



SUSTAINABILITY REPORT

2009-11

POWERGRID
One Nation. One Grid.

OUR GUIDING PRINCIPLES

Vision

World Class, Integrated, Global Transmission Company with Dominant Leadership in emerging Power Markets Ensuring Reliability, Safety and Economy.

Mission

We will become a Global Transmission Company with Dominant Leadership in Emerging Power Markets with World Class Capabilities by:

- **World Class:** Setting superior standards in capital project management and operations for the industry and ourselves.
- **Global:** Leveraging capabilities to consistently generate maximum value for all stakeholders in India and in emerging and growing economies.
- **Inspiring, nurturing and empowering** the next generation of professionals.
- **Achieving continuous improvements** through innovation and state of the art technology.
- Committing to **highest standards in health, safety, security and environment.**

Values

- Zeal to excel and zest for change
- Integrity and fairness in all matters
- Respect for dignity and potential of individuals
- Strict adherence to commitments
- Ensure speed of response
- Foster learning, creativity and team-work
- Loyalty and pride in POWERGRID

Objectives

- • Undertake transmission of electric power through Inter-State Transmission System.
- • Discharge all functions of planning and coordination relating to Inter-State Transmission System with-
 - i. State Transmission Utilities;
 - ii. Central Government;
 - iii. State Government;
 - iv. Generating Companies;
 - v. Regional Power Committees;
 - vi. Authority;
 - vii. Licensees;
 - viii. Any other person notified by the Central Government in this behalf.
- • Exercise supervision and control over the Inter-State Transmission System.
- • Efficient Operation and Maintenance of Transmission Systems.
- • Establish / augment and operate all Regional Load Despatch Centres and Communication facilities
- • Restoring power in quickest possible time in the event of any natural disasters like super-cyclone, flood etc. through deployment of Emergency Restoration Systems.
- • Provide consultancy services at national and international levels in transmission sector based on the in-house expertise developed by the organization.
- • Participate in long distance Trunk Telecommunication business ventures.
- • Ensure principles of Reliability, Security and Economy matched with the rising / desirable expectation of a cleaner, safer, healthier Environment of people, both affected and benefited by its activities.




SUSTAINABILITY REPORT

2009-11

Power Grid Corporation of India Limited
(A Govt. of India Enterprise)

Blueprint of the Report

This is our second Sustainability Report and is for the period 2009-10 & 2010-11. Our first sustainability report is in public domain. The current report has been prepared as per GRI-G3 Guidelines. The information / data has been gathered from reliable sources like inventories, log books, other records etc. We have followed International Standards like Accountability, UK Standard "AA1000:2008 APS and AA1000:2011 SES" to make the process inclusive, focus on material / significant aspects and responsiveness.

Taking our efforts towards transparency further, this report has been externally assured by accredited assurance provider M/s TUV Rheinland India, a group company of  TÜVRheinland®, Germany.


Reporting Parameters

We would like to inform our stakeholders that we have changed our reporting cycle to biennial and this shall remain same henceforth. Our first Sustainability Report for the year 2008-09 was released in March 2010.

The Joint venture companies, supply chain have been excluded from the reporting boundary. However, our 100% subsidiary company, Power System Operation Corporation Limited (POSOCO), is included. The sustainability data has been gathered from relevant sources. Wherever we don't have sufficient data capturing systems, computation has been done on the basis of assumption. Required indication of the procedure/system of data collection has been given at appropriate places in the Environment, Economic & Social disclosures.



Please send your suggestions / feedback at esmd@powergridindia.com.



Report Application Level		C	C+	B	B+	A	A+	
Standard Disclosures	<div>Profile Disclosures</div> <div>OUTPUT</div>	Report on 1.1 2.1 - 2.10 3.1 - 3.8, 3.10 - 3.12 4.1 - 4.4, 4.14 - 4.15	Report Externally Assured	Report on all criteria listed for Level C plus: 1.2 3.9, 3.13 4.5 - 4.13, 4.16 - 4.17	Report Assured by TUV Rheinland, India	Same as requirement for Level B	Report Externally Assured	
	<div>Disclosures on Management Approach</div> <div>OUTPUT</div>	Not Required		Management Approach Disclosures for each Indicator Category		Management Approach Disclosures for each Indicator Category		
	<div>Performance Indicators & Sector Supplement Performance Indicators</div> <div>OUTPUT</div>	Report fully on a minimum of any 10 Performance Indicators, including at least one from each of: social, economic, and environment.**		Report fully on a minimum of any 20 Performance Indicators, at least one from each of: economic, environment, human rights, labour, society, product responsibility.***		Respond on each core and Sector Supplement* indicator with due regard to the materiality Principle by either: a) reporting on the indicator or b) explaining the reason for its omission.		
		* Sector supplement in final version ** Performance indicators may be selected from any finalized Sector Supplement, but 7 of 10 must be from the original GRI Guidelines *** Performance indicators may be selected from any finalized Sector Supplement, but 14 of 20 must be from the original GRI Guidelines						

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Chairman's Message



It is a moment of great pride for me to present our second bi-annual Sustainability Report. It is a journey we, at POWERGRID, embarked upon in 2010 by becoming the first PSU in Indian Power Sector to come out with a Sustainability Report. I would also like to add here that while our first report was internally assessed, our second report is duly validated by an accredited independent agency, M/s.TUVRheinland Pvt. Ltd.

We, as India's largest transmission utility and being a technology leader, strongly believe in our responsibility towards all stakeholders and feel that as a leader we should not only set benchmarks in achieving our commercial and operational goals, but also set high standards for others to follow in the field of sustainable development. This Sustainability Report aims at sharing various initiatives taken by us to highlight our commitment towards a socially

responsible corporate entity not only focusing on business but also towards the community and the environment.

Sustainable Development is a vital part of our business operations with our concerns for people and environment taking centre stage. This is embedded in and reflected through our motto, "Reduce where you can and mitigate where you cannot", along with our well-defined Environmental and Social Policy and Procedures. We are well aware that only by serving the needs of our society, we truly can advance our growth agenda.

We had set ambitious goals in the previous report – while most of them have been accomplished, we continue to redefine our targets and progress on other agendas. We are committed at all levels to ensure that our operations contribute to the sustainable development of the country and our corporate responsibility on environmental and social concerns evolves from this commitment. The main thrust of our sustainability efforts includes: maintaining high standards of business conduct, reducing environmental impact, providing a safe workplace while promoting professional development; and fulfilling our commitments to clients, investors, associates and all other stakeholders.

We have set measurable targets in tandem with our operational activities and have taken multiple initiatives on several fronts to curb



R. N. NAYAK, *Chairman & Managing Director*

carbon emission and to foster sustainable development. In fact, our Company has proactively followed the Environmental and Social Policy and Procedures (ESPP) for the conservation of forests and proper upkeep of flora and fauna, including resettlement and rehabilitation of those affected. We have adjusted our operational procedures to become more environmentally sensitive through technological interventions, which have resulted in reduction of carbon emissions and effectively use our resources, for instance taking steps towards reduction in requirement of right of way, setting up of smart grid, energy efficiency and waste paper recycling plant.

During the reporting period we took a giant leap by installing a 10 kW Hybrid Generation Plant consisting of 4 kW Solar Photo Voltaic & 6 kW Wind Generation at Mapusa (Goa) substation, which is supplying power to some of the substation installations. In addition to this, our sustained initiatives and actions towards minimizing leakage of SF6 gas, a potential Green House Gas (GHG), have also resulted in saving of 850 kg of gas. This is equivalent to reducing emission of 20,315 tones of CO2 into the atmosphere. We have also been successful in remarkable reduction in use of other raw materials and important natural resources, which has helped us in minimizing our ecological footprint.

We have also taken a lead initiative and developed a comprehensive master plan for integration of renewable energy generation coming up across the country into the grid through "Green Energy Corridors".

Sound corporate governance has always been fundamental to our existence. Safety training has been made a part of HRD calendar to ensure employee safety in all domains. Regular safety drills for contract labor have been made essential. We adopted a formal policy on sustainability and corporate responsibility, as well as supplier

code of conduct, to ensure that our priorities and commitments are clear, concrete, and unmistakable as declared through the relevant GRI guidelines and performance.

We firmly believe that ensuring a legacy for the future requires a commitment to improving the quality of life of people today, while considering the economic, social, and environmental needs of future generations. Meeting this commitment presents us all with an enormous challenge. It is in essence a challenge for innovation. I take this opportunity to inform that POWERGRID is, and will continue to work towards finding solutions that will allow us to meet our economic and social goals while protecting the health and the quality of community and environment.

I reiterate our ongoing commitment towards sustainable development and take it as an opportunity to make a difference. While we are proud of the progress we have made, the challenges ahead are an inspiration for us to do better.


(R N Nayak)



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POWERGRID: An Overview



POWERGRID, the Central Transmission Utility (CTU) of the country and a Navratna Public Sector Enterprise under the Ministry of Power, Govt. of India and a listed company under Indian Companies Act, 1956 is engaged in power transmission business with the mandate for planning, co-ordination, supervision and control over complete inter-State transmission system and operation of National & Regional Power Grids. Based on network size and operation efficiency POWERGRID has been ranked as the third largest transmission utility in the world by World Bank in January, 2009.

We are India's biggest inter-state transmission entity with the objective to create a strong and vibrant National Grid covering 75290 ckt.kms and 82355 ckt.kms in the year 2009-10 & 2010-11 respectively. We ensure optimum utilization of generating resources, conservation of an eco-sensitive Right of Way and the flexibility to accommodate the uncertainty of generation plans. We have also diversified into Telecom and consultancy business and emerged as a renowned consultant in power transmission sector in National as well as International markets.

Ranked 8th among the Fastest Growing Asian Companies, 13th in Electric Utilities in Asia and 18th among the Top Fastest Growing Global Companies.

Platts Top 250 Global Energy Rankings, 2010

We have consistently achieved "Excellent" rating against targets set under Memorandum of Understanding (MoU) with Ministry of Power ever since signing of our first MoU in 1993-94.

Technology Leaders

We are recognized world over as a Technology Leader in Power Transmission especially in EHVAC & HVDC. After commissioning and operating 765 kV UHVAC & ± 500 kV HVDC transmission system, we are now working on next higher transmission voltages of 1200 kV UHVAC & ± 800 kV HVDC Systems to achieve efficient utilization of Right of Way (RoW) and increased power transfer capability for transfer of bulk power over long distances.

POWERGRID Fears Nature Not Technology



Focused R & D

We give priority to research activities with potential for societal, environmental and national benefits. Towards this, various new technologies have been adopted suiting Indian power system such as up-gradation of transmission lines on case to case basis, use of Thyristor Controlled Series Compensation, high temperature endurance conductors, development of pole type tower structure for 400 kV transmission lines, GPS/GIS based survey techniques, etc. We have also taken up leadership initiative for implementation of Smart Grid technology in the country for effective transmission and distribution of Power.

Building the Nation

Taking a lead role, we have been making valuable contribution in Govt. of India's nation building schemes of Accelerated Power Development and Reforms Program (APDRP) and Rajiv Gandhi Gramin Vidyutikaran Yojana (RGGVY). For the year 2010-11, infrastructure has been created for electrification of 4710 un-electrified villages across the country. Similarly, service connections to about 10.60 Lakh BPL households were provided. Cumulatively, till March '11 infrastructure has been created for electrification of 55,445 villages and service connections to about 26.79 Lakh BPL households have also been released under RGGVY.

Towards Sustainable Development

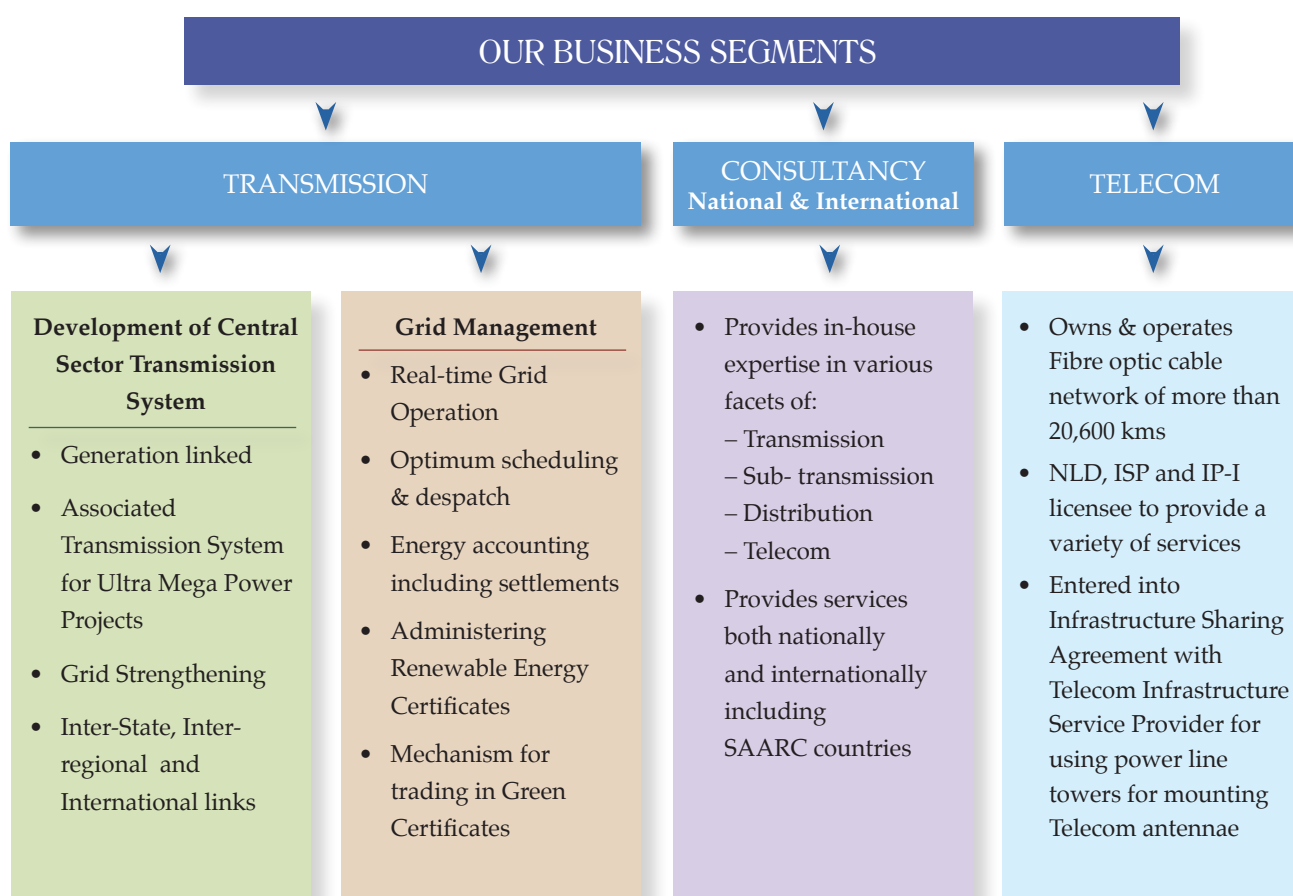
Understanding Environmental and Social Responsibilities, we have always endeavored to protect the environment in areas of our activities right from planning to completion and subsequent operation of projects. Transmission projects are environmentally clean, non-polluting in nature and do not produce any solid / liquid wastes. Our development activities have minimal environmental and social implications. In order to address such issues, we have developed a comprehensive Environment and Social Policy and Procedures (ESPP) in 1998 and upgraded the same in 2005 & 2009, in line with international best practices, to preempt possible environmental and social issues.

As a responsible corporate citizen, we have evolved a CSR policy that promotes community development around our offices and sub-stations with focus on Education, Health care, Infrastructure Development, Ecology & Environment Conservation and Disaster relief in the country. The CSR initiatives are aimed to improve the quality of life of the local population and bring the marginalized people to the mainstream of development.

POWERGRID, World Bank's first Use of Country System (UCS) compliant Power Transmission Utility having proven expertise in environmental & social safeguards management.

Environmentally Sensitive, Growing Global





First Prize for
Excellence in Power
Transmission

*IEEMA Power
Awards, 2009*

Transmission

Our core business is the transmission of electric power. We have been contributing significantly towards development of Indian power sector and the country by undertaking coordinated development of Power Transmission Network through continuous innovations in technical & managerial fields along with effective and transparent operation of regional grids. With our strong in-house expertise in all specialized areas of power transmission business, we have carved a niche amongst the largest transmission utilities in the world.

Towards sustainable development, as CTU, we have focused on integration of emerging technologies like 1200 kV UHVAC, ± 800 kV HVDC, FACTS, Smart Grid etc. into transmission sector development, which are first of its kind in India.

We have undertaken development of 11 High Capacity Transmission Corridors to facilitate transfer of power from various upcoming IPP generation projects located in the States of Orissa, Chhattisgarh, Jharkhand, Madhya Pradesh, Sikkim, Andhra Pradesh, Tamil Nadu, etc. The transmission corridors mainly comprise of high capacity 765 kV double circuit, ± 800 kV HVDC lines with associated substations at different locations.

We have also undertaken the development of transmission system of 6 UMPPs each of 4000 MW capacity as well as other central sector generation projects and grid strengthening schemes. The transmission scheme mainly involves establishment of 765 kV AC and ± 800 kV HVDC system.



Operational Excellence

As on 31st March 11, we own and operate more than 82,355 Ckt. kms network of inter-state transmission lines, 135 EHV & HVDC substations across the country with transformation capacity of about 93,050 MVA and wheel about 50% of total power generated in the Country. During FY 2010-11, transmission system availability of 99.80% was achieved for our transmission network. Besides, number of trippings per line was also contained at 1.27 against MoU target of 2.5 under “Excellent” category.

Maintaining such high availability was possible through deployment of state-of-the-art Operation & Maintenance techniques as per established international practices. We have adopted state-of-the-art preventive maintenance with “Condition Assessment Techniques” for periodically assessing equipment health.

Maintenance activities are planned well in-advance with an “Annual Maintenance Plan” for every asset, through live line or shut down as per technical feasibility. We also employ state-of-the-art “Emergency Restoration System” for restoration of collapsed transmission lines, in shortest possible time.

Our transmission projects are planned, implemented, monitored and controlled through Integrated Project Management and Control System, developed in line with the organization support structure for effective and smooth implementation.

Three Gold Shields
and one Silver Shield:
National Awards
for Meritorious
Performance in
Power Sector.

We have an
impeccable track
record of not bottling
up of even a single
Megawatt of power
from central sector
generation projects
for want of inter-State
transmission system.

