

## EXECUTIVE SUMMARY

The Power Grid Corporation of India Limited (POWERGRID) was incorporated in October 1989 to transmit power generated from the Central Power Stations and the surplus electricity from the State Electricity Boards to regional Load Centres, thus establishing Regional and National Power Grids. The infrastructure developed by POWERGRID is reliable, economical and secured, that comprise of EHV AC and HV DC transmission lines, substations, load dispatch centres and communication facilities. POWERGRID as on Jan'09 operates approximately 69,500 Circuit kms (Ckm) of 765 KV, 400 KV, 220 KV, 132 KV AC transmission lines, and HVDC transmission system. It has a total installed transformation capacity of 77,200 MVA, distributed over 116 substations, and maintained at a persistent level of over 99% of line availability. POWERGRID a Navratna<sup>1</sup> company is one of the largest power transmission corporations in the world. In order to fulfil its goal of establishing a National Power Grid, POWERGRID plans to augment regional grids, reinforce inter-regional links, set up modern co-ordination systems, and control facilities.

### ENVIRONMENT & 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 .”*

POWERGRID has developed its corporate Environmental and Social Policy and Procedures (ESPP) to address the environment and socio-economic issues arising from its activities based on the basic principles of Avoidance, Minimization and Mitigation. The ESPP outlines POWERGRID's approach and commitment to deal with environmental and social issues relating to its transmission projects, lays down the management procedures and protocols for the purpose that includes the framework for identification, assessment, and management of environmental and social concerns at both organizational and project levels.

<sup>1</sup> Navratna status is conferred to a PSU by Department of Public Enterprises, Ministry of Heavy Industries & Public Enterprises, Government of India after a comprehensive review of its performance on six major parameters. Additionally, a company must first be a miniratna and have four independent directors on its board before it can be made a Navratna. This status provides a company enhanced financial and operational autonomy and freedom to enter joint ventures, form alliances and also to float subsidiaries abroad.

POWERGRID believes that the ESPP is a dynamic and living document, which shall be further upgraded in the light of the experiences gained from field implementation and other relevant factors. The main aim is to give a human face to corporate functioning and to move away from the classical cost-benefit approach to the larger realm of corporate social responsibility, while mainstreaming the environmental and social concerns.

POWERGRID achieved the distinction of being the first power utility & second company in the world to be certified with PAS 99:2006 integrating the requirements of ISO 9001:2000, ISO 14001:2004 and OHSAS 18001:1999. The British Standards Institution (BSI) accredited this certification after extensive audit of POWERGRID's Integrated Management System. POWERGRID has already inducted its ESPP requirements into the integrated management system, the effectiveness of which is being audited regularly by an independent and internationally accredited third party. POWERGRID has also been accredited with Social Accountability Standards SA 8000:2001 in 2008.

POWERGRID developed the first ESPP document in 1998, based on desk research and national consultations, on the regulatory framework and analysis of priority issues in the power transmission sector consistent with the operational directives of the Multilateral Funding Agencies. During the subsequent revisions of ESPP, the consultative process was enlarged to engage all stakeholders, including Project Affected Persons (PAPs) and the local communities. The regional level consultations were organised in southern, western, northern and eastern regions of the country. The national consultation was held at its corporate office in Gurgaon. The ESPP- 2009 is based on an extensive analysis by the World Bank under their policy of Use of Country System (UCS) and changes in India in respect of policies, laws, regulations, guidelines, etc. The Bank's analysis report was presented in the form of Safeguard Diagnostic Review (SDR) that was disclosed/discussed during public consultations organized at Delhi and Hyderabad in Nov 2008 to get the feedback of stakeholders.

The ESPP spells out POWERGRID's environment and social policy, and its commitment to:

- ensure total transparency in dealing with all the stakeholders - i.e. the concerned government agencies, local communities, individual landowners and employees and their involvement through a well-defined public consultation process as well as dissemination of relevant information about the project at every stage of implementation;
- maintain the highest standards of corporate responsibility not only towards its employees but also to the consumers and the civil society, along with social responsibility through various community development activities<sup>2</sup> for promoting socio-economic development

<sup>2</sup> These include providing basic infrastructure facilities, rain water harvesting, tree plantations, relief and restoration work during natural calamities, in-house social clubs, promoting social and cultural activities, providing education to poor children, organizing health awareness / check-up camps, sponsoring local fares/ festivities/ sports activities , etc.

and enriching the quality of life of the community in areas around its establishments, most importantly through people's participation; and

- minimise adverse impacts on the natural environment by consciously economising on the requirement of land for civil structures, reducing the width of the Right of Way ( ROW)<sup>3</sup> , etc.

The ESPP document comprises of seven sections. Section I elaborates the environmental and social policy of POWERGRID. Section II contains the relevant legal enactments, regulations and requirements of Multilateral Funding Agencies and their implications. Section III outlines the project cycle of a typical POWERGRID transmission project. Section IV provides a summary of environmental and social issues associated with power transmission projects. Section V details POWERGRID's environmental and social management framework. Section VI details the organizational support required to implement ESPP. Section-VII describes the regional and national level consultations with the stakeholders during the revision of ESPP.

---

<sup>3</sup> Through construction of tall towers (80 meters and in extreme situations even up to 140 metres), multicircuit and single pole towers

# 1.0 POWERGRID'S ENVIRONMENTAL AND SOCIAL POLICY

## *ENVIRONMENT & 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 ."*

The Power Grid Corporation of India Ltd. (POWERGRID) a Navratna company is one of the largest electrical power transmission utilities in the world. In order to fulfil its goal of establishing a strong National Power Grid by 2012, POWERGRID plans to augment regional grids, reinforce inter-regional links, set up modern co-ordination systems, and control facilities. It constructs, owns, and operates Extra High Voltage (EHV) transmission network stretching across the country, with approximately 69,500 Circuit kilometres of transmission lines, and HVDC transmission system, 116 EHVAC/ HVDC substations, and 77,200 MVA of transformation capacity (as on Jan'09).

POWERGRID has developed its corporate Environmental and Social Policy and Procedures (ESPP) to address the environment and socio-economic issues arising from its activities based on the basic principles of Avoidance, Minimization and Mitigation. The ESPP outlines POWERGRID's approach and commitment to deal with environmental and social issues relating to its transmission projects, lays down the management procedures and protocols for the purpose that includes the framework for identification, assessment, and management of environmental and social concerns at both organizational and project levels.

POWERGRID believes that the ESPP is a dynamic and living document, which shall be further upgraded in the light of the experiences gained from field implementation and other relevant factors. The main aim is to give a human face to corporate functioning and to move away from the classical cost-benefit approach to the larger realm of corporate social responsibility, while mainstreaming environmental and social concerns.

POWERGRID has gained the distinction of being the first power utility & second company in the world to be certified with PAS 99:2006 integrating the requirements of ISO 9001:2000, ISO 14001:2004 and OHSAS 18001:1999. The British Standards Institution (BSI) accredited this certification after extensive audit of POWERGRID's Integrated Management System. POWERGRID has already inducted its ESPP requirements into the integrated management system, the effectiveness of which is being audited regularly by an independent and internationally accredited third party. POWERGRID has also been accredited with Social Accountability Standards SA 8000:2001 in 2008.

POWERGRID developed the first ESPP document in 1998, based on desk research and national consultations, on the regulatory framework and analysis of priority issues in the power transmission sector consistent with the operational directives of the Multilateral Funding Agencies. During the subsequent revisions of ESPP, the consultative process was enlarged to engage all stakeholders, including Project Affected Persons (PAPs) and the local communities. The regional level consultations were organised in southern, western, northern and eastern regions of the country. The national consultation was held at its corporate office in Gurgaon. The ESPP-2009 is based on an extensive analysis by the World Bank under their policy of Use of Country System (UCS) and changes in India in respect of law, regulation, guidelines etc. The Bank's analysis report was presented in the form of Safeguard Diagnostic Review (SDR) that was disclosed/discussed during public consultation organized at Delhi and Hyderabad in Nov 2008 to get the feedback of stakeholders.

### **ENVIRONMENT**

- ◇ *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.*

The ESPP spells out POWERGRID's environment and social policy, and its commitment to:

- ensure total transparency in dealing with all the stakeholders - i.e. the concerned government agencies, local communities, individual landowners and employees and their involvement through a well-defined public consultation process as well as dissemination of relevant information about the project at every stage of implementation;

- maintain the highest standards of corporate responsibility not only towards its employees but also to the consumers and the civil society along with social responsibility through various community development activities<sup>1</sup> for promoting socio-economic development and enriching the quality of life of the community in areas around its establishments, most importantly through people's participation; and minimise adverse impacts on natural environment by consciously economising on the requirement of land for civil structures, reducing the width of the Right of Way (ROW)<sup>2</sup>, etc.

### **SOCIAL**

- ◇ *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.*

- Proper management of environmental and social issues through International Management System viz. ISO: 14001 for Environment Management, ISO: 9001 for Quality management, and OHSAS: 18001 for Occupational Health & Safety and Social Accountability SA:8000-2001.
- Maintaining high standards of human resource development of staff, contractors and others associated with POWERGRID meeting the national requirements and conforming to the international norms.
- Constantly review the policy and procedures consistent with its guiding principles of prevention, minimum disturbance, and innovative remedial measures.

<sup>1</sup> These include providing basic infrastructure facilities, rain water harvesting, tree plantations, relief and restoration work during natural calamities, in-house social clubs, promoting social and cultural activities, providing education to poor children, organizing health awareness / check-up camps, sponsoring local fares/ festivities/ sports activities , etc.

<sup>2</sup> Through construction of tall towers (80 meters and in extreme situations even up to 140 metres), multicircuit and single pole towers.

# 2.0 POLICY, LEGAL AND REGULATORY FRAMEWORK

This chapter explains the constitutional provisions, policy, legal and regulatory framework for environmental and social issues applicable to power transmission. In addition, the requirements of multilateral funding agencies are also mentioned.

## 2.1 Constitutional PROVISIONS

The Constitution of India (1950) is rather unique in incorporating certain specific provisions for the protection and improvement of the country's environment. The relevant provisions, introduced by the 42nd Amendment Act, 1976, are given below:

### Article 48 A

- **“The State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country”.**

### Article 51 A (g)

- **“It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures”.**

Thus, the Indian Constitution includes in the Directive Principles of State Policy a specific directive to the State to protect and improve the environment. At the same time, the Fundamental Duties laid down for all Citizens of the country includes a specific provision to improve and protect the natural environment and to have compassion for the living creatures.

Apart from this, the Right to Life guaranteed by Article 21 of the Constitution has been interpreted by the Supreme Court of India in several recent judgements to include the right to live in a clean and healthy environment. This is a very significant development in favour of environment protection.

Similarly, the constitutional provisions in regard to social safeguards are enshrined in the Preamble to the Constitution, such as JUSTICE, social, economic and political; LIBERTY of thought, expression, belief, faith and worship; EQUALITY of status and of opportunity; FRATERNITY assuring the dignity of the individual and the unity and integrity of the Nation. Fundamental Rights and Directive Principles guarantee the right to life and liberty. Health, safety and livelihood have been interpreted

as part of this larger framework. The provisions on social safeguards are contained in Articles 14, 15, 17, 23, 24, 25, 46, 330, 332, etc.

POWERGRID is committed to upholding and implementing the aforesaid constitutional provisions, specially in fulfilling its role and responsibilities in regard to environment and social issues.

## **2.2 Power Sector and Transmission**

The first legislation on power sector in India came in 1887, which was subsequently amended and re-enacted as The Indian Electricity Act in 1910. However, in 1948 all power sector institutions were nationalized under the Indian Electricity (Supply) Act, which describes the statutory powers and functions of the Central Electric Authority (CEA), State Electricity Boards (SEBs) and the generating companies. Most SEBs came into existence during 1948, which was followed by the setting up of five Regional Electricity Boards in 1963 for more focussed development.

Later, power transmission was separated from generation and distribution and POWERGRID was formed in 1989 to develop and operate Extra High Voltage (EHV) transmission network. In 1998, through a major amendment of the various existing Electricity Acts, the Government of India (GOI) recognized power transmission as a distinct activity and came up with the concept of the Central Transmission Utility (CTU) with a mandate for planning, co-ordination, supervision, and control over all interstate transmission systems. The Government of India enacted The Electricity Act 2003 by repealing all existing Acts to further open the power sector and to encourage competition, protection of consumer interest and supply of electricity to all areas.

POWERGRID undertakes its activities within the purview of the national laws, relevant international obligations and guidelines of the funding agencies. POWERGRID sees its responsibilities under the present framework as under:

- mandatory requirements under the law and the guidelines of funding agencies; and
- prescriptive requirements that influence management procedures addressing environmental and social issues.

## **2.3 Mandatory Requirements - Environment**

### **2.3.1 Electricity Act, 2003**

This Act provides the framework for power sector development by measures conducive to the industry. But, the Act does not explicitly deal with environmental implications of activities related to power transmission. However, POWERGRID integrates environment protection as a part of its project activities and its transmission schemes are planned in such a way that the power of eminent domain is exercised responsibly. The applicable legal provisions under the Act are:

- Section 68(1) – Sanction of the Ministry of Power (MOP) is a mandatory requirement for taking up any new transmission project. Such sanction authorizes POWERGRID to plan and coordinate activities to commission a new project.
- Section 164(B) – Under this section POWERGRID has all the powers that the telegraph authority possesses and can erect and construct towers without actually acquiring the land.

The main features of the Electricity Act 2003 are given in Appendix-I.

### **2.3.2 Forest (Conservation) Act, 1980**

This Act provides for the conservation of forests and regulating the diversion of forest lands to non-forestry purpose.

When any transmission project falls within forest area, prior clearance is required from relevant authorities under the Forest (Conservation) Act 1980. State Governments cannot de-reserve any forestland or authorise its use for any non-forest purpose without approval from the Central Government. The flow chart for forest clearance as per this law is given in Appendix -II. The steps for forest clearance are briefly described below:

#### **A) Route Alignment**

Preliminary route selection for transmission lines is done by using tools such as the forest atlas and Survey of India maps. During route alignment, all possible efforts are made to avoid the forest area or to keep it to the barest minimum. Whenever it becomes unavoidable due to the geography of terrain or heavy cost involved in avoiding it, different alternative options are considered to minimize the requirement of forest area. Modern tools like GIS/GPS are used for finalization of route. For selection of optimum route, the following criteria are taken into consideration to the extent possible that:

- (i) the proposed transmission line bypasses human habitation;
- (ii) no monuments of cultural or historical significance are affected
- (iii) the proposed transmission line does not adversely impact any local community assets such as playgrounds, schools, places of worship etc.
- (iv) a transmission line avoids environmentally sensitive areas, eco-sensitive zones, forests, sanctuaries, national parks, tiger / biosphere reserves, and CRZ covered coastal areas
- (v) the line route impacts minimally on natural resources.

To accomplish this, route selection of transmission line is undertaken in close consultation with representatives of the State Forest, Environment and Revenue Departments. Site-specific alterations

are made to avoid environmentally sensitive areas and settlements at execution stage. Alignments are generally sited 10-15 km away from major towns, whenever possible, to provide for future urban expansion.

## B) Right of Way

Right of Way (ROW) width depends on the line voltage. A maximum width of ROW for transmission lines on forest land and minimum clearances between conductors and trees to be adhered in route selection as specified in IS: 5613 and by the MoEF guidelines given in Table 2.1.

**TABLE 2.1: ROW CLEARANCE BETWEEN CONDUCTORS AND TREES**

TRANSMISSION VOLTAGE (IN KV)	MAX. ROW* (IN METERS)	MINIMUM CLEARANCE BETWEEN CONDUCTORS & TREES* (IN METERS)
132	27	4.0
220	35	4.6
±500 HVDC	52	7.4
400 D/C / S/C	46 / 52	5.5
800	64-85	9.0

*\*As per the IS: 5613 and MoEF guidelines finalized in consultation with CEA.*

At present, a width clearance of 3 meter is generally allowed below each conductor for the movement of tension stringing equipment. Suggestions to increase width area for 400 KV and above lines, based on the type of conductor used (3m for twin, 5 m for triple and 7 m for quad conductor), is also considered on case to case basis by MoEF. Trees on such strips are felled but after stringing is complete and natural regeneration is allowed to specific heights and whenever required the tree plantation is taken. Forest department is requested to undertake felling, pollarding, and pruning of trees for electrical clearance, whenever necessary, under the advice of POWERGRID. One strip is left clear of vegetation to allow for maintenance of the transmission line (**Appendix –III**).

## C) Formulation of Proposal

After finalization of route-alignment and ROW width, POWERGRID submits details in prescribed proforma (refer **Appendix IV**) to the respective Nodal Officer (Forest) of concerned State Government. Nodal Officer forwards the details to the concerned Divisional Forest Officer (DFO) for formulation of proposal for processing of clearance under the Forest (Conservation) Act, 1980. The DFO then

surveys the relevant forest area required for the construction of transmission line under the possible alternatives.

Forest authorities conduct a cost-benefit analysis to assess the loss of forest produce, loss to environment vis-à-vis benefits of project (**Appendix –V**).

Compensatory Afforestation (CA) scheme is prepared to compensate loss of vegetation and is an important part of the proposal. For CA, the forest authorities identify degraded forestland of twice the area of affected land. POWERGRID provides undertaking/ certificate to meet the cost of compensatory afforestation and the Net Present Value of forestland diverted. The NPV rate varies from Rs. 4.38 to Rs. 10.43 lakh per hectare depending upon the type of forest (as per Supreme Court order dt. 28.03.08 and 09.05.2008) and is payable to the “Compensatory Afforestation Fund Management and Planning Authority” (CAMPA). As per Supreme Court order, NPV for a wildlife sanctuary area shall be 5 times of normal forest and for a national park area, it will be 10 times of normal forest. If the forest is rich in wildlife, then the Chief Wildlife Warden also gets a detailed assessment report prepared, including measures to protect the wildlife, which is submitted with the proposal.

#### **D) Approval of Proposal**

The proposal is submitted to the State Forest Department and then forwarded to the Principal Chief Conservator of Forests in the State and finally to the State Secretariat. The State Government recommends the proposal for further processing and approval to

- a) Concerned Regional Office of the MoEF if the area involved is 40 hectares or less
- b) MoEF, New Delhi, if the area is more than 40 hectares.

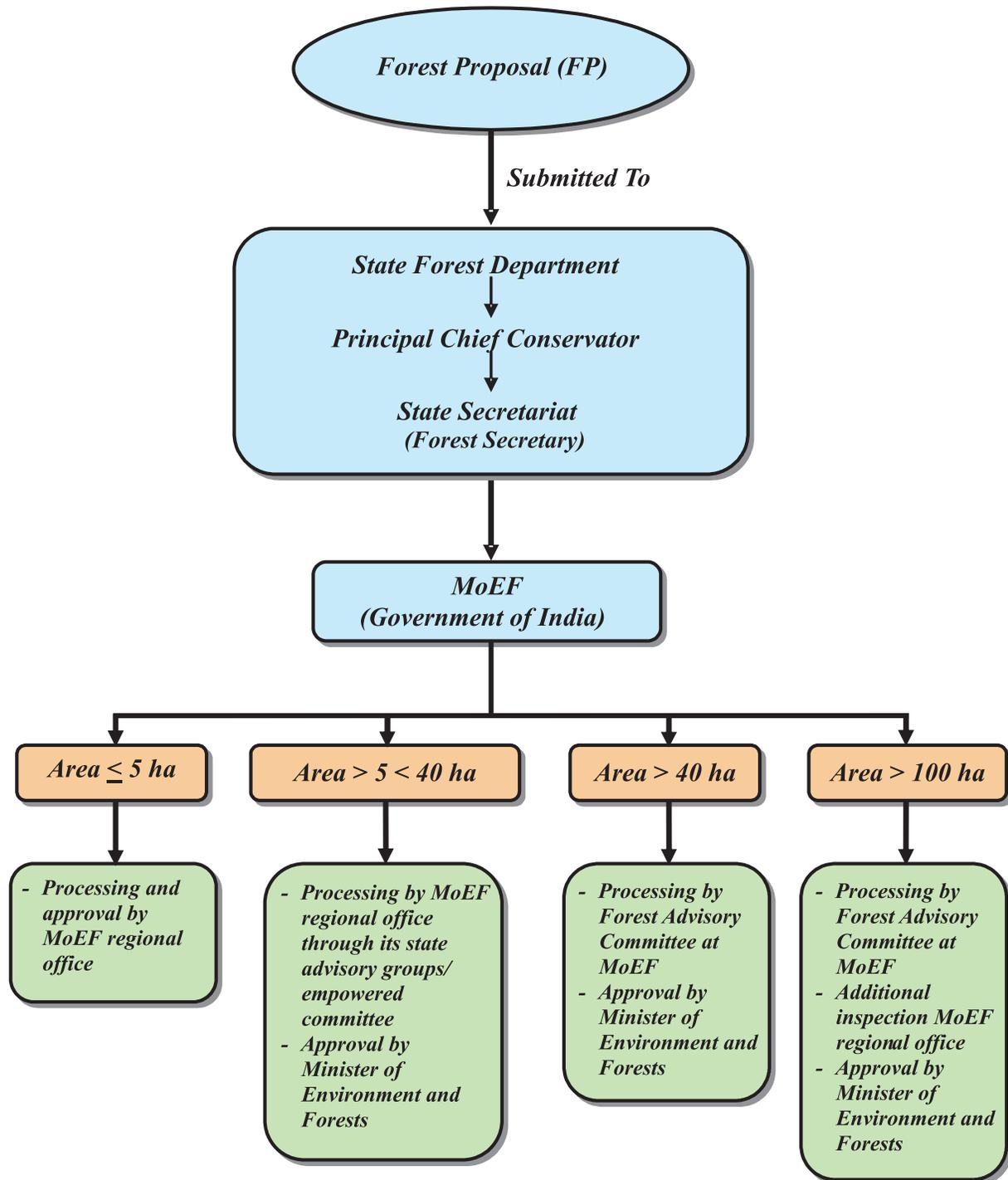
The approval process is illustrated in **Figure 2.1**.

To facilitate speedy approval of forest proposal involving lesser area, Ministry of Environment & Forests had established Regional Offices in each region for processing and approving these proposals (**Appendix -VI**).

The MoEF approves the proposal in two stages. In principle, or first stage, approval is accorded with certain conditions depending upon the case. Second stage, or final, approval is accorded by the MoEF after receiving the compliance report from State Government (**Appendix -II**).

**POWERGRID** FOLLOWS THE PRINCIPLE OF AVOIDANCE BY SKIRTING FORESTLAND UNLESS IT IS INESCAPABLE AND IN SUCH INSTANCES OBTAINS PRIOR CLEARANCE FROM FOREST AUTHORITIES. IT ABIDES BY THE RELEVANT GUIDELINES, INCLUDING THE DIRECTIONS OF THE SUPREME COURT FROM TIME TO TIME.

**FIGURE 2.1: FOREST CLEARANCE APPROVAL PROCESS**



### 2.3.3 ENVIRONMENT (PROTECTION) ACT, 1986

The Environment (Protection) Act 1986 was introduced as an umbrella legislation for the protection and improvement of environment. The Act and the Rules thereunder require that environmental

clearances is obtained (Appendix-VII) for specific types of new projects or expansion of existing projects (addressed under Environmental Impact Assessment Notifications, 1994 and 2006) and for submission of an environment statement to the State Pollution Control Board annually. Project categories specified under the schedule of the EIA notification is provided in Appendix VIII. Environmental clearance is not applicable to power transmission projects.

Since transmission line projects are non polluting in nature and do not involve any disposal of solid waste, effluents and hazardous substances on land, air and water, so limited requirements of Environment (Protection) Act 1986 are applicable. However, through a notification dated May 7, 1992, under the Environment (Protection) Act 1986 power transmission projects located in two districts in the Aravalli range (viz. Alwar in Rajasthan and Gurgaon (divided into 2 districts viz Gurgaon and Mewat in April 2005) in Haryana require environmental clearance from the MoEF.

