delhi is also targeted at the mid level executives with experience who wish to upgrade their academic profile.

For employees with qualification of Diploma in Engineering who wish to upgrade themselves with a graduate course, a tie up has also been made with BITS Pilani. Similarly a tie up has also been made with Jamia Millia Islamia for a course in Diploma – Power Engineering for personnel with ITI qualifications. For both these courses, classes are organized at the plant level to enable the interested employees to pursue the course while being on normal official duty.

Employees are groomed in their respective career paths through consistent career linked planned interventions and long term educational programmes. The courses are designed to cater to organizational needs and match it with individual learning.

NTPC conducts well over 3000 programmes every year, aimed at enhancing the knowledge and skills of its employees. These are divided into two broad areas: Need based and Planned Interventions. Need based programmes are typically conducted over 3-5 days while planned intervention programmes are of longer duration, typically over one week. Planned intervention programmes aim at equipping employees with additional knowledge and skills when they are elevated to higher positions in the hierarchy. An employee attends these planned intervention programmes at intervals of 3-5 years, appropriate to his level. Over the years, these programmes have been found to be very effective and through such interventions, employees are made ready to tackle all possible situations.

In a year, NTPC conducts on an average 10-15 planned intervention programmes across all units and offices to



cover employees at various levels. At a lower level of targeted employees, these programmes are conducted at Stations and Regional headquarters while for employees at levels of Senior Managers and above, these are conducted by PMI, Noida. Similar to these, there are programmes for non-executive levels also. NTPC also conducts a 3-days pre-retirement workshop

for the employees concerned so that they are well advised before entering retirement life. The workshop is conducted by external experts and covers topics such as sound financial management and preventive health protection.

Details of such programmes held during 2012-13 are as follows:

Programmes held during 2012-13				
Name of Programmes	No. of participants	Mandays	No. of Hrs.	Average No. of Hrs. per Employee
AMC	35	420	3360	96
EMC	12	144	1152	96
CAPSULE COURSE	13	156	1248	96
FOUNDATION COURSE	41	533	4264	104
EXEC. DEVELOPMENT COURSE	168	3380	27040	160.95
DEPT.EXAM CLASSES	3541	10595	84760	23.94
PRE-PROMOTION TRG	686	3434	27472	40.05
ANY OTHER PROGRAM	7298	14555	116440	15.96



## SOCIETY

NTPC has a well structured process for community engagement and development. The Company is committed to the growth and progress of these communities who are its important stakeholders. The Company also has specified programmes for inclusive growth and equitable development not only at station level but at country level. Formal and informal meetings are organized to understand the needs of communities and their expectation from the Company. Some of the areas of our initiatives and programmes undertaken are described below:

### Education

The Company has aligned its education related initiatives with the Government's national programs. Some of the activities undertaken in the area of education are :

- Support was extended for construction of Engineering college in Korba and Polytechnic training institute in Kayamkulam.
- Support was extended to Ramakrishna Mission, New Delhi for conducting various activities under the banner "Awakening India" heralding the 150<sup>th</sup> Birth Anniversary Celebrations of Swami Vivekananda
- Financial support was provided for purchase of equipments for the school Kathashala at Govindpuri, New Delhi to KATHA, an NGO
- Construction of individual girl toilets at govt. schools has been taken up by various NTPC stations, so as to support education of girl child and reduce dropout rate of girls from schools.
- For providing motivation for education and awareness on non conventional energy, NTPC took up distribution of Solar Lamps to approximately 900 meritorious students of village schools.
- 23 schools, run by NTPC predominantly for the neighbourhood community, have been benefitting more than 20,000 students belonging to communities around its stations

- Various activities like distribution of scholarships, uniforms, books, bags and other stationery items to the students and creation of assets and infrastructure support has benefitted more than 350 village schools.

### Adoption of ITIs:

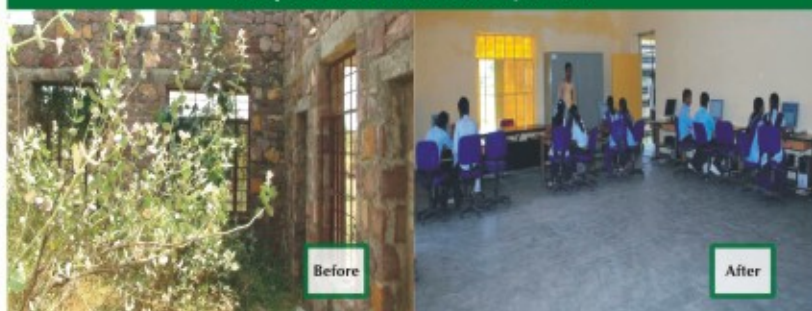
The country has an ambitious power development plan for the 12<sup>th</sup> plans period (2012-17). As a leading power Company, NTPC is expected to make power contributions. One of the major bottlenecks that can come in the way of achieving these plans is shortage of skills at the technician level. Even today, NTPC and various contracting agencies are experiencing the huge shortages of skilled manpower resulting in project delays. Unless an urgent corrective action is taken, the shortage is likely to aggravate.

In view of criticality of the issue, Ministry of Power has called upon PSUs and other power utilities strengthening the Industrial Training Institutes (ITIs) across the Country.

NTPC has taken the initiative of adopting ITIs/ setting up new ITIs near its power generating stations/ projects. Till 31.03.2013, NTPC was associated with 26 ITIs. NTPC adopted 17 existing Govt. ITIs, out of which 14 ITIs had been adopted under PPP scheme of Gol and 3 ITIs were being up-graded under Bilateral Agreement with respective State Govt. Besides, NTPC is also setting up 9 new ITIs at places as given below:

1. Chatra (Jharkhand)
2. Salakati (Kokrajhar, Assam)
3. Solapur (Maharashtra)
4. Balouda, Bilaspur (Chhattisgarh)
5. Chorbhatthi, Korba (Chhattisgarh)
6. Naktu, Sonebhadra (UP)
7. Barkagaon, Hazaribagh (Jharkhand)
8. Salhawas, Jhajjar (Haryana)
9. Nabinagar, Aurangabad (Bihar)

Adoption of ITI at Anta (Rajasthan)



- Total 3430 nos. of students taken admission in these ITIs in 2012-13.
- Through this initiative, total 1533 new seats have been added by way of starting new trades/ units in these adopted & new ITIs till 31.03.2013.
- An expenditure of Rs 12.81 Cr. has been incurred in 2012-13 for up-gradation of existing Govt. ITIs and establishing new ITIs with total cumulative expenditure of Rs. 33.20 Cr. since 2009-10.



## Health

Assessing community health and creating awareness of healthy living is another CSR thrust area for NTPC. Some of the activities undertaken in are of health during 2012-13 are:

- Access to health care facilities for the neighbourhood community at nominal charges at NTPC hospitals.
- The Company has a specific scheme for providing medical facilities to the Project Affected Persons (PAPs) and their families wherein a high subsidy is given for consultation charges and for indoor treatment in NTPC Hospitals.
- Directly Observed Treatment cum Designated Microscopy Centres (DOT cum DMC) with mobile ambulance facilities are being run by 12 NTPC hospitals through NTPC Foundation under Revised National Tuberculosis Control Programme (RNCTP) that caters to villages up to radius of 25-30 km, benefiting 5550 people during 2012-13.
- Mobile Health Clinic facility was started by Stations to provide quality health care at the doorstep of neighborhood villages.
- More than 70 medical camps of various types for local villages including those for detection and treatment of respiratory diseases like TB and lung cancer, eye check up camps and general health checkups were conducted. During the camps more than 2100 surgeries of various nature were performed.
- Other activities like fogging, spraying anti larva chemicals and support for Health Infrastructure was provided in about 200 villages during the year.
- Support was extended to Odisha Govt. to meet medical emergencies by providing essential drugs during monsoon period.



## Capacity Building

Based on the need of the local community in the neighborhood of its stations, NTPC took up various vocational training programmes such as computer training, motor driving, general electrical repairing, mobile repairing, fitter, refrigeration & air conditioning repair, masonry, shuttering etc for the youth. Various coaching classes were organized for village children. NTPC is implementing the project called "Improvement in Quality of Life of Rural Poor to create Self- Reliance by increasing Participation in Community Development Work" around its Kahalgaon Station.

With the objective to enhance employability of the youth from J&K and thereby make them part of the growth story of the country, NTPC has been entrusted with the responsibility of capability development for 1000 Engineers in next five years. Under the scheme UDAAN, a Special Industry Initiative for the youth of J&K has been launched by the Ministry of Home Affairs under recommendations from the Expert Group constituted by PMO.

NTPC was the first PSU to launch this scheme by inducting and training the first batch of young Engineers from the state of Jammu & Kashmir. The batch was inducted on 20<sup>th</sup> Nov' 2012 for a 36 week training programme in "Power Plant Operation and Maintenance".

## Women Empowerment and Skill Upgradation

### Case Study

NTPC has taken up a project for skill development for employability at Badarpur to support the marginalised and BPL segments helping them in income generation. The project is an ongoing activity which is run by enthusiastic volunteers of "Sampriti" an NGO formed by NTPC employees. The project was started in 2010. Upto FY 2012-13, 236 women have been trained in 9 batches in courses like dress making, beauty culture and healthcare. These women have been given certificate and initial kits for support.

Some trained women:

- 1) have set up their own parlor
- 2) have got employment in parlors
- 3) are working on occasions of marriages, festivals and parties for applying mehendi etc
- 4) formed a Self Help Group which is functioning for earning livelihood with "Sampriti"

The project impacted neighbourhood women in creating self employability and earning capability.



Women Empowerment is high priority for NTPC. During the year, the following activities were undertaken for woman empowerment:

- Various vocational training programmes for women in the neighbourhood villages of its stations including dress designing, beautician, embroidery hair & skin care etc. were taken up.
- Skill- up gradation programs in sewing for women population in the neighbourhood villages to promote self-employment were conducted by stations, including providing sewing machines. It covered more than 600 women.



### People with Special Ability

NTPC works towards the integration of people with physically challenged people into mainstream society through programmes that encompass rehabilitation, employment, training, education, consultation to maximise their potential and to help them to be self-reliant and independent. Some of the activities and programmes are as under:

- Information and Communication Technology (ICT) centers, established by NTPC Foundation at Delhi University and New ICT centres have been started at Guwahati University and Devi Ahilya Vishwavidyalaya, Indore for providing IT education to physically & visually challenged students. This has benefited about 174 students during 2012-13.
- Stations took up activities to benefit physically challenged persons like distribution of dress, bags, study material, reimbursement of school fees etc., to school children, distribution of tricycles and providing medical appliances
- Disability Rehabilitation Centers (DRCs) at NTPC Tanda, Rihand, Korba, Dadri and Bongaigaon established in collaboration with NTPC Foundation and National Institute for the Orthopaedically Handicapped (NIOH), under the Ministry of Social Justice and Empowerment, Government of India, benefited about 4200 physically challenged people during 2012-13.

The DRC serves in the area of:

- i. Prevention & early detection
- ii. Medical intervention & surgical correction.



- iii. Fitment of artificial aid and appliances.
- iv. Therapeautical services such as physiotherapy, occupational & speech therapy.
- v. Vocational Training for acquisition of skills.
- vi. Job placement in local industries

### Drinking Water and Sanitation

In order to improve community life in the neighbourhood, NTPC has been undertaking various activities for providing access to safe drinking water and sanitation. Some of the activities taken up during 2012-13 are:

- Piped drinking water scheme at various stations.
- Hand pumps, bore wells and RO water plants have been provided at various locations.
- During acute summers, water supplied through tankers in nearby villages.
- Renovation of water bodies for maintaining water table.
- Installation of 27 hand pumps completed in District Dhanbad of Jharkhand.
- Construction of community toilets at various locations.
- Construction of individual toilets at different locations.