Development of National Grid

The First “DSIJ PSU
Awards 2009”

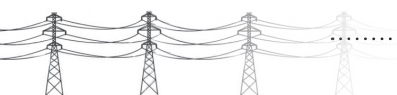
-Dalal Street Group of
Publications

We are taking adequate measures for strengthening & establishing Inter-State and Inter-Regional links for enhancing the capacity of National Grid in a time bound manner so as to ensure optimal utilization of the unevenly distributed energy resources. Inter-Regional capacity addition of 1,600 MW was achieved with the commissioning of Barh-Balia 400 kV Double Circuit (Quad) line in June, 2010. By 31st March 2011, National Grid with inter-regional power transfer capacity of about 22,400 MW has been established, placing it among one of the largest synchronous grids in the world with installed generation capacity of about 1,17,000 MW.

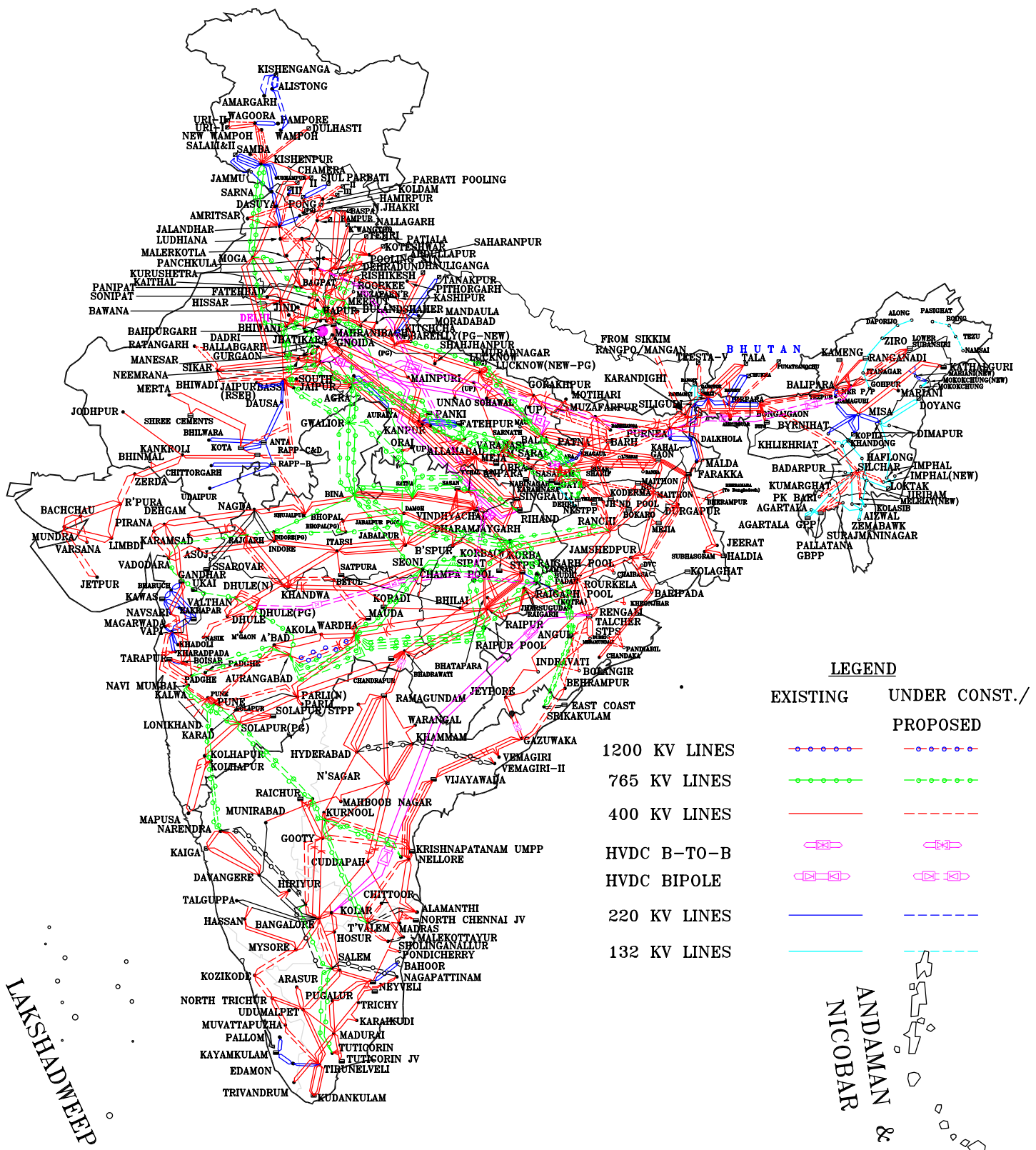
Grid Management

Grid Management is carried out through a hierarchical control philosophy using Supervisory Control and Data Acquisition (SCADA).

Power System Operation Corporation Limited (POSOCO), a fully owned subsidiary which was set up to look after Grid Management function in line with GoI directive, has started commercial operation from 1st October, 2010. Considering the increased complexity of grid operation of such a large network of the country, the facilities at the five Regional Load Despatch Centres and National Load Despatch Centre are being upgraded continuously



Mapping India*: Our Network



* Indicative Map. Not to scale.



through deployment of latest technology. Our effective grid management measures & techniques are not only paying rich dividends but have also restricted grid disturbances besides improving vital grid parameters and data availability. These measures have also led to increase in inter-regional power exchanges on real-time basis and helped in meeting more demand of energy deficit regions, thereby improving overall economy of the country. Moreover, Indian Power Grids have not experienced any major grid disturbance for more than eight years and even minor grid disturbances in regional grids have come down significantly.



Substation in Afghanistan



Stringing and erection work in Dubai

Consultancy

We have diversified into the business of consultancy by leveraging our rich experience and in-house expertise in the field of Planning, Design, Engineering, Load Despatch and Communication, Telecommunication, Contracts, Finance and Project Management.

We offer consultancy at national & international level and have emerged as a force to be reckoned with in South Asia, Middle-East & African countries. We have been actively participating in projects funded by The World Bank, ADB, and other international organizations in various countries like Vietnam, China, Kenya, Ethiopia, Uzbekistan, Afghanistan & Bangladesh.

We have been focusing on business development opportunities in relevant fields. During 2010-11, we bagged 45 new assignments, worth ₹ 600 Crore approximately. The revenue earned during FY 2010-11 from our various ongoing assignments was to the tune of about ₹ 299.35 Crore against ₹ 269 Crore earned during FY 2009-10.

We are an active player in preparing a roadmap for developing SAARC market for electricity on a regional basis to develop a cross country power grid, harnessing each other's capacities and resources in order to address the growing energy need in the region. We are associated with implementation of various interconnections between India and its neighbouring countries.

For instance, Punatsangchhu-I HEP – Alipurduar 400 kV D/C line for evacuation of hydropower from Bhutan; an asynchronous interconnection between India & Bangladesh through 500 MW HVDC back-to-back terminal along with Bheramara (Bangladesh) – Berhampore (India).

In addition, work is underway on feasibility of interconnection between India and Sri Lanka through HVDC bipole link including submarine cable for sea portion, and India and Nepal through 400 kV D/C Dhalkebar (in Nepal) - Muzaffarpur (in India) line.



Telecom

“Emerging Telecom
Infrastructure
Provider”:
INFOCOM CMAI
National Telecom
Awards 2010

Spotting the opportunity of convergence between transmission & telecom to shore up our revenue base, we have also entered into telecom business with the brand name “POWERTEL” to leverage our country wide transmission infrastructure. As on 31st March 2011 we were managing about 25,000 km of telecom network connecting metros, major cities & towns, maintained at an availability of 99.98%.

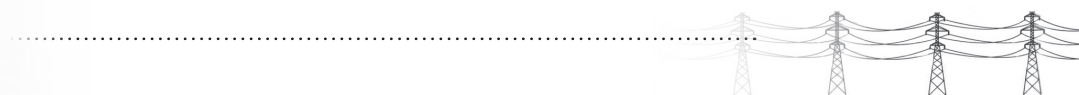
Among the telecom players, POWERGRID is the only utility in the country having overhead optic fiber network using OPGW (Optical Ground Wire) on power transmission lines. It is our constant endeavour to provide a robust highway of telecommunication at affordable cost with ultra-modern and ecofriendly implementation techniques. We are one of the few telecom players with marked presence in remote areas and have acquired Infrastructure Provider Category-I (IP-I), Internet Service Provider (ISP) Category ‘A’ and National Long Distance (NLD) licenses to provide a variety of services. During 2010-11, our telecom business earned revenue of about ₹ 187.20 Crore for the Company. Revenue realization to the tune of 99% of total sales was achieved during the year. The telecom business registered a Profit before Tax of ₹ 29.73 Crore for the financial year ended 31st March 2011; and Order Book rose to about ₹ 650 Crore in FY 2010-11 from ₹ 410 Crore in the previous year (i.e. up by 58%) despite a general slowdown experienced by Telecom industry due to intense price wars.

Besides prime telecom companies, prestigious Government organizations such as ERNET, STPI, NIC and various Government Ministries are also our customers.

We are one of the implementing agencies for the prestigious **National Knowledge Network Project** at a project cost of ₹ 6,000 Crore. The project envisages a gigantic 3 layer Telecom network of knowledge centers across the country such as IITs, IISc, etc. on high speed connectivity. We have bagged a contract of ₹ 900 Crore to be realized over a period of 10 years, out of which an advance of ₹ 384 Crore was received during FY 2010-11.

With the focus now shifting more towards rural connectivity, our role in telecom becomes even more significant as we have presence in rural & remote areas of the country by way of our vast and extensive Power Transmission network. Considering an ever increasing base of transmission towers across the country with a present base of about 1,50,000 towers including remote/ rural areas, a business model of leasing transmission towers for placing telecom antennas has been formulated to generate additional business. In the first phase, tower space has been leased out in 3 States of J&K, HP & Punjab for installation of Telecom Antennas and for other States, it is under process.

We have made synergic tie-ups with multiple service providers for spreading out of our Point of Presence to more than 2200 nodes on Pan-India basis. We are also venturing into Multi-protocol Label Switching services as a value addition to our Dense Wavelength Division Multiplexing / Synchronous Digital Hierarchy based Point to Point Telecom Network and have ventured into Data Center business for in-house requirement. This indeed is a major leap in achieving strategic network expansion by which we have strengthened our capabilities to reach and cater even remotely placed segments particularly small towns and villages.

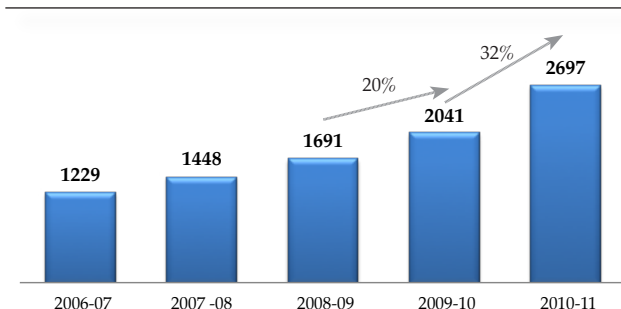


Economic Performance

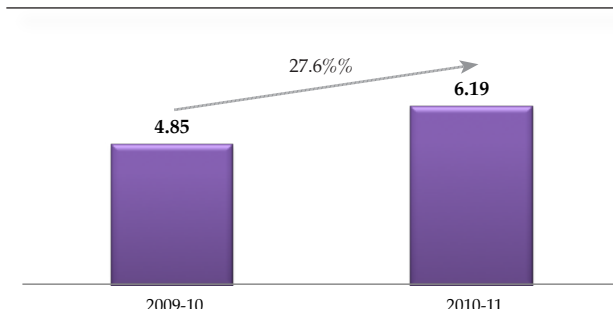
During the Financial Years 2009-10 and 2010-11, we have achieved some major milestones. In the year 2009-10, our net profit increased more than 20% compared to the previous FY 2008-09*. During FY 2010-11* we achieved a highest ever rise of 32% compared to previous year's profit.

The total dividend paid for the year 2010-11 is ₹ 1.75 per share as against ₹ 1.50 per share paid in 2009-10. The total dividend pay-out for the year 2010-11 amounts to ₹ 810.23 Crore as against ₹ 631.34 Crore during 2009-10 representing 30% of profit after tax for the year.

Net Profit (in ₹ Crore)

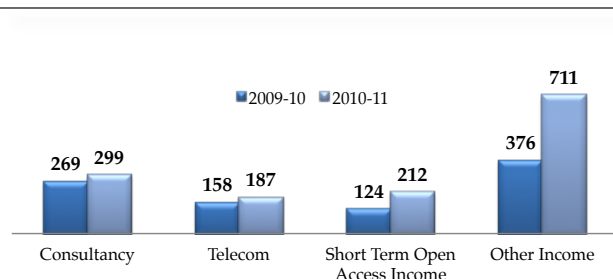


Earning per share (in ₹)

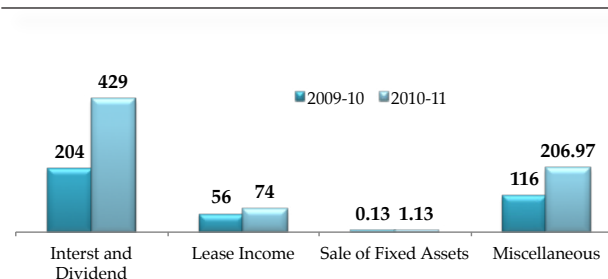


We believe that strategic diversification into synergic business would lead to increase in shareholders' value. Therefore, focused attention is being given for expanding the telecom and consultancy businesses for further improvement in financial performance. While transmission remains our main business and principal contributor to the bottom line; our other businesses have shown considerable increase in contribution to our total income.

Income from sources other than transmission (in ₹ Crore)



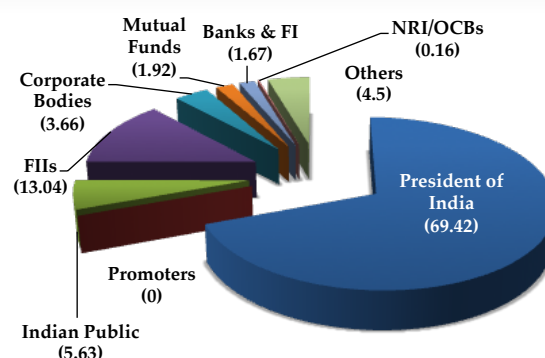
Break-up of other Income (in ₹ Crore)



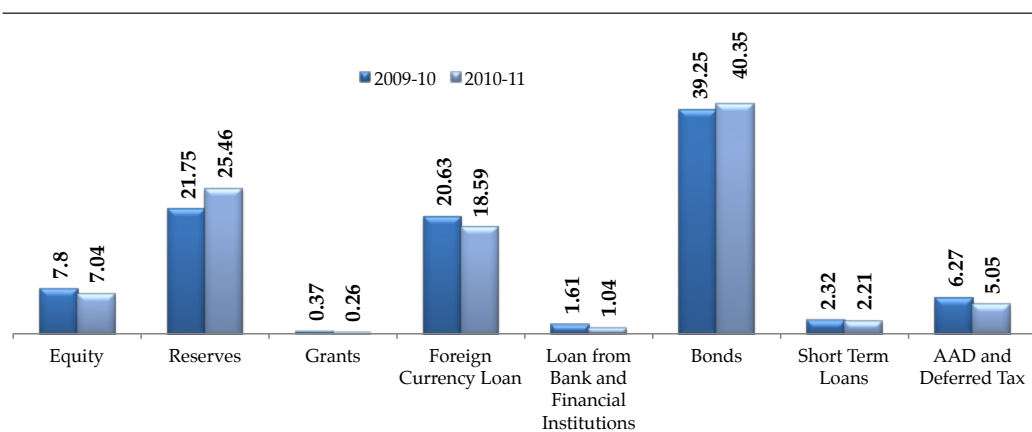
In November 2010, our Follow-on-Public Offer (FPO) of divestment of 10% of Govt. equity (420,884,123 shares) and issue of 10% fresh capital (420,884,123 shares) received huge response both from domestic & foreign institutional investors; and was oversubscribed by almost 15 times.

We have made an investment of ₹ 10,617 Crore during the FY 2009-10 and ₹ 12,005 Crore during FY 2010-11 for implementation of various ongoing projects. The requisite funds were mobilized from domestic market, proceeds of loans from multilateral funding agencies namely, The World Bank and Asian Development Bank, besides internal sources.

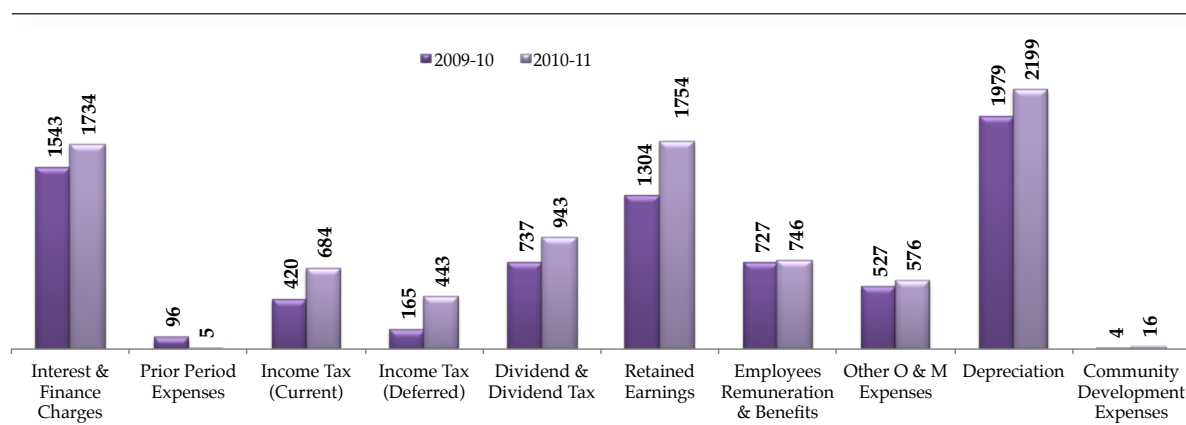
Shareholding pattern as on March 31, 2011 (in %)



Source of Funds (in %)



Distribution of Revenue (in ₹ Crore)



Key Financial Performance Indicators - Summary

Description	2009-10	2010-11	Growth %
Income			
Transmission Charges	6,576	7,691	16.95
Consultancy	269	299	11.15
Telecom	158	187	18.35
Short Term Open Access Income	124	212	69.60
Other Income	376	711	89.10
Total Income	7,504	9,100	21.27
Profit After Tax (PAT)	2,041	2,697	32.14
Earnings per Share (in ₹)	4.85	6.19	27.63
Book Value Per Share (in ₹)	37.81	46.12	21.98
Gross Fixed Assets	43,202	50,352	16.55
Debt	34,417	40,883	18.64
Net Worth	15,914	21,351	34.16
Capitalisation	3,610	7,313	102.58

Data Source: Annual Reports

* For details refer our website www.powergridindia.com

3

SUSTAINABILITY: The POWERGRID Journey

As the Central Transmission Utility of India, we are more than just another organization. By the very nature of our business, we touch millions of lives every day. We understand that real success is the result of inclusive development of the involved entities and stakeholders.