POWERGRID undertakes environmental assessment for all projects as a standard management procedure, as laid down in the ESPP, and also functions within permissible standards of ambient air quality and noise levels as prescribed by national laws and international regulations.

The other relevant rules and regulations under the Environment (Protection) Act 1986 applicable to the operations of POWERGRID are described below:

**A) BATTERIES (MANAGEMENT AND HANDLING) RULES, 2001**

By notification dt. 16th May, 2001 under Sections 6, 8 and 25 of the Environment (Protection) Act 1986, the MoEF has put certain restrictions on the disposal and handling of used batteries. Thus, it is the responsibility of the bulk consumer (POWERGRID) to ensure that the used batteries are deposited with the dealer, manufacturer or registered recycler for handling and disposal. A half-yearly return is filed as per form-8 (Appendix -IX) to the concerned State Pollution Control Board.

**B) HAZARDOUS WASTES (MANAGEMENT AND HANDLING) AMENDMENT RULES, 2003**

These rules classify used mineral oil as hazardous waste under the Hazardous Wastes (Management & Handling) Rules, 2003, that require proper handling and disposal. The requirements for disposal of used mineral oil as per the rules are:

- The used oil can be sent / sold for re-refining to registered recyclers, if it meets the specification in Schedule -5 (refer Appendix X).
- The waste oil which is not suitable for re-refining (i.e. does not meet the specifications listed in Schedule-5), can be used in furnaces if it meets the specifications laid down in Schedule -6 (refer Appendix X)
- Any waste oil which does not meet the specifications in Schedule-6 shall not be auctioned or sold, but shall be disposed of in a hazardous waste incinerator.

Used mineral oil generated at the POWERGRID substations meets the requirements of Schedule 5 of the above mentioned Rules. POWERGRID seeks authorisation for disposal of hazardous waste from concerned State Pollution Control Boards (SPCB) as and when required. The oil can be auctioned to authorised/registered re-refiners and information to the respective SPCB is submitted in Form - 13 as per Appendix XI.

### **C) OZONE DEPLETING SUBSTANCES (REGULATION AND CONTROL) RULES, 2000**

By notification dt. 17th July, 2000 under Sections 6, 8 and 25 of the Environment (Protection) Act 1986, the MoEF has notified rules for the regulation/ control of Ozone Depleting Substances (ODS) under the Montreal Protocol. As per the notification, certain control and regulation has been imposed on manufacturing, import, export, and use of these compounds. POWERGRID is following the provisions of the notification and is phasing out all equipment, which uses these substances, and is aiming at CFC free organisation in the near future.

#### **2.3.4 BIOLOGICAL DIVERSITY ACT, 2002**

The Ministry of Environment and Forests has enacted the Biological Diversity Act, 2002, following the Convention on Biological Diversity signed at Rio de Janeiro in 1992, of which India is a party.

This Act is meant to "provide for the conservation of biological diversity, sustainable use of its components, and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected therewith or incidental thereto."

POWERGRID is fully conscious of the provisions of this enactment and will abide by the same as best as possible.

#### **2.3.5 THE SCHEDULED TRIBES & OTHER TRADITIONAL FOREST DWELLERS (RECOGNITION OF FOREST RIGHTS) ACT, 2006**

The Act recognizes and vests the forest rights and occupation in forest land in forest dwelling Scheduled Tribes and other traditional forest dwellers who have been residing in such forests for generations but whose rights could not be recorded, and provides for a framework for recording the forest rights so vested and the nature of evidence required for such recognition and vesting in respect of forest land.

The definitions of forest dwelling Schedule Tribes, forest land, forest rights, forest villages, etc. have been included in Section 2 of the Act. The Union Ministry of Tribal Affairs is the nodal agency for implementation of the Act. While field implementation is the responsibility of the government agencies, POWERGRID is committed to abide by the provisions of the act, if any portion of a transmission line passes through any forest land to which the Act applies.

## 2.4 FUNDING AGENCIES REQUIREMENTS - ENVIRONMENT

The environmental requirements of the Funding Agencies pertinent to POWERGRID are: World Bank (WB) **Operational Policies (OP) 4.00** Piloting the Use of Borrower Systems to Address Environmental and Social Safeguard Issues in Bank-Supported Projects<sup>1</sup> ; **Asian Development Bank (ADB) Operations Manuals (OM) FI/BP and Japan Bank for International Cooperation (JBIC) Environmental Guidelines.**

The funding agencies procedures for environmental assessment (EA) of different development projects are outlined in these guidelines. These guidelines classify development projects in three categories - A, B & C- based on possible environmental and social impacts. The WB & ADB have another category - FI - applicable only to projects involving a credit line through a financial intermediary. Brief description of three major categories is as under:

**Category A:** Projects having significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These projects require a detailed EIA to address significant impacts.

**Category B:** Projects having some adverse impacts that are not as significant as of Category-A projects. These impacts are generally site specific and addressed through carefully designed mitigating measures. These projects do not require full EIA but would normally require an environmental review through Initial Environmental Assessment (WB) or Initial Environment Examination (ADB) guidelines.

**Category C:** Projects having minimal or no adverse environmental impacts. No EIA or environmental review is required for such projects.

Transmission line projects fall under Category-B, having limited impact, which are minimized through mitigation/ management measures and, therefore, require only an environmental review. However, due to the size of the investment, and its spread over to substantive portion of the country and its importance to the National Grid in India, POWERGRID projects might be considered under category-A and may be subjected to Environmental Assessment (EA).

EA is initiated as early as possible in project cycle and undertaken concurrently with economic, financial, institutional, social, and technical analysis of the project. Moreover, POWERGRID takes appropriate measures to prevent, minimize, mitigate, or compensate for adverse impact and improve environmental performance. EA takes into account the natural environment, human health and safety, and social aspects and trans-boundary and global environmental aspects. During EA process,

---

<sup>1</sup> OP 4.00 includes within its scope the Objectives and Operational Principles of World Bank safeguard policies. Of these, the World Bank has determined, per its SDR, that this ESPP is fully equivalent to the following safeguard policies related to the environment: Environmental Assessment, Natural Habitats, Forests, and Physical Cultural Resources.

public is kept informed at every stage of project execution and their views are respected in decision-making.

## **2.5 PRESCRIPTIVE FRAMEWORK - ENVIRONMENT**

The prescriptive framework involves applicable legislations, relevant policies, and the implementing agencies. The prescriptive framework also covers international treaties and conventions signed and ratified by India.

### **2.5.1 APPLICABLE LEGISLATIONS**

#### **A) POLLUTION PREVENTION AND CONTROL**

India initiated legislation and set up pollution control institutions between late 1970s and early 1980s. As a result, air emission and water effluent standards for various activities were established. Pollution Control Boards (PCBs) were set up under these laws to control emissions, sewage, and industrial effluent by approving, rejecting, or conditioning applications for "Consent to Establish" and "Consent to Operate".

POWERGRID, by the very nature of its operations, is not involved with activities that are grossly polluting in nature. Even then, its approach is to aim for "Zero Pollution" in its projects, irrespective of a compliance requirement.

POWERGRID follows the rules and notifications under the Environment (Protection) Act 1986, which prescribes the Ambient Air Quality Standards with respect to noise and functions within permissible levels as prescribed by Indian and International standards.

#### **B) CONSERVATION OF NATURAL RESOURCES**

- POWERGRID is fully conscious of the need to conserve the natural resources and avoids ecologically sensitive areas, eco-sensitive zones, forests, sanctuaries, national parks, tiger / biosphere reserves, and CRZ covered coastal areas, as far as possible. In case traversing forest land is unavoidable, clearance from the forest authorities is obtained under the Forest (Conservation) Act, 1980. Other relevant laws and / or regulations relating to natural resources that have bearing on the working of POWERGRID are:

- Indian Forest Act 1927;
- Wildlife (Protection) Act, 1972.
- Coastal Regulation Zone (CRZ) Notifications, 1991 & 2008
- Regulatory Framework for Conservation of Wetlands, 2008 (Draft)

Appendix VIII gives the relevant excerpts from the laws related to natural resources.

### **2.5.2 RELEVANT POLICIES**

The policy framework is contained in the following:

- National Forest Policy, 1988,
- National Conservation Strategy and Policy Statement on Environment and Development, 1992,
- Policy Statement for Abatement of Pollution, 1992
- Wildlife Conservation Strategy 2002-15,
- National Environment Policy (NEP), 2006.

In addition, India is a Party to several International Treaties and Conventions relating to environment, as given in Appendix XII. Some of these have trans-boundary implications.

POWERGRID is fully conscious of the above-mentioned policy framework, including trans-boundary issues, and will abide by the relevant requirements in its operations.

### **2.5.3 IMPLEMENTING AGENCIES**

The nodal agency at the centre for planning, promoting, and coordinating environmental programmes is the Ministry of Environment and Forests (MoEF). POWERGRID interfaces with MoEF at central and regional levels. The Central Pollution Control Board has executive responsibilities for prevention and control of all forms of pollution. Correspondingly, there are Departments of Environment & Forests and State Pollution Control Boards to perform the above functions at the State level. As power transmission is inherently a non-polluting industry, interaction with these boards is not anticipated. Due to liberalisation, POWERGRID's activities may require international interface and would honour the international regimes as covenanted by the Govt.

### **2.6 HEALTH AND SAFETY REQUIREMENTS**

POWERGRID maintains safety as a top priority, apart from various labour laws dealing with workers' health and safety, such as the Workmen's Compensation Act. POWERGRID has a dedicated unit to oversee all health and safety aspects of its projects under the Operation Service Department and has framed guidelines/ checklist for workers' safety based on prevailing international practices (including WBG EHS guidelines for Transmission and Distribution) as its personnel are exposed to live EHV apparatus and transmission lines. These guidelines include work permits and safety precautions for work on the transmission lines during construction and operation. See Appendix XIII for detailed checklist.

## 2.6.1 EXPOSURE TO ELECTRO MAGNETIC FIELDS (EMF)

There have been some concerns about the possibility of an increased risk of cancer from exposure to electromagnetic radiation from overhead transmission lines. However, a review by the World Health Organization (WHO) held as part of the International EMF Project (1996), concluded that:

"From the current scientific literature there is no convincing evidence that exposure to radiation field shortens the life span of humans or induces or promotes cancer".

Currently no EMF exposure guidelines have been framed in the country. However, international guidelines in this regard are detailed below:

- State Transmission Lines Standards and Guidelines in the USA
- International Commission on Non-Ionizing Radiation Protection (ICNIRP)
- US National Council on Radiation
- American Conference on Government and Industrial Hygiene (ACGIH)

The magnetic field below 400 kV overhead power transmission lines is estimated at 40 T. The ICNIRP guidelines present limiting exposure to EMFs, although it adds that the levels quoted should not be interpreted as distinguishing 'safe' from 'unsafe' EMF levels. The ICNIRP guideline for the general public (up to 24 hours a day) is a maximum exposure level of 1,000 mG or 100 T. A study carried out by the Central Power Research Institute (CPRI) on POWERGRID lines reveals that the EMF about 1 m above ground near a 400 kV single circuit transmission line range from 3-7.2 T in the RoW. The impact of EMF is also dependent on the duration of exposure and therefore no significant adverse impact is envisaged. POWERGRID complies with international norms for field strength limits, which are certified by Power Technologies Inc. (Appendix -XIV).

## 2.7 MANDATORY REQUIREMENTS - SOCIAL

### 2.7.1 NATIONAL REHABILITATION AND RESETTLEMENT POLICY, 2007

The Ministry of Rural Development, GoI, notified The National Rehabilitation, and Resettlement Policy in October 2007. It is applicable to all development projects involving displacement of 400 or more families en masse in plain areas or 200 or more families en masse in hilly areas.

The policy essentially addresses the rehabilitation of PAFs and provides a broad canvas for an effective consultation between PAFs and the project authorities. It has also listed R&R measures and entitlements for different category of PAFs.

The national policy on R&R is not attracted by the transmission projects, as these do not involve displacement of a large number of families. However, POWERGRID has adopted entitlement

benefits listed in the national R&R policy in its "Social Entitlement Framework" that is being implemented wherever land acquisition for substations is undertaken.

## 2.7.2 RIGHTS OF WAY AND COMPENSATION UNDER ELECTRICITY LAWS

If ROW is required through a forest area, the provisions of the Forest (Conservation) Act 1980 are attracted. In case of agricultural land, section 68 (5 & 6) of the Electricity Act 2003 provides the basis for compensation to be paid for any damage. POWERGRID follows these legal provisions and the CEA guidelines. (Appendix-XV and Appendix -XVI).

## 2.7.3 PROVISIONS UNDER THE LAND ACQUISITION ACT, 1894 FOR SUB-STATIONS

Due to the flexibility exercised by POWERGRID in selecting sites, no physical displacement of PAFs has taken place and there has been no significant loss of livelihoods. However, POWERGRID strictly follows the procedures laid down under the Land Acquisition Act (LA Act) 1894 when land is acquired for sub-stations. The Act specifies that in all cases of land acquisition, no award of land can be made by the government authorities unless all compensation has been paid. POWERGRID follows an activity schedule for land acquisition and for R&R (Table 2.2) the land acquisition process is illustrated in Figure 2.2. These are further reinforced taking into consideration POWERGRID's entitlement framework and public consultation process.

**Table 2.2: POWERGRID's Activity Chart for Land Acquisition and R&R**

ACTIVITY <sup>2</sup>
➤ Submission of cases for land acquisition
➤ Section 4 notification
➤ Spot verifications
➤ Scope for objections from public
➤ Publication of Section 6 declaration
➤ Marking of land, notice to persons and award by Collector
➤ Finalisation of R&R package
➤ Payment of compensation and acquisition of land
➤ Handing over land to POWERGRID
➤ Implementation of RAP/SAMP at site
o Extending R&R benefits to eligible families
o Regular Monitoring of RAP implementation
➤ Completion/Review of RAP Implementation

<sup>1</sup> The present LA act is under amendment. Once the proposed amendments are approved and notified, it will be followed in all cases of land acquisition.

<sup>2</sup> Proper justification for invoking Section-17 (emergency clause) shall be provided in the Rehabilitation Action Plan (RAP)

Apart from inbuilt consultation process of LA act, public consultation/information by POWERGRID is an integral part of the project implementation. Public is informed about the project at every stage of execution. During socio-economic survey taken up parallelly with land acquisition process, POWERGRID's site officials, along with consultants, meet people and inform them about the land acquisition details, proposed R&R measures and compensation packages. Draft RAP is discussed with all PAPs in open forum for their feedback. The process of such consultation and its documentation is a continuous process during project implementation and even during O&M stage.

#### **2.7.4 THE PROVISIONS OF THE PANCHAYATS (EXTENSION TO THE SCHEDULED AREAS) ACT, 1996**

The Act provides for extension of the provisions of Part IX of the Constitution relating to the Panchayats to the Scheduled Areas. As per the provisions of the Act, the concerned Gram Sabhas or Panchayats shall be consulted before making the acquisition of land in a Scheduled Area for any development project and before re-settling or rehabilitating the affected persons.

POWERGRID shall avoid such areas to the extent possible. Where unavoidable, it will consult the concerned Gram Sabha / Panchayat for obtaining their consent as per the provisions of the Act.

#### **2.7.5 INDIAN TREASURE TROVE ACT, 1878 AS AMENDED IN 1949**

The Act provides for procedures to be followed in case of finding of any treasure, archaeological artefacts etc. during excavation.

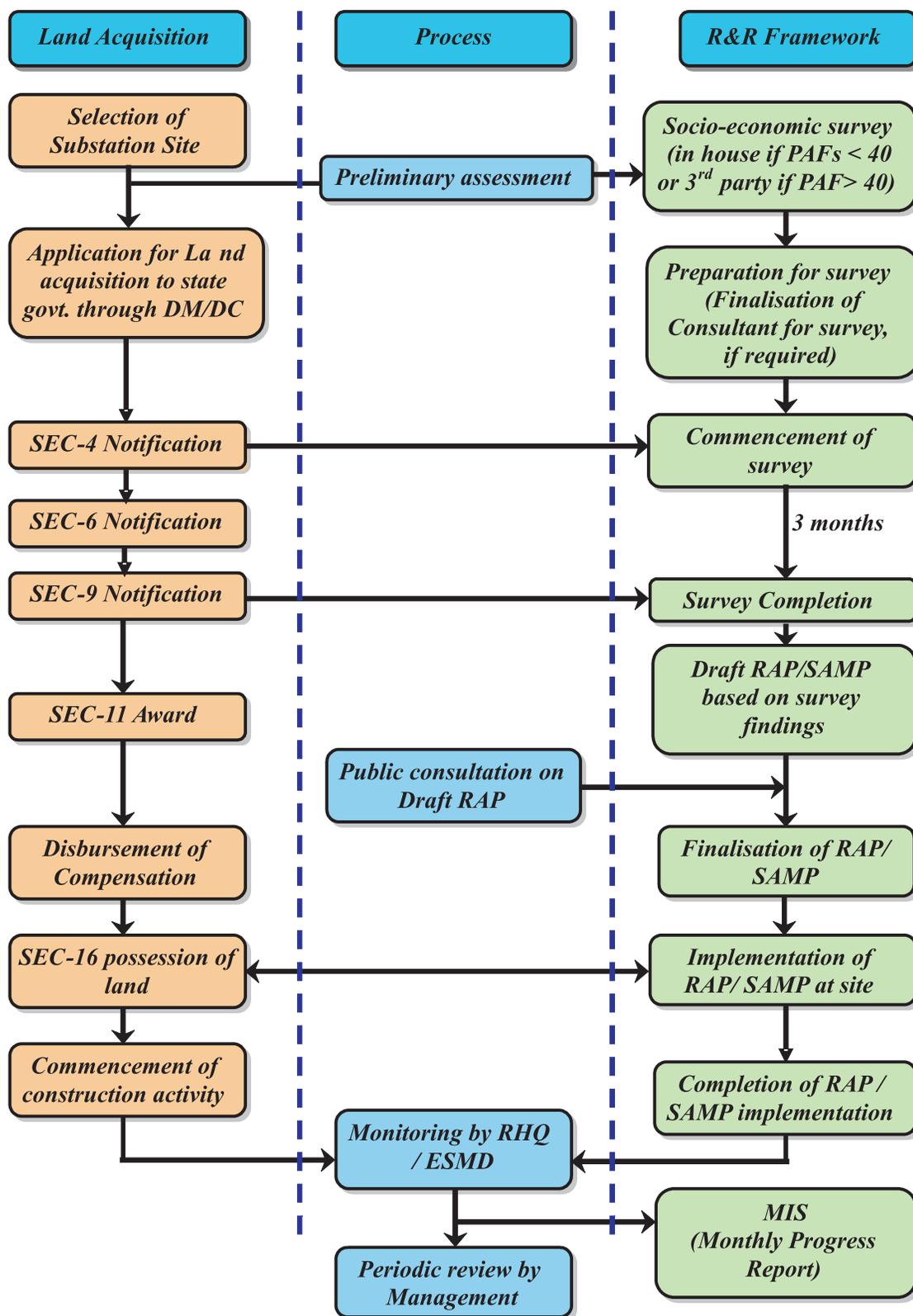
Possibilities of such discoveries are quite remote due to limited and shallow excavations. However, in case of such findings, POWERGRID will follow the laid down procedure in the Section-4 of Act.

#### **2.7.6 THE RIGHT TO INFORMATION ACT, 2005**

The Act provides for setting out the practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, the constitution of a Central Information Commission and State Information Commissions and for matters connected therewith or incidental thereto.

POWERGRID is a designated Public Authority under the Act. The process for obtaining information and details of designated officials is posted on the POWERGRID website.

Figure 2.2: Land Acquisition Process



## 2.8 POWERGRID'S SOCIAL ENTITLEMENT FRAMEWORK

The social entitlement framework is based on progressive trends in national policies for Project Affected Families, with respect to the inclusion of Project Affected People (PAPs), and the nature and extent of compensation. In order to provide a framework for the R&R process and to supplement existing procedures, details of entitlements are shown in Table 2.3. POWERGRID reiterates that displacement is not, and will not be, a major consequence of its projects. Irrespective of whether displacement occurs, the entitlement framework will be a base for all its management procedures. Refer Appendix -XVII for an elaboration of POWERGRID's social entitlement framework and Appendix - XVIII for Terms of Reference (TOR) for baseline socio-economic survey and preparation of rehabilitation action plan (RAP)

The basic categories of impacts under this entitlement framework are:

- loss of land;
- loss of structure;
- loss of source of livelihood;
- loss of access to common resources and facilities;
- loss of standing crops and trees;
- losses during transition of displaced persons/establishments; and
- losses to host communities.

### A) INCLUSION OF PERSONS WITHIN THE DEFINITION OF "PAP"

The definition of PAP includes people who lose land, livelihoods, homesteads, structures, and access to resources, because of project activities.

### B) EXTENT AND NATURE OF ENTITLEMENTS

POWERGRID will provide "adequate compensation" as required as per law and compensate at replacement costs. If required, POWERGRID will supplement this with rehabilitation assistance and other measures to ensure that PAPs are not made worse off by their operations. In case the PAPs opt for cash compensation for loss of land or structure, they will be, in addition, provided rehabilitation assistance. Appendix-XVII gives details of income generating options under POWERGRID's entitlement framework, which are only illustrative. Further site-specific schemes depending upon the ground situation and available resource base may be evolved in consultation with the PAFs. However, in case the PAFs opt for "land for land" they will not receive any further entitlements except transition benefits, wherever applicable.

**C) RESETTLEMENT ON AN INDIVIDUAL BASIS**

POWERGRID will focus on the family unit when, and if, resettlement occurs in any project and will adopt the entitlement framework given in Table 2.3 for its projects, which is based on the national policy and other progressive directives emanating from the government or the funding agency.

**D) RESETTLEMENT AND REHABILITATION AS A TIME BOUND ACTIVITY**

POWERGRID will maintain a time schedule for R&R, which will be dovetailed into the project cycle, ensuring that implementation of the action plan is completed within the first 12-15 months of project execution.

**E) CUT-OFF DATES**

Cut-off dates will be set out to identify eligible PAFs to prevent subsequent influx of encroachers or others who wish to take advantage of R&R benefits. The cut-off date shall normally be the date of the section 4 notification under the LA Act.

**F) BUDGET**

The total cost of R&R, including the cost of compensation, relocation and rehabilitation, social assessment, planning, implementation, supervision monitoring and evaluation, shall be included as an integral part of the total project cost

**G) PUBLIC DISCLOSURE, CONSULTATION, AND PARTICIPATION**

Public consultation will be an integral part of the process throughout the planning and execution of a project details of which are listed in Appendix XIX. All assessment report are also posted on our web site for information to all stakeholders. The Environment and Social Management Team (ESMT) will interact closely with the State authorities and district administration while implementing the RAP. Although responsibility of RAP implementation lies with POWERGRID, it may be entrusted to a reputed institution (Govt. or Non Govt.) enjoying the confidence of the people in the area. However, support of the State authorities will be sought as per requirement.

Implementation will be monitored by a committee constituted under the chairmanship of concerned head of the region (POWERGRID). Other members, including representatives of local authorities, panchayat, PAFs, and NGOs, will oversee overall implementation of RAP and shall forward quarterly reports to the POWERGRID management. Environment and Social Management Department (ESMD) shall co-ordinate RAP implementation and its monitoring with Regional Headquarters (RHQ) and site office on regular basis. Corrective measures, if required, will be incorporated into the Plan. Apart from the State authorities, PAFs and well-reputed persons in the area will also be consulted during the preparation and implementation of the Plan.

## F) GRIEVANCE/ REDRESSAL MECHANISM

A committee will be set up comprising of POWERGRID, representatives of local authorities, PAPs, Gram Panchayat or any well-reputed person as agreed with the local authorities and PAPs. This committee will address the grievances of the PAPs.

People of village in general and PAFs in particular are informed/apprised about the existence of such committee during consultation process and are advised that in case of any grievance regarding Land acquisition/RAP can approach Chairman & Convenor of Grievance Redressal Committee (GRC) or the site office of the POWERGRID. Meeting of the GRC shall be convened within 15 days of receiving a grievance for its discussion /solution. GRC endeavour will be to pronounce its decision within 45-90 days of receiving the grievance.

