

## **SALIENT FEATURES OF THE ELECTRICITY ACT, 2003**

**Objective:** An Act to consolidate the laws relating to generation, transmission, distribution, trading and use of electricity and generally for taking measures conducive to development of electricity industry, promoting competition therein, protecting interest of consumers and supply of electricity to all areas, rationalization of electricity tariff, ensuring transparent policies regarding subsidies, promotion of efficient and environmentally benign policies, constitution of Central Electricity Authority, Regulatory Commissions and establishment of Appellate Tribunal and for matters connected therewith or incidental thereto

**PART-I:** This part deals with the jurisdiction of the law and important definitions

**PART-II:** This part deals about National Policy and Plan to be prepared by Central Govt. in consultation with state Govt. National Policy and National Electricity plan needs to be published in Gazette / News paper once in 5 years.

**PART-III:** This part deals about generation of electricity

- Generating company and requirement for setting up of generating station
- Hydro-electric generation
- Captive generation
- Duties of generating companies
- Directions to generating companies

**PART-IV:** This part deals licensing for transmission of electricity, distribution and undertaking trading in electricity.

1. Authorised persons to transmit, supply, etc. electricity
2. Power to exempt
3. Grant of license
4. Procedure for grant of license
5. Conditions of license
6. Licensee not to do certain things
7. Amendment of license
8. Revocation of license
9. Sale of utilities of licensees

10. Vesting of utility in purchaser
11. Provisions where no purchase takes place
12. Directions to licensees
13. Suspension of distribution license and sale of utility

**PART V:** This part deals transmission of electricity including inter-state, regional and inter-regional transmission system.

14. Inter-State, regional and inter-regional transmission
15. National Load Despatch Centre
16. Constitution of Regional Load Despatch Centre
17. Functions of Regional Load Despatch Centre
18. Compliance of directions
19. Intra-State transmission
20. Transmission within a State
21. Constitution of State Load Despatch Centres
22. Functions of State Load Despatch Centres
23. Compliance of directions
24. Grid Standards
25. Intervening transmission facilities
26. Charges for intervening transmission facilities
27. Directions by Appropriate Government
28. Central Transmission Utility and functions
29. State Transmission Utility and functions
30. Duties of transmission licensees
31. Other business of transmission licensee

**PART-VI:** This deals with provisions of distribution of electricity with respect to distribution licensee

32. Duties of distribution licensee and open access
33. Duty to supply on request
34. Exceptions from duty to supply electricity
35. Power to recover charges
36. Power to recover expenditure
37. Power to require security

38. Additional terms of supply
39. Agreements with respect to supply or purchase of electricity
40. The Electricity Supply Code
41. Other businesses of distribution licensees
42. Provisions with respect to electricity trader
43. Control of transmission and use of electricity
44. Use, etc. of meters
45. Disconnection of supply in default of payment
46. Standards of performance of licensee
47. Different standards of performance by licensee
48. Information with respect to levels of performance
49. Market domination

**PART-VII:** This chapter deals about terms and conditions for the determination of tariff.

50. Tariff regulations
51. Determination of tariff
52. Determination of tariff by bidding process
53. Procedure for tariff order
54. Provision of subsidy by State Government
55. Development of market

**PART-VIII:** This part deals work of licensees includes provision as to opening up of streets, railways etc., overhead lines, notice to telegraph authority.

56. Provision as to opening up of streets, railways, etc
57. Overhead lines
58. Notice to telegraph authority

**PART-IX:** This part deals about constitution and functions of Central Electricity Authority

**PART-X:** This part deals about Regulatory Commissions and its constitution, power and functions of central commission

**PART-XI:** This part deals about appellate tribunal for electricity

**PART XII:** This part deals about investigation, enforcement of assessment for electricity consumed by consumer by State Govt. or board or licensee.

**PART XIII:** This part deals about reorganization of Electricity Board

**PART XIV:** This part deals mainly about offences and penalties for misusing/theft of electricity.

**PART XV:** This part deals constitution of special courts for the purpose of providing speedy trial of offences referred to in sections 135 to 139

**PART XVI:** This part deals mainly resolution of dispute by arbitration under this Act.

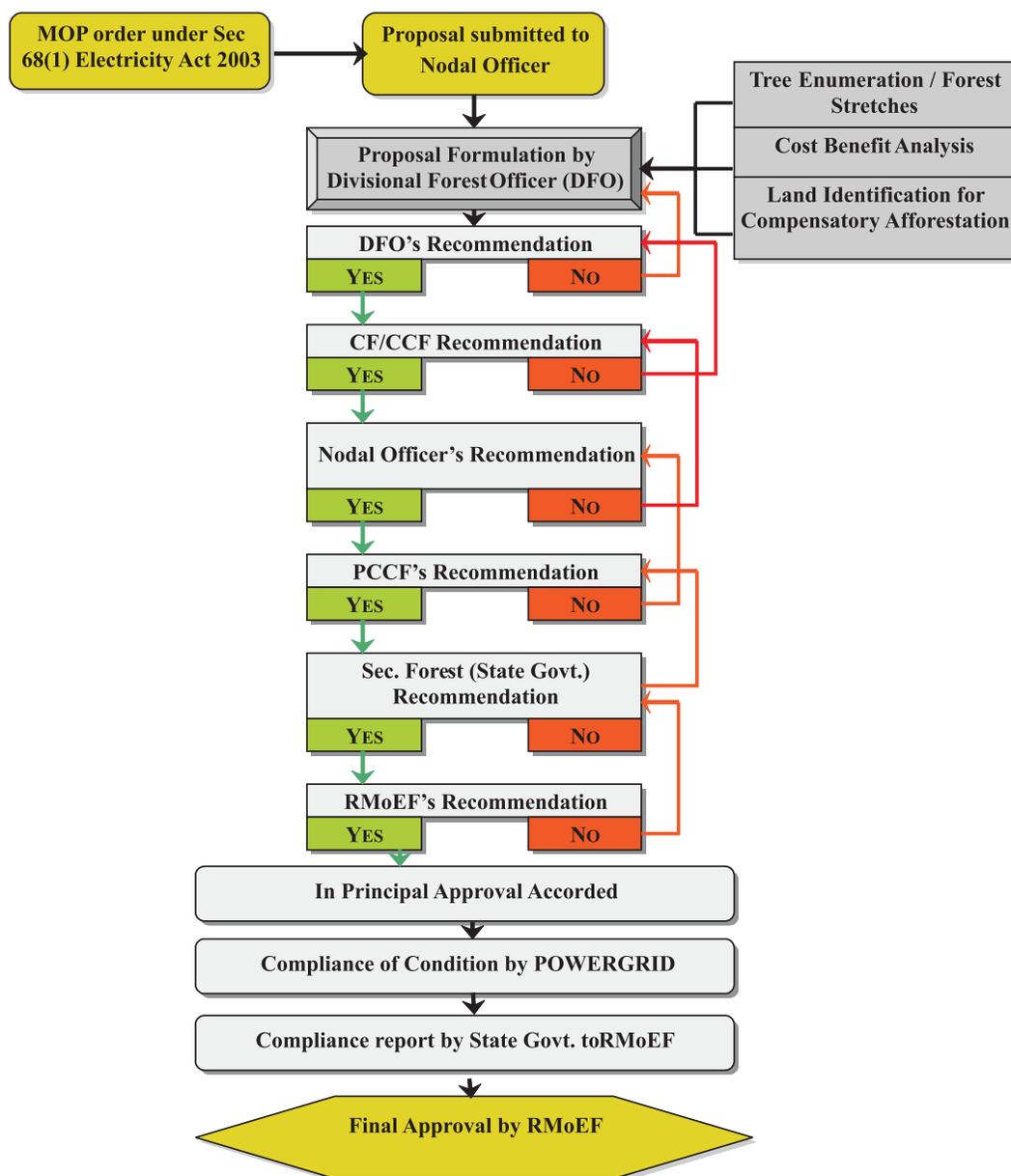
**PART XVII:** This part deals mainly protection of railways, highways, airports and canals, docks, wharfs and piers, protection of telegraphic, telephonic and electric signalling lines, amendment of sections 40 and 41 of Act 1 of 1894

**PART XVIII:** This part mainly deals miscellaneous matter includes following:

59. Coordination Forum
60. Exemption of electric lines or electrical plants from attachment in certain cases
61. Protection of action taken in good faith
62. Members, officers, etc., of Appellate Tribunal, Appropriate Commission to be public servants
63. Recovery of penalty payable under this Act
64. Services of notices, orders or documents
65. Transitional provisions
66. Inconsistency in laws
67. Act to have overriding effect
68. Provisions of this Act to be in addition to and not in derogation of other laws
69. Power of Central Government to make rules
70. Powers of Authority to make regulations
71. Powers of Central Commission to make regulations
72. Rules and regulations to be laid before Parliament
73. Powers of State Governments to make rules
74. Powers of State Commissions to make regulations
75. Rules and regulations to be laid before State Legislature
76. Power to remove difficulties
77. Provisions of Act not to apply in certain cases
78. Repeal and saving

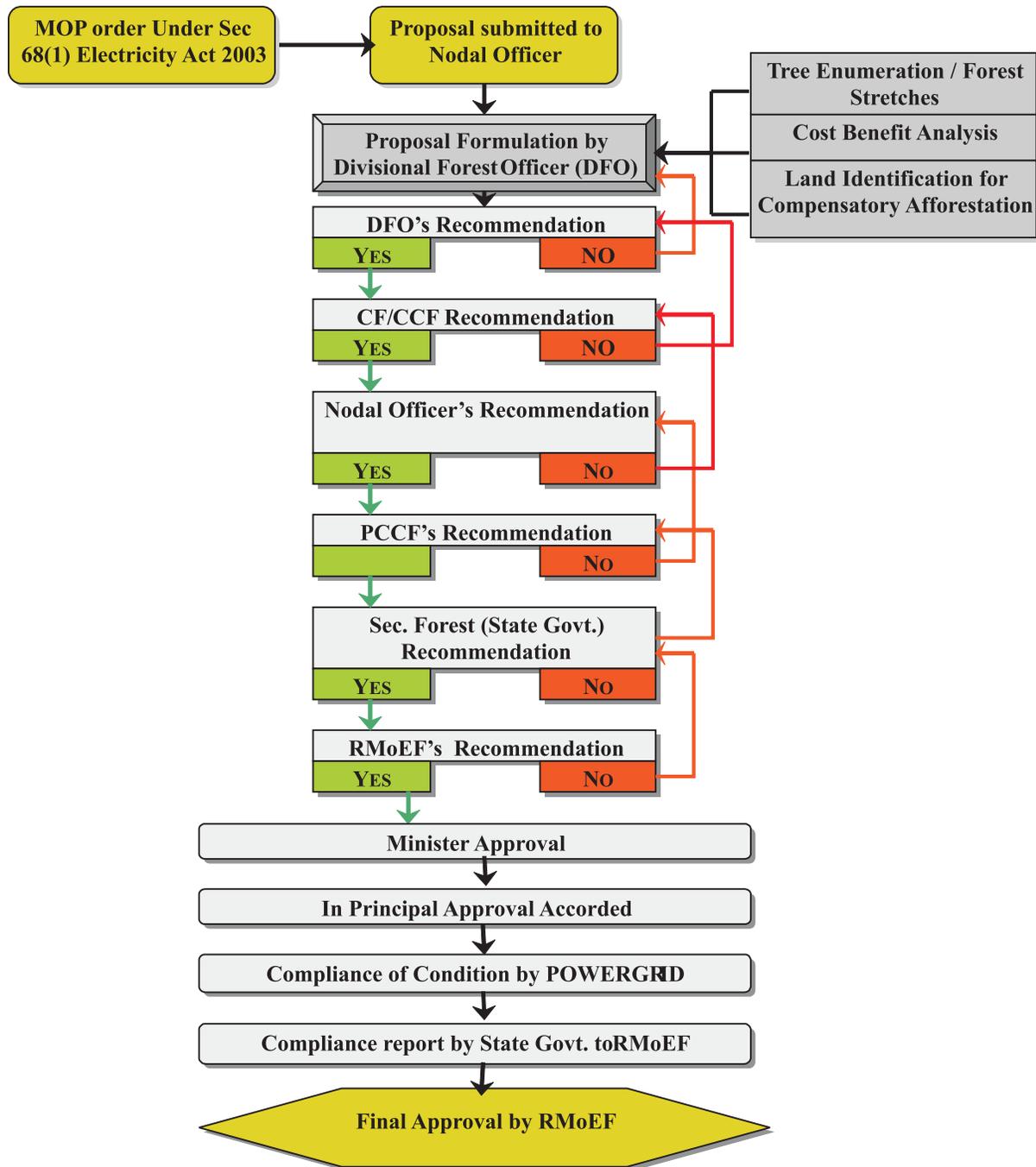
The Electricity Act, 2003 does not explicitly deal with environmental implications of activities related to power transmission other than 164 (B) to avail benefits of eminent domain provided under the Indian Telegraph Act, 1885, which provide all the powers that the telegraph authority possesses. Accordingly, POWERGRID can erect and construct towers without actually acquiring the land and after paying compensation towards all the damages.