We are committed to achieve the goal of Sustainable Development. In all of our manoeuvres, it is our constant endeavour to avoid any permanent impact on the environment and society. Our activities do not result in disposal of any pollutant in land, air, water or any large scale excavation resulting in soil erosion. However, given the scale of our operations, it is inevitable that there is some impact upon both natural environment and communities involved. To address such issues, we

have integrated environmental and social management procedures into our corporate operations by enunciating Environmental and Social Policy and Procedures (ESPP).

The policy outlines our approach and commitment to deal with environmental and social issues, relating to transmission projects, and lays out management procedures and protocols to address the same. It lays a framework for identification, assessment and management for environmental and social concerns at organizational and project level with the adopted principles of Avoidance, Minimization and Mitigation. The policy is applauded by the multilateral funding agencies like The World Bank & ADB and applied uniformly for all projects across the country.

Our Certifications



Occupational
Health & Safety
Management System
ISO 18001:2007



Environment Management
System ISO 14001:2004



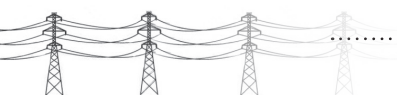
Social Accountability
System
SA 8000:2008



Quality Management
System
ISO 9001:2008



Integrated Management
Registration
PAS 99:2006



Environment and Social Objectives

ENVIRONMENTAL AND SOCIAL POLICY & PROCEDURES (ESPP)



ENVIRONMENT AND SOCIAL POLICY STATEMENT

"POWERGRID is committed to the goal of sustainable development and conservation of nature and natural resources. While continually improving its management systems, accessing specialist knowledge and introducing state of the art and internationally proven technologies, POWERGRID strictly follows the basic principles of Avoidance, Minimization and Mitigation in dealing with environmental and social issues. Where necessary, restoration and enhancement is also undertaken."



ENVIRONMENTAL OBJECTIVES

- Avoid operations in environmentally sensitive areas, eco-sensitive zones, forests, sanctuaries, national parks, tiger / biosphere reserves, and CRZ covered coastal areas
- Consider environmental implications of location, terrain, and sensitive areas in impact identification and mitigate these with innovative / practical engineering solutions
- Application of efficient and safe technology practices
- Abate pollution in all activities and operations
- Minimize energy losses and promote energy efficiency



SOCIAL OBJECTIVES

- Take due precautions to minimize disturbance to human habitations, tribal areas and places of cultural significance.
- Take due care of Project Affected People (PAP).
- Involve affected people from inception stage to operation and maintenance.
- Consult affected people in issues of RoWs, land acquisition or loss of livelihood
- Encourage consultation with communities in identifying environmental and social implications of projects.
- Pay special attention to marginalized and vulnerable groups and secure their inclusion in overall public participation.
- Guarantee entitlements and compensation to affected people as per its R&R policy.
- Share information with local communities about environmental and social implications.
- Always maintain highest standards of health and safety and adequately compensate affected persons in case of any eventuality.



Key Risks, Challenges & Opportunities

Electricity has become a necessity in our day to day lives and it plays a pivotal role in the economic growth of our country. While, its use on one hand has sharply benefited the quality of life and aided economic advancement, on the other hand its generation has raised several social, environmental, economic and political issues. In order to meet the growing power demand of various regions coupled with an uneven distribution of generation resources across the country, the power transfer capacity needs to be enhanced continuously. Key technological innovations are required for upgrading the existing transmission system in order to meet the exponentially growing demand for power in the future.

We have achieved a number of milestones in pursuit of our mission and have been playing a strategic role in the Indian Power Sector by creating an extensive and dependable (more than 99%) reliability transmission network interconnecting generating stations with load centers. Being one of the largest transmission companies in India, we focus on evolving and adopting new technologies continuously through innovation and adoption of state of art technologies. As a result, system and technologies suitable for bulk power transfer over long distances like high capacity EHV / UHV AC system, HVDC system, compact tower/substation, mitigating devices to address high short circuit level, intelligent grid etc., have been developed.



View of a switch yard



Hotline Maintenance



Emergency Restoration System

However, a variety of issues and challenges need due emphasis while taking expansions to the desired level. The identification of key risks and challenges associated with our business activity is a continuous activity.

We believe in taking proactive approach rather than reacting to the impact of other activities. This is well demonstrated by our different policies and procedures like ESPP Policy, Risk Management Framework, initiatives in R & D etc. Risks like RoW and challenges like environmental & social pressures have been converted into opportunities by construction of higher capacity transmission lines, GIS S/s, enhanced community engagement, etc.





4

Corporate Governance: Our Philosophy



Present Board of Directors



Board of Directors during reporting period

Ranked 8th among
the Fastest Growing
Asian Companies,
13th in Electric
Utilities in Asia and
18th among the Top
Fastest Growing
Global Companies.

*Platts Top 250 Global
Energy Rankings, 2010*

We believe that good governance should entail trusteeship, empowerment and accountability of the management while remaining proactive to the Government policies. Our Governance process is focused towards our mission of “establishment and operation of Regional and National Power Grids to facilitate transfer of power within and across the regions with Reliability, Security and Economy on sound commercial principles” based on the well-established practices in engineering & design, contracts, project management, environment & social management, finance etc. which are not only followed in letter and spirit but are continually improved upon.

We are a “NAVRATNA Public Sector Enterprise” since May, 2008. The NAVRATNA status has provided us increased flexibility and autonomy in terms of making investments and operational decisions. The Board of Directors now have the power to approve capital expenditure on purchase of new items or for replacement without any monetary ceiling. The ceiling on equity investment to establish joint ventures and wholly owned subsidiaries in India or abroad is 15% of the net worth of the Company in one project limited to ₹ 1000 Crore. The overall ceiling on such investment in projects put together is 30% of the net worth of the Company.

The Board of Directors comprises of Chairman and Managing Director, Functional Directors, Govt. Nominee Directors and Independent (Non Official Part Time) Directors. The rights and obligations of the employees are delineated in the policy Manuals published and the amendments are notified from time to time.



The powers of the internal participants i.e. top executives and below are laid down in the well-established and practiced “Delegation of Powers”. We have also prepared and implemented, “Works and Procurement Policy and Procedure for Pre-award and Post-award Stages” with a view to making the policies and procedures more systematic, transparent and easy to administer with major thrust on expeditious and decentralized decision making coupled with accountability and responsibility. The ratio of basic salary of the Board of Directors (BOD) to the Executive Director (ED) to the Executive Trainee (ET) is 3.01: 2.49: 1. The superannuation age is 60 years. The services of the Board of Directors ceases on completion of the contract tenure or on achieving the age of superannuation whichever is earlier.

The Board has also constituted several Committees viz. Audit Committee, Remuneration Committee, Committee for Award of Contracts relating to Rural Electrification, APDRP and other Deposit Works, Committee on Investment on Projects, Committee for Bonds, Shareholder / Investors Grievance Committee, Committee on Award of Contracts, etc*. to have better and more focused attention. Advisory Boards of eminent persons are in place for Environment and Social Policy and Procedures, R&D and for Telecom to advise us on critical issues / consensus building in these areas. The ESPP review committee keeps the best international practices in mind and oversees its compliance at different sites and submits its findings / recommendations to the CMD. The independent committee comprises of eminent environmentalists / social scientists of international repute and representatives nominated by multilateral funding agencies and two independent directors.

Transparency in Governance

Means of Communication

We communicate with our shareholders through Annual Reports, General Meetings, Newspapers and disclosure through web site. Information and latest updates and announcements made by us can be accessed at our website: www.powergridindia.com including the following: Quarterly / Half-Yearly / Annual Financial Results, Shareholding Pattern, Corporate disclosures made from time to time to Stock Exchanges.

Code of Conduct

The Board of Directors have laid down two separate Code of Conduct – one for Board Members and another for Senior Management Personnel in alignment with our Mission & Objectives and aims at enhancing ethical and transparent process in managing the affairs of the Company. The said code has been renamed and amended in pursuance of Guidelines on Corporate Governance for Central Public Sector Enterprises, 2010. Now, the name of the Code is ‘Code of Business Conduct and Ethics for Board members’ and ‘Code of Business and Ethics for Senior Management Personnel’.

Code of Insider Trading

In pursuance of the Securities and Exchange Board of India (Prohibition of Insider Trading) Regulations, 1992, our Board has laid down “Code of Conduct for Prevention of Insider Trading” with the objective of preventing purchase and / or sale of shares of the Company by an Insider on the basis of unpublished price sensitive information. Under this code, Insiders (i.e. Designated Employees) are prevented to deal in the Company’s shares during the closure of Trading Window. To deal in Securities beyond limits specified, permission of Compliance Officer is required. The Directors / Officers / Designated Employees are also required to disclose related information periodically as defined in the Code. Company Secretary has been designated as Compliance Officer for this Code.

Right to Information (RTI) Act

Since we are a designated public authority, the provisions of the Right to Information Act, 2005 are applicable on us. The Chief Public Information Officers (CPIO) at the Corporate and regional level ensure smooth access to information in a timely manner.

* For details refer our website www.powergridindia.com.



Whistle Blower

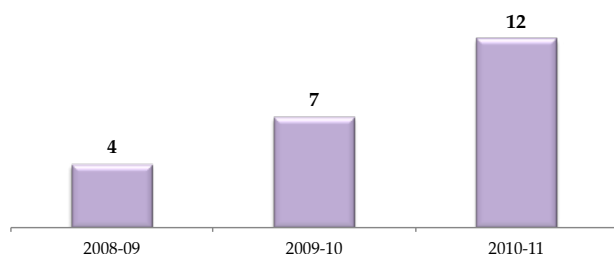
Our Vigilance Department deals with fraud or suspected fraud involving employees/representatives of suppliers, contractors, consultants, service provider or any other party doing business with us. Whistle Blower Policy has been approved by the Board of Directors and has been implemented. The 'Integrity Pact' signed with contractors under the aegis of 'Central Vigilance Commission' is seen as a useful tool in ensuring transparency in awarding contracts. Further, we are moving swiftly toward e-procurement aspiring to use the latest technology.

In order to further the objective of transparency in governance, training was imparted to 440 non-vigilance executives on 'Ethics and Vigilance Matters' through various preventive vigilance workshops. Employees are also sent for training to various organizations like CBI and the National Institute of Criminology and Forensic Science, besides participating in training programmes organized at Corporate Centre.

We also conduct online process inspections in which critical works are inspected at the initial stage of execution by the vigilance executives for shortcomings. The following may be identified as sensitive areas in the organization:

- Award of contracts
- Construction activities
- Local Purchases
- Personnel claims
- Payment of bills to private firms/Contractors

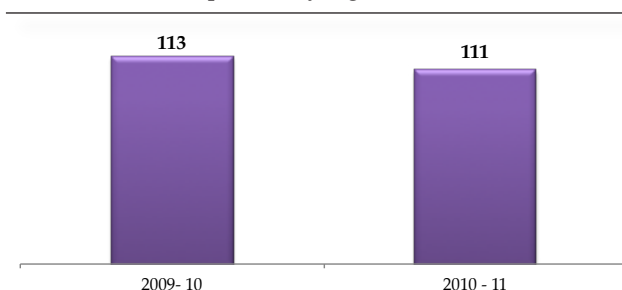
Training on Anti Corruption Policies
(No of Workshops)



To spread awareness amongst employees and to prevent violation of the Contract Rules, bulk SMSs were used in order to educate them on vigilance matters. As per the directives of the Central Vigilance Commission, Vigilance Awareness Week is organized every year.

Disciplinary action was taken involving 18 & 27 employees in 2009 & 2010 respectively against incidents of corruption and two agencies were blacklisted in 2009-10. No agency(s) was blacklisted in the year 2010-11.

No of Inspections by Vigilance Executives



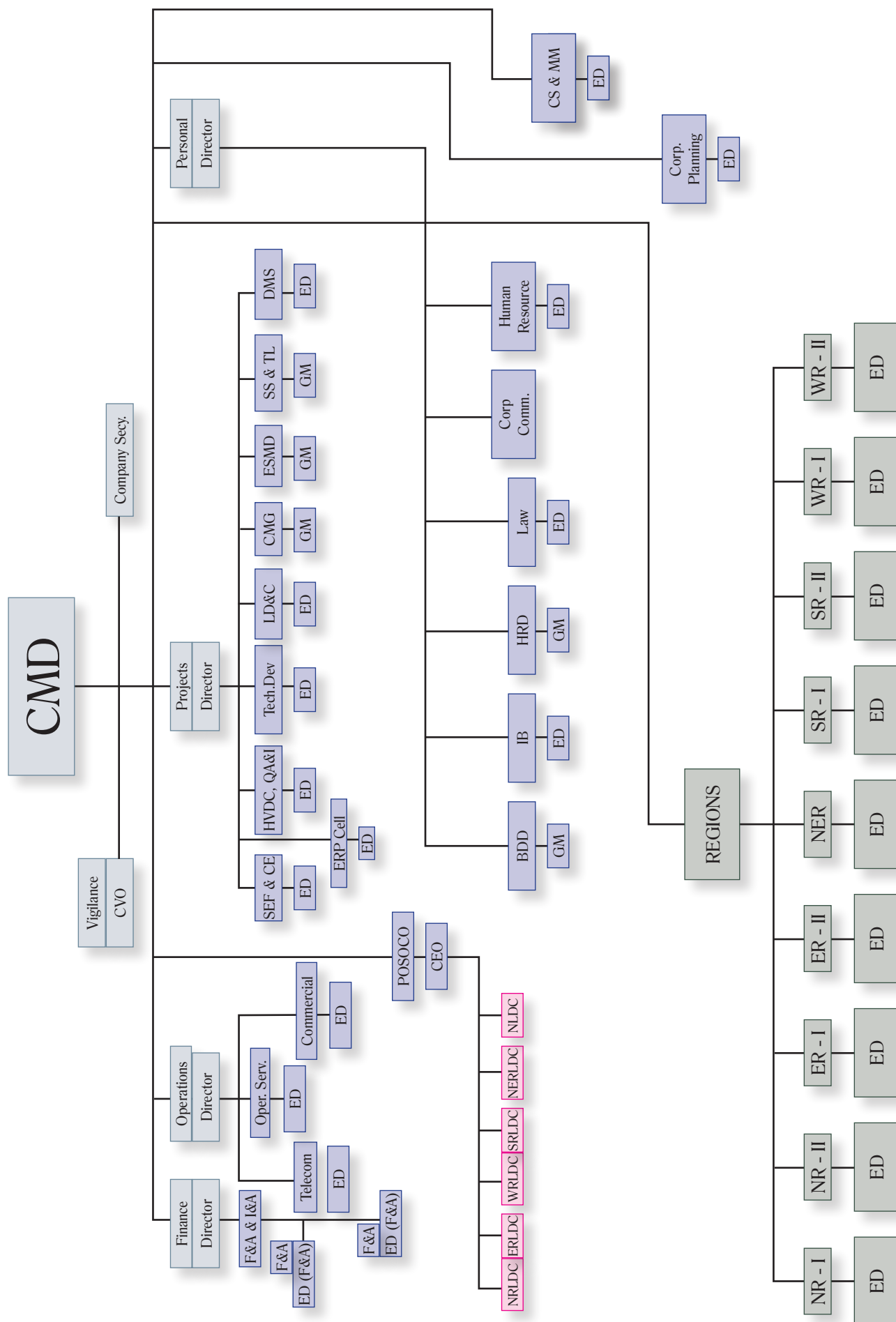
Pledge Taking Ceremony during the Vigilance Awareness Week



Release of Candour by Vigilance Commissioners



Organization Structure (as on 31st March 2011)



Materiality Analysis & Mapping

In this report, we have provided information on the material issues of our company. A detailed procedure was carried out to find out the material issues to be included in the report through engagements with our internal & external stakeholders. The modes of engagement with the identified stakeholders have been given in the matrix on page 29. Wherever possible we have utilized our existing forums of stakeholder engagement to map their concerns and expectations. The prioritization of the topics to be reported on the basis of internal & external stakeholder engagements & those identified by the organization was done by the sustainability team at the corporate level. The aspects that have been observed to be of concern to our internal & external stakeholders majorly include:



Economic

- Economic Value Generated and Distributed
- Employee Benefit Plan
- Local Suppliers
- Indirect Economic Impacts



Environment

- Material Conservation
- Energy Management
- Water Management
- Biodiversity Conservation
- Emissions, Effluents & Wastes
- Compliances
- Environment Protection



Social

- Employment
- Labour Management Relations
- Health & Safety
- Training & Education
- Diversity & Equal Opportunity
- Non-Discrimination
- Freedom of Association & Collective Bargaining
- Child/Forced/Compulsory Labour
- Community
- Anti-Corruption
- Customer Satisfaction
- Compliance

Materiality Mapping from Stakeholder's Perspective:

The materiality matrix representing the critical issues for the organization as mapped through these discussions has been described below.

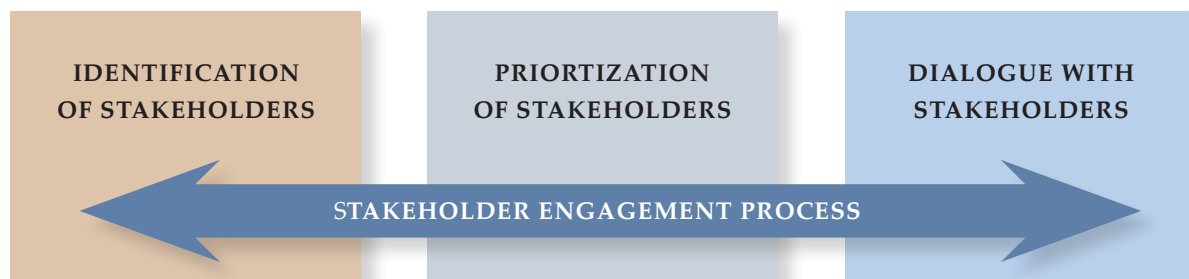


5

Building Trust & Partnerships

Our stakeholders are critical to us to achieve our business goals and realization of our vision & mission. For the purpose of this report we believe in the definition of Stakeholders as given in GRI-G3 guidelines “as the entities or individuals that can reasonably be expected to be significantly affected by the organization’s activities, products and /or services; and whose actions can reasonably be expected to affect the ability of the organization to successfully implement its strategies and achieve its objectives”.