### Infrastructure

NTPC has been striving to provide better facilities with construction of roads, community centres, lighting, access to water etc around its stations. Activities undertaken in the area of infrastructure creation are:

- Installation of 10 High Mast Lights, in Berhampore district of West Bengal.
- Solar Power System in three municipal corporations of Raibareli, Bacharvan and Lalganj in Raibareli District.
- Installation of 36 solar street lights at different locations in the Barabanki district in Uttar Pradesh.
- NTPC has provided financial Assistance for Infrastructure development works for relocation of





occupants of Shram Nagar to the identified site at Korba.

- Construction of 24 patches of cement concrete roads aggregating about 2.5 km in various villages in District Chhindwara, Madhya Pradesh.
- Kahalgaon station has taken up infrastructure development work such as construction of road, sanitation, drinking water and electrical lightning



work in 6 villages, 3 each in Bhagalpur and Godda Districts.

### Rural Sports

NTPC also lays stress on rural sports and its projects conduct rural meets on annual basis. It also encourages local schools in the vicinity to conduct games and tournaments. It provides them facilities such as sports equipment, grounds etc. Inter School Sports Meet within the projects are also held on a regular basis to identify young talent among the children of employees as well as neighbourhood communities.

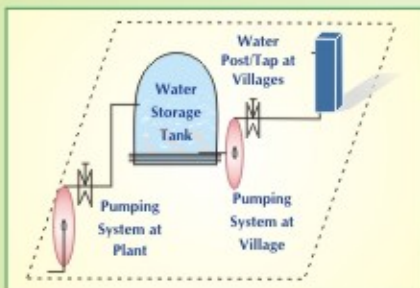
### Natural Calamities

NTPC has been providing relief assistance at the time of Natural Calamities to Chief Ministers' Relief Funds through financial, material & manpower support from stations, regions and corporate centre.

## Creation of Infrastructure for Supply of Drinking Water

### Case Study

NTPC has taken up measures to mitigate the drinking water crisis in the vicinity of its Talcher plant. The project was aimed to provide year round drinking water throughout the year to the population of 20 villages in the periphery of plant. The scheme provides treated & potable water through reservoir and pipelines to villagers.



The project involved villagers and Rural Water Supply & Sanitation (RWS&S) department for implementation of the scheme. The scheme is self-sustainable. The project was planned in 2009 & completed in 2012-13. The community people are completely satisfied with the intervention.

The project impacted life of 100% households of 20 villages by providing safe drinking water from nearby taps resulting in following benefits:

- Reduced hardships for women and girls engaged in collecting water from long distances.
- Girls' students enrolment in schools has increased by 90%.
- Incidence of water born diseases diarrhoea, cholera and other diseases was substantially reduced, as brought out from the OPD records of the TTPS Hospital as well as patients enrolled during various health camps organized by the station.

## Solar lighting systems in nearby areas

### Case Study

As a step forward towards promoting clean energy usage and social responsibility, NTPC has taken initiative to provide solar lighting systems near NTPC Unchahar in three nearby Municipality Areas (Bachrawan, Lalganj and Raibareli).

The project was undertaken in partnership with MNRE which provides 30% subsidy on Solar Systems. The project also involved local communities in implementation, promoting locals loyalty and amity with NTPC. The system provided standalone street lighting system at Lalganj (250 units) and Bachrawan (350 units) panchayat areas, and solar PV system at four locations in Raibareli area.



### Managing Displacement of Local Residents

Involuntary resettlement may result in long-term hardship and impoverishment for affected persons and communities, as well as environmental damage and social stress in areas to which they have been displaced. In NTPC, a detailed Socio Economic Survey (SES) is carried out by a professional agency to collect the detailed information of project affected persons and is normally completed within a period of 5-6 months. The SES is generally conducted immediately after land boundaries are frozen and preferably after notification under section-4 of land acquisition act for a project. During the year, SES was completed for Darlipali, Lara, Barethi, Gadarwara, Chatti Bariatu (South) and Dhuvran projects and is in progress at Bilhaur project.

SES covers status of each Project Affected Persons (PAP), ownership of movable and immovable property, deprivation of property including land, structures, trees, houses either occupied or owned with tenancy rights or even as encroachers, loss of property, loss of job due to physical re-location, loss of access to income generating resources, deprivation of community life etc.

Based on the survey report, an R&R plan is formulated to address all Rehabilitation and Re-settlement issues in consultation with affected persons and district administration based on State Policies, National R&R Policy and NTPC R&R Policy. Implementation of R&R Plan is started after obtaining approval from State Govt.

NTPC tries to acquire minimal houses/ hamlets to avoid physical displacement of persons to the extent possible. It provides free of cost plot in resettlement colony and resettlement grant, shifting grant etc or self-resettlement grant for self relocation to homesteads in consultation with homestead oustees and district administration. Only a few persons were displaced due to construction/ expansion of projects and all have been resettled and relocated satisfactorily.

For restoration of livelihood of the affected persons, Rehabilitation grant and annuity is being provided as decided in consultation with affected persons and district administration and approved by the State Govt concerned

### Managing Organizational Risk related to Corruption

NTPC has a "Fraud Prevention Policy" for reporting of frauds or suspected frauds involving employees of the Company or other parties doing business with NTPC. The policy has been framed to provide a system for detection and prevention of fraud, reporting of any fraud that is detected or suspected and fair dealing of matters pertaining to fraud. The policy has been described under the section Organizational Policies.

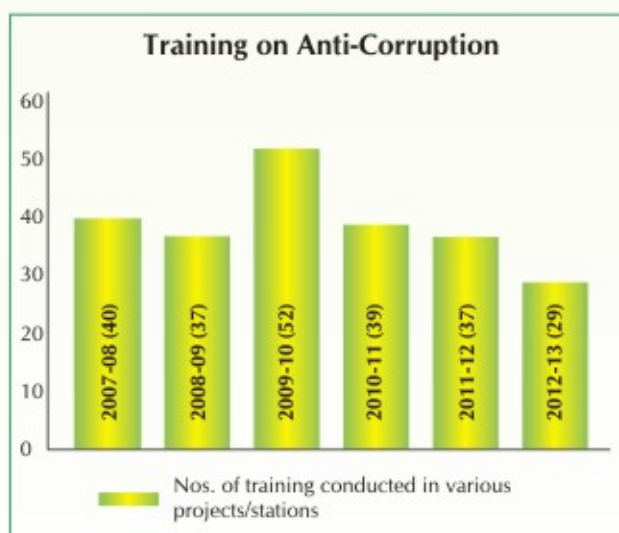
NTPC has a Vigilance Department which is headed by Chief Vigilance Officer (CVO) who is a nominee of Central Vigilance Commission. NTPC has made it mandatory for all the projects and stations to award the

packages above ₹ 15 lacs through e-procurement. NTPC has signed a MoU with Transparency International India and the integrity pact is being implemented for all contracts of value exceeding ₹ 10 crore. Further, for all packages involving ₹ 100 crore or more, two Independent External Monitors have been nominated by Central Vigilance Commission.

To have a close monitoring of the heavy expenditure, Quarterly Progress Reports are collected from all the departments where the value of Contract or Procurement is exceeding a predetermined threshold value. In addition, normal preventive checks are also conducted by Project Vigilance Executive and Technical Cell at Corporate Centre. The Vigilance Department submits its report to the competent authority and also to the Board of Directors. As per the directive of DoPT/MoP, the property returns of all the executives have been published on NTPC website. During the year 2012-13, all 21 operating stations were analysed for risk related to corruption.



Preventive Vigilance Workshops are being conducted every year to sensitize employees about DO's and DON'Ts in work areas and their role in preventing corruption. During the Vigilance Awareness Week, a compendium of circulars and a Handbook on Preventive Vigilance and Case Studies were also issued. The issues related to contractors are also addressed to their satisfaction during Customer Meet organized during Vigilance Awareness Week.



As a part of creating awareness amongst employees, posters and banners in Hindi and English language have been displayed at important places at all the plant locations and offices.

During FY 2012-13 the following vigilance cases were finalised:

- Two cases of major penalty proceedings resulting in issuance of warning to one employee and imposition of penalty of 'stoppage of increment' to another employee.
- \*16 cases of minor penalty proceedings resulting in:
  - i. Imposition of penalty of 'Censure' on three employees
  - ii. 'Reduction to lower stage' on four employees
  - iii. 'Withholding of promotion' on two employees
  - iv. 'Stoppage of increment' on three employees
  - v. 'Suspension without wages for 4 days' on four employees.

*\*Additionally, 4 administrative cases*

### Public Policy Participation

NTPC is a corporate member of a number of Chambers and Associations including SCOPE, FICCI, CII, TERI, ITRHD, WEC etc. and participates in these forums for public policy issues.

NTPC is in electricity generation business. Whenever stakeholder comments are sought by relevant authorities on key public policy development issues such as Electricity Tariff Regulations, Electricity Policy, Grid Code etc, NTPC makes appropriate submission to the authorities keeping in view the overall development of power sector.

Impact of regulatory policies is always associated with company performance and hence these policies are deliberated with due diligence and support is extended to regulators. Policy advocacy for betterment of sector is always carried out and representations are made against Regulators decisions whenever felt necessary after critical analysis.

The company does not give any contribution (in-kind or in-cash) to political parties, politicians and related institutions of the country.

Due care is taken to ensure that the Company complies with all the statutory as well as voluntary requirements. There was no instance of non-compliance with laws and regulations pertaining to provision and use of products and services.

### No fines or penalties were imposed on NTPC during the reporting period

As on 31.03.2013, no case is pending by any stakeholder for unfair trade practices, irresponsible advertising and anti-competitive behavior.

During the FY 2012-13, 42 investor complaints were received, out of which 41 complaints were resolved and only one complaint remained pending to be resolved through web based complaints redress system 'SCORES' (SEBI Complaints Redress System).

As regards customer complaints, which were filed by NTPC or by different beneficiaries of NTPC against CERC orders/ APTEL Judgements related to NTPC, total 91 cases are pending, as on 31.03.2013, out of which 23 cases are with Appellate Tribunal for Electricity (APTEL) and 68 cases are with Supreme Court.

In addition, 16 cases are pending in various consumer forums of the country on other matters.





## HUMAN RIGHTS

NTPC believes that the human resources are the backbone of the Company, in driving operational and financial performance. Both, men and women are treated with equal respect and dignity and it is strictly ensured that all aspects of human rights viz. transparent investment and procurement practices, prevention of discrimination, freedom of association and collective bargaining, prohibiting child labour and preventing forced labour, safety and security practices towards zero accident, indigenous rights etc. at work place are maintained by the organization. All our contractual agreements, tenders and suppliers agreement are in line with the provisions of Factories act and labour laws w.r.t human rights.

### Human dignity

The above commitment is reinforced by the fact that NTPC is a member of Global Compact, a UN initiative and is committed to adhere to its principles in the areas of Human Rights, Labour, Environment and Anti-corruption. NTPC is one of the founder members of the Global Compact Network India. The provisions pertaining to Labour, Welfare, Safety, Insurance etc. are being specified in the bidding documents and the contractor or its subcontractors are required to act in accordance with the aforesaid provisions.

As part of the induction training, newly joined

executives are made aware about company's policies and procedures which includes human rights. Security personnel at NTPC are from Central Industrial Security Force (CISF) who are well trained in human rights aspects. During the year, no case of human rights violation was reported in NTPC.