**Table 2.3: POWERGRID's Social Entitlement Framework<sup>1</sup>**

SN	TYPE OF ISSUE/IMPACT	BENEFICIARY	ENTITLEMENT OPTIONS
1.	<b>Loss of land</b>		
a)	<b>Homestead land</b> with valid title, or customary or usufruct rights	Titleholders	(i) Cash compensation as fixed by authorities + Equivalent area of land for alternate home not exceeding 150 sq.m. in rural areas and 75 sq.m. in urban areas free of cost preferably in same village/ panchayat/area + Registration Charges
b)	<b>Agricultural Land</b>		
(i)	With valid title, or customary or usufruct rights	Titleholders	Alternative land of equivalent production potential but not more than 1 hectare of irrigated land or 2 hectare of un-irrigated land subject to <ul style="list-style-type: none"> <li>■ agriculture based PAPs (rendered landless)</li> <li>■ availability (State Govt./ Voluntary sellers at existing rate) within same panchayat/ block</li> <li>■ Registration Charges</li> </ul> + Cash compensation for the extent of land against which replacement land is not provided or Cash compensation at replacement cost <sup>2</sup> (Compensation as fixed by authorities under LA act) + Rehabilitation Assistance <sup>3</sup> as follows: a) 750 days of minimum agricultural wages for families losing entire land/rendered landless. OR option for opting IGS of equivalent amount for regular income;

<sup>1</sup> The proposed entitlement framework will be applicable only in the case of land acquisition for substation. However, if any State has its own R&R policy and is found to be better (barring provision of employment) than PAPs shall be given option to chose between the two.

<sup>2</sup> Replacement cost will include compensation as fixed by competent authorities under LA act including solatium and interest + Rehabilitation Assistance

<sup>3</sup> Rehabilitation assistance amount shall not exceed the value of compensation

SN	TYPE OF ISSUE/IMPACT	BENEFICIARY	ENTITLEMENT OPTIONS
			<p>b) 500 days of minimum agricultural wages for families losing part land and becoming marginal farmer;</p> <p>c) 375 days of minimum agricultural wages for families losing part land and after loss of land may be categorised as small farmers.</p> <p>d) Minimum agricultural wages ranging between 100 200 days (depending upon the impact) for families (big farmers) losing part/negligible land and left with sufficient land to sustain them.</p>
(ii)	tenants, sharecroppers, leaseholder	Individual	Reimbursement for unexpired lease + Rehabilitation Assistance equivalent to 200 days of minimum agricultural wages
(iii)	Nontitled (Encroacher)	Individual	Rehabilitation Assistance equivalent to 375 days of minimum agricultural wages if cultivating the acquired land continuously for last 3 years from section-4 notification
<b>2.</b>	<b>Loss of structure</b>		
<b>a)</b>	<b>House</b>		
(i)	with valid title, or customary or usufruct rights	Titleholders	Cash compensation at replacement cost (without deduction for salvaged material) plus Rs. 25,000/- assistance (based on prevailing GOI norms for weaker section housing) for construction of house plus transition benefits as per category-6
(ii)	Tenant, leaseholder	Individual	Lump sum payment equivalent to 6 month rent (on production of proof) or Rs. 5000/- which ever is higher to re-establish residence
(iii)	Squatters	Household / Family	Cash compensation for structure + Lump sum payment ranging between Rs. 5000 to Rs. 25000/- (depending on type of structure and family size) as one time payment towards disturbance + Transition benefits as per category-6.
(iv)	Cattle shed	Owner/ Family	Cash compensation as fixed by authorities plus Rs. 15,000/- for re-construction of cattle shed.
<b>b)</b>	<b>Shop/Institutions</b>		
(i)	with valid title, or customary or usufruct rights	Individual	Cash compensation plus Rs. 25,000/- for construction of working shed/shop plus rehabilitation assistance equivalent to 1 year income plus transition benefits as per category-6
(ii)	tenants, leaseholder	Individual	Transition allowance equivalent to 1 year income + transition benefits as per category-6
(iii)	squatters	Individual	Cash compensation for structure plus transition allowance equivalent to 1 year income plus transition benefits as per category-6

SN	TYPE OF ISSUE/IMPACT	BENEFICIARY	ENTITLEMENT OPTIONS
3.	<b>Loss of livelihood/ Wage/Occupation</b> Agriculture/ commercial	Individual	Rehabilitation Assistance equivalent to 625 days of minimum agricultural wages preferably in shape of Income Generating Scheme (IGS) or in shape of Units in joint name of spouse under Monthly Income Scheme for sustainable/ regular income + Provision for need based short training on development of entrepreneurship skills/ facilities on selected IGS
4.	<b>Loss of access to Common Property Resources (CPR) and facilities</b>		
a)	Rural common property resources	Community	Replacement/ augmentation of CPRs/ amenities or provisions of functional equivalence
b)	Urban Civic amenities	Community	Replacement/ access to equivalent amenities/ services
5.	<b>Loss of standing crops/trees</b>		
a)	With valid title	Family	For either category, only the cultivator will get compensation at market rate for crops and 8 years income for fruit bearing trees
b)	Tenant/ lessee		
6.	<b>Losses during transition of displaced persons/ establishments/ Shifting /Transport</b>	Family/unit	Provision of transport or equivalent cash (Rs. 10,000/- minimum) for shifting of material/ cattle from existing place to alternate place
7.	<b>Losses to Host Commu- nities/Amenities/ Services</b>	Community	Augmentation of resources of host community to sustain pressure of PAPs
8.	<b>Additional benefits for Tribals</b>	Tribals	Land for land option shall be preferred  Additional relocation allowance of 500 days minimum agricultural wages if land for land option is not feasible  Resettlement if involved, close to their natural habitat

Note : Vulnerable group like women headed/SC/physically handicap/ disabled families under categories 1-3 shall be considered for additional need based benefits.

### **ADDITIONAL BENEFITS FOR TRIBAL PEOPLE**

As far as possible, the practice in siting a substation is to avoid land of tribals. However, if tribal land acquisition becomes inevitable, the following benefits, in addition to those mentioned above, shall be provided to the affected tribal families:

- land for land option wherever possible, shall be preferred for rehabilitation of affected families;
- tribal PAFs shall be entitled to additional Rehabilitation Assistance (RA) of 500 days minimum agricultural wages if land for land option is not feasible or not opted and PAF

- willing to adopt mainstream;
- if resettlement is involved they will be re-settled as close to their natural habitat as possible so that they can retain their ethnic, linguistic and cultural identity; and
- all tribal PAFs shall be consulted through their representative or group engaged in their welfare activities for all their rehabilitation measures.

## 2.9 FUNDING AGENCIES REQUIREMENTS – Social

POWERGRID's mandatory requirements vis-à-vis Funding Agencies are comprehensive Resettlement and Rehabilitation (R&R) guidelines and an entitlement framework as per World Bank Operational Policy 4.001 and O.P. 4.10 Indigenous Peoples,<sup>2</sup> and ADB's Operations Manual OM-F2/BP.

### A) ADB's Operations Manual –F2/BP: Involuntary Resettlement

This describes Bank's policies and procedures on involuntary resettlement as well as conditions that borrowers are expected to meet during operations involving resettlement. Its objective is to avoid such resettlement as far as possible. It also classified project into three categories viz:

- **Category-A:** where resettlement is significant and involves physical displacement of more than 200 persons, which require a detailed resettlement plan.
- **Category-B:** where resettlement is not that significant and requires a short resettlement plan.
- **Category-C:** where no resettlement of peoples are foreseen and neither require resettlement plan nor a resettlement framework.

POWERGRID emphasizes that physical displacement is not an issue with transmission projects because land below tower/ line is not acquired and only a small piece of land is required for substations. However, all affected persons/ families shall be provided compensation and rehabilitation assistance along with other measures as per POWERGRID's social entitlement framework which is based on these directives/ manuals and national R&R Policy to restore income/ livelihood of all affected persons.

## 2.10 PRESCRIPTIVE FRAMEWORK – Social

The prescriptive framework for social issues relevant to POWERGRID transmission projects include the State legislation, and policies of operational agencies and other relevant commissions set up

<sup>1</sup> The World Bank has determined, per its SDR, that this ESPP is fully equivalent to the Objectives and Operational Principles per OP 4.00 relevant to the Bank's social safeguards relating to Involuntary Resettlement and Indigenous Peoples.

<sup>2</sup> Although the World Bank has determined that this ESPP is equivalent to the Objectives and Operational Principles of OP 4.00 with regards to Indigenous Peoples,, until such time as POWERGRID undertakes a project in a tribal area, requiring the preparation and implementation of a Tribal Peoples Development Plan, the World Bank will continue to rely on OP 4.10 for any World\_Bank-supported POWERGRID projects that affecting Indigenous Peoples.

under the law.

### **2.10.1 National and State Laws and Policies Relating to Land Acquisition and Issues of Resettlement and Rehabilitation**

POWERGRID is informed of various provisions of laws relating to land acquisition as well as new developments in this area, such as:

#### **A) Land Acquisition Act 1894 (Amended- 1984) and State Amendments**

This is the principal law dealing with acquisition of private land by the State for “a public purpose”. Progressive liberalisation and industrialisation have led to increase in compulsory land acquisitions. Land acquisition process goes through a number of stages starting from notification to payment of compensation. States amendments in parent act are followed in the respective States where land is acquired.

#### **B) Madhya Pradesh Pariyojana Ke Karan Visthapit Vyakti (Punsthapan) Adhiniyam, 1985**

This Act enables the State to resettle persons displaced from lands that are acquired for irrigation projects.

#### **C) Maharashtra Project Affected persons Rehabilitation Act, 1986**

This Act enables the State to rehabilitate persons affected by irrigation projects.

### **2.10.2 Relevant Policies**

Comprehensive R&R policies that have been consulted:

- Resettlement and Rehabilitation Policy- Coal India Ltd., May,2008
- Resettlement and Rehabilitation Policy- NHPC Ltd., 2007
- Policy for Rehabilitation and Resettlement of Land Owners – Land Acquisition Oustees – Haryana State, December,2007;
- The Orissa Resettlement and Rehabilitation Policy, Orissa State, May, 2006;
- Resettlement and Rehabilitation Policy – NTPC Ltd., June,2005;
- National Policy on Resettlement and Rehabilitation for Project Affected families (Ministry of Rural Development) 2004<sup>1</sup>.

**Appendix XX & XXI** provides present recognition of key issues in different R&R policy.

<sup>1</sup> The GoI is planning for a comprehensive legislation on R&R. Once such legislation is notified, relevant provisions of that legislation will be followed/incorporated in the “Social Entitlement Framework”.

### 2.10.3 Operational Agencies in R&R Planning Implementation

Key players in R&R planning and implementation differ according to law and policy. Non-government agencies are increasingly being included in the process. However, with the advent of national R&R policy, a well defined body including an identified R&R Commissioner and Administrator for R&R planning and implementation shall be in place wherever provisions of National Policy are applicable. However transmission line projects, the provisions of national R&R policy are not attracted, hence this responsibility vests with the POWERGRID in general and site / RHQ in particular in consultation with the state / local authority.

ACTIVITY <sup>1</sup>	
➤	Submission of cases for land acquisition
➤	Section 4 notification
➤	Spot verifications
➤	Scope for objections from public
➤	Publication of Section 6 declaration
➤	Marking of land, notice to persons and award by Collector
➤	Finalisation of R&R package
➤	Payment of compensation and acquisition of land
➤	Handing over land to POWERGRID
➤	Implementation of RAP/SAMP at site
○	Extending R&R benefits to eligible families
○	Regular Monitoring of RAP implementation
➤	Completion/Review of RAP Implementation

## 2.11 IMPLICATIONS FOR POWERGRID

The legal requirements and compliance measures adopted by POWERGRID are shown in Table 2.4.

### 2.11.1 ENVIRONMENTAL

Presently clearance under the Forest (Conservation) Act, 1980 is the only mandatory requirement under a national law. The Environment (Protection) Act 1986, as such, is not applicable to transmission projects except in two districts of Alwar (Rajasthan) and Gurgaon (Haryana). Similarly, Environment Impact Assessment (EIA) is also not required as per existing provisions of law. However, compliance of EPA 1986 amendments regarding Batteries (Management and Handling) Rules 2001

<sup>1</sup> The GoI is planning for a comprehensive legislation on R&R. Once such legislation is notified, relevant provisions of that legislation will be followed/incorporated in the "Social Entitlement Framework".

and Hazardous Wastes (Management and Handling) Amendment Rules 2003 on used oil during operational stage have been made mandatory. The requirement of funding agencies such as the World Bank, ADB and JBIC are spelt out in their Operational Policies/Manuals and may require certain measures even beyond the requirement of national laws/acts. POWERGRID commits itself to follow the mandatory and prescriptive requirements. These have been suitably incorporated in assessment/ management procedures wherever/ whenever applicable.

### **2.11.2 SOCIAL**

Current mandatory requirements are the provisions under the Land Acquisition Act, 1894 (with respect to sub-stations) and the National policy on R&R. The prescriptive requirements are state laws, draft policies and the existing framework regulating health and safety. However, funding agencies requirements are quite stringent on R&R. Hence, POWERGRID has adopted the entitlement framework given in Table 2.3 for its projects based on the national policy and other progressive trends. As regards health and safety of its workers, POWERGRID applies the best international standards.

### **2.11.3 FINANCIAL**

POWERGRID estimates that the cost of R&R, compensation and other mitigation measures, including community developmental works, will be about 5% of the total project cost depending on project location and size.

**Table 2.4: Legal Requirements & Compliance Measures**

S.NO.	LEGAL REQUIREMENTS ACT/RULES/GUIDELINES	APPLICABLE ATTRIBUTES	POWERGRID'S COMPLIANCE MEASURES
1.	The Electricity Act, 2003	<p>Section 68(1) requires sanction from MOP, GOI for taking up any new transmission project. Sanction authorizes POWERGRID to plan and coordinate activities to commission the new project.</p> <p>Section 68 (5 &amp; 6) provides basis for compensation to be paid for all damages including standing crop and trees in the Right of Way.</p> <p>Section 164(B) – POWERGRID may, for the purpose of placing any wires, poles, etc., erect and construct towers without acquisition of land.</p>	<p>POWERGRID follows these provisions together with CEA guidelines.</p> <p>Power transmission schemes are planned in such a way that the power eminent domain is exercised responsibly.</p>
2.	Forest (Conservation) Act, 1980	<p>Provides for conservation of forests and restriction on use of forests or forest land for non-forest purpose.</p> <p>This is applicable to POWERGRID whenever a transmission line traverses a forest area. Prior approval from Ministry of Environment &amp; Forests (MOEF), Govt. of India has to be obtained before construction of line in forest areas</p>	<p>Projects involving forest areas undergo detailed review/ process to obtain forest clearance from MoEF. During route alignment, all possible efforts are made to avoid the forest areas.</p> <p>Wherever it becomes unavoidable, different alternatives are examined to minimize the requirement of forest areas. The final route for transmission line is selected in close consultation with MoEF, state forest and revenue departments.</p>

S.NO.	LEGAL REQUIREMENTS ACT/RULES/GUIDELINES	APPLICABLE ATTRIBUTES	POWERGRID'S COMPLIANCE MEASURES
3.	<b>Environment (Protection) Act, 1986</b>	Environmental clearance component of this Act is only applicable to passing of transmission projects in specified areas of Aravalli range.	This Act as such is not applicable to transmission projects. However if line is passing through some selected/specified areas/forest in the district of Alwar and Gurgaon, Clearance of MoEF under the act is taken by POWERGRID before commencement of construction in the specified / restricted areas.
a.	<b>Batteries (Management and Handling) Rules, 2001</b>	Bulk consumers like POWERGRID to dispose all used batteries to dealers, manufacturer, registered recycler, reconditioners or at the designated collection centres only. Half-yearly return for the same is to be submitted to the concerned State Pollution Control Board.	Used batteries are sold to registered recyclers/ dealers/ manufacturers and half-yearly return (form 8) is submitted to concerned State Pollution Control Board.
b.	<b>Hazardous Wastes (Management and Handling) Amendment Rules, 2003</b>	All used mineral oil is categorized as hazardous waste and require proper handling and disposal.	Mineral oil is sold as used oil to registered recyclers and Annual return (form 13) is submitted to the concerned State Pollution Control Board.
c.	<b>Ozone Depleting Substances (Regulation and Control) Rules, 2000</b>	Controls and regulations specified on manufacturing, import, export, and use of CFC compound.	POWERGRID follows all provisions of notification, and is phasing out all equipments that use ODS
4.	<b>The Biological Diversity Act, 2002</b>	This act is not directly applicable to transmission projects because it deals with the conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected therewith	POWERGRID abides by the provision of the Act wherever applicable, and avoids Biosphere Reserves during route alignment.

S.NO.	LEGAL REQUIREMENTS ACT/RULES/GUIDELINES	APPLICABLE ATTRIBUTES	POWERGRID'S COMPLIANCE MEASURES
5.	<b>Workman's Compensation Act, 1923</b>	The act specifies the employer's liability for compensation to the employee in several situations.	POWERGRID maintains safety as a top priority, and has a dedicated unit to oversee all health and safety aspects of its project. POWERGRID has framed detailed guidelines/checklists for workers' safety (Appendix-XII).
6.	<b>National Rehabilitation and Resettlement Policy, 2007</b>	Applicable to projects where 400 families in plain and 200 families in hills are displaced enmass.	Entitlement benefits listed for PAFs are adopted by POWERGRID in its "Social Entitlement Framework" and the same is implemented wherever land acquisition for substations is undertaken.
7.	<b>Land Acquisition Act, 1894 as amended in 1984</b>	This Act prescribes a well-defined procedure for acquisition of private properties for public purpose.	POWERGRID follows the procedures as prescribed in the Act for acquisition of land for substation wherever applicable. POWERGRID exercises flexibility during site selection to avoid environmental and social impacts.
8.	<b>The Scheduled Tribes &amp; Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006</b>	The Act recognizes and vests the forest rights and occupation in forest land in forest dwelling Scheduled Tribes and other traditional forest dwellers who have been residing in such forests for generation but whose rights could not be recorded; to provide for a framework for recording the forest rights so vested and the nature of evidence required for such recognition and vesting in respect of forest land.	While field implementation is the responsibility of the government agencies, POWERGRID is committed to abide by the provisions of the act, if any portion of a transmission line passes through any forest land to which the Act applies.

S.NO.	LEGAL REQUIREMENTS ACT/RULES/GUIDELINES	APPLICABLE ATTRIBUTES	POWERGRID'S COMPLIANCE MEASURES
9.	<b>The Provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996</b>	The Act provides for extension of the provisions of Part IX of the Constitution relating to the Panchayats to the Scheduled Areas. It provides that Gram Sabhas or Panchayats shall be consulted before making the acquisition of land in the Scheduled Areas for development projects.	POWERGRID shall avoid such areas to the extent possible. Where unavoidable, it will consult the concerned Gram Sabha / Panchayat for obtaining their consent as per the provisions of the Act.
10.	<b>Indian Treasure Trove Act, 1878 as amended in 1949</b>	The act provides for procedure to be followed in case of finding of any treasure, archaeological artefacts etc. during excavation.	Possibilities of such discoveries are quite remote due to limited and shallow excavations. However, in case of such findings, POWERGRID will follow the laid down procedure in the Section-4 of act.
11.	<b>The Right to Information Act, 2005</b>	Act to provide for setting out the practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, the constitution of a Central Information Commission and State Information Commissions and for matters connected therewith or incidental thereto.	POWERGRID is a designated Public Authority under the Act is covered under the act. The process for obtaining information and details of designated officials is posted on POWERGRID website.

# 3.0 POWERGRID PROJECT CYCLE

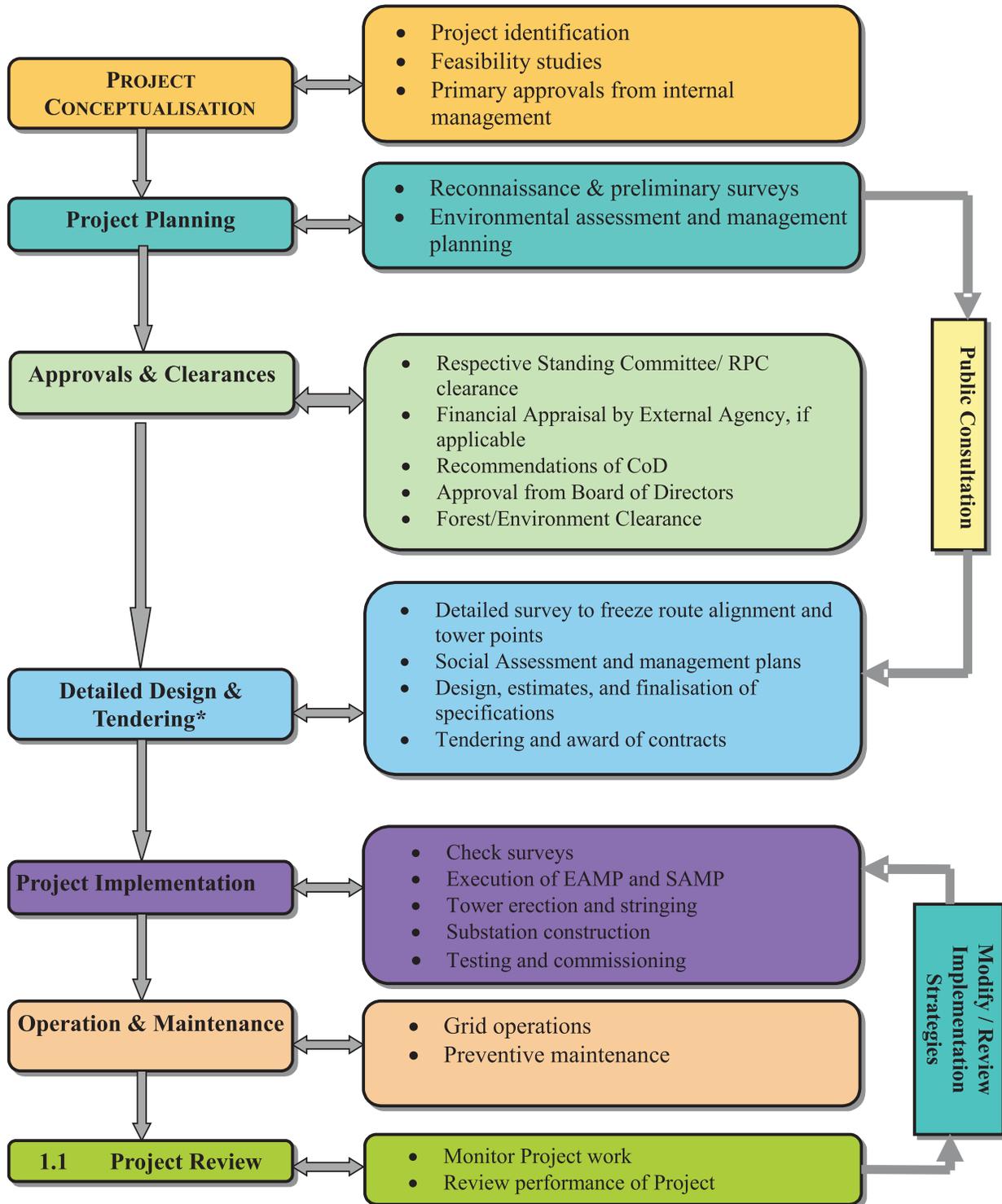
POWERGRID is a public service company whose main objective is to transmit the power efficiently between the various regions of the country. It is a designated Central Transmission Utility notified vide gazette notification dated 27.11.03 under section 38 (1) of Electricity Act, 2003. POWERGRID is committed to introducing efficient management and impeccable quality into the Indian power sector. Since its inception in 1989, it has followed best possible standards and systematically enhanced its internal infrastructure, management structure systems and processes and has adopted a comprehensive “**Integrated Management System**” (IMS) comprising of International Management System viz. **ISO: 14001** for Environment Management, **ISO: 9001** for Quality management and **OHSAS: 18001** for Occupational Health & Safety and SA 8000:2001 (**Appendix XXII**).