Our detailed Stakeholder Engagement Process is given below:



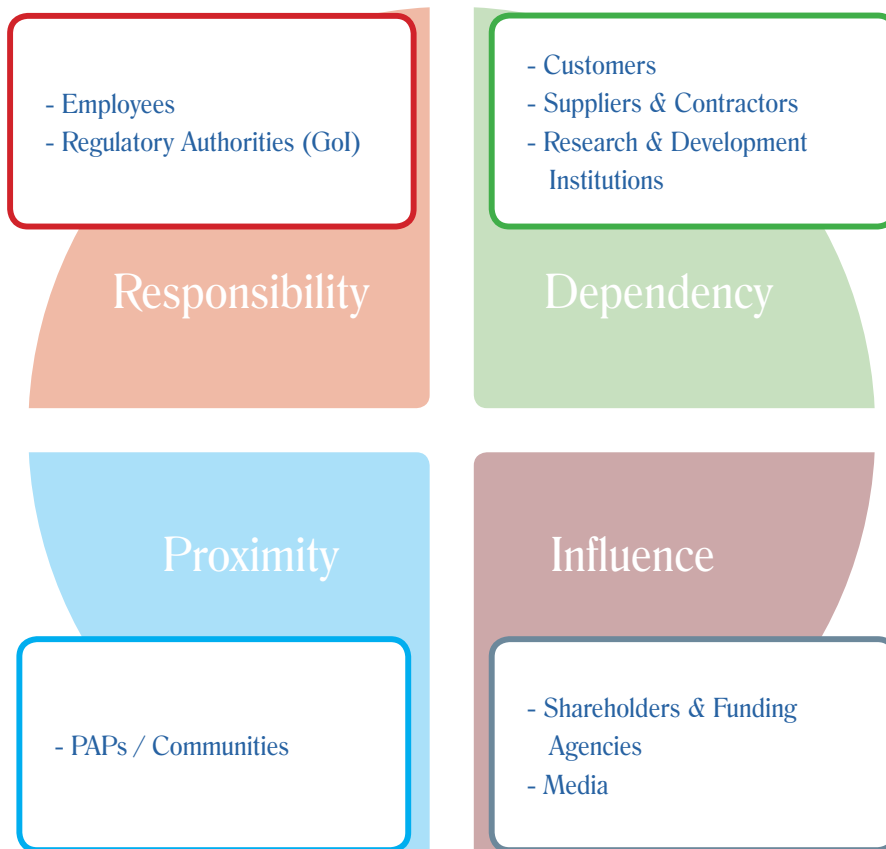
Identification & Prioritization of Stakeholders

We have identified the following as our key stakeholders in economic, environment & social dimensions. The prioritization of the stakeholders to engage with was done considering factors like Dependency, Influence, Responsibility and Proximity:

- | | |
|--|---|
| <ul style="list-style-type: none"> • Regulatory Authorities • Customers • PAPs/Communities • Employees | <ul style="list-style-type: none"> • Suppliers & Contractors • Research & Development Institutions • Shareholder and Funding Agencies • Media |
|--|---|

“Leveraging capabilities to consistently generate maximum value for stakeholders in our company” is the motto that we follow. We constantly strive to add value to our supply chain through forward integration. Our client base comprises of state electricity boards, international companies / customers and clients associated with our consultancy and telecom businesses. Regular meetings and interactions are held with our customers in order to ensure consistent and accurate feedback which results in the strengthening of our processes. Customer satisfaction is maintained by ensuring System Availability at more than 99 %.





Research & Development institutions remain our important stakeholders as they help us to deploy front-end-technologies and solutions to mitigate environmental & social issues in projects like adoption of latest technologies and innovations resulting in minimizing the right of way (RoW) width, compact / GIS substations, land requirement to conserve the natural environment. Media has also been identified as an important stakeholder in a way that it can impact our brand image and also serve as an important channel of communication with our stakeholders.



Dialogue with Stakeholders

In the previous report we had limited our engagement to internal stakeholders and shareholders. We have widened our scope of stakeholder engagement with other external stakeholders to map their concerns and expectations, during the reporting period.





Participative Management

We conduct open sessions, chaired by the CMD and the functional Directors, to know about the views / suggestions of the employees concerning the overall development & growth prospects of the organization. We believe in participation of employees at all levels for meeting the objectives of the company.

Community Engagement

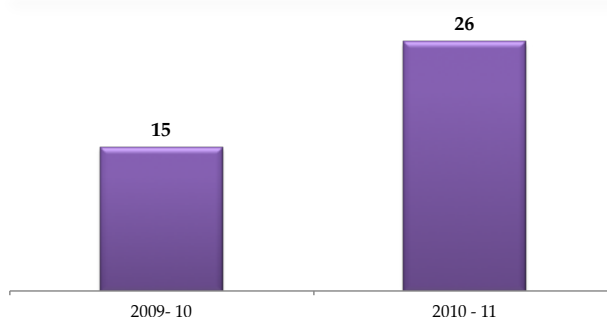
Land is the first and the most crucial resource needed throughout our activities ranging from survey, initial / final environment assessment, RoW requirements during TL construction, to the acquisition of land for the construction of sub-stations. Therefore engagement with the community becomes indispensable. Apart from inbuilt consultation process of Land Acquisition (LA) Act, Public Consultation / information by us is an integral part of the project implementation process. Public is informed about the project at every stage of execution. During the survey, our site officials, along with consultants, meet people and inform them about the RoW requirement / land acquisition details. The ESPP spells out its commitment to ensure total transparency through a well-defined public consultation process as well as dissemination of relevant information about the project at every stage of its implementation. It is also ensured that such consultations are based on the principle / concept of "Free, Prior Informed Consultation".



Vendor Development

Vendors are selected based on a tendering process. Two types of tenders are floated namely global and domestic. Tendering process is of two kinds namely; 'Single Stage Two Envelope' and 'Single Stage Single Envelope'. After analysis of the technical and price bids the vendor is selected. We are developing an extensive & well-organized supply chain and growing vendor list by manifold over the last decade. Our vendors are committed to law of the land. Vendors are made to comply with the provisions of the labour laws, environmental laws & effectual safety plans through stipulations in the general conditions of contract. The vendor meetings on safety plans organized by us, is a testimony to the organizational commitment to ensure safe and healthy work environment to the satisfaction of our stakeholders in a plethora of areas.

No of Training/Interactions with Vendors and Other Stakeholders



Stakeholder Engagement Matrix

STAKEHOLDER CATEGORY	MODES OF ENGAGEMENT	FREQUENCY
Shareholders	Annual General Meeting	Once a year
	Board meetings/ Communications	Minimum 4 times a year
	Annual Report	Once a year
Customers ➤ SEB's ➤ Telecom -Private firms (BRPL, Reliance etc.) Consultancy (National & International)	Signing of Transmission Service Agreement (TSA)	With every project
	Meetings with customers	Once a month
Funding Agencies (World Bank, ADB, etc.)	Signing of Loan Agreements	With each Loan
	Review Missions	Half-yearly
Employees	Magazines	
	• Grid Flash	Monthly
	• Regional Magazines (9)	Quarterly
	• Grid News	Quarterly
	• Grid Darpan (Rajbhasha)	Quarterly
	• Candour (Vigilance)	Yearly
Community	Department specific meets	
	• HRD Conclave	Twice a year.
	• PNBC meetings	Thrice a year.
	• HR meetings	As and when required
	Public Consultation	At every stage of the project from conceptualization to Operation & Maintenance.
Government	Community Development	Every project Community Development works are identified and undertaken.
	Corporate Social Responsibility	On a continuous basis
	Compliance to Laws	On a continuous basis
	Comments / observations on proposed legislations	As & when a new enactment is proposed.
	RPC (Regional Power Committee)	09 Nos during 2009-10 & 2010-11
	Commercial Committee Meeting (CCM)	
	CEA Standing Committee Meeting	03 Nos during 2009-10 & 2010-11
Suppliers & Contractors	Pre award discussions	With every Award
	Open Bid Discussions (OBD)	With every Award
	Review meeting at various management levels	Monthly
	MPR of each contractor & suppliers	Monthly
	Joint discussions on technological advancements including Research & Development institutions	On a regular basis
Media	Press Briefing/ Invitations to events	10 (For every major event)



6

Harnessing Human Capital

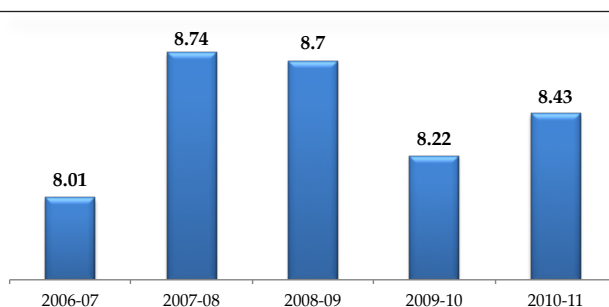
Labour-Management Relations

The POWERGRID National Bipartite Committee (PNBC) is an apex level joint consultative forum comprising of management and workmen representatives. PNBC provides a platform for addressing issues related to the workmen cadre at the national level. Some of the landmark achievements of this forum has been the signing of three long term wage agreements. All the workmen are covered under collective bargaining agreements. The workmen represent approx 30 % of the employee strength in POWERGRID. The forum has also been instrumental in communicating the company's vision, business plans, core values and important business developments upto the grass root level. Regional level issues pertaining to workmen are dealt through regional forum of PNBC called POWERGRID Regional Bipartite Committee (PRBC). We were amongst the first few companies to implement wage revision (w.e.f. 1st January, 2007) for workmen & supervisors, in the year 2010-11. During the financial year 09-10 & 10-11 the IR scenario in the corporation has been cordial and no man-days have been lost due to strike.

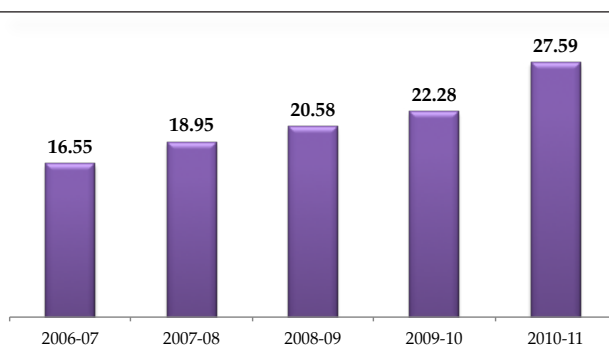
Labour Practices & Decent Work

An effective work culture has been established in the organization through empowerment, transparency, decentralization, participative management etc. We are also certified under Social Accountability 8000:2008. The cafeteria in the Corporate Office and Food Lounge of Multi Purpose Hall is conferred with ISO 22000:2005 certification. For ensuring the welfare and improvement in the quality of life of employees and their family members, various welfare measures have been provided in the Human Resource Policy to enable overall development of the individual as a contented & conscious citizen. Cultural programmes and social gatherings are conducted periodically for promoting healthy community living and entertainment on various occasions like Diwali, Holi Milan, New Year, Raising day, etc. We have been regularly participating in the Annual Inter-PSU Sports meets and in the year 2009-10 and won awards in Chess, Carrom & Table Tennis tournaments. The good practices have resulted in an increase in profits per employee on a year on year basis.

Ckt Kms Per Employee



Profit After Tax per Employee (₹ in Lakhs)



Career Development

In order to nurture the concept of learning organization, “Accelerated Career Growth Scheme” for non-executives has been introduced. This has led to encouragement of employees for pursuing higher studies and keeps themselves abreast with latest techniques and technology. This scheme has achieved high levels of motivation among various sections of employees who otherwise would have stagnated.

The career growth and development of employees is ensured through job rotation, multi skilling, job assignments in the three tiers of the company, namely Corporate, Regional offices and Substations. Such a broad work experience results in the overall growth of an employee which enables them to make quick and informed decisions. In addition to this we have a dedicated Executive Trainee (ET) program through which fresh talent / youngsters are recruited and are groomed to take up greater responsibilities in the future. We provide internal career growth prospects to all employees i.e. recruitment for lateral posts / experienced posts is conducted only when talent for a particular job opening is not available in-house. The performance of executives is measured using Annual Appraisal Reports with the help of Key Result Areas (KRAs). All (100%) of our employees undergo performance appraisal and receive feedback consistently.



cases of discrimination. This cell is under control of nominated liaison officer. It is the responsibility of the officer to provide a human touch in the working environment which in itself gives the psychological satisfaction that promotes confidence building. Also a complaint register is maintained exclusively for SC, ST and OBC employees to register their complaints against discrimination, if any. The complaints are disposed off in a time bound manner. The Liaison Officers are available on a pre-fixed day and time for interaction once in a week. Wide publicity regarding availability of the liaison officer is ensured amongst SC/ST employees. Regular meeting with SC/ST/OBC Employee's Association are conducted. 'Awareness Programme' are organized to acquaint the SC/ST/OBC/PWD employees about the relaxations and concessions available to them under Government directives.

- b) **Sexual Harassment Cell:** A sexual harassment committee exists in the company in order to handle grievances related to the discrimination of employees on the basis of gender. The committee is convened on a case to case basis only.

Redressal of Employee Grievances

We practice an “Open Door Policy” which results in immediate redressal of occurrence of employee grievances. However, to further promote fair and equitable employment relationship there is a scheme for Grievance Redressal of employees. This ensures a time bound mechanism for the redressal of grievances. Also no cases of discrimination have been reported during FY 09-10 & 10-11. The mechanism to handle cases of harassment / discrimination is of two types:

- a) **Reservation Cell:** A reservation cell has been constituted at the corporate, as well as regional level to comply with government directives on reservation matters for SC, ST, OBC, Ex-servicemen, Persons with Disabilities (PWD), minorities etc. to redress

Child/Forced & Compulsory Labour

We comply with relevant legislations dealing with the abolition of employment of child labour. In addition to this we are SA 8000: 2008 compliant and the SA 8000 team also audits the contractors' premises thus ensuring stringent adherence. In order to ensure that the contractor does not engage any child labour, a clause has been added in the General Conditions of Contract (GCC) so as to ensure mandatory compliance.





Occupational Health & Safety

We are certified under OHSAS (Organization Health & Safety Management System) 18001:2007, which ensures a healthy working environment for employees by strict adherence to norms on occupational health and safety in the workplace. Regular medical check-ups of our employees are conducted to ensure prevention of any diseases. Our Mission statement emphasizes on the importance of health & safety in functioning. We have a well-defined safety policy which assigns high importance to safety as an essential component in every sphere of our activities. The policy dedicates us to improve our performance, well-being of employees and strive to achieve zero accidents. As mandated, we have constituted an apex level Safety Committee chaired by our CMD and senior management officials including full time Directors, Executive Directors, General Managers and Safety coordinators as members. To ensure the absolute implementation of the policy upto the grass root level, we have designated safety officers along with safety officers of the contractor at the site. Our commitment to occupational health & safety can be reiterated by the fact that we have forwarded our Safety Policy to the Directorate General of Inspections for approval.

To minimize the number of accidents, a Corporate Safety Cell has been constituted. The Safety Cell assesses the implementation of health and safety aspects by conducting a Safety Audit every year in each region to evaluate the ground realities and take corrective measures wherever necessary.

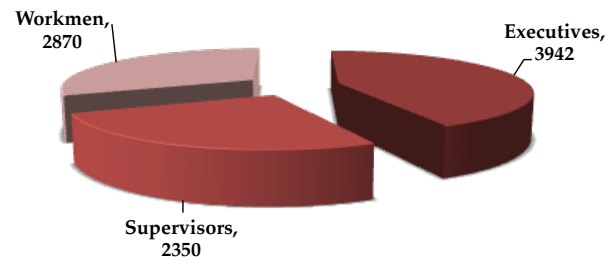
Accident Statistics during 2009-11				
Year	No. of Fatal Accidents	No. of Non-fatal Accidents	Total Persons Affected	
			No. of Fatalities	No. of Injuries
2009-10	11	4	16	35
2010-11	23	6	25	11



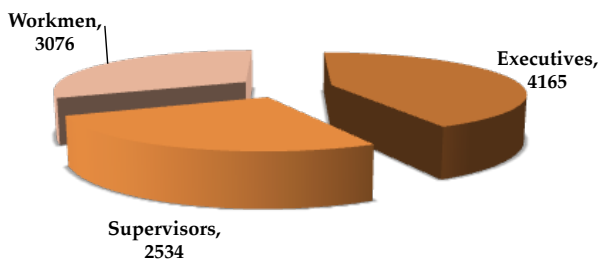
Human Capital

Our employees have been the torch bearers who have heralded a culture of operational effectiveness in every sphere of functioning. Compensating performers gains supreme importance. We have been the front runners to implement the 2007 wage revision. As a result the pay & benefit structure is one of the best in the power sector. To harness tremendous growth opportunities in the industry

Total Manpower as on March 31, 2010 (Nos.)



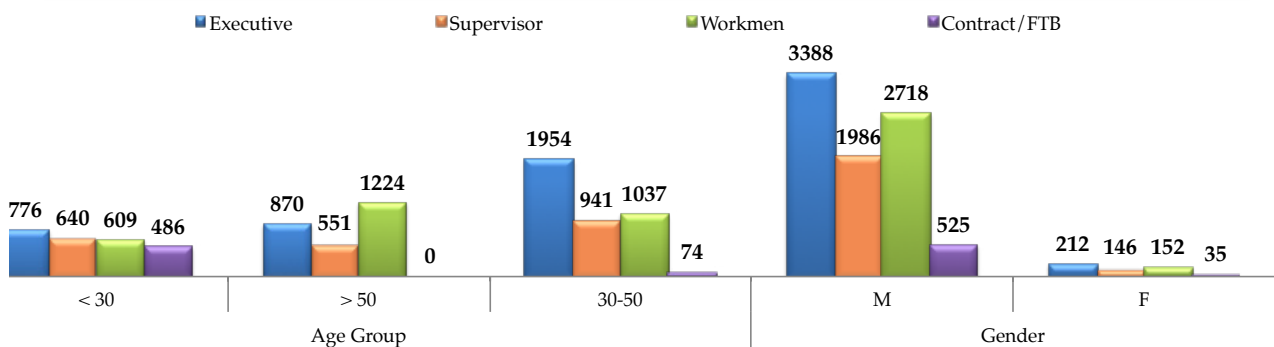
Total Manpower as on March 31, 2011 (Nos.)