For addressing the issue of labour standard in a comprehensive manner, NTPC has adopted international standards like SA-8000 and OHSAS-18001. Thirteen NTPC stations have been certified for SA 8000 in previous years. During the year 2012-13, NTPC Jhanor Gandhar and NCPP-Dadri stations revalidated its SA 8000 certification. Revalidation for the same is under process at Auraiya, Singrauli and Unchahar. Surveillance audit for SA 8000 has been carried out at Anta, Auraiya, Badarpur, Farakka, Kayamkulam, NCPP Dadri, Ramagundam, Rihand and Simhadri.

### Prevention of discrimination at the workplace

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





creed, colour, gender and religion. There was no incident of discrimination reported in the reporting period.

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

NTPC encourages the formation of employee unions and associations to maintain harmonious employee relations. Employees freely exercise their rights to form unions and associations to espouse their cause. The issue of mutual interest are periodically discussed and resolved with employees' representatives. There was no operations identified in which the right to exercise freedom of association and collective bargaining may be at significant risk. There was no incident of violation involving rights of indigenous people and right to exercise freedom of association and collective bargaining in the reporting period.

### **Prohibiting child labour and preventing forced and compulsory labour**

NTPC address all the issues of Human Rights including gender equality, child labour, forced and compulsory labour, requirements of minimum wages etc. NTPC does not employ any person below 18 years of age and there are provisions in contractual conditions wherein contractors are also not allowed to employ child labour. NTPC projects and stations are protected places and there are checks and balances to eliminate any possibility of employing child, forced or compulsory

labour. NTPC also ensures that its contractors strictly comply with the same guidelines. Appropriate systems and checks have been put in place to ensure that all contractors' workers are paid minimum wages and are given all the benefits stipulated in various laws. The Company ensures compliance to Factories Act and Labour Laws at all its operations through periodic reviews. None of its operations were found to have risk of child, forced or compulsory labour in FY 2012-13 and no complaints were received in this regard.

### **Employee Grievance Mechanism**

Employees grievances and complaints, which are primarily manifestation of their dissatisfaction against their working conditions, managerial decisions etc. if not promptly attended to, may lead to serious situations. For redressing the grievances of employees, NTPC has established a time bound Grievance Redressal Mechanism for all employees at each project. The Employee grievances are also captured through different forums like participative forums, communication meetings, employee organizational climate surveys etc.

The objectives of the grievances handling system are:

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





## PRODUCT RESPONSIBILITY

Customer satisfaction is very important for a company like NTPC. The Majority of NTPC's customers are electricity utilities owned by state governments. Safety is embedded in our operations. Though NTPC is not directly involved in the business of transmission and distribution, it offers support services to its customers on technical and managerial areas as per specific requirements of the customers. Customer support activities in the form of workshops and seminars are being provided to the customers in different functional areas including health and safety aspects. The objective is to share NTPC's expertise and best practices with its customers.

### Programs to improve access to electricity

NTPC extensively participates in various sector development programmes of Ministry of Power, GoI, so as to ensure inclusive growth in the power sector. Some of these are as below:

#### 1. Re-Structured Accelerated Power Development and Reforms Programme (R-APDRP)

Ministry of Power, GoI, has launched the Restructured Accelerated Power Development and Reforms Programme (R-APDRP) in July, 2008 with focus on establishment of base line data, fixation of accountability, reduction of losses through strengthening & up-gradation of Sub Transmission and Distribution network. NTPC played an important role in the programme.

#### 2. Rural Electrification Programmes

NTPC, through its wholly owned subsidiary NESCL, is contributing towards carrying out the implementation of the rural electrification scheme called "Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY)" launched in April 2005 with the goal of electrifying all un-electrified villages and hamlets and providing access to electricity to all households.

#### 3. Jawaharlal Nehru National Solar Mission (JNNSM) Programmes

NTPC Vidyut Vyapar Nigam Limited (NVTN), the trading arm of NTPC, has been designated, by Government of India, as the Nodal Agency for implementing "Jawaharlal Nehru National Solar

Mission" with an objective to undertake business of sale and purchase of solar power.



Facilitated by NVTN, 468 MW of solar PV capacity has been commissioned till March, 2013 and further, around 500 MW solar PV projects are scheduled for commissioning during 2013-14. During the year 2012-13, the Company transacted solar energy with various Discoms spread all over the country and traded 1590 MUs of solar bundled power in comparison to 329 MUs traded in previous year.

#### 4. Village Electrification Scheme

The Central Government had launched a scheme for supply of reliable power to rural household within a radius of 5 km of the power station. Total 29 projects were initially identified for implementation around NTPC power plants. NTPC awarded eight projects where work had commenced. However, the scheme has been withdrawn by Ministry of Power in March'13.

### Customer Satisfaction

NTPC is the largest power generation company in India. It is a bulk supplier of electricity. NTPC sells electricity from its thermal power generating stations located across India to various bulk customers throughout the country. Majority of our customers are the electricity utilities owned by state governments.

NTPC has an elaborate system of Customer Relationship Management (CRM), which is an important initiative of NTPC in strengthening relationship with customers. Customers are provided with all the relevant information to ensure that they are aware of how to handle systems and procedures.

Customer official's participate in various Technical and Managerial training programs being organized at NTPC





for knowledge updation on free of cost basis. During the year, 138 participants from various customers attended training in 60 programmes conducted by NTPC.

Conducting the Customer Satisfaction Index (CSI) Survey for gathering customers' feedbacks and responding to their requirements captured through this survey is another important activity under CRM. Feedback as received is being analysed to identify customers' expectations, issues of concerns and satisfaction for internal assessment, and identification of suitable strategies to address the issues and improvement in processes. This initiative is expected to serve as a useful tool for further strengthening customer relationship and better appreciation of our business imperatives.

### Product Safety

Various messages and instruction are displayed in the form of posters and hoardings at various vulnerable locations in order to inculcate safety culture. Different competitions, debates and other campaigns on safety are also organised from time to time to enhance safety awareness for employees and nearby villagers. Due care is taken to use local language where ever required. There is no case of injuries to public due to NTPC assets reported during the year.

There is no requirement of product and service labelling for NTPC.

### Marketing Strategy

The regulatory process in power sector is one of the most strategic and critical processes. 'The Electricity Act

2003' provides an enabling framework for accelerated and more efficient development of the power sector. It seeks to promote availability of quality supply of electricity to consumers at competitive rates. The Central Electricity Authority (CEA) has overall responsibility of planning and formulation of technical standards for electrical plants and electrical lines. NTPC has been complying with the Grid Code and Grid Standards, national/ international standards, wherever applicable. Regional Load Dispatch Centers has the responsibility of scheduling dispatch and monitoring of Grid Operations.

NTPC does not distribute electricity directly. Being in the generation business only, power outage indexes such as SAIFI & SAIDI are not applicable to NTPC. However, the average planned outage, forced & other outage and availability factor of NTPC Coal Stations and Gas Stations during 2012-13 are given below:

Description	Planned Outage (%)	Forced and Other Outage (%)	Availability Factor (%)
Coal Station	4.92	2.95	90.2
Gas Station	3.5	0.64	71.4

No incident was brought to the notice of NTPC regarding any non-compliance or wrong business practices pertaining to marketing, communications including advertising, promotion and sponsorship during the reporting period. Also, NTPC complied with all the laws and regulations concerning provision and use of products and services. There has been no monetary fines for non-compliance with laws and regulations concerning the provision and use of products during the reporting period.





## SUSTAINABLE DEVELOPMENT PROJECTS

### Sustainable Development Projects undertaken in FY 2012-13

An amount of more than Ten Crores was spent by NTPC in the financial year 2012-13 on various Sustainable Development Projects initiated / undertaken during the year. Details of some of the projects is as under :

S.No.	Description of SD Projects
<b>1.</b>	<b>Waste Management</b>
1.1	A Bio- methanation plant has been installed at NTPC Dadri to treat 500 Kg / day of bio-degradable waste from township and plant canteen and generate bio gas for guest house.
1.2	Another Bio- methanation plant with a capacity of 100 Kg/day has been installed at NTPC Kayamkulam to generate bio gas for plant canteen.
1.3	Two Ash based product manufacturing units have been setup at NTPC Vindhyachal
<b>2.</b>	<b>Afforestation</b>
2.1	During the year 2012-13, 1,08,549 trees were planted inside NTPC Plant boundaries and 2,06,928 trees were planted outside NTPC premises.
<b>3.</b>	<b>Stack SPM Reduction Using Ammonia Flue Gas Conditioning</b>
3.1	Ammonia flue gas conditioning system has been installed in 2 Units of NTPC Ramagundam and is under optimisation.
3.2	Concentration of stack SPM has been reduced from 150 mg/Nm <sup>3</sup> to 120 mg/Nm <sup>3</sup> using ammonia flue gas conditioning technology at Korba and Badarpur.
<b>4.</b>	<b>Environmental Studies</b>
4.1	Human Health Risk Assessment Studies have been initiated at 4 NTPC stations to assess the impact of operation of NTPC plants on the ambient air quality in the area around these plants and the impact of pollutants on Human Health.
4.2	Pollutant Source Apportionment Studies have been initiated at 6 NTPC stations to assess the pollution load in ambient air around these stations and to determine the contribution of NTPC and other sources in the same.

### Sustainable Development Projects planned for FY 2013-14

S.No.	Description of SD Projects
<b>1.</b>	<b>Afforestation</b>
1.1	Plantation of more than four lakh trees at NTPC Korba, Simhadri, Talcher Kaniha, Ramagundam, Dadri, Rihand & Kahalgaon plants.
1.2	Maintenance of trees planted in the previous years to ensure their survival
<b>2.</b>	<b>Rehabilitation of village water body</b>
2.1	Restoration and rehabilitation of one Kachcha water pond at one of the villages near NTPC- Unchahar plant.
<b>3.</b>	<b>Energy Management and promotion of Renewable Energy</b>
<b>3.1</b>	<b>Solar Energy Projects</b>
3.1.1	Installation of 3 KW Hybrid (grid interactive) Solar PV plant for lighting at NTPC-Farakka
3.1.2	Installation of 50 KW Solar PV plant for lighting of hospital at NTPC-Sipat
3.1.3	Installation of 17 KW Solar PV plant, parallel to existing 24 V DC for DC Distribution Boards at NTPC-Dadri
3.1.4	Installation of integrated Solar system of 18 KW for Administrative Building lighting and other loads except HVAC loads at NTPC- Kayamkulam.
3.1.5	Solar water heaters at NTPC - Solapur at two Field hostels.