This section provides the review of a typical POWERGRID’s project cycle to address environmental and social issues. The key milestones in POWERGRID project cycle are:

- Project conceptualisation
- Project Planning
- Approval and clearances
- Detailed design and tendering
- Project Implementation
- Operation & maintenance
- Project review

**Figure 3.1** outlines the detailed process for a typical transmission project and is summarised in subsequent sections. The detailed process of a typical POWERGRID project is discussed in **Appendix XXIII**.

**Figure 3.1: Project Cycle of A Typical POWERGRID Project**



• To save time, these activities are advanced and undertaken in parallel to Project Investment Approval process.

### 3.1 Project Conceptualisation

POWERGRID identifies the need for a new project in consultation with the Central Electricity Authority (CEA), the Regional Electricity Boards (REB) and the State Electricity Boards (SEB)/ State Power Corporations. A power transmission project is identified according to the demand and supply of a given region based on capacities of power generating companies and the demand of SEBs / State Power Corporations.

After the need identification, feasibility studies are conducted that include environmental, social, economic, and financial assessments. The project is prioritised and implementation schedule is developed. As a part of the study, POWERGRID develops various options for the location of transmission lines that consider avoidance of environmentally and socially sensitive area. The line options are then marked on a map using a “BEE Line” (the shortest distance between origin of proposed transmission line and the sub-stations sites).

Approval for the feasibility report is obtained from the internal management of the POWERGRID. The corporation, consistent with the Navratna status, can approve all investment proposals irrespective of project cost and source of funding. The projects having cost higher than Rs 500 Crores, are financially appraised by external agency prior to consideration of investment proposal by Board. Proposal along with appraisal report by external agency is submitted to Sub-Committee of Board of Directors of POWERGRID. Sub-Committee of Board of Directors after due diligence, recommends the proposal to Board of Directors for its approval. .

Since financial approval of project may take longer time, certain critical project preparatory activities, such as preliminary or detailed survey, forest clearance, and land acquisition process are initiated with special permission of Board of Directors. Such provisions/actions also facilitate more in-depth and timely assessment of environment & social issues due to availability of better lead time.

### 3.2 Project planning

During this stage, reconnaissance surveys are carried out and two or three route alternatives are studied in detail. Field officers record all critical information such as rivers, hills, railway crossings, telephone, and power transmission lines. In addition to environmental and social details are also noted. (Refer **Appendix XXIV** for Proforma to gather relevant environment and social information for transmission lines and sub-stations). Detailed Survey is carried out for forest areas and preliminary survey for the rest of the areas. POWERGRID employs modern survey tools such as GPS, aerial photography and satellite images to collect all relevant information.

The collected information is transferred to Geographical Information System (GIS) and the optimum route is selected ensuring that the alignment avoids forests and areas of significant natural resources.

If this is unavoidable, POWERGRID endeavour to ensure that the route does not involve human habitation and areas of cultural importance and the use of forest is kept to a minimum.

The Introduction of GIS and GPS provide topographical and geo-technical details in route selection process. This helps in developing cost effective design alternatives related to local site conditions and planning for the mitigation measures.

After the finalisation of route, POWERGRID carries out the environmental assessment with the help of authorised agencies (Forest Department) and formulates an Environmental Assessment and Management Plan (EAMP), which include the forest proposal. Local forest authorities certify that the final route selected involves the barest minimum of forests. The EAMP is submitted to the Ministry of Environment and Forests (MoEF) for obtaining forest clearance with an undertaking to bear the cost of compensatory afforestation on degraded forest land double the area.

POWERGRID identifies number of potential substation sites based on data collected as per the checklist (refer **Appendix XXV**) and a comprehensive analysis for each alternative site is carried out. The analysis considers various site specific parameters that includes infrastructure facilities such as access roads, railheads, type of land viz. Govt., revenue, private land, agricultural land; social impacts such as number of families getting affected; and cost of compensation and rehabilitation giving due weightage to each. An initial assessment of the selected site is done to ascertain the scope and extent of social assessment. The socio-economic surveys are outsourced if the affected families are more 40.

Land acquisition for the selected site is generally carried out only after the approval of the project by GOI. However, in case of urgency or to meet the project schedule, special permission is obtained from competent authority for starting land acquisition process before GOI approval.

### **3.3 PROJECT APPROVALS**

As noted earlier at 3.1, POWERGRID being a Navratna company, power to approve projects is vested with its Board (**Appendix XXVI**) .

### **3.4 DESIGN AND TENDERING**

On receiving the approval from the GOI, detailed surveys to fix angle tower points and types of towers are carried out. Social assessments of the project is undertaken to develop a project specific Social Management Plan. POWERGRID's Engineering Department designs the towers and substations including cost estimates for their implementation. The contracts for construction, erection, and stringing of towers are awarded to competent contractors through bidding process.

### **3.5 PROJECT IMPLEMENTATION**

POWERGRID's field staff and contractors conduct spot checks to verify the ground profile and make necessary changes wherever required, on the toposheets. Field staff fixes tower spots and heights (extensions) wherever necessary for tension towers. Construction, erection, & stringing of towers and sub-stations are then initiated. Due care is taken to minimise / mitigate environmental impacts. Health & Safety aspects are also given utmost importance. POWERGRID has a dedicated department to oversee health and safety requirement both during construction as well as operation stage (refer Appendix XIII for checklist for health & safety). POWERGRID tests all lines and substations prior to commissioning of the project.

### **3.6 OPERATION AND MAINTENANCE**

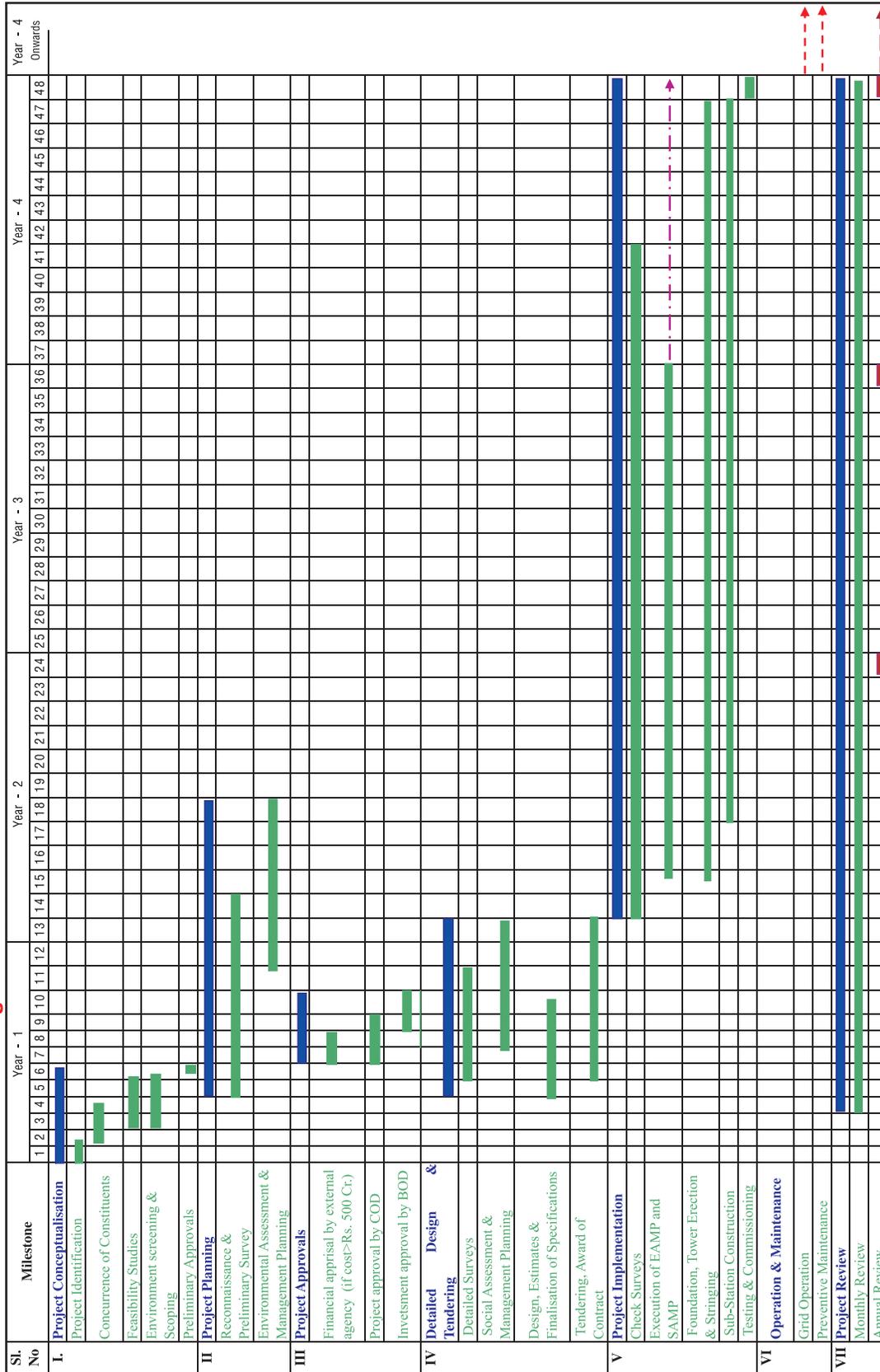
POWERGRID continuously monitors the transmission lines and substations. These lines and substations are patrolled regularly to identify faults and its rectification. The Regional offices and respective site offices carry out monitoring of line. Checklists used for inspection of transmission lines and substations are provided in **Appendix XXVII**.

### **3.7 PROJECT REVIEW**

POWERGRID's site managers review the lines and substations on a daily basis. Apart from this, the Executive Director of the region conducts monthly review meetings. The regional headquarters monitor construction, technical, environmental, and social components of the power transmission projects. The environmental and social components of the project are also reviewed annually.

**Figure 3.2** provides the Gantt chart of a typical POWERGRID project.

Figure-3.2 : GANTT CHART FOR TYPICAL POWERGRID PROJECT



# 4.0 ENVIRONMENTAL AND SOCIAL ISSUES

POWERGRID's core activity is to lay transmission lines and install substations. Construction and operation of transmission lines and substations may involve environmental and social concerns that are distinct from each other in terms of their nature of impacts. Some of the environmental and social issues that could arise from its projects are unavoidable, and POWERGRID seeks to address them through its management processes outlined in its Environmental and Social Policy and Procedures (ESPP) document.

Environmental and social issues associated with power transmission project are relatively less significant as compared to power generation projects. Based on its experience from managing 48,000 Ckm transmission lines criss-crossing the length and breadth of the country, POWERGRID has identified environmental and social issues typically associated with its projects as below.

## 4.1 Environmental issues

In this section, environmental issues arising from a typical POWERGRID project are discussed. The POWERGRID experience in managing these issues and their applicability in various phases of project cycle is presented in **Table 4.1**.

### 4.1.1 Transmission lines

The Key environmental issues associated with installation of transmission lines are:

#### A) Clearaning of Trees within Right of Way

Right of Way (ROW) width for the transmission line depends on the line voltage. The maximum permissible width of ROW for transmission lines on forestland and minimum clearances between conductors and trees are given in Table 2.1.

A width clearance of 3 m is presently allowed below each conductor for the movement of tension stringing equipment. Trees on such strips are felled, but after stringing is complete, natural regeneration is encouraged.

Lopping of trees is required to facilitate stringing and maintenance of ROW. Felling, pollarding, and pruning of trees for electric clearance, whenever necessary, is done with permission from the local forest officer. Lopping and felling of trees can open up forest canopy allowing more sun light

into the under storey where it can lead to an edge effect and allow for proliferation of socio-phytic weeds. This can have added repercussions within a semi evergreen or evergreen biotope (fragile ecosystems restricted to North East India and the Western Ghats).

#### **B) Clearing of Ground vegetation for movement of Machinery**

Heavy machinery is used to for installation of transmission lines and towers and may require clearing of ground vegetation for its movement. This activity cause temporary disturbance to the forest, orchards, plantation and agriculture fields. POWERGRID, wherever possible uses the existing path / access roads for the movement of man and machinery. The existing roads that cannot support heavy machinery load are upgraded and thus the village infrastructure is improved. In areas where lines traverse agricultural land, compensation is paid to owners for any crop damage incurred as a result of construction activities. Agricultural activities are allowed to continue following the construction period. If bunds or other on-farm works are disturbed during construction or maintenance, they are restored to the owner's satisfaction following cessation of construction or maintenance activities. In the event that private trees are felled during construction or maintenance operations, compensation is paid to the owner as determined by the forest / horticulture departments.

#### **4.1.2 Substation**

The Key environmental issues with construction of substation are

**A) CLEARING OF GROUND VEGETATION:** A typical substation requires an area of 15-30 hectares of land. The land is acquired and vegetation is cleared to enable construction activity.

**USED TRANSFORMER OIL:** As a part of routine maintenance, transformer oil changed every 10-15 years. The used transformer oil is categorised as hazardous wastes as per Hazardous waste (Management & Handling) Rules, 2003 and its unscientific disposal in environment may lead to soil and water contamination.

#### **BOX 4.1 : POWERGRID'S EXPERIENCE AND INITIATIVES TO MITIGATE ENVIRONMENTAL IMPACTS**

**POWERGRID** HAS BEEN IMPLEMENTING ENVIRONMENT AND SOCIAL POLICY AND PROCEDURE SINCE 1998. PRIOR TO THAT, TRANSMISSION LINES OF APPROXIMATELY 27,000 CKM WERE LAID ACROSS THE COUNTRY. THIS INVOLVES APPROXIMATELY 6% OF FOREST AREA. HOWEVER, AFTER IMPLEMENTATION OF ESPP W.E.F. 1998, DIVERSION OF FOREST AREA HAS BEEN REDUCED TO APPROXIMATELY 1.35% FROM 6% TAKING INTO CONSIDERATION THE ADDITION OF APPROXIMATE 20,500 CKM OF LINE UP TO MARCH, 2004 AND 21,483 CKM DURING APRIL'04 TO DEC'08 (SINCE 1998). THE CUMULATIVE TOTAL OF FOREST AREA IS AROUND 3.3% FOR 69,482 CKM LINE CONSTRUCTED. (APPENDIX XXVIII).

MEASURES LIKE COMPENSATORY AFFORESTATION, WHICH INVOLVES PLANTATION OVER TWICE THE AREA, AFFECTED BY THE PROJECT HAS NOT ONLY HELPED IN COMPENSATING LOSS OF VEGETATION, BUT HAS ALSO INCREASED FOREST COVER. **POWERGRID** HAVE CONTRIBUTED ABOUT US \$ 25 MILLION TOWARDS AFFORESTATION ON MORE THAN 10,000 HA OF LAND OVER THE LAST DECADE. MASSIVE PLANTATION IN ALL OF ITS INSTALLATIONS NOT ONLY IMPROVES AESTHETICS BUT ALSO CONTRIBUTES GREATLY IN MAINTAINING THE DESIRED ECOLOGICAL BALANCE.

TO MINIMISE ADVERSE IMPACTS ON NATURAL HABITATS, HUMAN HABITATIONS, MAJORITY OF TOWERS ARE LOCATED ON AGRICULTURAL LANDS. TO MINIMISE DAMAGE TO THE ENVIRONMENT **POWERGRID** USES MANUAL STRINGING IN THICK FORESTS AND ON SLOPES WHENEVER POSSIBLE.

**POWERGRID** HAS INCORPORATED THE BEST TECHNICAL PRACTICES TO DEAL WITH ENVIRONMENTAL ISSUES. IN LANDSLIDE PRONE AREAS, **POWERGRID** DESIGNS TOWER BASES WITH LEG EXTENSION AND REVETMENTS THAT PREVENT SOIL EROSION NEAR THE TOWER. **POWERGRID** HAS ALSO DESIGNED SPECIAL TOWERS SUCH AS VERY HIGH (80 M AND OCCASIONALLY OVER 140 M) FOR REDUCING IMPACT ON TREES, ORCHARD, WILDLIFE AND CROSSING OF WETLANDS, RIVERBEDS. WHEREVER APPROPRIATE MULTI CIRCUIT AND COMPACT TOWERS HAVE BEEN INSTALLED FOR REDUCTION IN ROW REQUIREMENT. WE HAVE TAKEN INITIATIVES TO OPTIMIZE ROW REQUIREMENT THROUGH CHANGE IN TOWER DESIGN, RESULTING IN REDUCTION OF THE REQUIREMENT FROM 85 M TO 64 M FOR 765 KV AND FROM 52 M TO 46 M IN 400 KV D/C LINE.

THE MITIGATION MEASURES FOR ENVIRONMENTAL ISSUES ARE SUMMARISED IN TABLE 4.3

**Table 4.1: POWERGRID Experience in Managing Environmental issues**

Project activity Experience of management	Transmission Lines			Sub-Station	
	Tower Construction, Erection & Stringing	O & M	Land Acquisition	Construction	O&M
<i>Time tested &amp; Substantial</i>	<ul style="list-style-type: none"> <li>➤ Disturbance to crop of plantations &amp; orchards</li> <li>➤ Safety of tower in wetlands, riverbeds &amp; coasts</li> <li>➤ Opening up natural forests               <ul style="list-style-type: none"> <li>- Clearing of access roads</li> <li>- Disturbance due to</li> <li>- Construction activity</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>➤ Fires prevented by safety &amp; maintenance protocols</li> <li>➤ Lopping of trees along ROW to maintain ground clearance</li> </ul>	<ul style="list-style-type: none"> <li>Avoiding               <ul style="list-style-type: none"> <li>➤ forests</li> <li>➤ homestead</li> <li>➤ wetlands</li> <li>➤ orchards</li> <li>➤ plantations</li> </ul> </li> </ul>		
<i>Scope for Strengthening</i>	<ul style="list-style-type: none"> <li>➤ Tree felling in ROW</li> </ul>			<ul style="list-style-type: none"> <li>➤ Clearing of ground cover</li> <li>➤ Alteration of minor drainage pattern</li> </ul>	

## 4.2 Social Issues

In this, section social issues associated with transmission line and substations are discussed. The POWERGRID experience in managing these issues and during various phases of project cycle is presented in **Table 4.2**.

### 4.2.1 Transmission lines

1. **Loss to standing crop:** Foundation and erection of towers and stringing of transmission lines involves movement of machinery. This may cause damage to the standing crops in agriculture field resulting in serious socio economic concerns for the cultivators.
2. **Change in land prices:** Installation of transmission towers may reduce the price of the property.
3. **Aesthetic appeal of an area:** Erection of transmission towers and lines affects the aesthetics of the area.
4. **Temporary loss of access to Common Property Resources:** During construction phase of transmission lines, access to common property resources for the local community may be compromised.

### 4.2.2 Substation

Social issues associated with establishment of substations are related to land acquisition. A typical substation would require an area of 15 (35 acres) to 30 (75 acres) hectares. The acquired land generally consists of agricultural land and / or wasteland. Based on POWERGRID's experience, the common social issues are identified below.

1. **Loss of livelihood due to acquisition of private agricultural land:** Private agricultural lands some times get acquired for the construction of substations. This may results in loss of livelihood to the concerned cultivators and agricultural workers. POWERGRID provides compensation to the affected population vis-à-vis their social entitlement framework (refer **Appendix XVII**)
2. **Loss of common property resources due to acquisition of revenue land:** The local communities use common property resource lands for various purposes such as grazing ground for their cattle and sourcing biomass for cooking fuel. Acquisition of these lands for construction of substation results in loss of common property resource of the local community that could affect their socio-economic condition.

3. **Loss of homestead:** Acquisition of homestead for construction of substation results in resettlement of the families. These families are entitled to receive compensation vis-à-vis social entitlement Framework (refer Appendix XVII). Based on POWERGRID experience till date, only one homestead has been acquired, which indicates that resettlement of population/person is not an issue with transmission project.

#### **BOX 4.2: POWERGRID'S EXPERIENCE AND INITIATIVES TAKEN TO REDUCE ADVERSE SOCIAL IMPACTS**

*TO LOCATE SUBSTATIONS FOR POWER TRANSMISSION PROJECT, POWERGRID USES FLEXIBLE APPROACH IN THAT ADJUSTMENTS IN PROJECT IMPLEMENTATION ARE MADE TO MINIMISE THE ADVERSE SOCIO- ECONOMIC IMPACTS ON THE LOCAL COMMUNITIES. SUCH ADJUSTMENTS MAY INCLUDE DELAYING THE CONSTRUCTION OF THE SUBSTATIONS TO ACCOMMODATE CROP HARVESTING OR RELOCATE THE SUBSTATION TO PROTECT A SENSITIVE AREA. IF THIS IS UNAVOIDABLE, THEN POWERGRID PROVIDES COMPENSATION AT MARKET RATE OF THE POTENTIAL HARVEST*

*TO DATE POWERGRID HAS ESTABLISHED 116 SUBSTATIONS AND THE LAND REQUIRED FOR THESE HAS RANGED FROM 20-40 HECTARES. LAND REQUIREMENT (3307.72 HA.) SO FAR HAS BEEN MET IN THE FOLLOWING MANNER; 64% FROM PRIVATE OWNERS AND 26 % FROM GOVERNMENT. OUT OF THE TOTAL LAND ACQUIRED, THE DESIGNATED LAND USE WAS 60 % AGRICULTURE LAND AND 40% WASTELAND. ACQUISITION OF THIS SIZE OF LAND GENERALLY ENTAILS NEGOTIATIONS WITH 20 – 50 LANDOWNERS.*

*AS PART OF ITS SAFETY MEASURES, IN CASE OF LINE DAMAGE AT ANY POINT IN ROUTE CIRCUIT BREAKERS ARE PROVIDED TO CUT OFF POWER TRANSMISSION WITHIN A FEW MILLISECONDS. POWERGRID ENSURES THAT HAZARDS DUE TO FIRES ARE MINIMISED BY ADOPTING HIGH STANDARDS OF SAFETY. IT ALSO TAKES UTMOST CARE FOR THE SAFETY OF SUB-STATIONS AND THEIR EMPLOYEES WITH THE HELP OF DISASTER CONTROL PLANS. (REFER APPENDIX XXIX FOR POWERGRID'S DISASTER CONTROL PLAN IN CASE OF FIRES)*

*TO HONOUR ITS COMMITMENTS AND TO MAINTAIN THE SOCIAL FABRIC OF THE COMMUNITY, POWERGRID TRIES TO AVOID RESETTLEMENT AND REHABILITATION (R&R) IN ALL ITS PROJECTS BY SITING SUBSTATIONS ON GOVERNMENT LAND. IN CASE REHABILITATION IS INEVITABLE, POWERGRID ADDRESSES R&R ISSUES THROUGH ITS SOCIAL ENTITLEMENT FRAMEWORK THAT INCORPORATES NATIONAL POLICY ON R&R, 2004 & 2007 AND OTHER APPLICABLE REGULATIONS. POWERGRID ENSURES PROPER VALUATION OF LAND AND ASSETS OF PAFS THROUGH CONSULTATION PROCESS, AND COMPENSATIONS FOR ALL CATEGORIES OF PAF ARE DISBURSED WITHIN THE STIPULATED PERIOD. ALL STAKEHOLDERS INCLUDING THE PUBLIC AND THE LOCAL AUTHORITIES ARE CONSULTED ON SOCIO-ECONOMIC ISSUES THAT ARISE FROM ITS PROJECT ACTIVITIES PRIOR TO DEVELOPMENT OF SAMP. POWERGRID ENHANCES EMPLOYMENT OPPORTUNITIES FOR MARGINALISED GROUPS THROUGH THE RAP AND TPDP. POWERGRID USES THE BEST POSSIBLE TOWER DESIGNS TO AVOID UN-AESTHETIC INTRUSIONS ON THE LANDSCAPE. POWERGRID'S SUBSTATIONS OFTEN RESULTING IN UPGRADING THE INFRASTRUCTURE FACILITIES OF NEARBY VILLAGES.*