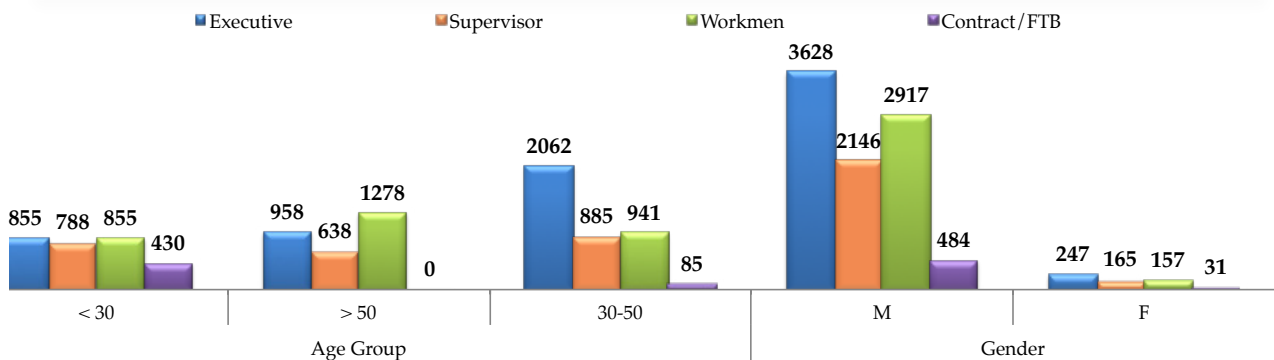
and to ensure smooth transition of knowledge, in the year 2009-10 & 2010-11 1200 and 979 employees have been recruited respectively. Due to good brand image and competitive pay packages, encouraging response has been received from candidates of IIMs during campus recruitments. Besides, a number of executive trainees from NITs and IITs have also been recruited through campus recruitments.

Employee Distribution Pattern based on Employee Category, Age and Gender

Employee distribution Pattern in 2009-10 (Nos.)



Employee distribution Pattern in 2010-11 (Nos.)



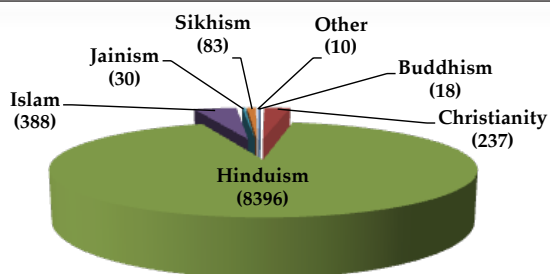
Contract / FTB are those recruited on a Fixed Tenure basis for a specific project or assignment.



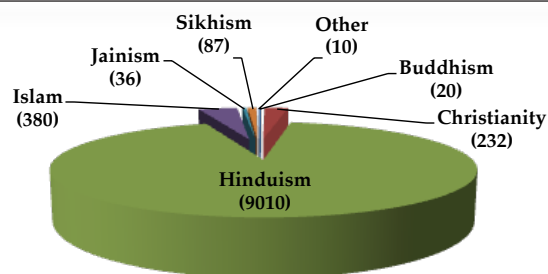
We do not discriminate between our employees on any basis whatsoever. All employees at the same grade and level enjoy the same benefits. This can be further reflected through the fact that the relevant factors being the same, the ratio of pay scales of men & women is 1: 1.

Employee Distribution Pattern based on Ethnic Background and Employee Turnover

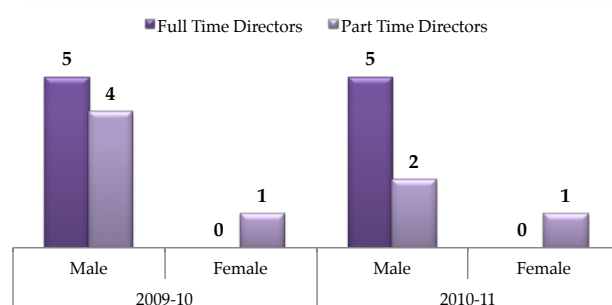
Employee distribution on Ethnic Basis in 2009-10 (Nos.)



Employee distribution on Ethnic Basis in 2010-11 (Nos.)

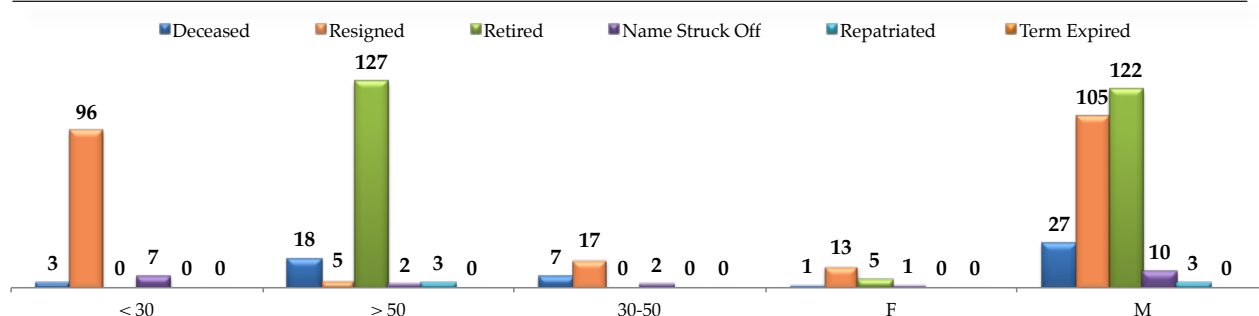


Corporate Governance Body (Nos.)

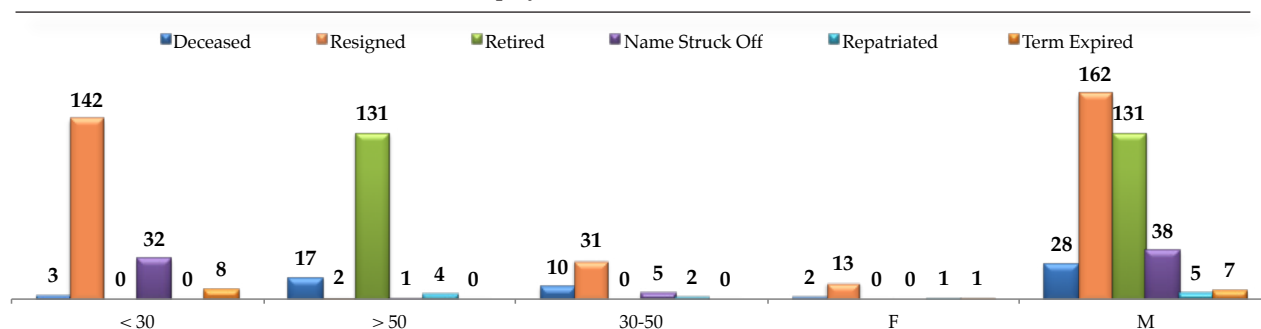


The turnover rate in our company was 3.13% and 3.97% respectively for the financial year 2009-10 & 2010-11. Employee turnover includes resignations, retirements, deaths; names struck off, repatriation (in case of deputationists), term expiration of those employed on Fixed Tenure Basis but excludes dismissals.

Employee turnover in 2009-10 (Nos.)



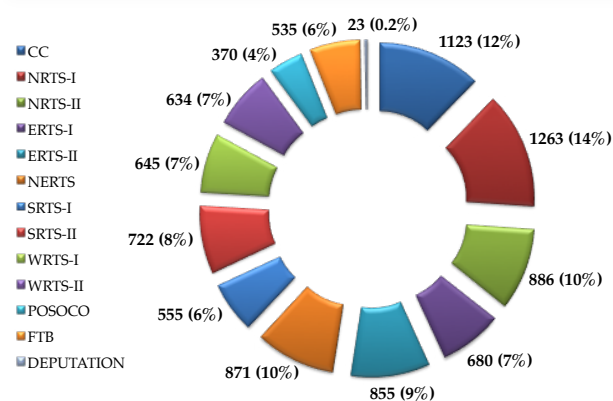
Employee turnover in 2010-11 (Nos.)



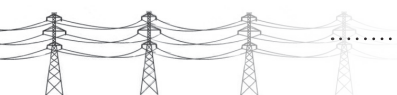
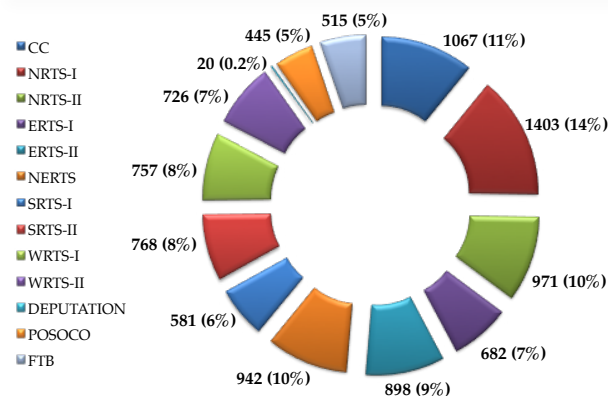
In order to ensure faster decision making and implementation of policies and practices upto the grassroots, POWERGRID is divided into the following regions:

- Corporate Centre: situated at Gurgaon
- Northern Region Transmission System – I: comprises of Rajasthan, U.P., Uttarakhand, Delhi & NCR
- Northern Region Transmission System – II: Jammu, Punjab, Himachal Pradesh, Haryana
- Eastern Region Transmission System – I: Bihar, Jharkhand
- Eastern Region Transmission System – II: West Bengal, Orissa, Sikkim
- North Eastern Region: Assam, Meghalaya, Mizoram, Tripura, Arunachal Pradesh, Nagaland, Manipur
- Southern Region Transmission System – I: Andaman & Nicobar Islands, Andhra Pradesh, parts of Karnataka, parts of Tamil Nadu
- Southern Region Transmission System – II: Tamil Nadu, Karnataka, Kerala, Puducherry
- Western Region Transmission System – I: Maharashtra, Chattisgarh, Goa, Parts of Madhya Pradesh
- Western Region Transmission System – II: Dadar & Nagar Haveli, Gujarat, Parts of Madhya Pradesh

Workforce break-up by region 2009-10



Workforce break-up by region 2010-11



Employee Benefits

- I. We provide superannuation benefits @ 30 % of Salary (Basic + Dearness Allowance) per month, as per statutory compliances and DPE (Department of Public Enterprises) Guidelines. The benefits are as follows:
- a) **Provident Fund:** 12% of salary per month is contributed by both employer & employee. The provident fund is maintained by POWERGRID Employees provident Fund Trust.
 - b) **Pension (Defined Contribution):** Company contribution is arrived at after deduction of PF, Gratuity & PRMB (Post Retirement Medical Benefit) from a total of 30% of salary per month. Employee contribution was a fixed amount during 2009-10 & 2010-11. The pension fund is maintained by the POWERGRID Pension Trust. At the time of superannuation, the employee may commute one third of the amount accumulated in the pension fund and the remaining amount is paid in the form of annuity.
 - c) **Gratuity** is paid based on (15 days last drawn salary) x (No. of years of completed service)/26 subject to maximum of ₹ 10 Lakhs. Gratuity is paid only in case of completion of minimum 5 years of continuous service; however this condition does not apply in case of death of an employee. The POWERGRID Employees Gratuity Fund Trust maintains the gratuity account. In 2009-10 total assets of the trust were ₹ 247.26 Crore and in 2010-11 were ₹ 338.69 Crore. The net income earned during 2009-10 & 2010-11 was ₹ 14.77 Crore & ₹ 23.15 Crore respectively. In the year 2009-10, 243 employees were paid ₹ 10.5 Crore towards gratuity. In the year 2010-11, 529 employees were paid ₹ 25.6 Crore towards gratuity.
 - d) **Post-Retirement Medical Benefit (PRMB)** under which retired employees and their spouse are provided medical facilities on making a one-time contribution.
- II. Major non statutory welfare measures are as follows:
- a) **Other Defined Retirement Benefits (ODRB):**
The Company has a scheme for settlement at the time of superannuation at home town for employees and dependents.
 - b) **Medical coverage** for Employee, Spouse, dependent children and dependent parents
 - c) **Group Personal Accident Scheme** – In case of death, the nominee gets 100 % of capital sum assured which is 50 months basic (maximum of pay scale + DA).
 - d) **Death Relief Scheme** – In case of death of an employee, every employee of the company contributes ₹ 100 each from their salaries. e.g.: If total number of employees is 10,000 then contribution is ₹ 10,00,000. 50 % of this amount is given to the nominee of deceased employees and the remaining 50 % is used for purchase of annuity for pension scheme.
 - e) **House Building Advance (HBA) & Conveyance Advance** etc. is sanctioned at low rate of interest. In addition the advance is fully insured.
 - f) **In case of death of employee**, spouse and the minor children of deceased employee are provided medical facility. Children can avail medical facilities till the deemed date of retirement of deceased employee. However, spouse can avail medical facility lifelong.

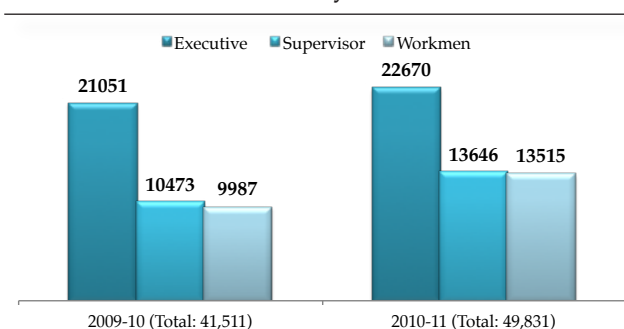
The above benefits are provided to our full time employees. Those recruited on contract / Fixed Tenure Basis (FTB) are not provided benefits mentioned in I (b), (d) & II (a), (e) & (f) above.



Development of Human Capital

Human Resource Development (HRD) strategy is evolved with a view to make employees competent for planning, monitoring and timely commissioning of construction projects, enable them to perform the operation & maintenance of TL effectively and upgrade themselves technologically resulting in better career growth opportunities. Through an In-House Online Training Need Assessment (TNA) System, individual TNAs of 8,300 employees were captured in the year 2010-11.

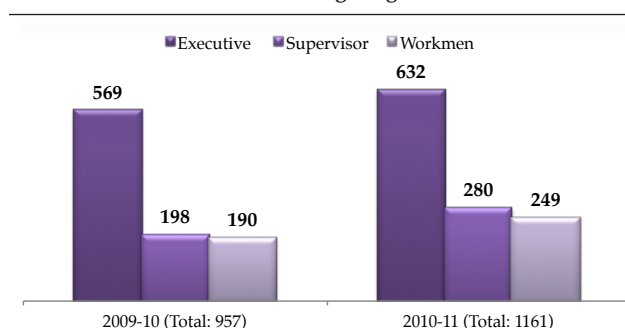
No of Mandays Trained



We have also taken Capacity Building Initiatives for skill development and enhance employment opportunities of workers being deployed in Power Transmission Line Construction with the help of Transmission Line (TL) construction companies under Public Private Partnerships (PPP). Directorate General of Employment and Training (DGET), MLoE, GoI has already accorded accreditation for these courses under Modular Employable Skills (MES) approved by NCVT (National Council for Vocational Training).

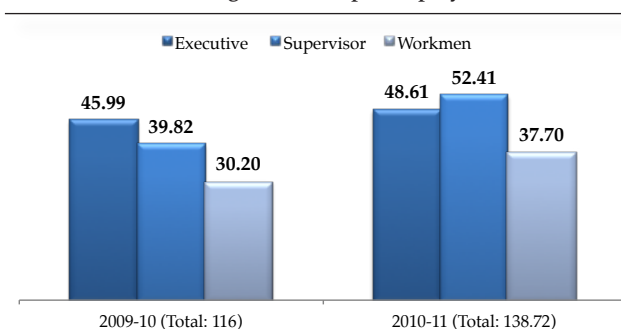
We have also provided training to foreign and domestic clients like Transmission utility of Afghanistan and Uttarakhand respectively. Further, "Transmission Line Management Institute" has been established at Misa along with extension Centre at Salakati in Assam. Knowledge Map and Knowledge Matrices have been prepared for the business verticals of the company. Besides conducting technical and behavioral trainings, the training on Human Rights issues to sensitize people towards women, the differently-abled and the socially weaker sections of the society have also been imparted. During the year 2009-10 and 2010-11, 132 man-days have been utilized for trainings on Human Rights issues. "Next Innings" training programmes are also conducted for superannuating employees in which the retiring employees are provided input on self-finance management, career after 60, mental, physical, spiritual and emotional well-being.

No of Training Programs

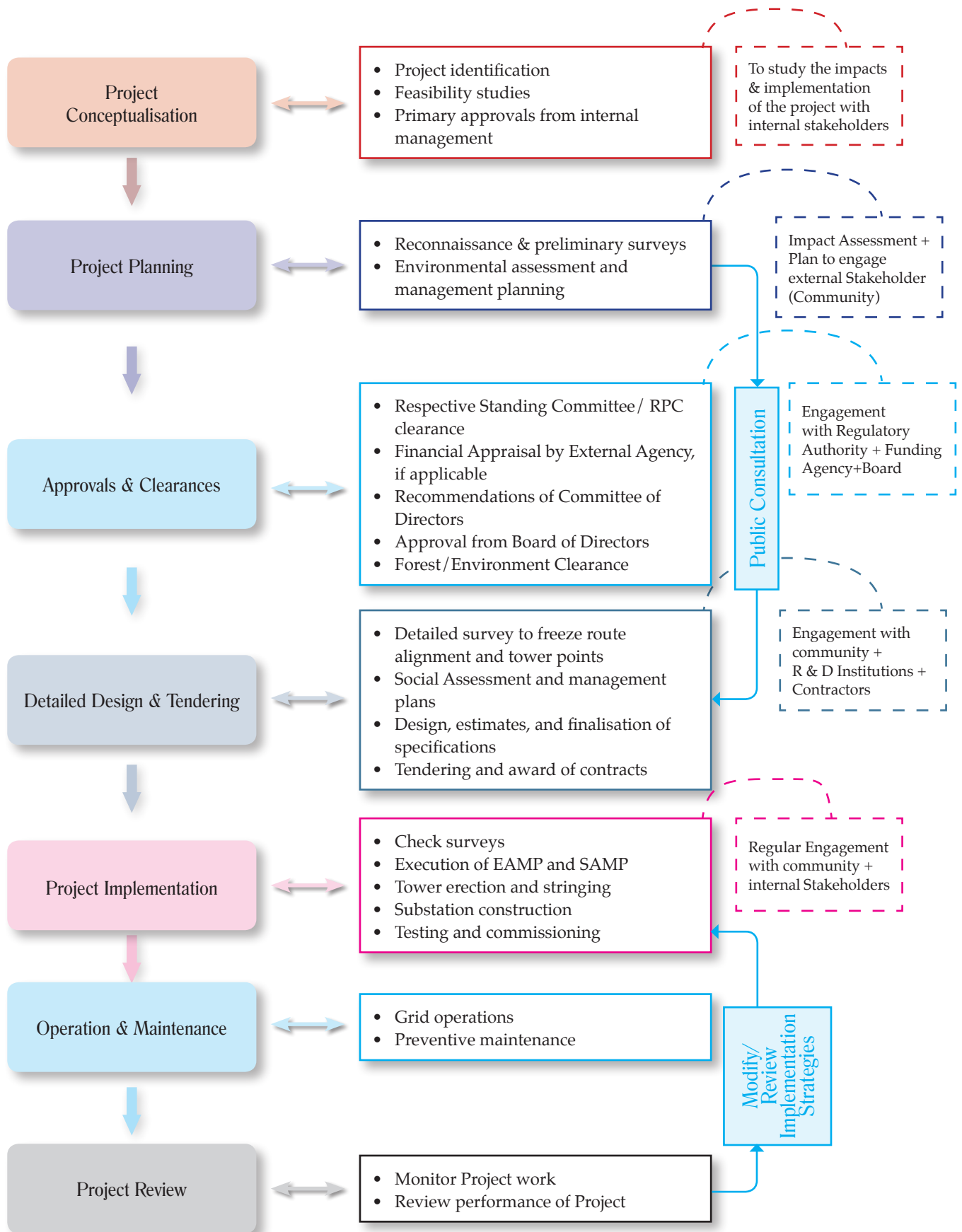


We have strategic alliances with institutes such as IIM, IIT, MDI, NPTI, Jamia Millia Islamia(JMI), Amity Business School as a testimony of successful partnership between utility and academic institutions for achieving operational and professional excellence. At the same time, the hands on training programmes being conducted at manufacturer's premises such as CGL, BHEL, ABB, AREVA etc. are excellent examples of synergistic collaboration between the utility and the industry.