<b>3.2</b>	<b>Energy Conservation Projects</b>
3.2.1	Replacement of fluid couplings with magnetic couplings at NTPC- Tanda for one Conveyor and one Crusher in Coal Handling Plant to save power by about 3-5%.
3.2.2	Installation of Variable Frequency Drive (VFD) in one NOx injection pump (15kw) and one raw water pump (37 kw) at NTPC – Kayamkulam to reduce station Auxiliary Power Consumption.
3.2.3	Replacement of alternate street lights with solar lights at NTPC - Rihand and NTPC - Kayamkulam
3.2.4	Replacement of Sodium Vapour Lamps with LED lamps at three NTPC stations namely Rihand, Singrauli and Kahalgaon
<b>4.</b>	<b>Waste Management</b>
4.1	Domestic Waste Conversion to Organic Fertilizer at NTPC - Rihand
4.2	Vermi Composting of Plant Canteen waste at NTPC - Auraiya
4.3	Installation of Bio methanation plant with capacity to treat 100 Kg of bio degradable waste per day at Kahalgaon for conversion of bio degradable waste from plant canteen, guest house and township canteen into Bio gas for cooking purpose.
4.4	Segregation, storage and disposal of hazardous and non hazardous waste into separate pits for healthy sanitation of township at NTPC - Talcher Kaniha.
4.5	Waste Management Study at NTPC - Kahalgaon for identification and categorization of different types of wastes, review of existing methodology for segregation /collection, handling, storage, treatment and disposal and exploring possibilities of reuse/recycling.
<b>5.</b>	<b>Water Management</b>
5.1	Rain water harvesting at NTPC - Auraiya at 2 places.
5.2	Rain water harvesting through construction of 15 nos of recharge pits and 3 nos of bore wells in township and plant area at NTPC- Talcher Kaniha.
5.3	Construction of recharge pit and bore well in township at NTPC - Kahalgaon
<b>6.</b>	<b>Emission Reduction</b>
6.1	Reduction of SPM in Stack emission of Stage II units of NTPC- Ramagundam from present value of 110 mg/Nm <sup>3</sup> to less than 90 mg/Nm <sup>3</sup> with ammonia dosing.
<b>7.</b>	<b>Environmental Studies</b>
7.1	Environment Cost Benefit analysis study at NTPC – Dadri&Kawas
7.2	Life Cycle Mass Balance study at NTPC - Ramagundam
7.3	Impact of pollutant from Gas power plant on crops/other vegetation at NTPC -Gandhar
7.4	Post operation Environment Impact Assessment (EIA) Study at NTPC- Kawas
7.5	Pollutant Source apportionment study at NTPC- Mouda
7.6	Study of heavy metal pollution in ground water from ash pond at NTPC-Ramagundam





## KEY DATA AT A GLANCE

### ECONOMIC INDICATORS

Particulars	FY 2010-11 (₹ in Crores)	FY 2011-12 (₹ in Crores)	FY 2012-13 (₹ in Crores)
<b>A: Direct Economic Value Generated</b>			
Revenues	57,399.49	64,514.79	69,614.92
Sub Total (A)	57,399.49	64,514.79	69,614.92
<b>B: Direct Economic Value Distributed</b>			
Operating Cost	38,666.55	45,099.40	44,881.02
Employee Wages & Benefits	2,789.71	3,090.48	3,360.12
Payments to Providers of Capital	4,554.22	5,009.83	6,665.52
Payments to Government	3,072.01	3,600.58	4,527.83
Community investments	77.44	55.49	77.08
Sub Total (B)	49,159.93	56,855.78	59,511.57
Economic Value Retained (A-B)	8,239.56	7,659.01	10,103.35
<b>Employee remuneration and other benefits</b>			
Nos. of Employees (year end)	23,797	24,011	23,865
Average Salary, Wages and Benefits per Employee per Annum (₹)	13,04,935	14,48,117	15,76,840
Average Cost of other Benefits per Employee per Annum (₹)	2,49,045	2,50,929	2,84,706
Average Cost of Employee Remuneration & Benefits per Annum (₹)	15,53,980	16,99,046	18,61,546

### ENVIRONMENTAL INDICATORS

Name of Indicator		Unit	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13
<b>Material used</b>						
Input material	Lube Oil	KL	1,604	1,662	1,711	2,093
		Lt/MU	7.34	7.54	7.75	9.06
	Transformer Oil	KL	198	232	344	259
		Lt/MU	0.91	1.05	1.56	1.12
	Chlorine	MT	3,740	3,563	4,914	3,559
		Kg/MU	17.12	16.17	22.26	15.41
	Ammonia	MT	470	394	1,249	1,764
		Kg/MU	2.15	1.79	5.66	7.64
	Alum	MT	8,985	9,411	10,746	9,838
		Kg/MU	41.13	42.70	48.69	42.59
	HCl	MT	14,126	14,827	15,140	14,500
		Kg/MU	64.67	67.28	68.60	62.77
	H2SO4	MT	9,913	9,434	9,252	6,156
		Kg/MU	45.38	42.80	41.92	26.65
	Hydrogen	KL	---	3,88,957	4,29,046	4,82,349
		Lt/MU	---	1,765	1,944	2,088



Name of Indicator	Unit	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13	
<b>Direct energy consumed</b>						
Energy	Coal	MMT	135	137	141	155
		Kcal/Kg	3,385	3,418	3,371	3,276
		TJ	19,13,263	19,60,536	19,90,032	21,19,115
		Kg/Kwh	0.708	0.702	0.713	0.731
	Natural Gas	MMSCMD	13.88	13.77	13.09	10.70
		Kcal/SCM	9,420	9,420	9,372	9,465
		TJ	1,99,809	1,98,226	1,87,477	1,54,767
		SCM/Kwh	0.184	0.199	0.208	0.198
	Naptha	MT	4,17,004	3,30,783	1,23,403	2,67,296
		Kcal/ Kg	11,340	11,342	11,348	11,401
		TJ	19,799	15,708	5,863	12,759
	LDO	KL	10,836	11,563	13,856	25,583
		Kcal/KL	8,309	8,742	9,540	9,551
		GJ	377	423	553	1,023
	HFO	KL	55,095	48,265	57,863	70,062
		Kcal/KL	9,625	9,734	9,848	9,784
		GJ	2,220	1,967	2,386	2,870
	Specific Oil consumption	ml/Kwh	0.35	0.31	0.36	0.45
	HSD	KL	1,80,056	8,885	279	998
		Kcal/KL	9,036	8,932	8,669	9,052
GJ		6,811	332	10	38	
<b>Sector Disclosures - Coal Stations</b>						
Installed Capacity	MW	24,885	26,875	28,695	31,855	
Commercial Generation	MU	1,90,857	1,95,124	1,97,682	2,11,294*	
Net Generation	MU	1,77,937	1,81,908	1,84,186	1,96,688	
PLF	%	90.81	88.29	85.00	83.10	
Cycle Efficiency	%	35.86	35.86	35.83	35.83	
Planned Outage	%	4.26	4.87	5.14	4.92	
Forced Outage	%	2.41	2.46	2.81	2.93	
Availability Factor	%	91.76	91.62	89.73	90.20	
<b>Sector Disclosures - Gas Stations</b>						
Installed Capacity	MW	3,955	3,955	3,955	3,955	
*Commercial Generation	MU	27,581	25,255	23,014	19,699	
Net Generation	MU	27,004	24,680	22,504	19,235	
PLF	%	78.4	71.8	65.2	56.0	
Cycle Efficiency	%	42.89	42.72	42.76	42.55	
Planned Outage	%	3.24	3.34	3.20	3.50	
Forced Outage	%	1.03	0.17	0.15	0.58	
Availability Factor	%	93.14	89.57	80.86	71.40	
Total Installed Capacity (Coal + Gas)	MW	28,840	30,830	32,650	35,820	
Total Commercial Generation (Coal + Gas)	MU	2,18,438	2,20,379	2,20,696	2,30,993*	
Total Net Generation	MU	2,04,941	2,06,588	2,06,690	2,15,923	
Total Gross Generation	MU	2,18,840	2,20,536	2,22,068	2,32,028	

(\*Commercial Generation- includes 8 MU generation of Mouda station also)

Name of Indicator		Unit	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13	
<b>Auxiliary Power Consumption</b>							
Energy	Coal Stations	MU	12,673	13,052	13,346	14,451	
		%	6.64	6.69	6.75	6.84	
	Gas Stations	MU	563	575	515	468	
		%	2.04	2.28	2.24	2.38	
	<b>Energy saved</b>						
	Electrical	MU	93.8	102.3	111.2	119.9	
	Heat Energy (equivalent MT of coal)	MT	72,747	22,774	36,530	9,366	
	Heat Energy (equivalent MCM of Gas)	MCM	2.55	6.58	0.51	1.97	
	Heat Energy (equivalent KL of Naptha)	KL	—	10.30	21.24	253	
	Water	Total Drawn**	Lakh KL	48,835	49,988	47,010	45,908
Lt/Kwh			22.36	22.68	21.30	19.87	
(** Excluding once through CCW of Farakka & Singrauli)							
<b>Stack Emissions</b>							
Emissions	SPM	MT	99,985	1,04,529	1,06,922	1,00,226	
	Specific SPM***	gm/Kwh	0.49	0.51	0.52	0.46	
	SO <sub>2</sub>	MT	7,76,324	8,39,086	7,90,889	8,47,919	
	Specific SO <sub>2</sub>	gm/Kwh	3.79	4.06	3.83	3.93	
	NO <sub>x</sub>	MT	4,65,340	4,90,891	4,64,822	4,89,711	
	Specific NO <sub>x</sub> ***	gm/Kwh	2.27	2.38	2.25	2.27	
	<b>Greenhouse Emissions</b>						
	CO <sub>2</sub> (Coal Stations)	MT	17,34,89,881	17,74,74,064	17,99,02,214	19,22,28,461	
	CO <sub>2</sub> emission intensity (Coal Stations)***	gm/Kwh	975	976	977	977	
	CO <sub>2</sub> (Gas Stations)	MT	1,20,94,282	1,10,39,917	1,00,84,744	87,66,230	
	CO <sub>2</sub> emission intensity (Gas Stations)***	gm/Kwh	448	447	448	456	
	***Based on Net generation						
	<b>Ozone Depleting Substances</b>						
	ODS	CFC-11 equivalent (Kg)	—	5,416	5,245	3,607	
	<b>Non Hazardous</b>						
Misc. Ferrous Scrap	MT	15,661	24,278	15,503	40,053		
	mg/Kwh	71.69	110.16	70.25	173.40		
Non Ferrous Scrap	MT	875	626	497	867		
	mg/Kwh	4.00	2.84	2.25	3.75		
<b>Hazardous</b>							
PCB	MT	0	0	0	0		
Used Batteries	MT	37	101	110	144		
	Kg/MU	0.17	0.40	0.48	0.62		
Spent Resin	Lt	1,478	1,271	8,879	17,952		
	ml/MU	6.77	5.77	40.23	77.72		
Used lube oil	KL	870	827	997	702		
	Lt/MU	3.98	3.75	4.51	3.04		
Transformer Oil	KL	381	412	148	197		
	Lt/MU	1.74	1.87	0.67	0.85		
Bio-medical waste	Kg	—	10,370	10,727	10,678		



Name of Indicator		Unit	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13
<b>Main plant effluents</b>						
Effluents	Quantity	KL	46,09,78,765	45,94,40,374	44,55,92,309	43,00,81,284
		Lt/Kwh	2.11	2.08	2.01	1.86
	<i>Based on the estimation, since water is discharged through open drains and water meters have not been installed in all locations.</i>					
	pH	-	7.7	7.6	7.5	7.6
	TSS	mg/Lt	42.6	38.5	43.7	39.4
	O & G	ppm	2.1	2.3	2.4	2.7
Ash	Ash generated	Lakh Ton	462	472	501	563
Ash Utilized	Total Ash utilized	Lakh Ton	276	260	275	310
		%	59.73	55.14	55.01	55.02
	Land Development	Lakh Ton	78.43	63.86	68.74	40.92
		%	16.97	13.53	13.73	7.27
	Issue to cement & other ind.	Lakh Ton	108.52	98.79	90.63	107.40
		%	23.48	20.93	18.10	19.08
	Ash Dyke Raising	Lakh Ton	35.15	36.14	42.20	86.01
		%	7.61	7.66	8.43	15.28
	Bricks	Lakh Ton	1.03	0.79	0.96	1.29
		%	0.22	0.17	0.19	0.23
	Roads/Rail	Lakh Ton	13.41	14.77	17.97	18.46
	Embankment	%	2.90	3.13	3.59	3.28
	Mine filling	Lakh Ton	11.28	11.80	11.68	13.34
		%	2.44	2.50	2.33	2.37
Others	Lakh Ton	28.26	34.14	43.13	42.27	
	%	6.11	7.23	8.62	7.51	
Environment Expenditure	Total	Rs (Crores)	52.20	59.12	94.12	124.8
		Rs/MU	2,390	2,682	4,265	5,403