**FOREST CLEARANCE FLOW CHART (Forest area up to 5 hectare)**



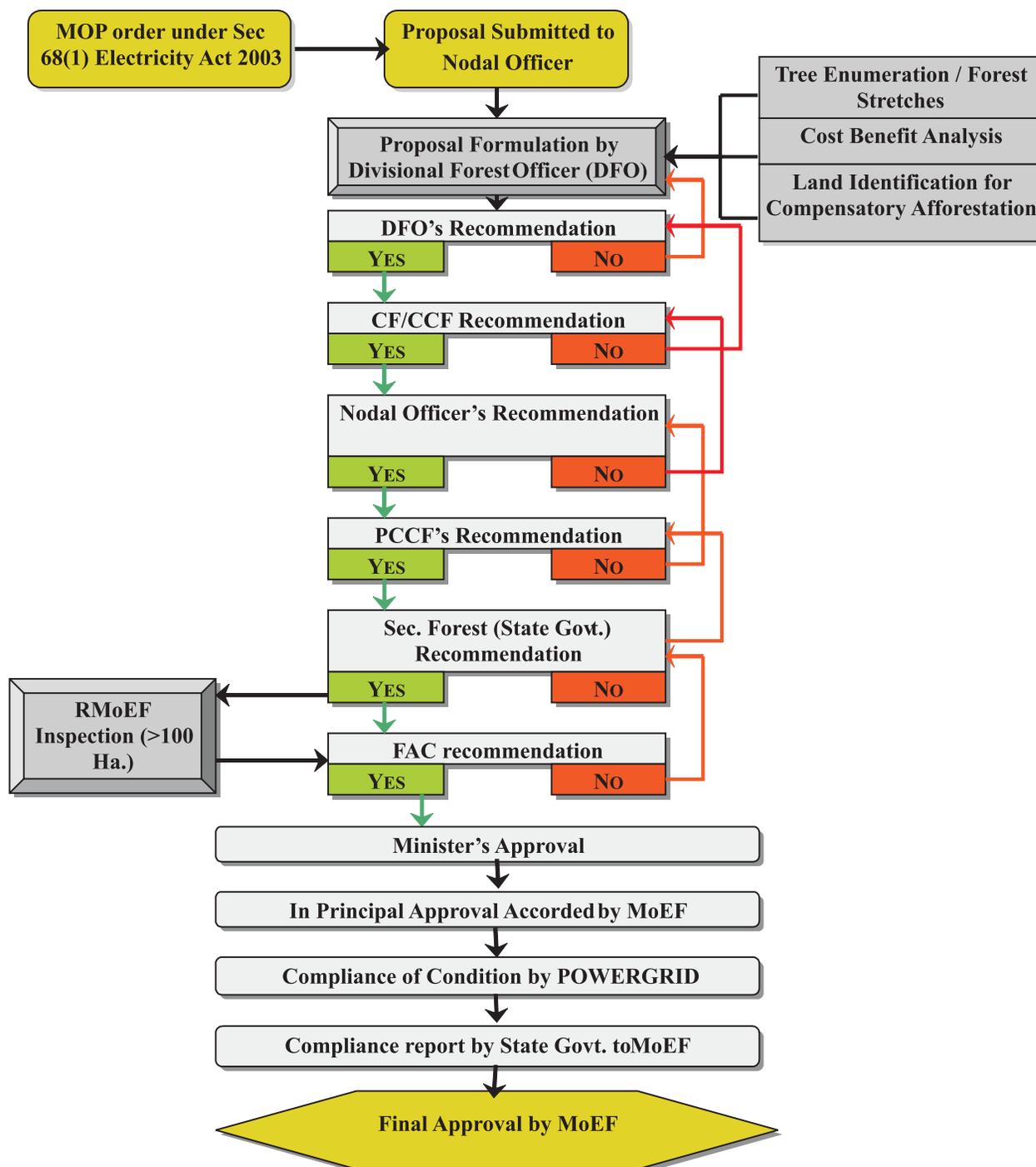
*Note: For any clarification sought at any level case is referred back to utility through proper channel*

As per MoEF notification dt.3.2.04 specific time limit has been fixed for processing of forest proposal w.e.f. its submission. A total of 210 days has been allocated for state Govt. to process and recommendation of case to concerned RMoEF. RMoEF has been allotted 45 days for approval involving forest area up to 5ha.



Note: For any clarification sought at any level case is referred back to utility through proper channel

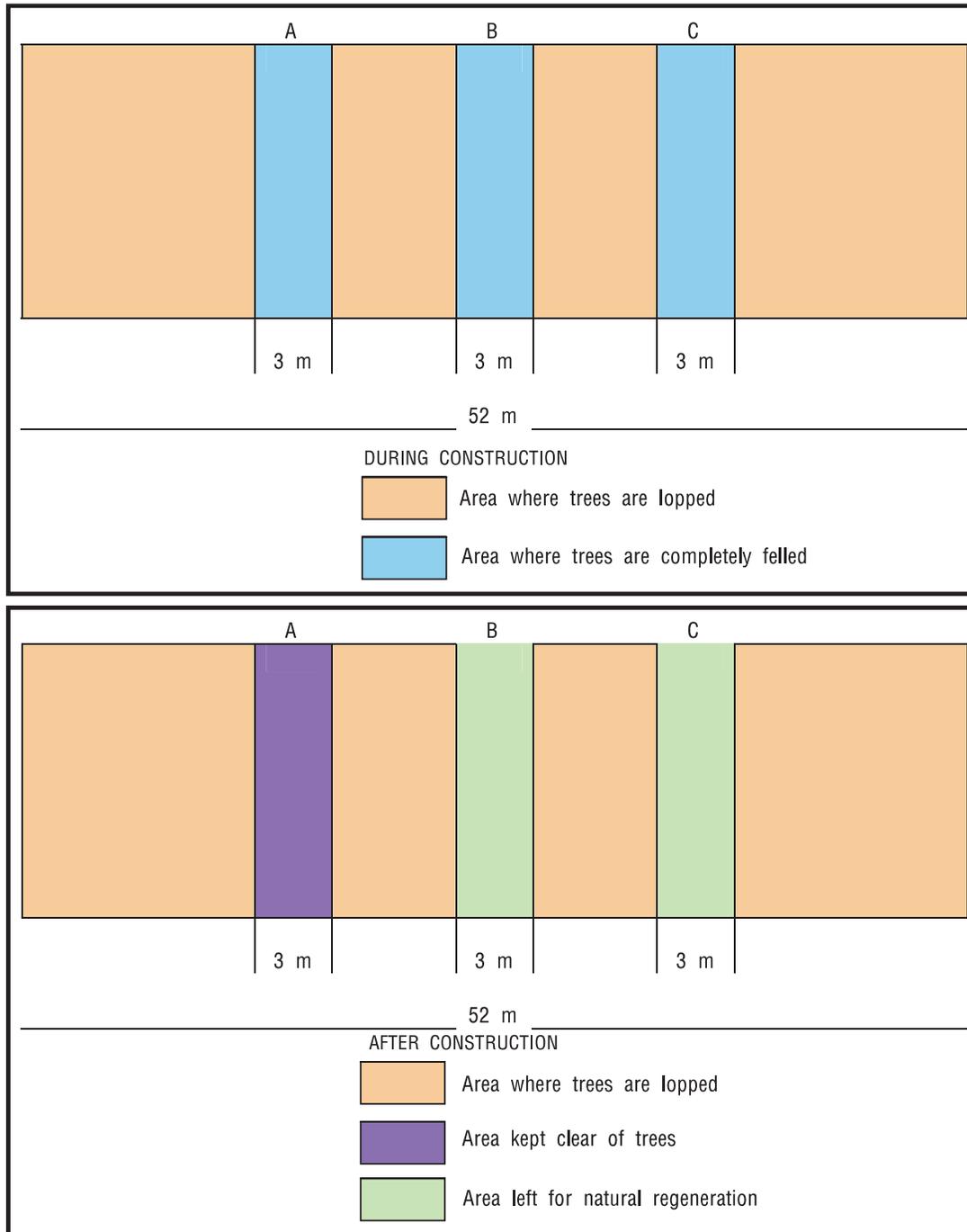
As per MoEF notification dt.3.2.04 specific time limit has been fixed for processing of forest proposal w.e.f. its submission. A total of 210 days has been allocated for state Govt. to process and recommendation of case to RMOEF depending upon the area involved. RMOEF has been allotted 45 days for processing of cases involving forest area up to 40 ha and submission to MoEF for obtaining sanction of MoEF.



Note: For any clarification sought at any level case is referred back to utility through proper channel

As per MoEF notification dt.3.2.04 specific time limit has been fixed for processing of forest proposal w.e.f. its submission. A total of 210 days has been allocated for state Govt. to process and recommendation of case to MoEF. MoEF has been allotted 90 days for processing of case to obtain sanction of central Govt. and issue of In-principle approval/ rejection.

**RIGHT OF WAY IN FOREST: 400 KV S/C**



Above chart depicts the tree felling zone/requirement as per MoEF guidelines for construction of transmission lines in forest area. (For details refer Para 2.1.2 (B) of Vol.-I)

**FORMAT FOR FORMULATION OF FOREST PROPOSAL**

**FORM – 'A'**

**PART – I**

**(to be filled by the user agency)**

1. Projects details:
  - i) Short narrative of the proposal and project/scheme for which the forest land is required
  - ii) Map showing the required forest land, boundary of adjoining forest on a 1:50,000 scale map
  - iii) Cost of the project
  - iv) Justification for locating the project in forest area
  - v) Cost benefit analysis (to be enclosed)
  - vi) Employment likely to be generated
2. Purpose-wise break-up of the total land required:
3. Details of displacement of people due to the project if any :
  - i) Number of families
  - ii) Number of Scheduled Castes/Scheduled Tribe families
  - iii) Rehabilitation plan (to be enclosed)
4. Whether clearance under Environment (Protection) Act, 1986 required? (Yes/No)
5. Undertaking to bear the cost of raising and maintenance of compensatory afforestation and/or penal compensatory afforestation as well as cost for protection and regeneration of Safety Zone etc. as per the scheme prepared by the State Government (undertaking to be enclosed)
6. Details of certificates/documents enclosed as required under the instructions.

