

SUSTAINABILITY REPORT 2011-12

GRI G3 Compliant
B+ Level Report



A Maharatna Company

Powering with Care...



Powering India's Growth



Vision

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

मूल मान्यताएं

व्यावसायिक नैतिकता

पर्यावरण एवं आर्थिक
रूप से निर्वहनीय

ग्राहक को प्रधानता

संगठन एवं
व्यवसाय पर गौरव

परस्पर आदर
और विश्वास

स्वयं एवं
अन्य का उत्प्रेरण

नवप्रवर्तन और गति

संपूर्ण गुणवत्ता
से उत्कृष्टता

पारदर्शी व
प्रतिष्ठित संगठन

उद्यमशीलता

समर्पित

Core Values

B	Business Ethics
E	Environmentally & Economically Sustainable
C	Customer Focus
O	Organisational & Professional Pride
M	Mutual Respect & Trust
M	Motivating Self & Others
I	Innovation & Speed
T	Total Quality for Excellence
T	Transparent & Respected Organisation
E	Enterprising
D	Devoted

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

Sustainability Report 2011-12

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STATEMENT OF CHAIRMAN & MANAGING DIRECTOR



Dear Stakeholder,

Everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment. Sustainability creates and maintains the conditions under which humans and nature can co-exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations.

NTPC is operating one of the largest fleets of generating units in the world and its operational excellence is at par with world standards with high levels of capacity utilization and reliability through use of latest technologies and best practices. Along with the financial top line and bottom line, NTPC puts equally sharp focus on environment and social aspects.

NTPC has an ambitious plan to become a 128 GW company by 2032. It has demonstrated the highest ever

growth in its history during the year. 2,820 MW generation capacity was commissioned in 2011-12, the highest ever in a single year. 9,610 MW capacity was added during 11th Plan period ending March 2012, exceeding the Plan target. Three 660 MW Super Critical Units were commissioned and declared commercial at Sipat. Units of 16,809 MW capacity are presently under construction.

Sustainability principles are translated into strategy and action by NTPC in all its operations so that corporate excellence is blended with inclusive growth and environment friendly power development. NTPC has been a member of 'TERI – Business Council for Sustainable Development – India (TERI-BCSD) since August 2001, which is the Indian partner of the World Business Council for Sustainable Development, Geneva. One of the initial members of the India Chapter of United Nations Global Compact (UNGC), a global

sustainability initiative under the aegis of UN, NTPC is committed to the principles of sustainable development encompassing the environment, the society and corporate governance.

In order to further enhance NTPC's efforts in the area of Sustainable Development, we have already initiated the following actions :

- A Board Level Sub-Committee on Sustainable Development has been formed with an independent Director as Chairman.
- A high level Steering Committee is formed to assist the Board Level Sub-Committee on all SD related activities.
- A separate Sustainable Development Policy has been adopted to undertake Sustainable Development activities efficiently and effectively in a structured manner. This is in addition to a well defined Community Development Policy, which NTPC already has.
- Dedicated Sustainable Development Projects worth more than Rs 3.0 Crores were undertaken by NTPC during the year 2011-12 and an outlay of about Rs 10.0 Crores has been identified for implementation of SD Projects in the year 2012-13. These projects cover wide area of Sustainable Development such as waste management, bio-diversity conservation, reduction in air emissions, life cycle environmental impact assessment and electrification of un-electrified & de-electrified villages (under Rajiv Gandhi Grameen Vidyutikaran Yojna –RGGVY, through its wholly owned subsidiary NESCL).

Bulk of our new capacity addition is coming through super critical units leading to greater efficiency and reduced impact on the environment, promoting sustainable growth. NTPC has also taken several initiatives to increase the share of electricity based on non-fossil sources in its portfolio as well as in the country. Work is already in progress on 3 hydro-electricity projects with total capacity of 1491 MW. A medium term roadmap has already been prepared for implementation of 300 MW through renewable energy sources by 2017 which includes Solar capacity of 105 MW. A roadmap for development of another 700 MW basket of renewable energy is in progress as a long term measure.

The National Solar Mission is a major initiative by the Government of India to promote ecologically sustainable growth while addressing India's energy

security challenge. We are playing a key role in the implementation of the first phase of Jawaharlal Nehru National Solar Mission (JNNSM) of 1,050 MW through our subsidiary NTPC Vidyut Vyapar Nigam Ltd (NVTN). 173 MW of Solar PV capacity has already been commissioned by 2011-12.

For monitoring air quality around our power plants on real time basis, 61 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 around 19 million trees throughout the country to 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.

NTPC has built strong partnerships with the communities around the projects and also with the wider society through a well conceived basket of CSR interventions for the betterment of lives of the people. As most of our stations are located in remote areas, we undertook various activities during 2011-12 in the neighborhood of our plants like providing access to water, road and electricity; education ; sanitation and public health; promotion of sports and games; community centres; vocational training; skill development centres ; support for agricultural activities etc. We also provided support for relief and rehabilitation work in the flood affected area of Odisha and earthquake affected area of Sikkim, respectively. Further, our plants at Korba and Farakka arranged relief material during floods in Chhattisgarh and West Bengal respectively. During the year 2011-12, NTPC utilized over 0.50 percent of its Profit after Tax on CSR activities.

The power sector faced several challenges during the year 2011-12. Power stations had alarmingly low levels of coal stock and upcoming projects did not have coal supply guarantee. The issue was only partially addressed by signing fuel supply agreements with Coal India having commitment to meet 80% requirement. Import of coal increased by about 45 % over the last year. The imported coal prices have also increased substantially, challenging the very viability of tariff based bidding system. Continued gas shortages has led to complete halt on expansion of gas based power stations. Ministry of Environment and Forests, as well as, Central and State Pollution Control Authorities have enforced stringent environmental norms affecting project development. Pressures from environmental and social NGOs have led to inordinate delay in project clearances.

However, driven by domestic demand and with a very large segment of its huge population having economic aspirations and dynamism, the Indian economy stands on firm foundations. This translates into a strong growth outlook for the power sector. It is envisaged that for 8 per cent GDP growth, India will need power generation capacity of 778 GW by 2032. The target growth of 8.2 per cent over the Twelfth Plan period for “strong inclusive growth” envisaged by the Government of India would require commensurate growth in the power sector.

NTPC plans to add 14,038 MW capacity during the Twelfth Plan period and maintain its position as the largest power generator in the country. We maintain close interface with all the stakeholders, continuously scan the business environment and proactively engage in policy advocacy. Some of the key concerns which have emerged during interactions with stakeholders are:

- Perception of slow capacity addition in the sector.
- Inadequate fuel supply.
- Financial status of the State Utilities.
- Delay in land acquisition and environmental clearances.

NTPC has taken several steps to overcome these challenges in order to achieve our growth targets. Some of these are:

- All the statutory clearances and approvals including Fuel tie-up are obtained for new projects before placement of award for Main Plant Package.
- Bulk tendering is being done to step up capacity addition. This has also helped in induction of leading global manufacturers to set up equipment manufacturing units in India along with their domestic JV partners.
- Initiatives for direct import of coal, saving 15 to 23 per cent by way of price including low GCV coal for increasing the blending ratio and optimizing cost of generation.
- Development of own mines.
- Work in progress for transport of coal to Farakka through inland waterways, a pioneering initiative of the Company being cited as a model for other sectors. Initiatives being taken to transport coal to Barh and Bongaigaon projects also through waterways.

- Optimizing plant layouts and continuous improvement in the design of various components of projects with sharper focus on quality assurance and minimizing land & water requirement.
- Focus on improvement of cycle efficiency of power plants through adoption of Super-Critical, Ultra-Super Critical and even Advanced – Ultra Super Critical technology with higher steam and pressure parameters to bring about major reduction in the coal used as well as emission per unit of power generated.

We have also taken proactive steps for setting up appropriate corporate governance systems and processes. Transparency, accountability, fairness and intensive communication with stakeholders are integral to our functioning. The Company has requisite number of Independent Directors on the Board, meeting the requirements of the Listing Agreement and the Guidelines on Corporate Governance for Central Public Sector Enterprises.

All the impressive achievements of NTPC have been made possible by the untiring efforts of the employees for whom NTPC is an ‘employer of choice’. In a study on ‘India’s Best Companies to Work for 2012’, by the Economic Times and ‘Great Place to Work Institute’ NTPC has been ranked #1 among PSUs, #1 in Manufacturing and Production Industry segment and overall #3 among 514 companies with business operations in India. This is next only to Google and Intel.

NTPC will continue to take up Sustainable Development projects for conserving natural resources, energy, water and make all out efforts to minimise environmental impacts of our projects on the society. We will also continue to invest in community around our power stations through various initiatives by providing access to water, electricity, education, healthcare etc.

We welcome your views and suggestions on this report for sustaining and improving our sustainability journey.



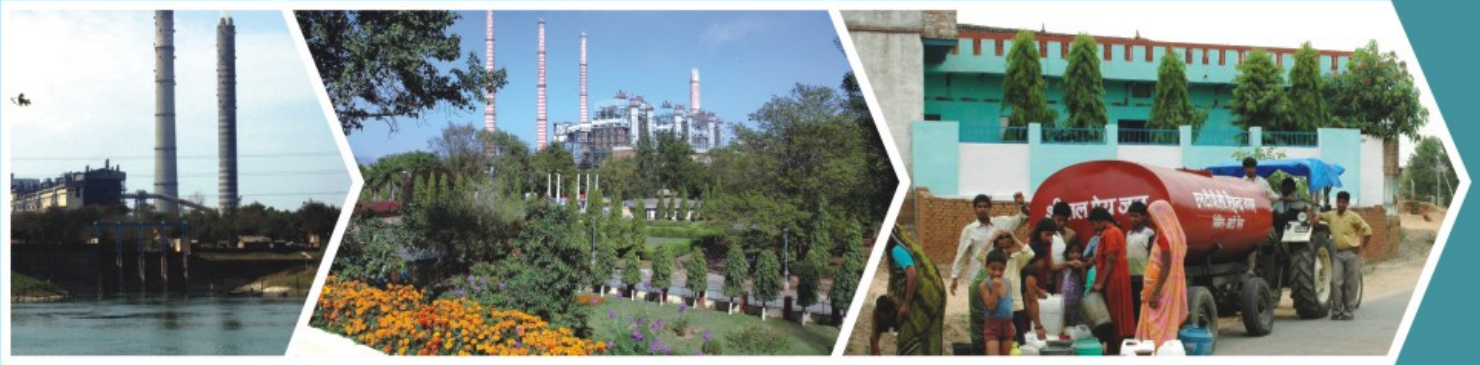
(Arup Roy Choudhury)

Chairman and Managing Director

New Delhi
March, 2013



ABOUT THIS REPORT





ABOUT THIS REPORT

With this report, we start our Sustainability Reporting Journey with the Vision “Going Higher on Generation, lowering GHG intensity”. This report is intended for all our key stakeholders: customers, employees, shareholders, suppliers, government, regulatory bodies, public bodies, NGOs and public at large. The report is based on Global Reporting Initiative’s G3 guidelines on sustainability reporting and is self declared B level report as per GRI application level. A detailed table showing reference to reported GRI indicators has been listed at the end of this report. For any clarifications and feedback on the content of the Report, please contact the following:

**Executive Director/General Manager
Sustainable Development Group
Engineering Office Complex (EOC)
NTPC Limited, Sector- 24,
Noida-201301 (U.P.)
Email-sustainability@ntpc.co.in
Phone : (+ 91) 120 - 2412732
Fax : (+ 91) 120 – 2412773**

Scope and Boundary of the Report

The report covers the activities of all NTPC owned operating power generation plants (total 21 in No.).

Hydro projects, mining projects and corporate offices at Scope & EOC, Noida have been included in social and economic Indicators but have been excluded in Environment indicators. The table given depicts the inclusion and exclusion of performance indicator data :

	Scope Office	EOC, Noida Office	Station	Hydro/Mining Projects
EC	✓	✓	✓	✓
EN	X	X	✓	X
LA	✓	✓	✓	✓
SO	✓	✓	✓	✓
HR	✓	✓	✓	✓
PR	✓	✓	✓	✓

All these plants are located in India. It does not cover the activities of our Joint Ventures, Subsidiaries, Supply chain and under construction green field projects. However, references have been made to some of the activities beyond the operating plants for the purpose of clarity and for describing strategic initiatives, risk mitigation etc. The report focuses on sustainability issues assessed as most material to our business. We have tried to remain objective and report in an open, honest and balanced way.

Reporting period

This report depicts our sustainability performance for

the period 01st April 2011 to 31st March 2012 unless stated otherwise in the report. This report serves as a summary document and reference has been made to the relevant detailed information that is available in other reports of the company or on our Corporate website, wherever required. Moving forward, NTPC shall endeavor to publish Sustainability Report annually.

Measurement approaches for Performance Indicator data

All attempts have been made to apply a uniform approach across all NTPC stations for collection of data on performance indicators. Our individual operating units collect and process their performance data using the available national or international methodologies and techniques for measurement, calculation and analysis wherever possible. However, since various units of NTPC power plants have come up over a period of last more than 30 years, there is a wide variation in the

systems available at these units and hence necessary variations have been made wherever required with the objective to represent fairly the business performance level and achievements. Also, we have used assumptions, other standard equations and calculation methodologies for data estimation and quantification wherever required.

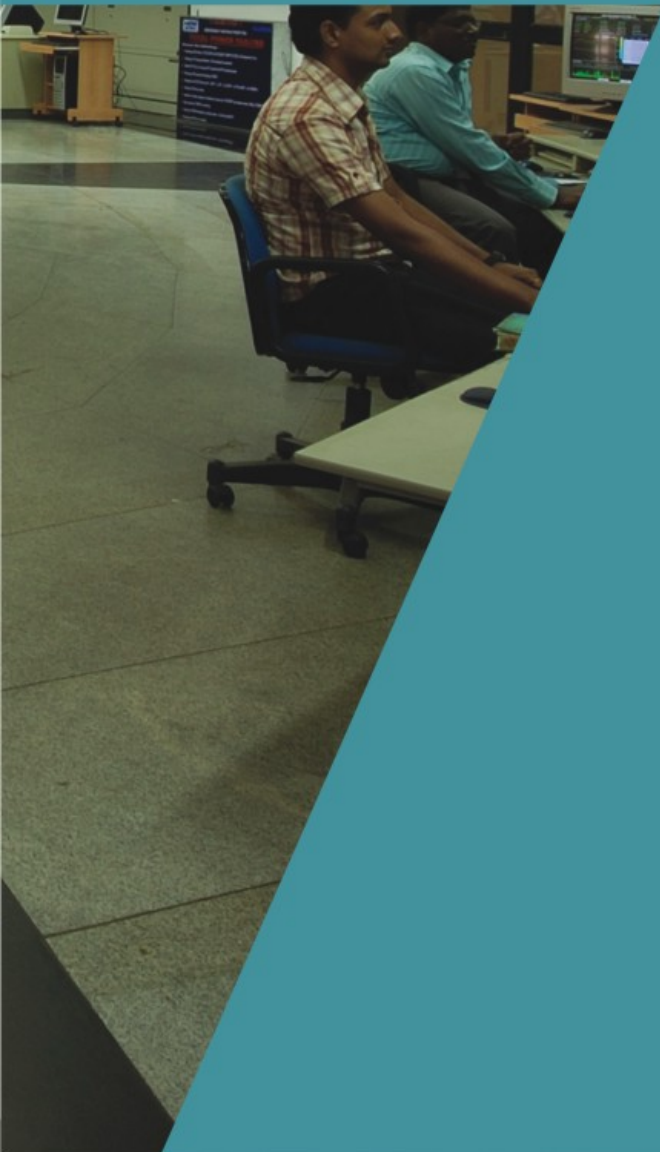
In order to present a holistic account of our sustainability activities, certain information included in this report refers to our future plans and intentions towards our strategy, operations, performance goals and targets, business plans etc. Such information inherently involves a certain degree of uncertainty. While we will strive to achieve the intended goals, we cannot ensure a desirable outcome in all cases.

We engaged M/s DNV AS by a well defined tendering process to provide independent external assurance on this report.

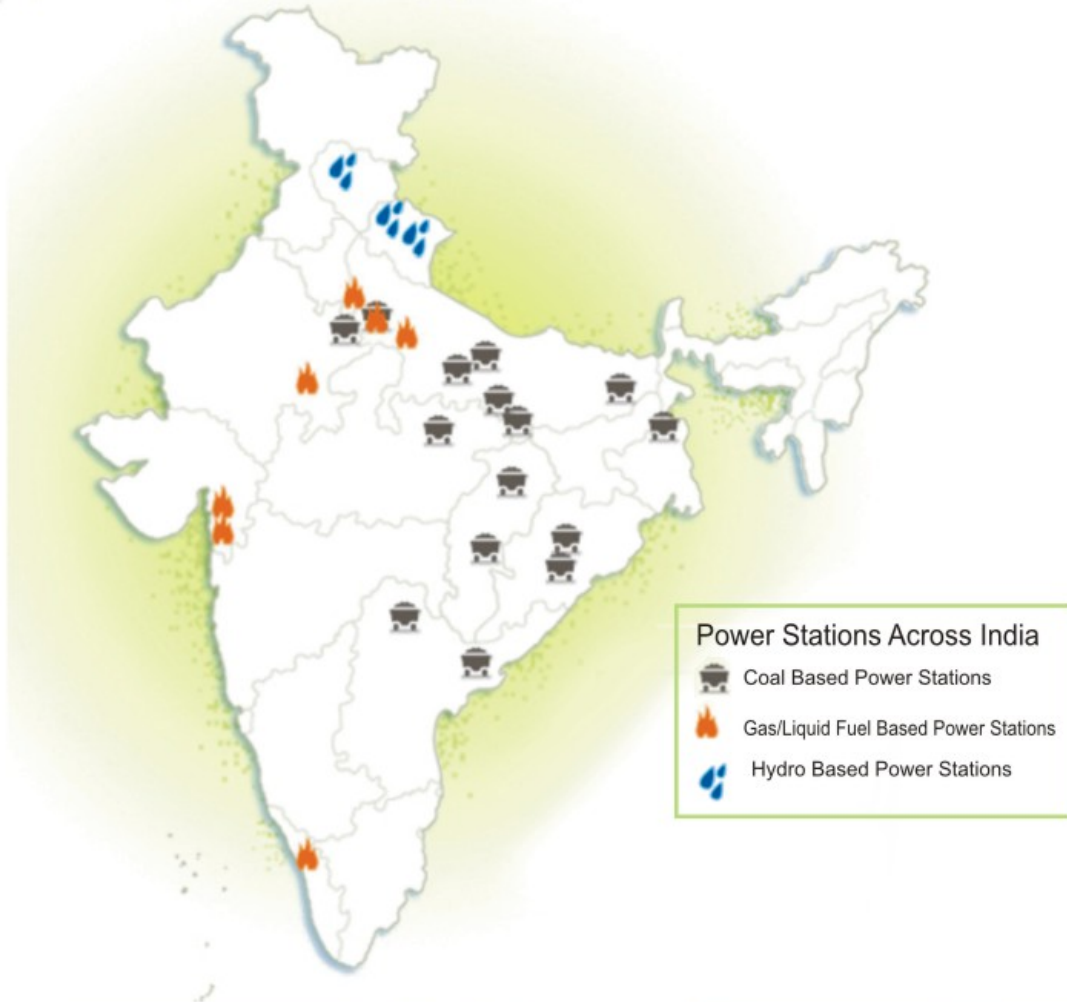




ORGANISATION PROFILE



Our Power Plants



ORGANISATION PROFILE

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.



NTPC 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:

- a) Contribute towards clean and sustainable environment with respect to Land, Water and Air.
- b) Conserve resources by reduction, reuse and recycling.
- c) Initiate and support measures to optimize usage of renewable energy, increase energy efficiency and

reduce GHG emissions.

- d) Support measures for biodiversity conservation by following the practices of protecting, conserving and restoring ecosystems.
- e) Be transparent, ethical and fair to all stakeholders.
- f) Be supportive in developing and enhancing people's standard of living in and around our business units.
- g) Generate awareness, share knowledge and support training programmes on sustainable development among the employees, communities under its area of influence and public at large.

Principles of Environment Policy of NTPC, 1995

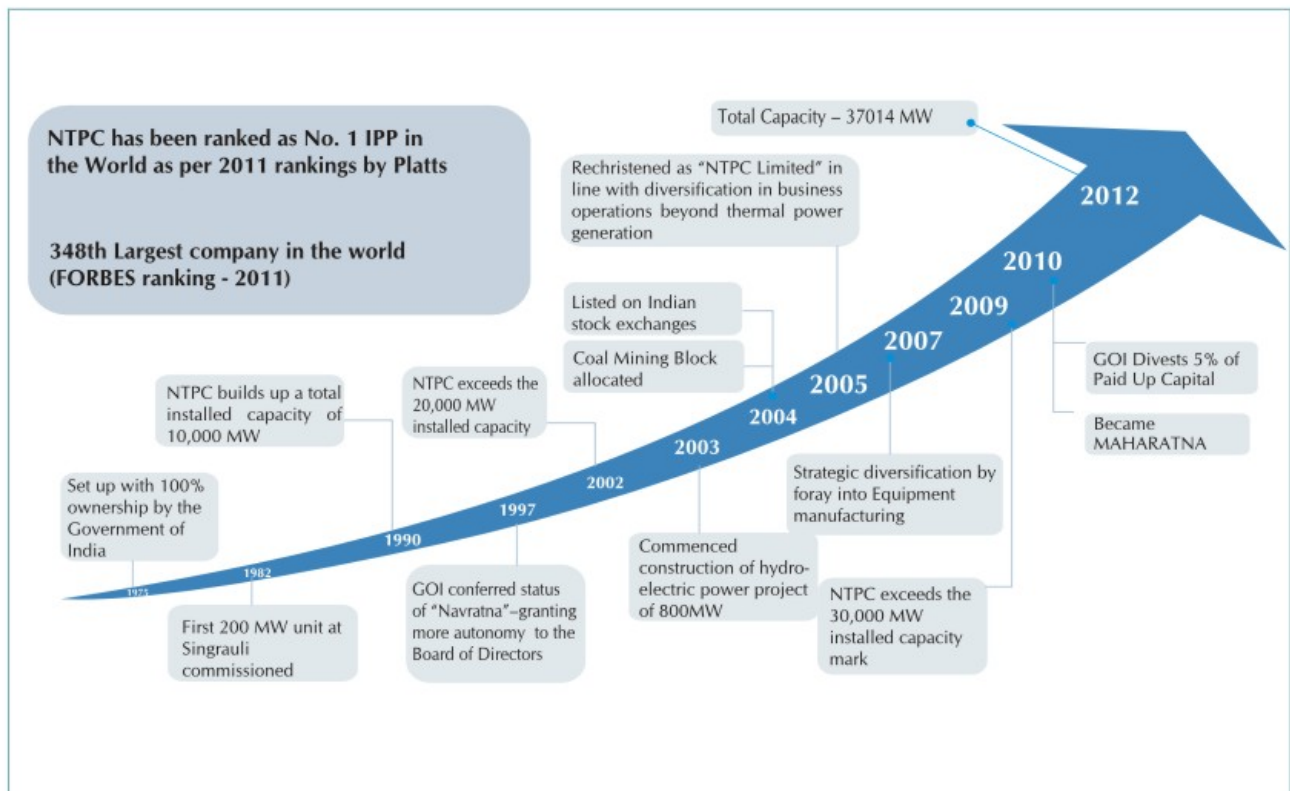
- To achieve and maintain a leader's role in the area of Environment Management in the Power Sector in the country.
- To keep in view the various environmental requirements in all its business decisions.
- To continuously adopt ways and means for Environment Protection and Environment Improvement around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

*Objectives of NTPC CD Policy, August 2010

- 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 Millenium 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.

* Detailed NTPC Community Development (CD) Policy is available on our website www.ntpc.co.in

NTPC's Journey so far ...



NTPC - LEADING THE INDIAN POWER SECTOR

NTPC was set up in 1975 to accelerate power development in India. The Company started with coal based power generation. After gaining sufficient experience in it, NTPC also commissioned natural gas based power plants. In pursuit of its vision to become an 'Integrated Power Major', the Company started diversifying its activities through backward, forward and lateral integration in the entire value chain of power generation business. The name of the Company is NTPC Limited and it has its Head Quarters at NTPC Bhawan, Core-7, Scope Complex, Institutional Area, Lodhi Road, New Delhi-110003.

Core Business of Electricity Generation and Capacity Addition –

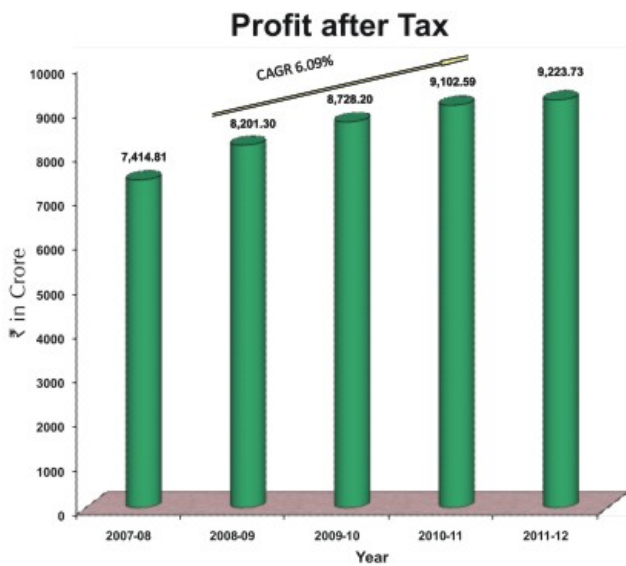
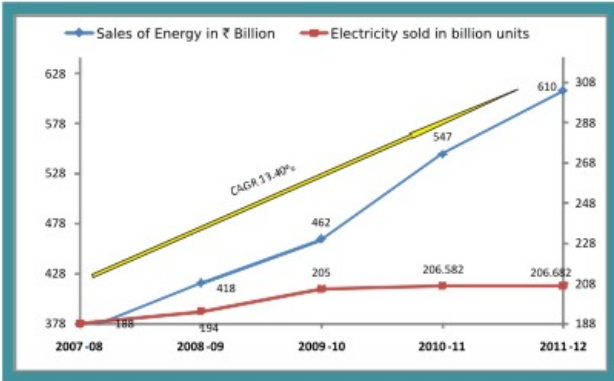
NTPC is generating electricity through its coal and gas based power stations either wholly owned or through

JV with other public sector companies. During the FY 2011-12, NTPC (standalone) generated 222.07 BU which was 25.48% of the total electricity generated in India and total electricity generation along with JVs was 240.31 BU. The total installed generation capacity of NTPC as on 31st March 2012 was 37014 MW, including 4364 MW under joint venture. Total capacity commissioned during the year was 2820 MW.

NTPC is the leader in Indian power sector. With 18.52% of total installed capacity of the country, NTPC (including JVs and Subsidiaries) contributed over 27% of the country's generation as on 31.03.2012.

NTPC is ranked 3rd in Asia among global electric utilities as per Forbes Global 2000 ranking published in the year 2012. It is also ranked as 337th largest Company in the world in the Forbes Global 2012. NTPC is also ranked no.1 Independent Power Producer Globally in the Platts Top 250 Global Energy Company Rankings-2011.

In addition to its excellent operational performance, NTPC has a robust financial performance:



Operational Structure

The basic Organisation Structure of NTPC has been given at page-20. The structure depicts CMD, Directors, Regional Executive Directors and Power Stations under their control. However, there are various Functional Divisions, specialized in their functional areas and are working under each Director. These divisions are headed by Executive Directors / General Managers which has not been depicted here for the sake of keeping it simple and understandable.

Nature of Ownership & Legal Form

NTPC is a Government Company within the meaning of Section 617 of the Companies Act, 1956. The President of India presently holds 84.5% of the total paid-up equity share capital. Remaining equity of the Company is held by the FIs, FIIs, MF, Banks, Corporate Bodies and public at large.

Markets Served

- a) NTPC is the largest Power Utility in India. It is a bulk supplier of the electricity. NTPC sells electricity from its various Thermal Power Generating Stations located across India to various bulk customers located throughout the country.
- b) 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.

- c) Sale of electricity is made through long term Power Purchase Agreements entered with the respective customers made 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.
- d) 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.
- e) NTPC has the leading market-share (about 27 per cent) and its strategies to sustain and increase the market share includes :
 - i. Capacity Addition Targets of becoming 128 GW Company by 2032 and maintaining sector leadership.

- ii. Strategic Integration along the value-chain through entry into coal mining, power equipment manufacturing, power trading, power distribution and lateral diversification into hydro, renewables and nuclear (in line with the Government policies).