**SOCIAL INDICATORS**

Name of Indicator		Unit	FY 2010-11	FY 2011-12	FY 2012-13	
<b>Employment (No.)</b>						
Total Workforce	Executives	Male	---	11,502	11,761	
		Female	---	792	827	
	Non-Executives	Male	---	11,055	10,637	
		Female	---	662	640	
	TOTAL		23,797	24,011	23,865	
	<b>Region Wise Distribution</b>					
	CORPORATE & CONSULTANCY	No.	---	2,568	2,401	
	NORTHERN	No.	---	4,267	4,151	
NATIONAL CAPITAL	No.	---	3,067	2,880		
SOUTHERN	No.	---	2,637	2,667		
EASTERN – I	No.	---	3,184	3,207		
EASTERN – II	No.	---	2,338	2,403		
WESTERN – I	No.	---	971	1,095		



	Name of Indicator	Unit	FY 2010-11	FY 2011-12	FY 2012-13	
Total Workforce	WESTERN – II	No.	---	4,332	4,399	
	HYDRO	No.	---	438	449	
	MINING	No.	---	209	213	
	TOTAL	No.	23,797	24,011	23,865	
Total no. and rate of new employee	<b>New Employee joined during the year (No.)</b>					
	Gender Diversity	Male	1,075	841	633	
		Female	151	82	53	
	Total	No.	1,226	923	686	
	<b>Employee Turnover</b>					
	Gender Diversity	Male (No.)	133	115	166	
		Female (No.)	04	08	18	
	Age Diversity	= < 30 yr	49	84	151	
		> 30 & < 50 yr	56	26	27	
		> = 50 yr	32	13	6	
	Region Wise Turnover	CC	No.	---	24	20
		NORTHERN	No.	---	15	32
		NATIONAL CAPITAL	No.	---	11	16
		SOUTHERN	No.	---	14	12
		EASTERN - I	No.	---	16	21
		EASTERN - II	No.	---	11	22
		WESTERN - I	No.	---	5	17
		WESTERN - II	No.	---	20	35
		HYDRO	No.	---	5	8
MINING		No.	---	2	1	
TOTAL		No.	---	123	184	
Employee productivity	Gen /Employee	MU	9.27	9.25	9.72	
	Man/MW	Ratio	0 .77	0 .74	0.67	
Average hours of training per yr per employee by gender by employee category	<b>Training imparted to employees (No.)</b>					
	Executives	Male	---	---	7,562	
		Female	---	---	416	
	Non-Executives	Male	---	---	9,772	
		Female	---	---	466	
	Total		23,797	22,221	18,216	
	<b>Average No. of hours training per employee (PMI)</b>					
	Executives	Male (No.)	---	---	52.83	
		Female (No.)	---	---	57.98	
	Non-Executives	Male (No.)	---	---	55.85	
Female (No.)		---	---	52.37		
Total		58.64	56.64	54.56		
Vigilance	No. of Training Conducted in various stations	No.	39	37	29	
	No. of Employee Participated	No.	1,474	1,057	745	
Total No. of Work related Fatalities by Region and Gender	Reportable Accidents	Fatal	5	11	10	
		Non Fatal	45	40	19	
	Total Employees (Regular + Contractor)	No.	50,699	53,232	47,070	
	Total Man hours	Hrs	12,67,86,173	15,09,98,366	12,33,19,841	
	Total Man Days Lost	Days	31,255	68,100	61,288	
	Frequency Rate	FR	0.39	0.34	0.24	
	Incident Rate	IR	0.99	0.96	0.62	
Occupational Disease Rate	---	0	0	0		





# GRI & NVG CONTENT INDEX

## 1. Standard Disclosures

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4.1		Governance structure of the organization	Principle 1	Governance structure of the business, including committees under the Board responsible for organizational oversight. In case no committee is constituted, then the details of the individual responsible for the oversight. Mandate and composition (including number of independent members and/or non-executive members) of such committee with the number of oversight review meetings held.	26, 27



4.2	Governance, Commitment and Engagement	Whether the chair of highest governance body is also an executive officer and reasons for this arrangements	Principle 1	State whether the person/committee head responsible for oversight review is independent from the executive authority or not. If yes, how.	26
4.3		No of members of the highest Governance body that are independent and/or non-executive	Principle 1	Mandate and composition (including number of independent members and/or non-executive members) of such committee with the number of oversight review meetings held.	26
4.4		Mechanism for shareholders and employees to provide recommendations or directions to the highest governance body	Principle 1	Mechanisms for shareholders and employees to provide recommendations or direction to the Board/ Chief Executive.	26, 36-42
4.5		Linkage between compensation for highest governance body and organization's performance	Principle 1		26-28
4.6		Processes in place to ensure avoid conflicts of interests in highest governance body	Principle 1	Processes in place for the Board/ Chief Executive to ensure conflicts of interest are avoided.	27
4.7		Process for determining the qualification and expertise of highest governance body for guiding the organization's strategy on economic, environment and social topics			27
4.8		Internally developed statements of mission, values, codes of conduct and principles relevant to economic, environment and social topics	Principle 1	Internally developed statement on Ethics, Codes of Conduct and details of the process followed to ensure that the same are followed	Front Inside, 19-20
4.9		Procedure for the highest governance body for overseeing the management of economic, environment and social performances	Principle 1	Frequency with which the Board/ Chief Executive assess BR performance.	13, 14, 27
4.10		Process for evaluating the highest governance body's own performance in respect to economic, environment and social performances			27
4.11		Explanation of whether and how the precautionary approach of principle is addressed			26-27
4.12		Externally developed economic, environment and social charters and other initiatives to which the organization subscribes or endorses			27-28
4.13		Membership in associations and /or national /international advocacy organizations			28
4.14		List of stakeholders groups engaged by the organization	Principle 4	Statement on the process of identification of stakeholders and engaging with them	36
4.15		Basis of identification of stakeholders	Principle 4	-do-	36
4.16	Approach to stakeholder engagement	Principle 4	-do-	36-42	
4.17	Key topics and concerns raised through stakeholder engagement and organization's response	Principle 4	Statement on significant issues on which formal dialogue has been undertaken with any of the stakeholder group	40-42	





## II. Performance Indicators

GRI				NVG		
No.	Indicator	Indicator Type	Indicator Description	NVG*	Item	Page
<b>Economic Performance Indicators</b>						
1.	EC 1	Core	Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments.	Part A, A-1	Economic and Financial Data – Sales; Net Profit; Tax Paid; Total Assets; Market Capitalization (for listed companies); number of employees;	54,96
2.	EC 2	Core	Financial implications and other risks and opportunities for the organization's activities due to climate change			54
3.	EC 3	Core	Coverage of the organization's defined benefit plan obligations			78
4.	EC 4	Core	Significant financial assistance received from government			55
5.	EC 5	Additional	Range of ratios of standard entry level wage compared to local minimum wage at significant locations of operation			76
6.	EC 6	Core	Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation.	Principle 2	Statement on use of sustainable practices used in the value chain	55
7.	EC 7	Core	Procedures for local hiring and proportion of senior management hired from the local community at significant locations of operation			76
8.	EC 8	Core	Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement.			55, 84-88
9.	EC 9	Additional	Understanding and describing significant indirect economic impacts, including the extent of impacts			55, 84-88
<b>Environmental Performance Indicators</b>						
10.	EN 1	Core	Materials used by weight or volume			58, 96
11.	EN 2	Core	Percentage of materials used that are recycled input materials	Principle 2	Statement on the use of recyclable raw materials used	58
				Principle 6	Percentage of materials used that are recycled input materials	58
12.	EN 3	Core	Direct energy consumption by primary energy source.	Principle 6	Total energy consumed by the business entity for its operations	59,97
				Principle 6	Use of renewable energy as percentage of total energy consumption	64
13.	EN 4	Core	Indirect energy consumption by primary source	Principle 6	Total energy consumed by the business entity for its operations	59
14.	EN 5	Additional	Energy saved due to conservation and efficiency improvements	Principle 6	Statement on use of energy saving processes and the total energy saved due to use of such processes	62, 98
15.	EN 6	Additional	Initiatives to provide energy-efficient or renewable energy-based products and services, and reductions in energy requirements as a result of these initiatives	Principle 2	Statement on use of energy-efficient technologies, designs and manufacturing/ service-delivery processes	59-63
				Principle 6	Statement on use of energy saving processes and the total energy saved due to use of such processes	59
16.	EN 7	Additional	Initiatives to reduce indirect energy consumption and reductions achieved	Principle 2	Statement on use of energy-efficient technologies, designs and manufacturing/ service-delivery processes	59-63
				Principle 2	Statement on use of energy saving processes and the total energy saved due to use of such processes	59-63



GRI				NVG		
No.	Indicator	Indicator Type	Indicator Description	NVG*	Item	Page
17.	EN 8	Core	Total water withdrawal by source	Principle 6	Total water consumed and the percentage of water that is recycled and reused	65,98
18.	EN 9	Additional	Water sources significantly affected by withdrawal by source			65
19.	EN 10	Additional	Percentage and total volume of water recycled and reused	Principle 6	Total water consumed and the percentage of water that is recycled and reused	65
20.	EN 11	Core	Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.			66-67
21.	EN 12	Core	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas			66-67
22.	EN 13	Additional	Habitats protected or restored			66-67
23.	EN 14	Additional	Strategies, current actions, and future plans for managing impacts on biodiversity	Principle 6	Details of efforts made for reconstruction of bio-diversity	66-67
24.	EN 15	Additional	Number of ICUN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk			66-67
25.	EN 16	Core	Total direct and indirect greenhouse gas emissions by weight	Principle 6	Statement on quantum of emissions of greenhouse gases and efforts made to reduce the same	68,98
26.	EN 17	Core	Other relevant indirect greenhouse gas emissions by weight	Principle 6	-do-	68
27.	EN 18	Additional	Initiatives to reduce greenhouse gas emissions and reductions achieved	Principle 6	-do-	68-69
28.	EN 19	Core	Emissions of ozone-depleting substances by weight.			69,98
29.	EN 20	Core	NO <sub>2</sub> , SO <sub>2</sub> , and other significant air emissions by type and weight			68,98
30.	EN 21	Core	Total water discharge by quality and destination	Principle 6	Statement on discharge of water and effluents indicating the treatment done before discharge and the destination of disposal	65,99
31.	EN 22	Core	Total weight of waste by type and disposal method	Principle 6	-do-	69-70, 98
32.	EN 23	Core	Total number and volume of significant spills	Principle 6	-do-	73
33.	EN 24	Additional	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally			NA
34.	EN 25	Additional	Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization's discharges of water and runoff			NA
35.	EN 26	Core	Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation.			73
36.	EN 27	Core	Percentage of products sold and their packaging materials that are reclaimed by category			NA
37.	EN 28	Core	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations.			58, 73