Training Manhours per employee



Project Lifecycle & Stakeholders Involvement



7

Building Social Framework

Land Acquisition

Transmission projects generally do not require a large area as the land below tower/line is not acquired as per law and only a small piece of land is acquired for the construction of sub-stations. We try to locate sub-stations on government/ waste land as far as possible and in the absence of government land, private land may be selected keeping in mind to minimize the social impact on account of land loss. The site selection is planned on the basis of avoiding irrigated land, homestead land/houses, religious structures, cultural property or public infrastructure.

We strictly follow the procedure laid down under the National Law for acquisition of private properties i.e. the Land Acquisition Act 1894, when land is acquired for the construction sub-stations.



Barren land before construction of Gwalior S/s



Gwalior S/s after construction

We have articulated a “Social Entitlement Framework” based on National Resettlement and Rehabilitation Policy, 2007 and other progressive trends in our ESPP applicable for the affected families.

Acquisition of private land may impact the people from areas where they live and work. Such change may lead to economic and cultural disruption to the affected people. Thus, to address these issues, a Rehabilitation Action Plan (RAP) is essential for the Project Affected Persons (PAPs) to offset the trauma and to develop and implement programs which are meaningful and workable such that the affected persons will not become worse off economically than before.

Community Development Work

In addition to the measures taken for Rehabilitation & Resettlement (R&R), community development works are also undertaken for the overall improvement of surrounding village and community. Based on Social Assessment outcome, we implement need based development work like construction of roads, drinking water facility, school building, community center etc. in association with local authorities.



Tubewell in Lucknow under CD works



Public Disclosure, Consultation & Participation

Any development activity can be implemented successfully only with active involvement of the beneficiaries from an early stage of project preparation. Public consultation/information is an indispensable part of our project implementation and is carried out in regional / local language for wider / better understanding. Group meetings / consultation take place at every stage of execution ranging from survey, construction to commissioning of Transmission Line. Besides this, Gram Sabhas are also conducted under FRA, 2006, when Transmission Line traverses through the forest area.

The process of consultation is carried out during

(a) Transmission Line Construction

- (i) When planning a transmission line, public consultation is used as an integral tool for screening, assessment and finalisation of route alignment. During initial screening and walkover survey, our staff meets the public in the route of proposed transmission line. Observations and problems arising from these discussions are given due consideration while finalising the route.
- (ii) Based on survey for tower spotting, our site officials meet the public i.e. people coming in the route of the line. This enables us to gauge public opinion. At the time of construction, every individual on whose land a tower is to be erected is met with. People coming in the way of the RoW are consulted and their views and suggestions are incorporated.

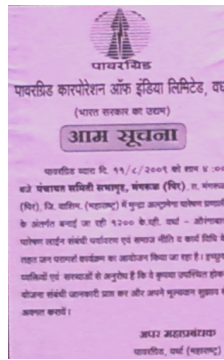


(b) Substation Construction

We identify the location of the substation and notify the area under LA Act. Public consultation is a part of LA Act. Over and above the mandatory requirements of the law, we are committed to assessment of probable impacts associated with land acquisition through its social assessment and management process which includes a socio-economic survey of the proposed substation sites. The socio-economic survey will assess both adverse and positive impacts of the project on aspects such as the natural resource base, developmental potential of the area, economy of the affected area, social structure, norms and traditions. The socio-economic survey will include a complete household census recording members, property with legal rights and resources which are in possession or in use. Appropriate methods such as participatory rural appraisal and questionnaires are utilized.



We assess the social impact of land acquisition based on the socio-economic survey and design compensation packages in consultation with the people. We organize meetings with the Project Affected Persons (PAPs) in order to evolve the Rehabilitation Action Plan (RAP). Meetings with the State authorities, PAFs and well-reputed persons in the area are also consulted during the preparation and implementation of the RAP.



The mode / technique of public consultation involves public meetings, informal small group meetings, information brochures and pamphlets, operating field offices, local planning visits and site visits by staff, response to public enquires, press releases inviting comments, project coordination committees, ombudsman or representative and public displays.

Contributing to Social Equity

Our commitment towards Social Responsibility (Labour, Employees, Communities, Employee's families) is amply reflected in our already adopted Integrated Management Policy, Environmental and Social Policy & Procedures (ESPP), Rehabilitation Action Plan (RAP), Corporate Objectives, OSHAS-18001 and Social Accountability SA 8000. Corporate Social Responsibility is primarily to show case our abiding commitment and concern to pay-back to the society and environment for the benefits reaped so far. CSR has always been an integral part of our vision and the cornerstone of Core Values of Good Corporate Citizenship. We are committed towards taking responsibility for its impact, though very minimal in nature, on society and being accountable to the inhabitants of Mother Nature.

As part of our Corporate Social Responsibility initiative we are making key contributions to society through social investment and programs and its engagement in public policy to ensure socio-economic development of weaker sections of Society and for overall conservation of Environment and improvement of Ecological balance.



Renovation of Govt. Primary School Building at Barabanki



Our Corporate Social Responsibility addresses the issue of Community Development (including employment, conservation and environment, etc.) in the vicinity of our offices / sub-stations where the Resettlement and Rehabilitation (R&R) activities under ESPP have been completed and closed. The **policy provides for spending 0.75% & 1 % of previous year's net profit in 2009-10 & 2010-11 respectively on identified CSR activities.**

In the year 2009-10 and 2010-11 ₹ 4.29 Crore & ₹ 15.58 Crore respectively was utilized for various CSR activities in different thrust areas like infrastructure vocational training livelihood generation / self employment, education, community health, and environment (spread across the country).

The number of CSR activities under the various thrust areas is indicated in the table below:

CSR Thrust Area	2009-10	2010-11
Education	31	92
Health	29	89
Infrastructure	132	157
Livelihood	3	48
Plantation (No of trees planted)	-	86679



Skill Development Training



Ambulance provided to Rourkela Govt Hospital



Construction of RCC road



Development Nursery

A major portion of CSR initiatives was focused on the development of physical infrastructure in and around its areas of operations. During this period, CSR activities included the construction of class rooms, libraries, computer room for schools, primary health centers, drinking & sanitation facilities, check dam, drainage, roads, bus shelter, community center, street lights, skill development programs for employment / livelihood generation, plantation etc.. These facilities were established to have a long lasting value and have a multiplier effect on improving the standard and quality of life of people living in and around our area of operations.

CSR initiatives undertaken in different villages around our establishments have contributed tremendously and earned the goodwill of the local inhabitants. The work done by us has been appreciated by one and all. This has also played a pivotal role in improving the quality of life of local people by enabling them to use the physical infrastructure established by the company and bringing the marginalized people into the mainstream of development.

A CASE STUDY

400/220 KV SUBSTATION AT WARANGAL



Mr. P.Vamsi Krishna (Student)
Assistance: ₹ 50,000
Scheme: Bank Fixed Deposit

Brief facts

- Area of Land Acquired for Substation: 37 acres 32 guntas (Private Land).
- Location: Oglapur & Oorugonda Villages, Atmakur Mandal, Warangal District.
- Land Compensation Disbursed: ₹ 56.45 Lakhs.
- Rehabilitation Assistance Disbursed: ₹ 11.13 Lakhs.
- RAP implemented in association with NABCONS (NABARD).



Community Centre
(₹ 8.36 Lakhs)



Meeting of Members of SHG,
with POWERGRID
& Lodi Officials

Rehabilitation and Resettlement (R&R) Assistance:

- RA given to the tune of ₹ 3333/- to 75000/- per PAF in the form of IGS.
- Vulnerable Groups such as Widow Woman headed, SC, ST families and families with physically handicapped members were paid an amount ₹ 25000/- in addition to their eligibility.



Smt. Arsam Vasantha (SC)
Assistance: ₹ 1,00,000
Scheme: Auto

Assistance through Income Generation Schemes (IGS)

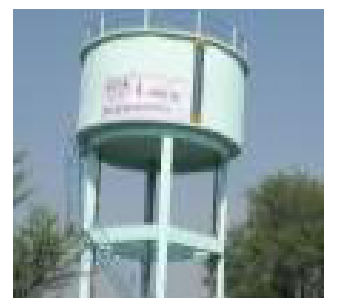
- To efficiently organize IGS, Lodi Multipurpose Social Service Society (LODI), an NGO, familiar with the Village level Issues was consulted based on the recommendations of NABCONS (NABARD).
- 4 Nos of Skill Development Programs were conducted for equipping the beneficiaries to take up the Income Generating Schemes (IGS).
- 6 Nos of Awareness programs were conducted on issues of general interest like SHG & VO awareness, HIV / AIDS, Social Issues etc.



School Building
(₹ 6.19 Lakhs)

Community Developmental Works:

- Community Development Works carried out at Oorugonda Village and Oglapur Village.
- The total estimated value of these works is about ₹ 73 Lakhs.



Water Tank & Distribution
Pipe Line (₹ 10 Lakhs)

8

Creating Ecological Value

Environment Management Framework

We achieved the distinction of being certified with PAS 99:2006, integrating the requirements of ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007. The British Standards Institution (BSI) accredited this certification after extensive audit of our Integrated Management System. We have also developed our corporate Environmental and Social Policy and Procedures (ESPP) to address the environment and socio-economic issues arising from our activities based on the basic principles of Avoidance, Minimization and Mitigation. In April '09, we achieved another distinction by becoming the first company completely assessed and certified by World Bank under the Use of Country System in the field of Environment and Social Management. We aim to ensure total transparency and accountability in dealing with our stakeholders and their involvement through well-defined procedures as well as dissemination of relevant information at every stage of project implementation.



Impacts on Environment

The very nature of our operation, is not involved with activities that are grossly polluting in nature. Even then, our approach is to aim for “Zero Pollution” in our projects, irrespective of a compliance requirement. However, transmission line projects have some localized impacts on natural resources like forests, whenever transmission lines pass through forest area.

We are fully conscious of the need to conserve the natural resources and avoid ecologically sensitive areas, eco-sensitive zones, forests, sanctuaries, national parks, tiger/biosphere reserves, and CRZ covered coastal areas, as far as possible. Thus utilizing the available technological resources (GIS & GPS) to optimize route alignment with emphasis on avoidance of forest, National Parks, Wildlife Sanctuary and other ecologically sensitive areas even to the extent of adopting more circuitous routes and setting up of state of the art substations en route. However, in few cases use of forest area becomes unavoidable due to site specificities of a project and the overall topography of the area.

We undertake environmental assessment for all projects as a standard operating procedure, as laid down in the ESPP, and also function within permissible standards of ambient air quality and noise levels as prescribed by national laws and international regulations. **During the reporting period, none of our facilities were penalized for non-compliance with environmental laws and regulations.**



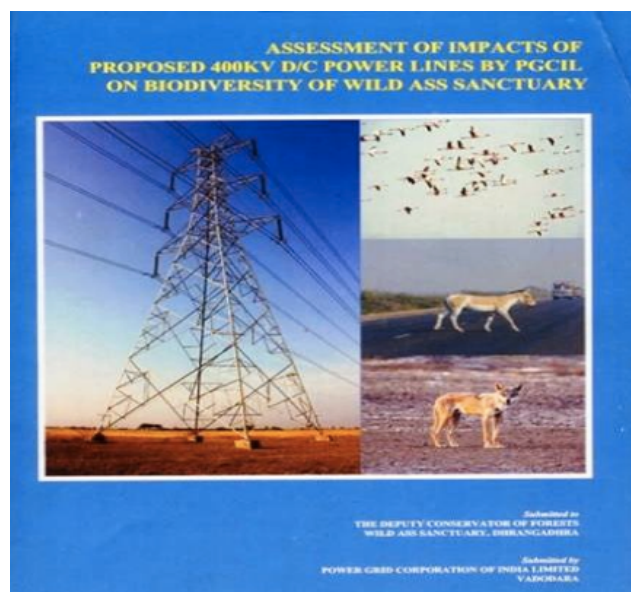
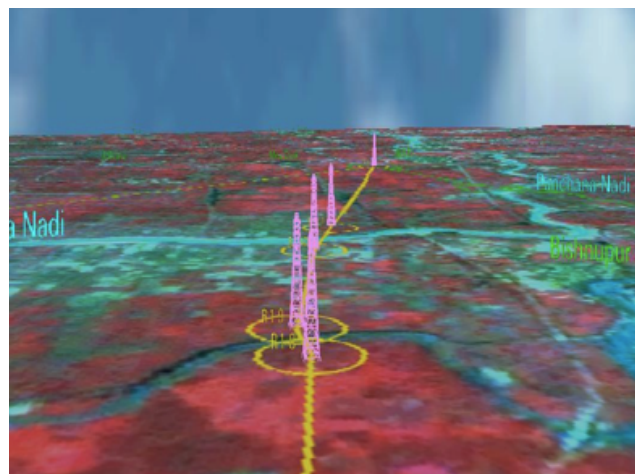
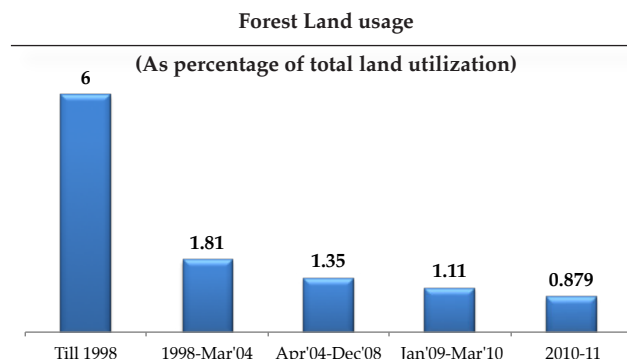
Protecting Land and Bio-diversity

We always avoid setting up of substations in the proximity of ecological sensitive area/zones. But in case of transmission line traversing through forest land is unavoidable due to terrain or technical reasons then the involvement of such area is restricted to minimum possible extent.

As it is evident from table below, forest land involvement has come down drastically from 6% in 1998 to 0.8% in 2010-11. This has been made possible due to systematic conservation approach adopted in construction of transmission lines & substations. Similarly for the establishment of substations, Company follows the practice of land management in a manner that minimizes land requirement so that there will be minimum ecological impacts on land and flora/ fauna. The Chart shows forest land involved in construction of 82,355 Ckt. kms line till March 2011.

We had taken following steps to conserve natural resources & wildlife habitats:

- Adopted all available technological resources (GIS & GPS) to optimize route alignment with emphasis on avoidance of forest, National Parks, Wildlife Sanctuary and other ecological sensitive areas even to the extent of adopting more circuitous routes and setting up of state of the art substations en route. For example in Solapur- Pune line, the Great Indian Bustard Sanctuary has been completely avoided. Similarly in Agra-Sikar line, Sariska Tiger reserve was avoided.
- Specific impact studies by domain experts conducted to suggest measures to minimize adverse impact on wildlife/biodiversity of areas like Mundra UMPP passing through the Wild Ass Sanctuary in Kutch area of Gujarat.



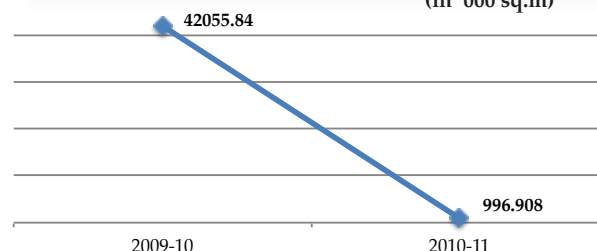
- Adopted innovative tower design like tall towers, multi circuit towers, pole type towers etc. to save trees in forest area and ecologically sensitive areas by reduction of Right of Way (RoW) requirement. During the construction of the 765 KV S/C Vindhyachal-Satna line, which is passing through forest land in Madhya Pradesh, two 765 KV S/C line were converted into one 765 KV D/C line (of the portion passing through the forest area) which resulted in saving of approximately 170 hectares of forest land and thousands of trees.
- We have initiated the design of innovative towers and developed compact tower of various configurations for different voltage transmission lines which require lesser width of Right of Way. In case of 765 KV S/C, the RoW requirement has been reduced from 85 m to 64 m. Likewise, for 400 KV D/C, RoW width comes down to 46 from 52 m. During 2010-11, the saving in RoW due to construction of 765 KV lines instead of lower capacity lines is app. 996908 sq. m.



765 kV Horizontal
Configuration - 85 mts. RoW

765 kV Delta
Configuration - 64 mts. RoW

Saving in RoW due to Construction of 765 KV Line
(in '000 sq.m)



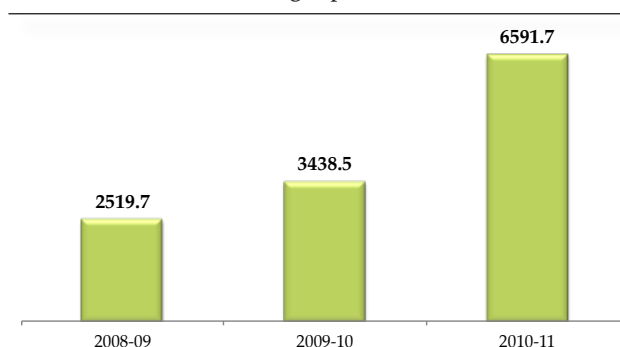
- Undertaking voluntary plantation/ afforestation activity in and around our substations, avenue tree plantation and community plantation etc. as part of our Corporate Social Responsibility initiative. During the year 2010-11, we spent approx. ₹ 83.00 Lakhs for planting 86,679 trees in different regions of the country.