Significant Changes during reporting period (April 2011-March 2012)

NTPC has added 2820 MW capacity and the total installed capacity have increased from 34194 MW to 37014 MW in the year 2011-12. As on 31st March, 2012 Company's installed capacity and generation vis-à-vis All India capacity and generation are as follows –

Particulars	All India	NTPC	% Share
Capacity (MW)	199877.03	32650	16.34%
Generation* (BUs)	876.89	222.07	25.32%
Capacity incl. JVs (MW)	199877.03	37014	18.52%
Generation* incl. JVs (BUs)	876.89	240.31	27.40%

* including Bhutan Import

(Source: All India Data- CEA's executive summary)

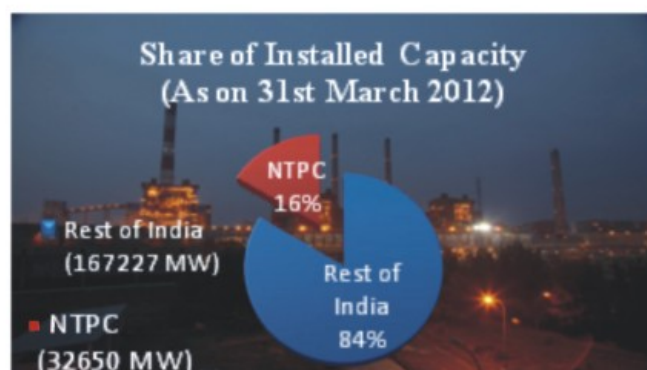
OVERVIEW AND STRATEGY

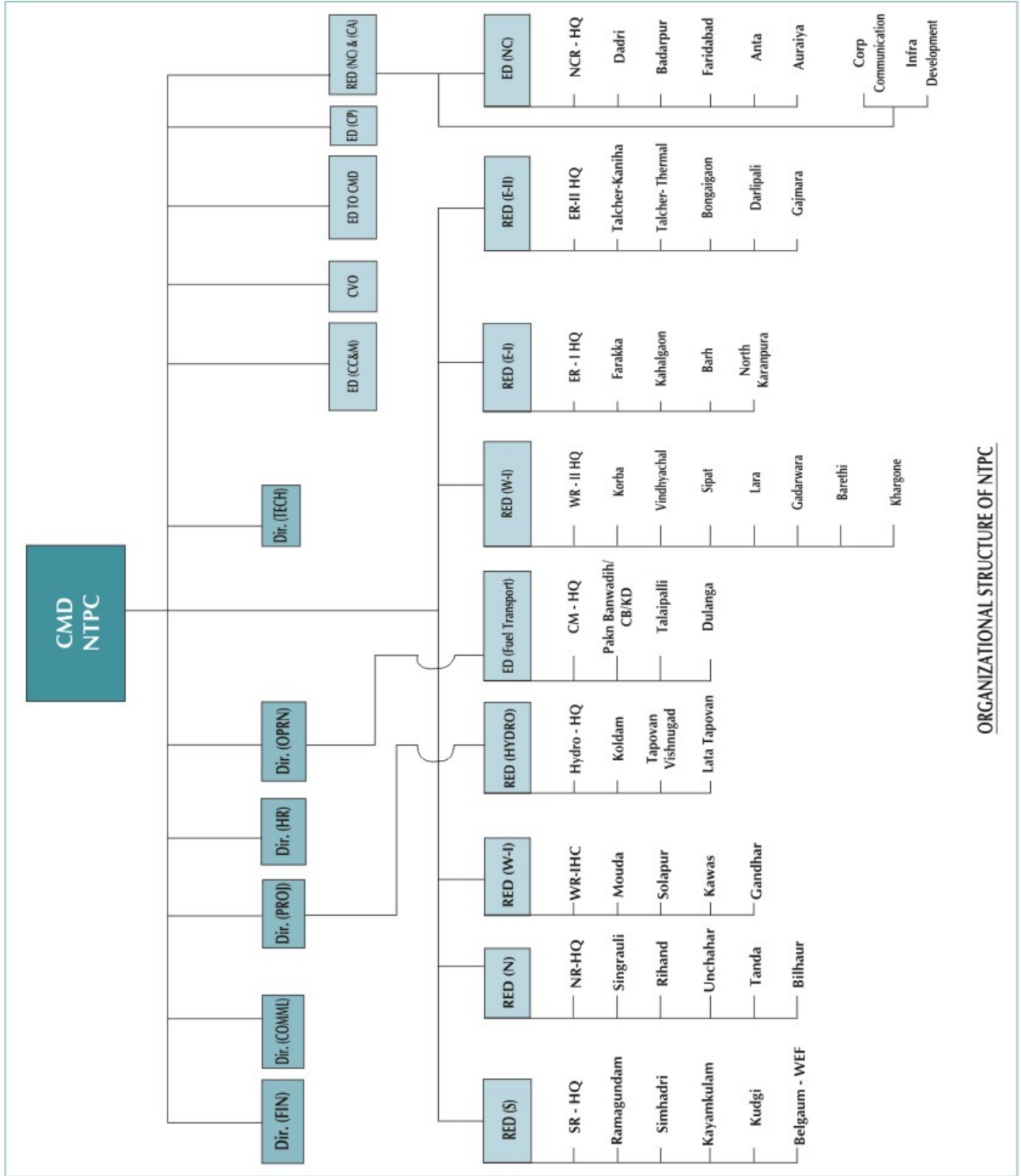
Units installed during the year 2011-12 are :

Project/ Unit installed during 2011-12	Capacity (MW)	Project/ Unit installed during 2011-12	Capacity (MW)
NTPC owned		Under JVs	
Sipat-I	1,320	Jhajjar (JV with HPGCL & IPGCL)	500
Simhadri-II	500	Vallur (JV with TANGEDCO)	500
Addition during 2011-12		2,820 MW	

There is no significant change in the share capital structure and other capital formation during the year 2011-12. A list of wholly owned operating Stations of NTPC along with their installed capacity (in MW) and Gross Generation (in MU) during 2011-12 is as under:

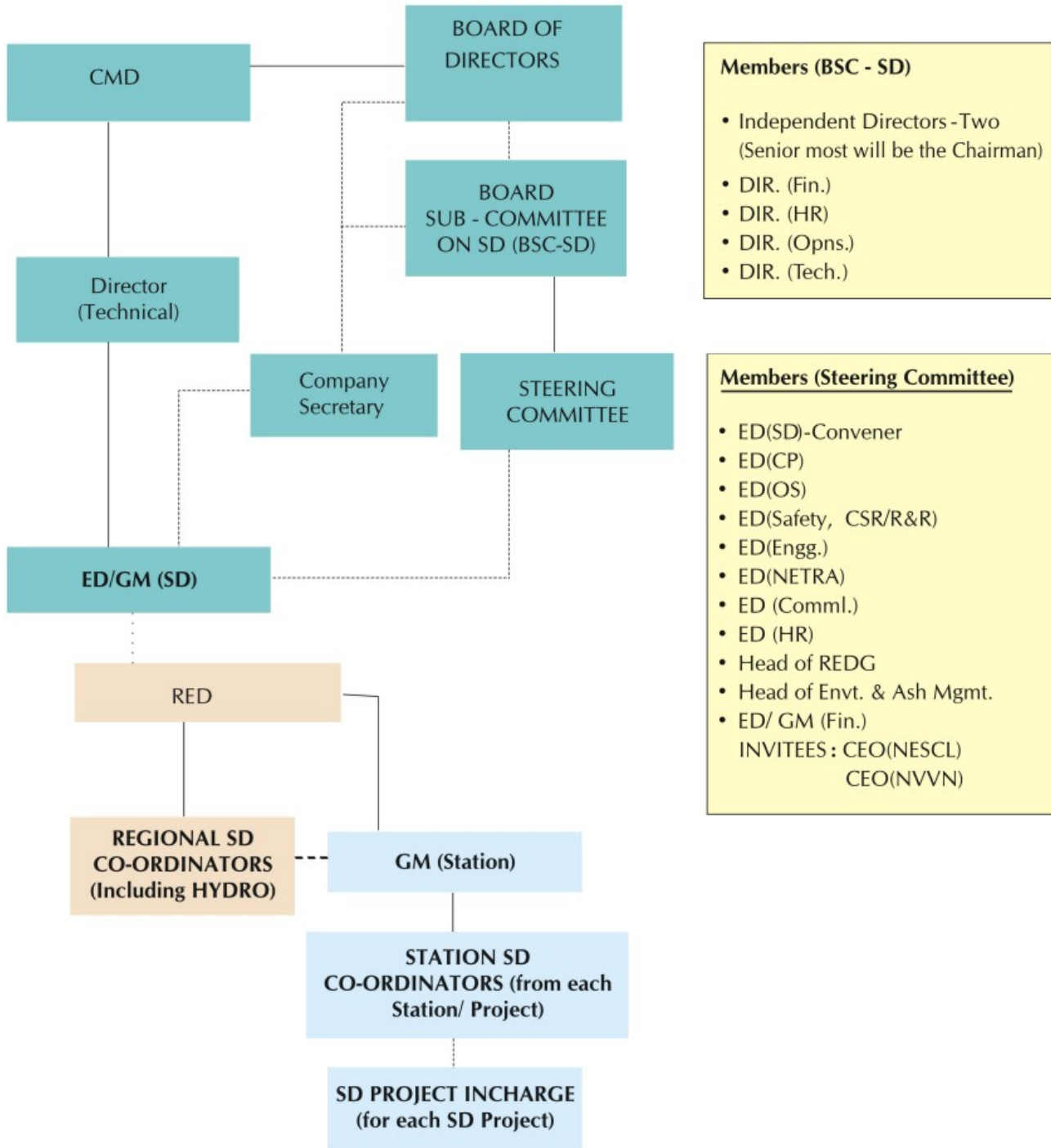
Stations	Fuel Type	Installed Capacity (MW)	Gen. (MU) Gross
Northern region		5490	43452
Singrauli	Coal	2000	15585
Rihand	Coal	2000	16183
Unchahar	Coal	1050	8279
Tanda	Coal	440	3405
National Capital Region		4837	34015
Badarpur	Coal	705	4775
Dadri	Coal	1820	14224
Anta	Gas	413	2693
Auraiya	Gas	652	3879
Dadri	Gas	817	5376
Faridabad	Gas	430	3068
Western Region		9473	62783
Korba	Coal	2600	18030
Vindhyachal	Coal	3260	25886
Sipat	Coal	2320	11575
Kawas	Gas	645	3608
Jhanor Gandhar	Gas	648	3684
Eastern Region		7900	49451
Farakka	Coal	2100	10416
Kahalgaon	Coal	2340	13438
Talcher – Kaniha	Coal	3000	21857
Talcher – Thermal	Coal	460	3740
Southern Region		4950	32366
Ramagundam	Coal	2600	21255
Simhadri	Coal	2000	10405
Rajiv Gandhi CCP	Liquid Fuel	350	706
Total		32650	222068





ORGANIZATIONAL STRUCTURE OF NTPC

Organizational Setup for Sustainable Development





POWER SCENARIO : KEY CHALLENGES AND OPPORTUNITIES



POWER SCENARIO : KEY CHALLENGES AND OPPORTUNITIES

Electricity is an essential requirement for all facets of our life and has been recognized as a basic human need. It is a critical infrastructure on which the socio-economic development of the country depends. Supply of electricity at reasonable rate is essential for growth of the country. Equally important is availability of reliable and quality power at competitive rates to Indian industry to make it globally competitive and to enable it to exploit the tremendous potential of employment generation. Recognizing that electricity is one of the key drivers for rapid economic growth and poverty alleviation, the nation has set itself the target of providing its access to all households.

Indian Power sector is witnessing major changes. Growth of Power Sector in India since its Independence has been noteworthy. However, the demand for power has been outstripping the growth of availability. Substantial peak and energy shortages prevail in the country. This is due to inadequacies in generation, transmission & distribution as well as inefficient use of electricity. Very high level of technical and commercial losses and lack of commercial approach in management of utilities has led to unsustainable financial operations. Electricity industry is capital-intensive having long gestation period. Electricity is a commodity that cannot be stored in the grid where demand and supply have to be continuously balanced. The widely distributed and rapidly increasing demand requirements of the country need to be met in an optimum manner. NTPC, being a Public Sector Undertaking and the largest power generating company in the country, all its business activities need to be fully aligned with national power scenario priorities and five year plans of the Power Ministry.

THE POWER SECTOR SCENARIO IN INDIA

Generation Capacity

Sector	Total Capacity (MW)	% share
State	85918.65	42.99%
Centre	59682.63	29.86%
Private	54275.75	27.15%
Total	199877.03	100.00%

The total installed capacity in India as on March 31, 2012 (excluding captive generating capacity connected to the grid) as per CEA reports, is given in the Table above.

Fuel	Total Capacity (MW)	% Share
Thermal (Coal/Gas/Oil)	131603.18	65.84%
Hydro	38990.40	19.51%
Nuclear	4780.00	2.39%
R.E.S.	24503.45	12.26%
Total	199877.03	100.00%

The total installed capacity represented by fuel mix is also given here. Out of the total thermal capacity of 65.84%, the Coal based capacity is 56.05%, thus coal remains the key fuel for power generation.

The total basket of Renewable Energy Sources (RES) in the Country (including small hydro power projects) was 24503.45 MW of which over 70% is contributed by wind power, 13% by biomass and bagasse, 12% by small hydro projects, 4% by solar and balance through urban/industrial waste. (Source: Ministry of New and Renewable Energy (MNRE))

The capacity utilisation in the Indian power sector is measured by Plant Load Factor (PLF).

Sector	Sector wise PLF % (Thermal)		
	2009-10	2010-11	2011-12
State	71.13	66.75	68.00
Central	85.64	85.12	82.12
Private	82.41	76.70	76.19
All India	77.68	74.97	73.32

PLF of thermal stations declined from 74.97% in the year 2010-11 to 73.32% in the year 2011-12. The decline in PLF was mainly on account of backing down / shut down of units because of low schedule from beneficiary states, delay in stabilization of new units, transmission constraints and shortage / poor quality of coal.

In the XI Plan, 54964 MW (excluding RES) capacity has been added, a 12% shortfall (approx.) over the mid-term target of 62374 MW. However, in absolute terms, this capacity addition in the XI plan is much higher as compared to the capacity added in each of last three five year plans. The coal based capacity addition was the nearest to the target.

As per the report of Working Group on Power, set up by Planning commission for finalizing the target for XII plan, the targets set for capacity addition during XII plan is 75785 MW (excluding RES). (Source: CEA)

CAPACITY ADDITION DURING XI PLAN in MW (Excluding RES)				
	Thermal	Hydro	Nuclear	Total
Target (after mid-term review)	50757	8237	3380	62374
Achievement	48540	5544	880	54964
Shortage (%)	4.4	32.7	74.0	11.9

During the XII Plan, emphasis has also been laid on adding capacity through Hydro, Nuclear and Renewable energy sources which is in line with the Government of India's low carbon growth strategy. However, fossil fuel based power remains absolutely necessary to achieve the XII plan target. About 84% of the capacity is expected to be added through fossil fuel based plants. The XII Plan target seems realisable subject to availability of land, environment clearances, fuel, water and signing of Power Purchase Agreements.

TARGET FOR XII PLAN	
Fuel	Target Capacity (MW)
Hydro	9204
Nuclear	2800
Gas	1086
Coal	62695
Total	75785

Power Demand – Supply Position

As per World Energy Statistics 2010, India ranks 5th in the world in terms of total electricity generated. The per capita consumption of power in India has increased from 631.50 units in 2005-06 to 813.30 units (Provisional) in 2010-11. India still has one of the lowest per capita power consumption compared to the world average of 2807 units in 2009 (Source: World Development Indicators).

Sector wise and fuel wise break-up of generation in BUs for the year 2011-12 and 2010-11 is given here.

GENERATION (Billion Units)					
Sector	2010-11	2011-12	Fuel	2010-11	2011-12
Central	346.09	364.00	Thermal	665.01	708.81
State	343.30	367.95	Hydro	114.26	130.51
Private	116.14	139.65	Nuclear	26.27	32.29
Others*		5.28	Others*		5.28
Total		876.89	Total		876.89

*Import from Bhutan

(Source: CEA)

Since year 2001-02, the generation in India has grown at a CAGR of 5.46%. Overall, the sector is characterized by acute shortages and the gap in the demand and supply position which has been in the range of 8.5% - 11.1% in the past 5 years.

During the year 2012-13, India's GDP is expected to grow at 6.5% to 7%. In order to sustain the growth in GDP and bring it around 9%, India needs to add power generation capacity commensurate with this pace since growth of power sector is strongly co-related with the growth in GDP and going forward it is expected that supply will create further demand. The expected demand forecast of electricity during the year 2016-17 and 2021-22 is as given in the Table below.

Year	Requirement (MUs)	Availability (MUs)	Surplus/ Deficit (+/-) (%)
2007-08	737,052	664,660	-9.8%
2008-09	777,039	691,038	-11.1%
2009-10	830,594	746,644	-10.1%
2010-11	861,591	788,355	-8.5%
2011-12	937,199	857,886	-8.5%

Year	Energy Requirement(BUs)	Peak Load (MW)
2016-17	1403	197686
2021-22	1993	289667

(Source: Report of Working Group on Power, set up by Planning Commission, for finalizing the target for XII plan).

OPPORTUNITIES IN POWER SECTOR

Over the years, Government of India has taken several policy initiatives for development of vibrant and sustainable power sector. Enactment of the Electricity Act, 2003 opened the electricity market. Opening up of the Power Sector has provided enough opportunities to various entities in the power sector i.e. Central, State Utilities and Private Sector. Indian power sector is one of the fastest growing sectors in the world and energy availability has increased over the years. The demand for power has exceeded the supply. The envisaged capacity addition during XII plan and XIII Plan is 75785 MW and 93400 MW respectively (excluding Renewable), giving opportunity for every player in the sector. For achieving such a fast growth in power generation, fossil fuel based power remains the mainstay for capacity addition and about 84% of the capacity is expected to be added through fossil fuel based plants in the XII plan.

Renewable Energy

There is a vast untapped potential in the Renewable Energy segment in India. The Ministry of New and Renewable Energy (MNRE), being the nodal agency for development of renewable energy, is committed to the development of clean energy including wind energy,



solar energy, small hydro-electric projects, biomass power, cogeneration-bagasse and waste to energy. The renewable energy ensures energy security with environmental sustainability and provides answer to decentralized distribution. It is the most appropriate, scalable and optimal solution for providing power to thousands of remote villages and hamlets across the country.

As on 31st March 2012, RES account for only 12.26% of installed capacity. Ministry of New and Renewable Energy has ambitious plans of adding 29800 MW of grid-interactive renewable power comprising 15000 MW wind power, 2100 MW small hydro power, 10000 MW solar power and 2700 MW bio-power during the XII Plan. The total estimated medium-term potential (2032) for power generation from renewable energy sources such as wind, small hydro, solar, waste to energy and biomass in the country is about 183000 MW.

The Government has taken several steps to encourage development of renewable energy sector which includes:

(a) Jawaharlal Nehru National Solar Mission was launched in November 2009 with a target of deploying 20000 MW of grid connected solar power by 2022.

(b) Preferential tariff for grid interactive renewable power in most potential States.

(c) FDI up to 100% under the automatic route is permitted subject to provisions of Electricity Act, 2003.

(d) CERC has issued Renewable Energy Certificate Regulations, 2010 for increasing the share of renewable energy in the total generation capacity of the country.

(e) To encourage the use of Renewable Energy, State Electricity Regulatory Commission (SERC) of different states have notified the Renewable Purchase Obligations (RPO) i.e. the minimum share of its total purchase to be met from renewable sources for the distribution companies

Hydro Potential

The identified hydroelectric potential of the country is above 145000 MW (excluding small hydro projects of less than 25 MW). However, installed capacity of hydro electric projects, as on 31.03.2012, is only 38990 MW. Government of India has adopted a multi pronged strategy to put this potential to use. Some of the policy measures and initiatives taken by the Government are :

- (a) Incentives to investors in order to increase the installed capacity of hydro projects
- (b) Merchant sale of power upto 40% maximum of the saleable energy for all developers.
- (c) Cost plus tariff regime has been extended for public as well as private sector hydro power projects upto December 2015.

Energy Conservation - Demand Side Management

Various studies have reported that saving one megawatt of power costs between 1/5th to 1/10th as compared to the capital investment needed to generate an equivalent megawatt of power. With ever increasing demand of electricity and efforts for unlocking of renewable energy potential, a renewed focus by power utilities on Demand Side Management (DSM) is essential. Government of India under National Mission on Enhanced Energy Efficiency (NMEEE) has embarked on one of the most ambitious and extensive energy saving initiatives with launch of Perform, Achieve, Trade (PAT) scheme. The PAT scheme is a market based trading mechanism and under this scheme, Designated Consumers (DCs) have been given targets to reduce specific energy consumption by the year 2014-15. In case, DCs are unable to achieve the allocated targets, they would be either required to purchase Energy Saving Certificates (ESCerts) or pay penalty

corresponding to the shortfall in their target achievement. This mechanism is expected to lay emphasis on adopting energy conservation measures and may create opportunities for more energy efficient organisations.

THREATS IN POWER SECTOR

Fuel Constraint – Coal and Gas

Constrained availability of fuel for power sector continues to be one of the key concerns affecting the power generation in India, which is predominantly based on fossil fuel i.e. coal and gas. The production of coal as well as gas has not kept pace with the demand. During year 2011-12, an estimated 27.58 million tonne (mt) of coal was imported against the requirement of 35 mt (excluding requirement of imported coal based plants) in order to meet the shortfall of indigenous coal. The generation loss reported due to coal supply shortages during the year 2011-12 has increased to 8.82 BUs from 7.0 BUs for the same period last year. It is expected that Power Sector would continue to face fuel constraints in future also. The domestic coal production is required to grow at the rate of 7%-9% in order to match with the growth in demand. As per the report of the Working Group on Power for XII plan, the estimated coal requirement for thermal power projects, based on the norms of 5 mt per 1000 MW, for terminal year of XII plan is 842 mt, while total availability is expected to be





of the order of 604 mt leaving a shortfall of 238 mt which is expected to be bridged by import of coal.

The gap between demand and supply of coal is further expected to increase due to various ecological concerns. The indigenous coal supply has to be augmented to match the growth in power sector since most of the thermal plants cannot use coal blended with more than 15% of imported fuel due to the design of the boilers. Further, it is also necessary to create the requisite infrastructure to facilitate the fuel to reach the intended destination.

During the year 2011-12, actual production of natural gas was 47549.40 MCM as against 52222.10 MCM during the previous year, registering a decline of about 8.9% due to lower than anticipated production. The gap in demand and supply is expected to grow further. Due to unfavorable demand-supply balance of hydrocarbons in India, Government is encouraging national oil companies to pursue equity oil and gas opportunities overseas. DGH has also initiated steps to identify prospective areas for shale gas exploration as India has several shale formations which seem to hold gas.

In spite of various measures taken by the Government, non availability of coal and gas in desired quantity would have an adverse impact on the overall performance of the sector.

Health of State Electric Utilities

Another area of key concern is the poor financial health of State Utilities i.e. our customers. The return on assets has become negative for most of the SEBs. There are number of factors which have contributed to the poor financial performance such as high degree of technical and commercial losses, tariff not determined on the basis of economics and increasing cross subsidies. As per the report "The working of state power utilities and electricity department for the year 2011-12" of Power & Energy Division of the Planning Commission, the projected losses of SEBs without subsidies for 2011-12 were expected to be of the order of Rs. 56,458 crore. Such huge losses have put a question mark on the sustainability of the entire power sector. Due to poor paying capacity, some of the State utilities are not scheduling full capacity from power stations, even though there is a tremendous shortage of power in the country.

During the last few years, some of the SEBs have increased the tariff to bridge this gap, however the rise has not been commensurate with increase in the cost of supply. The gap between cost of supply and the average tariff increased from Rs.0.76/kwh in the year 1998-99 to Rs.1.45/ kwh in the year 2009-10. This gap was expected to decline to Rs.1.07/kwh in 2011-12.

Project Implementation Delays

The following challenges were faced while setting up new Power Projects during XI Plan :

- Delay in land acquisition.
- Inadequate infrastructure facilities like reliable construction power supply and constraints in transportation of heavy equipment.
- Delay in placement of orders – mainly civil works and Balance of Plants (BoPs).
- Delay and non-sequential supply of material for Main Plant and BoPs.
- Shortage of skilled manpower for erection and commissioning.
- Shortage of fuel.

Some other key concerns are :

- Delay in forest & environment clearance for coal projects.
- Availability of water for power plants and increase in the cost of water.

OUR STRENGTHS & STRATEGIES TO MEET THESE THREATS / CHALLENGES

During the year 2011-12, operating stations of NTPC performed better than collective performance of any other sector in terms of Plant Load Factor. To retain the status of sector leader, NTPC has drawn a long term corporate plan to become a 128 GW Company by 2032 which means tripling the capacity from the existing levels. 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 Gases. The Company has also taken several steps to be an integrated major in the power sector. As a step in backward integration, NTPC has entered into coal mining business and is also exploring the possibilities in energy value chain through participation in NELP blocks.

Ambitious capacity addition program brings number of challenges for the Company. To achieve the targeted capacity addition, NTPC has adopted 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 and state-of-the-art project monitoring centre

to have on-line monitoring of progress of the projects. In addition, diversification into new areas like coal mining, hydro electric, nuclear power brings 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 all challenges in its stride.

Risk Management in NTPC

NTPC recognizes that risks are not only inherent to any business but are also dynamic in nature. NTPC is also susceptible to certain risks arising out of various activities undertaken in the normal course of its business. NTPC has adequate measures in place to overcome/manage these risks. These risks also provide the challenges and opportunities to view the business with a different perspective.

NTPC has an elaborate Enterprise Risk Management (ERM) framework in place. As part of implementation of the ERM framework, an Enterprise Risk Management Committee (ERMC) comprising of Executive Directors representing geographically spread regions and core functions of the Company is in place. 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. The ERMC has identified 25 key risk areas out of which the following 7 have been classified as the top risks for the Company:

- 1 Fuel supply risks
- 2 Project implementation delay risks
- 3 Acquisition of land related risks
- 4 Environmental pollution and other related regulatory norms including ash utilization related risks
- 5 Risks related to coal mining and coal washeries
- 6 Risks pertaining to hydro projects
- 7 Risks related to recruitment and retention of skilled 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 be adopted for management of various risks.

Risks related to coal mining and hydro projects are mainly due to environmental clearances, land acquisition / Rehabilitation & Resettlement issues and hence have not been separately discussed in this section.

Meeting Fuel Requirement

Coal India Ltd. (CIL) has long been the main supplier of coal to meet NTPC's coal requirements. In spite of various decisions taken by the Govt. for easing availability of coal, a number of our power plants are facing acute shortage of domestic coal. To facilitate assured coal supply to the new projects commissioned after 31st March 2009, Coal India Ltd. (CIL) has drafted a model Fuel Supply Agreement (FSA). For the FY 2012-13, NTPC's coal requirement is around 164 million tonnes (mt) (@85% PLF) and the availability of domestic coal (from CIL/ SCCL sources) is expected to be around 134.9 mt. There will be a shortfall of around 29.4 mt in supply of domestic coal which is to be arranged through domestic as well as international market. The coal requirement will have a quantum jump in the coming years and in the terminal year of XII Plan i.e. by the year 2016-17 it is expected to be around 227 mt, out of which 190 mt is expected to be available from CIL

sources and captive mines of NTPC . Besides, there has been steady decline in quality of domestic coal. Boulders, stones have become main cause of concern. These are creating coal unloading problems and large retention time of railway wagons.

Beginning with the import of 2.1 mt coal in the year 2004-05, NTPC has been importing coal every year to meet shortfall in the requirement at the stations. The quantity of coal imported in NTPC since then has increased manifold and during the FY 2012-13, it is planned to import 16 mt of coal. In addition, coal from domestic market is being procured through e-auction and bilateral agreement with coal companies. Further, in future, coal is expected to be available from captive mines of NTPC which will be in the range of 24-25 mt by the end of XII plan. Our plan for mitigating the shortfall in coal for the FY 2012-13 and 2016-17 is as under :

FY	Coal Requirement	Expected Domestic Coal Availability	Shortfall	Imported Coal (Equivalent Domestic)	Coal from Captive mines	Bilateral MOU / e-auction
2012-13	164.0	134.9	29.4	16 (27)	0	3
2016-17	227.1	162.8	64.3	22 (37.4)	24	3

Figures in mt



The Company has signed coal supply agreements with various subsidiary coal companies of CIL for all the coal based stations which were under commercial operation as on 31st March 2009 and the annual quantity of coal contracted under these agreements is 124.9 million tonne. In addition bilateral agreements have been signed with SCCL & North Eastern Coalfields (NECL) for supply of 5.0 million tonnes and 0.3 million tonnes respectively. Further, agreement is in place for supply of imported coal of approx. 12 mt.

We have signed long term Gas Supply Agreements (GSAs) with GAIL for supply of Administered Price Mechanism (APM) gas of 14.76 MMSCMD and 2.0 MMSCMD RLNG on firm basis and 0.5 MMSCMD RLNG on fallback basis. We have also tied up 0.82 MMSCMD of non-APM gas of ONGC and 2.30 MMSCMD of KG D6 gas of RIL. GSPA for another 2.16 MMSCMD KG D6 gas is expected to be signed with RIL shortly.

We feel that the above measures will help the Company in getting sustained fuel supply to its power plants.

Combating Project Implementation Delay Risks through effective Project Management

A Power Project has three distinct life-cycle phases i.e. Project Conceptualization, Project Planning & Development and Project Execution; these are mutually exclusive as well as comprehensively interdependent. During project conceptualization the main issues are availability of critical resources such as land, water, fuel, energy demand, fund etc.; tie-ups for clearances and approvals. Risk potential during Project Development phase is acquisition of critical land, obtaining coal linkage and environment & forest clearance, project financing, power purchase agreements, etc. In addition, conducive local environmental condition such as law & order, site infrastructure development are pre-requisites for timely project execution.

We have adopted an integrated system for the planning, scheduling, monitoring and control of approved projects under implementation, covering all aspects of the project, from concept to commissioning. Going forward, state-of-the-art project management practices are being adopted by the Company to accelerate the pace of project implementation besides benefiting in terms of cost reduction. We have set up a state-of-the-art IT enabled Project Monitoring Centre as part of the Growth Management Centre (GMC), first of its kind in

the sector, which provides milestone based project monitoring, real time network updation, real time video capture apart from latest video conferencing facility.

The Company has effected standardization and bulk ordering of Super-critical units of 660 MW and 800 MW to reduce engineering time and thereby reduce project execution time. It will also benefit in terms of bulk discounts, optimization of spares inventory, concurrent execution and above all development of manufacturing facilities for super-critical technology based units in the country.

With various initiatives on Project Implementation, we have been able to add 2820 MW of capacity during the year 2011 – 12 which is the highest ever achieved in any particular year. We have been able to add 9610 MW of Projects during XI five year plan period as against a firm target of 9220 MW. Our future capacity addition plans are as under :

- To add 4160 MW capacity by end of the year 2012-13.
- To further add about 14,000 MW by the end of XII Plan.
- To achieve Installed capacity of 1,28,000 MW by the year 2031 – 32.

New Technology Absorption for continual improvement in the Company performance

The operating performance of NTPC has been considerably above the national average. The availability factor for coal stations compares favourably with international standards. Large capacity addition programme puts pressure on our already constrained primary energy resources. A major stress must, therefore, be laid on energy efficiency and conservation, with particular emphasis on efficiency of electricity generation, transmission, distribution and end-use.

To take care of the generation side efficiency improvement, we have introduced Super critical technology for our Sipat Plant with Steam parameters of (247 Kg/cm²/ 537 deg.C/ 565 deg. C).

In order to improve the efficiency further, we have adopted even higher steam parameters of (247 Kg/cm²/ 565 deg.C/593 deg.C) for Barh Extension project and all 660/ 800 MW being taken up thereafter. The improved heat rate at these parameters will result in 5.79% gain in efficiency over the efficiency of conventional Sub -



Critical 500 MW Unit considering similar coal. For the sub-critical 500 MW units also, reheat temperature has been increased to 565 deg. C for all new units (resulting in about 0.7% gain in efficiency).

To meet future challenges of meeting India's electricity needs at affordable cost with minimum environmental impact, NTPC has drawn 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:

- Setting up of Coal Fired Units with Ultra Supercritical Parameters targeting efficiency comparable to the best available technology in the world.
- Establishment of Indian Coal Based Gasifier & Gas cleaning System for IGCC.