GRI				NVG		
No.	Indicator	Indicator Type	Indicator Description	NVG*	Item	Page
38.	EN 29	Additional	Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce			73
39.	EN 30	Additional	Total environmental protection expenditures and investments by type			73,99
<b>Labour Practices</b>						
40.	LA 1	Core	Total workforce by employment type, employment contract, and region	Part A, A-1	Economic and Financial Data – Sales; Net Profit; Tax Paid; Total Assets; Market Capitalization(for listed companies); number of employees	76, 96, 99
				Principle 3	Total number of employees with percentage of employees that are engaged through contractors	76, 99
				Principle 3	Percentage of employees who are women	76,100
41.	LA 2	Core	Total no. and rate of employee turnover by age group, gender and region			77,100
42.	LA 3	Additional	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major operations			77-78
43.	LA 4	Core	Percentage of employees covered by collective bargaining agreements			78
44.	LA 5	Core	Minimum notice period (s) regarding significant operational changes, including whether it is specified in collective agreements			78
45.	LA 6	Additional	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs			78
46.	LA 7	Core	Rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities by region			7, 89, 100
47.	LA 8	Core	Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases			78-81
48.	LA 9	Additional	Health and safety topics covered in formal agreements with trade unions.			78-80
49.	LA 10	Core	Average hours of training per year per employee by employee category	Principle 3	Number of training and skill up-gradation programmes organized during the reporting period for skilled and unskilled employees	80-81, 100
50.	LA 11	Additional	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	Principle 3	-do-	83
51.	LA 12	Additional	Percentage of employees receiving regular performance and career development reviews			82
52.	LA 13	Core	Composition of governance bodies and breakdown of employees per category according to gender, age group, minority group membership, and other indicators of diversity			26-27, 76, 100



GRI				NVG		
No.	Indicator	Indicator Type	Indicator Description	NVG*	Item	Page
53.	LA 14	Core	Ratio of basic salary of men to women by employee category			76
54.	LA 15	Core	Return to work and retention rates after parental leave, by gender.			77
<b>Social Performance Indicators</b>						
Society						
55.	SO 1	Core	Percentage of operations with implemented local community engagement, impact assessments, and development programs.	Principle 8	Details of community investment and development work undertaken indicating the financial resources deployed and the impact of this work with a longer term perspective	84-88
56.	SO 2	Core	Percentage and total number of business units analyzed for risks related to corruption			89
57.	SO 3	Core	Percentage of employees trained in organization's anti-corruption policies and procedures			88, 100
58.	SO 4	Core	Actions taken in response to incidents of corruption			88-89
59.	SO 5	Core	Public policy positions and participation in public policy development and lobbying.	Principle 7	Statement on significant policy advocacy efforts undertaken with details of the platforms used	89
60.	SO 6	Additional	Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country			89
61.	SO 7	Additional	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes			89
62.	SO 8	Core	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations			89
63.	SO 9	Core	Operations with significant potential or actual negative impacts on local communities.			88
64.	SO 10	Core	Prevention and mitigation measures implemented in operations with significant potential or actual negative impacts on local communities.	Principle 8	Details of community investment and development work undertaken indicating the financial resources deployed and the impact of this work with a longer term perspective	88
<b>Human Rights</b>						
65.	HR 1	Core	Percentage and total number of significant investment agreements that include human rights clauses or that have undergone human rights screening.			90-91
66.	HR 2	Core	Percentage of significant suppliers and contractors that have undergone screening on human rights and actions taken	Principle 2	Statement on the use of sustainable practices used in the value chain	90-91
67.	HR 3	Additional	Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained			90
68.	HR 4	Core	Total number of incidents of discrimination and actions taken.	Principle 5	Statement on complaints of human rights violations filed during the reporting period	90-91
69.	HR 5	Core	Operations identified in which the right to exercise freedom of association and collective bargaining may be at significant risk, and actions taken to support these rights			91



GRI				NVG		
No.	Indicator	Indicator Type	Indicator Description	NVG*	Item	Page
70.	HR 6	Core	Operations identified as having significant risk for incidents of child labor, and measures taken to contribute to the elimination of child labor	Principle 2	Statement on the use of sustainable practices used in the value chain	91
71.	HR 7	Core	Operations identified as having significant risk for incidents of forced or compulsory labor, and measures taken to contribute to the elimination of forced or compulsory labor	Principle 2	-do-	91
72.	HR 8	Additional	Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that are relevant to operations			90
73.	HR 9	Additional	Total number of incidents of violations involving rights of indigenous people and actions taken	Principle 5	Statement on complaints of human rights violations filed during the reporting period	91
74.	HR 10	Core	Percentage and total number of operations that have been subject to human rights reviews and/or impact assessments.			91
75.	HR 11	Core	Number of grievances related to human rights filed, addressed, and resolved through formal grievance mechanisms.	Principle 3	Number of grievances submitted by the employees	90-91



GRI				NVG		
No.	Indicator	Indicator Type	Indicator Description	NVG+	Item	Page
<b>Product Responsibility</b>						
76.	PR 1	Core	Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures			NA
77.	PR 2	Additional	Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services, by type of outcomes	Principle 9	Details of the customer complaints on safety, labelling and safe disposal of the products received during the reporting period	92
78.	PR 3	Core	Type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements	Principle 9	Statement on whether the labelling of their products has adequate information regarding product-related customer health and safety, method of use and disposal, product and process standards observed,	92
79.	PR 4	Additional	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling,, by type of outcomes	Principle 9	-do-	NA
80.	PR 5	Additional	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction	Principle 9	Details of the customer complaints on safety, labeling and safe disposal of the products received during the reporting period	92-93
81.	PR 6	Core	Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship			92
82.	PR 7	Additional	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion and sponsorship, by type of outcomes			92-93
83.	PR 8	Additional	Total number of substantial complaints regarding breaches of customer privacy and losses of customer data			92-93
84.	PR 9	Core	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services			93

NA - Not applicable

### \*NVG Nine Principles

- Principle 1 : Businesses should conduct and govern themselves with Ethics, Transparency and Accountability
- Principle 2 : Businesses should provide goods and services that are safe and contribute to sustainability throughout their life cycle
- Principle 3 : Businesses should promote the well being of all employees
- Principle 4 : Businesses should respect the interests of, and be responsive towards all stakeholders, especially those who are disadvantaged, vulnerable and marginalized.
- Principle 5 : Businesses should respect and promote human rights
- Principle 6 : Business should respect, protect, and make efforts to restore the environment
- Principle 7 : Businesses, when engaged in influencing public and regulatory policy, should do so in a responsible manner
- Principle 8 : Businesses should support inclusive growth and equitable development
- Principle 9 : Businesses should engage with and provide value to their customers and consumers in a responsible manner



### III. Electric Utility Sector Supplement

No.	Indicator	Indicator Type	Indicator Description	Page
<b>I. Organizational Profile Disclosures</b>				
1.	EU 1		Installed capacity, broken down by primary energy source and by regulatory regime.	11, 15
2.	EU 2		Net energy output broken down by primary energy source and by regulatory regime	15
3.	EU 3		Number of residential, industrial, institutional and commercial customer accounts.	39
4.	EU 4		Length of above and underground transmission and distribution lines by regulatory regime	NA
5.	EU 5		Allocation of CO <sub>2</sub> e emissions allowances or equivalent, broken down by carbon trading framework.	NA
<b>II. Sector Disclosures</b>				
6.	Availability and Reliability	EU 6	Management approach to ensure short and long-term electricity availability and reliability. (closely linked to EU 10) (planned capacity vs demand)	47-48
7.	Demand-Side Management	EU 7	Demand-side management programs including residential, commercial, institutional and industrial programs.	NA
8.	Research and Development	EU 8	Research and development activity and expenditure aimed at providing reliable electricity and promoting sustainable development.	51
9.	Plant Decommissioning	EU 9	Provisions for decommissioning of nuclear power sites	NA
<b>III. Economic</b>				
10.	Availability and Reliability	EU 10	Planned capacity against projected electricity demand over the long term, broken down by energy source and regulatory regime.	47-48
11.	System Efficiency	EU 11	Average generation efficiency of thermal plants by energy source and by regulatory regime.	97
12.		EU 12	Transmission and distribution losses as a percentage of total energy	NA
<b>IV. Environmental</b>				
13.	Biodiversity	EU 13	Biodiversity of offset habitats compared to the biodiversity of the affected areas	66
<b>V. Labor Practices and Decent Work</b>				
14.	Employment	EU 14	Programs and processes to ensure the availability of a skilled workforce	80-82
15.		EU 15	Percentage of employees eligible to retire in the next 5 and 10 years broken down by job category and by region.	77
16.		EU 16	Policies and requirements regarding health and safety of employees and employees of contractors and subcontractors.	20, 78-80
17.		EU 17	Days worked by contractor and subcontractor employees involved in construction, operation & maintenance activities.	79
18.		EU 18	Percentage of contractor and subcontractor employees that have undergone relevant health and safety training.	79
<b>VI. Society</b>				
19.	Community	EU 19	Stakeholder participation in the decision making process related to energy planning and infrastructure development.	42
20.		EU 20	Approach to managing the impacts of displacement	88
21.	Disaster / Emergency Planning and Response	EU 21	Contingency planning measures, disaster/ emergency management plan and training programs, and recovery/restoration plans.	84-87
<b>VII. Product Responsibility</b>				
22.	Community	EU 22	Number of people physically or economically displaced and compensation, broken down by type of project	87
23.	Access	EU 23	Programs, including those in partnership with government, to improve or maintain access to electricity and customer support services	92
24.	Provision of Information	EU 24	Practices to address language, cultural, low literacy and disability related barriers to access and safely use electricity and customer support services	92-93
25.	Public Health & Safety	EU 25	Number of injuries and fatalities to the public involving company assets including legal judgments, settlements and pending legal cases of diseases.	92-93
26.	Access	EU 26	Percentage of population unserved in licensed distribution or service areas	NA
27.		EU 27	Number of residential disconnections for non payment, broken down by duration of disconnection and by regulatory regime.	NA
28.		EU 28	Power outage frequency.	NA
29.		EU 29	Average power outage duration	NA
30.		EU 30	Average plant availability factor by energy source and by regulatory regime	93,97





## ACRONYMS

Abbr.	Details
AAQMS	Ambient Air Quality Monitoring Station
ACV	Actual Calorific Value
ADB	Asian Development Bank
AFGC	Ammonia Flue Gas Conditioning
AMC	Advanced Management Programme
APAC	Asia Pacific
APC	Auxiliary Power Consumption
APIO	Assistant Public Information Officer
APM	Administrative Price Mechanism
APTEL	Appellate Tribunal for electricity
ASCI	Administrative Staff College of India
AT&C	Aggregate Technical and Commercial
ATDC	Apparel Training & Design Centre
AWRS	Ash Water Recirculation System
BG	Bank Guarantee
BHEL	Bharat Heavy Electrical Ltd.
BOP	Balance of Plant
BP	Basic Pay
BPL	Below Poverty Level
BTPS	Badarpur Thermal Power Station
BU	Billion Units
CAG	Comptroller and Auditor General of India
CAGR	Cumulative Annual Growth Rate
CAPEX	Capital Expenditure
CARE	Credit analysis and research
CBOs	Community Based Organisations
CC	Corporate Centre
CD	Community Development
CDA	Community Development Authority
CDM	Clean Development Mechanism
CDSL	Central Depository Services (India) Limited
CEA	Central Electricity Authority
CEMS	Continuous Emission Monitoring System
CENPEEP	Centre for Power Efficiency & Environmental Protection
CEO	Chief Executive Officer
CERC	Central Electricity Regulatory Commission
CFC	Chloro fluoro Carbons
CFD	Computational Fluid Dynamics
CFDS	Corporate Filing and Dissemination System