Expenditure towards Environment Conservation

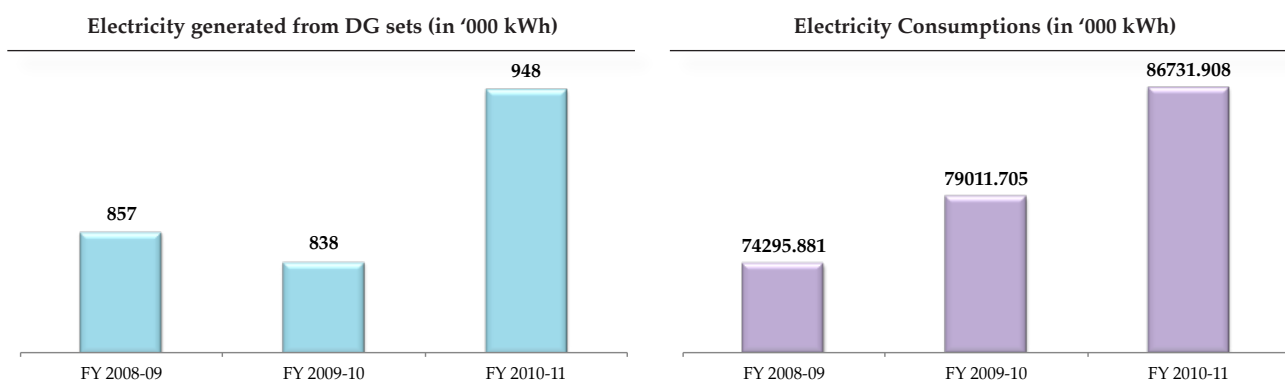
Taking into consideration the potential impact on natural resources like forest and land due to our project activities, we have spent approximately ₹ 125 Crore during last three years towards Environment Conservation. Most of the expenditure incurred for environment conservation has been towards voluntary plantation, compensatory afforestation, rainwater harvesting & EMP implementation etc. Besides these, investment has also been made towards Environment Management in terms of certifications, consultancy charges and Awareness Training Sessions that are organized on regular basis. The chart shows detail of environmental expenditure on annual basis.

Environment Saving Expenditure (in ₹ Lakhs)



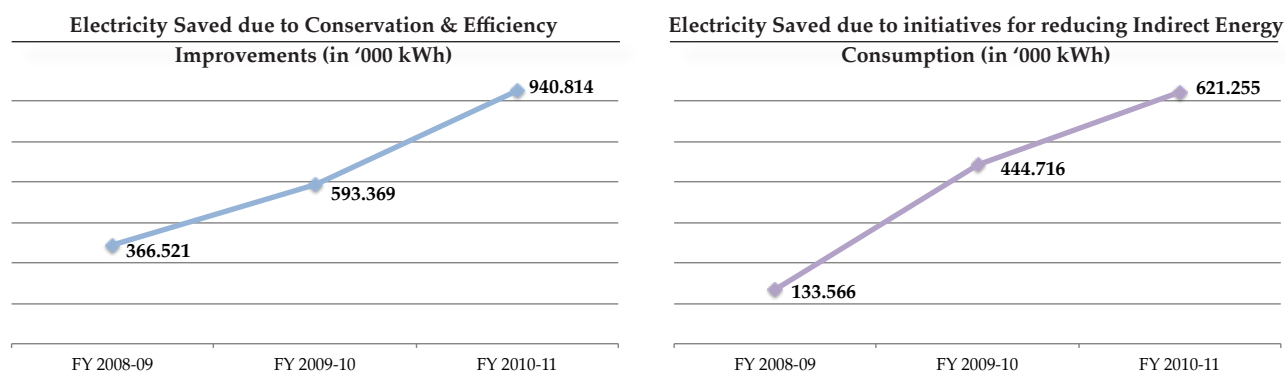
Energy Management

Our primary energy consuming activities are lighting in substations, cooling & domestic use in colonies and office establishments. Most of the consumption is met from indirect primary source i.e. electricity purchased from state electricity utilities. Direct source of energy constitute energy from DG sets installed in facilities for backup/emergency only. The consumption of energy in the form of electricity and diesel during last three years is indicated below:



Graphs show an increasing trend due to increase in number of Substation commissioned during the reporting period.

To optimize consumption, energy efficiency measures like conversion/retrofitting equipment, process redesign etc. are being taken up. Apart from this, a significant reduction is achieved through various initiatives such as switching to CFL lamps from convention lamp, installation of solar lights and solar Geysers, optimization of AC temperature etc. at our facilities over the reporting period. Details of energy saved due to such initiatives are summarized in the chart below:



As a step forward in using New and Renewable energy a 10 kW Hybrid Generation Plant consisting of 4 kW Solar Photo Voltaic & 6 kW Wind Generation has been commissioned at Mapusa (Goa) substation in April, 2009. With this Mapusa substation has joined hands in using Green Power for its internal consumption. The system is generating about 30 kWh per day and is utilized at Community Centre, Children Park and few street lights.



Water Management

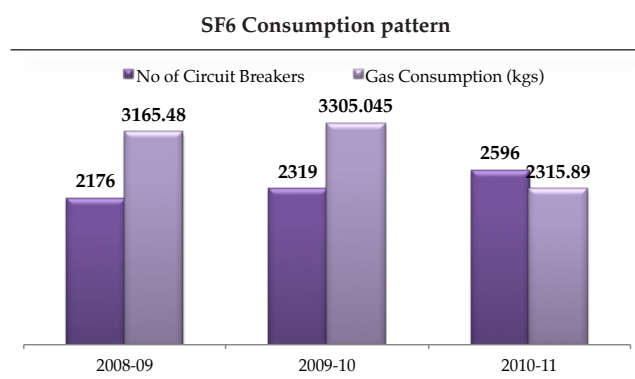
We use water only for domestic consumption in colonies, offices & horticultural uses and not for operation/ process of substation activity. Therefore we believe that our activities do not have any significant impact on water resources. Generally the requirement is met from four sources i.e ground water, municipal water supplies, surface water and rain water utilization – with first two sources are the major sources of water withdrawal.

Our facilities do not generate any process effluents that need specialized treatment system. The domestic waste water generated from our facilities is treated in septic tank / soak pit and wherever possible reused for horticulture. The increase in water withdrawal over previous reporting year is on account of increase in nos. of projects / substation facilities commissioned.

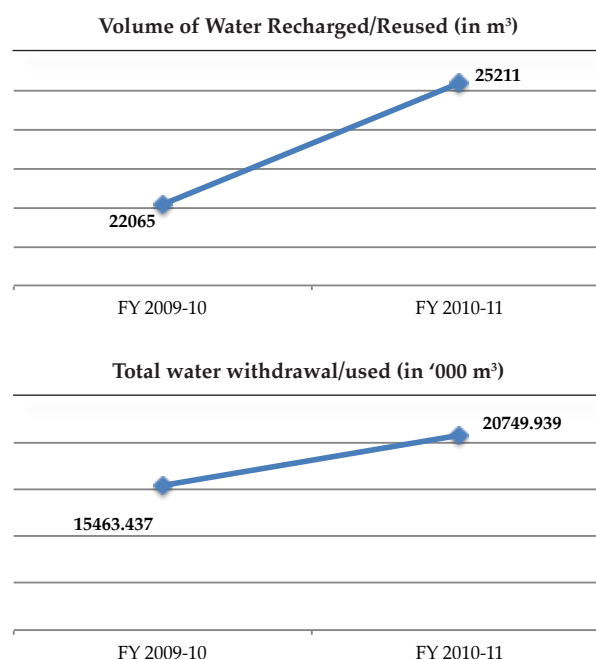
However, we have taken the initiative to conserve precious water resources through Rain Water Harvesting system which is now an integral part of every new substation design. During the year 2010-11, approximately 25211 m³ rain water harvested is reused/recharged to ground water by means of recharge pits as against 22065 m³ in 2009-10. The amount of total water consumed as well as reused / recharged to ground water during the reporting period is indicated in the graphs on the left.

Emission Control

Power Transmission projects don't involve any activity which directly emits waste/toxic substances like SO_x, NO_x, CO₂, etc. into the atmosphere. Our main sources of emission are secondary emissions from electricity



Rain water harvesting at Vapi Sub-station



consumption, business travel and employee commuter. All our power consumptions acquire from indirect source i.e. purchased from State Electricity Grid. However, direct source emission is from diesel generator set used for standby/emergency power for lighting purpose in substation/administrative offices at Corporate and regions and also used during construction activity. We ensure adequate maintenance of DG sets to comply with the emission norms prescribed by pollution control board.

Apart from above, another source of GHG emission is leakage of SF₆ gas used in Circuit Breakers. So our GHG reduction plan is primarily focused on reduction in leakage of SF₆. In the year 2010-11, consumption on



account of leakage of SF₆ has been reduced by 850 Kgs from base year 2008-09. This is equivalent to reduction in emission of 20315 tonnes of CO₂ which in turn helped mitigate the negative impact on climate change. This is possible due to our concentrated efforts like leakage arresting, systematic monitoring etc.

Of late we do not use of Ozone Depleting Substances (ODS) like CFCs, including Halon in our equipment. Moreover, all our new equipment and refrigeration are CFC free certified.

Waste Management

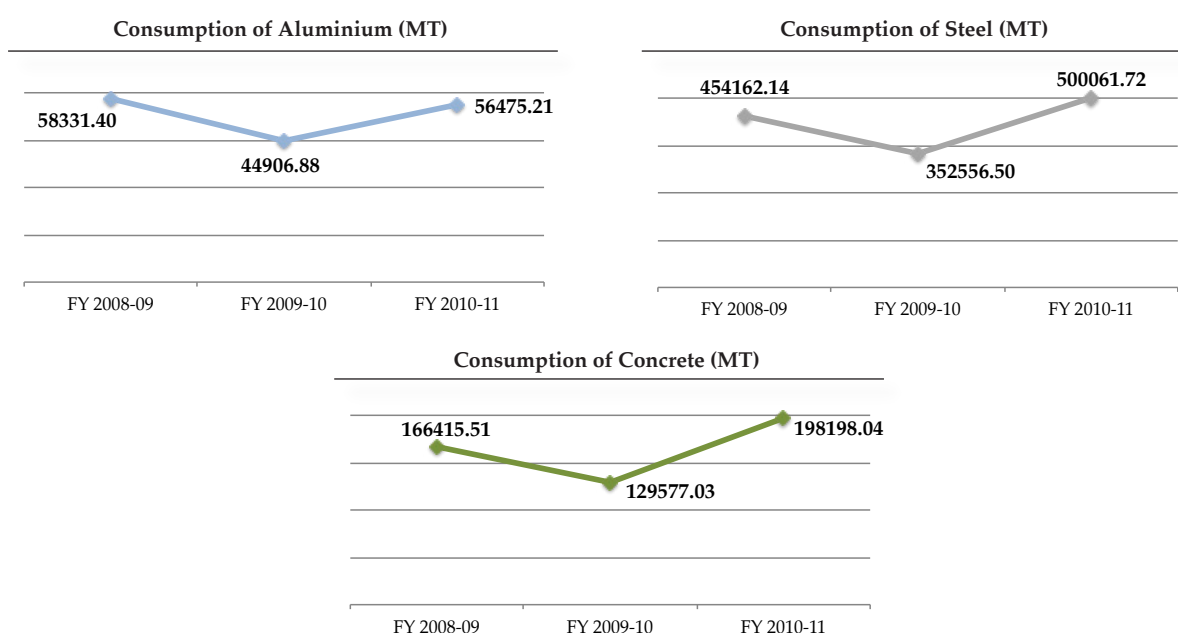
Our operations generate various wastes that include metal scrap from tower parts, insulators, waste oil from transformers, used batteries and waste from office establishment. We have put in place waste segregation at the source and disposed the waste material as follow:

- Metal scraps through auction for Recycling
- Used batteries as per Batteries (Management and Handling) Rules, 2001
- Used transformer oil which is Hazardous waste by authorized recycler/ re-processor as per Hazardous Waste (Management, Handling & Transboundary movement) Rules, 2008

As a part of India's commitment to international guidelines, we have also phased out Polychlorinated Bi-phenyl (PCB), a Persistent Organic Pollutants (POP's) used as insulating medium in electrical equipment from all its establishment and has discontinued procuring electrical equipment containing PCB more than 2 mg/kg(PCB free).

Material Conservation

Our contribution to the conservation of the natural resource base and efforts to reduce the material intensity is an integral part of corporation's sustainability strategy. Major raw materials used for the construction of transmission line and substation include Steel, Aluminum and concrete. These are basically semi-manufactured goods. The increase in quantity of raw materials like Steel and concrete from the base year can be attributed to higher nos. of project commissioned during 2010-11. The raw material consumption pattern vis-à-vis cumulative savings in terms of Aluminum, Steel & Concrete used for constructing high voltage 765 KV lines is indicated below:

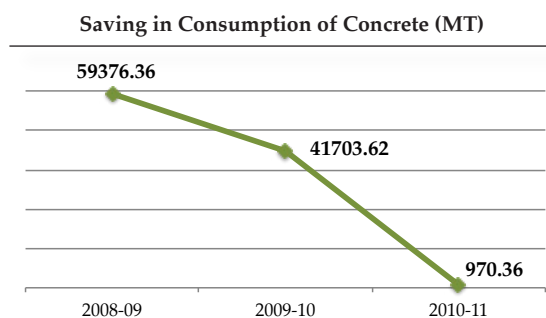
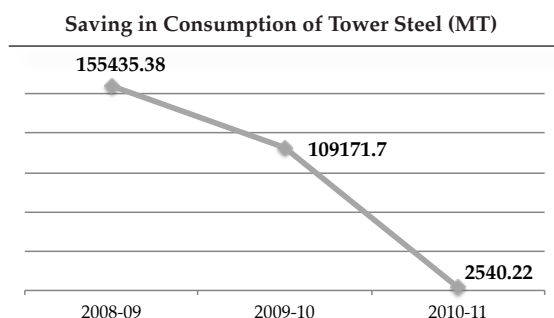
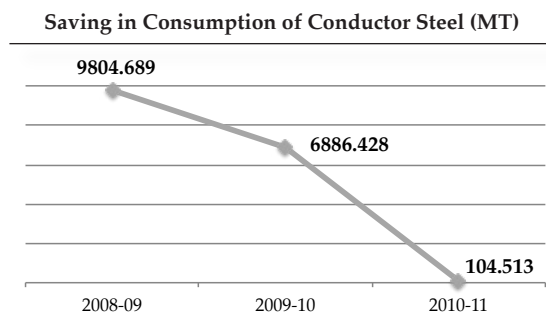
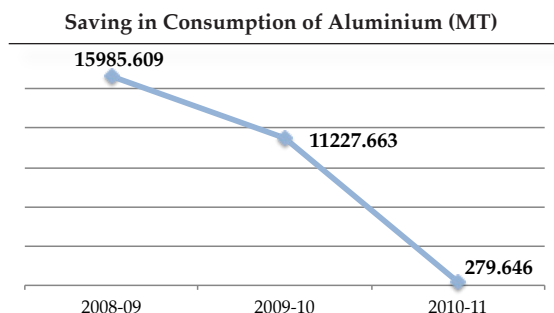


Graphs show an increasing trend due to increase in Number of Transmission Lines and Substation commissioned during the Reporting Period.



The specific consumption of raw materials has been reduced over the years through technological innovation using high capacity transmission lines i.e. 765 KV, ± 800 HVDC for transmitting bulk power. Savings in Aluminium, Tower Steel, Conductor Steel and Concrete due to shifting from 400 KV to 765 KV Line is depicted below:

Saving in Raw material consumption due to shifting from 400kV to 765 kV (Assuming one 765 kV S/C is equivalent to two 400 kV D/C and one 400 kV S/C line)



Technological Initiatives

We have made efforts for conservation of energy in our projects - right from the planning stage, to the execution stage and throughout the O&M period. One of the major criteria for selection of transmission system/ technology is lower losses. In fact, we have adopted higher voltage levels like 765 kV AC, ± 500 kV HVDC, ± 800 kV HVDC and 1200 kV AC in our transmission systems for bulk power transfer across various regions which result in lower losses in the system.

The 1200 kV AC system has significant advantages over lower voltage levels as visible from comparison table.

The high power density of 1200 kV system helps us to reduce the requirement of Right-of-Way (RoW), thereby reducing the environmental impact of transmission system.

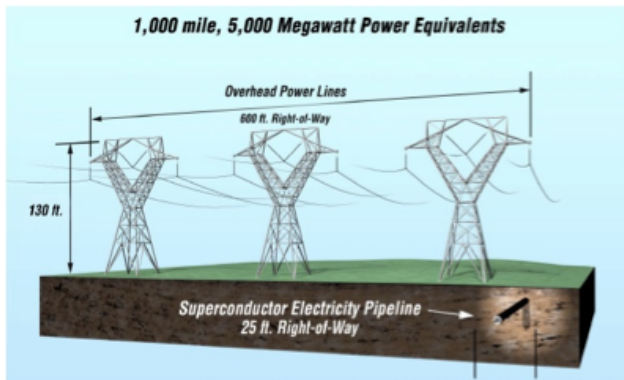


1200 KV S/C Tower



Parameters	400kV	765kV	1200kV
ROW (m)	46	64	92
Capacity (MW)	700-1000	2300-2900	6000-8000
MW / m	15	45	87

In order to facilitate the indigenous development of 1200kV AC technology, POWERGRID have taken up a test station project in collaboration with Indian equipment manufacturers. The test station facilitates development of field proven equipment within India with an optimum cost and design features.



A comparison of conventional transmission system and Superconductor cables

We are working on specialized “Smart Grid” concept to take up implementation of Smart Grid / Smart City Projects which will help in reduction of Aggregate Technical & Commercial (AT&C) losses, peak load management/ demand response, integration of renewable energy, power quality management, outage management etc. Smart Grid will act as a backbone infrastructure to enable more resilient and efficient energy system and tariff structures. We entered into a Joint Venture Agreement in November’2009 on equal participation with NTPC Ltd., Power Finance Corporation Ltd. and Rural Electrification Corporation Ltd. The JV Company will promote measures of Energy efficiency, Energy Conservation and Climate

Change and is carrying out business related to energy audit of Govt. buildings, consultancy assignments etc. The Joint Venture Company is named ‘Energy Efficiency Services Limited’.

Further, In order to address the issues of RoW and tower problems, we are exploring the application of High Temperature Superconductor cables for bulk power transmission. This technology allows transfer of power with reduced losses in negligible RoW.

Innovative designs in Transmission line Towers

We have taken initiatives to built multi-circuit towers for taking 6-8 circuits on a single tower. Such towers are also used where transmission lines enter into Urban/densely populated/ forest areas for connecting substation(s) to effectively overcome severe RoW problem.



Multi Circuit Tower in Forest

Pollution mapping in Northern Region

POWERGRID in association with CPRI, Northern Regional Power Committee (NRPC) & the State Transmission Utilities of Northern Region is conducting Pollution Mapping to minimize the probability of occurrence of pollution flashover in lines passing through pollution affected areas thereby increasing system availability & stability.