*THE MITIGATION MEASURES FOR SOCIAL ISSUES ARE ALSO SUMMARISED IN TABLE 4.3.*

**Table 4.2: POWERGRID Experience in Managing Social Issues**

Project activity Experience of management	Transmission Lines		Sub-Station		
	Tower Construction, Erection & Stringing	O & M	Land Acquisition	Construction	O&M
<i>Time tested &amp; Substantial</i>	<ul style="list-style-type: none"> <li>➤ Crop loss compensation</li> <li>➤ Avoiding sensitive areas like historical/cultural areas, military areas, human settlements, oil pipelines</li> <li>➤ Safety precautions - workers</li> <li>➤ Safety of towers, especially on               <ul style="list-style-type: none"> <li>- Highways crossings</li> <li>- Railway crossings</li> <li>- Telephone lines crossings</li> <li>- Other transmission lines crossings</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>➤ Compensating loss to crop yield</li> <li>➤ Safety precautions</li> </ul>	<ul style="list-style-type: none"> <li>➤ Compensation for land, crops, trees</li> <li>➤ Avoiding socially sensitive areas</li> <li>Human settlements</li> <li>Urban areas</li> <li>Historical/ cultural areas</li> <li>Loss of livelihood</li> </ul>		<ul style="list-style-type: none"> <li>➤ Precautionary measures for health and safety of workers and substation safety e.g. fire, maintenance of machine, etc.</li> </ul>
<i>Scope for Strengthening</i>	<ul style="list-style-type: none"> <li>➤ Temporary disturbance during construction, erection and stringing</li> <li>➤ Loss of access to traditional resources</li> <li>➤ Temporary change in land use intensity</li> </ul>	<ul style="list-style-type: none"> <li>➤ Change in land prices</li> <li>➤ Aesthetics</li> </ul>	<ul style="list-style-type: none"> <li>➤ Disturbance in livelihood</li> <li>➤ Squatters &amp; encroachers etc.</li> <li>➤ Resettlement if required</li> </ul>	<ul style="list-style-type: none"> <li>➤ Induced development</li> </ul>	<ul style="list-style-type: none"> <li>➤ Aesthetics</li> </ul>

**Table 4.3: POWERGRID's Environmental and Social Management Measures**

Sl. No	Potential Issues	Management Measures
A	1. Minimising adverse impact on natural forests 2. Lopping of trees	➤ POWERGRID endeavours environmentally sensitive areas such as forest and other ecologically fragile / sensitive areas while selecting its ROW and has designed special towers to reduce ROW and impact on trees & wildlife
	3. Habitat Loss 4. Vegetation damage	➤ To minimise damage to vegetation and habitat fragmentation, POWERGRID utilises hand clearing and transportation of tower material by head loads into forests
	5. Habitat fragmentation 6. Edge effect on flora & fauna	➤ POWERGRID maintains only a 3m wide strip for O&M and allows for regeneration of vegetation in the other two strips and beneath the transmission lines (refer Appendix-III) to avoid habitat fragmentation and edge effect.
	7. Increased access to wild lands 8. Paths/Access roads 9. Run off and sedimentation from grading of access roads	➤ POWERGRID avoids creating new access roads or paths during construction activity and utilises existing paths and field bunds for movement of material. It also strengthen existing village road for transportation of material, which is also helpful to the local communities.
B	1. Chemical contamination from chemical maintenance techniques	➤ POWERGRID does not use chemicals for forest clearance/ ROW maintenance
	2. Poly Chloro Biphenyls (PCBs) in electrical equipment	⊘ POWERGRID does not use PCB's in its electrical equipment. POWERGRID has arranged for studies with National Grid Company, U.K. for sampling of existing equipment and creation of a PCB management plan if necessary. The studies so far have not found any incident of PCB traces/contamination.
C	1. Change in land use and population relocation due to towers	➤ POWERGRID does not acquire land for its transmission towers. POWERGRID pays compensation for any crop loss and damage caused during its activities. POWERGRID allows regeneration and cultivation beneath the towers and lines.
	2. Change in land use and population relocation for substations	➤ POWERGRID avoids populated urban/rural areas, trees/ plantations for its substation. If unavoidable POWERGRID pays compensation on the principle of replacement. Issues of R&R are addressed through detailed social assessment and planned measures for rehabilitation of affected population through RAP/SAMP.

Sl. No	Potential Issues	Management Measures
	3. Induced secondary development during construction	➤ POWERGRID operations are short-lived and do not induce secondary developments during construction
	4. "Chance finds" or discovery of any archaeological artefacts, treasure etc. during excavation	➤ Possibilities of such phenomenon are quite remote due to limited and shallow excavations. However, in case of such findings, POWERGRID will follow the laid down procedure in the Section-4 of Indian Treasure Trove Act, 1878
D	1. Avian hazards from transmission lines and towers	➤ POWERGRID avoids colonial nesting sites, flyways and significant bird habitats by careful route selection. The towers are provided with bird guards to prevent any avian hazards.
	2. Air craft hazards from transmission lines and towers	➤ POWERGRID as per the requirement of IS 5613 of July'94 provides aviation markers, night-lights for easy identification of towers in notified/selected areas.
	3. Impaired cultural and aesthetic resources/	➤ POWERGRID selects best possible designs and support structures for transmission towers. All possible precautions like use of safety equipments are ensured at construction site. Site in-charge and Safety Officer carry out regular monitoring of these requirements for strict compliance of these regulations.
	4. Health and safety	➤ POWERGRID lines do not cause any hazards to health and safety. POWERGRID uses the best international standards in technology.
	5. Fire Hazards	➤ POWERGRID uses state of art technology in its transmission lines and substations which trips the line in fraction of seconds to prevent fire hazards
	6. Pollution	➤ Although pollution is not an issue with transmission project still POWERGRID is making all out efforts to further minimise it. Sites are cleared of all the leftover material and debris to avoid any chance of pollution.

# 5.0 ENVIRONMENT & SOCIAL MANAGEMENT PROCEDURES

POWERGRID is committed to Sustainable Development by eliminating/ minimising adverse environmental and social impacts of its activities. To achieve this goal, it has laid down comprehensive Environmental and Social Management Procedures premised on basic principles of Avoidance, Minimization and Mitigation. Such procedures identify the relevant issues at early stages of project cycle and tackle these through tested management procedures and protocols.

POWERGRID, therefore, places a great emphasis on efficient management and quality control by incorporating Environment and Social Management Procedures (ESMP) into the project cycle. POWERGRID is committed to implement environmental and social management measures to ensure all its projects have minimum negative impacts on environment and socio –economic status of the local communities.

The environmental and social management process is represented in **Figure 5.1** and its detailed process is as follows:

## 5.1 Project conceptualisation

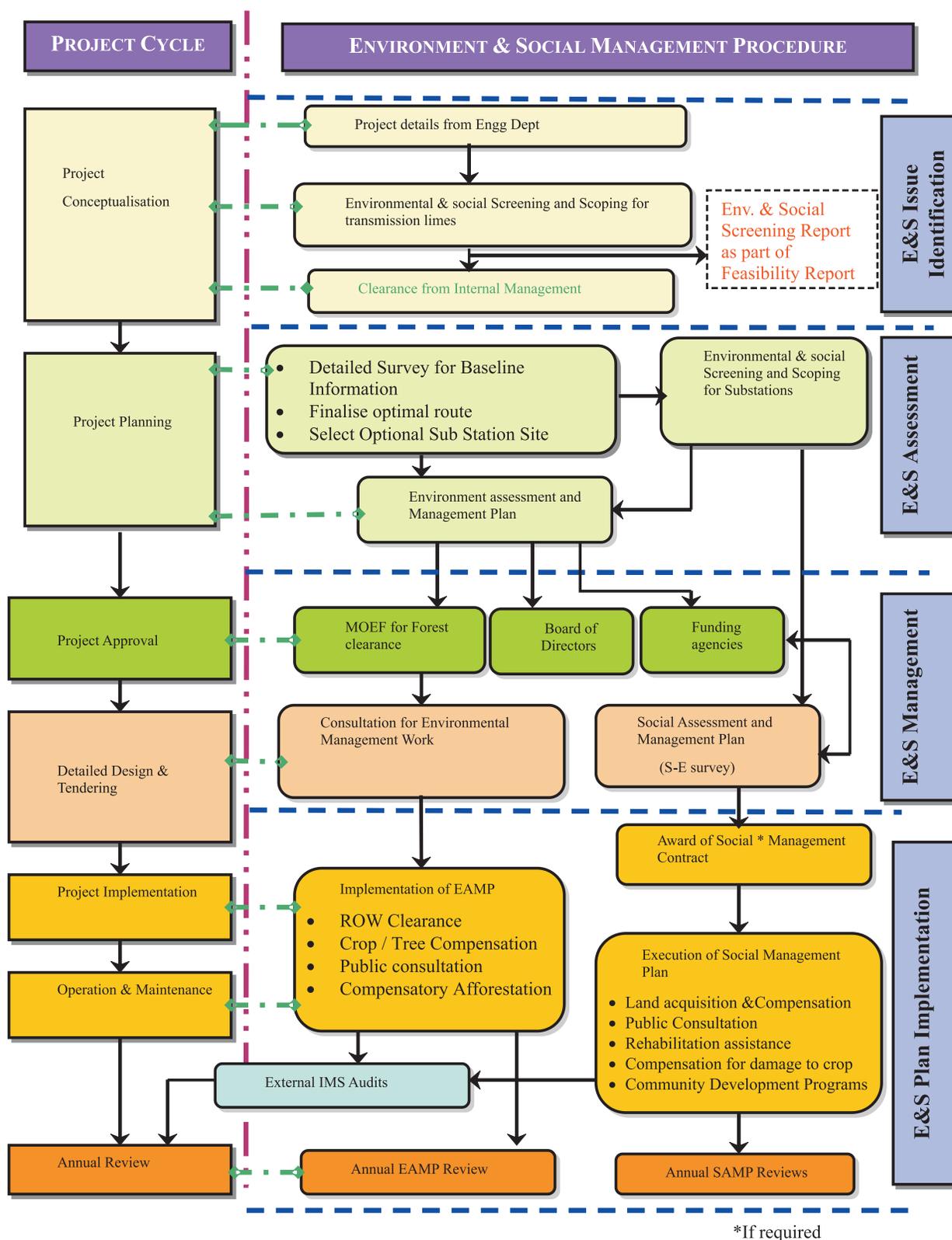
During the conceptualisation stages of the proposed project, environment and social screening process assist in identifying potential environment and social issues that may require evaluation and implementation during project development. The environmental screening and scoping report forms an integral part of project feasibility study and is tabled to the internal management committee for appraisal. At this stage, Funding Agencies (FA) may separately appraise the project.

Environmental and Social issue identification process for any POWERGRID project includes the following.

- Environmental screening and scoping for transmission lines
- Social screening and scoping for transmission Lines
- Approval from internal management

The Objectives, Process, and Output of each of these steps are as discussed below;

**Figure 5.1: Environmental And Social Management Procedure**



### 5.1.1 Environmental Screening and Scoping for Transmission Lines

#### ➤ Objectives

- a. To identify environmentally sensitive areas, issues, and possible management measures
- b. To suggest alternative transmission line routes, if necessary
- c. To outline scope of environmental assessment and management planning

#### ➤ Process

- i. The Environmental and Social Management Department (ESMD) through its “Bee” line survey (a desk review) on Survey of India topographic sheets (toposheets) and the Forest Atlas will examine various route options. ESMD will identify environmentally sensitive areas such as evergreen, semi evergreen, deciduous and scrub forests, riparian areas, wetlands, mountains, critical wildlife habitats and geologically sensitive areas.
- ii. Field units will conduct spot verifications to confirm the information of Bee- Line survey, and identify possibilities of circumventing environmentally sensitive areas (not restricted to previously designated ones) and collect information on issues identified during desk review through studies of alternatives, at least 3 alternatives routes are studied in the process of environment assessment and after analysis of different parameters and significant economic benefit associated with the project and without the project, the most optimum route having minimum environment & social impact is selected for further investigation
- iii. RHQs and Site office will consult state forest departments for transmission lines passing through forest areas. Revenue authorities will be consulted for their views on revenue lands. Based on the above process the scope for an Environmental Assessment and Management Plan (EAMP) is finalised.

#### ➤ Output

- i. Environmental screening and scoping document as part of feasibility report. This report provides details of environmentally sensitive areas, environmental issues and views of Forest Department, Revenue Department and an Initial Environment Assessment Report (IEAR).

### 5.1.2 Social Screening and Scoping for Transmission Lines

#### ➤ Objectives

- a. To identify socially sensitive areas, issues, and viable management measures

- b. To suggest alternative transmission line routes if necessary
- c. To outline scope of Social Assessment and Management Plan (SAMP)

➤ **Process**

- i. ESMD and RHQ will examine various route alternatives through Survey of India toposheets and census records and will identify potential socially sensitive areas such as urban and rural settlements, cultural and historical areas, etc.
- ii. The site/ field staff will conduct spot verifications to explore available options in order to avoid socially sensitive areas.
- iii. ESMD, RHQs and site staff will finalise scope of SAMP, if any, for transmission lines.

➤ **Output**

- a. Social screening and scoping document with details on socially sensitive areas and social issues and views of PAPs and Revenue Department

### 5.1.3 Internal Management Approval

➤ **Objective**

- a. To obtain internal approval from POWERGRID's management.

➤ **Process**

- i. Feasibility Report will be submitted to POWERGRID's internal management with environmental screening & scoping details.
- ii. POWERGRID being a Navratna company, its Board of Directors can approve project investment proposals, subject to statutory forest and environmental approvals from the MoEF.
- iii. POWERGRID will submit the Feasibility Report and IEAR with internal management approval to funding agencies for pre-appraisal.

➤ **Output**

- i. Project approval from BoD.
- ii. Conditional Funding Agency's acceptance

### 5.2 Project planning

During this stage, tentative locations for substation sites are identified and environment and social screening is conducted. Transmission route for the project is finalised at this stage based on environmental baseline information and other engineering parameters.

After environmental issues for transmission, line and substation are identified through screening and scoping exercise, Environmental Assessment and Management Plan (EAMP) is prepared. EAMP forms an integral part of forest proposal and is submitted to MoEF for review. Following activities are conducted in this stage

- Environment and social screening for substation
- Environmental Assessment and Management Planning (EAMP)

The objective, process, and output of each of these procedures are as under.

### 5.2.1 Environmental Screening and Scoping for Substation

#### ➤ Objectives

- a. To identify environmentally sensitive areas, issues, and possible management measures
- b. To suggest alternative transmission line routes, if necessary
- c. To outline scope of environmental assessment and management planning

#### ➤ Process

- i. ESMD, Engineering Department, and RHQ will examine substation sites through secondary information such as Survey of India topo sheets and the Forest Atlas.
- ii. The site office checks environmentally sensitive areas through spot verification to avoid placing Substations in such areas.
- iii. RHQ and the site staff will consult revenue authorities for their views on Substation locations. The scope of the EAMP is thus finalised for the substation sites.

#### ➤ Output

- i. Environmental Screening and Scoping document as part of the Feasibility Report. This report provides details of environmentally sensitive areas, environmental issues, and views of the Forest Department, Revenue Department, and an Initial Environment Assessment Report (IEAR).

### 5.2.2 Social Screening and Scoping for Substation

#### ➤ Objectives

- a. To identify socially sensitive areas, issues, and viable management measures
- b. To outline scope of Land Acquisition Assessment (LAA)
- c. To outline scope of Social Assessment and Management Plan (SAMP)

➤ **Process**

- i. ESMD, Engineering, site, and RHQ staff analyses alternative substation sites.
- ii. The field staff shall conduct spot verifications to avoid socially sensitive areas by exploring various options and submit details of alternative sites including other relevant information collected on various social issues. Social issues that could arise in power transmission projects are described in section 4.2 (Refer Appendix – XXV for Format on data collection).
- iii. ESMD, Engineering, site, and RHQ assess alternate sites for substations based on revenue records, other secondary information and through field visits. The composition of Project Affected People, if any, their needs, the type and scale of compensation and other R& R measures will also be assessed.
- iv. The ESMD, Engineering, site, and RHQs shortlist the optimum site for approval of competent authority and finalize LAA and scope of the SAMP.

➤ **Output**

- i. Social screening and scoping document with details on socially sensitive areas and social issues and views of PAPs and Revenue Department

### 1.2.3 Environmental Assessment & Management Planning

➤ **Objective**

- a. To prepare the EAMP for the transmission project

➤ **Process**

- i. RHQ and site staff in consultation with ESMD prepares a forest proposal for transmission line in the forest areas with the help of the Forest Departments. Which includes details of species, GBH classification of trees to be felled, cost-benefit analysis, identified degraded forestland, details of Compensatory Afforestation (CA) enumerated on a map and detailed programme for CA. For non-forest areas, an environmental review is undertaken and appropriate management measures are formulated. In the case of substations, an environmental review is undertaken and appropriate management measures are formulated.
- ii. ESMD and the authorised agency undertake an environmental review based on environmental screening and scoping and formulates a management plan for transmission lines and substations.

➤ **Output**

- i. EAMP containing details of environmental review, forest proposal, and associated management measures.

### 5.3 Project approval

Environmental and social management Steps are initiated during approvals and clearance stage of the Project cycle. At this stage the procedure of forest clearance are initiated by submitting forest proposal to MoEF and the funding agencies.

After receiving approval from these authorities, the process for implementation of EAMP is initiated by short-listing agencies and awarding contracts (if required) for environment management works.

Environmental and social risk assessment procedure includes the following.

- Forest clearance
- Funding agency acceptance

#### 1.3.1 Forest Clearance

➤ **Objective**

- a. To obtain forest clearance from MoEF

➤ **Process**

- i. POWERGRID submits a forest proposal in MoEF's prescribed format (refer Appendix - V) to the Nodal Officer of the concerned State who after scrutiny will forward it to concerned DFO for survey and assessment of the land proposed to be diverted for the transmission line and formulation of proposal.
- ii. DFO send forest proposal to Conservator of Forests and Principal Chief Conservator of Forests who will forward it to State Secretary of forests.
- iii. The Forest Proposal is sent to MoEF who approves the proposal in two stages. At the first stage, approval is conditional on POWERGRID depositing cost of compensatory afforestation to forest department and fulfilling any other stipulated condition. State Government informs MoEF about compliance of conditions and MoEF grants final approval (Refer Appendix –III).

➤ **Output**

- i. MoEF's final forest clearance allowing POWERGRID's activities in the given forest area

### 5.3.2 Funding Agency Acceptance

#### ➤ Objectives

- a. To get concurrence of the funding agencies related to environmental components of the project.

#### ➤ Process

- i. POWERGRID submits a feasibility report and details of EAMP/IEAR to funding agencies for appraisal (refer **Appendix XXX-A** for contents of IEAR). IEAR is based on walkover and preliminary survey. A detailed Final Environmental Assessment Report (FEAR) listing action/measures adopted for mitigation of possible environmental impact, details of environment/forest clearance, EMP implementation, monitoring details etc. after the environment/forest clearances are obtained from MoEF shall be compiled and submitted as per the requirement of multilateral funding agencies (refer **Appendix XXX-B** for content of FEAR).

#### ➤ Output

- i. The Feasibility Report/IEAR and FEAR are accepted by the funding agencies.

### 5.4 DETAILED design and tendering

Social assessment and management planning is undertaken during this phase. The SAMP that includes RAP and TPDP is submitted to funding agencies for appraisal. Consultation processes for implementation of EAMP is also initiated at this stage. The environmental and social management procedures undertaken during this phase are

- Social assessment and management planning
- Concurrence of funding agencies
- Consultation for environmental management work

#### 5.4.1 Social Assessment and Management Planning

#### ➤ Objectives

- a. To appoint a suitable agency for the SAMP (if required)
- b. To prepare SAMPs for substations and transmission lines (if required)

#### ➤ Process

- i. POWERGRID selects and appoint a suitable agency (if required) to prepare the SAMP. Preparation of the SAMP for transmission lines involves negotiation of the compensation

packages with revenue authorities and PAPs. A document is prepared setting out the final terms of compensation and other rehabilitation measures and after final negotiations, agreements are drafted.

- ii. POWERGRID finalises the substation sites, notify the area under LAA and undertakes a detailed land acquisition census.
- iii. POWERGRID assess social impacts of the land acquisition and finalize compensation and management measures, which include a Rehabilitation Action Plan (RAP), if affected families are more than 40. A Tribal People's Development Plan (TPDP) is also required if there is a potential of adverse impact on this community. (**Refer Appendix – XXXI & XXXII**). The compensation packages in the RAP and TPDP are evolved in consultation with the PAPs. POWERGRID's public consultation process is illustrated in Appendix - XIX. Activities, which POWERGRID suggests as compensation packages within its RAP, are illustrated in its entitlement framework.
- iv. POWERGRID, in consultation with PAPs and Revenue Authorities, decides on the compensation amount to be paid to the PAPs. If PAPs opt for cash compensation for loss of land or structure, they are provided cash compensation as per law and rehabilitation assistance/ a package for starting an income generation enterprise.
- v. POWERGRID consults PAPs/PAFs on the proposed rehabilitation measures listed in RAP/SAMP.

➤ **Output**

- i. SAMP for substations and transmission lines

#### 5.4.2 Concurrence of Funding Agency for SAMP

➤ **Objective**

- a. To obtain concurrence of funding agency for SAMP, if required

➤ **Process**

- i. POWERGRID submits SAMP with internal management approval to funding agency for concurrence.

➤ **Output**

- i. Concurrence of funding agency for SAMP

#### 5.4.3 Consultation for Environmental Management Work

- **Objective**
  - a. To implement Environment Management Plan (EAMP) with the help of authorised agencies.
- **Process**
  - i. ESMD, RHQ and site office consults the Forest Department and revenue authorities and public to undertake EAMP.
- **Output**
  - i. Authorised agencies (Forest Deptt.) consulted / informed for undertaking tree felling/loping in forest areas and implementation of CA scheme.

## 5.5 Project Implementation

Environmental and social management plan prepared earlier, are implemented during this phase. The Process include the following

- Execution of EAMP
- Award of social management contract
- Execution of social management works
- Environmental monitoring
- Social monitoring
- Annual environmental reviews
- Annual social reviews

### 5.5.1 Execution of Environmental Management Plan

- **Objective**
  - a. To undertake environmental management as prescribed in the EAMP/IEAR.
- **Process**
  - i. EAMP/IEAR are executed taking into account appropriate ground clearance for transmission line, ROW, etc. by the contractor, forest authorities carry out Compensatory Afforestation.
- **Output**
  - i. Tangible proof of execution of EAMP

### 5.5.2 Award of Social Management Contract

➤ **Objective**

- a. To select and appoint a suitable agency, if required, for implementing SAMP

➤ **Process**

- i. ESMD, RHQ and Contract Services department selects a suitable agency and appoint them to undertake the social management work.

➤ **Output**

- i. Agencies appointed to execute social management works

### 5.5.3 Execution of Social Management works

➤ **Objective**

- a. To undertake social management works as prescribed in the SAMP.

➤ **Process**

- i. POWERGRID shall pay the compensation and execute any other measures as agreed and documented in the SAMP for transmission lines.
- ii. POWERGRID deposits compensation with land acquisition authorities and take possession of land.
- iii. The Rehabilitation Assistance (RA) is disbursed to eligible PAPs prior to execution of civil works.
- iv. POWERGRID with the help of external agencies (if required) will execute all R&R measures prescribed in the SAMP/RAP.

➤ **Output**

- i. Tangible proof of execution of social management measures

### 5.6 Operation and maintenance

Environmental and social initiatives taken in earlier phase of project cycle are monitored in this phase.

#### 5.6.1 Environmental Monitoring

➤ **Objective**

- a. To monitor work undertaken as part of EAMP

➤ **Process**

- i. Regular patrolling of ROW and CA by DHQs
- ii. The substations to be monitored on a daily basis

➤ **Output**

- i. Periodic monitoring reports containing updates of execution of EAMP.

### 5.6.2 Social Monitoring

➤ **Objective**

- a. To monitor work undertaken as part of SAMP

➤ **Process**

- i. POWERGRID monitors all R&R measures.