Abbr.	Details
CFL	Compact Fluorescent Lamps
CFO	Chief Financial Officer
CIGRE	International Council of Large Electric System
CII	Confederation Of Indian Industry
CIL	Coal India Limited
CISF	Central Industrial Security Force
CMD	Chairman and Managing Director
CO2	Carbon Dioxide
COC	Cycle of Concentration
COP	Communication on Progress
CP	Corporate Planning
CPCB	Central Pollution Control Board
CPIO	Central Public Information Officer
CPSE	Central Public Sector Enterprise
CRISIL	Credit Rating Information Services of India Limited
CRM	Customer Relationship Management
CRO	Chief Risk Officer
CSA	Coal Supply Agreement
CSI	Customer Satisfaction Index
CSR	Corporate Social Responsibility
CTU	Central Transmission Utility
CVC	Central Vigilance Commission
CVO	Chief Vigilance Officer
CW	Cooling Water
D & B	Dun & Bradstreet
DA	Dearness Allowance
DC	Designated Commission
DDCMIS	Distributed Digital Control Monitoring and Information System
Deptt	Department
DGH	Directorate General of Hydrocarbons
DIR.	Director
DISCOMs	Distribution Companies
DM Water	Demineralised Water
DMC	Designated Microscopy Centre
DNV	Det Norske Veritas
DOT	Directly Observed Treatment
DPE	Department of Public Enterprises
DPR	Detailed Project Report
DRCs	Disability Rehabilitation Centres
DSIJ	Dalal Street Investment Journal





Abbr.	Details
DSM	Demand Side Management
EC	Economic Performance Indicator
ECBC	Energy Conservation Building Code
ECS	Electronic Clearance Service
ED	Executive Director
EDC	Employee Development Centre
EMC	Enhancing Managerial Competence
EMS	Environmental Management System
EN	Environmental Performance Indicator
EOC	Engineering Office Complex
ER	Eastern Region
ERM	Enterprise Risk Management
ERMC	Enterprise Risk Management Committee
ES Certi	Energy Saving Certificates
ESP	Electro-Static Precipitator
ETP	Effluent Treatment Plants
EUSS	Electric Utility Sector Supplement
EVOICE	Employees Voluntary Organization for Initiative in Community Empowerment
FGC	Flue Gas Conditioning
FICCI	Federation of Indian Chambers of Commerce and Industry
FII	Foreign Institutional Investors
FI	Financial Institution
FSA	Fuel Supply Agreement
FTL	Fluorescent Tube Light
FY	Fiscal Year
GCN	Global Compact Network
GCV	Gross Calorific Value
GDP	Gross Domestic Product
GHG	Green House Gases
GJ	Giga Joules
GLS	General Lighting Service
GM	General Manager
GOI	Government of India
GPP	Gas Power Plant
GPTW	Great Place to Work
GRI	Global Reporting Initiative's
GSAs	Gas Supply Agreements
GW	Giga Watt
HCA	Host Country Approval
HCFC	Hydro Chloro Fluoro Carbon
HFO	Heavy Fuel Oil
HIV	Human Immunodeficiency Virus
HPGCL	Haryana Power Generation Corporation Limited
HPSV	High Pressure Sodium Vapours Lamps

Abbr.	Details
HQ	Head Quarters
HR	Human Resources
HR	Human Rights Performance Indicator
HW	Hardware
ICD Policy	Initial Community Development Policy
ICRA	Investment Information and Credit Rating Agency
ICT	Information and Communication Technology
IUCN	International Union for Conservation of Nature
IERE	International Electric Research Exchange
IGCAR	India Gandhi Centre for Advanced Research
IGCC	Integrated Gasification Combined Cycle
IGP	Inspector General of Police
IPE	Indian Institute of Plant Engineers
IMS	Integrated Management System
IOCL	Indian Oil Corporation Limited
IPGCL	Indraprastha Power Generation Corporation Limited
IPMA	International Project Management Association
IPMCS	Implementation of Integrated Project Management and Control System
IPP	Independent Power Producers
IPS	Indian Police Service
ISD	Investor Services Department
IT	Information Technology
ITES	Information Technology Enabled Services
ITIS	Industrial Training Institutes
ITRHD	Indian Trust for Rural Heritage and Development
JNNSM	Jawaharlal Nehru National Solar Mission
JV	Joint Ventures
Kg	Kilograms
KL	Kilo Litres
LA	Labor Practices & Decent Work Performance Indicators
LED	Light Emitting Diode
LWTP	Liquid Waste Treatment Plant
MCM	Million Cubic Metre
MDGs	Millennium Development Goals
MDI	Management Development Institute



Abbr.	Details
MF	Mutual Funds
MGR	Merry Go Round
MHA	Ministry of Home Affairs
MoP	Ministry of Power
MMSCMD	Million Metric Standard Cubic Meter per day
MNRE	Ministry of New and Renewable Energy
MoEF	Ministry of Environment and Forests
MoU	Memorandum of Understanding
MT	Million Tonnes
MU	Million Units
MW	Mega Watt
NBC	National Bipartite Committee
NBPPL	NTPC BHEL Power Projects Limited
NCR	National Capital Region
NCTPP	National Capital Thermal Power Plant
NECL	North Eastern Coalfields Limited
NEFI	NTPC Executives Federation of India
NEFT	National Electronic Funds Transfer
NELP	New Exploration Licensing Policy
NESCL	NTPC Electric Supply Company Limited
NETRA	NTPC Energy Technology Research Alliance
NFCH	National Foundation for Communal Harmony
NGOs	Non Governmental Organizations
NIOH	National Institute for the Orthopedically Handicapped
NIT	Notice Inviting Tender
NMEEE	National Mission on Enhanced Energy Efficiency
NO2	Nitrogen Dioxide
NOX	Oxides Of Nitrogen
NR	Northern Region
NSDL	National Security Depository Limited
NVG	National Voluntary Guidelines
NVVN	NTPC Vidyut Vyapar Nigam Ltd
O & G	Oil and Grease
O & M	Operations and Maintenance
OBC(CL + NCL)	Other Backward Class (Creamy Layer + Non Creamy Layer)
ODP	Ozone Depleting Potential
ODS	Ozone Depleting Substances
OHSAS	Occupational Health and Safety Assessment System
OS	Operation Services
OTSS	One Time Settlement Scheme
PADO	Performance Analysis & Diagnostic Optimization

Abbr.	Details
PAPs	Project Affected People
PAT	Perform, Achieve and Trade
PAT	Profit After Tax
PE	Partially Electrified
PEM	Performance Evaluation Matrix
PHCs	Primary Health Centre
PhD	Doctor of Philosophy
PI	Process Interface
PICs	Public Information Centre
PLF	Plant Load Factor
PM	Particulate Matter
PMC	Project Monitoring Committee
PMI	Power Management Institute
PMS	Paryavaran Monitoring System
PPA	Power Purchase Agreement
PPEs	Personal Protective Equipments
PPP	People Power Planet
PR	Product Responsibility Performance Indicator
PSE	Public Sector Enterprise
PSU	Public Sector Undertaking
PV	Photo Voltaic
QC	Quality Circle
QMS	Quality Management System
3 R's	Reduce, Recycle & Reuse
R&D	Research & Development
R&R	Resettlement and Rehabilitation
RAP	Rehabilitation Action Plan
R-APDRP	Re-Structured -Accelerated Power Development & Reforms Program
RCM	Reliability Centered Maintenance
RED	Regional Executive Director
REDG	Renewable Energy and Distributed Generation
RES	Renewable Energy Sources
RFD	Result Framework Document
RGCCP	Rajiv Gandhi Combined Cycle Power Project
RGGVY	Rajiv Gandhi Grameen Vidyutikaran Yojna
RLDC	Regional Load Dispatch Centers
RNTCP	Revised National Tuberculosis Control Programme
RPCs	Regional Power Committees
RPO	Renewable Purchase Obligation
RTI	Right to Information
SA-8000	Social Accountability 8000 Standard
SACS	Special Analytical and Computational Sciences
SAIDI	System Average Interruption Duration Index



Abbr.	Details
SAIFI	System Average Interruption Frequency Index
SC	Scheduled Caste
SCCL	Singareni Collieries Company Limited
SCOPE	Standing Conference of Public Enterprises
SD	Sustainable Development
SEB	State Electricity Board
SERC	State Electricity Regulatory Commission
SHRM	Strategic Human Resource Management
SIE	Social Impact Evaluation
SO	Society Performance Indicators
SO <sub>2</sub>	Sulphur Dioxide
SPCB	State Pollution Control Board
SPM	Suspended Particulate Matter
SR	Southern Region
ST	Scheduled Tribes
STP	Sewage Treatment Plant
STPP	Super Thermal Power Project
SW	Software
TANGEDCO	Tamil Nadu Generation and Distribution Corporation Limited
TEKL	Transformers and Electricals Kerala Limited

Abbr.	Details
TERI	The Energy and Resources Institute
BCSD	Business Council for Sustainable Development
TL	Tube Light
TSDF	Treatment, Storage and Disposal Facilities
TSS	Total Suspended Solids
UE/DE	Un-electrified / De-electrified
UMPP	Ultra Mega Power Project
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
UNGC	United Nations Global Compact
USAID	United States Agency for International Development
VAM	Vapour Absorption Machine
VDACs	Village Development Advisory Committees
VFD	Variable Frequency Drive
WBCSD	World Business Council for Sustainable Development
WEC	World Energy Council
WHRB	Waste Heat Recovery Boiler
WR	Western Region





## ASSURANCE STATEMENT



### Introduction and objectives of work

**Bureau Veritas Certification (India) Pvt. Ltd. (Bureau Veritas)** has been engaged by **NTPC Limited** to conduct an independent assurance of its Sustainability Report 2012-13. This Assurance Statement applies to the related information included within the scope of work described below.

This information and its presentation in the Sustainability Report 2012-13 (hereafter referred to as Report) are the sole responsibility of the management of NTPC Limited. Bureau Veritas was not involved in the drafting of the Report. Our sole responsibility was to provide independent assurance on the accuracy and reliability of information included, and on the underlying systems and processes established to collect, analyses and review.

### Scope of Assurance

**NTPC Limited** requested Bureau Veritas to verify the accuracy and reliability of the following:

- Data and information included in the **Sustainability Report 2012-13 of Corporate Functions and 21 Power Stations across India covering Thermal Power (Coal based and Gas Based) and Solar Power Generation.**
- The assurance process was conducted to meet the requirements of a **Type 1 assurance engagement** as defined by AA1000 2008 Assurance Standard (AA1000 AS). The assurance process was designed to provide a reasonable level of assurance concerning the nature and extent of NTPC's adherence to the AA1000 AS accountability principles and a **Moderate level of assurance** of the reliability of specified performance information within the report.

### Methodology

As part of its independent assurance, Bureau Veritas Assurance team planned and carried out the assurance engagement based on offsite document review and site visit at NTPC Limited Head Office at Scope Complex, Lodhi Road, New Delhi; Sustainable Development Group and Environment Management Group Office at Corporate Centre, Noida; Power Management Institute (PMI), Noida; Thermal Power Stations at Dadri, Faridabad and Badarpur and 5 MW Solar Power Generation Facility at NTPC Dadri between 10<sup>th</sup> to 14<sup>th</sup> Match, 2013 and undertook broadly the following activities:

1. Conducted Interviews with core team of the SD group responsible of preparing the Sustainability report and the Senior Management of NTPC Limited – Including but not limited to GM-SD Group, AGM-SD Group, AGM-EMG, HOD- Corporate Safety, GM-CSR and R&R, GM-Corporate Planning, Company Secretary, AGM-CPIO, AGM-Vigilance, AGM-HR, AGM-Finance, AGM-PMI and GM-Dadri, Faridabad and Badarpur power stations.
2. Onsite and offsite review of documentary evidence such as Performance Monitoring Reports and Factual information (for the period 1st April 2012 to 31<sup>st</sup> March 2013) contained in the Report, Achievement against Internal and External Memorandum of Understanding (MoU) targets, Enterprise Risk Management (ERM) framework, Environmental Compliance of the Stations, CSR-R&R expenditure records from SAP system etc. shared by NTPC Limited to Bureau Veritas Assurance team.
3. Evaluation of information against Global Reporting Initiative (GRI G3.1, Electric Utility Sector Supplement and National Voluntary Guidelines) disclosure frameworks and principles of Accuracy, Accessibility, Balance, Clarity, Comparability, Reliability and Timeliness;
4. Audit of performance Indicator data (samples of which traced back to source)
5. Review of NTPC Limited's internal mechanisms for implementing Sustainable Development and other policies, data and information systems for collection, aggregation, analysis and review at Corporate SD Group Level and Power Station Level.