**Signature**

**(Name in Block letters)**

**Designation**

**Address (of User Agency)**

**Date:** \_\_\_\_\_

**Place:** \_\_\_\_\_

**State serial No. of proposal** \_\_\_\_\_

(To be filled up by the Nodal Officer with date of receipt)

**PART – II**

**(To be filled by the concerned Deputy Conservator of Forests)**

State serial No. of proposal \_\_\_\_\_

Location of the project/Scheme:

7. Location of the project/ scheme :
  - i) State/Union Territory
  - ii) District
  - iii) Forest Division
  - iv) Area of forest land proposed for diversion (in ha.)
  - v) Legal status of forest
  - vi) Density of vegetation
  - vii) Species-wise (scientific names) and diameter class-wise enumeration of trees (to be enclosed, in case of irrigation/ hydel projects enumeration at FRL, FRL-2 meter & FRL-4 meter also to be enclosed.
  - viii) Brief note on vulnerability of the forest area to erosion
  - ix) Approx. distance of proposed site for diversion from boundary of forest
  - x) Whether forms part of National Park, wildlife sanctuary, biosphere reserve, tiger reserve, elephant corridor, etc. (if so the details of the area and comments of the Chief Wildlife Warden to be annexed).
  - xi) Whether any rare/endangered/unique species of flora and fauna found in the area-if so details thereof
  - xii) Whether any protected archaeological/heritage site/defence establishment or any other important monument is located in the area. If so the details thereof with NOC from competent authority, if required
8. Whether the requirement of forest land as proposed by the user agency in col.2 of Part-I is unavoidable and barest minimum for the project. If no recommended area item-wise with details of alternatives examined.
9. Whether any work in violation of the Act has been carried out (Yes/No). If yes details of the same including period of work done, action taken on erring officials. Whether work in violation is still in progress
10. Details of compensatory afforestation scheme:
  - i) Details of non forest area/degraded forest area identified for compensatory afforestation, its distance from adjoining forest, number of patches, size of each patch
  - ii) Map showing non-forest/degraded forest area identified for compensatory afforestation and adjoining forest boundaries
  - iii) Detailed compensatory afforestation scheme including species to be planted, implementing agency, time schedule, cost structure, etc

- iv) Total financial outlay for compensatory afforestation scheme
  - v) Certificates from competent authority regarding suitability of area identified for compensatory afforestation and from management point of view (To be signed by the concerned Deputy Conservator of Forests)
11. Site inspection report of the DCF (to be enclosed) especially highlighting facts asked in col.7 (xi, xii), 8 and 9 above.
12. Division/District profile:
- i) Geographical area of the district
  - ii) Forest area of the district
  - iii) Total forest area diverted since 1980 with number of cases
  - iv) Total compensatory afforestation stipulated in the district/division since 1980 on (a) forest land including penal compensatory afforestation
  - v) Progress of compensatory afforestation as on (date)\_\_\_\_\_ on
    - a) forest land
    - b) non-forest land
13. Specific recommendations of the DCF for acceptance of otherwise of the proposal with reasons

**Signature**

Name \_\_\_\_\_ Official Seal Date: \_\_\_\_\_ Place: \_\_\_\_\_

**PART – III**

**(To be filled by the concerned Conservator of Forests)**

14. Whether site, where the forest land involved is located has been inspected by concerned Conservator of Forests (Yes/No). If yes, the date of inspection & observations made in form of inspection note to be enclosed
15. Whether the concerned Conservator of Forests agree with the information given in Part-B and the recommendations of Deputy Conservator of Forests.
16. Specific recommendations of concerned Conservator of Forests for acceptance or otherwise of the proposal with detailed reasons.

**Signature**

Name

Date : \_\_\_\_\_ Official Seal Place; \_\_\_\_\_

**PART – IV**

**(To be filled in by the Nodal Officer or Principal Chief Conservator of Forests or Head of Forest Department)**

17. Detailed opinion and specific recommendations of the State Forest Department for acceptance of otherwise of the proposal with remarks (While giving opinion, the adverse comments made by concerned Conservator of Forests or Deputy Conservator of Forests should be categorically reviewed and critically commented upon).

**Signature**

**Name**

**Designation**

**(Official Seal)**

**Date:**

**Place:**

**PART-V**

**(To be filled in by the Secretary in charge of Forest Department or by any other authorized officer of the State Government not below the rank of the Under Secretary)**

18. Recommendation of the State Government (Adverse comments made by any officer or authority in Part-B or Part-C or Part-D above should be specifically commented upon)

**Signature**

**Name**

**Designation**

**(Official Seal)**

**Date: \_\_\_\_\_**

**Place: \_\_\_\_\_**

**APPLICABILITY AND PARAMETERS FOR COST- BENEFIT ANALYSIS**

**Category of Proposals for which Cost-Benefit Analysis Applicable**

SN	Nature of Proposal	Applicable/ Not applicable	Remarks
1.	All categories of proposals involving forest land up to 20 hectares in plains and up to 5 hectares in hills	Applicable/ Not applicable	These proposals are to be considered on case by case basis and value judgement
2.	All other proposals involving forest land more than 20 hectares in plains and more than 5 ha. in hills including roads, transmission lines, minor, medium and major irrigation projects, hydel projects mining activity, railway lines, location specific installations like microwave stations, auto repeater centres, T.V. towers etc.	Applicable	These are cases where a cost-benefit analysis is necessary to determine when diverting the forest land to non-forest use is in the overall public interests

**Parameters for Evaluation of Loss of Forest**

SN	Parameters	Roads, Transmission lines & Railway lines
1.	Loss of value of timber, fuel wood and minor forest produce on an annual basis, including loss of man-hours per annum of people who derived livelihood and wages from the harvest of these commodities	To be quantified & expressed in monetary terms
2.	Loss of animal husbandry productivity, including loss of fodder	-do-
3.	Cost of human resettlement	To be quantified & expressed in monetary terms
4.	Loss of public facilities and administrative infrastructure (Roads, buildings, schools, dispensaries, electric lines, railways etc.) on forest land, or which would require forest land if these facilities were diverted due to the project	To be quantified & expressed in monetary terms

### **Parameters for Evaluation of Social Assessment**

SN	Parameters	Roads, Transmission lines & Railway lines
1.	Increase in productivity attributable to the specific project	To be quantified & expressed in monetary terms
2.	Benefits to economy	Value judgement
3.	No. of population benefited	-do-
4.	Employment potential	-do-
5.	Cost of acquisition of facility on non forest land wherever feasible	To be quantified & expressed in monetary terms
6.	Loss of (a) agricultural & (b) animal husbandry production due to diversion of forest land	-do-
7.	Cost of rehabilitating the displaced persons as different from compensatory amounts given for displacement	To be quantified & expressed in monetary terms
8.	Cost of supply of free fuel-wood to workers residing in or near forest area during the period of construction	-do-

## Appendix - VI

### LIST OF REGIONAL OFFICE UNDER THE MINISTRY OF ENVIRONMENT & FORESTS

ZONAL OFFICES	JURISDICTION-STATE
Chief Conservator of Forest (Central) Southern Zone <b>BANGALORE</b>	Kerala, Tamil Nadu, Andhra Pradesh, Karnataka, Pondicherry, Lakshwadeep & Goa
Chief Conservator of Forest (Central) Western Zone <b>BHOPAL</b>	Gujarat, Madhya Pradesh, Chattisgarh, Maharashtra, D&N Haveli & Daman & Diu
Chief Conservator of Forest (Central) Eastern Zone <b>BHUBANESWAR</b>	Bihar, Jharkhand, West Bengal, Orissa, A&N Island & Sikkim
Conservator of Forest (Central) Northern Zone <b>CHANDIGARH</b>	Haryana, Punjab, Himachal Pradesh and Jammu & Kashmir
Chief Conservator of Forest (Central) Central Zone <b>LUCKNOW</b>	Uttar Pradesh, Uttaranchal, Delhi & Rajasthan
Chief Conservator of Forest (Central) North-Eastern Region <b>SHILLONG</b>	Assam, Tripura, Mizoram, Manipur, Meghalaya, Arunachal Pradesh & Nagaland

## **RELEVANT SECTIONS AND CRITERIA OF KEY ENVIRONMENT LEGISLATIONS/POLICIES**

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

Section 2 of the Forest (Conservation) Act, 1980 is attracted when any of POWERGRID's project activities are within forest land. This is an Act to provide for the conservation of forests and for matters connected therewith or ancillary or incidental thereto.

#### ***S.2. Restriction on the preservation of forests or use of forest land for non-forest purpose -***

*Notwithstanding anything contained in any other law for the time being in force a State, no State Government or other authority shall make, except with the prior approval of the Central Government, any order directing:-*

- i) that any reserved forest (within the meaning of the expression "reserved forest" in any law for the time being in force in that State) or any portion thereof, shall cease to be reserved;*
- ii) that any forest land or any portion thereof may be used for any non-forest purpose;*
- iii) that any forest land or any portion thereof may be assigned by way of lease or otherwise to any private person or to any authority, corporation, agency or any other organisation not owned, managed or controlled by Government;*
- iv) that any forest land or any portion thereof may be cleared of trees which have grown naturally in that land or portion, for the purpose of using it for real forestation.*

***Explanation:*** *For the purpose of this section "non-forest purpose" means the breaking up or clearing of any forest land or portion thereof for:-*

- a) the cultivation of tea, coffee, spices, rubber, palms, oil-bearing plants, horticultural crops or medicinal plants;*
- b) any purpose other than real forestation, but does not include any work relating or ancillary to conservation, development and management of forests and wild life, namely, the establishment of check-posts, fire lines, wireless communications and construction of fencing, bridges and culverts, dams, waterholes, trench marks, boundary marks, pipelines or other like purpose.*

## **National Forest Policy, 1988**

The relevant extracts are given below:

### **1. Preamble**

In Resolution No. 13/52-F, dated the 12th May 1952, the Government of India in the erstwhile Ministry of Food and Agriculture enunciated a Forest Policy to be followed in the management of State Forests in the country. However, over the years, forests in the country have suffered serious depletion. This is attributed to relentless pressures arising from ever-increasing demand for fuel wood, fodder and timber; inadequacy of protection measures; diversion of forest lands to non-forest uses without ensuring compensatory afforestation and essential environmental safeguards; and the tendency to look upon forests as revenue earning resource. The need to review the situation and to evolve, for the future, a new strategy of forest conservation has become imperative. Conservation includes preservation, maintenance, sustainable utilisation, restoration and *enhancement of the natural environment. It has thus become necessary to review and revise the National Forest Policy*

### **2. Basic Objectives**

The basic objectives that should govern the National Forest Policy are the following:

- Maintenance of environmental stability through preservation and, where necessary, restoration of ecological balance that has been adversely disturbed by serious depletion of forests of the country.
- Conserving the natural heritage of the country by preserving the remaining natural forests with the vast variety of flora and fauna, which represent the remarkable biological diversity and genetic resource of the country
- Checking soil erosion and denudation in catchment areas of rivers, lakes, reservoirs in the interest of soil and water conservation, for mitigating floods and droughts and for retardation of siltation of reservoirs.
- Checking the extension of sand-dunes in desert areas of Rajasthan and along coastal tracts.
- Increasing substantially the forest/tree cover in the country through massive afforestation and forestry programmes, especially on all denuded, degraded and unproductive lands.
- Meeting the requirements of fuel wood, fodder, minor forest produce and small timber of the rural and tribal populations.
- Increasing the productivity of forests to meet essential national needs.

- Encouraging efficient utilization of forest produce and maximising substitution of wood.
- Creating a massive people's movement with the involvement of women, for achieving these objectives and to minimise pressure on existing forests.

The principal aim of Forest Policy must be to ensure environmental stability and maintenance of ecological balance including atmospheric equilibrium, which is vital for sustenance of all life forms, human, animal and plant. The derivation of direct economic benefit must be subordinated to this principal aim.

### **The Environment (Protection) Act, 1986**

Certain relevant provisions are given below:

#### **S.3. Power of Central Government to take measures to protect and improve environment:**

Subject to the provisions of this Act, the Central Government shall have the power to take all such measures as it deems necessary or expedient for the purpose of protecting and improving the quality of the environment and preventing, controlling and abating environmental pollution.

In particular, and without prejudice to the generality of the provisions of sub-section (1), such measures may include measures with respect to all or any of the following matters, viz.:

- i) co-ordination of actions by the State Governments, officers and other authorities-
  - a) under this Act, or the rules made there under; or
  - b) under any other law for the time being in force which is relatable to the objects of this Act;
- ii) planning and execution of a nation-wide programme for the prevention, control and abatement of environmental pollution;
- iii) laying down standards for the quality of environment in its various aspects;
- iv) laying down standards for emission or discharge of environmental pollutants from various sources whatsoever; Provided that different standards for emission or discharge may be laid down under this clause from different sources having regard to the quality or composition of the emission or discharge of environmental pollutants from such sources;
- v) restriction of areas in which any industries, operations or processes or class of industries, operations or processes shall not be carried out or shall be carried out subject to certain safeguards;
- vi) laying down procedures and safeguards for the prevention of accidents which may cause environmental pollution and remedial measures for such accidents;

- vii) laying down procedures and safeguards for the handling of hazardous substances;
- viii) examination of such manufacturing processes, materials and substances as are likely to cause environmental pollution
- ix) carrying out and sponsoring investigations and research relating to problems of environmental pollution;
- x) inspection of any premises, plant, equipment, machinery, manufacturing or other processes, materials or substances and giving, by order, of such directions to such authorities, officers or persons as it may consider necessary to take steps for the prevention, control and abatement of environmental pollution;
- xi) establishment or recognition of environmental laboratories and institutes to carry out the functions entrusted to such environmental laboratories and institutes under this Act;
- xii) collection and dissemination of information in respect of matters relating to environmental pollution;
- xiii) preparation of manuals, codes or guides relating to the prevention, control and abatement of environmental pollution; and
- xiv) such other matters as the Central Government deems necessary or expedient for the purpose of securing the effective implementation of the provisions of this Act.