➤ **Output**

- i. Periodic monitoring reports containing updates of execution of SAMP.

### 5.7 Annual review

POWERGRID management review the performance of environment and social management measures.

#### 5.7.1 External Audits/Review

➤ **Objective:**

- a. To verify/audit/certify for Integrated Management System (IMS) by external agency and have oversight and on-site performance audit of ESPP implementation through Independent Review Committee (IRC)

➤ **Process**

- i. POWERGRID shall get annual audit of implementation of IMS carried out through external agency having appropriate expertise.
- ii. POWERGRID shall organize review /on-site performance audit of EAMP & SAMP and maintain an oversight through Independent Review Committee (IRC) of experts from amongst the ESPP Review Committee on implementation and compliance of ESPP

➤ **Output**

- i. IMS Audit report by external agency.
- ii. On-site oversight / performance audit reports from IRC.

**5.7.2 Annual Environmental & Social Review**

➤ **Objective**

- a. To review annual progress of EAMP and SAMP in its transmission projects

➤ **Process**

- i. POWERGRID, internally or with a consultant (if necessary) review environmental performance of project during all phases of implementation including external audit findings

➤ **Output**

- i. Annual environment and social sustainability report<sup>15</sup>

---

<sup>15</sup> The first such Annual Sustainability Report is being prepared in consultation with M/s CII and shall be issued by mid 2009.

**Table 5.1: Environmental and Social Assessment & Management Process of A Typical Powergrid Transmission Project**

Milestones	Objectives	Process	Responsibility	Product/Decision
<b>I. Project Conceptualisation</b>				
1. Environmental and Social Screening & Scoping for Transmission Lines	<ul style="list-style-type: none"> <li>To identify environmentally and socially sensitive areas, issues and management measures possible</li> <li>To suggest alternate transmission line routes, if necessary</li> <li>To outline the scope of Environmental Assessment (EA) and Social Assessment (SA) studies</li> </ul>	<ul style="list-style-type: none"> <li>Screen and scope Transmission Lines from an environmental and social perspective               <ul style="list-style-type: none"> <li>- desk Review</li> <li>- spot Verification</li> <li>- informal public consultation</li> <li>- consultation with Forest Departments &amp; revenue Authorities</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>Engg. Dept.</li> <li>RHQ</li> <li>Site office</li> </ul>	<ul style="list-style-type: none"> <li>Environmental &amp; social screening and scoping documents as part of feasibility report and Initial Environment Assessment report.</li> </ul>
2. Environmental & Social approval	<ul style="list-style-type: none"> <li>To obtain environmental &amp; social approvals from the Internal Management, and FA</li> </ul>	<ul style="list-style-type: none"> <li>Submit FR (with E&amp;S screening &amp; scoping details) to Internal Management</li> <li>Submit FR (with environmental &amp; social screening and scoping details) with Internal Management approval for pre-appraisal by Funding Agencies</li> </ul>	<ul style="list-style-type: none"> <li>Engg. Dept</li> <li>Corp. Plg. Dept.</li> <li>ESMD</li> <li>Corp. Plg. Dept.</li> <li>ESMD</li> </ul>	<ul style="list-style-type: none"> <li>Internal Management Approval</li> <li>Concurrence of Funding Agencies</li> </ul>
<b>II. Project Planning</b>				
1. Environmental and Social Screening and Scoping for SubStations	<ul style="list-style-type: none"> <li>To identify environmentally and socially sensitive areas, issues and management measures possible</li> <li>To suggest alternate sub-station sites, if necessary</li> </ul>	<ul style="list-style-type: none"> <li>Screen and scope Sub-Station sites from an environmental and social perspective               <ul style="list-style-type: none"> <li>- Desk Review</li> <li>- Spot Verification</li> <li>- consultation with potential</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>Engg. Dept.</li> <li>RHQ</li> <li>Site office</li> </ul>	<ul style="list-style-type: none"> <li>Environmental &amp; social screening and scoping documents for sub-stations</li> </ul>

Milestones	Objectives	Process	Responsibility	Product/Decision
	<ul style="list-style-type: none"> <li>To outline the scope of Environmental Assessment (EA) and Land Acquisition Assessment (LAA) and Social Assessment (SA) studies</li> </ul>	PAPs, Forest Departments & Revenue Authorities		
2. Environmental Assessment & Management Planning	<ul style="list-style-type: none"> <li>To prepare environmental assessment management plans for the project</li> </ul>	<ul style="list-style-type: none"> <li>Transmission Lines</li> <li>a. Forest Areas <ul style="list-style-type: none"> <li>- tree enumeration</li> <li>- cost-benefit analysis</li> <li>- Compensatory Afforestation</li> </ul> </li> <li>b. Other Areas <ul style="list-style-type: none"> <li>- Undertake environmental review and formulate appropriate management measures</li> </ul> </li> <li>Sub-Stations <ul style="list-style-type: none"> <li>- Undertake environmental review and formulate appropriate management measures</li> </ul> </li> <li>Public Consultation <ul style="list-style-type: none"> <li>- To inform/record public views for refinement / review if needed</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>RHQ</li> <li>Site Auth.</li> <li>Agencies</li> </ul>	<ul style="list-style-type: none"> <li>Environmental assessment management plan</li> <li>- Environmental review</li> <li>- Forest Proposal</li> <li>- Environmental management measures</li> <li>- Views of Public</li> </ul>
3. Forest Clearance	<ul style="list-style-type: none"> <li>To obtain Forest Clearance</li> </ul>	<ul style="list-style-type: none"> <li>Submit Forest Proposal to state Government</li> <li>Forest Proposal to MoEF for conditional approval</li> <li>Forward Compliance report by State Government to MoEF for Final Forest Clearance</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>RHQ</li> <li>Site office</li> </ul>	<ul style="list-style-type: none"> <li>Final Forest Clearance by MoEF</li> </ul>

Milestones	Objectives	Process	Responsibility	Product/Decision
<b>III. Project Approvals</b>				
1. BoD Approvals	<ul style="list-style-type: none"> <li>To obtain financial approval from Board of Directors</li> </ul>	<ul style="list-style-type: none"> <li>Submit FR (with EAMP and social screening and scoping details) to CoD/BoD for their review</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>Corp. Plg. Dept.</li> <li>Engg. Dept.</li> </ul>	<ul style="list-style-type: none"> <li>Approval of Board of Directors</li> </ul>
2. Financial Agency's Acceptance	<ul style="list-style-type: none"> <li>To obtain acceptance from FA for environmental &amp; social components of feasibility report</li> </ul>	<ul style="list-style-type: none"> <li>Submit FR (with EAMP and social screening and scoping details) / IEAR to Funding Agencies for acceptance</li> </ul>	<ul style="list-style-type: none"> <li>Corp. Plg. Dept.</li> <li>ESMD</li> </ul>	<ul style="list-style-type: none"> <li>EAMP and social screening and scoping /IEAR approved by FA</li> </ul>
<b>IV. Detailed Design &amp; Award</b>				
1. Social Assessment & Management Planning	<ul style="list-style-type: none"> <li>To appoint a suitable agency for SAMP; If required</li> <li>To prepare social assessment &amp; management plan for transmission lines</li> <li>To prepare social assessment &amp; management plan for sub-stations</li> </ul>	<ul style="list-style-type: none"> <li>Select and appoint suitable agency for social assessment &amp; management planning, If required</li> <li>Transmission Lines <ul style="list-style-type: none"> <li>Negotiate compensation packages with Revenue Authorities and PAPs</li> <li>Finalise and document compensation and other management measures</li> </ul> </li> <li>Sub-Stations <ul style="list-style-type: none"> <li>Finalise site for sub-station</li> <li>Notify area under LAA</li> <li>Undertake detailed LA Census</li> <li>Final negotiations and documentation of agreements</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>Cont. Ser. Dept</li> <li>RHQ</li> <li>ESMD</li> <li>RHQ</li> <li>Site office</li> <li>ESMD</li> <li>External Agency.</li> <li>RHQ</li> <li>Site</li> </ul>	<ul style="list-style-type: none"> <li>Agency appointed for SAMP</li> <li>SAMP <ul style="list-style-type: none"> <li>Transmission line <ul style="list-style-type: none"> <li>Social review</li> <li>Compensation &amp; other management measures</li> </ul> </li> <li>Sub-station <ul style="list-style-type: none"> <li>LAA</li> <li>RAP/TPDP</li> </ul> </li> </ul> </li> </ul>
2. Concurrence of FA for Social Assessment & Management Plan	<ul style="list-style-type: none"> <li>To obtain concurrence of FA for the social assessment &amp; management plan (RAP/IPDP)</li> </ul>	<ul style="list-style-type: none"> <li>Submit social assessment &amp; management plan (with Internal Management approval) to FA for concurrence</li> </ul>	<ul style="list-style-type: none"> <li>Corp. Plg. Dept.</li> <li>ESMD</li> </ul>	<ul style="list-style-type: none"> <li>Concurrence of FA for SAMP</li> </ul>

Milestones	Objectives	Process	Responsibility	Product/Decision
3. Consultation for Environmental Management work and	<ul style="list-style-type: none"> <li>To take help from authorised agencies for environmental management work</li> </ul>	<ul style="list-style-type: none"> <li>Consult Authorised Agencies for environmental management work</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>RHQ</li> <li>Site office</li> </ul>	<ul style="list-style-type: none"> <li>Authorised Agencies Consulted to execute EM works</li> </ul>
4. Award of Social Management work	<ul style="list-style-type: none"> <li>To award social management work to appropriate agencies, if necessary</li> </ul>	<ul style="list-style-type: none"> <li>Award social management work to appropriate agencies through competitive bidding, if necessary</li> </ul>	<ul style="list-style-type: none"> <li>ESMD.</li> <li>Cont. Ser. Dept</li> <li>RHQ</li> </ul>	<ul style="list-style-type: none"> <li>Agencies appointed to execute SM works</li> </ul>
<b>V. Project Implementation</b>				
1. Execution of Environmental Management Works	<ul style="list-style-type: none"> <li>To undertake environmental management work as prescribed in environmental assessment management plan</li> </ul>	<ul style="list-style-type: none"> <li>Execute environmental management works               <ul style="list-style-type: none"> <li>Appropriate clearance for transmission line ROW, etc.</li> <li>Compensatory Afforestation</li> <li>Payment of tree/crop compensation</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>Authorised Agency</li> <li>RHQ</li> <li>Site office</li> <li>Contractors</li> </ul>	<ul style="list-style-type: none"> <li>Environment management measures executed</li> </ul>
2. Execution of Social Management Works	<ul style="list-style-type: none"> <li>To undertake social management work as prescribed in social assessment management plan (RAP/ IPDP)</li> </ul>	<ul style="list-style-type: none"> <li>Transmission lines               <ul style="list-style-type: none"> <li>Pay compensation as agreed &amp; documented in SAMP and execute other measures</li> </ul> </li> <li>Sub-stations               <ul style="list-style-type: none"> <li>Deposit compensation and take possession of land</li> <li>Disbursement of RA prior to civil works</li> <li>Execute RAP /TPDP measures as prescribed in the SAMP</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>External Agency</li> <li>RHQ</li> <li>Site</li> <li>Contractor</li> </ul>	<ul style="list-style-type: none"> <li>Social management measures executed</li> </ul>

Milestones	Objectives	Process	Responsibility	Product/Decision
<b>VI. Operation &amp; Maintenance</b>				
1. Environmental & Social Monitoring	<ul style="list-style-type: none"> <li>To monitor work being undertaken as part of EAMP and SAMP</li> </ul>	<ul style="list-style-type: none"> <li>Monitor EAMP measures               <ul style="list-style-type: none"> <li>- Maintenance of ROWs</li> <li>- Progress on compensatory afforestation</li> </ul> </li> <li>Monitor SAMP measures               <ul style="list-style-type: none"> <li>- Appropriate compensation and other measures during maintenance of towers and lines</li> <li>- Progress on R&amp;R measures to restore livelihood</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>ESMD.</li> <li>RHQ</li>   <li>ESMD</li> <li>RHQ</li> </ul>	<ul style="list-style-type: none"> <li>Periodic monitoring reports</li> </ul>
<b>VII. Project Review</b>				
1. External IMS Audit	<ul style="list-style-type: none"> <li>To verify status of compliance and implementation of IMS</li> </ul>	<ul style="list-style-type: none"> <li>Appoint an external agency with appropriate expertise to conduct the review/ audit of performance of implementation of IMS</li> </ul>	<ul style="list-style-type: none"> <li>ESMD/QA&amp;I</li> </ul>	<ul style="list-style-type: none"> <li>IMS audit report from External Agency.</li> </ul>
2. Oversight and on-site Performance Audit /Review	<ul style="list-style-type: none"> <li>To verify / review implementation of ESPP</li> </ul>	<ul style="list-style-type: none"> <li>Performance audit to review compliance of EAMP, SAMP at project site / field by IRC.</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> </ul>	<ul style="list-style-type: none"> <li>IRC on-site oversight / performance audit reports.</li> </ul>
3. Annual Environmental & Social Review	<ul style="list-style-type: none"> <li>To review annually the EAMP and the SAMP of transmission projects</li> </ul>	<ul style="list-style-type: none"> <li>Appoints an external agency with appropriate expertise to conduct environmental and social performance of project during construction operation and maintenance including IMS audit findings</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> </ul>	<ul style="list-style-type: none"> <li>Annual environmental and social sustainability report</li> </ul>

## 5.8 Environmental and social risk management framework

Environmental and Social Risk Assessment is a vital part of POWERGRID's environmental and social management strategies. The risk assessment process identifies existing risks, and forecast future potential risks in its power transmission projects. It is a scientific process that includes Cost Benefit Analysis. The environment and social management procedures developed by POWERGRID evaluate these risks, both qualitatively and quantitatively, and prioritise them. Based on prioritisation, environment and social management options are selected.

POWERGRID's risk assessment process involves several, successive, interactive stages, which have been included in the environmental and social assessment and management procedures and are, listed below

- Risk Identification
- Risk Assessment
- Risk Characterisation
- Risk Management
- Risk Mitigation
- Risk Preparedness

POWERGRID, based on its environmental and social risk assessment process, decides on management options to eliminate or minimises environmental and social impacts. The risk management process includes risk preparedness, risk mitigation and the sharing of liabilities (via Internal Arrangements and Insurance). Responsibilities in the event of occurrence of a risk have been illustrated in **Table 5.2**.

### Via Internal Arrangement

To absorb the risk in the event of its occurrence POWERGRID strengthens existing internal capacities. This would include creating funds or supplementing present funds to prepare for contingencies such as major ecological disasters adverse or health impact resulting in environmental human disease.

### Via Insurance

To share risk, POWERGRID maintains existing insurance schemes and supplement them to give it fuller coverage as regards environmental and social risks. The only legislation relevant to environmental insurance is the Public Liability Insurance Act, 1991. This Act makes it mandatory for any owner dealing with and handling hazardous substance to take out an insurance policy. In case of an industrial accident, payment to the victims will be made from the relief funds and insurance cover.

**Table 5.2: POWERGRID's Risk Responsibility Framework**

Risk	Key Role-players			
	GOI	POWERGRID	Contractor	Insurers
Non Compliance				
➤ Regulatory	✓	✓	✓	–
➤ Contractual	–	–	✓	–
Major hazards, e.g. tower fall during construction	–	✓	✓	✓
During O&M	–	✓	–	–
Impacts on health etc.	–	✓	–	–
Force Majeure				
➤ Insurable	–	–	–	✓
➤ Non-Insurable	✓	✓	–	–
Inclusion/ Exclusion of concerned Communities/ NGOs	✓	✓	–	–
Public interest mitigation	✓	✓	–	–

# 6.0 INSTITUTIONAL FRAMEWORK

ESPP implementation requires an organization support structure in the form of organizational requirements, training needs and plan, and information management system. The following section captures these institutional arrangements for ESPP implementation by its 7956 employees consisting of 3526 executives, 1819 supervisors and 2611 workers who collectively have experience of laying and maintaining 69,500 Ckms of EHVAC and HVDC transmission lines as on Jan'09. Moreover, services of regionally dispersed NGOs and leading Environment/ Social Institutes are utilized for environment / social assessment of projects. Independent experts, specializing in the relevant discipline, are also engaged to deal with complex and technical issues like socio-economic survey, wildlife impact assessment etc. Compliance of ESPP provisions at field level is also monitored / reviewed regularly through Independent Review Committee (IRC).

## 6.1 ORGANISATIONAL REQUIREMENTS

To ensure quality and strengthen organizational systems to enable effective implementation of the ESPP, POWERGRID sets out procedures and provides an enabling work culture that encourages total involvement of all its personnel. A strategic environment has been adopted within the organizational structure that is marked by:

- A synchronized system of functioning coordinated by a Corporate Planning and Corporate Monitoring group, which monitors all activities in the organization
- An emphasis on intradepartmental approach to all projects, delineation of departmental responsibilities and the delegation and decentralization of authority resulting in a fast response and quick adjustment to change
- A commitment to provide at all times the best possible time bound quality service in all areas of its operations.

POWERGRID's commitment to the ESPP is evolved along these principles. To ensure effective implementation of its ESPP, POWERGRID will focus on:

- Strengthening the implementation of the ESPP by redeployment of appropriately trained personnel at key levels
- Reinforcing in-house capabilities by working with specialized external agencies

- Placing dedicated manpower with specialization in the respective field to deal with and manage the environment and social issues;
- Reviewing progress of the ESPP internally or through external agencies

The operations are divided into nine regions, which consist of several site offices to oversee transmission projects; and maintenance of transmission lines and substations. Site offices report to Regional Headquarters (RHQs). RHQs have overall responsibility for construction, operation, and maintenance of transmission systems apart from providing necessary support services. **Refer Appendix – XXXIII, XXXIV, XXXV and XXXVI**, for the basic structure of the corporate headquarters, RHQs and Site office.

## 6.2 ORGANISATIONAL STRUCTURE AND RESPONSIBILITIES

An organizational structure has been developed at the corporate, regional and site level to aid effective implementation of the ESPP document. The organizational flowcharts are as per **Figure 6.1** and **6.2**.

At the corporate level, an Environment and Social Management Department (ESMD) has been formed, which even though has been existing since 1993, but came in its present form in 1998 with the development of the ESPP document. The key responsibilities of ESMD are;

- Coordinating environmental and social commitments and initiatives with various multilateral agencies and the MoEF.
- Coordination of all environmental activities related to a project from conceptualisation to operation and maintenance.
- Advising and coordinating RHQs and Site offices to carry out environmental and social surveys for new projects.
- Assisting RHQs and Site offices to finalize routes of entire power transmission line considering environmental and social factors that could arise enroute
- Advising RHQs and Site offices to follow-up with the state forest offices and other state departments in expediting forest clearances and the land acquisition process of various ongoing and new projects
- Providing a focal point for interaction with the MoEF for expediting forest clearances and follow-ups with the Ministry of Power on environmental and social issues
- Training of RHQs & Site officials on environment and social issues and their management plan
- Training of other departments (especially Engineering, Legal, Corporate Planning, Human Resources Management and Contract Services department) to familiarize them with the ESPP document

From time to time POWERGRID also deploys staff with requisite skill base to strengthen the in house capacity of ESMD. Some of the key areas considered are expertise in Rapid Appraisal techniques, social issues identification, negotiation skills, management and mitigation techniques and land acquisition assessment skills. These personnel after receiving appropriate training are absorbed in the functioning of ESMD.

At the regional level (RHQ's) an Environmental and Social Management Cell (ESMC) has been created to provide a nodal point to manage environmental and social issues of projects under its jurisdiction and to coordinate between ESMD and the Site office. The key functions of ESCMC are;

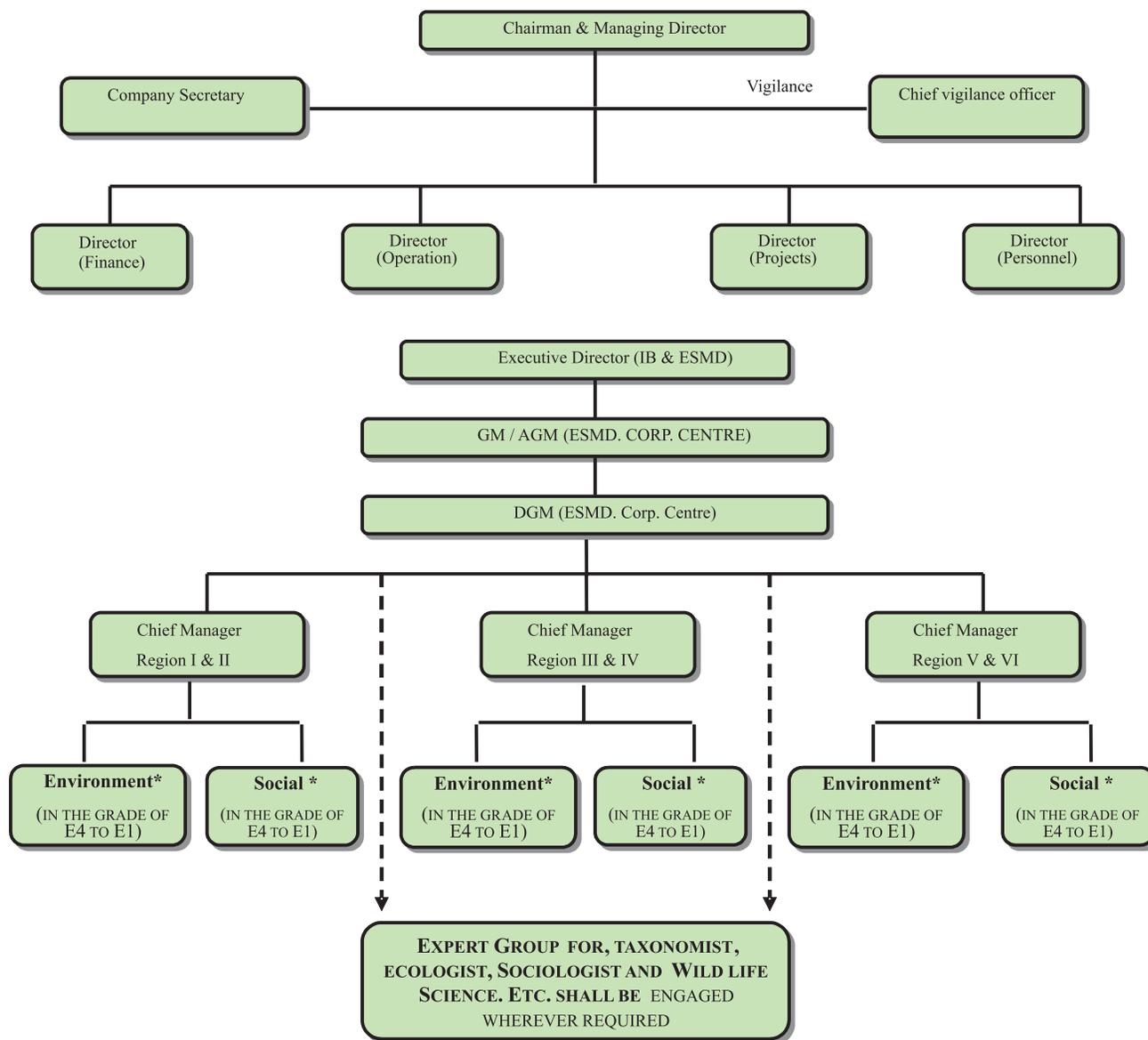
- Advising and coordinating with site offices to carry out environmental and social surveys for new projects envisioned in the corporate investment plan
- Assisting the ESMD and sites to finalize routes of power transmission lines considering the environmental and social factors that could arise enroute.
- Follow-up forest clearances and land acquisition processes with state forest offices and other state departments for various ongoing and new projects.
- Supervision and Monitoring of EAMP & SAMP implementation

At the site level the site incharge, after receiving appropriate training from the RHQ's is responsible for implementation of the requirements of this ESPP document. The site head will select and deploy personnel with relevant background, to form a core group called the Environmental and Social Management Team (ESMT). The key responsibilities of ESMT are;

- Conduct surveys on environmental and social aspects to finalize the route for the transmission lines
- Conduct surveys on sites being considered for land acquisition
- Interact with the Forest Departments to develop the forest proposal and follow up for MoEF clearance.
- Interact with Revenue Authorities for land acquisition and follow up with authorized agencies for implementation of SAMP.
- Implementation of EAMP and SAMP
- Monitoring of EAMP and SAMP and producing periodic reports.