It has been decided to implement 100MW IGCC Technology Demonstration Project at NTPC Dadri in two stages, with Stage-I comprising of installation and stabilization of coal gasifier, gas clean up and other associated systems and Stage-II comprising of combined plant.

Tackling Environmental Issues

There has been growing concern about Climate Change and its impact on human beings. Pollution emitted from thermal power plants has been under greater scrutiny due to increased awareness about Cause and Effect relationship between emissions and environment. With the growing awareness, the thermal power stations are open to more frequent reviews by public at large and by other stakeholders, on mitigating measures for abatement of pollution. Thus there lies 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. NTPC is faring way ahead of other major power producers in India and worldwide in terms of CO₂ emission per unit generation, owing to its improved operational practices, coupled with introduction of state-of-the-art technologies.

All NTPC power plants have been designed keeping in view futuristic requirements. Provisions for space have been made for installing Flue Gas Desulfurization units if required at a later date. Massive renovation and modernization work of ESPs is underway to meet future norms. New ESPs have been designed to meet strict environmental norms for SPM emission.

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 have been done to increase Cycle of Concentration and reduce blow down from cooling towers and water cycles are being designed to achieve maximum recirculation and reuse of water, thereby reducing water consumption.

Another area of concern is increasing ash utilization to reduce ash disposal to land. For this purpose, new avenues such as use of ash in agriculture, ash based products etc. are being explored. Policy advocacy with regulators for implementation of gazette notification is undertaken to enforce provisions. Innovative areas for sustained ash utilization in future are being explored.

Stack SPM Emissions

Stack SPM has remained a major challenge for coal based power plants. With the increased industrial activities resulting in higher energy demand and its generation, concern has also grown to mitigate its fall out in terms of proportionally higher overall pollution. The older power generation units commissioned by NTPC more than 20 years back are especially facing challenge of keeping up with the repeated revision of pollution norms. With the ever increasing energy demand and in its quest to excel in its performance, NTPC has been making all out effort to improve its generation causing increased ash loading to Electro Static Precipitator (ESPs) making it more challenging to handle flue gases. To address the issue NTPC in association with Heavy Water Board has come out with its unique system of Flue Gas Conditioning so as to minimise the SPM emission from old power plants. Efforts are also underway to take up retrofits of ESPs to improve their efficiency wherever possible.

Stations falling under Critically Polluted Areas & Issues with SPCBs / CPCB

In 2009, 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. A total of 88 industrial clusters were selected in consultation with the Ministry of Environment & Forests. Out of these 88

Clusters, 43 clusters have been classified as Critically Polluted. Some of NTPC stations have fallen into such zones. These plants are - Singrauli, Rihand, Vindhyachal, Talcher Thermal, Talcher Super, Badarpur, Faridabad & Simhadri. Respective states have prepared special action plans to combat pollution problem in these areas and have issued directives to all industries located therein to adhere to these action plans.

NTPC is responsible corporate and is fully aware of its responsibilities towards society and environment protection and is committed to ensure full compliance to the statutory environmental norms. Separate environment management groups have been established at all stations to oversee implementation of environment protection plans. Latest state-of-the-art technologies to cover all aspects of environment management and controls have been installed in NTPC stations. Wherever directives were issued by State Pollution Control Board to any station, corrective action have been taken and satisfactory compliance and acceptance of the respective board has been ensured.

For improving the environmental conditions of critically polluted areas identified by CPCB, revised environment protection action plans have been prepared by SPCB/ CPCB while revising the statutory norms. These revised environmental norms for the existing stations are difficult to implement due to various factors such as design considerations at inception, space limitations, obtaining prolonged shutdown from grid, non availability of original equipment supplier etc. NTPC has taken extensive design and technology review for such retrofitting of running stations. NTPC had the challenging task to look for least cost technically feasible engineering solutions for keeping the minimum impact on cost of generation. These issues are being addressed and NTPC has already initiated necessary actions to comply with such requirements in respective unit/ plant.

Implementaion of time bound action plans are in progress and for some of the plants the plans have also been backed up with Bank Guarantees. Action plans for such cases have been submitted to respective SPCB/CPCB and regular progress report is also being sent. Details of Bank Guarantees submitted by NTPC are as below:

Sl. No.	Station	Amount of Bank Guarantee (as on 31.03.2012)
1	Korba	Rs 50 Lakhs
2	Vindhyachal	Rs 10 Lakhs
3	Singrauli	Rs 20 Lakhs
4	Simhadri	Rs 2 crore

Ash Management and its Utilisation

In India, coal as a fuel would remain main source for power generation. The main concern of coal based power plants is the quality of Indian coal which has low Calorific value and high ash content (about 30-45%). Large number 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 145 Million tonnes per annum to 250 million tonnes per annum by the year 2017. Disposal of this ash in ash ponds would require huge land. For enhancing fly ash utilization level, several initiatives have been taken up in NTPC such as augmentation of dry fly ash extraction and storage system, increasing fly ash issue to cement & other industries, creating rail loading facility, entering in to agreement/ tie-up with cement and other ash user agencies etc. Saturation of certain areas of ash utilization like land development in the vicinity of thermal power plant, lack of opportunities for ash utilization at pithead stations located at remote locations 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 & backfilling of operating mines with ash along with overburden are being explored / pursued at NTPC pit head stations for sustainable ash utilization.

Issues pertaining to Land Aquisition and R&R at Greenfield / Expansion projects

Power plants require considerable amount of land for its operation, township and ash disposal. Most of NTPC power plants are located in remote areas near coal mines. Depending upon the location of the plant, it may require government land as well as private land. The acquisition of private land is a sensitive issue and if not handled properly may lead to delay in land acquisition and may create social impact. The following are some of the main issues concerning Land Acquisition and Resettlement and Rehabilitation of Project Affected Persons (PAPs) :

- Non availability of updated land records - Ownership/Quality of land/Land classification.
- Limitations w.r.t mining / expansion projects necessarily requiring densely populated areas.
- Rising expectations of local community / Law and Order.
- Limitations in fixing compensation viz. Market value/Replacement value.
- Issues concerning unviable land holdings left after land aquisition.
- Issues in Identification of Project Affected Persons such as expertise of consultants engaged for Socio Economic Surveys, encroachers, dwellers on Forest land / Government land, landless labourers, gender issues, multiple displacement etc.
- Multiplicity of R&R policies and entitlements in expansion projects due to land acquisition in the same area at different times.
- Expectation of direct job within organization and its limitation.
- Non availability of sufficient land for land based rehabilitation.
- Non entrepreneurship ability of PAPs for self employment and difficulties in gainful utilization of compensation.

If the project is not completed in time, due to land acquisition problems, it creates an adverse impact on financial and socio-economic scenario involving NTPC / PAPs / Society at large. On the other hand if the project comes up on time, it generates a lot of direct & indirect employment in society and a lot of opportunities come-up for all the stakeholders besides enriching the power infrastructure of the nation, which is so vital for development. NTPC has taken various steps to minimise the socio-economic impacts of land acquisition, some of these are:

- NTPC has a well defined R&R and community development policy. Site specific plan / road map is made before land acquisition as per Land Acquisition Act/notified procedures.
- Socio-economic Surveys are conducted and

Rehabilitation Action Plans are made and implemented in true letter and spirit.

- Dedicated and trained manpower has been deputed at all upcoming projects for handling Land Acquisition and R&R issues. Various programs are undertaken for capacity building of these executives on land acquisition.
- Specialized support and strategic intervention is extended by experts from Corporate Centre, where ever required, to meet the challenges of Green field / Brown field projects including mining projects.

Cost of Production and Payment Security

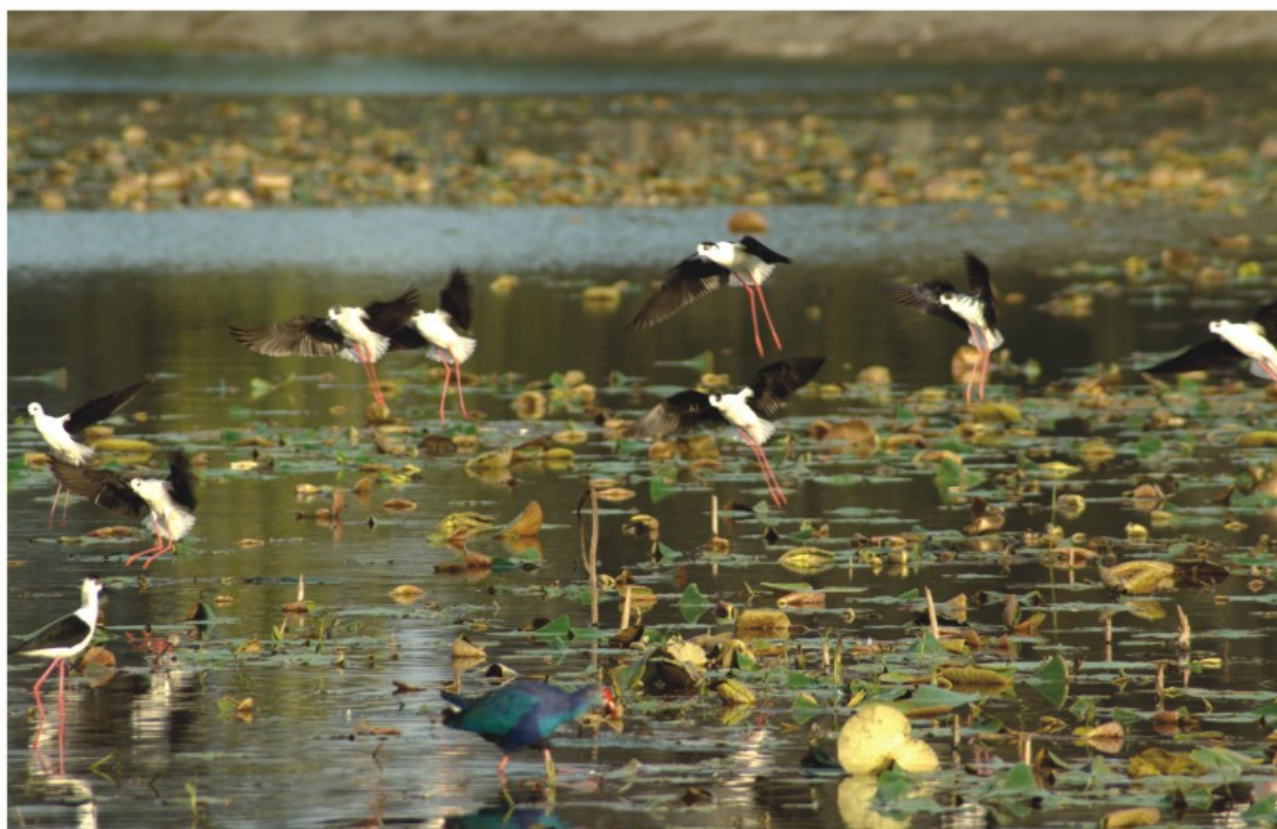
NTPC believes in prudent management of its financial resources and strives to reduce the cost of capital. It has robust financials leading to strong cash flows, which are being progressively deployed in generating assets. NTPC has a strong balance sheet, which provides it the "Most Favoured Borrower" status. The Company's ability to service debt liability remains strong due to certainty of revenues. Often, NTPC has been able to raise debt at a lower cost as compared to its peers in power sector. Most of the stations of NTPC are pit-head

stations and generate electricity at a low cost. Even future projects are likely to be low cost as most of the expansion projects are pit-head which provide a cost advantage as compared to its peers. The low average tariff of NTPC also ensures lower risk concerning power off-take in the sector.

All the stations of NTPC have long term PPA with customers. The entire output of NTPC's power stations, except 75 MW each from Farakka-III and Korba-III, has been contracted under long term power purchase agreements. NTPC has in place a sound payment security mechanism of LC backed by the Tri-Partite Agreements among Govt. of India, RBI and State Govt, which was signed as part of the One Time Settlement Scheme (OTSS). As per the TPA, which is valid upto 2016, in case of default, payment can be realized from Central Plan Allocation of the State.

After implementation of One time settlement scheme, NTPC has been able to realize 100% dues from customers for the last nine consecutive years.

To ensure payment security beyond 2016, NTPC has signed Supplementary Agreements with Utilities to provide Collateral Arrangements thereafter.





Retaining Human Resources

NTPC has a highly talented team of committed professionals. The commitment of the employees is also reflected in terms of operational and financial parameters such as generation/ employee, sales/employee, value added/per employee etc. We have a pool of ~ 25,000 employees, who are experts in various areas of power production. Over the years, NTPC is repeatedly being ranked among the best employers in prestigious surveys. At present, the company has a very low attrition rate. However, with the fast expansion of private sector capacity in the sector and shortage of experienced manpower in critical areas such as project execution and operation, creating a conducive and professional work environment for the employees remains a priority area for NTPC.

Meeting the Competition

Due to the gap between demand and supply in the Indian power sector, there has generally been a stable market for power generation companies. NTPC is the largest power generating company in the country having a market share of approximately 16.34% in terms of installed capacity and 25.32% in terms of national generation.

The share of private sector capacity has increased to 54276 MW (as on March 31, 2012) from 36761 MW (as on March 31, 2011) and going forward, the same is expected to increase even faster as is evident from capacity added during XI plan so far and future plans of

private power generators. As far as generation is concerned, private sector has contributed to around 16% of total electricity generation in the year 2011-12 as compared to 14% in the previous year.

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, the Company is geared to face any competition. With proven in-house engineering capabilities built in the past and wide ranging experience of project execution and with long-term PPAs of over 1,00,000 MW in place, NTPC is confident that it shall be able to retain leadership position in the industry. Further, the high operational efficiency enables NTPC to sell power at competitive prices and achieve savings. NTPC believes that its monitoring and maintenance techniques offer it a competitive advantage in an industry where reliability and maintenance costs are a significant determinant of profitability.

Govt. of India, in January 2005, has issued guidelines for tariff determination through bidding for procurement of power by distribution licensees. Around 50,000 MW capacity has been awarded through Case-I and Case-II biddings. It has also announced a policy of encouraging the development of thermal power projects with a capacity of approximately 4,000 MW and utilizing "Supercritical technology," known as UMPPs. Four UMPPs have been awarded through a process of competitive bidding. NTPC has participated in two UMPPs and is ready to participate in competitive bidding in the future.

Materiality Analysis

————— Importance —————>

	Issue	Low	Medium				High	
Economic	Project Implementation Delays							
	Cost of Power - Operational Efficiency							
	Health of State Utilities							
	Meeting the competition							
Environment	Fuel Security – Availability of Power							
	Ash Management							
	Environmental Issues							
Social	Land Acquisition							
	Retention of Skilled employees							

- Importance for NTPC
- Importance for Stakeholders (includes Government, General public, customers, employees and community)
- View from NTPC and Stakeholders coincide.
- Represents a difference between internal and external view.

Being our 1st Sustainability report , materiality analysis has been developed by internal experience and going forward, we intend to improve the process of materiality analysis.



CORPORATE GOVERNANCE AND STAKEHOLDER ENGAGEMENT





CORPORATE GOVERNANCE AND STAKEHOLDER ENGAGEMENT

Constitution of the Board

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

- i) Seven functional Directors including the Chairman & Managing Director,
- ii) Two Government Nominees and
- iii) Nine Independent Directors

As the chairman of the company is an Executive Director, as per Listing Agreement, 50% of the Board of the Company must comprise Independent Directors. As on 31.03.2012, the Board comprised seven Functional Directors including Chairman & Managing Director, two Government Nominee Directors and eight Independent Directors. As per Listing Agreement, there must be nine Independent Directors on the Board. As

against nine Independent Directors, there were only eight Independent Directors as on 31.03.2012. On 23.08.2012, one more Independent Director was appointed, making a total of nine Independent Directors.

The Chairman & Managing Director is at the chair of highest governing body i.e. Board of Directors. The power to appoint Directors in NTPC, being a Government Company, vests with the President of India. Accordingly, appointment of Chairman & Managing Director of NTPC has been made by the President of India. The combined post of the Chairman & Managing Director ensure single person authority and accountability.

In terms of Maharatna guidelines, the Companies Act, 1956, the listing agreement 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) Committee for Corporate Social Responsibility
- xi) Committee for Vigilance Matters
- xii) Committee for Mine Development

Group of Directors

The Board of the Company had earlier constituted a number of Group of Directors for specific purposes. These Group of Directors have ceased to exist on completion of their objective.

As on 31st March 2012, only one Group of Directors existed as under:

Group of Directors for appointment of Financial Consultant for carrying out due diligence of Coal Mines/ Blocks : This Group of Directors has been constituted to approve appointment of financial consultant for carrying out due diligence of coal mines/ blocks abroad on offer for acquisition of stake.

Code of Conduct

To realise the goal emanating from the core principles of Corporate Governance philosophy and 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 (Guidelines), there is Code of Conduct for Board Members and Senior Management Personnel. The Code is in alignment with Company's Vision and Values to achieve the Mission & Objectives and aiming at enhancing ethical and transparent process in managing the affairs of the Company. A copy of the Code of Conduct is available at the website of the Company.

The Code of Conduct for Board Members and Senior Management Personnel provides that the Board Members and Senior Management Personnel shall,

inter-alia, act within the authority conferred upon them keeping the best interest of the Company in view and shall act with utmost care, skill, diligence and integrity, fulfil their fiduciary duty, not involve themselves in an offence involving moral turpitude and make necessary disclosures. The Board is also committed to the principles and objectives of UNGC and WBCSD programs.

Enterprise Risk Management

As a diversified enterprise, the Company has always had a system-based approach to Enterprise risk management as an integral part of its business processes. The Enterprise Risk Management Framework has been set up to identify and manage risks for sustainable value creation, assessment of key business risks through continuous measurement, monitoring of key performance indicators, focus on key risks and reporting to Board Members on risk assessment and minimization procedures.

The Enterprise Risk Management Framework involves Risk Reporting Structure, Risk Measurement & Monitoring, Risk Portfolio and Risk Optimization. A committee, namely Enterprise Risk Management Committee (ERMC), consisting of Regional Executive Directors and Functional Heads at Executive Director Level has been constituted which identifies risks, makes risk assessment on the basis of certain criteria and devises methods for mitigation of risks. ERMC meets every quarter to review the risks and various action plans based on risk reported on an IT tool for Enterprise Risk Management. Based on the critical nature of the risks, ERMC discusses and finalises action plans for the risk management. The outcomes of ERMC are reported to the Board.

For faster implementation of action plans and effective risk mitigation, Risk responsibility structure was revised in April, 2011. Now risk responsibility is being shared at following three levels:

1. Primary risk responsibility (Head of Projects, CEOs of Subsidiaries and Functional Executive Directors) for risk reporting, suggesting risk mitigation measures and execution of action plans, after approval of the ERMC recommendations.
2. Secondary risk responsibility (Regional Executive Directors and Functional Executive Directors) for risk reporting along with formulation of action plans and supporting the approval process of ERMC recommendations.

3. Overall risk responsibility (CMD and Functional Directors) are responsible for driving timely approval of ERMC recommendations and monitoring of action plans for risk mitigation.

Chief Risk Officer (CRO) is the convener of ERMC and is responsible for reporting to CMD and Board of Directors based on deliberations in ERMC.

The Company has "Fraud Prevention Policy" which provides for a Whistle Blower mechanism for reporting of fraud or suspected fraud involving employees of the Company as well as representatives of vendors, suppliers, contractors, consultants, service provider or any other party doing any type of business with NTPC.

Remuneration of Directors

NTPC being a Central Public Sector Undertaking, the appointment, tenure and remuneration of Directors are decided by the Government of India. Independent Directors are paid only sitting fees at rate fixed by the Board within the ceiling fixed under the Companies Act, 1956 for attending the Board Meetings as well as Committee Meetings. In NTPC, there exist graded responsibility based performance linked incentive schemes which mutatis mutandis apply to functional directors.

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

Conflict of Interests

All the agendas placed before the Board are approved by the concerned Director/ Finance Director and the Chairman & Managing Director. There is a procedure of holding monthly functional director level meeting for reviewing the important inter departmental 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 a company takes any part in the discussion on agenda items in which they are directly or indirectly interested.

Appointment of Directors

All the Functional Directors are appointed by the President of India and job description, qualifications

and experience of the functional directors are approved by the Board which is updated from time to time keeping in view the changed scenario in industry.

For appointment of independent directors, Govt. of India has set up a Search Committee in which Chairman & Managing Director of a PSU is a representative. DPE has also prescribed that the independent director to be appointed shall have experience of not less than 10 years at the level of Joint Secretary and above in the Government; Chairman & Managing Director/ MD in Corporate Sector; Professor level in an Academic Institution or professionals of repute like eminent Chartered Accountant / Cost Accountant at the level of Director of Institutes / Head of Department; persons of eminence with proven track record from Industry, Business or Agriculture.

Performance Evaluation of Governance Body

The performance of the Board and the Directors are evaluated by the Ministry of Power, which is the administrative ministry for the Company. For evaluating the performance of the Company, the Government has instituted a system of target setting which is agreed to between the Company and the Government through a Memorandum of Understanding (MOU). The 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, environmental and social 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, is incorporated. The performance reports of all Directors are reviewed by the Chairman & Managing Director and forwarded to the administrative ministry for evaluation.

Corporate Memberships

The list of membership of NTPC in associations and/ or national/ international advocacy organizations is as under :

1.	All India Management Association
2.	All India Organization of Employees
3.	American Society for Quality
4.	British Society Council
5.	British Standards Institute
6.	Central Board of Irrigation and Power
7.	Centre for Public Sector Studies
8.	Coal Preparation Society of India
9.	Committee for International Commission on Large Dams (India)
10.	Confederation of Indian Industry
11.	Doble Engineering Company
12.	Federation of Indian Chambers of Commerce & Industry
13.	Forum of the Hydro Power Producers in Satluj Basin
14.	Global Carbon Capture and Storage Institute, Australia
15.	India Habitat Centre
16.	Indian Geotechnical Society
17.	Indian Green Building Council
18.	Indian International Centre
19.	Indian Member Committee (World Energy Council)
20.	Indian Society for Tock Mechanics and Tunneling Technology
21.	Indian Trust for Rural Heritage and Development
22.	International Council of Large Electric System (CIGRE)
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.	North American Electric Reliability Corporation
29.	Petrotech Society
30.	Power HR Forum
31.	Shri Ram Centre for Industrial Relations and Human Resources
32.	South Asia Forum for Infrastructure Regulation
33.	Standing Conference of Public Enterprises (SCOPE)
34.	Strategic Human Resource Management (SHRM)
35.	The Energy and Resources Institute
36.	The Indian CFO Forum
37.	The Indian Hotels Company
38.	The Institute of Internal Auditors of India
39.	The Mining, Geological & Metallurgical Institute of India
40.	Thought Arbitrage Research Institute
41.	UN Global Compact Network
42.	World Economic Forum

These memberships provide us forums for policy advocacy and knowledge sharing.

STAKEHOLDER ENGAGEMENT

In NTPC, stakeholder engagement is a part of continuous learning and involves dialogue between the Company and one or more of its stakeholders. It is a means of providing the feedback of the Company for assessing stakeholder expectations. The stakeholders have been identified on the basis of internal analysis. The total stakeholder base of the company encompasses Government of India, financiers, investors, customers, suppliers, community, media, employees, regulators and statutory bodies. All citizens of India have also been identified as stakeholders in view of the fact that NTPC generates 25% of the total electricity in the country and though NTPC does not distribute electricity directly, non-availability of it can severely affect the lives of common citizens. Besides, any citizen of India can engage with the organisation through a simple application under RTI Act 2005.

List of Identified Stakeholders :

1. Government
2. Shareholders & Investors
3. Customers
4. Suppliers
5. Neighborhood Communities
6. Media
7. Regulators & Statutory Authorities



8. Employees
9. Citizens of India

Customer Relationship Management (CRM) system is implemented under the professionally assessed Customer Satisfaction Index (CSI). This has played a substantial role in 100% realization of the amount billed to customers for the ninth consecutive year during 2011-12.

Government: The Company was formed in the year 1975 as a wholly-owned entity of Government of India. The Government of India held 84.5% of the paid-up share capital of the Company in 2011-12. The working of the Company is subject to quarterly reviews by the Government at its Secretary level. 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 have been giving a number of feedbacks on various facets of operation of the Company. The Company, after assessment of such feedback, submits action taken reports to these agencies.

Shareholders : Apart from the 84.5% of the company's stock owned by Gol, the balance free float of 15.5% is held by Domestic and Foreign Institutional investors, individuals etc. There are more than 750,000 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 analyst, there is a dedicated Investor Services Department (ISD) which deals with the statutory compliances and other related matters.

Investing and financial community has following expectations:

- Long term creation of value
- Transparency and timeliness with regard to economic and financial information
- Corporate Governance and Risk Management

The Company communicates with its shareholders through its Annual Report, Annual General Meeting and disclosures through web site. The Company also communicates with its institutional shareholders / potential investors through a combination of analysts briefing and individual discussions as well as participation in investor conferences from time to time. NTPC also proactively participates in non-deal domestic / international road shows to extend reach to a wider array of potential investors. Annual analysts and investors meet is held during the month of August every year where Board of the Company interacts with the investing community. Financial results are discussed by way of conference calls regularly after the close of each quarter.

Information and latest updates and announcement regarding the company can be accessed at company's website: www.ntpc.co.in including the following:-

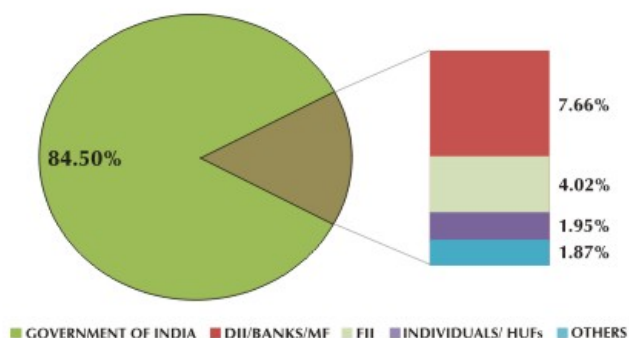
- Quarterly / Half-yearly / Annual Financial Results
- Shareholding Pattern
- Transcripts of conferences with analysts
- Corporate disclosures made from time to time to Stock Exchanges

Disclosures made to stock exchanges are also made through Corporate Filing & Dissemination System (CFDS). The Company's official news releases, other press coverage, presentations made to institutional investors / analysts are also hosted on the Website. By communicating in a targeted, systematic and transparent manner, we provide the capital market with shareholder-relevant information and cultivate long-term relationships with our target groups so as to increase the trust in the company.

Saving trees by reducing uses of paper in communicating with investors :

NTPC 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 2011-12, following savings were made:

Shareholding Pattern as on 31.03.2012



Nature of Communication	No. of Shareholders to whom ecommunication was sent	Savings involved
Annual Report	326905	Monetary Savings: Rs.1.53 crore (approx) Around 107 tonnes of paper saved resulting in saving of ~ 2500 trees (taking ~ 24 trees per ton of paper)
Dividend Intimations		
• Interim Dividend 2011-12	307062	
• Final Dividend 2010-11	348254	

Going beyond Regulation

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 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 Rs.1.30 crore

Customers: Whenever any Power Generating Station is planned, NTPC approaches all State Power Distribution Utilities of the region, for getting their consent to draw their power requirement from the new Power Station. 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 CRMS, regular structured interaction with customers takes place for

sharing of feedback/ experiences/expectations. Views expressed by the customers are given due importance in formulating future business plans and strategies. Following are the key features of the CRMS:

Customer Relationship Management System:

NTPC has a well laid out Customer Relationship Management (CRM) system. It is implemented with professionally assessed requirements of customers under the Customer Satisfaction Index (CSI). This has played a substantial role in 100% realization of the amount billed to customers for the ninth consecutive year during 2011-12.

a) Interactive Forums: As part of the CRM initiatives, NTPC has implemented the following forums for regular interaction with customers and to discuss the general and specific customer related issues including issues related to sectoral development, sustainability, efficiency, environmental protection etc:

- Regional Power Committee / Commercial Committee/ Operation Coordination Committee Meetings: NTPC regularly participates in all Regional Power Committee Meetings, which has representation of all customers of the region. These meetings are being held on a regular basis, 3 to 4 times in a year and provide a forum for feedback regarding current requirements of the customers. Issues pertaining to commercial, operations, etc. are discussed and resolved.
- Regional Power Meet is organized at regular intervals to provide a platform for interaction with the top level officials of our beneficiaries.
- Business Partner Meets organized for specific customer to facilitate interaction at working level and provide opportunity to discuss specific issues.
- Genco Meets organized to discuss various issues related to generation and provide a platform for sharing of experiences between NTPC and the State Utilities.
- Meeting of Regional Executive Directors with head of customer organizations.
- Day-to-day interaction with SEB Managers (NTPC Officials posted at SEB headquarters) for understanding and resolving the issues.

b) Customer Support Services: We offer Support Services to our customers on Technical and Managerial area as per specific requirements of our customers. Customer Support activities in the form

of workshops / seminars are being provided to the customers 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.

c) Training to customers at NTPC's training facility: Customer's officials are invited to participate in various Technical and Managerial Training Programs being organized at our Power Management Institute, Noida for knowledge updation. NTPC does not charge any fee from participating officials of customers.

Suppliers: Good supplier relations and supplier network are must for successful construction and operation of a plant. Therefore, they are identified as one of the stakeholders. NTPC organizes pre-bid conferences with suppliers to learn about the latest developments in the relevant field and to incorporate these in the bidding documents before the tendering process commences for award of major packages. The fair, equitable and transparent tendering procedures adopted by NTPC, envisages well structured and systematic measures to address the concerns as part of stakeholder engagement.

Neighborhood Communities : Public interest groups 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. Public hearings and meetings with local interest groups like Village Development Advisory Committee and Village Panchayat, Block/Dist Officials are a cohesive part of project implementation programme to satisfy the local communities and the Project Affected People (PAP). The process of consultation is continued even after setting up the plant.

Media: There are effective communications and regular interactions with media (both print and electronic) on various occasions including publication of quarterly results, annual results and other important events. Annual press meet is held in the first week of April every year.

Regulator and Statutory Authorities: The Company strives to adhere to various statutory and mandatory rules and regulations and obtains all necessary licenses for setting up and running the plant. All such government and local authorities and their requirements are identified and met with. NTPC participates in various forums made available by these statutory authorities, as also, meet them individually for policy advocacy and for resolving various important issues.

Employees: Employee satisfaction, professional and

career growth opportunities, social welfare, health, safety and quality of life are the issues and interests that are continuously addressed in consultation with the employees.