#### **S.6. Rules to regulate environmental pollution:**

The Central Government may, by notification in the Official Gazette, make rules in respect of all or any of the matters referred to in Section 3.

In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely:-

- a) the standards of quality of air, water or soil for various areas and purposes;
- b) the maximum allowable limits of concentration of various environmental pollutants (including noise) for different areas;
- c) the procedures and safeguards for the handling of hazardous substances;
- d) the prohibition and restrictions on the handling of hazardous substances in different areas;
- e) the prohibition and restrictions on the location of industries and the carrying on the processes and operations in different areas;
- f) the procedures and safeguards for the prevention of accidents which may cause environmental pollution and for providing for remedial measures for such accidents.

## **The National Environment Policy, 2006**

The National Environment Policy, 2006 is a national commitment to a clean environment, mandated in the Constitution in Articles 48 A and 51 A (g), strengthened by judicial interpretation of Article 21. It is recognized that maintaining a healthy environment is not the state's responsibility alone, but also that of every citizen. A spirit of partnership should thus be realized throughout the spectrum of environmental management in the country. While the state must galvanize its efforts, there should also be recognition by each individual - natural or institutional, of its responsibility towards maintaining and enhancing the quality of the environment.

The National Environment Policy has been motivated by the above considerations and is intended to mainstream environmental concerns in all development activities. It briefly describes the key environmental challenges currently and prospectively facing the country, the objectives of environment policy, normative principles underlying policy action, strategic themes for intervention, broad indications of the legislative and institutional development.

The National Environment Policy is intended to be a guide to action: in regulatory reform, programmes and projects for environmental conservation; and review and enactment of legislation, by agencies of the Central, State, and Local Governments. The policy also seeks to stimulate partnerships of different stakeholders, i.e. public agencies, local communities, academic and scientific institutions, the investment community, and international development partners, in harnessing their respective resources and strengths for environmental management.

## **Coastal Regulation Zone**

The Coastal Regulation Zone Notification dated 19th February 1991 under which coastal stretches were declared Coastal Regulation Zones (CRZ) and restrictions were imposed on the setting up and expansion of industries, operations and processes in the said Zones for its protection.

Ministry of Environment and Forests has issued another notification "The Coastal Management Zone" in 2008. The objective of this notification is protection and sustainable development of the coastal stretches and marine environment through sustainable coastal zone management practices based on sound scientific principles taking into account the vulnerability of the coast to natural hazards, sustainable livelihood security for local communities and conservation of ecologically and culturally significant coastal resources. It proposes to demarcate Setback line, Coastal Zone classification and formulation of Integrated Coastal Zone Management Plan (ICZMP). Transmission activities are covered under proposed Coastal Management Zone (CMZ)-III which require EIA study for transmission line passing through CMZ-III region.

### **Draft Regulatory Framework for Conservation of Wetlands, 2008**

The wetlands, which are vital parts of the hydrological cycle, are highly productive, support exceptionally large biological diversity and provide a wide range of ecosystem services, such as food and fibre; waste assimilation; water purification; flood mitigation; erosion control; groundwater recharge; microclimate regulation; enhance aesthetics of the landscape; support many significant recreational, social and cultural activities, besides being a part of our cultural heritage; Many wetlands are seriously threatened by reclamation through drainage and land filling, pollution, hydrological alterations and over-exploitation.

India is a signatory to the Ramsar Convention, 1982, relating to wetlands of international importance, especially as waterfowl habitat. More lately, the Ministry of Environment and Forests has notified a Draft Regulatory Framework for Conservation of Wetlands, in July, 2008 to conserve identified valuable wetlands and to prevent their degradation. The draft notification enlists some of the activities that are prohibited, and others that need to be regulated. Categorization of wetlands has also been proposed on the basis of significance of the functions performed and for determining the extent and level of regulation. The draft regulation also talks about central, state, district conservation committees, their functions and powers, enforcement of regulatory activities, etc. POWERGRID activities are not covered under the draft notification.

### **The Wildlife (Protection) Act, 1972**

This Act provides for the protection of wild animals and birds and for matters connected therewith or ancillary or incidental thereto. It also deals with the establishment and management of protected areas, such as National Parks and Wildlife Sanctuaries, and lays down schedules for the endangered/threatened species. This wildlife regime does not directly apply to POWERGRID operations, but due care is taken to respect the spirit and provisions of law.

### **Supreme Court Directives**

Supreme Court of India had delivered certain orders for improvement of environment which are also mandatory. Following are the summary of these orders:

#### ***Order dated 12.12.1996:***

*“The word forest must be understood according to the dictionary meaning. This, description covers all statutorily recognized forests, whether designated as reserved, protected or otherwise for the purpose of Section 2 (i) of the Forest (Conservation) Act. The term “forests” as understood in the dictionary sense, but also any area recorded as forest in the Government record irrespective of the ownership.”*

**Order dated 14.2.2000:**

*Putting ban on all activities including removal of dead, diseased, dying or wind fallen trees, drift wood and grasses etc from any National Park or Sanctuaries covered under Wild life Protection Act.*

**Order dated 12.11.2002:**

*While according, transfer under Forest (Conservation) Act, 1980 for non-forest purpose, in addition to cost of compensatory afforestation the user agency shall also pay the Net Present Value (NPV) at the rate of Rs. 5.80 to Rs. 9.20 lacs per ha. of forest land depending upon the quantity and density of forest land in question converted for non-forest use. However, many organizations including POWERGRID are contesting for review of this order.*

**Order dated 3.03 / 09.05 2008:**

*While deciding finally on issue of the Net Present Value (NPV) the court has ordered revision in rate of NPV ranging from Rs. 4.38 to Rs. 10.43 lakh per hectare depending upon the type of forest that has also been classified in different category payable to the “Compensatory Afforestation Fund Management and Planning Authority” (CAMPA). As per order NPV for wildlife Sanctuary area shall be 5 times of normal forest and for National parks area it will be 10 times of normal forest.*

## Appendix - VIII

### SPECIFIED PROJECT CATEGORIES AS LISTED IN SCHEDULE OF ENVIRONMENT IMPACT ASSESSMENT NOTIFICATION, 2006 (MOEF) REQUIRE PRIOR ENVIRONMENTAL CLEARANCE

Project or Activity		Category with threshold limit		Conditions if any
		A	B	
(1)	(2)	(3)	(4)	(5)
<b>1</b>		<b>Mining, extraction of natural resources and power generation (for a specified production capacity)</b>		
1(a)	Mining of minerals	≥ 50 ha. of mining lease area Asbestos mining irrespective of mining area	<50 ha 5 ha. of mining lease area.	General Condition shall apply <u>Note</u> Mineral prospecting (not involving drilling) are exempted provided the concession areas have got previous clearance for physical survey
1(b)	Offshore and onshore oil and gas exploration, development & production	All projects		<u>Note</u> Exploration Surveys (not involving drilling) are exempted provided the concession areas have got previous clearance for physical survey
1(c)	River Valley projects	(i) ≥ 50 MW hydroelectric power generation; (ii) 10,000 ha. of culturable command area	(i) < 50 MW ≥ 25 MW hydroelectric power generation; (ii) < 10,000 ha. of culturable command area	General Condition shall apply
1(d)	Thermal Power Plants	≥ 500 MW (coal/lignite/naphta & gas based); ≥ 50 MW (Pet coke diesel and all other fuels )	< 500 MW (coal/lignite/naphta & gas based); <50 MW ≥ 5MW (Pet coke, diesel and all other fuels )	General Condition shall apply

1(e)	Nuclear power projects and processing of nuclear fuel	All projects	-	
<b>2</b>		<b>Primary Processing</b>		
2(a)	Coal washeries	≥ 1 million ton/annum throughput of coal	< 1 million ton/annum throughput of coal	General Condition shall apply (If located within mining area the proposal shall be appraised together with the mining proposal)
2(b)	Mineral beneficiation	≥ 0.1 million ton/annum mineral throughput	< 0.1 million ton/annum mineral throughput	General Condition shall apply (Mining proposal with Mineral beneficiation shall be appraised together for grant of clearance)
<b>3</b>		<b>Materials Production</b>		
3(a)	Metallurgical industries (ferrous & non ferrous)	<p>a) Primary metallurgical industry All projects</p> <p>b) Sponge iron manufacturing ≥ 200TPD</p> <p>c) Secondary metallurgical processing industry All toxic and heavy metal producing units ≥ 20,000 tonnes /annum</p>	<p>Sponge iron manufacturing &lt; 200TPD</p> <p>Secondary metallurgical processing industry</p> <p>i) All toxic and heavy metal producing units &lt; 20,000 tonnes /annum</p> <p>ii) All other non-toxic secondary metallurgical processing industries &gt; 5000 tonnes/annum</p>	General Condition shall apply for Sponge iron manufacturing

3(b)	Cement plants	≥ 1.0 million tonnes/annum production capacity	<1.0 million tonnes/annum production capacity. All Stand alone grinding units	General Condition shall apply
<b>4</b>		<b>Materials Processing</b>		
4(a)	Petroleum refining industry	All projects	-	-
4(b)	Coke oven plants	≥ 2,50,000 tonnes/annum	<2,50,000 & ≥ 25,000 tonnes/annum	-
4(c)	Asbestos milling and asbestos based products	All projects	-	-
4(d)	Chlor-alkali industry	≥ 300 TPD production capacity or a unit located outside the notified industrial area/ estate	<300 TPD production capacity and located within a notified industrial area/ estate	Specific Condition shall apply No new Mercury Cell based plants will be permitted and existing units converting to membrane cell technology are exempted from this Notification
4(e)	Soda ash Industry	All projects	-	-
4(f)	Leather/skin/hide processing industry	New projects outside the industrial area or expansion of existing units outside the industrial area	All new or expansion of projects located within a notified industrial area/ estate	Specific condition shall apply
<b>5</b>		<b>Manufacturing/Fabrication</b>		
5(a)	Chemical fertilizers	All projects	-	-
5(b)	Pesticides industry and pesticide specific intermediates (excluding formulations)	All units producing technical grade pesticides	-	-
5(c)	Petro-chemical complexes (industries based on processing of petroleum fractions & natural gas and/or reforming to aromatics)	All projects	-	-

5(d)	Manmade fibres manufacturing	Rayon	Others	General Condition shall apply
5(e)	Petrochemical based processing (processes other than cracking & reformation and not covered under the complexes)	Located out side the notified industrial area/ estate	Located in a notified industrial area/ estate	Specific Condition shall apply
5(f)	Synthetic organic chemicals industry (dyes & dye intermediates; bulk drugs and intermediates excluding drug formulations; synthetic rubbers; basic organic chemicals, other synthetic organic chemicals and chemical intermediates)	Located out side the notified industrial area/ estate	Located in a notified industrial area/ estate	Specific Condition shall apply
5(g)	Distilleries	(i) All Molasses based distilleries (ii) All Cane juice/non-molasses based distilleries $\geq 30$ KLD	All Cane juice/non-molasses based distilleries - $< 30$ KLD	General Condition shall apply
5(h)	Integrated paint industry	-	All projects	General Condition shall apply
5(i)	Pulp & paper industry excluding manufacturing of paper from waste paper and manufacture of paper from ready pulp with out bleaching	Pulp manufacturing and Pulp & Paper manufacturing industry	Paper manufacturing industry without pulp manufacturing	General Condition shall apply
5(j)	Sugar Industry	-	$\geq 5000$ tcd cane crushing capacity	General Condition shall apply
5(k)	Induction/arc furnaces/cupola furnaces 5TPH or more	-	All projects	General Condition shall apply