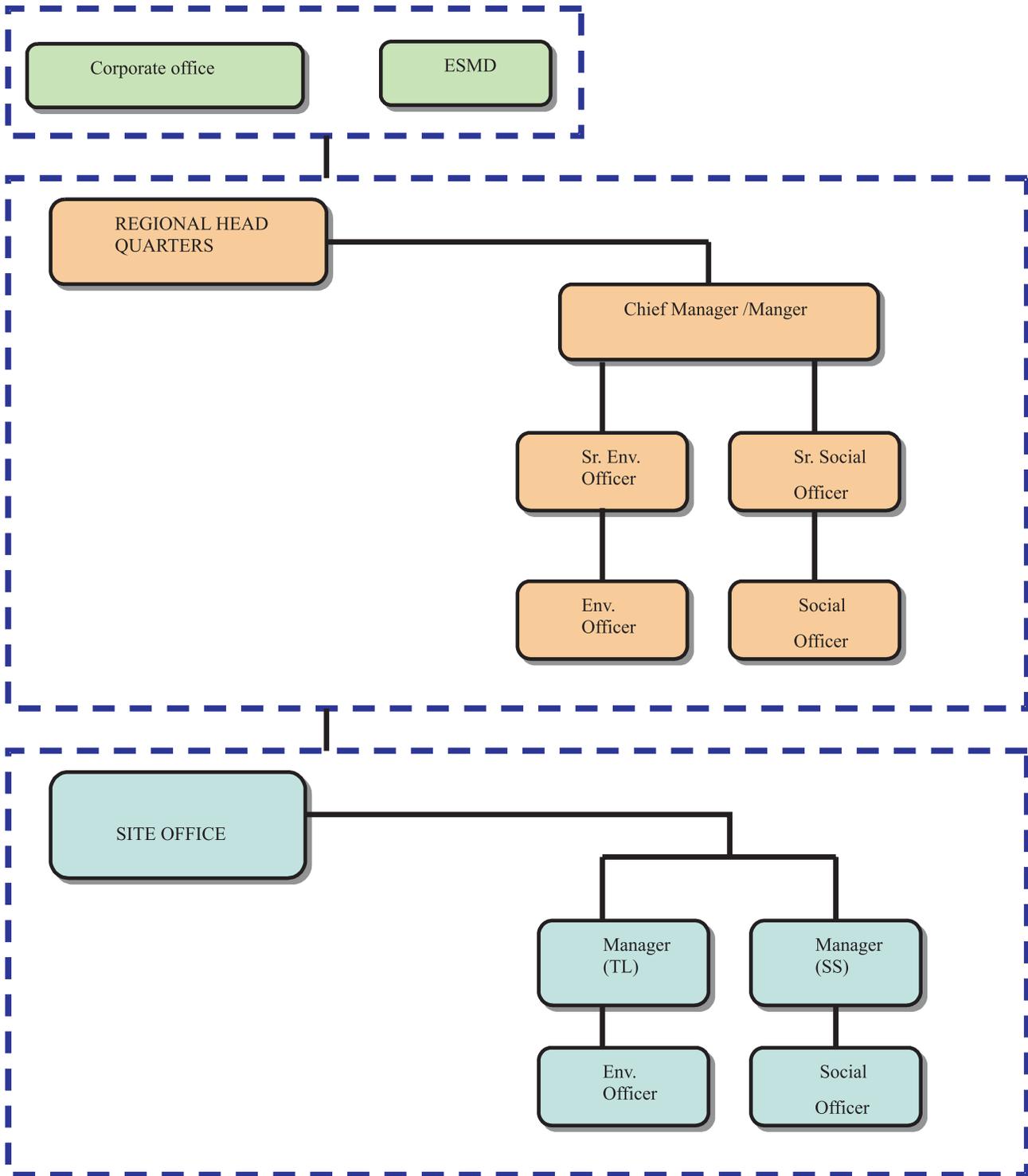
A responsibility allocation matrix has been developed as per **Table 6.1**. This matrix captures the project activities, environmental and social management processes, key indicators to monitor progress, roles, and responsibilities of various stakeholders at different levels and involvement of external agencies.

**Figure 6.1: ESMD Structure at Corporate Center**



\* Personnel with specialization in respective field being placed through recruitment/ deputation.

Figure 6.1: ESMD Structure at Corporate Center



**Table 6.1: Responsibility allocation framework for the E&S assessment & management process**

Milestones	Process	Output / Indicators	Responsibility			
			Preparation/ Execution	Review	Approval	External Preparation
<b>I. Project Conceptualisation</b>						
1. Environmental & Social Screening and Scoping for Transmission Lines	<ul style="list-style-type: none"> <li>Screen and scope Transmission Lines from an environmental &amp; social perspective</li> </ul>	<ul style="list-style-type: none"> <li>E &amp; S screening and scoping documents as part of FR</li> </ul>	<ul style="list-style-type: none"> <li>RHQ</li> <li>Site office</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>Engg. Dept.</li> </ul>	<ul style="list-style-type: none"> <li>Internal Management Approval</li> </ul>	<ul style="list-style-type: none"> <li>Initial Environment Assessment Report</li> </ul>
2. Environmental & Social approval	<ul style="list-style-type: none"> <li>Submit FR (with E&amp;S Screening &amp; scoping details) to Internal Management Approval</li> <li>Submit FR (with E&amp;S Screening &amp; scoping details) with Internal Management Approval for pre-appraisal by FA</li> </ul>	<ul style="list-style-type: none"> <li>Internal Mgt. Approval</li> <li>Concurrence of funding agencies</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>Corp.Plg. Dept.</li> <li>Corp. Plg. Dept</li> <li>ESMD</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>Engg. Dept.</li> <li>Corp.Plg. Dept.</li> <li>Corp. Plg. Dept.</li> </ul>	<ul style="list-style-type: none"> <li>Internal Management Approval</li> <li>Internal Management Approval</li> </ul>	<ul style="list-style-type: none"> <li>Pre-appraisal by FA</li> </ul>
<b>II. Project Planning</b>						
1. Environmental & Social Screening and Scoping for Sub-stations	<ul style="list-style-type: none"> <li>Screen and scope Sub-stations sites from an environmental &amp; social perspective</li> <li>Public Consultation</li> </ul>	<ul style="list-style-type: none"> <li>E&amp;S Screening and Scoping reports for Sub-station sites</li> </ul>	<ul style="list-style-type: none"> <li>RHQ</li> <li>Site office</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>Engg. Dept.</li> </ul>	<ul style="list-style-type: none"> <li>Internal Management Approval</li> </ul>	<ul style="list-style-type: none"> <li>Ext. Agency like revenue, forest dept etc. for social Screening &amp; Scoping</li> </ul>
2. Environmental Assessment & Management Planning	<ul style="list-style-type: none"> <li>To prepare an environmental &amp; social management plan               <ul style="list-style-type: none"> <li>- Transmission Lines</li> <li>- Sub-Stations</li> <li>- Public Consultation</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Environmental assessment management plan</li> </ul>	<ul style="list-style-type: none"> <li>RHQ</li> <li>Site</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> </ul>	<ul style="list-style-type: none"> <li>Internal Management Approval</li> </ul>	<ul style="list-style-type: none"> <li>State Forest Dept</li> </ul>

Milestones	Process	Output / Indicators	Responsibility			
			Internal		External	
			Preparation/ Execution	Review	Approval	Preparation
3. Forest Clearance	<ul style="list-style-type: none"> <li>Submit Forest Proposal to state Government</li> <li>Forest Proposal to MoEF for conditional approval</li> <li>Forward FP to MoEF for Final Forest Clearance</li> </ul>	<ul style="list-style-type: none"> <li>Final Forest Clearance by MoEF</li> </ul>	<ul style="list-style-type: none"> <li>RHQ</li> <li>Site office</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>FD</li> </ul>	<ul style="list-style-type: none"> <li>Internal Management Approval</li> </ul>	<ul style="list-style-type: none"> <li>RMoEF / MoEF</li> </ul>
<b>III. Project Approvals</b>						
1. GOI Authorities Approvals	<ul style="list-style-type: none"> <li>Submit FR (with ESMP and social Screening &amp; Scoping reports) Planning Commission, Pre-PIB, PIB, CCEA &amp; GOI for approvals</li> </ul>	<ul style="list-style-type: none"> <li>EAMP and social Screening and scoping (Approved as part of FR) by GOI Authorities</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>Corp. Plg. Dept.</li> <li>Engg. Dept.</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>Corp. Plg. Dept.</li> <li>Engg. Dept.</li> </ul>	<ul style="list-style-type: none"> <li>Internal Management Approval</li> </ul>	
2. FA Acceptance	<ul style="list-style-type: none"> <li>Submit FR (with environmental assessment management plan and social screening and scoping details) to Funding Agencies for appraisal</li> </ul>	<ul style="list-style-type: none"> <li>EAMP and social screening &amp; scoping (conducted as part of feasibility report) by FA</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>Corp. Plg. Dept.</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>Corp. Plg. Dept.</li> </ul>	<ul style="list-style-type: none"> <li>Internal Management Approval</li> </ul>	<ul style="list-style-type: none"> <li>Detailed appraisal and concurrence</li> </ul>
<b>IV. Detailed Design &amp; Award</b>						
1. Social Assessment & Management Planning	<ul style="list-style-type: none"> <li>Select and appoint suitable agency for social assessment &amp; management planning (if necessary)</li> </ul>	<ul style="list-style-type: none"> <li>Agency appointed for SAMP (if necessary)</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>Cont. Ser.</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>Cont. Ser.</li> <li>Legal Dept.</li> </ul>	<ul style="list-style-type: none"> <li>BOD</li> </ul>	

Milestones	Process	Output / Indicators	Responsibility			
			Internal		External	
			Preparation/ Execution	Review	Approval	Preparation
	<ul style="list-style-type: none"> <li>To prepare a social assessment and management plan for               <ul style="list-style-type: none"> <li>- Transmission Lines</li> <li>- Sub-stations</li> <li>- Public Disclosure</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Social assessment and management plan</li> </ul>	<ul style="list-style-type: none"> <li>RHQ</li> <li>Site office</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> </ul>	<ul style="list-style-type: none"> <li>Internal Management Approval</li> </ul>	<ul style="list-style-type: none"> <li>Ex. Agency (if required) for detailed socio-economic survey.</li> </ul>
2. Concurrence of FA for SAMP	<ul style="list-style-type: none"> <li>Submit SAMP (with BOD approval to FA for concurrence)</li> </ul>	<ul style="list-style-type: none"> <li>Concurrence of FA for SAMP</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>Corp. Plg. Dept.</li> </ul>	<ul style="list-style-type: none"> <li>Corp. Plg. Dept.</li> </ul>	<ul style="list-style-type: none"> <li>Internal Management Approval</li> </ul>	<ul style="list-style-type: none"> <li>Appraisal/ review by FA</li> </ul>
3. Consultation for EM works & Tendering & Award of EM & SM Contracts	<ul style="list-style-type: none"> <li>Consult authorised agencies (forest dept.) for environmental management work</li> <li>Select and award social management work to appropriate agencies through competitive bidding, if necessary</li> </ul>	<ul style="list-style-type: none"> <li>Authorised agencies consulted to execute environmental management works</li> <li>Agencies appointed to execute social management works</li> </ul>	<ul style="list-style-type: none"> <li>RHQ</li> <li>Site</li> <li>RHQ</li> <li>Site office</li> <li>Cont. Ser.</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>ESMD</li> <li>Legal Dept.</li> </ul>	<ul style="list-style-type: none"> <li>Internal Management Approval</li> </ul>	
<b>V. Project Implementation</b>						
1. Execution of Environmental Management Works	<ul style="list-style-type: none"> <li>Execute environmental management works</li> </ul>	<ul style="list-style-type: none"> <li>Environmental management measures executed</li> </ul>	<ul style="list-style-type: none"> <li>RHQ</li> <li>Site office</li> <li>Authorised agency</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> </ul>	<ul style="list-style-type: none"> <li>Internal Management Approval</li> </ul>	

Milestones	Process	Output / Indicators	Responsibility			
			Internal		Approval	External Preparation
			Preparation/ Execution	Review		
2. Execution of Social Management Works	<ul style="list-style-type: none"> <li>Execute social management works               <ul style="list-style-type: none"> <li>- Transmission lines</li> <li>- Sub-stations</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Social management measures executed</li> </ul>	<ul style="list-style-type: none"> <li>RHQ</li> <li>Site office</li> <li>Ext. Agency (if required)</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>RHQ</li> </ul>	<ul style="list-style-type: none"> <li>Internal Management Approval</li> </ul>	<ul style="list-style-type: none"> <li>Ex. Agency (if required) for SAMP implementation.</li> </ul>
<b>VI. Operation &amp; Maintenance</b>						
1. Environmental & Social Monitoring	<ul style="list-style-type: none"> <li>Monitor environmental assessment management plan measures</li> <li>Monitor social assessment &amp; management plan measures</li> </ul>	<ul style="list-style-type: none"> <li>Periodic monitoring reports</li> <li>Periodic monitoring reports</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>RHQ</li> <li>Site office</li> <li>ESMD</li> <li>RHQ</li> <li>Site office</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> <li>ESMD</li> </ul>	<ul style="list-style-type: none"> <li>Internal Management Approval</li> <li>Internal Management Approval</li> </ul>	
<b>VII. Project Review</b>						
1. Annual Environmental & Social Review	<ul style="list-style-type: none"> <li>Appointment of consultant</li> <li>Review and report on environmental and social performance of project during construction operation and maintenance</li> </ul>	<ul style="list-style-type: none"> <li>Annual environmental and social review report</li> </ul>	<ul style="list-style-type: none"> <li>ESMD</li> </ul>		<ul style="list-style-type: none"> <li>Internal Management Approval</li> </ul>	<ul style="list-style-type: none"> <li>Ex. Auditors (if required)</li> </ul>

### 6.3 TRAINING AND DEVELOPMENT

Training and development of employees is an integral part for implementation of ESPP. A training needs identification has been carried out at Corporate, Regional and Site level, based on which focused training modules have been developed for;

- Strengthening in house corporate level capacity to implement the provisions of ESPP
- Creating Awareness, providing the tools for implementation of Environmental and Social Policy, and accompanying set of management procedures to all departments
- Developing competence within key employees to provide training in their respective departments

Based on the training needs identification ESMD, ESMC and ESMT are key organizational support groups identified, which need to have the required competence to integrate the ESPP document within all departments. The skill requirement for these groups is as depicted in **Table 6.2**. Based on skill requirement/improvement at all levels for proper implementation of ESPP, a training programme focusing personnel at Corporate, RHQ's and site has been developed (**Table 6.3**) which will be implemented by the Human Resource Department in the next two years. These training programs are to be conducted with the help of local and national training institutions and experts in various aspects of environmental and social management. Human Resource Department will also identify courses offered by the premier institutions in India and abroad on environment and social management and inter-phase these with identified programme.

### 6.4 INFORMATION MANAGEMENT

Internal and External Communication systems have been developed with roles and responsibilities of all stakeholders specified. ESMD has been identified, as the central nodal agency for ESPP implementation, so all communications to other departments will be made directly by them. The following modes of communication have been identified;

- Requests for information from field /sites by the corporate headquarters are routed through the RHQs.
- Departments at the corporate office such as Engineering and ESMD coordinate with the RHQs directly
- The corporate planning department interfaces with Funding Agencies and most of the government of India authorities
- For clearance procedures, ESMD directly interfaces with MoEF, and Engineering directly interfaces with MOP/CEA.

**Table 6.2: Powergrid's skill requirement**

Milestones	Environment and social Management Team	Environment and social Management Cell	Environment and social Management Department	Engineering Department	Corporate Planning Department
1. Environmental & Social Screening and Scoping for Transmission Lines	<ul style="list-style-type: none"> <li>EA &amp; SA process</li> <li>Env. &amp; Soc. issues identification skills</li> <li>Negotiation skills</li> <li>Mitigation techniques</li> </ul>	<ul style="list-style-type: none"> <li>EA &amp; SA process</li> <li>Negotiation skills</li> <li>E&amp;S management techniques</li> <li>Risk assessment &amp; management techniques</li> </ul>	<ul style="list-style-type: none"> <li>ESPP &amp; Project cycle</li> <li>Indian &amp; FA requirements</li> <li>EA &amp; SA process</li> <li>Negotiation skills</li> <li>E&amp;S management techniques</li> <li>Risk Assessment &amp; Management techniques</li> </ul>	<ul style="list-style-type: none"> <li>E &amp; S issues identification skills</li> <li>EA &amp; SA process</li> </ul>	
2. Environmental & Social approval					<ul style="list-style-type: none"> <li>EA &amp; SA process</li> <li>ESPP &amp; project cycle</li> <li>Indian &amp; FA requirement</li> <li>E&amp;S mgt. Techniques</li> </ul>
3. Environmental & Social Screening and Scoping for sub-station sites	<ul style="list-style-type: none"> <li>EA &amp; SA process</li> <li>Env. &amp; Soc. issues identification skills</li> <li>LAA process</li> <li>RRA</li> </ul>	<ul style="list-style-type: none"> <li>EA &amp; SA process</li> <li>EM &amp; SM techniques</li> <li>Indian &amp; FA requirements</li> <li>LAA process</li> <li>RRA</li> <li>RA &amp; Mgt. techniques</li> </ul>	<ul style="list-style-type: none"> <li>EA &amp; SA process</li> <li>EM &amp; SM techniques</li> <li>Indian &amp; FA requirements</li> <li>LAA process</li> <li>RRA</li> <li>RA &amp; Mgt. techniques</li> </ul>	<ul style="list-style-type: none"> <li>E &amp; S issues identification skills</li> <li>EA &amp; SA process</li> <li>LAA process</li> </ul>	
4. Environmental Assessment and Management Planning	<ul style="list-style-type: none"> <li>EA process</li> <li>EM techniques</li> <li>Risk assessment</li> <li>Forest proposal</li> </ul>	<ul style="list-style-type: none"> <li>EM techniques</li> <li>Indian &amp; FA requirements</li> <li>Forest clearance</li> </ul>	<ul style="list-style-type: none"> <li>EM techniques</li> <li>Indian &amp; FA requirements</li> <li>Forest clearance process</li> <li>Negotiation skills</li> </ul>	<ul style="list-style-type: none"> <li>EA process</li> <li>EM techniques</li> </ul>	

Milestones	Environment and social Management Team	Environment and social Management Cell	Environment and social Management Department	Engineering Department	Corporate Planning Department
	process <ul style="list-style-type: none"> <li>Compensatory afforestation process</li> </ul>	process <ul style="list-style-type: none"> <li>Negotiation skills</li> <li>Compensatory afforestation process</li> </ul>	<ul style="list-style-type: none"> <li>Compensatory afforestation process</li> </ul>		
5. Forest Clearance	<ul style="list-style-type: none"> <li>Forest proposal process</li> <li>Compensatory afforestation process</li> </ul>	<ul style="list-style-type: none"> <li>Forest clearance process</li> <li>Indian &amp; FA requirements</li> <li>Negotiation skills</li> </ul>	<ul style="list-style-type: none"> <li>Forest clearance process</li> <li>Indian &amp; FA requirements</li> <li>Negotiation skills</li> </ul>	<ul style="list-style-type: none"> <li>Forest clearance process</li> </ul>	
6. GOI Approvals			<ul style="list-style-type: none"> <li>Indian &amp; FA requirements</li> <li>Awareness of Indian laws, polices on environment and social aspects</li> </ul>		<ul style="list-style-type: none"> <li>Indian &amp; FA requirements</li> <li>Awareness of Indian laws, polices on environment and social aspects</li> </ul>
7. FA acceptance			<ul style="list-style-type: none"> <li>Indian &amp; FA requirements</li> <li>Awareness of Indian laws polices on E&amp;S aspects</li> </ul>		<ul style="list-style-type: none"> <li>Indian &amp; FA requirements</li> <li>Awareness of Indian laws, polices on E&amp;S aspects</li> </ul>
8. Social Assessment and Management Planning	<ul style="list-style-type: none"> <li>SA process</li> <li>LAA process</li> <li>RRA</li> <li>Public consult skills</li> <li>SM process</li> </ul>	<ul style="list-style-type: none"> <li>SA process</li> <li>LAA process</li> <li>RRA</li> <li>Public consult skills</li> <li>SM process</li> <li>Indian &amp; FA requirements</li> </ul>	<ul style="list-style-type: none"> <li>SA process</li> <li>LAA process</li> <li>RRA</li> <li>Public consult skills</li> <li>SM process</li> <li>Indian &amp; FA requirements</li> </ul>	<ul style="list-style-type: none"> <li>SA process</li> <li>SM techniques</li> <li>LAA process</li> <li>RRA</li> </ul>	

Milestones	Environment and social Management Team	Environment and social Management Cell	Environment and social Management Department	Engineering Department	Corporate Planning Department
9. Concurrence of FA for SAMP					<ul style="list-style-type: none"> <li>Indian &amp; FA requirements</li> <li>Awareness of Indian laws, policies on environment and social aspects</li> </ul>
10. Consultation for EM works and Tendering & Award of SM Contracts		<ul style="list-style-type: none"> <li>Consultation capabilities to meet EAMP</li> <li>Skills to assess Consultation capabilities to meet SAMP</li> </ul>	<ul style="list-style-type: none"> <li>Consultation capabilities to meet EAMP</li> <li>Skills to assess Consultation capabilities to meet SAMP</li> </ul>		
11. Execution of EM works	<ul style="list-style-type: none"> <li>EM techniques</li> <li>Compensatory Afforestation process</li> </ul>	<ul style="list-style-type: none"> <li>EM techniques</li> <li>Compensatory Afforestation process</li> </ul>	<ul style="list-style-type: none"> <li>EM techniques</li> <li>Compensatory Afforestation process</li> </ul>	<ul style="list-style-type: none"> <li>EM process</li> </ul>	
12. Execution of SM works	<ul style="list-style-type: none"> <li>SM process</li> <li>SM techniques</li> </ul>	<ul style="list-style-type: none"> <li>SM process</li> <li>SM techniques</li> </ul>	<ul style="list-style-type: none"> <li>SM process</li> <li>SM techniques</li> </ul>	<ul style="list-style-type: none"> <li>SM process</li> </ul>	
13. Monitoring	<ul style="list-style-type: none"> <li>Monitoring techniques</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring techniques</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring Techniques</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring techniques</li> </ul>	
14. IMS Audit	<ul style="list-style-type: none"> <li>Internal Auditing</li> </ul>	<ul style="list-style-type: none"> <li>Internal Auditing</li> </ul>	<ul style="list-style-type: none"> <li>Internal Auditing</li> </ul>	<ul style="list-style-type: none"> <li>Internal Auditing</li> </ul>	<ul style="list-style-type: none"> <li>Internal Auditing</li> </ul>
15. Annual E&S Review		<ul style="list-style-type: none"> <li>Review process</li> </ul>	<ul style="list-style-type: none"> <li>Review process</li> </ul>		