6. Review of process for identification, management of material issues, risks to the Company and its stakeholders; and justification for subsequent inclusion within the report;

Our work was conducted against Bureau Veritas' standard procedures and guidelines for external Assurance of Sustainability Reports, based on current best practice in independent assurance. The work was planned and carried out to provide moderate level of assurance and we believe it provides a reasonable basis for our conclusions.

#### **Our findings and recommendations**

On the basis of our methodology and the activities described above, it is our opinion that:

- The information and data included in the scope of our assurance are accurate, reliable and free from material mistake or misstatement. The information is presented in a clear, understandable and accessible manner and the Report provides a fair and balanced representation of activities during the FY 2012-13.
- NTPC Limited has established appropriate systems for the collection, aggregation and analysis of relevant information as per GRI G3.1 Economic, Social, Human Resource, Labour and Environmental & EUSS disclosure requirements;
- The Report properly reflects the organisation's alignment to and implementation of the AA1000 Assurance Standard (2008) principles of Inclusivity, Materiality and Responsiveness in its operations.
- Presently the GHG data comprises of the direct emission from power generation only. Detailed GHG Accounting System for monitoring, reporting and periodic verification may be established.
- The synergy between Energy and Water consumption performance monitoring may be explored at power station level for optimising the natural resource consumptions and achieving sustainable water resource management at station level.
- Criteria of prioritizing the CSR activities and expenditure at various levels may be established according to the impact created on the communities.

#### **Adherence to AA1000 AS Principles**

**Inclusivity** – NTPC Limited continues to deploy robust processes for engaging with key stakeholders including undertaking centralised stakeholder engagement with key audiences such as Socially Responsible Investors and non-governmental organisations. The site visits also indicate that operations regularly engage with local stakeholders. The willingness of NTPC Limited to engage with stakeholders in order to develop its approach to relevant issues has been particularly evident during this reporting period through activities of the engagement forums listed in the Sustainability Report 2012-13.

**Materiality** – The internal materiality determination process results has been strengthened by input from the Corporate Planning department, ERM framework continues to provide a comprehensive, balanced understanding and prioritisation of NTPC Limited's Twenty Six key material corporate responsibility issues. However, the continued investment and expansion of its power generation activities in Hydro and Renewable means that there is a need to enhance the scope for the company to incorporate the impact of its activities on its overall materiality matrix.

**Responsiveness** – The report provides a comprehensive response to the issues and stakeholder concerns relating to its activities. Through the assurance process it is evident that NTPC Limited is responding to concerns raised by specific stakeholder groups and seeking proactive discussions to ascertain their views and progress towards addressing any concern. At the sites visited it was apparent that stakeholder views are listened to and that site level management are willing to work with local communities to achieve appropriate solutions.

#### **Evaluation against Global Reporting Initiative (GRI) G3.1 Sustainability Reporting Guidelines**

Bureau Veritas undertook an evaluation of NTPC Limited's Sustainability Report 2012-13 against the G3.1 Sustainability Reporting Framework and Electric Utility Sector Supplement



(EUSS) Guidelines. This included cross checking the GRI index table against all the reference documents to provide an opinion on the self-declared GRI application level. Based on our work, it is our opinion that **NTPC's Sustainability Report 2012-13** has been prepared in accordance with the GRI G3.1 Reporting Framework including appropriate consideration of the Reporting Principles and necessary indicators to meet the requirements of GRI Application Level **[A+]**.

#### Limitations and Exclusions

Excluded from the scope of our work is any assurance of information relating to:

- Activities outside the defined assurance period of FY 2012-13 and Positional statements (expressions of opinion, belief, aim or future intention by NTPC Limited and statements of future commitment);
- The data and information under assurance related to all GRI 3.1 standard disclosure and performance indicators of 21 operating power station of NTPC Limited only. NTPC Mouda, which was declared commercial only on 13.03.2013, has not been included under assurance. Subsidiaries and Joint Ventures are excluded from the Assurance activity. Hydro projects, mining projects, under construction projects, corporate offices and regional offices have been included in economic and social indicators (unless otherwise stated) but have been excluded from environmental indicators in the report. Assurance activity does not cover the physical site visit verification at hydro projects, mining and under construction projects. Two solar PV plants excluded from Environmental Performance Indicators as the plants were commissioned on 31.03.2013 and excluded from the assurance process. Energy Indirect GHG emission (wherever applicable) is excluded.

#### Statement of independence, impartiality and competence

Bureau Veritas is an independent professional services company that specialises in QHSE, Social Accountability & Sustainability Assurance with almost 180 years history in providing independent assurance services, and an annual turnover in 2013 of Euros 3.933 billion. Bureau Veritas has implemented a Code of Ethics across the business to maintain high ethical standards among staff in their day to day business activities. We are particularly vigilant in the prevention of conflicts of interest. No member of the assurance team has a business relationship with NTPC Limited, its Directors or Managers beyond that required of this assignment. We have conducted this verification independently, and there has been no conflict of interest. The assurance team has extensive experience in conducting verification and assurance over environmental, social, ethical and health and safety assessments and has over 30 years combined experience in this field and an excellent understanding of Bureau Veritas standard methodology for the Assurance of Sustainability Reports.

#### BUREAU VERITAS CERTIFICATION INDIA (P) LTD.



Sanjay Patankar  
Lead Assurer  
Product Manager, Climate Change  
and Sustainability



Rupam Baruah  
Technical Reviewer  
General Manager – Eastern Region

Mumbai, India  
31 March 2014



## Report Application Level

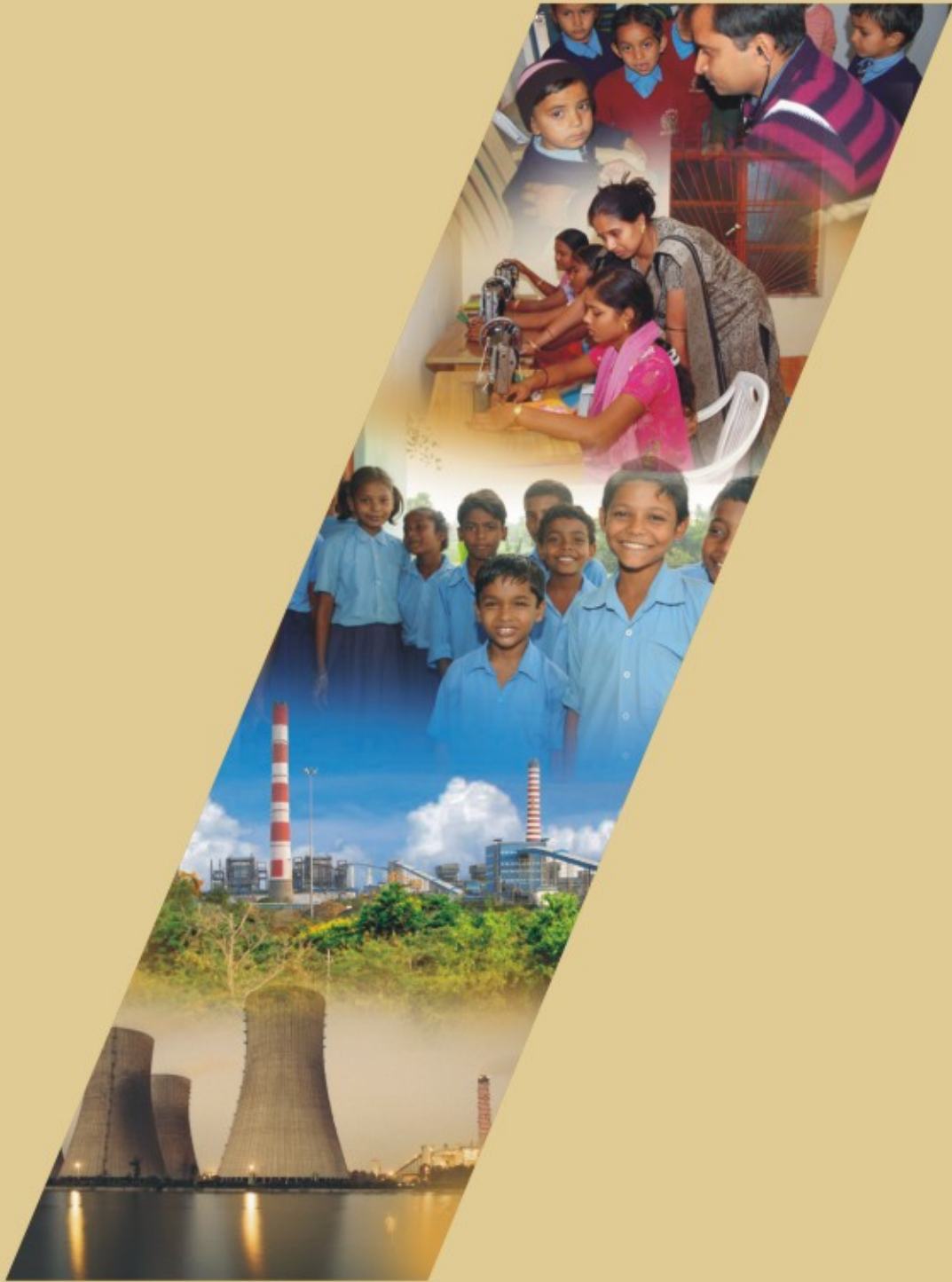
Report Application Level	C	C+	B	B+	A	A+
<b>Profile Disclosures</b> OUTPUT	Report on: 1.1 2.1-2.10 3.1-3.8,3.10-3.12 4.1-4.4,4.14-4.15		Report on all criteria listed for Level C plus: 1.2 3.9, 3.13 4.5-4.13, 4.16-4.17		Same as requirement for Level B	
<b>Management Approach Disclosures</b> OUTPUT	Not Required	Report Externally Assured	Management Approach Disclosures for each Indicator Category	Report Externally Assured	Management Approach disclosures for each Indicator Category	Report Externally Assured
<b>Performance Indicators &amp; Sector Supplement Performance Indicators</b> OUTPUT	Report fully on a minimum of 10 Performance Indicators, including at least one from each of: social, economic, and environment.**	Report Externally Assured	Report fully on a minimum of 20 Performance Indicators, at least one from each of: economic, environment, human rights, labor, society, product responsibility.***	Report Externally Assured	Respond on each core and Sector Supplement* indicator with due regard to the materiality Principle by either: a) reporting on the indicator or b) explaining the reason for its omission.	Report Externally Assured

\* Sector supplement in final version

\*\* Performance Indicators may be selected from any finalized Sector Supplement, but 7 of the 10 must be from the original GRI Guidelines

\*\*\* Performance Indicators may be selected from any finalized Sector Supplement, but 14 of the 20 must be from the original GRI Guidelines





A Maharatna Company

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