6		Service Sectors		
6(a)	Oil & gas transportation pipe line (crude and refinery/ petrochemical products), passing through national parks /sanctuaries/ coral reefs /ecologically sensitive areas including LNG Terminal	All projects	-	-
6(b)	Isolated storage & handling of hazardous chemicals (As per threshold planning quantity indicated in column 3 of schedule 2&3 of MSIHC Rules 1989 amended 2000)	-	All projects	General Condition shall apply
7		Physical Infrastructure including Environmental Services		
7(a)	Air ports	All projects	-	-
7(b)	All ship breaking yards including ship breaking units	All projects	-	-
7(c)	Industrial estates/ parks/ complexes/ areas, export processing Zones (EPZs), Special Economic Zones (SEZs), Biotech Parks, Leather Complexes.	If at least one industry in the proposed industrial estate falls under the Category A, entire industrial area shall be treated as Category A, irrespective of the area. Industrial estates with area greater than 500 ha. and housing at least one Category B industry.	Industrial estates housing at least one Category B industry and area <500 ha.  Industrial estates of area > 500 ha. and not housing any industry belonging to Category A or B.	Special condition shall apply  Note: Industrial Estate of area below 500 ha. and not housing any industry of category A or B does not require clearance.
7(d)	Common hazardous waste treatment, storage and disposal facilities (TSDFs)	All integrated facilities having incineration & landfill or incineration alone	All facilities having land fill only	General Condition shall apply

7(e)	Ports, Harbours	≥ 5 million TPA of cargo handling capacity (excluding fishing harbours)	< 5 million TPA of cargo handling capacity and/or ports/ harbours 10,000 TPA of fish handling capacity	General Condition shall apply
7(f)	Highways	i) New National High ways; and ii) Expansion of National High ways greater than 30 KM, involving additional right of way greater than 20m involving land acquisition and passing through more than one State.	i) New State High ways; and ii) Expansion of National / State Highways greater than 30 km involving additional right of way greater than 20m involving land acquisition.	General Condition shall apply
7(g)	Aerial ropeways	-	All projects	General Condition shall apply
7(h)	Common Effluent Treatment Plants (CETPs)	-	All projects	General Condition shall apply
7(i)	Common Municipal Solid Waste Management Facility (CMSWMF)	-	All projects	General Condition shall apply
<b>8</b>	<b>Building /Construction projects/Area Development projects and Townships</b>			
8(a)	Building and Construction projects	-	≥ 20000 sq.mtrs and <1,50,000 sq.mtrs. of built-up area#	#(built up area for covered construction; in the case of facilities open to the sky, it will be the activity area )
8(b)	Townships and Area Development projects.	-	Covering an area ≥ 50 ha and or built up area ≥ 1,50,000 sq .mtrs ++	++All projects under Item 8(b) shall be appraised as Category B1

### **Projects requiring Site Clearance from MoEF:**

Site clearance from the MoEF is to be obtained in case of the following projects:

- Mining;
- Pit-Head thermal power stations;
- Hydropower, major irrigation projects and/or their combination including flood control;
- Ports and harbours (excluding minor ports);
- Prospecting and exploration of major minerals in areas more than 500 hectares.
- Industrial Estate

For obtaining site clearance, application is to be submitted giving the location of the project along with requisite details, to the MoEF. MoEF will convey its decision about the suitability of the proposed site within a maximum period of 30 days.

**FORM -8 FOR DISPOSAL OF BATTERIES**

**MINISTRY OF ENVIRONMENT AND FORESTS**

**NOTIFICATION**

**New Delhi, the 16th May, 2001**

**FORM – VIII**

[see rule 10 (2)(ii)]

FORM FOR FILING RETURNS BY RECYCLERS OF USED BATTERIES

[To be submitted by the bulk consumer to the State Board by 30<sup>th</sup> June (for the period October-March) and 31<sup>st</sup> December (for the period April-September) every year]

1.	Name and address of the bulk consumer	
2.	Name of the Authorised person and full address with telephone and fax number	
3.	<p>Number of new batteries of different categories purchased from the manufacturer/importer/dealer or any other agency during October-March and April-September</p> <p>Category :</p> <p>Automotive</p> <p>four wheeler</p> <p>two wheeler</p> <p>Industrial</p> <p>UPS</p> <p>Motive Power</p> <p>Stand-by</p> <p>Others</p>	<p>(i) No. of Batteries</p> <p>(ii) Approximate weight ( in Metric Tonnes)</p>
4.	Number or used batteries of categories mentioned in Sl. No. 3 and Tonnage of scrap sent to manufacturer / dealer / importer / registered recycler / or any other agency to whom the used batteries scrap was sent.	

Place \_\_\_\_\_

Signature of the authorised person

Date \_\_\_\_\_

\* Enclose list of manufacture / dealer / importer / registered recyclers / or any other agency to whom the used batteries scrap was sent

**SPECIFICATIONS OF USED OIL FOR REFINING AND WASTE OIL FOR RECYCLING**
**Schedule-5**
**Specifications for Used oil Suitable for Re-refining**

SN	Parameter	Maximum Permissible Limit
1.	Colour	8 hazen units
2.	Water	15%
3.	Density	0.85 to 0.95
4.	Kinematic Viscosity cSt at 100°C	1.0 to 32
5.	Dilutents	15% vol.
6.	Neutralisation No.	3.5 mg KOH/g
7.	Saponification value	18 mg KOH/g
8.	Total halogens	4000 ppm
9.	Polychlorinated biphenyls (PCBs)	Below detection limit
10.	Lead	100 ppm
11.	Arsenic	5 ppm
12.	Cadmium+Chromium+Nickle	500 ppm
13.	Polyaromatic hydrocarbons (PAH)	6%

**Schedule-6**
**Specifications for Waste Oil Suitable for Recycling**

SN	Parameter	Limit
1.	Sediment	5% (maximum)
2.	Heavy Metals (cadmium+chromium+nickel+lead+arsenic)	605 ppm maximum
3.	Polyaromatic hydrocarbons (PAH)	6% maximum
4.	Total halogens	4000 ppm maximum
5.	Polychlorinated biphenyls (PCBs)	Below Detection Limit

**FORM - 13 FOR DISPOSAL OF REFUSED OIL**

**MINISTRY OF ENVIRONMENT AND FORESTS**

**NOTIFICATION**

**New Delhi, the 20th May, 2003**

**FORM – 13**

[ See rule 20 (5) ]

Form for Filling Returns of Auction/ Sale of Non-Ferrous Metal Wastes/ Used Oil/Waste Oil

[To be submitted by waste generators / auctioneers to the concerned State Pollution Control Board / Committee by 31st January of every year]

1.	Name and address of the waste generator/ auctioneer	
2.	Total quantity of wastes auctioned / sold during the period	<p>Non-ferrous Metal Wastes [indicate type and quantity in metric tonnes along with the name(s)/address(s) of registered recycler(s)]:</p> <p>Used oil/waste oil [indicate type and quantity in metric tonnes along with the name(s)/ address(s) of registered recycler(s) /re-refiner(s)]</p>

*\*delete whichever is not applicable*

Signature:

Designation: .....

Place : .....

Date : .....

**INTERNATIONAL TREATIES, CONVENTIONS AND DECLARATIONS ON ENVIRONMENT  
CONSERVATION TO WHICH INDIA IS A PARTY**

International Plant Protection Convention, 1952

Plant Protection Agreement for the Asia and the Pacific Region, 1956

Convention Concerning the Protection of the World Culture and Natural Heritage – 1972

Convention on International Trade in Endangered Species of wild Flora and Fauna (CITES), 1976

International Whaling Commission, 1981

Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention), 1982

Convention on Conservation of Migratory Species of Wild Animals, 1983

Convention for the Protection of the Ozone Layer (Vienna Convention), 1988

The Montreal Protocol on Substances that Deplete the Ozone Layer, 1989

Convention on the Control of Trans boundary Movements of Hazardous Wastes and their Disposal (Basel Convention), 1992

Male Declaration on Control and Prevention of Air Pollution and its Likely Trans boundary Effects for South Asia, 1992

Rio Declaration and Agenda-21 on Sustainable Development, 1992

Convention on Biological Diversity, 1992

United Nations Framework Convention on Climate Change (UNFCCC), 1993

United Nations Convention to Combat Desertification (UNCCD), 1996

International Treaty on Plant Genetic Resources for Food and Agriculture, 2001

Kyoto Protocol, 2002

**HEALTH AND SAFETY CHECKLIST**

**Safety Related Check List during Construction of Transmission Lines**

Region : ..... Name of DHQ/GHQ: ..... Date of Safety Audit:.....

Name of Tr. Line: .....

Loc. No: .....Voltage Level: .....

Name of Contractor: .....

Name of Sub Contractor: .....

**A. During Tower Foundation :**

SN	Description of Activity	Feed back	Remarks
<b>i) Excavation :</b>			
1.	Dumping of Excavated soil. (Minimum 1.5 Mts. or half the depth of the pit which ever is more)	Yes / No.	
2.	Whether angle of repose of soil as per design in the foundation is maintained or not.	Yes / No.	
3.	De watering arrangement is available (If necessary)	Yes / No.	
4.	Working area has been protected properly to avoid against fall of passerby or animal in the excavated pit.	Yes / No.	
5	Shoring & Shuttering to protect the loose rock / soil against fall exists.	Yes / No.	
6	Arrangement of illumination at construction site is available. (if required )	Yes / No.	
7	Check proper/adequate arrangement is made for extension of electric supply. (Proper size of cable, Use of fuse, No loose connection for De-watering Pumps/ Illumination / Electric compressors etc. if applicable).	Yes / No.	
8	Check for damage / Uneven settlement of foundation.	Yes / No.	
9	Ensure Life saver arrangements have been made during construction of well foundation in river bed. (Where necessary)	Yes / No.	
10	Check that the adequate arrangement is made for the storage of blasting material at safe place. (if required)	Yes / No.	

11	Check that the blasting materials is handled with due care at site. ( If required )	Yes / No.	
12	Check that during blasting operation, Labour / Workmen / Passerby are at safe places and arrangement is made to inform public by caution markings (Red Flag) / Public Notices.	Yes / No.	
13	Check that the Blaster is holding the proper license issued by the appropriate authority. as per the Indian Explosive Act.	Yes / No.	
14	Check that the length of the fuse wire used during blasting operation is adequate.	Yes / No.	
15	Ensure Laying of temporary cable used for operation of Machines used during construction should not cause any danger for electrocution of workmen.	Yes / No.	
16	Check that PPEs i.e. Safety helmets, Safety Shoes, is used by blaster and their gang members during blasting.	Yes / No.	
17	Ensure that Shuttering and timbering has been made as detailed in I:S: 3764.	Yes / No.	
18	Ensure that before undertaking excavation, the soil has been tested and in case of availability of any explosive / dangerous gas, necessary arrangement must be made to remove / dilute such gases.	Yes / No.	
19	The positions of underground installations such as sewers, water pipes and electrical cables have been verified and in case of their existence, they must be isolated.	Yes / No.	
20	Arrangement shall be made to prevent external vibrations due to rail / road traffic (If required).	Yes / No.	
21	Safety is ensured during the construction of Tr. Lines for buildings, structures etc. which are coming in the vicinity of the excavated area from collapse. ( If required )	Yes / No.	
22	Check that sufficient strong ladder of suitable length is available for ingress / outgress of persons in the pit	Yes / No.	
23	Lone worker should not be allowed to work in the excavated area beyond shoulder level.	Yes / No.	
24	Check for any possibility of seepage of water from nearby pond / river should be estimated and taken care of.	Yes / No.	
25	After excavation the work has been completed speedily and back filling done at the earliest.	Yes / No.	