**Table 6.3: Staff development programme**

Course	Training Schedule	Duration of Programme	Staff to be Trained	Department
<b>1. CORPORATE HEADQUARTERS</b>				
<ul style="list-style-type: none"> <li>• ESPP</li> <li>• Policy</li> <li>• Contents of ESPP</li> <li>• How POWERGRID will implement the ESPP</li> </ul>	<ul style="list-style-type: none"> <li>• Workshop</li> </ul>	<ul style="list-style-type: none"> <li>• 1/2 day or 1 day</li> </ul>	<ul style="list-style-type: none"> <li>• All senior staff (Dir, Exe. Dir GM, AGM)</li> </ul>	<ul style="list-style-type: none"> <li>• All</li> </ul>
<ul style="list-style-type: none"> <li>• ESPP</li> <li>• Policy</li> <li>• Project cycle</li> <li>• E&amp;S assessment and Management process</li> </ul>	<ul style="list-style-type: none"> <li>• Workshop</li> </ul>	<ul style="list-style-type: none"> <li>• 2 days</li> </ul>	<ul style="list-style-type: none"> <li>• DGM, Ch. Mgr. Manager and other Junior Tech. Staff</li> </ul>	<ul style="list-style-type: none"> <li>• ESMD</li> <li>• Engg. Dept.</li> <li>• Corp. Plg.</li> <li>• Cont. Ser.</li> <li>• Legal Dept.</li> </ul>
<ul style="list-style-type: none"> <li>• ESPP</li> <li>• Project cycle</li> <li>• EA&amp;SA process</li> <li>• Env. &amp; Soc. issue identification</li> <li>• Land Acquisition Assessment               <ul style="list-style-type: none"> <li>- Public consultation</li> <li>- Rapid Appraisal Techniques</li> </ul> </li> <li>• Risk Assessment &amp; Management</li> <li>• EMP &amp; SMP</li> </ul>	<ul style="list-style-type: none"> <li>• Training programme</li> </ul>	<ul style="list-style-type: none"> <li>• 3 days</li> </ul>	<ul style="list-style-type: none"> <li>• Manager, Sr. Scientist, Engg. level, staff</li> </ul>	<ul style="list-style-type: none"> <li>• ESMD</li> </ul>
<b>2. REGIONAL HEADQUARTERS/ DISTRICT HEADQUARTERS</b>				
<ul style="list-style-type: none"> <li>• ESPP</li> <li>• Policy</li> <li>• Contents of ESPP</li> <li>• How POWERGRID will implement the ESPP</li> </ul>	<ul style="list-style-type: none"> <li>• Workshop</li> </ul>	<ul style="list-style-type: none"> <li>• 1/2 day or 1 day</li> </ul>	<ul style="list-style-type: none"> <li>• All senior staff of RHQ</li> </ul>	<ul style="list-style-type: none"> <li>• All</li> </ul>

Course	Training Schedule	Duration of Programme	Staff to be Trained	Department
<ul style="list-style-type: none"> <li>• ESPP</li> <li>• Policy</li> <li>• Project cycle</li> <li>• E&amp;S assessment &amp; management process</li> </ul>	<ul style="list-style-type: none"> <li>• Workshop</li> </ul>	<ul style="list-style-type: none"> <li>• 2 days</li> </ul>	<ul style="list-style-type: none"> <li>• DHQ Heads, Manager, Sr. Scientist, Engg. level, staff</li> </ul>	<ul style="list-style-type: none"> <li>• DHQ heads</li> <li>• ESMC</li> <li>• Engg. Dept.</li> <li>• Corp. Plg.</li> <li>• Cont. Ser.</li> <li>• Legal Dept.</li> </ul>
<ul style="list-style-type: none"> <li>• ESPP</li> <li>• EA&amp;SA process</li> <li>• E&amp;S issues identification</li> <li>• LAA process</li> <li>• Rapid Appraisal Techniques</li> <li>• Public consultation</li> <li>• Risk assessment &amp; management process</li> <li>• E&amp;S management planning</li> </ul>	<ul style="list-style-type: none"> <li>• Training programme</li> </ul>	<ul style="list-style-type: none"> <li>• 5 days</li> </ul>	<ul style="list-style-type: none"> <li>• Engg. level</li> </ul>	<ul style="list-style-type: none"> <li>• ESMC</li> <li>• ESMT</li> </ul>

## 6.5 MONITORING

The success of POWERGRID may be attributed to vigorous and continuous monitoring of all its activities including environment and social issues. The Corporate Monitoring Group (CMG) is a dedicated department for monitoring entire project activities and reporting to the Director (Projects). Regular monitoring of activities is carried out by different department at RHQ/site and is being reviewed by the regional head on monthly basis. CMG takes quarterly review of each region separately through Project Review Meeting (PRM). CMD and Directors also take regular review of ongoing project activities including environment and social issues and corrective measures if required are implemented at site.

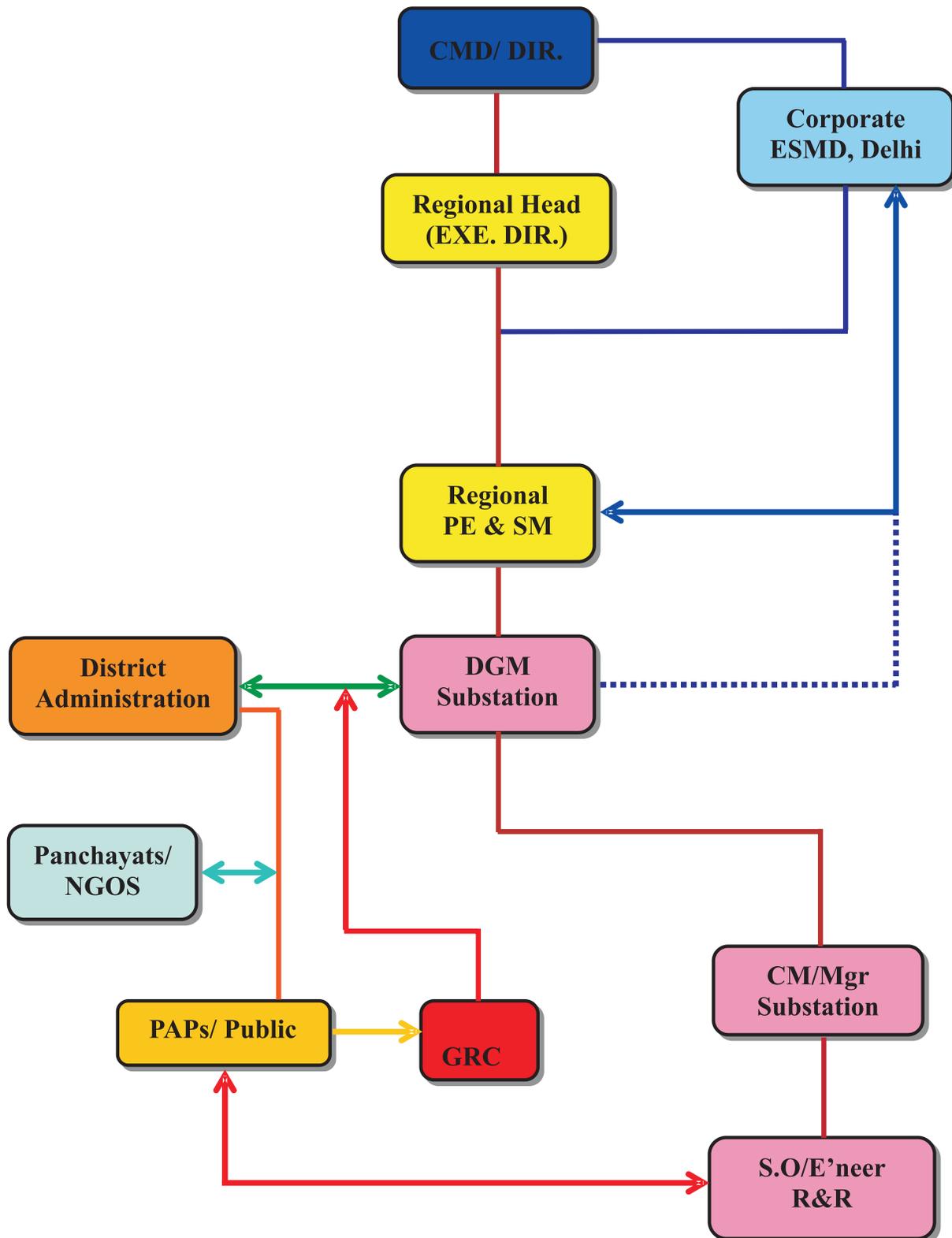
For environmental and social components of a project, environmental and social monitoring plan is developed, based on baseline data and impacts predicted during the environmental and social assessment process. The concerned forest department staffs, as part of their duties monitor impacts on ecological resources through which the transmission line traverses. POWERGRID appoints concerned officials for timely implementation various activities such as compensatory afforestation, ROW maintenance, prevention of fire hazards, natural regeneration of vegetation etc. The environmental and social monitoring plan for each project will be integrated with construction, operation and maintenance and shall be monitored by the ESMD on a monthly basis in association with the corporate monitoring group. The higher management is apprised through a monthly report.

POWERGRID does not acquire land for the construction of transmission lines. However, about 15 to 30 hectares of land is acquired for the construction of substations. Since small area is acquired resettlement of population is not an issue with transmission projects. Project Affected People (PAP) are rehabilitated in accordance with guidelines laid down in the social entitlement framework, national policy and requirements of funding agencies. The monitoring of RAP/SAMP is one of the key functions assigned to ESMT at project site under the supervision of project in-charge. To streamline the process, one executive (Social Officer or Engineer) of this team is made responsible for all the activities related to implementation/monitoring of proposed RAP. Further, for effective monitoring help of local authorities District Magistrate (DM) / Deputy Commissioner (DC) and other official is taken. ESMD in association with RHQ review the progress on regular basis. Participation of PAPs in the monitoring of RAP is also ensured through regular consultation and active participation. **Figure 6.3** describes the organizational structure for RAP.

Third party evaluation and assessment of RAP shall also be undertaken after certain period (18-24 months after RAP implementation) by an external agency to evaluate and assess the result of RAP and other measures taken for betterment of PAFs.

**Table 6.4** provides key indicators identified for monitoring directly by POWERGRID and its associates.

Figure 6.3: Organisational Support Structure for Monitoring of Rap



**Table 6.4: monitoring framework**

SN	Project Activity / Stage	Monitoring Indicator	Frequency	Responsibility
1	Pre-Construction	<p>Tower Location and Line alignment w.r.t. Distances from;</p> <ol style="list-style-type: none"> <li>Set back from nearest dwellings or social institutions</li> <li>Water bodies</li> <li>Agricultural land</li> <li>Ecological protected area</li> <li>Reserved forests</li> <li>Flood Zone</li> </ol> <p>Exclusion of PCB in transformer</p> <p>Exclusion of CFC in electrical or other equipment</p> <p>EMF strength</p> <p>Noise level from substation</p> <p>Noise during construction</p> <p>Compensation for temporary or permanent loss of productive land, trees. Monitoring of;</p> <ol style="list-style-type: none"> <li>RAP</li> <li>Crop compensation plan</li> <li>Tree compensation plan</li> </ol>	<p>Once - at time of detailed siting and alignment survey and design</p> <p>Once - As part of tender specification</p> <p>Once - As part of tender specification</p> <p>Once - part of detailed alignment survey</p> <p>Once - built in design criteria and specified in tender</p> <p>Once - during construction machinery specification</p> <p>Once a quarter - Based on consultation with PAP</p>	<p>POWERGRID</p> <p>POWERGRID</p> <p>POWERGRID</p> <p>POWERGRID</p> <p>POWERGRID</p> <p>POWERGRID and assigned contractor</p> <p>POWERGRID</p>
2.	Construction	<p>Government Clearances</p> <p>Oil spill containment and spill cleanup</p>	<p>Once for each subproject</p> <p>Once - Built in product specification</p>	<p>POWERGRID</p> <p>POWERGRID</p>

SN	Project Activity / Stage	Monitoring Indicator	Frequency	Responsibility
		Sewage disposal system	Once - in tender specification	POWERGRID
		Fire prevention and fire protection equipment monitoring	Once - in tender specification	POWERGRID
		Crop disturbance during construction	Periodically when required	POWERGRID assigned contractor
		Air borne dust emissions during construction	Every two weeks	POWERGRID assigned contractor
		Vegetation marking and clearance	Every two weeks - strictly limited to target vegetation	POWERGRID assigned contractor
		Trimming and cutting of trees in ROW	Once per site - Identification of presence of target species with height following vegetation clearance plan	POWERGRID assigned contractor
		Disposal of cleared vegetation	Once per site - as approved by statutory authorities	POWERGRID assigned contractor
		Disposal of excavated soil	Every 2 weeks	POWERGRID assigned contractor
3	Operation and	Effectiveness of Training programs and plan	Once a year	POWERGRID
		Compliance with transmission tower setback conditions	Once in quarter	POWERGRID
		Maintenance of ground clearance to comply with limits of EMF	Once	POWERGRID
		Noise levels at boundary nearest to substations	Once a year	POWERGRID

POWERGRID is not involved in activities that are polluting in nature. The organisational focus is to aim for zero pollution and no use chemicals for ROW maintenance or PCBs in its electrical equipment. Hence, the requirement of a pollution monitoring plan or a PCB level-monitoring plan is not required.

# 7.0 REGIONAL AND NATIONAL CONSULTATIONS

POWERGRID is the first Power Utility in the country, which, in 1998 evolved Environment & Social Policy and Procedure (ESPP) and has implemented it in all its projects. ESPP had been instrumental in addressing the complicated environmental and social issues for the last six years and have drawn appreciation of various stakeholders. However, during the intervening period many changes in the rules & guidelines of the MoEF and operational policies of multilateral funding agencies, introduction of Electricity Act, 2003 have taken place that have bearing on ESPP. Moreover, awareness and concern towards environment and social safeguard issues have also grown. In view of above, it became necessary to review the existing provisions of ESPP and revise/upgrade it by incorporating all relevant changes to make it up to date.

Accordingly, POWERGRID has modified/ upgraded its first edition of ESPP-1998 by incorporating the new laws/acts, revised/changed rules and guidelines including that of multilateral funding agencies and the suggestions/ feed back received from different sites and the deliberation of experience sharing seminar held in Aug'03.

POWERGRID, which believes in total transparency, had finalized the first ESPP after an open and transparent process of consultation with different stakeholders including a National Consultation Process. In order to get the feedback from the stakeholders on past experience and to obtain suggestion for further refinement. A similar transparent process was undertaken for the revised ESPP in 2004 (Refer **Table-7.1 & Appendix-XXXVII**) and for the findings and recommendations of the World Bank's Safeguard Diagnostic Review (SDR) in November 2008.

For the more substantial revisions undertaken in 2004, the process of consultation was divided into two phases. In first phase, POWERGRID organized regional level consultations on upgraded ESPP in different regions of the country. The first such consultation was organized at Trichy, Tamil Nadu in southern region on 28.07.04, which was attended by around 200 persons. The second consultation was organized at Amritsar, Punjab in northern region on 10.08.04 and was attended by 75 people. The third workshop was organized at Jabalpur, Madhya Pradesh in central region on 17.08.04, which was attended by 45 persons. The fourth workshop was organized at Jeypore, Orissa in eastern region on 25.08.04 and was attended by 29 people. Prior to conducting of such regional consultation workshop, notices were published in local dailies both English and vernacular languages in respective areas inviting public for participation. The large numbers of people who

participated were PAPs, representatives of communities, social organizations, officials of government organizations and concerned citizens. The main issue that emerged was about quantum of compensation fixed by district authorities for acquired land, trees & crops. People were of the view that compensation is not commensurate with prevailing market value. Another aspect on which affected population desired information was provision of providing job at POWERGRID installations. These issues were discussed in detail and POWERGRID limitations in fixing compensation were explained. They were also informed that POWERGRID's Social Entitlement Framework provides Rehabilitation Assistance (RA) in addition to compensation amount to the family level i.e. all adult and married sons of landowners are eligible for such RA. People seem to be satisfied with the explanation, however, they suggested that unmarried sons, widow daughters might also be included in the eligible category, which has been accepted and incorporated in the ESPP. As regard job with POWERGRID it was clearly explained why it was virtually impossible to provide a permanent job in our installations.

In second phase, a national workshop on modified/upgraded ESPP was organized at its Corporate Office, Gurgaon on 7<sup>th</sup> of Oct.'04. More than 100 participants from Government Organizations / Social Organization, PAPs from different parts of the country, representative from the World Bank/ ADB, expert committee members, and executives from region/sites and concerned citizens participated in the said workshop.

The daylong consultation workshop began with a welcome address Executive Director, Environment and Social Management, POWERGRID. He described the construction, operation, and maintenance activities of POWERGRID transmission projects. He emphasized on the flexibility available with transmission projects to avoid environmental and social issues at each step of its operation. He also stressed on POWERGRID's commitment to transparency and public consultation at relevant stages of its operation.

In his keynote address, Chairman and Managing Director, POWERGRID highlighted POWERGRID's contribution to the sustainable development process in the country. He reaffirmed POWERGRID's corporate social responsibility and described how it is translated into operational procedures through the ESPP. Keeping interest of poor farmers in mind, he also promised that POWERGRID would take up the issue of compensation against acquired land with concerned government department for doing the needful. He invited constructive feedback during the national workshop and also at later stage. He emphasized that the POWERGRID is always open to opinions, clarifications, and suggestions for improving its operations.

Deputy General Manager, Environment and Social Management, presented POWERGRID's ESPP in detail to the participants. He described how POWERGRID with the experience of 48,000 circuit kilometres and 82 substations, has addressed environmental and social concerns based on principles

of avoidance, minimization and mitigation. He further described the operational measures that have been set in place to ensure that the environment and social assessment and management process is fully integrated into the typical project cycle. Finally, the organizational support systems including staff development plans were illustrated.

The discussion on the modified ESPP was spread over the morning and the afternoon sessions. Members of the review committee as independent observer facilitated the discussion. Several participants commended POWERGRID for the initiative to organize such open consultation and making their operations more transparent. The key concerns were essentially regarding R&R of PAPs. Each of the PAPs present was provided an opportunity to describe their experience and to express their views. While most of them stated that, they were looking forward to POWERGRID to take further step to streamline the process of fixing compensation amount they were told about the POWERGRID stand as well as government initiative through amendment of LA act. They were also informed, that the POWERGRID entitlement framework included compensation plus rehabilitation assistance for alternate income generating opportunities. Participants, while commending the efforts of the POWERGRID, reiterated that the process of R&R should be nurtured carefully in such a way that the PAPs do not lose out in the long run.

The workshop concluded with the address by Additional General Manager, ESMD, POWERGRID who thanked all the participants and reiterated, POWERGRID's commitment to the goal of sustainable development.

**Table- 7.1: Summary of the Consultation Process on Modified ESPP**

S.No.	Date	Venue Region	No. of person Attended	Issues discussed
<b>A. REGIONAL LEVEL</b>				
1.	28.7.04	Trichy Substation Southern Region	200	<ul style="list-style-type: none"> <li>• Compensation at market rate</li> <li>• Job opportunities for PAPs in POWERGRID</li> <li>• Petty contracts</li> <li>• Eligibility criteria for RA in respect of widow daughters, unmarried adult sons etc</li> </ul>
2.	10.8.04	Amritsar Northern Region	75	
3.	17.8.04	Jabalpur Substation Western Region	45	
4.	25.8.04	Jeypore Eastern Region	29	

S.No.	Date	Venue Region	No. of person Attended	Issues discussed
<b>B. NATIONAL LEVEL</b>				
5	7.10.04	Corporate Centre Gurgaon	100	<ul style="list-style-type: none"> <li>Members of ESPP Review Committee as independent observer monitored discussion on Modified ESPP.</li> <li>The major issue that was emphasised by all PAPs was streamlining the process of compensation both its fixation and disbursement.</li> <li>POWERGRID's CMD promised to take up the issue with concerned agencies for needful.</li> </ul>

#### **Stakeholders / Public Consultation on SDR:**

The Consultations took place on November. 18 and 21, 2008 at Delhi and Hyderabad.

The Stakeholders Consultation among Professionals, Experts, Sectoral Leaders and PAPs began with a brief introduction by Mr. Mikul Bhatia of World Bank on the long association of POWERGRID & World Bank and how POWERGRID has taken many initiatives in association with the World Bank in the field of environmental and social safeguard management. Mr. Harvey Himberg, Senior Environmental Specialist, Quality Assurance and Compliance Unit of the World Bank and Mr. Alberto Ninio, Lead Counsel, Environmental Law Unit, Legal Department of the World Bank, then explained the objectives of Use of Country System (UCS) and selection of POWERGRID's ESPP as a first candidate from India for such exercise.

Mr Jaiswal, ED(CP & ESMD) from POWERGRID spoke about the process of development of the ESPP and evaluation of other initiatives by the POWERGRID on Environment & Social issues. This was followed by presentation of World Bank on the SDR, presenting the analysis, findings and recommendations carried out during the last one year. Presentation by the Bank also outlined out the existing gaps between the ESPP and applicable Bank safeguard policies as set forth in World Bank Operational Policy 4.00, Piloting the Use of Borrower Systems for Environmental and Social Safeguard Issues in Bank-Supported Projects. After the presentation, Mr. Sanjay Srivastava, Senior Environmental Specialist in the World Bank's South Asia Region requested participants'

observations on the SDR and invited them to submit their structured & written observations via email to World Bank for consideration and incorporation in the SDR.

The discussion started with Mr. Aqueel Khan, representing a leading NGO, M/s ASK, who questioned the nomenclature of the SDR, i.e., whether it is an analysis of the “country” (India) system or rather, the borrower’s (POWERGRID’s) policies. He made the categorical observation that a borrower or a corporate can not frame any law which is a prerogative of the country. Therefore he suggested instead of UCS, the SDR should focus on the borrower system. He also raised a question on the compensation of PAPS and the proactive approach in meeting the expectations of affected people in a dynamic and ever changing project scenario. He also wanted to know whether or not POWERGRID is covered under the Right to Information Act (RTI). He raised another important aspect regarding inclusion of non-titled holder/encroachers as beneficiaries. Mr. Himberg explained the position of Bank regarding UCS and borrower system, clarifying the term “borrower system” would be more appropriate for POWERGRID. POWERGRID then explained that RTI is applicable to POWERGRID and that non-titled holders, including squatter, encroachers etc. have already been included as beneficiaries in the POWERGRID Social Entitlement Framework. Mr. Khan then raised the issue of compensation for depreciation of land below transmission towers, on behalf of PAPs present there. POWERGRID explained the present legal position regarding the payment of compensation as well as the outcome of many judicial judgments on that issue. POWERGRID also emphasized that although they are open to such issues, being a Government entity, they require support of law/act/guidelines/judicial orders for implementing such provisions.

Mr. Samar Singh Chairman of ESPP Review Committee inquired about the process of SDR analysis from the Bank and discussed the complexities of the Forest Rights Act 2006. He also clarified requested clarification about one of the findings of SDR regarding relevance of Environment (Protection) Act 1986 and its applicability to POWERGRID operations.

The Bank officials raised the issue of Compensatory Afforestation (CA) related to Forest Clearance and its implementation and periodic compliance report to the officials of Ministry of Environment & Forests (MoEF) present there. MoEF officials replied that forest clearance is a transparent process. As regards CA, they informed that as per the Hon’ble Supreme Court (SC) directive “Compensatory Afforestation Fund Management and Planning Authority” (CAMPA) has been constituted and is being monitored constantly by the SC. MoEF officials informed that it is a fact that due to on going litigation CA has not been undertaken in the last 4-5 years. However, they observed that the Government of India (GOI) has already initiated certain measures under the Green India campaign and that the GOI is considering allowing user agencies to develop their own plantations for transfer to the Forest Department. In this regard, a CAMPA bill has also been introduced in the parliament.

Sh. S.K. Pande, Member ESPP Review Committee also raised certain HR issues regarding the progress of POWERGRID's plan of people working in the field of Environment & Social Management and whether this is considered as a "punishment" posting, in comparison to working in Corporate or regional HQ. Mr. Jaiswal explained the initiative taken by POWERGRID for proper training for such employees as well as such initiatives as quarterly coordination meetings, external & internal audits. He explained that executives working in Environment & Social management are part of the main stream and he observed that POWERGRID is in the process of recruiting specialists in the field of Environment & Social Science to further strengthen the department.

PAPs present have informed the Bank about the various initiatives taken by the POWERGRID in the field of R&R and Community development work.

The programme concluded with the sum up by Mr. Sanjay Srivastava of World Bank on the issue raised during discussion and thanked all participants for their contribution.