Citizens of India : NTPC being a Government of India Undertaking uses public money and is governed by Right to Information Act aimed at providing information to citizens and to maintain accountability and transparency. The 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 and has designated a Central Public Information Officer (CPIO), an Appellate Authority and Assistant Public Information Officers (APIOs) at all projects / stations / offices of NTPC. During 2011-12, 1,270 RTI applications were received seeking information on various issues, out of which 1,241 applications were replied to.

Summary of Stakeholder Engagement

Stakeholder	Forum	Agenda	Frequency
Government of India	Secretary level review	Review of overall Performance, Target Setting, New initiatives	Quarterly
	Conference Calls	Discussion with Investors after close of each Quarter.	Quarterly
Investors	Analyst and Investors Meeting	Interaction of Board of Directors with investing community to review progress of the projects and share the growth opportunities of the Company as well as challenges and concerns.	Annual
	Annual General Meeting	Interaction with shareholders about the Company's performance, growth and direction	Annual
	One on One Meetings and Investor Conferences	Handling queries of investors, fund managers & analysts relating to performance, future plans, challenges etc.	Regularly
	Review meets with Bankers (Domestic and Foreign)	To review progress of the projects and share the growth opportunities of the Company and to discuss debt requirements	Annual
	Regional level customer meet for each region	Interaction with top management level of customer organization & NTPC top management	Once in two years for each region
Customers	Commercial Co-ordination Committee and Technical Co-ordination Committee Meeting of Regional Power Committees (RPCs)	Technical and Commercial issues concerning NTPC and customers for each region	Quarterly
	Operation Co-ordination Committee Meeting of Regional Power Committees (RPCs)	Grid Operation, Scheduling and other related issues	Monthly
	Business Partner Meet	Interaction with middle management level of customer organization	Monthly

Summary of Stakeholder Engagement			
Stakeholder	Forum	Agenda	Frequency
	Customer Support Services	Support services to customers on various area of Power business	As desired by customers
Suppliers	Pre-bid conference, Suppliers meet	Latest developments, technical specifications	Before tendering & Need based
Neighborhood Communities	Public hearings VDAC Public Information Centres	Rehabilitation and Community development issues	Need based; at least once in a year
Media	Press Releases / Press conference	To keep the general public and community apprised of developments	Need based, New capacity additions, performance and new developments
Regulators (CERC)	Public hearings	Issues relating to tariffs	Need based
Statutory bodies	Statutory Audits, Inspections, Clearances, Compliances etc	Audits, clearance, inspection	As per statutory provisions; Need based
Employees	Participative forums Communication meetings, Employee Climate Surveys	Issues of concern, grievances and feedback	As per the requirement of different forums.
Citizens of India	Right To Information (RTI) Act	Information as per RTI Act	Continuous



ECONOMIC PERFORMANCE





ECONOMIC PERFORMANCE

With over 37000 MW installed Group capacity as on 31st March 2012, NTPC is the largest power generator in the country. Moreover, company has maintained its leadership position in the Indian power sector with 27.4% share of the total power generated in the country during the year 2011-12 with a PLF of 85% for its coal projects as against the National average of 73.32%.

This operational performance during the year 2011-12 has resulted in 13% increase in total income of the company to Rs 64,830.65 Crores and profit has increased by 1% to 9,223.73 Crores. This increase is commensurate with the increase in revenue from operations.

Economic Value Generated & distributed for FY: 2011-12 & 2010-11

Particular	2011-12 (Rs in Crores)	2010-11 (Rs in Crores)
A: Direct economic value generated		
Revenues	64,514.79	57,399.49
Sub Total (A)	64,514.79	57,399.49
B: Direct Economic Value Distributed		
Operating Cost	45,099.40	38,666.55
Employee Wages & Benefits	3,090.48	2,789.71
Payments to Providers of Capital	5,009.83	4,554.22
Payments to Government	3,600.58	3,072.01
Community investments	55.49	77.44
Sub Total (B)	56,855.78	49,159.93
Economic value retained (A-B)	7,659.01	8,239.56

Our belief in the power of human resources has been growing stronger. Attraction and retention of quality talent has been one of the cornerstones of our success. The company has a highly talented team of committed professionals. Commitment of the employees is also reflected in terms of operational and financial parameters. Over the years, the company has been consistently ranked among the best employer in prestigious surveys. Company has a very low executive attrition rate.

We offer employee benefits like provident fund, pension, gratuity, leave encashment and superannuation benefits in accordance with company norms. Table below shows Average Cost of Employee in terms of remuneration & others benefits per annum. The wages of all our employees are much above the minimum wages prescribed.

Employee remuneration and other benefits

Particular	2011-12	2010-11
No. of employees.	24,011	23,797
Average salary , wages and benefits per employee per annum (Rs.)	14,48,117 /-	13,04,935 /-
Average cost of other benefits per employee per annum (Rs.)	2,50,929/-	2,49,045/-
Average cost of employee remuneration & benefits per annum. (Rs.)	16,99,046/-	15,53, 980/-

Impact of Climate Change Issues :

India’s first National Action Plan for Climate Change (NAPCC) was released in June 2008 outlining existing and future policies and programs addressing climate mitigation and adaptation. The plan identifies eight core “national missions” running upto 2017. Emphasizing the overriding priority of maintaining high economic growth rates to raise living standards, the plan “identifies measures that promote our development objectives while also yielding co-benefits for addressing climate change effectively.” It pledges that India’s per capita greenhouse gas emissions “will at no point exceed that of developed countries even as we pursue our development objectives.”

NTPC being a major source of Carbon Dioxide emissions in India, has aligned its business activities in line with the NAPCC. Bulk of our new capacity addition would come through Super Critical Units leading to greater efficiency and reduced impact on the environment and thus promoting sustainable growth. In striving for its low carbon future, NTPC’s approach includes the following :

1. Increasing cycle efficiency of fossil fuel based units
2. Increasing share of non- fossil fuel based generation
3. Setting up of a demonstration plant based on IGCC Technology on high ash content Indian coal.
4. It’s Centre for Power Efficiency & Environmental Protection functions as a resource centre for acquisition, demonstration and dissemination of state-of-the-art technologies and practices, for performance improvement of coal fired power plants, for the entire power sector of India minimizing GHG emissions.
5. Participation in Jawahar Lal Nehru National Solar Mission
6. Efficient use of water

7. Participation in Clean Development Mechanism (CDM) Projects through small hydro projects, energy efficiency projects, solar PV projects etc.

These measures are expected to minimise impact of Climate Change issues on NTPC and will improve the preparedness of the organisation for adapting to the changed scenario.

Financial assistance from Government:

Being a Central Public Sector Enterprise, NTPC was promoted by Government of India. Presently, Government of India holds 84.5% of its total paid up equity capital. NTPC however, does not receive any budgetary support from the government. It also does not receive any significant subsidies, grants, royalties etc. from the Government apart from the initial capital contribution for its business investments and operations.

Policy and practices for Suppliers:

In order to encourage Indian bidders / suppliers, provisions regarding Price Preference and deemed Export Benefits are stipulated in the bidding documents to the extant of policy of Government of India. The fair, equitable and transparent tendering procedures adopted by NTPC, envisages well-structured and systematic measures to address the concerns of suppliers as part of stakeholder engagement. Open tenders floated by NTPC are given wide publicity in the newspapers, website and reputed trade journals for information of bidders and promote competition. With a view to address the concerns and suggestions of the prospective suppliers, NTPC responds promptly to the suggestions proposed by them prior to award.

Local Hiring:

Hiring of non-executives is done at the local / regional levels with appropriate notification to the Employment Exchanges of the respective location. Induction of executives in the company is on All India basis duly notified through press advertisements, campus interviews etc. Eligible candidates from the local community at various locations of operation also apply for notified posts.

INDIRECT ECONOMIC IMPACTS – BENEFIT TO THE NEIGHBOURHOOD AREAS

Social responsibility is integral to NTPC’s Corporate Governance philosophy. It follows the global practice

of addressing CSR concerns in an integrated multi stakeholder approach covering the environment and social aspects.

As most of the business units are located in remote rural areas, NTPC undertook activities in the neighbourhood of stations in the areas like primary education, community health, drinking water, sanitation, road, vocational training etc. In addition, Quality Circles (QCs) started in neighbourhood villages of stations contribute to improvements in various areas. The NTPC employees participated in various activities through Employee Voluntary Organization for Initiative in Community Empowerment (EVOICE).

In the area of Education, support was extended for construction of Engineering College in Korba, Polytechnic Training Centre in Kayamkulam and ITIs in Farakka and Faridabad. 23 schools run by NTPC predominately for community, benefited more than 20,000 students of neighbourhood community. Various activities in more than 500 village schools benefited close to 60,000 village children. Assistance was provided to National Foundation for Communal Harmony (NFCH), an autonomous organization with Ministry of Home Affairs, GOI to facilitate education and rehabilitation of the child victims of communal, caste, ethnic or terrorist violence.

Under the ongoing scheme of strengthening the Industrial Training Institutes (ITIs) across the country, the Company has taken the initiative of adopting ITIs near its power generating stations and a total of 17 ITIs have been adopted under this scheme till 31.03.2012.

This activity is being coordinated through PMI which is also facilitating the construction of nine new ITIs where new projects are coming up. Through this initiative, PMI has created 1398 seats in it till 31.03.2012.

Under Health, Mobile Health Clinic facility was started by Stations like Kayamkulam, Kawas and Talcher Thermal to provide quality health care at the doorstep of neighbourhood villages. Activities like medical camps for local villages including those for detection and treatment of respiratory diseases like TB and lung cancer and for general checkups conducted, fogging, spraying anti larva spray, and support to PHCs and Hospitals in about 300 villages during the year benefited more than 2 Lakh people. NTPC Limited extended support for replacement of old hospital equipments at Behala Balananda Brahmachari Hospital & Research Centre, Kolkata.

NTPC took up various vocational training programmes, such as Computer training, Motor rewinding, Motor Driving, Electrician & General Electrical Repairing, etc. for youth and various Coaching Classes etc. for village children, based on the need of the local community in the neighbourhood of its stations. Assistance was provided for Vocational training to 45 BPL candidates through Apparel Training and Design Centre (ATDC), Chhindwara.

As regards women empowerment, construction of Girls Hostel in Guntur district of AP and various vocational training programmes for women in the neighbourhood



villages of its stations including Dress Designing, Beautician, Embroidery, candle making, food preservation and food processing etc. were taken up. Skill up gradation programs in sewing for women population in the neighborhood villages to promote self-employment conducted by Stations including providing sewing machines covered more than 300 women.

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 were taken up by Stations.

In the area of infrastructure creation, NTPC Unchahar completed construction of bridge over drain and took up installation of Solar Power Lighting System in three municipal corporations of Raebareli, Bacharvan and Lalganj of Raebareli District. Talcher Thermal took up supply of drinking water through pipeline to Jagannathpur Village, Odisha through RWS&S, a State Govt. agency. Kahalgaon station has taken up infrastructure development work like construction of

road, sanitation, drinking water and electrical lightning work in 6 villages, 3 villages each in Bhagalpur and Godda District.

NTPC Foundation:

Information and Communication Technology (ICT) centers established by NTPC Foundation at Delhi University and in four Govt. Blind Schools at Ajmer, Lucknow, Thiruvananthapuram and Mysore for providing IT education to physically & visually challenged students have benefitted more than 2000 students so far. New ICT Centers at Guwahati University, Guwahati was started and MOU signed for ICT Center at Devi Ahilya Vishwavidyalaya, Indore.



NTPC is implementing project entitled "Improvement in Quality of Life of rural Poor to create Self- Reliance by increasing Participation in Community Development Work" around Kahalgaon Station through Disha.

Directly observed treatment cum designated microscopy centre (DOTs cum DMC) with Mobile ambulance facilities was run by 12 NTPC hospitals through NTPC Foundation under Revised National Tuberculosis Control Programme (RNCTP) registering more than 15,100 patients and providing treatment to more than 2,400 patients.

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 have provided services and aids & appliances to more than 23900 cases so far.

NTPC made financial contribution and provided material support for relief and rehabilitation work in the flood affected area of Odisha and earthquake affected area of Sikkim, respectively. Further, NTPC Korba and NTPC Farakka arranged relief material during floods in Chhattisgarh and West Bengal respectively.



EVATHI BEDA
15-02-02

15-02-02

15-02-02

15-02-02

15-02-02

M. R. BOYLE
15-02-02

ENVIRONMENTAL PERFORMANCE



DR. P. K. SHARMA
TEAM LEADER (HS)
09-01-03

SHAKILAL
BY. DIVISION (HS)
25-01-05



ENVIRONMENTAL PERFORMANCE

NTPC was amongst the first public utilities to bring out a comprehensive document entitled "NTPC Environment Policy and Environment Management System" in 1995. Amongst the guiding principles, adopted in the document, the company's proactive approach to environment, optimum utilization of equipment, adoption of latest technologies and continual environment improvement are the thrust areas. The policy also envisages efficient utilization of resources, thereby minimizing waste, maximizing ash utilization and providing green belt all around the plant for maintaining ecological balance.

Harmony between man and environment is the essence of healthy life and growth. Therefore, maintenance of ecological balance and a clean environment has been of utmost importance to NTPC. The environment management system of NTPC is policy driven and the system is steered at the Apex level.

Our continual endeavor for managing energy, water and waste disposal are monitored and certified by reputed national and international Certifying Agencies through established systems such as :

- Integrated Management System (IMS)
- Environmental Management System (EMS) ISO 14001

- Occupational Health and Safety Assessment System OHSAS 18001
- Quality Management System

These provide an overall management approach to improve systematically the environment, health, safety in work place. NTPC has adopted state of the art systems to control emissions and effluents in design stage itself. All pollutants discharged from the power plant through stack emission, ash pond effluent, main plant effluent, domestic effluent and Condenser Cooling Water (CCW) effluents are measured at the stipulated frequency at the source and at the points of discharge. Surveillance audits as per the requirements of ISO certifications of all

operating plants of NTPC is conducted as per the procedure and any observation or non conformance is dealt with utmost importance.

NTPC has adopted a well-structured database management system – called “Paryavaran Monitoring System (PMS)” through which regular reports of Stack Emissions, Ambient Air Quality, Effluents (Main Plant, Ash Pond, Sewage, Boiler Blow down etc.) are generated at Stations, Regional Head Quarters and Corporate Centre.

NTPC has also undertaken a comprehensive Ecological Monitoring Programme through Satellite Imagery Studies covering area around some of its major plants. Moreover, performance enhancement and upgradation measures are undertaken by the organization during the post operational stage of the stations, greatly helping to minimize the impact on environment and preserve the ecology in and around its power projects.

MATERIALS

While our main raw materials are coal, gas, Naptha etc which are covered under the theme energy in this report, other operational natural resource materials used by NTPC such as Lubricating oil, Transformer oil,

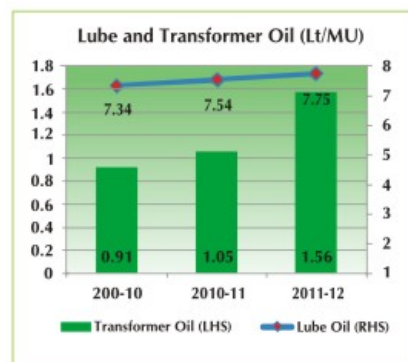
The recent growth in power generation has led to an increase in consumption of process materials. Our power generation operations are material intensive and have a scope of improvement in terms of efficient resource use. We have taken steps to ensure responsible use of materials, by optimizing our resource use and improving our operational efficiencies. Our approach is based on the requirements of the ISO 14001 international standard, which has helped us in ensuring optimum resource use and thus leading to reduction in the equipment downtime and energy expense.

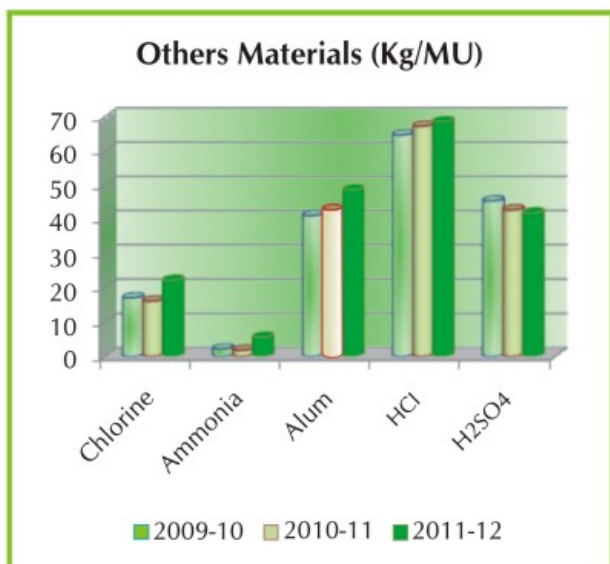
Alum, Chlorine, HCl etc have been considered here. Chemicals such as chlorine, H₂SO₄, HCl and alum are being used at NTPC units to maintain water quality, which varies with the type of water required viz. clarified water or DM water. The quantity of water to be treated also varies with the generation, blow downs and with other station activities such as commissioning of new units, acid cleaning of condenser tubes etc. Also, chemical consumption is different for each and every station depending upon the quality of water available for the station including seasonal variations.

MATERIAL CONSUMPTION				
		2009-10	2010-11	2011-12
Lube Oil	KL	1,604	1,662	1,711
Transformer Oil	KL	198	232	344
Chlorine	MT	3,740	3,563	4,914
Ammonia	MT	470	394	1,249
Alum	MT	8,985	9,411	10,746
HCL	MT	14,126	14,827	15,140
H2SO4	MT	9,913	9,434	9,252

MATERIAL CONSUMPTION				
		2009-10	2010-11	2011-12
Lube Oil	Lt/mu	7.34	7.54	7.75
Transformer Oil		0.91	1.05	1.56
Chlorine	Kg/mu	17.12	16.17	22.26
Ammonia		2.15	1.79	5.66
Alum		41.13	42.7	48.69
HCL		64.67	67.28	68.60
H2SO4		45.38	42.8	41.92

In the process of electricity generation, the raw materials used viz. coal, naptha, gas etc completely consumed and hence can't be recycled. However, a lot of waste oil, batteries and other scrap is being sold to registered recyclers for recycling.





ENERGY

Energy Generation and Consumption at NTPC

NTPC being into business of generating electrical Energy from natural resources (fossil fuels), demand for which is growing exponentially, our commitment to meet the demand by large capacity addition programme puts pressure on our already constrained and primary energy resources. As natural resources are limited, NTPC has laid stress on energy efficiency and conservation, with particular emphasis on efficiency of electricity generation.

The consumption of Fuel (Coal, Gas, Naphtha etc) for power generation depends on total power generated and Actual Calorific Value of the Fuel. Fuel consumption per unit of generation is an important indicator of efficiency. As a major public sector utility in the business of generating power, our main raw materials are coal and gas. Efficient and effective use of resources is the focus of energy generation. However,

the quality of coal available for power plants has been deteriorating over the last decade, which is the major cause of increase in coal consumption as compared to previous fiscal years. Availability of gas is another constraint for energy generation.

Year	Coal		Natural gas		Naphtha	
	(MMT)	GJ	*(MMS CMD)	GJ	(MT)	GJ
2009-10	135	1,91,32,62,930	13.88	19,98,09,185	417004	1,97,98,646
2010-11	137	1,96,05,36,089	13.77	19,82,25,683	330783	1,57,07,788
2011-12	141	1,99,00,32,095	13.09	18,74,76,573	123403	58,63,099

*At STP i.e 298K & 1 atm pressure, **Based on Actual Calorific value & the fuel as reported on page 98

INDIRECT ENERGY CONSUMPTION

Internal Energy requirement of power plants is expressed in terms of Auxiliary Power Consumption (APC) and is expressed as a percentage of power generated. APC of coal and gas based stations for the last 3 years is as under :

GAS STATIONS				
Year	Generation (MU)*	PLF (%)	APC (MU)	APC (%)
2009-10	27581	78.4	563	2.04
2010-11	25255	71.8	575	2.28
2011-12	23014	65.2	515	2.24

(*) Commercial Generation

COAL STATIONS				
Year	Generation (MU)*	PLF (%)	APC (MU)	APC (%)
2009-10	190857	90.81	12673	6.64
2010-11	195124	88.29	13052	6.69
2011-12	197682	85.00	13346	6.75

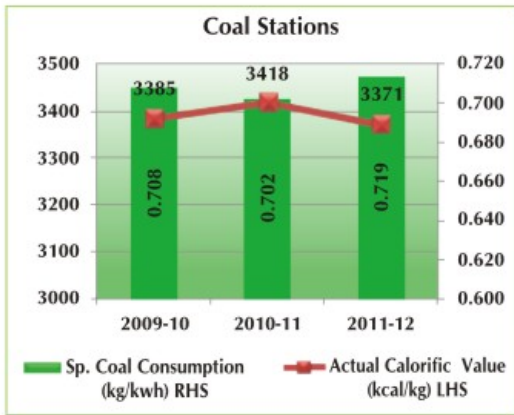
(*) Commercial Generation

All our major facilities have energy management plans in place that include making the best use of those facilities and using improved techniques in field management including Combined cycle gas-fired power stations, MGR (Merry Go Round), DDCMIS (Distributed Digital Control & Management Information System), Sliding Pressure Operation of SG, Ash water recirculation and Supercritical technology. We also use a sophisticated software, PADO (Performance Analysis and Diagnostic Optimization), that conveys real time information to plant control rooms on how efficiently production units are operating. Plant operators can then make adjustments to optimize energy efficiency.

COMPANY PERFORMANCE



ECONOMIC	ENVIRONMENT	SOCIAL	AWARDS AND RECOGNITION	DATA	GRI INDEX	ASSURANCE STATEMENT
MATERIALS	ENERGY	WATER	BIODIVERSITY	EMISSIONS	EFFLUENTS & WASTE	OTHER ENVIRONMENTAL ASPECTS



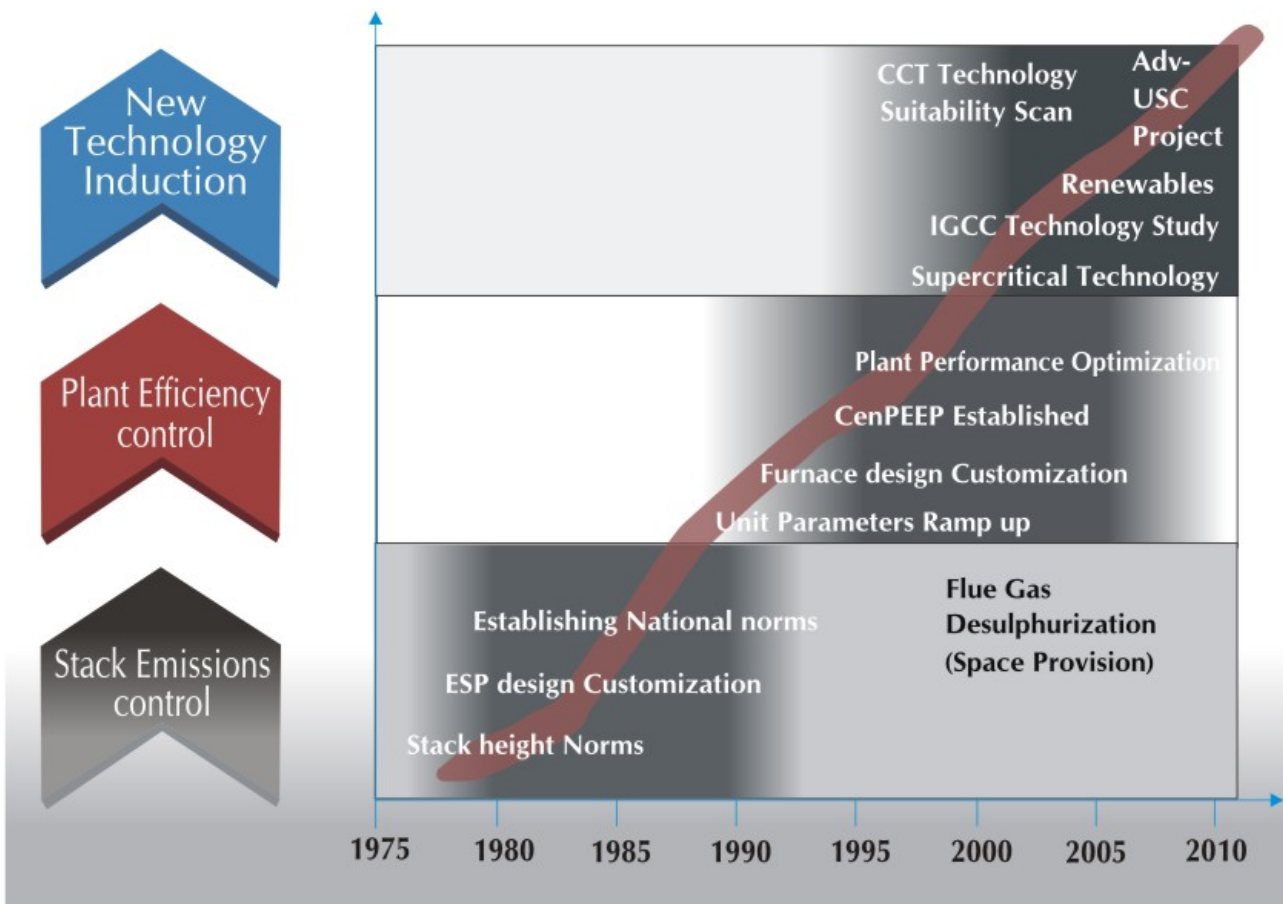
Average Annual Cycle Efficiency of NTPC's Coal and Gas based stations is as under :

Year	Cycle Efficiency (%)	
	Coal Based Stations	Gas Based Stations
2008-09	35.80	42.57
2009-10	35.86	42.89
2010-11	35.86	42.72
2011-12	35.83	42.76

(*) Commercial Generation

NEW TECHNOLOGY ABSORPTION FOR ENERGY EFFICIENCY IMPROVEMENT

Clean Power- A Central NTPC Theme



NTPC target technologies for long term plan:

- Setting up of Coal Fired Units with Ultra Supercritical Parameters targeting efficiency comparable to the best available technology in the world.
- Establishment of India Coal Based Gasifier & Gas cleaning System for IGCC.
- Implementing 100MW IGCC Technology Demonstration Project at NTPC Dadri.

Development of Advance Ultra Super Critical technology.

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 45% and about 15-17% less CO2 emission as compared to conventional 500 MW sub-critical thermal power plants

Hybrid solar thermal plant

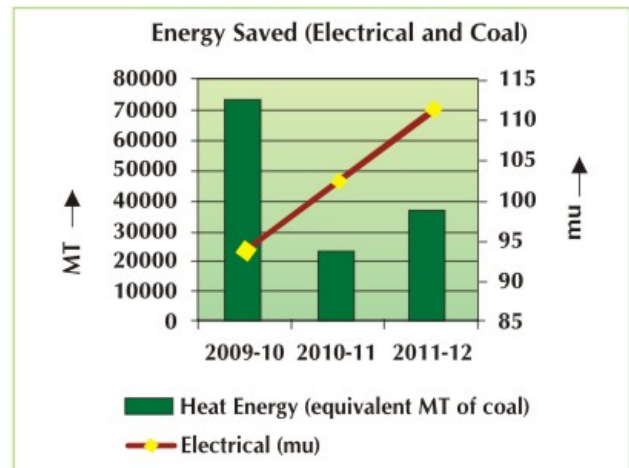
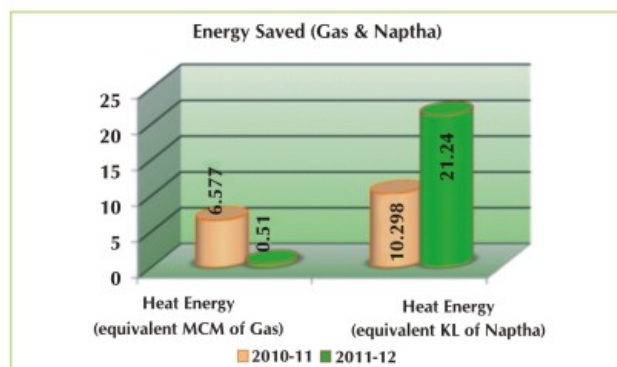
Detailed project report being prepared for hybrid solar thermal plant of about 5MWe by integration of solar heat with 210MW coal based unit at Dadri. Solar heat is being integrated along with feed heaters in the turbine cycle for conversion of solar heat to electrical power with the help of existing a steam cycle of 210 MW unit. This technology has been pioneered by NTPC for the first time in India.

ENERGY CONSERVATION

Some of the important energy conservation measures carried out during the year 2011-12 in different areas are :

- Energy audits in the areas of Auxiliary Power Consumption (APC), water balance, cooling water system, thermal insulation, air conditioning, WHRB performance, lighting, replacement of conventional GLS lamps and FTLs with CFLs/ efficient TL street lighting and HPSV fixtures with LED light.
- For reducing the APC, implementation of energy conservation schemes such as Installation of VFD's in HFO pressurizing pumps, Optimization of the operation of CW pumps, commissioning of vapor absorption system, plugging leakages in underground pipe work, modifying APH sector angle etc. are some of the measures which have also been implemented.
- External surface cleaning of WHRB tubes with ammonia, upgrading thermal insulation and Cooling Tower performance improvement by improved water distribution are some of the measures deployed in NTPC for the savings in Heat Energy.

Energy saved			
Area/Activities	2009-10	2010-11	2011-12
Electrical (MU)	93.78	102.33	111.25
Heat Energy (equivalent MT of coal)	72747	22774	36530
Heat Energy (equivalent MCM of Gas)	2.55	6.577	0.51
Heat Energy (equivalent KL of Naptha)	-	10.298	21.24



NTPC Energy Technology Research Alliance (NETRA) has taken up the following research projects on energy efficiency improvement for energy savings, CO2 reduction and monitoring of other emissions :

1. To optimize the performance & life of the ducts, like reduction of pressure drop losses and ash erosion in flue gas ducts through CFD modeling.
2. To reduce Auxiliary Power Consumption, improve availability through retrofitting of VFD drives in existing cooling tower fan motor at Dadri.
3. Study of Low Energy Absorption Building Envelope Design

Renewable Energy :

NTPC plans to broad-base generation mix by evaluating conventional and non-conventional sources of energy to ensure long term competitiveness and mitigate fuel risk. In this endeavor NTPC has taken various initiatives to implement the Renewable energy projects. The brief status of these initiatives is given below:

1. Solar PV Projects under execution – 10 MW
2. Solar PV Projects under tendering – 100 MW
3. Solar PV / Thermal Projects under development (DPR finalization) – 350 MW
4. Wind Power Projects in Karnataka and Maharashtra – 80 MW

ECONOMIC	ENVIRONMENT	SOCIAL	AWARDS AND RECOGNITION	DATA	GRI INDEX	ASSURANCE STATEMENT
MATERIALS	ENERGY	WATER	BIODIVERSITY	EMISSIONS	EFFLUENTS & WASTE	OTHER ENVIRONMENTAL ASPECTS

5. MoU with Karnataka Power Corporation Ltd for Wind Power Projects – 500 MW Wind Resource assessment under progress for 100 MW Wind Energy Project at Guledagudda in Bagalkot dist.
6. MoU with Govt of Kerala for Wind Power Projects – 200 MW
7. MoU with Gujarat Power Corporation Ltd for Renewable energy (Wind & Solar) based Power Projects – 500 MW:

Solar Thermal Projects under development (DPR finalization) – 50 MW
8. NTPC has formed a JV company named Pan Asia Renewable Co. Ltd with ADB and Kyuden International Corp for setting up 500 MW Renewable energy projects.
9. Small Hydro based power Project under execution – 8 MW
10. Small Hydro based power Project under development – 3 MW
11. MoU with National Geophysical Research Institute Hyderabad to identify potential sites for geothermal based energy projects and preparation of pre-feasibility report.
12. MoU with Swiss Agency for Development and Cooperation to plan and implement Renewable Energy (RE) and Distributed Generation (DG) projects. The main focus is on technology like biomass gasification including two stage gasifier, small hydro systems and solar energy and other RE option for DG.