<b>ii) Casting of Foundation / Concreting :</b>			
1	Check construction materials are stacked at safe place and also does not cause any danger. (Away from pit by 1.5 Mtrs. Or half the depth of pit, which ever is more. )	Yes / No.	
2	Check arrangement of illumination at Construction Site. (If required).	Yes / No.	
3	Ensure life saver arrangements have been made during construction of Well foundation in River Bed.	Yes / No.	
4	Check that the Concreting Mixer machine is placed at a safe place. (Not very near to pit.)	Yes / No.	
5	Check proper / adequate arrangement is made for extension of electric supply. (Proper size of cable, Use of fuse, No loose connection for De watering Pumps / Illumination / Electric compressors etc. if applicable).	Yes / No.	
6	Check that laying of temporary cables used during construction activities should not cause any danger for electrocution to workmen.	Yes / No.	
7	Inspection of excavations shall be made by a Competent Person every day. In case, possible cave in or slide is apparent, all working in the excavation shall be seized until the necessary precautions have been taken to safeguard the possible cave in or slide.	Yes / No.	
8	Jacks and vertical supports shall be positioned in such a manner that the vertical loads are distributed equally and do not exceed the capacity of the jacks and the jacks are placed away from pit edge etc.	Yes / No.	
9	Proper Jacking arrangement is made to take the entire load of template.	Yes / No.	
10	In case of long template in stub setting, more jacks have been provided and check that the Jacks are placed on levelled and hard surface to avoid the unbalancing and fallen.	Yes / No.	
11	Wire mesh rolls shall be secured in order to prevent dangerous recoiling action.	Yes / No.	
12	Lone worker should not be allowed to work in the excavated area.	Yes / No.	
13	Check that sufficient strong ladder of suitable length is available for ingress / outgress of persons in the pit	Yes / No.	

**B. Tower Erection :**

1	Check proper communication facility is available at site during Tower erection. (If required)	Yes / No.	
2.	Check damages or uneven settlement of foundation.	Yes / No.	

3.	Ensure the derrick used before tower erection has been checked for adequate strength/ size. Ensure for copy of test certificate for all the lifting machines and tackles.	Yes / No.	
4.	Ensure that the pulleys used before tower erection has been checked for adequate strength / proper size (diameter). Also in case of open type pulleys proper locking arrangements like providing of Safety Pin is made. Ensure for copy of test certificate for all the lifting machines and tackles.	Yes / No.	
5.	Ensure that the ropes used before tower erection has been checked for adequate strength / physical condition (Free from break of strands and knots etc.	Yes / No.	
6.	Check that the lifting tools and tackles i.e. Winch Machine, Chain Pulley Block, Trifor, D - Shackle etc. are in healthy condition and has been tested periodically. (Attach copy of test certificate).	Yes / No.	
7.	Ensure that permission has been obtained from Aviation Authority for erection of special towers. (Where necessary).	Yes / No.	
8.	Ensure that permission has been obtained form Aviation Authority for erection of towers which comes in the vicinity of flying zone. (Where necessary)	Yes / No.	
9.	Check that the safety measures has been taken before undertaking for the Road / Rail / River Xing jobs involving like wise stretches.	Yes / No.	
10.	For rail or road crossing check whether written working plan is available at site with specific reference to safety e.g. local earthing, skilled & experience manpower, proper T&P, strength and height of scaffolding to maintain the required clearance etc.	Yes / No.	
11.	Ensure that all the members and proper size of Nuts and Bolts of lower section are fitted properly before erection of the upper section of tower is taken up.	Yes / No.	
12.	Check that the anti climbing devices are provided in the tower after erection job.	Yes / No.	
13.	Check that the danger plates have been provided.	Yes / No.	
14.	Check that only erection team members are allowed to stand near the tower while erection is in process and should wear the safety helmet / Safety Shoes.	Yes / No.	
15.	Working area of the tower has been demarcated during erection.	Yes / No.	
16.	Check that proper guying arrangement has been made. And also to see that proper size of the crow bars has been used which has been fixed at hard surface in case of sandy soil or loose soil.	Yes / No.	

17	Check that proper arrangement is made while lifting the tower members and fixing them at height i.e. Proper size and strength of the hook used for lifting the tower members.	Yes / No.	
18	Check sufficient numbers of guys are made while lifting the assembled cross arm and also avoiding use of single sheeve pulleys while lifting the assembled cross arm / heavy load.	Yes / No.	

### C. Conductor Stringing:

1.	All drivers and plant operators are holding the valid driving license.	Yes / No.	
2.	Check that the permit has been obtained from the Competent Authority for stringing of conductor while crossing through Road / Rail / River / Venerable areas etc. ( Where necessary )	Yes / No.	
3.	Check that required painting has been made on tower falling in the vicinity of aviation zones. (Where necessary.)	Yes / No.	
4.	Check that all safety measures have been taken during stringing of conductor crossing the EHV / HV / LT lines (Earthing of existing lines etc.)	Yes / No.	
5.	Ensure that proper size of Nuts and Bolts is rigidly tightened and punching / tacking / tack welding is done in towers before undertaking stringing job.	Yes / No.	
6.	Ensure that proper scaffolding arrangements made during stringing of conductor ( While Road Xing / Power Line Xing etc.	Yes / No.	
7.	Ensure that all members are fitted in tower before undertaking conductor stringing work.	Yes / No.	
8.	Check that the back filling of the foundation has been done as per specification.	Yes / No.	
9.	Ensure that the discharge rod is electrically tested before use.	Yes / No.	
10.	Stringing Machine / Tension pullor Machine are properly earthed.	Yes / No.	
11.	Check the brake arrangement of the TSE Machines is working.	Yes / No.	
12.	Ensure that the pulleys used before conductor stringing has been checked for adequate strength / proper size (diameter), also in case of open type pulleys proper locking arrangements like providing of Safety Pin is made Ensure for copy of test certificate for all the lifting machines and tackles.	Yes / No.	
13.	Ensure the ropes used before conductor stringing has been checked for adequate strength / physical condition (Free from break of strands and knots etc.	Yes / No.	

14.	Check that the lifting tools and tackles i.e. Winch Machine, Chain Pulley Block, Trifor, D - Shackle etc. are in healthy condition and has been tested periodically. (Attach copy of test certificate).	Yes / No.	
15.	Check for the brake arrangement of the Drum reel of conductor during laying / paying out of conductor.	Yes / No.	
16.	Check that proper communication facility is available at site during of stringing of conductor ( If required )	Yes / No.	
17.	Whether the tower has been permanently earthed.	Yes / No.	
18.	Check that Sag Board is provided at two locations.	Yes / No.	
19.	Check that the Sag Board arrangement is made by the experienced / trained persons.	Yes / No.	
20.	Check approved Sag tension chart is available and followed at site.	Yes / No.	
21.	While clamping of conductor / EW to be done, check for earthing.	Yes / No.	
22.	Ensure sending signal to puller to stop when last layer of conductor / EW being pulled.	Yes / No.	
23.	Check tension applied on the dynamo meter dial and check values with approved data.	Yes / No.	
24.	Before stringing starts check that the villagers do not come underneath the job of the concerned section.	Yes / No.	
25.	Only nylon or polypropylene ropes should be used during conductor stringing in vicinity of live overhead lines.	Yes / No.	
26.	Ensure that PTW has been taken from the concerned authority.	Yes / No.	
27.	Ensure that Winch, Pulleys etc. are properly earthed.	Yes / No.	
28.	For LT lines, whether special persons are posted at each point of isolation till return of permit (PTW).	Yes / No.	
29.	Whether the network of LT lines has been thoroughly checked and precautions taken Against inadvertent charging.	Yes / No.	
30.	Check that proper arrangement is made / available for development and use of a Portable Earthing and Short – Circuiting Devices which can be engaged and disengaged to and from the LT lines, keeping away from the LT lines, until all operations on the same are completed and all men and materials are removed from LT lines.	Yes / No.	
31.	Check the provision and proper positioning for the guying and back staying (Where necessary).	Yes / No.	
32.	Check demarcation of feeder is done for D/c Line.	Yes / No.	
33.	Ensure that all the insulator strings are thoroughly checked for availability and proper fixing of cotter / split pins before hoisting the same.	Yes / No.	

### General Points common for all activities during Excavation, Casting of Foundation

#### A. Erection of tower and Stringing of Conductor :

SN	Description of Activity	Feed back	Remarks
1.	Check whether the contractor had procured required quantity of PPEs considering maximum numbers of erection gangs deployed at one time.	Yes / No.	
2.	Supervisors/ Workmen have been provided with required healthy PPEs, like Safety helmet / Safety Belts / Safety Shoes / Gum Boot etc. as applicable.	Yes / No.	
3.	Availability of First Aid Box with required medicines at site.	Yes / No.	
4.	Instruction register is available at site.	Yes / No.	
5.	Ensure that Supervisor / Gang Leader always issues instruction to the Workmen before start of work.	Yes / No.	
6.	Ensure that supervisory staff from Power Grid is available at site during construction.	Yes / No.	
7.	All driver and plant operators are holding valid driving license.	Yes / No.	
8.	Check the vehicle for rescue is available at site.	Yes / No.	
9.	Ensure engaged labour are aware of the job.	Yes / No.	
10.	Check that the unskilled labourers are not engaged in skilled job.	Yes / No.	
11.	Ensure that supervisor / workmen engaged in the field are aware of First Aid Techniques ( Such as in case of Electric Shock, Fall from the height, Snake bite and the person rescued from buried under the debris etc.	Yes / No.	
12.	Check for nearby Hospital / Doctor in case of emergencies arises.	Yes / No.	
13.	While transporting heavy consignment of conductor / EW drums from central store to site by the use of Cranes, Truck, and Tractor. The safety aspect for construction and failure of brake system of moving machinery is to be checked.	Yes / No.	
14.	At least one dry powder type of portable fire extinguisher shall be provided especially where explosive or blasting agents are used for excavation.	Yes / No.	
15.	Check the competence (Qualification / Experience) of supervisor / gang leader of contractor.	Yes / No.	

REMARKS IF ANY:

Signature	Signature	Signature
Name :	Name :	Name :
Designation :	Designation :	Designation :
Representative of Contractor	Power Grid Rep. from Site.	Power Grid Rep. from RHQ.

### Safety Related Check List during Construction of Transmission Lines

Region : ..... Name of DHQ/GHQ: ..... Date of Safety Audit:.....

Name of Sub Stn. / Switching Stn: .....

Name of Contractor: .....

Contractor License / Registration No.: ..... Validity.....

Name of Sub Contractor:.....

#### **A. Sub-Station Civil Works :**

SN	Description of Activity	Feed back	Remarks
<b>I). SAFETY DURING EXCAVATION :</b>			
1.	Check Sub station area has been protected by constructing boundary wall all around the sub station to avoid entry of passerby / unauthorized person or animal in the sub station.	Yes / No.	
2.	De watering arrangement is available ( If necessary )	Yes / No.	
3.	Check proper / adequate arrangement is made for extension of electric supply. (Proper size of cable, Use of fuse, No loose connection and no naked wire connection to Pumps / Illumination / Electric compressors etc. if applicable).	Yes / No.	
4.	Check arrangement of illumination at construction site is available.	Yes / No.	
5.	Check dumping of Excavated soil (Minimum 1.5 Mts. Or half the depth of the pit which ever is more from the edge of the pit.)	Yes / No.	
6.	Check Shoring & Shuttering to protect the loose rock / soil against fall. (if required).	Yes / No.	
7.	Check lone worker is not be allowed to work in the excavated area.	Yes / No.	
8.	Ensure Laying of temporary cables used for operation of Machines used during construction should not cause any danger for electrocution of persons / animals.	Yes / No.	
9.	Ensure that before undertaking excavation, the soil has been tested and in case of availability of any explosive / dangerous gas, necessary arrangement must be made to remove / dilute such gases.	Yes / No.	
10.	The positions of underground installations such as sewers, water pipes and electrical cables has been verified and in case of their existence, they must be isolated before further excavation works to ensure Human Safety.	Yes / No.	