Pole Type Tower

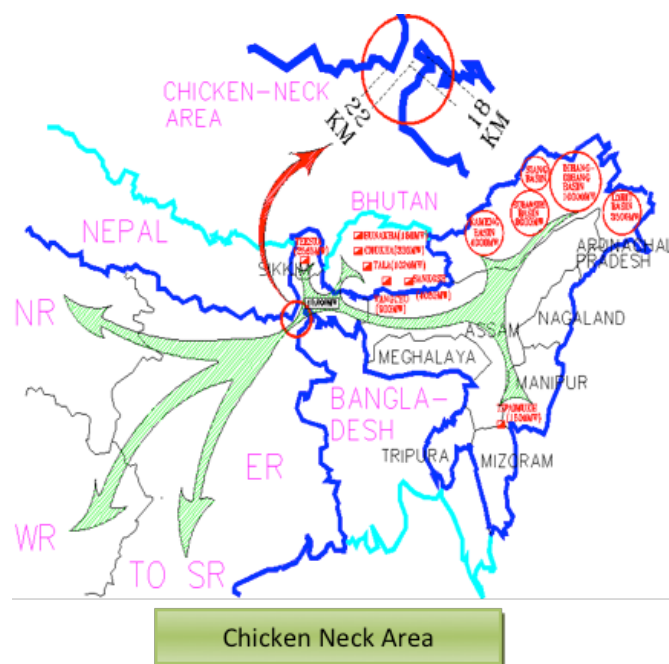


A CASE STUDY

±800 KV HVDC BISWANATHCHARIYALI-AGRA TRANSMISSION SYSTEM

Major Challenges

- Lack of Transmission Network for Transfer of Power from potential Hydro Power Generation Projects in North-Eastern Region. Establishment of adequate high efficiency transmission infrastructure to enable the harnessing of scattered hydro resources located large distances from the load centers.
- Power generated is to be evacuated from NER and transmitted to load centers of Northern Region through narrow Chicken Neck Area in north of West Bengal.
- Northern and Western grids are in a severe power deficit, and have a peak demand deficit To meet this future load growth, these regions have to either depend on the generation projects based on fossil fuels or shall have to receive power from distant hydro resources through long distance transmission links.
- Adoption of the suitable technology for high capacity transmission system to develop a low loss and low Environmental Impact transmission system in phased manner for large renewable hydro power potential of North-Eastern region.
- Minimization of possible impact and conservation of precious Right of Way (RoW) especially in areas like forest, difficult hilly terrain, densely populated towns/cities.



The Project

Northeast-North Interconnector

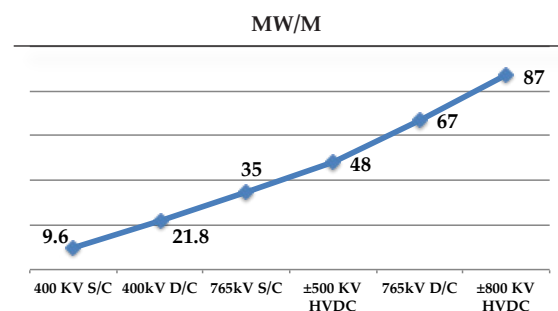
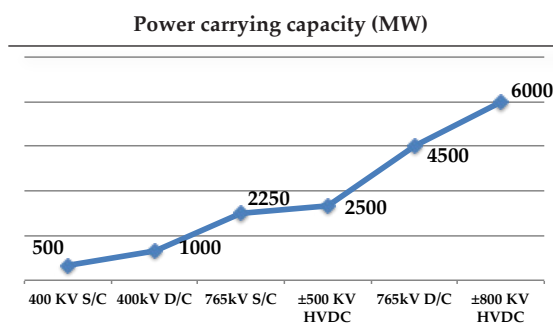
- The project comprises of long distance Transmission line (about 1812 km) from HVDC terminal station at BishwanathChariyali in the state of Assam in North-Eastern region to Agra in Northern Region for evacuation & transfer of about 3000 MW of power from hydro projects: the 2000 MW Lower Subansiri hydro project, 600 MW Kameng Hydro Project, and about 500 MW surplus power available in the region.

Benefits

1. Power carrying capacity of 800 KV HVDC Transmission Line is 6000 MW which is 7 times and 2.3 than 400 KV and 765 KV Line respectively resulting in reduction of overall RoW requirement thus saving the land requirement

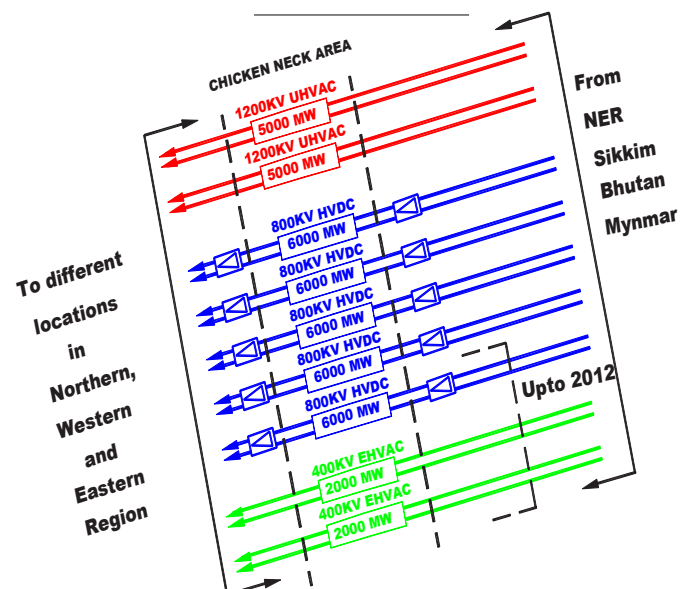
A Brief Comparison of RoW requirements and Power Carrying Capacities of Various Voltage level lines is presented below:

Parameters	400 KV S/C	400kV D/C	765kV S/C	765kV D/C	±500 KV HVDC	±800 KV HVDC
RoW (m)	52	46	64	67	52	69
Capacity (MW)	500	1000	2250	4500	2500	6000
MW / m	9.6	21.8	35	67	48	87



2. POWERGRID tries to avoid Impact on protected areas to the maximum during Implementation of its projects. In the instant project, the total forest involvement has been restricted to only 14.39 km (0.7%) which is insignificant compared to total line length of 1812 km. Besides this environmental sensitive or protected area like national parks, sanctuaries, eco-sensitive zones, tiger reserves and biosphere reserves etc were completely avoided.
3. Implementation of instant project will also reduces Carbon footprint by transmitting the Clean/Green hydro power with negligible environment impact by replacing highly polluting thermal generation power which otherwise would have emitted 257 million tons of CO₂ during the 30 year lifecycle of the project.
4. Conservation of precious Right of Way (RoW) especially in the RoW constrained area of Chicken Neck where international boundaries of India, Bangladesh and Nepal creates a narrow corridor which is to be shared with other infrastructure like Railway, Road, Oil & Gas pipe line etc.

Future Evacuation of 50000 MW through Chicken Neck Area



The project will provide positive impetus to the development of under developed North-Eastern region of the country through Infrastructural improvement associated with these developmental projects. The increased industrial activities shall create ample opportunities for employment for local people.

Consolidated Environment Performance Data

Core EN - 1: Materials used by weight or volume

Sl. No.	Raw materials Used/ Consumed	Quantity consumed		
		FY 2008-09	FY 2009-10	FY 2010-11
1	Steel(Tower Parts & Reinforcement)(MT)	436488.27	338571.48	480401.00
2	Steel(Conductor)(MT)	17673.87	13985.02	19660.72
3	Aluminium(Conductor)(MT)	58331.40	44906.88	56475.21
4	Concrete(MT)	166415.51	129577.03	198198.04
5	Transformer Oil (KL)	2405.155	3661.264	8905.268
6	Insulators(120 KN &160 KN)(Nos)	690194	922557	2140724

Core EN - 3: Direct Primary Energy Source

Sl. No.	Description	Electricity (kWh)		
		FY 2008-09	FY 2009-10	FY 2010-11
1	Total electricity generated from Diesel Generator Set	857231	838181	947684
		Energy in KJ		
		3086.033	3017.451	3411.662

Core EN - 4: Indirect Primary Energy Source

Sl. No.	Description	Electricity Consumed (kWh)		
		FY 2008-09	FY 2009-10	FY 2010-11
1	Electricity Purchased from State Electricity Board	73685819	78490235	86176358
		Energy in KJ		
		265268.9484	282564.846	310234.8888
2	Electricity taken from Tertiary	Electricity Consumed (kWh)		
		610062	521469	555550
		Energy in KJ		
		2196.2232	1877.2884	1999.98

Add EN - 5: Energy saved due to conservation and efficiency improvements

Sl. No.	Energy saving initiatives	Energy Saved (kWh)		
		FY 2008-09	FY 2009-10	FY 2010-11
1	Process Redesign/Power Factor Improvement	202099.11	330797.67	315311
2	Changes in Personal Behaviour	150172	179582	211393
3	Retrofitting	14250	82990	414110
	TOTAL	366521.11	593369.67	940814
		Energy in KJ		
		1319.475996	2136.130812	3386.9304



Add EN - 7: Initiatives to reduce indirect energy consumption and reductions achieved

Sl. No.	Energy saving initiatives	Electricity Saved (kWh)		
		FY 2008-09	FY 2009-10	FY 2010-11
1	CFL	99030	405393	573916
2	Solar Lights	30156	34943	39949
3	Solar Gyser	4380	4380	4500
	TOTAL	133566	444716	618365
			Energy in KJ	
		480.8376	1600.9776	2226.114

Core EN - 8: Total water withdrawal by source

Sl. No.	Source of Water Withdrawl	Water withdrawal (In m3)	
		FY 2009-10	FY 2010-11
1	Surface	2736353	815066.8
2	Ground	4313043.5	2861061.55
3	Municipal	8408931.33	17070399.33
4	Rain Water	5010	3312

Add EN -10: Percentage and total volume of water recycled and reused

Sl. No.	Description	Water recycled/reused (In m³)	
		FY 2009-10	FY 2010-11
1	Rain Water/ Used Water	22065	25211

Core EN - 16: Total direct and indirect greenhouse gas emissions by weight.

		FY 2008-09	FY 2009-10	FY 2010-11
1	Qty of SF6 Consumed (Kg)	3165	3305	2315

Core EN - 22: Total weight of waste by type & disposal method

Sl. No.	Type of waste	Quantity		
		FY 2008-09	FY 2009-10	FY 2010-11
Non Hazardous				
1	Steel (Scrap) (MT)	1629	545	982
2	Aluminium (Conductor) (MT)	492	100	530
3	Insulator (MT)	7198	5915	98306
Hazardous				
1	Used Batteries (Nos.)	1426	3698	949

Core EN - 30: Total environmental protection expenditures and investments by type

Sl. No	Description of Protection measures	Cost Incurred (in ₹)		
		FY 2008-09	FY 2009-10	FY 2010-11
1	Plantation activity undertaken at Substation	10545286	11129922	13565267
2	Cost of Compensatory afforestation (CA) & Net Present Value (NPV)	190239438	289799649	552137332
3	Installation of Rain water harvesting system	6009149	4765193	22640910
4	Implementation of EMP	45000000	37900000	70650000
5	For certification	180000	256250	177750
	Total	251973873	343851014	659171259



INDEPENDENT ASSURANCE STATEMENT

Introduction:

TÜV Rheinland India Private Ltd., member of TÜV Rheinland Group, Germany (TÜV, We) has been entrusted by the management of Power Grid Corporation of India limited, A Government of India Enterprises (POWERGRID, the Company) to conduct independent assurance of POWERGRID Sustainability Report 2009-11 (the Report). All contractual contents for this assurance engagement rest entirely within the responsibility of POWERGRID. Our task was to give a fair and adequate judgment on the POWERGRID Sustainability Report 2009-11.

The intended users of this assurance statement are stakeholders having relevance to the POWERGRID overall Sustainability Performance and impacts of its business activities during 2009-11 (April 2009 - March 2011). TÜV Rheinland is a global service provider of CSR & Sustainability Services in over 61 countries, having qualified professionals in the field of Corporate Sustainability Assurance, Environment, Social and Stakeholder Engagement. We have maintained complete impartiality and independence during the assurance engagement and were not involved in the preparation of report contents.

Assurance Standard:

The Independent Assurance was carried out in accordance with AccountAbility, U.K. Standard AA 1000 AS (2008) and related standards AA 1000 APS(2008), AA 1000 SES 2011 (Final exposure draft), Principles of Inclusivity, Materiality & Responsiveness, Global Reporting Initiative (GRI) Reporting guidelines Version 3(G3.0) and TÜV STAR (Sustainability-Trustworthy-Accountability-Responsiveness) assessment protocol.

Scope & Type of Assurance:

Our assurance engagement covers the following:

- POWERGRID Sustainability performance as described in the report in accordance with GRI reporting guidelines and performance indicators from Economic, Environment & Social category (GRI application Level "B"), also defined in Reporting boundaries.
- Evaluation of disclosed information in the report as per the Assurance Standards.
- Type-1, Moderate as per AA 1000 AS (2008).

Limitation: The assurance engagement was carried out at POWERGRID Corporate office at "Saudamini" Plot No.2, Secor-29, Gurgaon 122001, Haryana, India, and visits to their Northern region (NR-1) regional headquarter at New Delhi as well as one Indore substation (765/400/220 KV). The consultations with external stakeholder were not carried out. We have not observed any significant situations to limit our assurance activity. The verification is carried out based on the data and information provided by POWERGRID, assuming they are complete and true. We did not verify the reported financial data as same is verified by another third party.

Assurance Methodology:

TÜV has challenged the report contents and assess the process undertaken by POWERGRID from source to aggregate in disclosure of information/data related to Sustainability performance. Our judgment is based on the objective review of reported information as per criteria defined under Assurance standards.

Analytical methods and the performance of interviews as well as verification of data, done as random sampling, to verify and validate the correctness of reported data and contents in light of contractual agreement and the factual POWERGRID strategy as mentioned in the report. Our work included consultation with over 50 POWERGRID representatives including senior management and relevant employees. The approach deemed to be appropriate for the purpose of assurance of the report since all data therein could be verified through original proofs, verified database entries.

The Assurance was performed by our multidisciplinary team of experienced professionals in the field of Corporate Sustainability, Financial, Environment, Social and Stakeholder Engagement. We are of the opinion that our work offers a sufficient and substantiated basis to enable us to come to a conclusion mentioned below and based on the content of our contract.



Positive Observation:

We would like to mention some of the positive aspects observed during POWERGRID assurance engagement as below:

- POWERGRID is continuously improving its social & environment performance through technology innovation like reduce Right of Way (RoW), higher voltage transmission, multi-circuiting and improved tower designing.
- POWERGRID has established "Environmental and Social Policy & Procedures (ESPP) version 2009 and continually update through periodic multi-stakeholders consultation. It has well defined Social & Environment performance criteria like Rehabilitation & Resettlement Policy, Social Entitlement criteria and requirements from financial institutions like World Bank (OP 4.0), Asian Development Bank.

Opportunity for Improvement:

During assurance engagement, we found further opportunity for improvements, reported back to POWERGRID management, which do not affect our conclusion on the report. These are as follows:

- Enterprise Risk Management shall be further aligned with Sustainability context and use of management system framework, related process implementation and on-going compliance checks including entire value chain.
- The Sustainability Initiative shall be further aligned with International standards like Guidance on Social responsibility ISO 26000 (2010) and National Voluntary Guidelines (NVG).
- Stakeholder participation & communication including contractual workers needs to be further enhanced which will lead to Innovation, Learning and Sustainability Performance improvement and goal of achieving Sustainable development.

Adherence to AA 1000 principles:

Inclusivity: POWERGRID has undertaken dialogue with its internal and external stakeholders through formal and informal mechanism like open session chaired by the Senior Management, project stage wise consultation with project affected families (PAPs/communities) and NGO as per the process defined in ESPP.

Materiality: POWERGRID has identified and prioritized material issues related to sustainable development viz. economic, environment & social performance and provided balance information in the report.

Responsiveness: POWERGRID has responded to its stakeholders against identified material issues critical to sustainable development through disclosure made in report 2009-11, corporate strategy and policy, implementation systems and processes, allocation of resources to stakeholder engagement and communication.

Conclusion:

In conclusion, we can mention that no instances or information came to our attention that would be to the contrary of the statement made below:

- POWERGRID Sustainability Report 2009-11 meets the requirement of Type-1, Moderate Assurance according to AA1000AS(2008) and GRI application level "B+".
- The report includes statements and claims that reflects POWERGRID achievements and challenges supported by documentary evidences and internal records.
- The performance data we found in the report are collected, stored and analyzed in a systematic and professional manner and were plausible.
- TÜV Rheinland shall not bear any liability or responsibility to a third party for perception and decision about POWERGRID based on this Assurance Statement.



AA1000
Licensed Assurance Provider
000-51

New Delhi, 31st January, 2013

For TÜV Rheinland India Private Ltd.,

Dr. Manish Chandekar
Verifier

Ganga C. Sharma
Lead Verifier



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Precisely Right.

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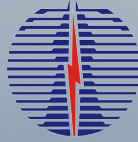
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List of Abbreviations

ADB	Asian Development Bank	NLD	National Long Distance
AIS	Air Insulated Switchyard	NLDC	National Load Dispatch Centre
CEA	Central Electricity Authority	NPTI	National Power Training Institute
CFC	ChloroFlouro Carbons	O&M	Operation & Maintenance
CPRI	Central Power Research Institute	PAS	Publically Available Specification
CRZ	Coastal Regulation Zone	PNBC	POWERGRID National Bipartite Committee
D/C	Double Circuit	PPE	Personal Protective Equipment
DG	Diesel Generator	PSU	Public Sector Undertaking
EAMP	Environment Assessment Management Plan	RGVY	Rajiv Gandhi Grameen Vidhyutikaran Yogana
EHVAC	Extra High Voltage Alternating Current	RoW	Right of Way
ERS	Emergency Restoration System	S/C	Single Circuit
FACTS	Flexible Alternating Current Transmission System	S/S	Substation
GHG	Green House Gasses	SAMP	Social Assessment Management Plan
GIS	Gas Insulated Switchyard	SCADA	Supervisory Control & Data Acquisition
GRI	Global Reporting Initiative	SEB	State Electricity Board
HEP	Hydro Electric Power	SF6	Sulphur Hexafluoride
HVDC	High Voltage Direct Current	SHG	Self Help Group
IGS	Income Generating Scheme	TL	Transmission Line
MPR	Monthly Progress Report	UHVAC	Ultra High Voltage Alternating Current
MVA	Mega Volt Ampere	UMPP	Ultra Mega Power Project
MW	Megawatt	VO	Voluntary Organization
NABARD	National bank for Agriculture and Rural Development	WAMS	Wide Area Measurement System





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