Climate Change Initiatives :

Along with the financial top line & bottom line , company puts equally sharp focus on the environmental and social bottom line. Bulk of the new capacity addition would come through Super Critical Units leading to greater efficiency and reduced impact on the environment and thus promoting sustainable growth. The Company has large coal based capacities and is leader in power generation. Company is a pioneer in undertaking climate changes issues proactively, Its vision statement on sustainable energy Development is " Going Higher on Generation, lowering GHG Intensity". Environmental concerns underpin NTPC's growth Strategy and it is striving for a low carbon future. NTPC's approach includes the followings:

Increasing cycle efficiency of fossil fuel based units:

- Supercritical Units of 660 MW have been commissioned and development of Advanced Supercritical Technology under National Mission on Clean Coal (Carbon) Technology is under progress.
- Setting up of coal fired power plants with Ultra supercritical parameters targeting efficiency comparable to the best available technology in the world.

Increasing share of non- fossil fuel based generation:

The Company intends to have a more diversified fuel mix based on Coal ,Gas, Hydro, Nuclear and renewable energy sources. NTPC has also commenced preparatory work for setting up of wind farms and solar projects in addition to hydro power plants(1320 MW capacity under implementation).

R&M of Old power stations :

The company has undertaken Renovation and Modernization of old power stations resulting in improvement in efficiency.

IGCC Technology demonstration plant:

In order to efficiently utilize the Indian coal, NTPC is keenly pursuing a commercial scale Integrated Gasification Combined Cycle (IGCC) technology demonstration project suitable for high ash Indian coal. It has been decided to implement 100MW IGCC



Technology Demonstration Project at NTPC Dadri in two stages, with Stage-I comprising of installation and stabilization of coal gasifier, gas clean up and other associated systems and Stage-II comprising of combined plant. Stage-II is proposed to be implemented after successful completion and stabilization of Stage-I. In order to assist NTPC in above venture, a consultant has already been appointed in the month of June, 2010.

CenPEEP (Centre for Power Efficiency & Environmental Protection):

NTPC established Centre for Power Efficiency & Environmental Protection (CenPEEP) in collaboration with US AID with a mandate to reduce GHG emissions per unit of electricity generated by improving the overall performance of coal-fired power plants. The centre functions as a resource centre for acquisition, demonstration and dissemination of state-of-the-art technologies and practices for performance improvement of coal fired power plants for the entire power sector of India. Through these efforts, over the years, more than 30 million tons of CO₂ has been avoided in NTPC. CenPEEP has shared its knowledge and expertise of best practices with 14 State utilities in order to improve their efficiency and reduce carbon footprint.

Green Infrastructure:

NTPC has built an Energy Conservation Building Code (ECBC) compliant building at NETRA.

Jawahar Lal Nehru National Solar Mission:

NTPC's wholly owned subsidiary, NVVN is the nodal agency for implementation of the first phase of the Jawahar Lal Nehru National Mission. The first sets of solar projects (173 MW) has been commissioned and balance Solar Projects of 861 MW capacity are scheduled for commissioning over the next two years. This is a remarkable contribution to National Solar Mission under the National Action Plan on Climate Change (NAPCC).

Clean Development Mechanism :

NTPC is pioneer in undertaking climate change issues proactively. The company has taken several initiatives in CDM Projects in Power Sector. 10 (Ten) of it's projects viz. North-karanpura STPP, Loharinagpala HEPP, Tapovan Vishnughad HEPP, Energy efficiency projects at NTPC-Singrauli, Energy efficiency projects at NTPC-Dadri, and more recently Small hydro project at NTPC-Singrauli, 5MW Solar PV at NTPC-Dadri, 15MW Solar (Thermal) at Anta, 5MW Solar PV at Faridabad & 5MW Solar PV at Andaman & Nicobar Islands have got Host Country Approval from National CDM Authority. 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 Frame Work Convention on Climate Change (UNFCCC)" under 'Approved Consolidated Methodology 13'. More green field energy efficiency CDM projects are in pipeline.

ECONOMIC	ENVIRONMENT	SOCIAL	AWARDS AND RECOGNITION	DATA	GRI INDEX	ASSURANCE STATEMENT
MATERIALS	ENERGY	WATER	BIODIVERSITY	EMISSIONS	EFFLUENTS & WASTE	OTHER ENVIRONMENTAL ASPECTS

WATER

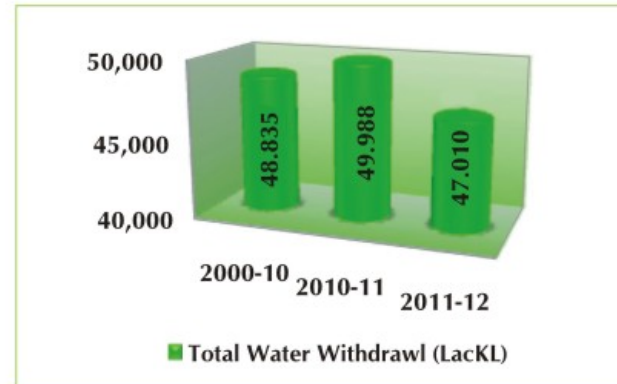
Water is an essential element of power generation and also a scarce resource for the mankind. For sustainable growth, NTPC practices the concepts of 3 R's-Reduce, Reuse & Recycle. We have taken several initiatives for water conservation, recirculation and re-use in our plants, resulting in considerable reduction in fresh water intake and reduction in effluent discharge from the power plants after effective treatment and monitoring.

At most of our plants, the fresh water is drawn from Rivers, Reservoirs and other natural water resources. Before setting up any power plant by NTPC, water allocation is done by State Government Authorities. Due care is taken to ensure that the water source is not significantly affected due to water withdrawal by NTPC plant. In most of our expansion projects, efforts are made to minimise the additional water requirement of the plant and in general the water requirement of the expansion units is met from the already allocated water quantity only and depending upon the type of water recycling systems available, about 70 - 90 % water is recycled or reused.

NTPC has undertaken water balance studies at most of its power stations. As per recommendations of these

studies, NTPC is making all out efforts to further recycle and reuse the water inside the plant to the extent possible and helping to conserve the precious water. We reduce water consumption in our power plants through:

Water Withdrawal (Lac KL)			
	2009-10	2010-11	2011-12
Total	48,835	49,988	47,010



- Closed cycle cooling system with cooling towers – The blow down water is re-used for ash sluicing in coal based plants.
- Multiple use of recycled water, increasing the Cycle of Concentration (COC) upto 4 to 5.
- Ash water recirculation system-Ash water is recycled again for ash sluicing
- Industrial effluents from liquid waste treatment plants – Treated water is re-used as service water or in other plant uses.
- Domestic sewage treatment plants – Treated effluent is reused for horticulture purposes.

During 2011-12, the total water withdrawal by our 21 operating stations under consideration is 47,010 Lakh KL, which is around 6 % lower (per MW) compared to that in 2010-11.



BIODIVERSITY

NTPC is committed to conduct its operations in a way that promotes the maintenance of regional biodiversity and the habitat upon which it depends, through a coordinated and comprehensive program of avoidance, minimization and mitigation of its impacts.



The actions taken by NTPC to protect the bio-diversity include:

- Minimising the land requirement for power plants
- Compliance with the existing criteria of site selection for thermal power plants published by MOEF.
- Locating the power plants away from protected areas or non-protected areas rich in biodiversity
- Avoiding acquisition of forest land for the project to the extent possible.

Good human health is the essence of sustainable development. In order to fulfill this objective, NTPC has undertaken a study named "Human health risk assessment study" at Rajiv Gandhi Combined Cycle Power Project, Kayamkulam (Kerala) to estimate potential impact of pollutants on human health & ecology. The study revealed that there is no adverse effect on flora, fauna and human beings. More such studies are underway in other NTPC Stations.

- 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



In our National Capital Power Project, Ash Mound has come out as the most viable alternative for ash disposal in an economic friendly way by minimum use of land and water.

Tree plantation in and around our all establishments is an ongoing activity. Development of green belts / ecological parks has been a significant feature of NTPC power plants. NTPC gives special thrust to afforestation and green belt development at all its projects and so far, more than 19 million trees have been planted, including Neem, Peepal, Mohua, Ashok, Shisham, Mango, Eucaliptus, Gulmohor, Karang, Jamun, Guava, Lemon, Gular, Kanad, Kadam Beir etc, covering vast tracts of land in and around NTPC projects.

At Rihand, where conditions were extremely hostile to any green cover development, NTPC has converted the barren stretches of land into lush green environments. These areas along with the water reservoirs and lakes, wherever available, attract a wide variety of fauna including avian species and act as their habitats.

Impacts of our activities on biodiversity

Our Units do not have any significant impact on biodiversity. As none of the project sites established by

COMPANY PERFORMANCE



ECONOMIC	ENVIRONMENT	SOCIAL	AWARDS AND RECOGNITION	DATA	GRI INDEX	ASSURANCE STATEMENT
MATERIALS	ENERGY	WATER	BIODIVERSITY	EMISSIONS	EFFLUENTS & WASTE	OTHER ENVIRONMENTAL ASPECTS

NTPC are 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. However, the stretch of Ganga river, in case of Kahalgaon Station, 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 when the construction of the project was nearing completion.

Similarly in case of Badarpur Thermal Power Project, State Govt (Uttar Pradesh and Delhi Govts. declared Okhla Bird Sanctuary and Asola Bhatti Wildlife Sanctuary as sanctuaries 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, which was started by UP State Electricity Board in 1981 while NTPC took over the project in 1992.

*NTPC – Kahalgaon is highly concerned about conservation of the biodiversity and had conducted a study on **Bio Productivity of Gangetic dolphins** (*Platanista gangetica*) in the Ganga River in the year 2003-04. Due care is being taken to minimise impact of our operations on these Dolphins.*

***Post Operational Environmental Impact Assessment** study through satellite is done to study impact of power plant operation on natural resources around. Due to massive tree plantation around power plant environment conditions have shown positive changes in most of these studies.*



EMISSIONS

Being a power utility and thus a main contributor of green house gas emissions in the country, NTPC has a special responsibility to provide measures for emission reduction and secure a sustainable future. NTPC is constantly improving its environmental conduct, has set up a climate-friendly programme and intends to further pursue and enhance its climate protection activities.

Stack Emissions

Apart from CO₂, major emissions released from the stack of a Coal based power plant are Particulate matter (PM), Sulfur-di-oxide (SO₂) and Oxides of Nitrogen (NO_x). NTPC being a proactive company, has taken several measures to keep pollutants emission to a minimum. High efficiency Electro-static Precipitators (ESPs) with efficiency of the order of 99.9% or higher and advanced control systems have been provided in all coal based plants to keep Particulate Matter (PM) well below the permissible level. All up-coming new plants are being provided with ESPs designed for outlet dust burden (SPM) of below 100 mg/Nm³. Performance enhancement of ESPs operating over the years have been carried out by augmentation of ESP Fields, retrofit

of Advanced ESP Controllers and adoption of sound O&M practices. Flue Gas Conditioning (FGC) system has also been provided at our old Units which are helping in reduction of SPM emissions below statutory limits as and when coal quality is deteriorating.

Presently NO_x emission from coal based power is not regulated. However, our boilers design specifications meet World Bank standard of 260 gm/GJ emission levels. For this purpose low NO_x burners are being used. Over fire dampers are also provided to reduce NO_x emissions. Better O&M practices are used by optimizing Fuel /air ratio to further reduce NO_x emissions in coal based power plants. In Gas based plants Dry / Wet De-NO_x systems have been provided to reduce NO_x emissions.

Indian coal is inherently low in sulfur content thus giving advantage of low Sulfur-di-oxide emissions from coal based power plants. However keeping futuristic requirement, space has been provided in 500 MW units for Flue Gas Desulfurisation unit. Sweetened Gas is being used in Gas based power plants thus resulting into very low / negligible SO₂ emission form Gas based power plants.

GHG Emissions and Carbon-di-Oxide (CO₂) reduction:

Thermal Power Plants are the main emitter of CO₂ a Green House Gas worldwide. Various steps are being taken across the globe to reduce this CO₂ emission intensity from coal based power plants. Efforts are being made on continuous basis in NTPC also to reduce its CO₂ emission intensity. NTPC is undertaking massive Renovation & Modernization of its units to improve efficiency which in turn will result in a proportionate reduction in CO₂ emissions.



ECONOMIC	ENVIRONMENT	SOCIAL	AWARDS AND RECOGNITION	DATA	GRI INDEX	ASSURANCE STATEMENT
MATERIALS	ENERGY	WATER	BIODIVERSITY	EMISSIONS	EFFLUENTS & WASTE	OTHER ENVIRONMENTAL ASPECTS

NTPC is presently reporting only Direct Green House Gas Emissions calculated as per "Calculation approach for Calculation of CO2 emissions" given in "CO2 database baselines for Indian Power Sector – User Guide ver 7.0 dated Jan'12" issued by Central Electricity Authority, Ministry of Power, Govt. of India.

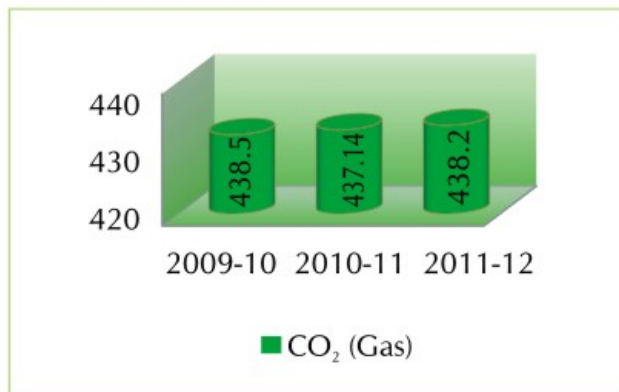
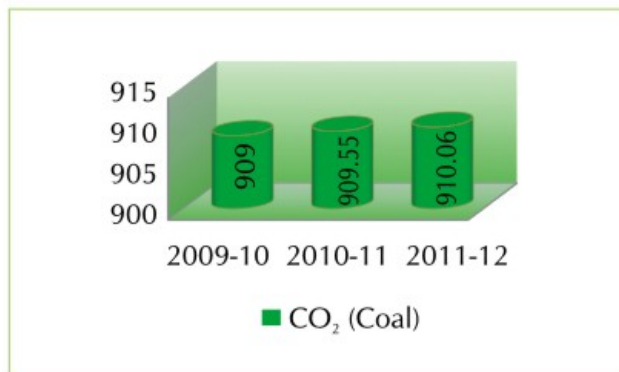
NTPC has adopted advanced and high efficiency technologies such as super critical boilers for the upcoming Greenfield projects (e.g. Barh, Solapur, Kudgi etc.). Its first Super critical units at Sipat have been synchronized. The company is also designing its upcoming plants for use of beneficiated coal and imported low ash coals. The above measures are aimed not only to achieve reduction in pollution and minimize use of precious natural resources but also to lead to reduction of CO2 emissions and thereby reducing global warming. NTPC plants are among the least CO2 emitter power plants in India due to continuously improving efficiency of its power units. In terms of CO2 emission per unit of electricity generated, NTPC plants, on an average, are already operating at around 8-10 % lower CO2 emissions than the national average of similar type of units in India. However, the impact of its Super Critical Units on CO2 reduction will be reflected in coming years.

There are no Indirect GHG emissions, as no electricity is being purchased in 21 operating stations. Emission intensity of CO2, SPM, SO2 & NOx in NTPC, based on commercial generation is as under:

Emissions (gm/kwh)			
	2009-10	2010-11	2011-12
GHG Emission			
CO2 (Coal)	909.00	909.55	910.06
CO2 (Gas)	438.50	437.14	438.20
Stack Emission			
SPM	0.458	0.474	0.484
SO2	3.55	3.81	3.58
NOx	2.13	2.23	2.11

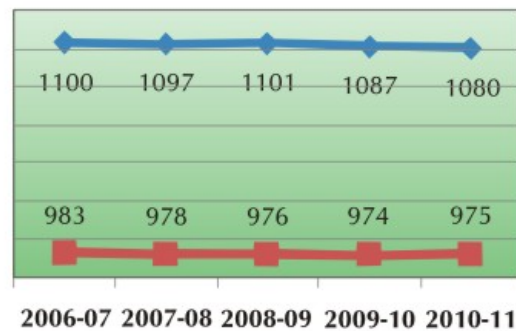
Marginal increase in CO2 intensity in the year 2011-12 is due to partial loading in coal as well as Gas based power plants. Use of imported coal having higher sulphur content has become a necessity and this has led to a rise in the SO2 emission of our units.

CO2 emission intensity based on energy sent out from coal based power plants of NTPC is well below the national average of CO2 intensity from coal based power plants of India.



GHG Emission Intensity (gm/kwh)

CO2 Intensity Based on Energy sent out (Source CEA dated Jan'12)



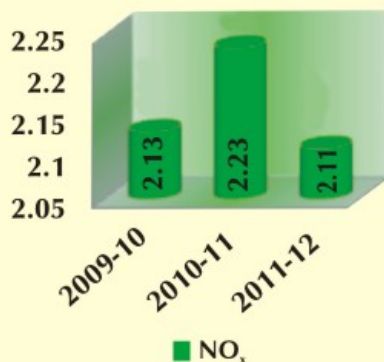
■ NTPC Average (gm/kwh)
◆ All India Average (gm/kwh)

Design parameters of ESPs of upcoming plants are selected keeping in view of futuristic requirement of lower SPM limits from stack. In existing plants, AFGC has been provided as a short term measure if necessitated. Work has been awarded to retrofit ESPs of Badarpur Station (Stage-II) units. For the other old ESPs at Singrauli, Rihand (Stage-I), Korba (Stage-I & II), plan has been prepared to retrofit in a phased manner.

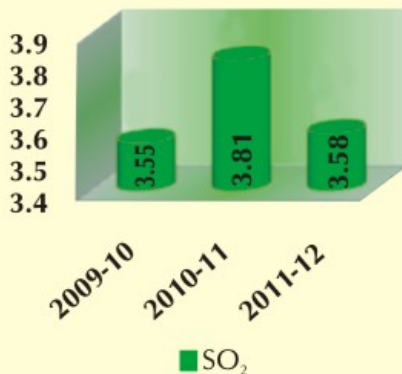
SPM Emissions (gm/kwh)



NO_x Emissions (gm/kwh)



SO₂ Emissions (gm/kwh)



For monitoring of ambient air quality, automation in Environment Monitoring has been initiated by making provision of online ambient air quality monitoring systems (AAQMS) along with Meteorological Sensors at all operating stations in NTPC.

NTPC is also taking steps to provide Continuous Emission Monitoring System (CEMS) to monitor emissions of SO₂, NO_x & CO₂ in all units of NTPC on real time basis.

Ozone Depleting Substances (ODS):

Chloro Fluoro Carbons (CFC) are the main contributor to ozone depletion. These substances (Freon & Halon) are used in refrigeration and fire fighting systems and are required to be phased out. Replacement substances with less Ozone Depleting Potential (ODP) are now available. The earlier practice of air conditioning through Freon system (R-11 & R12) has now been replaced in NTPC by substances such as R-22 (ODP = 0.05), R-134A (ODP=0) & R-410A (ODP=0). Halon is also being replaced. The consumption of ODS in NTPC in terms of CFC-11 is decreasing mainly due to use of alternate substances with lower ozone depleting potential which shown as under :

Ozone Depleting Substances (ODS) Consumption		
	2010-11	2011-12
CFC-11 equivalent in Kgs	5416	5244

EFFLUENTS

NTPC is aiming at adopting the concept of "Near Zero Effluent Discharge" for its power plants. This has been necessitated in view of ever increasing scarcity of water. Old ash ponds where once - through ash disposal systems were in use have been provided with Ash water recirculation system to reuse the water and reduce fresh withdrawal of water.

To conserve water and controlling the quality of effluents, NTPC has implemented various water conservation measures to reduce water consumption in power generation by using 3 R's (Reduce, Recycle & Reuse) as guiding principle. Most of the NTPC plants are equipped with Effluent Treatment Plants (ETP), Sewage Treatment Plants (STP) and Ash Water Recirculation System (AWRS). Effluents emanating from treatment plants are being recycled or used for horticulture purposes extensively. Decanted water from ash pond is recirculated back to use it again in ash slurry making. These steps help considerably to reduce fresh water requirement and minimise the discharge of effluents. All discharges are within the stipulated norms

ECONOMIC	ENVIRONMENT	SOCIAL	AWARDS AND RECOGNITION	DATA	GRI INDEX	ASSURANCE STATEMENT
MATERIALS	ENERGY	WATER	BIODIVERSITY	EMISSIONS	EFFLUENTS & WASTE	OTHER ENVIRONMENTAL ASPECTS

in natural surface water bodies. The following systems have been provided to recycle and reuse the water inside the plant to the extent possible and help to conserve the precious water.

Liquid Waste Treatment Plant (LWTP) :

In order to reduce the number of effluents leaving the station, control their quality centrally and take advantage of self neutralizing nature of mixed effluents and trying to achieve zero discharge goal of the station, LWTP have been installed at most of the NTPC plants. 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 LWTP. Thus all the effluents are collected together and then the combined effluents are commonly treated for their quality (dissolved & suspended matter) and the treated effluent to the extent possible are being reused. Balance effluents conforming to the prescribed limit by SPCB/CPCB is discharged from the station.

Sewage Treatment Plant (STP) / Sewage Treatment facilities :

Sewage Treatment Plants (STPs) have been provided at all NTPC stations to take care of Sewage Effluent from Plant and township areas. The effluent quality is monitored regularly and treated effluents conforming to the prescribed limit are being used for horticulture purpose to the extent possible. The above measures have led to conservation of water as well as maintaining effluent quality within the prescribed limits.

Ash Water Recycling System (AWRS) :

As a post-operational impact assessment exercise, Fly ash leachate study was conducted at NTPC Rihand (UP)



and Badarpur (Delhi) which reveals that there is no contamination of ground water due to leaching of heavy metals from ash dykes.

Ash Water Recycling Systems (AWRS) have been provided at most of the stations. The effluent from ash pond is recirculated back to the station for further ash sluicing to the ash pond thus savings a lot of fresh water. In old NTPC plants like Singrauli, Tanda and Talcher Thermal plants, where AWRS was not provided the same is under construction to reduce water consumption as well as effluent discharge.

The total quantity and average quality of discharged effluent from 21 operating stations is as follows:

	Effluents		
	2009-10	2010-11	2011-12
Total Quantity (Lac KL)	4,610	4,594	4,456
TSS (mg/litre)	42.6	38.5	43.7
O&G (ppm)	2.1	2.3	2.4
pH	7.7	7.6	7.5

WASTE MANAGEMENT

NTPC being a coal based thermal power organisation, its primary input fuel is coal. Hence the main waste generated is ash. Other wastes generated during operation and maintenance are - used lubricating oil, transformer oil , grease, scraps (metal and nonmetal), etc. In addition, domestic waste is generated in township, bio-medical waste is generated at NTPC Hospitals. The disposal of these wastes are as per the Integrated Management System (IMS) policies adopted at the stations.

NTPC has adopted integrated approach to treat / dispose solid wastes generated in a scientific manner. Hazardous waste is disposed of strictly as per Hazardous Waste Management rules. Most of the Non hazardous Waste such as ferrous scrap etc is also disposed off through e-auctions for recycling.

Hazardous Waste Disposal :

Hazardous waste are being disposed off as per Government of India (GOI) notification " Hazardous Waste (Management & Handling) Rules, 1989 (as amended in 2008)" for the Treatment, Storage and Disposal of hazardous wastes. The hazardous wastes which are recyclable are being sold to the authorized recyclers. Used batteries are being returned to original suppliers/manufacturers. As per the notification, hazardous wastes (non-recyclable) are to be sent to State Pollution Control Board (SPCB) approved Common Treatment Storage and Disposal Facility (TSDF). However, TSDFs have not been created at some of the states and hence such wastes are stored in properly identified places / hazardous waste pits.

Domestic Waste Disposal :

Bio-methanation Plants : As a proactive measure for demonstration of latest technology for bio-degradable solid waste generated at NTPC stations, pilot scale Bio - methanation Plants have been set up at NTPC- Faridabad, Kayamkulam and Singrauli. These plants are running successfully and have the following advantages:

- It is an eco-friendly system for waste disposal.
- Small and closed treatment plant requires less land and is free from bad odor and visible pollution
- Generates biogas for local applications
- Produces enriched manure

Efforts are being made to segregate domestic waste generated from colonies into bio-degradable & Non bio-degradable categories for proper disposal. Bio-degradable wastes are converted into manure through composting / Vermi composting. Some bio-degradable wastes are converted into bio-gas and are being used in canteen as energy through Bio-Methanation plant. Non bio-degradable wastes are being disposed at an identified place.

Bio-Medical Waste :

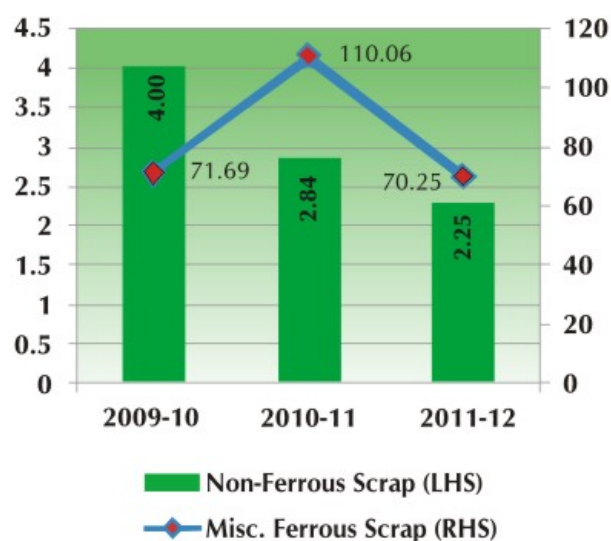
In NTPC Power plants small quantity of Bio-medical waste is generated. These wastes are being disposed off as per "Bio-medical waste (Management & Handling rules-2003)" issued by MOEF. Bio-medical wastes for

all the stations are being disposed off through authorized parties & approved by State Pollution Control Boards.

The total quantities of solid wastes disposed at NTPC stations are as under :

Category	Waste Type		2009-10	2010-11	2011-12
Non hazardous waste	Misc. Ferrous Scrap	MT	15661	24278	15503
	Non-Ferrous Scrap	MT	875	626	498
Hazardous Waste	Spent Resin	Lt	1478	1271	8879
	Used Lube Oil	KL	870	827	997
	Transformer Oil	KL	381	412	148
	Used batteries	MT	37	101	110

Solid Waste (mg/kwh)



No significant oil spills etc. have been reported during 2011-12 at any of NTPC stations. (More than Half a drum (100 Litres) of oil is considered significant at one particular location and in one instance)

Ash Management :

Huge amount of ash is generated from coal based power plants. Efforts are made to maximize utilization of ash through installation of Dry Ash Extraction System (DAES). Balance unutilized ash is sent to ash pond by making ash slurry for safe storage and utilization. The decanted water in Ash Pond is recycled back with the help of Ash Water Recirculation System (AWRS) and is used for making ash slurry again.

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

ECONOMIC	ENVIRONMENT	SOCIAL	AWARDS AND RECOGNITION	DATA	GRI INDEX	ASSURANCE STATEMENT
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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.



Ash Utilisation:

In NTPC , Fly Ash Utilization is taken as thrust areas of its activities. In the year 2011-12, total 50.05 million tonne ash was produced by NTPC’s coal based power plants and 27.53 million tonne ash was gainfully utilized in the areas of manufacture of cement & concrete, manufacture of bricks & other building products, road embankment construction, land reclamation and reclamation of abandoned open cast mine etc. which is about 55% of total ash production.

For increasing fly ash utilization by cement & other industries, augmentation of dry fly ash extraction and storage system have taken up at all existing old stations. All new stations recently commissioned are having full dry fly ash collection and storage system. Further, rail loading facility is also being provided at existing / new upcoming plants so that fly ash can be transported in bulk quantity to user industries. Stations have taken action for entering in to agreement/ tie-up with cement and other users agencies for issue of fly ash on sustainable basis. Fly ash based Portland Pozzolana cement is exclusively being utilized in construction works of new projects as well existing power plants.

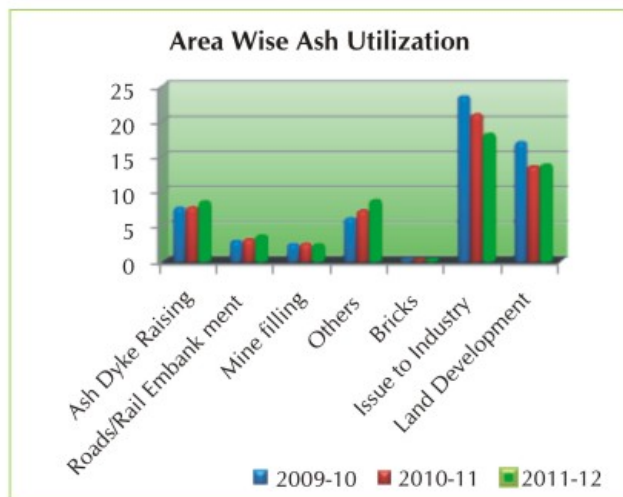
For use of fly ash in bricks, fly ash bricks manufacturing units have been set up at all stations and only fly ash bricks as being utilized in own plant and township construction work in all expansion projects as well as in some of green field projects. This is being done to set examples and to build up confidence amongst potential users, as a result of which, many fly ash brick plants have come up near NTPC Dadri, Vindhyachal, Simhadri, Ramagundam, Talcher- Kaniha areas. NTPC

has also set up mega capacity fly ash brick/ block manufacturing plant at its Sipat and Dadri stations to enhance fly ash bricks availability.