11.	Check that the scaffolds are not overloaded in any case. Scaffolds are to be erected and supported properly.	Yes / No.	
12.	Stability of the soil of the excavated pit for safe working is to be checked and certified by a competent person daily before start of work. A register at site is maintained where competent person can certify accordingly. No manhole should remain uncovered during night & off days.	Yes / No.	
13.	Check the provision of sufficient strong ladder of suitable length is available near the working place during excavation.	Yes / No.	
14.	Check if any permission is required from local statutory body before excavation.	Yes / No.	
15.	Check for No undercutting / toe cutting in soil.	Yes / No.	
16.	Check after excavation the work should be speedily completed without delay and back filling done at the earliest.	Yes / No.	
17.	Check for any possibility of seepage of water from nearby pond / river has been estimated and taken care of.	Yes / No.	
18.	Check to avoid slide / collaps of side walls of excavated pit, the excavation is to be done in trapezoidal cross - section.	Yes / No.	
<b>II). Safety precaution during storage, handling and use of blasting material:</b>			
1	Check that the adequate arrangement is made for the storage of blasting material at safe place. (Temporary Magazine is to be installed observing all norms) as per Indian Explosive Act.	Yes / No.	
2.	Check that the blasting materials is handled by licensed blaster with due care at site. (If applicable)	Yes / No.	
3.	Check smoking is prohibited in the vehicle carrying explosives.	Yes / No.	
4.	Check that the Blaster is holding proper license issued by the appropriate authority. As per Indian Explosive Act.	Yes / No.	
5.	Check that the length of the fuse wire used during blasting operation is adequate.	Yes / No.	
6.	Check while transportation, no unauthorized person is allowed in vehicle carrying explosives.	Yes / No.	
7.	Check that the loading and unloading of explosives is being done carefully.	Yes / No.	
8.	Check explosives and detonators or blasting caps is not being transported in the same vehicle.	Yes / No.	
9.	Check while transportation the detonators and explosives are not carried loose or mixed with other materials.	Yes / No.	

10	Check surplus explosives shall not be stacked near working area during loading / unloading.	Yes / No.	
11.	Check explosives shall not be held in hands when lightening the fuse.	Yes / No.	
12.	Check that blasting in the open has been carried out during the fixed hours every day or on fixed days in the week so that the public at large should know about this.	Yes / No.	
13.	Check that arrangement has been made to display sufficient warnings / sign board to enable the people to get out of the blasting area to get off the danger zone	Yes / No.	
14.	Check that the danger zone has been suitably cordoned off.	Yes / No.	
15.	Check during blasting operations begin / after the firing of explosives shall follow the loud siren.	Yes / No.	
16.	Check that during blasting operation, Labour / Workmen / Passerby are at safe places and arrangement is made to inform public by caution markings ( Red Flag ) / Public Notices etc.	Yes / No.	
17.	Check that PPEs i.e. Safety helmets, Safety Shoes, is used by blaster and their gang members during blasting and also the persons supervising the blasting operations.	Yes / No.	
18.	For covered blasting ensure placement of cover plates of proper thickness and sufficient numbers of sand filled bags.	Yes / No.	
19.	Ensure that permission for blasting has been obtained from the appropriate authority.	Yes / No.	
<b>III) safety during casting of foundation / concreting :</b>			
1.	Check construction materials are stacked at safe place and also does not cause any danger. (Away from pit) i.e. 1.5 Mtrs. or half the depth of the pit which ever is more.)	Yes / No.	
2.	Check proper arrangement of illumination at Construction Site of Sub station is available.	Yes / No.	
3.	Check that the Concreting Mixer/ Vibrator machines etc are placed at a safe place (Not very near to any pit at least 1.5 Mtr. from the edge of the pit) to avoid transfer of vibrations and should be operated by skilled persons.	Yes / No.	
4.	Check proper / adequate arrangement is made for extension of electric supply. (Proper size of cable, Use of fuse, No loose connection for De watering Pumps / Illumination / Electric compressors etc. if applicable).	Yes / No.	

5.	Check for laying of temporary cables used during construction activities should not cause any danger for electrocution to persons / animals.	Yes / No.	
6.	All bracing, struts and shuttering in excavations shall be adequately secured so as to prevent their accidental displacement.	Yes / No.	
7.	Ensure Shuttering and timbering has been made as detailed in I:S: 3764 for protecting the loose rock / soil against fall.	Yes / No.	
8.	Check for proper placing of Hydraulic jacks with stability and constant watch of these instruments (which are continuously loaded) to avoid any danger of displacement causing sever accident.	Yes / No.	

### B. Safety during Structure, Equipment Erection & Cable laying etc.

1.	Check Back filling done prior to erection activity.	Yes / No.	
2.	Check the derrick used before structure erection has been checked for adequate strength / size and no joints are permitted.	Yes / No.	Test certificate is required apart from visual inspection.
3.	Check that the pulleys used before structure erection / Equipment Erection has been checked for adequate strength / proper size (diameter), also in case of open type pulleys proper locking arrangements like providing of Safety Pin is made Safe working load should be punched.	Yes / No.	Test certificate is required apart from visual inspection.
4.	Check the ropes used before structure erection / Equipment Erection has been checked for adequate strength / physical condition (free from break of strands and knots etc.	Yes / No.	Test certificate is required apart from visual inspection.
5.	Check that the lifting tools and tackles are in healthy condition and has been tested periodically.	Yes / No.	Test certificate is required apart from visual inspection.

6.	Check permission has been obtained from Aviation Authority for erection of Lightning Mast which comes in the vicinity of flying zone. (Where necessary )	Yes / No.	
7.	Check that all Nuts and Bolts are fitted in the structure before undertaking the job of other section of the structure and are tightened.	Yes / No.	
8.	Check area has been cordoned off to prevent injuries to unauthorized persons from hitting against structural component or falling in the excavated pits.	Yes / No.	
9.	Check that danger plates are available on all the equipment & structures in the switchyard.	Yes / No.	
10.	Check demarcation of feeder is done for Double Circuit Line.	Yes / No.	
11.	Check only erection team members are allowed to stand near the structure / Equipment while erection is in process and should wear the safety helmet / Safety Shoes.	Yes / No.	
12.	Check proper guying arrangement has been made while lifting structure / Equipment, if necessary.	Yes / No.	
13.	Check that proper arrangement is made while lifting the structure members and fixing them at height i.e. Proper size and strength of the hook used for lifting the structure members.	Yes / No.	
14.	Check sufficient numbers of guys are made while lifting the assembled structure / heavy loads and also avoiding use of single sheeve pulleys while lifting the assembled structure / heavy load.	Yes / No.	
15.	Check arrangement has been made for equipment identification.	Yes / No.	
16.	Check that required painting made on tower falling in the vicinity of aviation zones. (Where necessary.)	Yes / No.	
17.	Check no live wires nearby. Take shut down if necessary.	Yes / No.	
18.	Check the structure has been permanently earthed.	Yes / No.	
19.	Check crane are preferably be used for erection of pipe structure in the sub station building works ( if required.)	Yes / No.	
20.	Check all safety procedures for erection work like use of safety helmets, Safety belts, use of guy wires, lowering / lifting of tools by rope etc. are strictly adhered to during structure erection works is in progress in the switchyard.	Yes / No.	
21.	Check that correct size of spanner (Box or ring type) as well as DE spanners is being used.	Yes / No.	
22.	Check working area of the structure has been demarcated during erection.	Yes / No.	

23.	Check heavy structures are lifted with crane with proper safety.	Yes / No.	
24.	Only polypropylene ropes are to be used to tie the aluminium tube / Bus bar since this is soft material and will not damage aluminium tube / Bus bar during erection.	Yes / No.	
25.	Ensure that R clips in insulator caps are fixed properly to avoid disconnection of insulator discs.	Yes / No.	
26.	Ensure that all the necessary security pins (split pins) are fixed.	Yes / No.	
27.	Check all nuts of jumper fittings are properly tightened and live metal clearance have been maintained as per POWERGRID specification.	Yes / No.	
28.	In case of tension fitting dead end joint dimensions before & after the compression are checked and recorded.	Yes / No.	
29.	No damaged component of any hardware fitting should be used on works.	Yes / No.	
30.	Length of jumpers has been measured properly to give it a parabolic shape. No sharp bend should exist.	Yes / No.	
31.	Check surge counter erection facilitates proper reading and that earthing is done with minimum bends.	Yes / No.	
32.	Check Surge monitor has been earthed by connecting it to main earth mat with (G I Flat 75 x 12 mm) and earth pit separately as per drawing.	Yes / No.	
33.	Check the alignment of earth switch with isolator, earth switch of isolator is put into operation and the contacts are cleaned. After completion of pre commissioning checks and formats are dully filled and signed.	Yes / No.	
34.	Ensure that the rubber beedings are kept in good condition.	Yes / No.	
35.	Check CT has been placed on the support structure very carefully and all nuts have been tightened. Earthing is done as per drawing.	Yes / No.	
36.	Ensure the lattice structure of CT has been earthed at two points.	Yes / No.	
37.	Check the marshalling box in the switchyard has proper illumination arrangement.	Yes / No.	
38.	Check the capacitor unit is short circuited & earthed, until erection and commissioning works are being done on CVT. (The capacitor get charged by the electrical fields in the vicinity and they keep these charges for a long time, which can be dangerous to human life. Hence the shorting of capacitor unit is necessary). It should be removed before tests / use.	Yes / No.	

39.	Check Fuses in the marshaling box are OK.	Yes / No.	
40.	Check proper earthing of CVT tank has been done.	Yes / No.	
41.	Check all housing accessories, mounting stools including bolts / Nuts for fixing Line Trap and insulators are of non magnetic material.	Yes / No.	
42.	Check H.F. point of CVTs on which the coupling device is not mounted has been earthed.	Yes / No.	
43.	Check the remaining CVTs have been earthed thro' coupling device.	Yes / No.	
44.	Cable drums after visual inspection should be stored preferably in the covered area. Cable ends should be clamped.	Yes / No.	
45.	Ensure each cable and conduit run should be tagged with cable identity numbering as per the approved that appear in the cable and conduit schedule.	Yes / No.	
46.	The tag should be of aluminium plate with ID number punched on it and securely attached to the cable conduit by not less than two turns. Cable tags should of rectangular shape for power cables and of circular shape for control cables.	Yes / No.	
47.	Check underground cable markers should project 150 mm above ground and spaced at an interval of 30 Mts. They shall be located on both sides of road and drain crossing and also at every change in direction.	Yes / No.	
48.	Check cable tags should be provided inside the switchgear, motor control centres, control and relay panels etc. wherever required for cable identification, where a number of cables enter together through a gland plate.	Yes / No.	
49.	The cable (power and control) between LT stations, Control room, DG set building and fire fighting pump house should be laid in the buried cable trenches. In addition to the above, for lighting purpose also, buried cable trench can be used in outdoor area. (as per Technical specification of specific contract )	Yes / No.	
50.	Cable route and joint markers and RCC warning covers should be provided wherever required. The voltage grade of cables should be engraved on the marker.	Yes / No.	
51.	Tray Identification Number on each run of trays at an interval of 10 Mtrs should be painted.	Yes / No.	
52.	In case the outer sheath of a cable is damaged during handling / installation, the same should be repaired to the satisfaction of the site. In case any other part of a cable is damaged, the same should be replaced by a healthy cable. Power cables should be at the top most layers. The armor of control cable is to be earthed.	Yes / No.	

53.	All cable termination should be appropriately tightened to ensure secure and reliable connections. All the exposed parts of cable lugs should be covered with tape, sleeve or paint.	Yes / No.	
54.	Power and control cables are laid on separate cable trays	Yes / No.	
55.	Co-axial cable is laid separately from power cable.	Yes / No.	
56.	All cable trays, racks and metallic ducts have been grounded by connecting each to earth / mat. ( As per Scheme )	Yes / No.	
57.	Check sections of cable trays have been bridged by copper jumpers/ G I to retain continuity of earthing. (As per Scheme)	Yes / No.	
58.	Check earthing of panel is done by the erection contractor for connecting it with switchyard earth mat. ( As per Scheme )	Yes / No.	
59.	Auxiliary bus wiring for AC and DC supplies, Voltage Transformer circuits, annunciation circuits and other common services is provided near the top of the panels running through out the entire length of the panels.	Yes / No.	
60.	All internal wiring to be connected to external equipment is terminated on terminal blocks, preferably vertically mounted on the side of each panel.	Yes / No.	
61.	Check whether Mimic Diagram is available preferably made of anodized aluminium or plastic of approved fast colour material and screwed on to the panel that can be easily cleaned.	Yes / No.	
62.	Check the panels all equipment mounted on front and rear side as well as equipment mounted inside are provided with individual name plates with equipment designated engraved.	Yes / No.	
63.	Check on top of each panel on front as well as rear side, large and bold name plates are provided for circuit / feeder designation.	Yes / No.	
64.	Check all front mounted equipments are provided at the rear with individual name plates engraved with tag numbers corresponding to panel internal wiring to facilitate easy tracing of the wiring.	Yes / No.	
65.	Check the name plates mounted directly by the side of the respective equipments should not be hidden by equipment wiring.	Yes / No.	
66.	Check availability of 240V single phase 50 HZ, AC socket with switch suitable to accept 5 Amps and !5 Amps pin round standard plug, is provided in the interior of each cubicle with ON-OFF switch for connection of hand lamps.	Yes / No.	