At existing stations, land fill/ low lying land development and ash dyke raising work is being carried out using ash only. Bottom ash is also being utilized in place of sand as a drainage layer in ash dyke raising works. For use of fly ash in agriculture segment, show case projects in the farmers fields has been taken up at most of the stations and fly ash is being made available to farmers as per their requirement/ demand. For use in back filling/ stowing of mines, studies/ pilot projects have been taken up at Ramagundam, Talcher-Kaniha and Korba stations. However, at Talchar Thermal Power Station, NTPC has been back filling South Balanda open cast mine on regular basis. Demonstration project is being taken up at NTPC Vindhyachal station to promote use of ash in forest wasteland development. The developed areas will be used for plantation purpose.

In order to create awareness and propagate multifaceted utilization of Fly Ash as a Resource Material in various segments and to create awareness among the prospective users & entrepreneurs for use of ash, promotional measures are being done by advertisement in newspapers, distribution of booklets/ brochures, documentary films and organizing workshop/ seminars etc.

Area wise ash Utilization (%)			
Area	2009-10	2010-11	2011-12
Ash Dyke Raising	7.61	7.66	8.43
Roads/Rail Embank ment	2.90	3.13	3.59
Mine filling	2.44	2.50	2.33
Others	6.11	7.23	8.62
Bricks	0.22	0.17	0.19
Issue to Industry	23.48	20.93	18.10
Land Development	16.97	13.53	13.73



OTHER ENVIRONMENTAL ASPECTS

Products and Services:

The scope of NTPC is to power generation and making it available up to its own switch yard. From the switchyard, the electricity is transmitted for distribution through overhead transmission lines which are not in the scope of NTPC . Therefore, initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation are not applicable to NTPC . No packaging material is used in electricity transmission.

Transport:

Transport impacts of electricity transmission and employees have not been considered as they are not of significant proportion for the organisation.

Compliance:

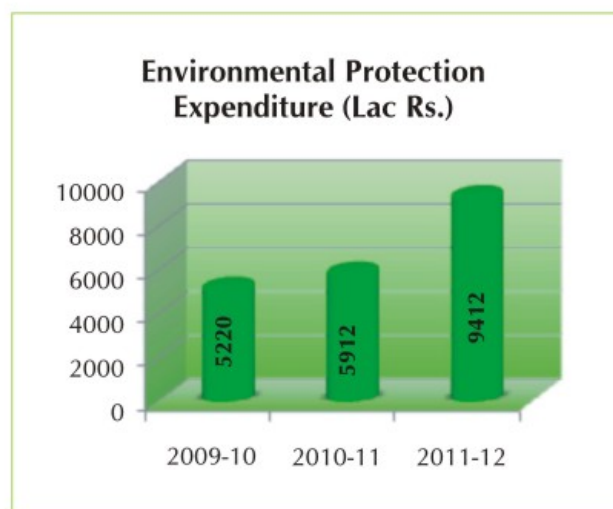
NTPC is bound by the statutory guidelines with respect to the environmental laws and regulations promulgated from time to time by the concerned authorities. With passage of time, environment norms get revised requiring retrofitting and up gradation of related equipments in old units/stations. So far as non-compliance of environment laws and regulations are concerned, there is no incidence of fines or monetary sanctions issued by any regulatory agency during the year. However, some of the NTPC power stations viz. Korba, Vindhyachal, Simhadri and Singrauli, were issued specific directives to make action plan of mitigation, backed by Bank Guarantee (BG). NTPC is continuously looking for least cost, technically feasible engineering solutions for ensuring compliance to these specific directives and to minimize its impact on cost of generation. Implementation of time bound action plans are in progress and regular progress report is also sent to respective authorities. In another such directive at Talcher, corrective actions were taken to comply with the directions and acceptance of the respective board has been ensured after satisfactory compliance.

Environmental Expenditures:

Environmental protection expenditure for the reporting period (2011-12) was about INR 9412 lac . Money was spent on preventive environment management

activities such as setting up & maintenance of facilities for effluent & solid waste management, environment monitoring & reporting, biodiversity conservation efforts and upgradation & sustenance of environment management systems.

	2009-10	2010-11	2011-12
Environment Protection Expenditures (Lac Rs)	5220	5912	9412



Automation of Environment Monitoring :

In order to monitor key environmental parameters of Ambient Air & Stack emissions continuously on real time basis, automation in monitoring has been adopted in NTPC . NTPC has taken a lead in installation and operation of Ambient Air Quality Monitoring Systems (AAQMS) to monitor air quality around all its power plants on real time basis. 61 AAQMS have been installed and networked to provide access to CPCB and to respective SPCBs. SO₂ & NO_x analysers have also been provided in flue gas ducts / stacks in units installed after 1996. NTPC is also taking steps to provide Continuous Emission Monitoring System (CEMS) with latest technology to monitor emissions of SO₂, NO_x & CO₂ in all units of NTPC on real time basis.

Environmental Studies :

NTPC has taken up a number of Environmental studies through reputed Institutes and Consultants for betterment of environment protection around its power projects. Some of these studies conducted at its power stations are:-

- Human health risk assessment study to assess potential health hazard to people living around power plants due to Thermal Power Plants. The

COMPANY PERFORMANCE

ECONOMIC	ENVIRONMENT	SOCIAL	AWARDS AND RECOGNITION	DATA	GRI INDEX	ASSURANCE STATEMENT
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observations so far has revealed that there is no adverse effect on animals and human beings.

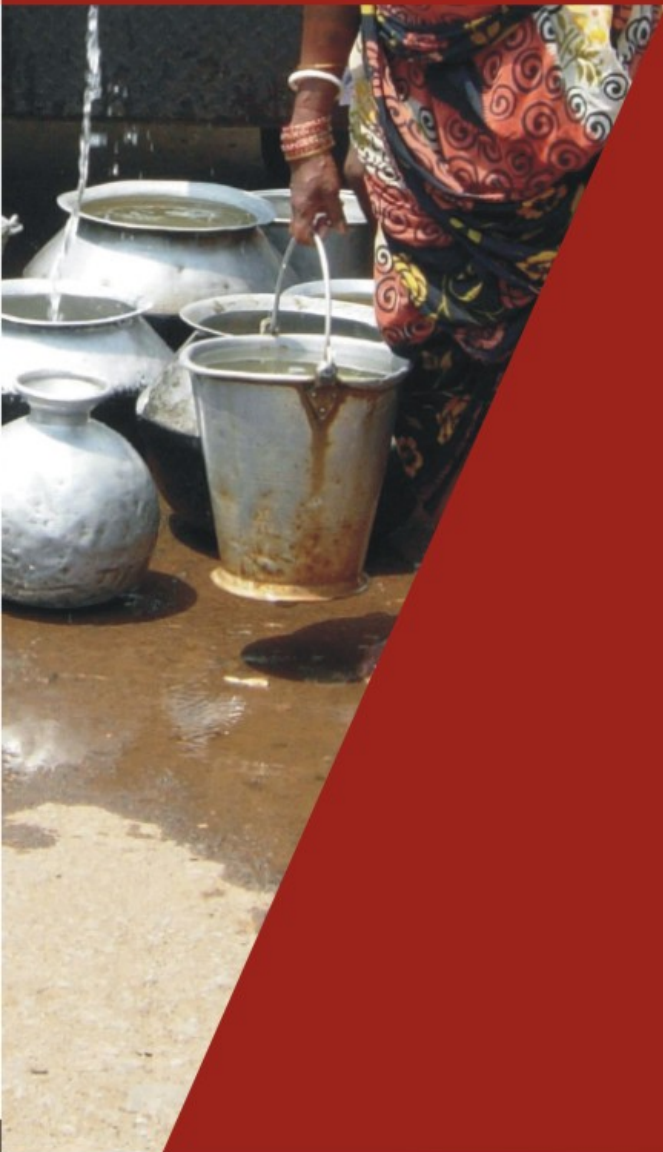
- Ash Pond Leachate Study is done to assess the impact of heavy metals from ash pond to soil and ground water. Studies have revealed that there is no contamination of water bodies.

- Post Operational Environmental Impact Assessment Study through satellite is done to study impact of power plant operation on natural resources around and no adverse impact has been reported, rather due to increase in green cover around power plant impacts are in positive direction.





SOCIAL PERFORMANCE





SOCIAL PERFORMANCE

NTPC, a member of Global Compact, confirms its involvement in various CSR activities in line with 10 Global Compact principles and shares the experiences with the representatives of the world through "Communication on Progress". NTPC submits its Communication on Progress (COP) to UN Global Compact on regular basis. A report on the progress made in this area is annexed to NTPC's Annual Report.

NTPC, a core member of Global Compact Network (GCN), India, (formerly known as Global Compact Society) actively participated in the Annual Convention of the Global Compact Network. NTPC member shared information regarding NTPC CSR practices in the various programmes by Management Institutes and workshops on DPE guidelines by SCOPE and other forums.

LABOUR PRACTICES & DECENT WORK

Employment

NTPC, the largest power company in the country, has been ranked 6th in Aon Hewitt Best Employers in India 2011 Study of Best Employers in the country. NTPC is the only PSU amongst the top 25 companies in the

Study. Over 200 companies from various industries such as banking and finance services, manufacturing, IT and ITEs, telecom, hospitality and pharmaceuticals participated in the study.

NTPC is a leader not just in power generation, but also in People Practices. It strongly believes in achieving organizational excellence through Human Resources and follows "People First" approach in order to leverage full potential of its 25,000 strong workforce.

ECONOMIC	ENVIRONMENT	SOCIAL	AWARDS AND RECOGNITION	DATA	GRI INDEX	ASSURANCE STATEMENT
LABOUR PRACTICES AND DECENT WORK		SOCIETY PERFORMANCE		HUMAN RIGHTS		PRODUCT RESPONSIBILITY

'People before PLF (Plant Load Factor)' is the guiding philosophy behind the entire gamut of HR policies. NTPC is committed to total well-being of employees' and believes that emotional well being is as critical as physical well-being. In order to meet employee aspirations in these changing times, HR systems in the company are continually renewed based on employee feedback. The system is aimed at identifying unit level and Company level factors that affect employee engagement.

In the recently published study "The Best Companies to Work for – 2011" conducted by Business Today, Indicus and People Strong Survey, NTPC was amongst Top 25 companies in India with 2nd position in Core Sector. In another survey conducted by Great Place to Work (GPTW) Institute Inc., India and The Economic Times in 2010, NTPC was awarded 7th place amongst the Top 50 preferred employers in India.

The employees of the company are the most important stakeholders of the company. Professional and career growth opportunities, employee satisfaction, social welfare, health, safety and quality of life of the

employees drive the success of NTPC. Their courage, integrity and commitment to the company's mission and goals has enabled it to become one of the leading power generation companies in the world. Creating a dynamic, safe and rewarding workplace is a key priority for company. NTPC believes that inspiring engagement endeavors, continuous professional development and excellent employee benefits create a work environment that enriches the lives of its employees and their families.

Recruitment

Induction of executives in the company is on All India level basis duly notified through press advertisements, campus interviews etc. Eligible candidates from the local community at various locations of operation also apply for notified posts. Hiring of non-executives is done at the local / regional levels with appropriate notification to the Employment Exchanges of the respective location. The lowest level of NTPC employee is W0 and the wages of employees in this level are same across all locations of NTPC.





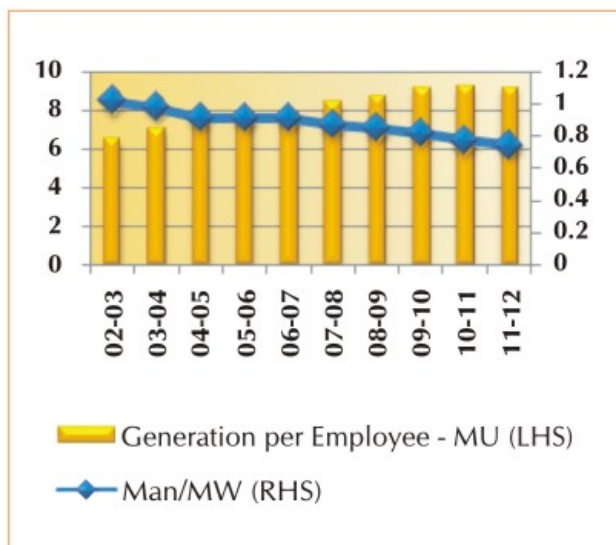
The recruitment policy had provisions to give preference to marginalised classes of society like the scheduled castes/tribes, economically backward classes, physically handicapped.

The Company takes pride in its highly motivated and competent human resource that has contributed its best

to bring the Company to its present heights. The productivity of employees is reflected in the consistent reduction of Man-MW ratio over the years.

The trend of over-all Man-MW ratio in NTPC excluding JV/subsidiary capacity and Generation per employee are as below:

Year	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Generation per Employee (MU)	6.58	7.11	7.43	7.81	7.99	8.48	8.75	9.22	9.27	9.25
Man / MW Ratio	1.02	0.98	0.91	0.91	0.91	0.87	0.85	0.82	0.77	0.74



Performance and Career Development Reviews

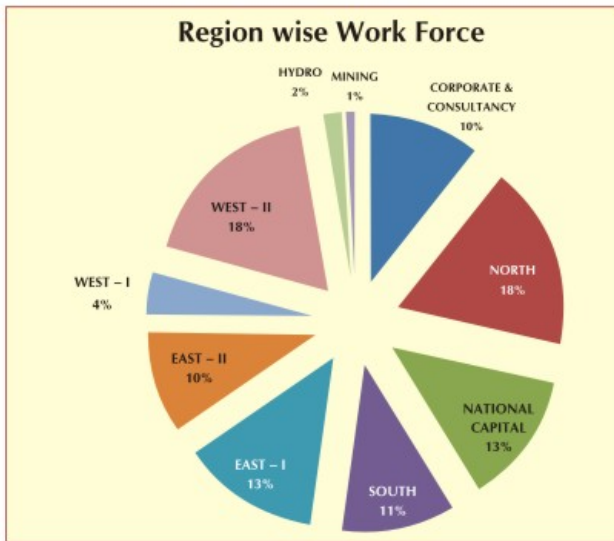
All the executives (i.e. 51.20% of total work force) receive performance feedback during midyear review and final appraisal as per the Performance Management System. The non-executives are given feedback in case of unsatisfactory performance.

The total employee strength of the company stood at 24,011 (excluding NTPC employees in JVs & Subsidiaries) as on 31.03.2012 against 23,797 as on 31.3.2011.

No. of employees in NTPC		
	2011-12	2010-11
Total number of employees	24,011	23,797

Total Workforce by Regions excluding Subsidiaries & Joint Ventures (2011-12)

REGION	NOs.
CORPORATE & CONSULTANCY	2568
NORTH	4267
NATIONAL CAPITAL	3067
SOUTH	2637
EAST – I	3184
EAST – II	2338
WEST – I	971
WEST – II	4332
HYDRO	438
MINING	209
TOTAL	24011

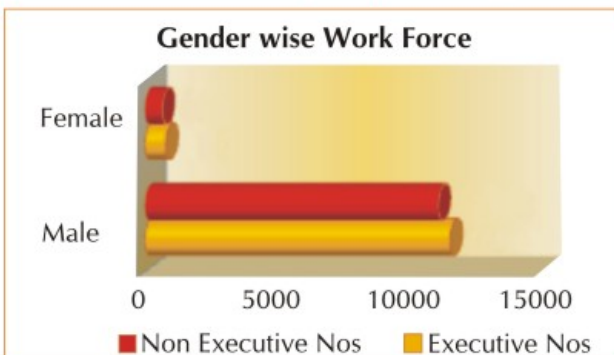


Employee Diversity & Equal opportunity

In NTPC, all employees play a critical role in the growth of the company and there is equal opportunity provided to all of them. The diversity of employees in NTPC is as under:

Gender wise categorization

Workforce category		Male	Female
Executive	Nos	11502	792
Non Executive	Nos	11055	662

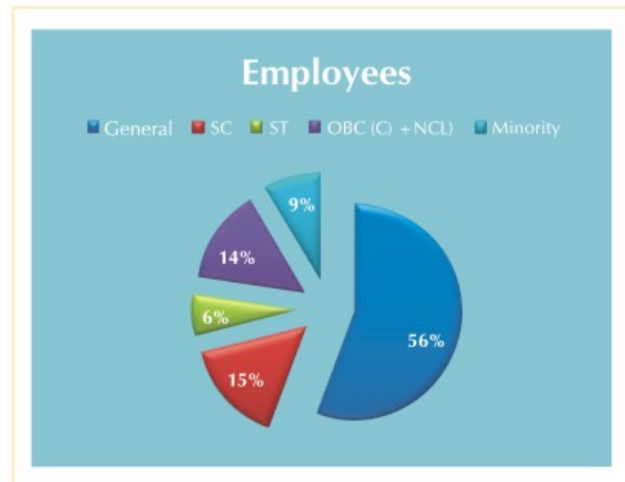


Age wise Categorization

Category	Gender	upto 30 yrs.	31-50 yrs.	Above 50 yrs	Total
Executive.	M	2529	5415	3558	11502
	F	291	326	175	792
Non- Executive	M	488	5279	5288	11055
	F	20	370	272	662
TOTAL		3328	11390	9293	24011

Category Wise Employees

Category	No. of Employees
General	13367
SC	3704
ST	1502
OBC (CL + NCL)	3404
Minority*	2034
TOTAL	24011



CL – Creamy layer: NCL – Non-creamy layer

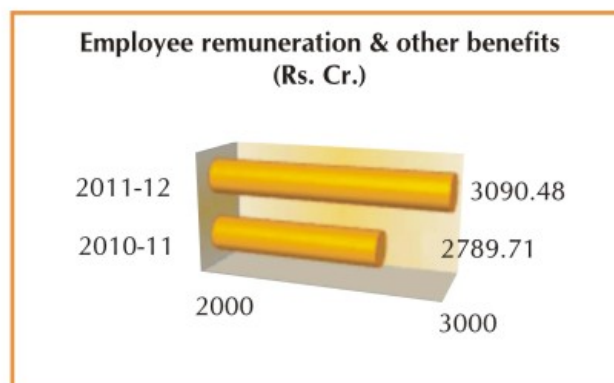
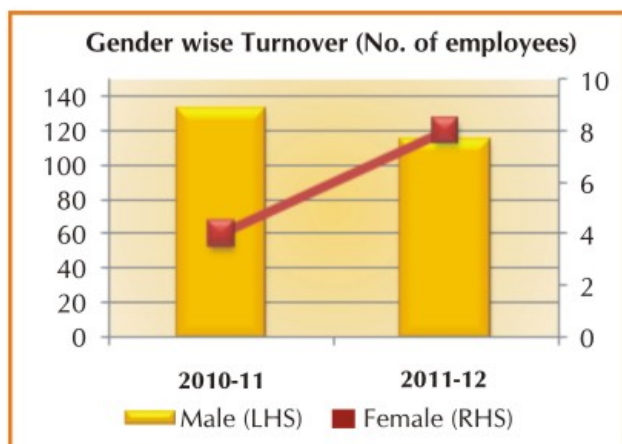
* Minority includes Buddhist, Christians, Muslim, Jain, Sikh & Parsi etc

There is no discrimination in remuneration on the basis of gender or by employee category in NTPC at any of the locations.

Employee Turnover :

The attrition rate of the executives during the year was 1.00% and turnover of non- executive is negligible. The breakup is given below:

Gender-wise Executive Turnover (Nos.)		
Year	Male	Female
2010-11	133	04
2011-12	115	08



Employees Remuneration and Other Benefits

Employees' remuneration and other benefits have increased by 11% from Rs. 2789.71 crore in FY 2010-2011 to Rs. 3090.48 Crore in FY 2011-2012.

Employees' remuneration and benefits expenses include salaries and wages, bonuses, allowances, benefits, contribution to provident and other funds and welfare expenses. All the executives receive performance feedback during midyear review and final appraisal as per the Performance Management System. There is no discrimination in remuneration on the basis of gender in NTPC i.e. all male and female employees receive equal remunerations.

There are no temporary or part time employees on rolls of NTPC. Benefits/ allowances provided to employees are as follows –

- Perks and allowances @ 47% of Basic Pay
- Superannuation benefits @ 30% of (BP+DA). Includes Provident fund, gratuity, post retirement Medical Scheme and Pension.

Medical treatment is extended in Company / empaneled hospitals and as per rules in non-empaneled hospitals.

In NTPC, retention rate after parental leave is 100%.

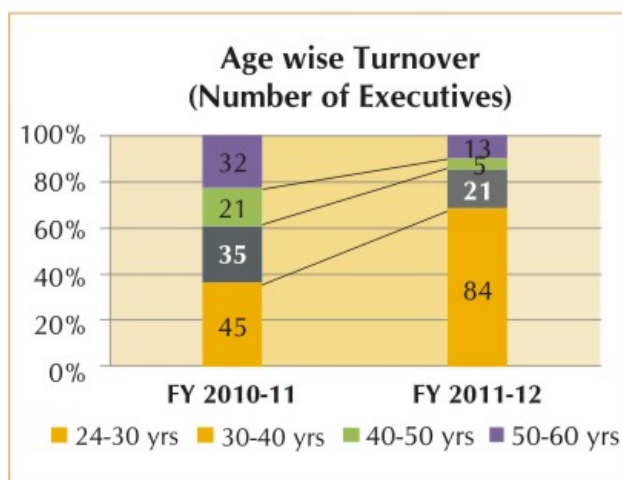
Labor/ Management Relations

All the employees in the unionized category (i.e 48.8% of the total manpower) are covered by collective bargaining agreements. All the collective bargaining agreements are in line with the applicable statutes and notice period of 3 weeks is given wherever applicable as per the relevant laws/agreements.

In NTPC, participative fora like Shop Level Committees, Plant Level Committees have been made and are fully operational, wherein, all the issues are discussed and

Age wise Executive Turnover (Nos.)

Financial Year	Age Group (In Years)			
	24-30	30-40	40-50	50-60
FY 2010-11	49	35	21	32
FY 2011-12	84	21	5	13



Region - Wise turn over FY 2011-12 (No. of Executives)

Region – wise Turn Over FY 2011-12 (No. of Executives)

REGION	NOs.
CORPORATE	24
NORTH	15
NATIONAL CAPITAL	11
SOUTH	14
EAST - I	16
EAST - II	11
WEST - I	5
WEST - II	20
HYDRO	5
MINING	2
TOTAL	123

recorded. Further at apex level, continuous interaction is held with National Bipartite Committee (NBC) on all aspects including operational issues. The formal agreements invariably contain stipulations requiring compliance of applicable laws like Industrial Disputes Act, Industrial Employment (Standing Orders) Act etc.

Occupational Health and Safety

NTPC promotes high performance, continuous improvement, and safe working practices. Our safety objective of providing a safe working environment covers our employees, our contractors and all others working with us on all our sites regardless of project complexity and cultural considerations. A business which provides a safe and healthy working environment allows its employees to perform at their highest potential and attracts and retains the best talent.

NTPC has always given prime importance to occupational health and safety to all the persons working in its projects and stations by making all efforts to prevent all types of accidents. To comply with the safety requirements, qualified Safety Officers have been appointed in all the units. The line executives take full responsibility of safety management and take preventive measures. To spread the awareness of safety measures, safety months are organized involving each

worker, wherein activities like safety related competitions including safety elocution, paintings and quizzes are conducted. "Better safe than sorry" is a tenet in setting safety standards at all power stations.

We insist on high levels of professionalism through training and knowledge sharing. We set the same safety objectives and standards for employees and contractors irrespective of facility location and nature of work and we benchmark ourselves against international peers to set new standards of excellence.

NTPC has a safety manual which is in use at its plants. This manual is a compilation of Safety guidelines and circulars issued by NTPC on accident reporting and investigation procedure, Safety Policy, Safety Rules, Entitlement and periodicity of safety PPEs, Material Safety Data Sheets, relevant Statutory Provisions like Factories Act etc. which are very useful as a reference document not only for the Safety Professionals but by all concerned employees. The manual is currently under revision.

Regular plant inspection, internal and external safety audits are carried out at each Project/Station. Safe methods are practised in all areas of Operation & Maintenance (O&M) and Construction & Erection (C&E) activities. Safety task force for O&M and Construction activities, height permit and height check list are implemented.





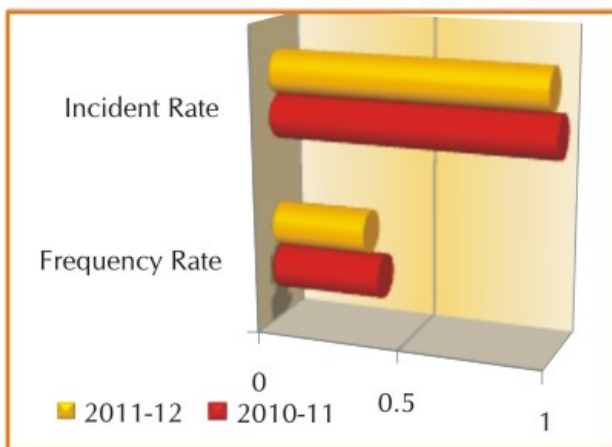
No occupational diseases have been reported during the reporting period 2011-12. Many of our plants have been awarded with prestigious safety awards in

recognition of implementing innovative safety procedure and practices. The relevant safety data for the 21 operating stations is as under:

Year	Reportable Accident (Nos.)		Total Employees (Regular + Contractual)	Total Man Hours	Total Man days lost	Frequency Rate (FR)	Incident Rate (IR)
	Fatal	Non- Fatal					
2010-11	5	45	50699	126786173	31255	0.39	0.99
2011-12	11	40	53232	150998366	68100	0.34	0.96

$$\text{Frequency Rate (FR)} = \frac{\text{Total Reportable Accident} \times 10^6}{\text{Total Man Hrs Worked}}$$

$$\text{Incident Rate (IR)} = \frac{\text{Total Reportable Accident} \times 1000}{\text{Avg Employment in the year}}$$



Health Care

The organization provides comprehensive medical care to employees and their families inclusive of

promotive, curative and preventive healthcare. It also provides adequate health care to the community around the project sites.

A fully dedicated team of Doctors and para medical staff at NTPC hospitals takes quality medical care to the doorsteps of employees in the project in locations where even Govt. Primary Health Care is inadequate and provide primary, secondary and emergency health care. The empanelled hospitals in cities provide the tertiary health care services. Mobile health clinic is being run by all the NTPC hospitals to provide free medical care and medicine to the surrounding community at their door step. With the above efforts the average employee age has increased.

Under the health awareness programme, following activities are being carried out by the medical department for the employees as well as the community:

- Lectures on various relevant topics by eminent doctors from reputed institutes
- Pamphlets & Poster distributed on Healthy tips, different common illness and their prevention.
- Short video films on cable network on different topics
- Road shows, Health quiz
- Organizing health camps
- Tips for healthy life
- Yoga session at different offices and projects
- Stress Management

NTPC conducted Diagnostic camps, Preventive programmes and also provided Education, Counselling, Training, Aids & appliances at all NTPC stations/projects which benefitted employees & their family members, school children and villagers.

	Education/ Training		Counselling		Prevention/ Risk control		Treatment	
	Yes	No	Yes	No	Yes	No	Yes	No
Programs recipients								
Workers	✓		✓		✓		✓	
Workers' families	✓		✓		✓		✓	
Community members	✓		✓		✓		✓	

Regular Employees

All regular employees, trainees and apprentices and their family members are fully covered under the medical policy of NTPC. Full-fledged company hospitals have been established in the projects township. In addition to provision of allopathic system, NTPC promotes the alternative systems like homeopathic and ayurvedic system of medicine.

NTPC also has a policy of annual comprehensive health check-up for the employees above the age of 45 years and health check up once in two years for the employees in the age groups of 40-45. The employees working in hazardous areas in the project undergo regular comprehensive health check-up.

Social security for Retired employees

NTPC has a contributory scheme of medical facilities

on superannuation for the employees and their spouses.

Medical Facilities to Project Affected Persons (PAPs)

NTPC has a specific scheme for medical facilities to the PAPs and their families wherein 80% rebate is given for the consultation charges and for indoor treatment in NTPC hospitals.

Community Development

NTPC provides basic infrastructure for the primary health center/dispensaries in the affected villages as per need and requirement. In addition, NTPC has been extending medical facilities in its project hospitals to the needy and poor people free of cost. Regular health check ups are organized in the neighbouring villages.

Spreading the social concern to the surrounding areas, the National Program enforced by the Family Planning camps, Blood donation camps, Immunisation schedules, Eye camps, Heart disease prevention camps, Cancer detection camps, School medical checkups etc. are organised for non-entitled people at the project hospitals at places where the Govt. Primary Health Care is inadequate.

People with Special Abilities

NTPC has been organizing free medical camps periodically in many of its projects for the benefit of disabled persons. Special equipment for the aid of disabled persons have also been distributed at our projects. Accommodation is provided by our projects to any agency/voluntary organization for the aid of disabled persons, besides providing any other assistance.

National Calamities

NTPC, from time to time, has donated towards the various Relief Funds at the time of natural calamities to the different government fund such as Prime Minister's National Relief Fund, Prime Minister's National Defence Fund, Chief Ministers Relief Fund etc. In addition to this, NTPC has sent a teams of Doctors, Engineers to the affected areas for restoration works.

Social Security for Old age/retirement

NTPC provides the following social security benefits to its employees:-



- Employees provident fund
- Gratuity
- Employees voluntary benevolent fund
- Self contributory superannuation benefit (Pension Scheme)

Under the prevention and risk control programme following best practices are followed by all the NTPC hospitals

- Bio-medical Waste Management
- Formulation of HIV Aids Policy at workplace
- Guideline on handling of communicable diseases

Training & Education, Diversity and Equal Opportunity

HR vision of NTPC is – “To enable our people to be family of committed world class professional, making NTPC a learning organization”. NTPC subscribes to the belief that efficiency, effectiveness and success of the organization depends largely on the skills, abilities and commitment of the employees. NTPC’s view of employee development has very wide perspective and is not constrained to job related inputs. Training in NTPC is carried out with short term and long term objectives to impact skills required to carry out various

jobs and provide development input for the individual’s and organization’s future growth .

NTPC’S training policy envisages minimum 7 man days of training per employee per year. Training needs are identified based on:

- Organizational requirement (captured from business plan)
- Departmental requirement (captured from departmental recommendation)
- Individual requirement/development plan (captured from performance planning framework).

A combination of in-house trainings and external institution led training opportunities are provided to various employees as per the needs.

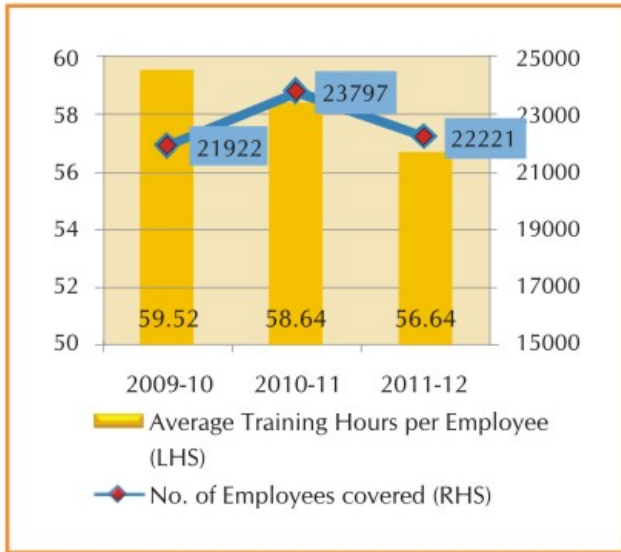
NTPC has developed its own training infrastructure at NOIDA and at each of NTPC stations and projects. Power Management Institute (PMI) at Noida, is the apex level training setup in NTPC and cater to advance training needs of executives from within as well as outside the company. Employee Development Centre (EDC) at stations cater to training & development needs of employees of respective stations. NTPC also conducts programme at other institutes which are specific to typical needs. NTPC also send it’s employees to international training on case to case basis.

COMPANY PERFORMANCE



ECONOMIC	ENVIRONMENT	SOCIAL	AWARDS AND RECOGNITION	DATA	GRI INDEX	ASSURANCE STATEMENT
LABOUR PRACTICES AND DECENT WORK		SOCIETY PERFORMANCE		HUMAN RIGHTS		PRODUCT RESPONSIBILITY

Details of formal training provided to employees over last three years is given below:



Parameters	2009-10	2010-11	2011-12
No of Employees covered	21922	23797	22221
Average Training Hours per Employee	59.52	58.64	56.64

Training Programs

NTPC conducts over 8,000 programme each year aimed at enhancing knowledge and skill of employees. These are divided into two broad areas:

- Need based programs
- Planned Intervention programs

Need based programmes are typically conducted over 3-5 days while planned intervention programmes are long duration, typically over one week. Planned intervention programmes aims at equipping employees with additional knowledge and skill when they are elevated to higher hierarchical positions. Company has a specific programme "Planning for super annuation." It is a 3 day program conducted twice a year at PMI for its employees who are retiring in next 1-2 years. Each employee has to attend these planned intervention programmes at an interval of 3-5 years, appropriate to his level. Over the years, these programmes have been found to be very effective. Through these programmes, employees are made ready to tackle all possible situations, throughout their stay in the organization.

Various domain of the programmes conducted in NTPC are:

- Management Domain
- Technical Domain
- Information Technology Domain
- Employee development

Details of some of the major planned intervention programmes conducted for executives are as below:

Business Unit head Program:

A 5 day program for Business Unit Heads (GM's) with an aim to develop capacity to identify the challenges of change and the skills required for proactively managing change.

Advance Management Program:

A 3 weeks program for senior executives at the level of AGMs conducted by ASCI, Hyderabad and MDI, Gurgaon.

Enhancing Managerial Competency :

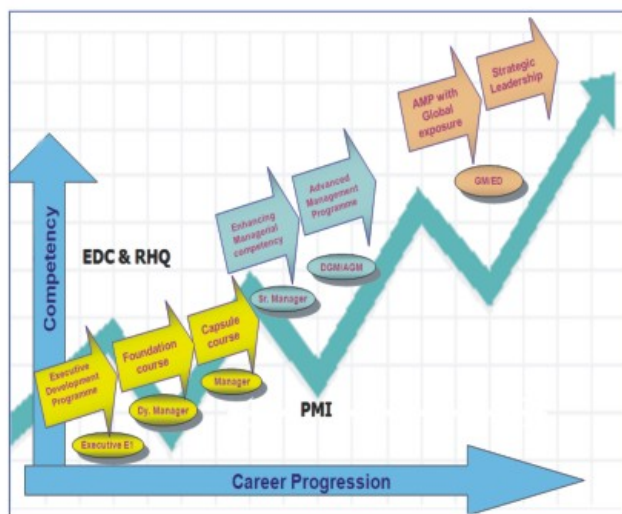
A three weeks program for Senior Managers sensitize changes with reference to Business of power sector. Enhance capabilities to understand strategic issues and develop holistic cross functional competencies.

Capsule Course on General Management:

A two weeks program for Managers provides an understanding of current issues of economy, industry and Company and to develop managerial skills and integrated perspective of management function.

Foundation Course in General Management:

A 11 days program for Dy. Managers provide an understanding of basics of general Management, create awareness on various Management theories like team working, communication, delegation etc.





In a year, NTPC conducts on an average 50 planned intervention programmes across all the stations and offices to cover employees at various levels. Similar to these, there are programme for non executive level and for technical streams also.

SOCIETY PERFORMANCE

Local Communities

Investment	A total expenditure of INR 49.44 crore was incurred towards Corporate Social Responsibility expenses during the Financial Year 2011-12, which was 0.54% of the net profit of the previous year.
Awards	NTPC received SCOPE Meritorious Award for CSR and Responsiveness for the year 2010-11, Golden Peacock Award for CSR for the year 2011 and Greentech Award for the year 2011.

As a socially responsible entity, NTPC has been sensitive to the needs and aspirations of the Project Affected Persons (PAPs). Accordingly, the Company has always tried for the best possible R&R package for the PAPs in consultation with stakeholders and State Government.

As per MOEF Notifications related to Environmental Clearance, Public Hearing and Public Consultations are undertaken prior to the start of construction of the project. The process of Public Hearing and Public Consultations are open to general public, during which

they can express their concerns regarding environmental impacts of the project, socio-economic impacts due to acquisition of land and homesteads, rehabilitation and resettlement programmes, expectations from the project, etc. The comments of the general public are recorded and forwarded to MOEF, which takes them into consideration while according environmental clearance for the project.

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

NTPC has taken new initiatives by setting up new ITIs and adopting existing ITIs to improve employability of PAPs and local population.

In line with the provisions of R&R Policy from 2005 onwards, Social Impact Evaluation (SIE) is also done by an external agency on completion of implementation of Rehabilitation Action Plan (RAP). SIE evaluates the impact of NTPC on affected Vs unaffected villages both pre and post acquisition of land and also evaluates whether all activities identified in the RAP have been completed satisfactorily and issues recommendations for necessary modification/corrective measures, if any, for the future project. Individual PAP-wise details are also compiled for comparison of their pre and post acquisition status and restoration of livelihood.

Recognizing the importance of a sound institutional framework to achieve the desired results, NTPC has set up dedicated R&R groups. These R&R groups operate at projects, Regional Headquarters and the Corporate Centre, associating people with social expertise and philanthropic thoughts, consultants, facilitators, social scientists and NGOs. For effective participation, consultation and transparency with the stakeholders in its activities, Public Information Centres (PICs) have been set up by NTPC and Village Development Advisory Committees (VDACs)/ similar participative mechanisms have been constituted by the concerned District administration. The Grievance Redressal Mechanism for each project encourages PAPs to approach them if dissatisfied with the arrangements. No significant grievance was reported during the FY 2011-12. R&R activities in NTPC endeavour to not just meet the formal organizational commitments made to the PAPs in line with company's R&R policy/ concerned State/ National R&R Policy but also go beyond them through the application of innovative practices from time to time.

Public Information Centre (PIC):

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

Consultative Mechanisms:

Village Development Advisory Committees (VDACs)/ similar participative mechanisms constituted by the concerned district administration facilitate finalization and implementation of RAPs in a participative manner. The representatives of PAPs, Gram Pradhan, Panchayat representative, Block Development Officer, other representatives of State Government, NTPC and NGOs / CBOs meet regularly from the formulation of RAP till its completion and closure at respective projects.

Public Policy

NTPC is a public sector undertaking (PSU) under the Government of India. It has been one of the high performing PSU and the Government has bestowed upon it the tag of 'MAHARATNA', having the potential to become global giant, thereby giving more powers to Board of Directors in its endeavour to expand its business in domestic and global markets.

Consequently, NTPC benefits from the fact that it has a commercial orientation while having the support of the Government. This support and ownership ensures that NTPC's views are taken into account while formulating any policy. NTPC provides vital inputs to government of India in drafting policies concerning energy sector which is taken cognizance of while finalizing policy by Gol. These views are provided to the Government proactively and have invariably resulted in adoption of a holistic approach by the Government. NTPC participates in various forums and Industry associations such as SCOPE, CII, FICCI, etc. to advocate the policies which are conducive for sustainable power development.

NTPC's CSR programs and R&R policy are seamlessly attuned to the national policies formulated by the Government of India. Corporate Social Responsibility is an article of faith and the Project Affected Persons (PAPs) are considered to be partners in progress by NTPC. NTPC extensively participates in various sectoral development programs of Ministry of Power, Gol such as Re-Structured Accelerated Power Development & Reforms Program (R-APDRP), Rural Electrification Programs such as Rajeev Gandhi Grameen Vidyutikaran Yojana and "5 km village electrification scheme" so as to ensure inclusive growth in the power sector.

Anti-Corruption Activities

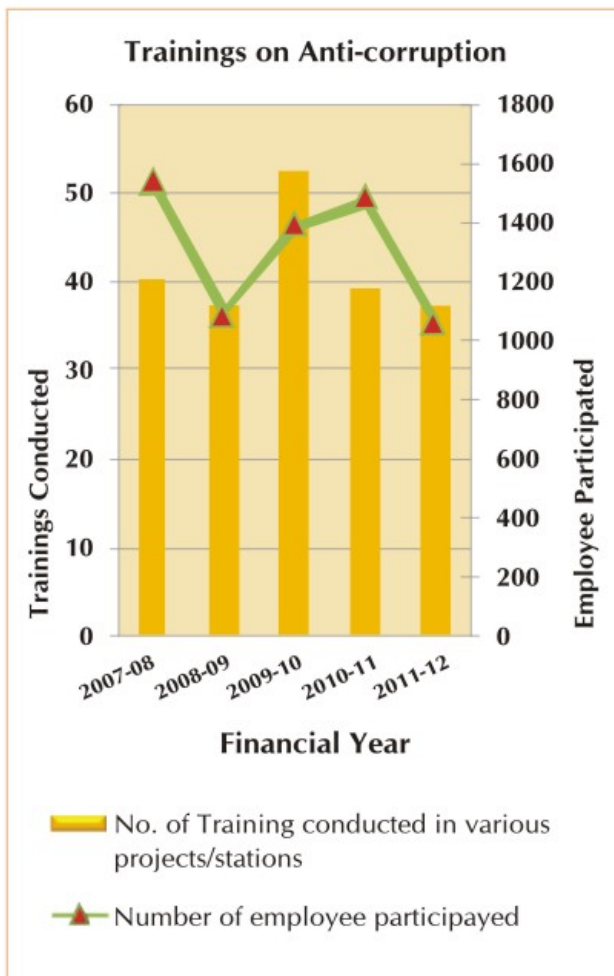
NTPC has made great strides in enhancing the ethical standards of the organisation by encouraging sound business practices and good corporate governance through an effective balance of proactive and preventive measures.

NTPC has a full fledged Vigilance Department headed by the Chief Vigilance Officer at Corporate Centre directly reporting to CMD as well as to Central Vigilance Commission (CVC), Govt. of India, an apex nodal body for monitoring anti-corruption work in India. The CVO is assisted by a team of experts in dealing Vigilance & technical matters for conducting/examining issues relating to corruption. In order to ensure independence in functioning and also for quick flow of information, relating to corruption, to the highest Management, each Individual stations/projects of the Company has a separate vigilance unit reporting directly to the respective Heads of Stations as well as to the CVO, at the Corporate Centre. The vigilance mechanism in NTPC is a continuous process comprising of three important aspects of Vigilance i.e. preventive vigilance, detective

vigilance and punitive vigilance. As a preventive measure, vigilance department conducts awareness programs for employees from time to time.

Financial Year	No. of Training conducted in various projects/stations	Number of employee participated
2007-08	40	1532
2008-09	37	1080
2009-10	52	1386
2010-11	39	1474
2011-12	37	1057

Preventive Vigilance Workshops are being conducted every year to sensitize employees about DOs and DON'Ts in work areas and their role in preventing corruption. Vigilance Awareness Week is being organized every year in first week of November to emphasize upon leveraging IT, creating awareness for transparency, accountability, fair play and objectivity. The issues relating to contractors are also addressed to their satisfaction during Customer Meet organized during Vigilance Awareness Week.



During 2011-12, 8.6% of executives attended training programs on anti corruption policies of NTPC.

100% of the departments at all business units are selected for corruption risk analysis. However, special focus is given to the following departments :

Names of the departments chosen for special focus on anti-corruption work	
Corporate and site Contracts & Material	Chosen because Company is incurring huge amount on purchases relating to Power Plants
O&M (Electrical, Mechanical and Civil Maintenance)	Handling of large value spares & consumables .
a) Civil Construction b) Electrical Erection c) Mechanical Erection	Handling of large number & value of Construction/Erection Contracts

Actions are initiated on the concerned employees in case of any findings of corruption under CDA rules of the company which comprises of investigation and further disciplinary proceedings etc. All necessary care is taken so that the employee against whom charges are made shall not interfere/ influence the investigating process. The punishments include various disciplinary actions ranging from issuing of warning letter to Compulsory Retirement/Termination from services.

During the year 2011-12, all 21 operating stations were analysed for risks related to corruptions. There were three major cases of fraud/misconduct reported to the corporate vigilance. Investigations in all the three cases have since been completed and those found prima-facie involved have been identified. One employee is under suspension and is in judicial custody. Appropriate action has been taken in all the other cases.

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 organization comply with all the statutory as well as voluntary requirements. During the reporting period, there were three incidents of non-compliance reported by stations which have been sorted out and no monetary fines were imposed.



HUMAN RIGHTS

For addressing the issue of labour standard in comprehensive manner, NTPC comply with the international standards like SA-8000 and IS / OHSAS-18001.

SA-8000 is an international standard for improving working conditions. It is based on the principles of thirteen international human rights conventions and is a tool to help apply these norms to practical work-life situations. The various elements of SA-8000 are :

- Child Labour
- Forced and Compulsory Labour
- Health and Safety
- Freedom of Association and Right to Collective bargaining
- Discrimination
- Disciplinary Practices
- Working Hours
- Remuneration &
- Management Systems

During the year 2011-12, our Faridabad plant was certified for SA-8000. The SA-8000 certification for Anta, Farakka, Kayamkulam, Dadri, Ramagundam, Rihand and Simhadri were revalidated and the same for

Unchahar is in the process of revalidation. We plan to obtain SA-8000 certifications for all our operating stations. These certifications help us in identifying, reviewing and improving human rights aspects pertaining to all our operations.

The human rights provisions have been envisaged in our bidding documents in respect of labour, welfare, statutory provisions, safety, etc. for supply cum erection and civil packages invited on international competitive bidding and domestic competitive bidding basis.

Any sort of discriminatory practice on the grounds of caste, creed, color, race, gender, religion, political is prohibited at all NTPC units, promoting diversity and offering equality of opportunity to all employees in the organization. None of the 21 locations identified are at significant risk.

Security of our power plants against any threat / sabotage etc. has been a very fundamental activity and it is being taken care of by deploying CISF at all our units of NTPC as per norms of MHA. With the mandate of securing our power plants, a separate department named "Security and Co-ordination Deptt." has been formed in NTPC which is headed by an IPS officer of IGP / Executive Director Level and is reporting to Director (HR). Regular training is given to all the security personnel deployed at our stations including human rights aspects. There were no incidences of violations involving rights of indigenous people and right to exercise freedom of association and collective bargaining in the reporting period. Also, no incidents of child or forced labour were reported either to the management of the concerned unit or to the statutory authorities in the year 2011-12.

All our management training programs as also various other training programs contain sessions on human rights aspects.





PRODUCT RESPONSIBILITY

NTPC sells electricity from its various thermal 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.

Customer Health and Safety

Due care is taken to ensure health and safety of our employees, associates and other stakeholders during electricity production and in all areas under operational control of NTPC. Transmission of electricity and its distribution is beyond the scope of NTPC.

Customer Relationship Management (CRM) initiative has been taken by NTPC towards strengthening relationship with our customers. Under this, regular structured interaction with customers takes place on an ongoing basis for sharing of feedbacks and experiences including health and safety aspects of NTPC's products and services.

Product and Service Labeling

There are no requirements of product and service labeling in NTPC and no incidents of non-compliance were reported during the year.

Marketing Communications

Electricity sector in India is a regulated sector. The Electricity Act 2003 provides the basic framework for functioning and development of the electricity sector in the country. The Central Electricity Authority (CEA) has overall responsibility of planning and formulation of technical standards for electrical plants and electrical lines. NTPC is strictly complying with the Grid code and Grid Standards. Regional Load Dispatch Centers have the responsibility of scheduling, dispatch and monitoring of Grid Operations.

Customer Privacy and Compliance

For the sale of electricity to Bulk Customers there are no laws, standards and voluntary codes related to marketing, communications including advertising, promotion and sponsorship. The basic reason for this being the specific characteristic of electricity as a product and the structure of power sector in our country. No incidences were 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 comply with all the laws and regulations concerning to provision and use of products and services. No fines/penalties were imposed on us during the reporting period.

AWARDS AND RECOGNITION



AWARDS AND RECOGNITION

The following awards were received by NTPC during 2011-12:

S. No	Award	Instituted By	Highlights
HUMAN RIGHTS			
1	National HR Excellence Award-2011	CII	NTPC received the recognition 'Significant Achievement in HR Excellence' at prestigious CII National HR Excellence Award-2011.
2	The Best Companies to Work for – 2011	Great Place to Work (GPTW) Institute, India in collaboration with The Economic times	NTPC was amongst Top 25 companies in India with 19th ranking. In the Industry-wise Best Companies – 2011 . NTPC is also ranked 3rd in the Manufacturing & Production and is the only company in the public sector.
3	The Best Employers in India, 2011 Study	Aon Hewitt in partnership with Outlook Business	NTPC is the only PSU amongst the top 25 companies in the Aon Hewitt Best Employers Study and has been ranked 6th in Aon Hewitt Best Employers in India 2011 Study of Best Employers in the country.
4	Aon Hewitt Best Employers in Asia Pacific, 2011	Aon Hewitt	NTPC has been named one of the Top 25 Best Employers in Asia Pacific in the sixth Aon Hewitt Best Employers in APAC 2011 study announced on 22nd June, 2011.
5	All India House Magazine Award for 2010-11	Govt. of India	NTPC's Magazine "Vidyut Swar" was presented 2nd prize by Smt. Pratibha Devi Singh Patil, Hon'ble President, India at the All India House Magazine Award for 2010-11 on the occasion of "Hindi Rajbhasa Day" in New Delhi. Union Home Minister, Shri P. Chidambaram presided over the ceremony.
COMPANY RANKINGS			
6	The Most Respected Company in Power Sector	Businessworld	NTPC the largest power utility in the country has been bestowed with the honour of being the most respected company in Power Sector for the year 2011 by Businessworld.
7	Forbes' Global 2000 list of top listed firms	Forbes, US magazine	NTPC has been ranked 348th among the world's 2000 most powerful listed companies.
8	Platts Top 250 Global Energy Company Rankings- 2010	Platts, The McGraw-Hill Companies	NTPC earned a ranking of: <ul style="list-style-type: none"> • 52 on overall global performance • No. 1 in Independent Power Producer & Energy Traders in Asia. • 10th in overall performance in Asia. • 2nd Independent Power Producers and Energy Traders globally.

S. No	Award	Instituted By	Highlights
9	Global D&B Rating	Dun & Bradstreet	NTPC has been recognized #1 in Global D&B rating conducted by Dun & Bradstreet Information Services India Private Ltd.
CSR AWARDS			
10	Good Corporate Citizen Award – 2011	PHD Chamber of Commerce	India's largest power company NTPC received the Good Corporate Citizen Award-
11	Golden Peacock Award for Corporate Social Responsibility	Institute of Directors	The Golden Peacock Award was awarded to NTPC for Corporate Social Responsibility at 6th International Conference on Society Responsibility.
ENVIRONMENT AWARDS			
12	Golden Peacock Award for Environment Management 2011	Institute of Directors	NTPC's Talcher Super thermal Power Station, Kaniha has been awarded Golden Peacock Award for Environment Management 2011
13	3rd Green Globe Foundation Awards	Green Globe Foundation	NTPC's Dadri project has been conferred with the Green Globe Foundation Award in the Public Sector category with the aim of honouring the efforts of corporate, NGOs and individuals striving for an environment friendly India.
14	Greentech Environment Award 2011	Greentech Foundation	NTPC's four stations at Kawas, Dadri, Jhanor and Farakka have been selected for presentation of the prestigious 12th Annual Greentech Environment Award 2011 for the following categories: <ul style="list-style-type: none"> • KawasGPP Platinum • NCTPP, Dadri Gold • Jhanor Gandhar GPP Gold • Farakka STPP Gold
QUALITY AWARDS			
15	Valued Customer Award	Central Power Research institute, Bengaluru	NTPC received the "Valued Customer Award" for "Field Testing Consultancy" instituted by Central Power research Institute, Bengaluru.
PERFORMANCE/PRODUCTIVITY AWARDS			
16	Top Liner Maharatna	DSIJ	NTPC has been adjudged as the "Top Liner Maharatna" for Highest Sales Growth at the 3rd DSIJ PSU Awards.
17	Prime Minister's Sharm Awards for 2009 and 2010	Ministry of Labour & Employment, Govt. of India	Sharm Bhushan Award for the year 2009 was awarded to : Shri Rajender Kumar Gupta, Sr. Foreman Gr.1, Badarpur TPS, New Delhi. Shram Shree/Shram Devi Awards for the

S. No	Award	Instituted By	Highlights
17	Prime Minister's Sharm Awards for 2009 and 2010	Ministry of Labour & Employment, Govt. of India	year 2010 was awarded jointly to the following: i. Shri Prasan Kumar Pradhan, Master Technician, Gr.II ii. Sh. Ramesh Chandra Dhal, Senior Technician, Gr. III iii. Shri Ramakanta Barik, Technician Gr. II
18	IPMA International Project Excellence Award – 2011	IPMA Award Management Board	NTPC's National Capital Power Station Dadri, Stage-II (2x490 MW) has achieved the highest status of Prize Winner in Award Category Project Excellence in Mega-Sized Projects.
19	D&B – Axis Bank Infra Awards 2011	D&B – Axis Bank	NTPC was adjudged the leading company in 2 categories, best in generation and best infrastructure company by the Dun & Bradstreet – Axis Bank Infra Awards 2011.
20	SCOPE Excellence Award - 2009-10	DPE/SCOPE	NTPC and IOCL have been declared joint winners for "SCOPE Excellence (Maharatna and Navratna) PSE Category" - 2009-10 awards.
CORPORATE GOVERNANCE AWARDS			
21	Good Corporate Citizen Award-2011	PHD Chamber of Commerce	NTPC received the Good Corporate Citizen Award-2011, instituted by PHD Chamber of Commerce for its outstanding achievement in the area of CSR and Corporate Governance.

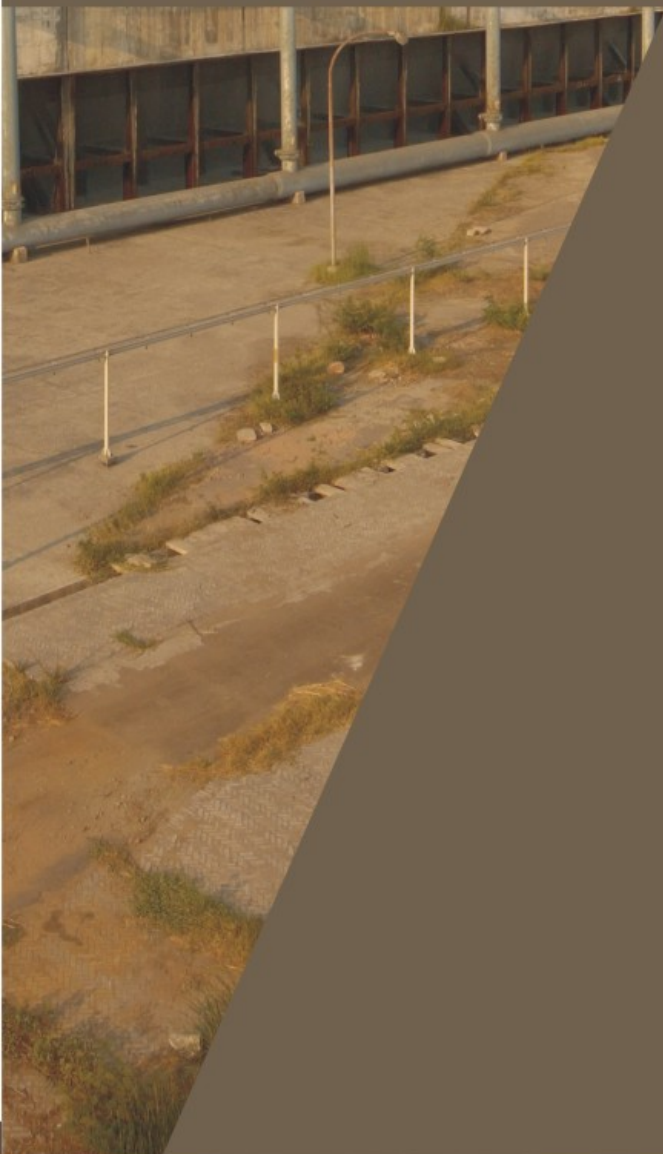


COMPANY PERFORMANCE





KEY DATA AT A GLANCE



KEY DATA AT A GLANCE

Name of Indicators	Units	2009-10	2010-11	2011-12	
ENVIRONMENT INDICATORS					
Material used					
Input material	Lube Oil	KL	1,604	1,662	1,711
		lit/mu	7.34	7.54	7.75
	Transformer Oil	KL	198	232	344
		lit/mu	0.91	1.05	1.56
	Chlorine	MT	3,740	3,563	4,914
		Kg/mu	17.12	16.17	22.26
	Ammonia	MT	470	394	1,249
		Kg/mu	2.15	1.79	5.66
	Alum	MT	8,985	9,411	10,746
		Kg/mu	41.13	42.7	48.69
	HCl	MT	14,126	14,827	15,140
		Kg/mu	64.67	67.28	68.60
	H2SO4	MT	9,913	9,434	9,252
		Kg/mu	45.38	42.8	41.92
Direct energy consumed					
Energy	Coal	MMT	135	137	141
		Kcal/Kg	3,385	3,418	3,371
		GJ	1,91,32,62,930	1,96,05,36,089	1,99,00,32,095
		Kg/kwh	0.708	0.702	0.713
	Natural Gas	mmscmd	13.88	13.77	13.09
		Kcal/scm	9,420	9,420	9,372
		GJ	19,98,09,185	19,82,25,683	18,74,76,573
	Naptha	MT	417,004	330,783	123,403
		Kcal/ kg	11,340	11,342	11,348
		GJ	1,97,98,646	1,57,07,788	58,63,099
Coal Stations					
*Generation	MU	190,857	195,124	197,682	
PLF	%	90.81	88.29	85.00	
Cycle efficiency	%	35.86	35.86	35.83	
Gas Stations					
*Generation	MU	27,581	25,255	23,014	
PLF	%	78.4	71.8	65.2	
Cycle efficiency	%	42.89	42.72	42.76	
TOTAL *Generation (Coal + Gas)	MU	218438	220379	220696	
<i>(*commercial generation)</i>					

COMPANY PERFORMANCE



Name of Indicators		Units	2009-10	2010-11	2011-12	
Auxillary power consumption						
Energy	Coal Stations	MU	12673	13052	13346	
		%	6.64	6.69	6.75	
	Gas Stations	MU	563	575	515	
		%	2.04	2.28	2.24	
	Energy saved					
	Electrical	MU	93.78	102.33	111.25	
	Heat Energy (equivalent MT of coal)	MT	72,747	22,774	36,530	
	Heat Energy (equivalent MCM of Gas)	MCM	2.55	6.577	0.51	
Heat Energy (equivalent KL of Naptha)	KL	-	10.298	21.24		
Water						
Water	Water Withdrawal	Lakh KL	48,835	49,988	47,010	
		lit/kwh	22.36	22.68	21.3	
Stack Emissions						
Emissions	SPM	MT	99,985	104,529	106,922	
	Specific SPM	gm/kwh	0.458	0.474	0.484	
	SO ₂	MT	776,324	839,086	790,889	
	Specific SO ₂	gm/kwh	3.55	3.81	3.58	
	NO _x	MT	465,340	490,892	464,822	
	Specific NO _x	gm/kwh	2.13	2.23	2.11	
	Greenhouse Gas Emissions					
	CO ₂ (Coal Station)	MT	173,489,881	177,474,064	179,902,214	
	CO ₂ emission intensity (Coal Station)	gm/kwh	909	910	910	
	CO ₂ (Gas Station)	MT	12,094,282	11,039,917	10,084,744	
CO ₂ emission intensity (Gas Station)	gm/kwh	438.50	437.14	438.20		
ODS (CFC-11 equivalent)	(Kg)	-	5416	5244		
Waste						
Waste	Misc. Ferrous Scrap	MT	15,661	24,278	15,503	
		mg/kwh	71.69	110.16	70.25	
	Non Ferrous Scrap	MT	875	626	498	
		mg/kwh	4	2.84	2.25	
	Used Batteries	MT	37	101	110	
	Spent Resin	Litre	1,478	1,271	8,879	
		ml/mu	6.77	5.77	40.23	
	Used lube oil	KL	870	827	997	
		ltr/mu	3.98	3.75	4.51	
	Transformer Oil	KL	381	412	148	
ltr/mu		1.74	1.87	0.67		
Main plant effluents						
Effluents	Quantity	m ³	460,978,765	459,440,374	445,592,309	
		lit/kwh	2.11	2.08	2.01	
	PH	-	7.7	7.6	7.5	
	TSS	mg/l	42.6	38.5	43.7	
	O & G	ppm	2.1	2.3	2.4	

Name of Indicators		Units	2009-10	2010-11	2011-12
Ash					
Ash	Ash Generated	lakh ton	276.1	260.3	275.3
	Total Ash Utilized	%	59.73	55.14	55.01
Ash Utilization					
Ash utilized	Land Development	lakh ton	78.43	63.86	68.74
		%	16.97	13.53	13.73
	Issue to cement & other ind.	lakh ton	108.52	98.79	90.63
		%	23.48	20.93	18.10
	Ash Dyke Raising	lakh ton	35.15	36.14	42.20
		%	7.61	7.66	8.43
	Bricks	lakh ton	1.03	0.79	0.96
		%	0.22	0.17	0.19
	Roads/Rail Embankment	lakh ton	13.41	14.77	17.97
		%	2.90	3.13	3.59
	Mine filling	lakh ton	11.28	11.80	11.68
		%	2.44	2.50	2.33
	Others	lakh ton	28.26	34.14	43.13
		%	6.11	7.23	8.62
Environmental Expenditure	Rs (Crores)	52.20	59.12	94.12	
	Rs/mu	2390	2682	4265	

Name of Indicators		Units	2009-10	2010-11	2011-12
LABOR PRACTICES AND DECENT WORK					
	Generation per employee	mu/emp	9.22	9.27	9.25
	Man/MW Ratio	Man/MW	0.82	0.77	0.74
No. of employees in NTPC					
Employment	Number of employees	No.	-	23,797	24,011
	Employees in Subsidiaries & Joint Ventures	No.	-	1,347	1,500
	Total employees	No.	-	25,144	25,511
	Gender-wise Turnover				
	Male	No.	-	133	115
	Female	No.	-	4	8
	Agewise Turnover : Age Group (In Years)				
	24-30	No.	-	49	84
	30-40	No.	-	35	21
	40-50	No.	-	21	5
50-60	No.	-	32	13	
Training	No of Employees	No.	21922	23797	22221
	Average Training Hours per Employee	No.	59.52	58.64	56.64
SOCIETY PERFORMANCE INDICATORS					
Corruption	No. Of Training conducted	No.	52	39	37
	Number of employee participated	No.	1386	1474	1057

GRI INDEX



GRI INDEX

I. Standard Disclosures

NO	Aspect	DESCRIPTION	Coverage	Page
1.1	Strategy and Analysis	Statement of CMD	Full	3-5
1.2		Description of Key Impacts, risks and opportunities	Full	24-37
2.1	Organization Profile	Name of the Organization	Full	16
2.2		Primary Brands, Products and/or Services	Full	16
2.3		Operational Structure of the Organization	Full	20
2.4		Location of HQ	Full	16
2.5		Location of major operations	Full	12,19
2.6		Nature of ownership and legal form	Full	17
2.7		Markets served	Full	17
2.8		Scale of reporting	Full	8
2.9		Significant changes during reporting period	Full	18
2.10		Awards received	Full	92-94
3.1	Report Parameters	Reporting period	Full	8
3.2		Date of most recent report (if any,)	NA	-
3.3		Reporting cycle	Full	9
3.4		Contact point for questions regarding the report	Full	8
3.5		Process for defining report contents	Full	9
3.6		Boundary of the reports (e.g. Countries, Divisions, Subsidiaries, JVs etc)	Full	8
3.7		Specific limitations on scope or boundary of report	Full	8
3.8		Basis for reporting on JVs, Subsidiaries etc	Full	8
3.9		Data measurement techniques and underlying estimations applied to compilation of indicators	Full	9
3.10		Explanation of effect of any re-statements of info provided in earlier reports	NA	-
3.11		Significant changes from previous reporting period	NA	-
3.12		Index table	Full	1
3.13		Policy and practice with regard to seeking external assurance	Full	9
4.1	Governance, Commitment and Engagement	Governance structure of the organization	Full	40
4.2		Whether the chair of highest governance body is also an executive officer and reasons for this arrangements	Full	40

NO	Aspect	DESCRIPTION	Coverage	Page
4.3	Governance, Commitment and Engagement	No of members of the highest Governance body that are independent and/or non-executive	Full	40
4.4		Mechanism for shareholders and employees to provide recommendations or directions to the highest governance body	Full	40
4.5		Linkage between compensation for highest governance body and organization's performance	Full	40
4.6		Processes in place to ensure avoid conflicts of interests in highest governance body	Full	42
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	Full	42
4.8		Internally developed statements of mission, values, codes of conduct and principles relevant to economic, environment and social topics	Full	Cover Inside
4.9		Procedure for the highest governance body for overseeing the management of economic, environment and social performances	Full	4,21,40
4.10		Process for evaluating the highest governance body's own performance in respect to economic, environment and social performances	Full	42
4.11		Explanation of whether and how the precautionary approach of principle is addressed	Full	41-42
4.12		Externally developed economic, environment and social charters and other initiatives to which the organization subscribes or endorses	Full	3-5
4.13		Membership in associations and /or national / international advocacy organizations	Full	43
4.14		List of stakeholders groups engaged by the organization	Full	44
4.15		Basis of identification of stakeholders	Full	44
4.16		Approach to stakeholder engagement	Full	44-48
4.17		Key topics and concerns raised through stakeholder engagement and organization's response	Full	37

II. Performance Indicators

NO	Aspect	GRI Index	Indicator Description	Coverage	Page
Economic Performance Indicators					
1	Economic Performance	EC 1	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.	Full	50
2		EC 2	Financial implications and other risks and opportunities for the organization's activities due to climate change	Partial	51

NO	Aspect	GRI Index	Indicator Description	Coverage	Page
3		EC 3	Coverage of the organization's defined benefit plan obligations	Full	51, 80
4		EC 4	Significant financial assistance received from government	Full	51
5	Market Presence	EC 5	Range of ratios of standard entry level wage compared to local minimum wage at significant locations of operation	Full	50
6		EC 6	Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation.	Partial	51-53
7		EC 7	Procedures for local hiring and proportion of senior management hired from the local community at significant locations of operation	Full	51
8	Indirect Economic Impacts	EC 8	Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement.	Full	50-53
9		EC 9	Understanding and describing significant indirect economic impacts, including the extent of impacts	Partial	51-53
Environmental Performance Indicators					
10	Materials	EN 1	Materials used by weight or volume	Full	57, 98
11		EN 2	Percentage of materials used that are recycled input materials	Full	57
12	Energy	EN 3	Direct energy consumption by primary energy source.	Full	58, 98
13		EN 4	Indirect energy consumption by primary source	Full	58, 99
14		EN 5	Energy saved due to conservation and efficiency improvements	Full	60
15		EN 6	Initiatives to provide energy-efficient or renewable energy-based products and services, and reductions in energy requirements as a result of these initiatives	Partial	60-61
16		EN 7	Initiatives to reduce indirect energy consumption and reductions achieved	Partial	58-62
17	Water	EN 8	Total water withdrawal by source	Full	63, 99
18		EN 9	Water sources significantly affected by withdrawal by source	Full	63
19		EN 10	Percentage and total volume of water recycled and reused	Partial	63
20	Biodiversity	EN 11	Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.	Partial	64-65
21		EN 12	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas	Partial	64-65

NO	Aspect	GRI Index	Indicator Description	Coverage	Page
22	Biodiversity	EN 13	Habitats protected or restored	Partial	64-65
23		EN 14	Strategies, current actions, and future plans for managing impacts on biodiversity	Partial	64-65
24		EN 15	Number of ICUN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk	Partial	64-65
25	Emissions, Effluents, and Waste	EN 16	Total direct and indirect greenhouse gas emissions by weight	Full	67, 99
26		EN 17	Other relevant indirect greenhouse gas emissions by weight	NR	-
27		EN 18	Initiatives to reduce greenhouse gas emissions and reductions achieved	Partial	66-67
28		EN 19	Emissions of ozone-depleting substances by weight.	Full	68, 99
29		EN 20	NO ₂ , SO ₂ , and other significant air emissions by type and weight	Full	68, 99
30		EN 21	Total water discharge by quality and destination	Full	69, 99
31		EN 22	Total weight of waste by type and disposal method	Full	70, 99
32		EN 23	Total number and volume of significant spills	Full	70
33		EN 24	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	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	Other Environmental Aspects	EN 26	Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation.	Partial	72
36		EN 27	Percentage of products sold and their packaging materials that are reclaimed by category	NA	-
37		EN 28	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations.	Full	33, 72
38		EN 29	Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce	NR	-
39		EN 30	Total environmental protection expenditures and investments by type	Partial	72

NO	Aspect	GRI Index	Indicator Description	Coverage	Page
Labour Practices					
40	Employment	LA 1	Total workforce by employment type, employment contract, and region	Partial	78-79, 100
41		LA 2	Total no. and rate of employee turnover by age group, gender and region	Partial	79-80, 100
42		LA 3	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major operations	Full	80
43	Labor/ Management Relations	LA 4	Percentage of employees covered by collective bargaining agreements	Full	80
44		LA 5	Minimum notice period (s) regarding significant operational changes, including whether it is specified in collective agreements	Full	80
45	Occupational Health and Safety	LA 6	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	Full	81-82
46		LA 7	Rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities by region	Partial	82
47		LA 8	Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases	Full	84-85
48		LA 9	Health and safety topics covered in formal agreements with trade unions.	Partial	82
49	Training and Education	LA 10	Average hours of training per year per employee by employee category	Partial	85,100
50		LA 11	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	Full	84-85
51		LA 12	Percentage of employees receiving regular performance and career development reviews	Full	78
52	Diversity and Equal Opportunity	LA 13	Composition of governance bodies and breakdown of employees per category according to gender, age group, minority group membership, and other indicators of diversity	Partial	40-42, 78-80
53	Equal remuneration for women & Men	LA 14	Ratio of Basic Salary and remuneration of women to men by employee category, by significant locations of operation	Full	79
Social Performance Indicators					
54	Community	SO 1	Nature, scope, and effectiveness of any programs and practices that assess and manage the impacts of operations on communities, including entering, operating, and exiting.	Partial	34-35, 86-87
55	Corruption	SO 2	Percentage and total number of business units analyzed for risks related to corruption	Full	88

NO	Aspect	GRI Index	Indicator Description	Coverage	Page
56	Corruption	SO 3	Percentage of employees trained in organization's anti-corruption policies and procedures	Full	88
57		SO 4	Actions taken in response to incidents of corruption	Full	87-88
58	Public Policy	SO 5	Public policy positions and participation in public policy development and lobbying.	Full	87
59		SO 6	Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country	Full	88
60	Anti-Competitive Behavior	SO 7	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes	Full	87-88
61	Compliance	SO 8	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations	Full	88
Human Rights					
62	Investment and Procurement Practices	HR 1	Percentage and total number of significant investment agreements that include human rights clauses or that have undergone human rights screening.	NR	-
63		HR 2	Percentage of significant suppliers and contractors that have undergone screening on human rights and actions taken	NR	-
64		HR 3	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	Full	89
65	Non-Discrimination	HR 4	Total number of incidents of discrimination and actions taken.	Full	89
66	Freedom of Association & Collective Bargaining	HR 5	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	Full	89
67	Child Labor	HR 6	Operations identified as having significant risk for incidents of child labor, and measures taken to contribute to the elimination of child labor	Full	89
68	Forced and Compulsory Labor	HR 7	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	Full	89
69	Security Practices	HR 8	Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that are relevant to operations	Full	89
70	Indigenous Rights	HR 9	Total number of incidents of violations involving rights of indigenous people and actions taken	Full	89

NO	Aspect	GRI Index	Indicator Description	Coverage	Page
Product Responsibility					
71	Customer Health and Safety	PR 1	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	Full	90
72		PR 2	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	Full	90
73	Product and Service Labeling	PR 3	Type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements	NA	-
74		PR 4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling,, by type of outcomes	Full	90
75		PR 5	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction	Partial	45, 90
76	Marketing communication	PR 6	Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship	Full	90
77		PR 7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion and sponsorship, by type of outcomes	Full	90
78	Customer	PR 8	Total number of substantial complaints regarding breaches of customer privacy and losses of customer data	Full	90
79	Compliance	PR 9	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services	Full	90

 Core Indicators

 Additional Indicators

NA = Not Applicable

NR = Not Reported

ACRONYMS



ACRONYMS

Abbr.	Details
3 R's	Reduce, Recycle & Reuse
AAQMS	Ambient Air Quality Monitoring Systems
ADB	Asian Development Bank
AFGC	Ammonia Flue Gas Conditioning
APAC	Asia Pacific
APC	Auxiliary Power Consumption
APIO	Assistant Public Information Officer
APM	Administrative Price Mechanism
ASCI	Administrative Staff College of India
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
CAGR	Cumulative Annual Growth Rate
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
CFL	Compact Fluorescent Lamps
CFO	Chief Financial Officer
CII	Confederation Of Indian Industry
CIL	Coal India Limited

Abbr.	Details
CISF	Central Industrial Security Force
CMD	Chairman and Managing Director
CO ₂	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
CRM	Customer Relationship Management
CRO	Chief Risk Officer
CSI	Customer Satisfaction Index
CSR	Corporate Social Responsibility
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
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
DSM	Demand Side Management
EC	Economic Performance Indicator
ECBC	Energy Conservation Building Code
ECS	Electronic Clearance Service
ED	Executive Director
EDC	Employee Development Centre
EMS	Environmental Management System
EN	Environmental Performance Indicator
EOC	Engineering Office Complex
ERM	Enterprise Risk Management

Abbr.	Details
ERMC	Enterprise Risk Management Committee
ES Certi	Energy Saving Certificates
ESP	Electro-Static Precipitator
ETP	Effluent Treatment Plants
EVOICE	Employees Voluntary Organization for Initiative in Community Empowerment
FGC	Flue Gas Conditioning
FICCI	Federation of Indian Chambers of Commerce and Industry
FIIs	Foreign Institutional Investors
FIs	Financial Institution
FSA	Fuel Supply Agreement
FTL	Faster than 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
HFO	Heavy Fuel Oil
HIV	Human Immunodeficiency Virus
HPGCL	Haryana Power Generation Corporation Limited
HPSV	High Pressure Sodium Vapours Lamps
HQ	Head Quarters
HR	Human Resources
HR	Human Rights Performance Indicator
ICD Policy	Initial Community Development Policy
ICT	Information and Communication Technology
ICUN	International Union for Conservation of Nature
IGCAR	India Gandhi Centre for Advanced Research
IGCC	Integrated Gasification Combined Cycle
IGP	Inspector General of Police
IMS	Integrated Management System

Abbr.	Details
IOCL	Indian Oil Corporation Limited
IPGCL	Indraprastha Power Generation Corporation Limited
IPMA	International Project Management Association
IPP	Independent Power Producers
IPS	Indian Police Service
ISD	Investor Services Department
IT	Information Technology
ITES	Information Technology Enabled Services
ITIS	Industrial Training Institutes
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
MF	Mutual Funds
MGR	Merry Go Round
MHA	Ministry of Home Affairs
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
NCTPP	National Capital Thermal Power Plant
NECL	North Eastern Coalfields Limited
NEFT	National Electronic Funds Transfer
NELP	New Exploration Licensing Policy
NESCL	NTPC Electric Supply Company Limited
NETRA	NTPC Energy Technology Research Alliance
NFCH	National Foundation for Communal Harmony
NGOs	Non Governmental Organizations

Abbr.	Details
NIOH	National Institute for the Orthopedically Handicapped
NIT	Notice Inviting Tender
NMEEE	National Mission on Enhanced Energy Efficiency
NO ₂	Nitrogen Dioxide
NO _X	Oxides Of Nitrogen
NSDL	National Security Depository Limited
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
PAPs	Project Affected People
PAT	Perform, Achieve and Trade
PHCs	Primary Health Centre
PhD	Doctor of Philosophy
PICs	Public Information Centre
PLF	Plant Load Factor
PM	Particulate Matter
PMI	Power Management Institute
PMS	Paryavaran Monitoring System
PPA	Power Purchase Agreement
PPEs	Personal Protective Equipments
PR	Product Responsibility Performance Indicator
PSE	Public Sector Enterprise
PSU	Public Sector Undertaking
PV	Photo Voltaic
R&R	Resettlement and Rehabilitation
RAP	Rehabilitation Action Plan
R-APDRP	Re-Structured -Accelerated Power Development & Reforms Program
RED	Regional Executive Director
REDG	Renewable Energy and Distributed Generation
RES	Renewable Energy Sources
RGCCP	Rajiv Gandhi Combined Cycle Power Project

Abbr.	Details
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
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 ₂	Sulphur Dioxide
SPCB	State Pollution Control Board
SPM	Suspended Particulate Matter
ST	Scheduled Tribes
STP	Sewage Treatment Plant
STPP	Super Thermal Power Project
TANGEDCO	Tamil Nadu Generation and Distribution Corporation Limited
TERI	The Energy and Resources Institute
TL	Tanko Lighting
TSDF	Treatment, Storage and Disposal Facilities
TSS	Total Suspended Solids
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
VDACs	Village Development Advisory Committees
VFD	Variable Frequency Drive
WBCSD	World Business Council for Sustainable Development
WHRB	Waste Heat Recovery Boiler

Report Application Level

Report Application Level	C	C+	B	B+	A	A+
<p>G3 Profile Disclosures OUTPUT</p>	<p>Report on: 1.1 2.1-2.10 3.1-3.8,3.10-3.12 4.1-4.4,4.14-4.15</p>		<p>Report on all criteria listed for Level C plus: 1.2 3.9, 3.13 4.5-4.13, 4.16-4.17</p>		<p>Same as requirement for Level B</p>	
<p>G3 Management Approach Disclosures OUTPUT</p>	<p>Not Required</p>	<p>Report Externally Assured</p>	<p>Management Approach Disclosures for each Indicator Category</p>	<p>Report Externally Assured</p>	<p>Management Approach disclosures for each Indicator Category</p>	<p>Report Externally Assured</p>
<p>G3 Performance Indicators & Sector Supplement Performance Indicators OUTPUT</p>	<p>Report on a minimum of 10 Performance Indicators, including at least one from each of: social, economic, and environment.</p>		<p>Report on a minimum of 20 Performance Indicators, at least one from each of: economic, environment, human rights, labor, society, product responsibility.</p>		<p>Respond on each core G3 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.</p>	

* Sector supplement in final version





INDEPENDENT ASSURANCE STATEMENT

Introduction

Det Norske Veritas AS ('DNV') has been commissioned by the management of NTPC Limited ('NTPC' or 'the Company') to carry out an assurance engagement (Type I, Moderate) on the Company's 2011-12 Sustainability Report ('the Report') in its printed format. This engagement focused on qualitative and quantitative information provided in the Report, and underlying management and reporting processes. The engagement was carried out against AccountAbility's AA 1000 Assurance Standard 2008 (AA 1000AS), the DNV Protocol for Verification of Sustainability Reporting (VeriSustain) and adherence to principles of the Global Reporting Initiative (GRI) 2006 Sustainability Reporting Guidelines Version 3.0 (G3.0).

The intended users of this assurance statement are the readers of NTPC's 2011-12 Sustainability Report. The Management of NTPC Limited is responsible for all information provided in the Report as well as the processes for collecting, analyzing and reporting that information. DNV's responsibility in performing this work is regarding the verification of the Report only, in accordance with the agreed scope of work. The assurance engagement is based on the assumption that the data and information provided to us is complete, sufficient and authentic.

Scope of Assurance and Limitations

The scope of the assurance as agreed upon with NTPC Limited included the verification of the content of the Report. In particular the assurance engagement included:

- Activities undertaken by NTPC Limited over the reporting period 1st April 2011 to 31st March 2012 and reported in this Report.
- Review of the policies, initiatives, practices and performance described in the Report.
- Evaluation of the disclosed information in the Report, the systems and the processes NTPC Limited has in place for adherence to the three Accountability Principles (Inclusivity, Materiality and Responsiveness) as required for a Type I, moderate level of assurance, in accordance with AA1000AS (2008).
- Evaluation of the adherence to the principles set out in the Global Reporting Initiative Sustainability Reporting Guidelines 2006 (GRI G3.0).
- The boundary of the Report is all NTPC owned operating power generation plants (21 in nos.) and does not cover NTPC's Joint Ventures, Subsidiaries, Supply chain and under construction green field projects.
- The assurance engagement (Type1, Moderate) did not involve any site visits; hence DNV has not verified the quantitative data and sustainability performance information stated in the report. No external stakeholders were interviewed as part of this assurance engagement.

Verification Methodology

This assurance engagement was planned and carried out in NTPC Limited Head Office in New Delhi and Sustainable Development Group office at Noida during February & March' 2013 in accordance with the AA1000AS (2008) and the DNV Protocol for Verification of Sustainability Reporting.[Note 1]¹. As part of the verification, we have challenged the sustainability related statements and claims made in the Report and assessed the robustness of the underlying systems and processes for adherence against the AccountAbility Principles.

For example, we have:

- Conducted desk review of NTPC Limited sustainability systems, processes and outputs, and other relevant information and documentation made available to us by NTPC as requested by DNV, such as Monitoring Reports, DPE Guidelines, ERM framework, Accident/Incident Records etc.
- Conducted interviews with the core team involved in preparing the Report and key decision makers of NTPC Limited including but not limited to Executive Director - Environment, Chief Risk Officer, Company Secretary, GM- CSR, HOD-Corporate Safety, Addl. General Manager - Human Resource Management.
- Performed sample based checks and reviews of the mechanisms for implementing the Company's Policies, as described in the report, and processes for generating, gathering and managing the quantitative and qualitative data included in the Report.
- Examined and reviewed documents, data and other information made available to DNV by NTPC Limited.

¹ www.dnv.com/cr



Conclusions

In our opinion, and based on the scope of this assurance engagement, the NTPC Limited Sustainability Report 2011-12, provides a fair representation of the Company's sustainability policies, objectives, strategic approach and performance during the reporting year.

We have evaluated the Report's adherence to the following principles (AA1000 APS) on a scale of 'Good', 'Acceptable' and 'Needs Improvement':

AA1000AS (2008) principles

Inclusivity: The Company demonstrates engagement with stakeholders through different channels. The material issues emerging from the stakeholder engagement were collected and prioritized, and the results are reflected in the Report. The stakeholder engagement process may be strengthened and structured whereby sustainability inputs from a range of stakeholders are systematically incorporated in developing the sustainable strategy of the organization. In our view, the level at which the Report adheres to the principle of inclusivity is "Good".

Materiality: The Company has reported its material issues of significance at the macro level and has not missed out any known material issues, but the process needs of the materiality determination may be strengthened further with regard to short, medium and long term impacts. In our view, the level at which the Report adheres to the principles of Materiality is "Acceptable".

Responsiveness: We consider that the Company's response to key stakeholder concerns, through its policies and management systems are fairly reflected in the Report. In our view, the level at which the Report adheres to the principle of Responsiveness is "Acceptable".

Opportunities for Improvement


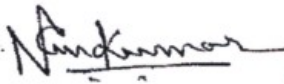
The following is an excerpt from the observations and further opportunities for improvement reported to the management of NTPC Limited and are not considered for drawing our conclusion on the report; however, they are generally consistent with the Management's objectives.

- Implementation of systematic internal review and auditing of internal data management system will help further improve the reporting process.
- Report Sustainability performance to include JV, Subsidiaries and other green field projects to progressively extend the boundary of the report.

DNV's Competence and Independence

DNV is a global provider of Sustainability Services, with qualified environmental and social assurance specialists working in over 100 countries. The DNV assurance team were not involved in the preparation of any statements or data included in the Report except for this Assurance Statement. DNV maintains complete impartiality towards any people interviewed. DNV expressly disclaims any liability or co-responsibility for any decision a person or entity would make based on this Assurance Statement.

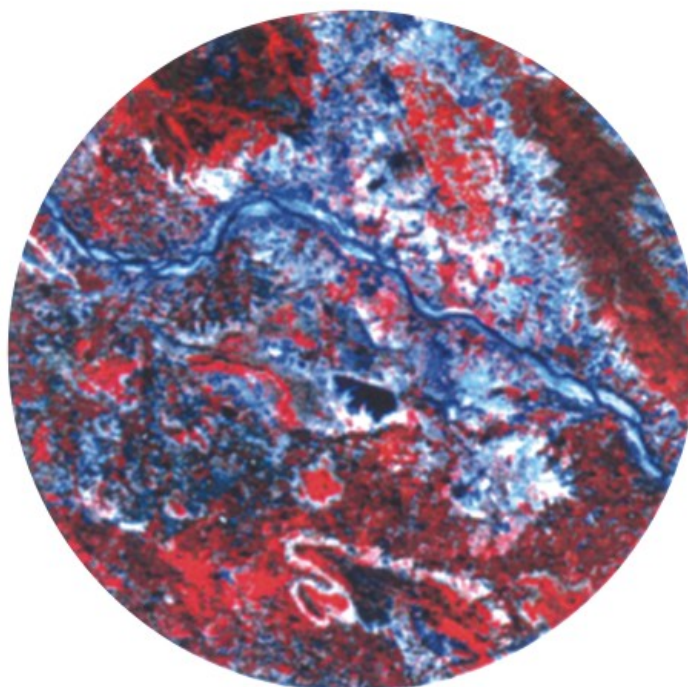
For Det Norske Veritas AS

 Ramesh Rajamani Lead Verifier Det Norske Veritas AS, India	 Vadekkapath Nandkumar Assurance Reviewer, National Head – Sustainability & Business Excellence Services Det Norske Veritas AS, India Branch
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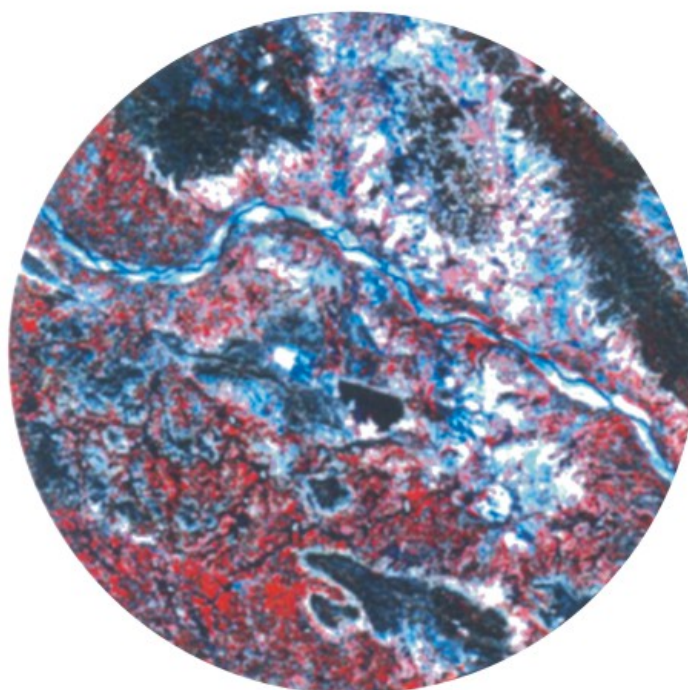
31st March 2013, New Delhi, India



SATTELITE IMAGERIES OF NTPC - RAMAGUNDAM

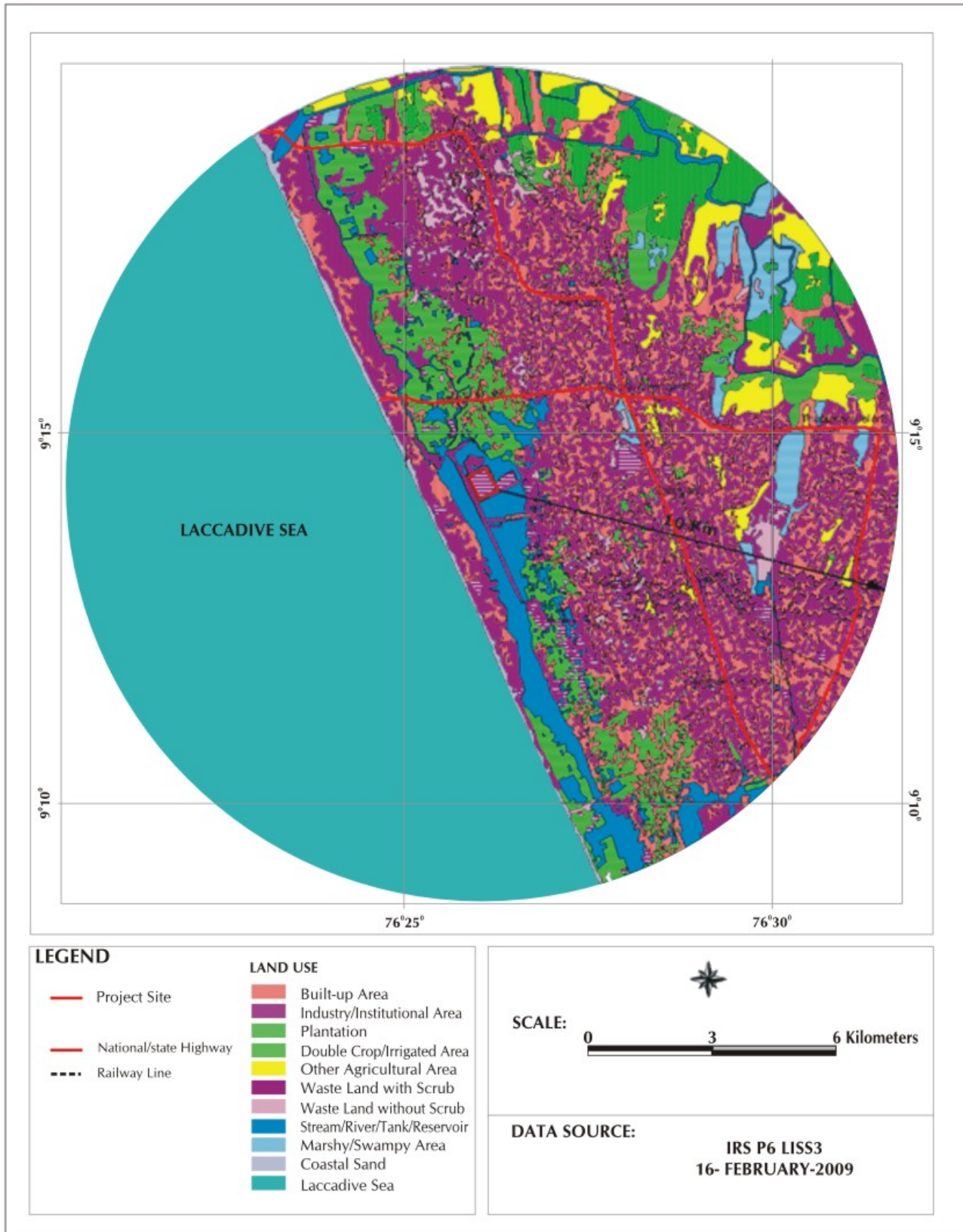


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FCC (IRS 1D - LISS III OF 14 FEB., 1998)

SATTELITE IMAGERY OF NTPC - KAYAMKULAM





A Maharatna Company

NTPC Limited

(A Govt. of India Enterprise)

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

Website : www.ntpc.co.in