67.	Check that panels are provided with a fluorescent lighting fixture rated with 240 Volts single phase, 50 Hz supply for the interior illumination of the panel during maintenance. The fittings are complete with switch fuse unit and switching of the lighting is controlled by the respective panel door switch. Adequate lighting with fuse unit is also provided for the corridor in control panels.	Yes / No.	
68.	Check control panels are provided with necessary arrangements for receiving, distributing, isolating and fusing of DC and AC supplies for various control, signalling, lighting and space heater circuits. The incoming and sub circuits are separately with switch fuse units.	Yes / No.	
69.	Check panels are provided with a space heater rated for 240 V, single phase, 50 Hz, AC supply for the internal heating of the panel to prevent condensation of moisture.	Yes / No.	
70.	Check all panels are equipped with an earth bus securely fixed	Yes / No.	
71.	Check when several panels are mounted adjoining each other, the earth bus is made continuous with necessary connectors and clamps for this purpose.	Yes / No.	
72.	Check provision is made for extending the earth bus bars to adjoining panels on either side.	Yes / No.	
73.	Check provision is made on each bus bar of the end panels for connecting earthing grid.	Yes / No.	
74.	Check all metallic cases of relays, instruments and panel mounted equipment including gland plates are connected to the earth bus by copper wires of specified size.	Yes / No.	
75.	Check the colour code of the earthing wire is green.	Yes / No.	
76.	Check that earthing made with equipment is with Nuts and Bolts i.e. For such connection lugs should be pressed and tightened to the terminals through Nuts and Bolts.	Yes / No.	
77.	Check that no equipment is mounted on the panel doors.	Yes / No.	
78.	Check each switch should bear clear inscription identifying its function.	Yes / No.	
79.	Check those who have sufficient knowledge of steel structural job have been employed in steel structural works only.	Yes / No.	
80.	Check necessary instruction has been communicated by supervisor before start of the day's works to workmen under his control.	Yes / No.	
81.	Storing of equipments is to be made properly to avoid any accident during handling.	Yes / No.	

82.	Check all Nuts and bolts are properly raised or lowered preferably using closed loop pulleys and gully bags / hand bags tied at the end for carrying nuts and bolts.	Yes / No.	
83.	Check that Fire resistant sheets are used before entrance of control cable in control room.	Yes / No.	
84.	Check air compressor tubing properly tightened.	Yes / No.	
85.	Check all carrying connectors / clamps properly tightened.	Yes / No.	

### C. Conductor layout during construction stage :

1.	Check all members are fixed in structure and ensure proper size of Nuts and Bolts are rigidly tightened and punching / tacking / tack welding is done in towers / structures before undertaking conductor laying job.	Yes / No.	
2.	Ensure proper scaffolding arrangements made during laying of conductor (While Power Line crossing etc).	Yes / No.	
3.	Ensure that all members are fitted in structure before undertaking conductor laying work.	Yes / No.	
4.	Ensure that the discharge rod is electrically tested before use.	Yes / No.	
5.	Ensure whether the structure is properly earthed.	Yes / No.	
6.	Only nylon or polypropylene ropes should be used during conductor laying in vicinity of live overhead lines.	Yes / No.	
7.	Ensure that PTW has been taken from the concerned authority when extension of existing sub station is under execution.	Yes / No.	
8.	Ensure that Winch, Pulleys etc. are properly earthed.	Yes / No.	
9.	For LT lines, check whether special persons are posted at each point of isolation till return of permit (PTW) if positioning of person is not possible then it is to be seen that all the point of isolation has been kept in the locked position till the work is in progress.	Yes / No.	
10.	Whether the network of LT lines has been thoroughly checked and precautions taken against inadvertent charging.	Yes / No.	
11.	Check that proper arrangement is made / available for grounding LT lines coming across during conductor laying. (This can be done by way of portable earthing and short circuiting devices which can be engaged to and disengaged from LT lines, keeping away from the LT lines until all operations on the same are completed and all man and materials are removed from the LT lines).	Yes / No.	

12.	Check the provision and proper positioning for the guying and back staying (Where necessary).	Yes / No.	
13.	Check working of hydraulic crimping machine.	Yes / No.	
14.	Check before and after crimping, dimensional changes in clamps and are in accordance with the drawings and specifications.	Yes / No.	

#### D. Switchyard earthing during construction stage:

1.	Check that while earthing conductor crossing the road is laid 300 mm below the road or at greater depth depending upon the site conditions.	Yes / No.	
2.	Check that while laying the Earthing conductor in outside area is buried at least 600 mm below the furnished ground level.	Yes / No.	
3.	Check that the earthing pads have been provided for the apparatus / equipments at accessible position.	Yes / No.	
4.	Check all steel columns, metallic stairs are connected to nearby earthing grid conductor by two earthing leads.	Yes / No.	
5.	Check of earthing of lightening fixtures, receptacles switches, junction boxes lighting conduits has been done by a separate earthing conductor.	Yes / No.	
6.	Check that the railway tracks within switchyard area has been earthed at a spacing of 30 Mts. / specified distance and also at both ends.	Yes / No.	
7.	Check cable trays has been connected to earthing flat of 50X6 mm / specified sized earthing flat at intervals specified in approved drawing.	Yes / No.	
8.	Check that this earthed flat is earthed at about 30 Mts. distance.	Yes / No.	
9.	All accessories in transformer and reactor like radiators tank, cooling banks etc are connected to the earthing grid at minimum two points.	Yes / No.	
10.	Check metallic conduits are not used as earth continuity conductor.	Yes / No.	
11.	Check flexible earthing connectors should be provided for the moving parts.	Yes / No.	
12.	Check sheath and armor of single core power cable is earthed at switchgear end and equipment side.	Yes / No.	
13.	Check contact surface of earthing pads for jointing free from scale, paint, enamel, grease, rust or dust.	Yes / No.	
14.	Check that light poles, junction boxes on the poles, cable and cable boxes / glands, lockout switches etc. are connected to the earthing conductor running along with the supply cable which intern is connected to the earthing grid conductor at a minimum two points.	Yes / No.	

15.	Check earthing conductor which is generally buried 2000 mm outside the switchyard fence. All the gates and every alternate post of the fence are to be connected to earthing grid.	Yes / No.	
16.	Check megger used for measuring soil resistivity is calibrated with desired accuracy.	Yes / No.	
17.	The earth resistivity has been measured in dry weather condition.	Yes / No.	
18.	Check the earthing of Transformers and Shunt reactor, earth pits are constructed as per relevant standard / approved drawing.	Yes / No.	
19.	Check that the measured value of combined earth resistance should be less than 1 Ohm.	Yes / No.	
20.	Check that for earth electrode and individual earth pits, this value should not be more than one Ohm.	Yes / No.	
21.	Check all non current carrying metal parts shall be effectively earthed by two separate and distinct earth connections ( Indian Electricity Rule 61,67 )	Yes / No.	
22.	Check that all pylon supports in the Fire Fighting HVSW system has been earthed to the earthmat.	Yes / No.	

**E: General points common for all activities during excavation, casting of foundation**

***Erection of structures, laying of Conductor, storage and transportation of material:***

1.	Check Supervisors / Workmen have been provided with required healthy PPEs. Like ( Safety helmet / Safety Belts / Safety Shoes / Gum Boot etc. as applicable )	Yes / No.	
2.	Check availability of First Aid Box with required medicines at site.	Yes / No.	
3.	Check Site Instruction register is available at site.	Yes / No.	
4.	Ensure Supervisor / Gang Leader always issues instruction to the Workmen including contractor labour before start of work.	Yes / No.	
5.	Ensure supervisory staff from Power Grid is available at site during construction.	Yes / No.	
6.	Check all driver and plant operators are holding valid driving license.	Yes / No.	
7.	Check the vehicle for rescue is available at site.	Yes / No.	
8.	Ensure engaged labour are aware of the job.	Yes / No.	
9.	Ensure supervisor / workmen engaged in the field are aware of First Aid Techniques ( Such as in case of Electric Shock, Fall from the height, Snake bite and the person rescued from buried under the debris, rescue of person from drowning etc.	Yes / No.	

10.	Check for availability and to keep a record of nearby Hospital / Doctor in case of emergencies arises.	Yes / No.	
11.	While transporting heavy consignment of conductor / EW drums from central store to site by the use of Cranes, Truck, Tractor. The safety aspect for construction and failure of brake system of moving machinery is to be checked.	Yes / No.	
12.	At least one dry powder type of portable fire extinguisher shall be provided especially where explosive or blasting agents are used for excavation. ( If applicable )	Yes / No.	
13.	Check the competence (Qualification / experience) of supervisor / gang leader of contractor.	Yes / No.	
14.	Wire mesh rolls shall be secured in order to prevent dangerous recoiling action.	Yes / No.	
15.	Proper unloading arrangement has been made at site (Preferably with crane) to unload the material.	Yes / No.	
16.	After unloading the material visual inspection of the materials has been carried out along with the erection contractor to check that the material has not been damaged or not (Galvanizing is proper or not) As per approved Field Quality Plan etc.	Yes / No.	
17.	While transporting the heavy laden equipment like transformer / Reactor by road from Rly Stn to Sub station check whether for all safety precaution taken. Like safe lifting capacity of crane, safe load on culvert / Bridge / Nala / Drain etc.and working plan is available at site with specific reference to safety e.g. local earthing, skilled & experience manpower, proper T&P, strength and LT wires / HT wires interrupting the height of equipment and the required clearance maintained etc. Permission to be obtained from concerned authority if required. "Impact recorder on the equipment like Reactor / Transformer must be installed during transportation"	Yes / No.	
18.	Check that the adequate and safe means of access and egress has been provided for all work places as far as reasonably practicable and is being used by the workers.	Yes / No.	
19.	Check proper illumination is provided at the work places and their approaches including passage ways.	Yes / No.	
20.	Check that the lamps have been protected by suitable guards where necessary to prevent danger, in case the lamp breaks.	Yes / No.	
21.	Check loose materials which are not required for use shall not be placed or left so as dangerously to obstruct work places or passage ways.	Yes / No.	

22.	Check all projected nails has been removed or bent over to prevent injury.	Yes / No.	
23.	Check scrap, waste and rubbish has not been allowed to accommodate on the site or the scrap materials has been stored at the isolated place.	Yes / No.	
24.	Check that the worker while working at height scaffold materials, waste materials and tools are not being thrown by them to cause injury to any person.	Yes / No.	
25.	Check whether contractor has procured required quantity of PPE considering maximum number of erection gangs deployed at one time. Check the quantity of PPEs.	Yes / No.	
26.	Check that the PPEs required by the workmen are being utilized by them always.	Yes / No.	
27.	Check the worker is under constant surveillance by the other person while working at height.	Yes / No.	
28.	Check construction site has been barricaded for unauthorized persons / animals.	Yes / No.	
29.	Check that lifting appliances and machines and vehicles used on the construction site is of sound material and good quality and is free from patent defects and is strong enough to with safely the load and stresses to which they will be subjected.	Yes / No.	
30.	Check structures and equipment is being used only for the purpose for which they were intended.	Yes / No.	
31.	Check equipment has been operated by the competent person.	Yes / No.	
32.	Check portable ladders shall not exceed 9 Mts. in length, other wise may cause danger while climbing of person and back legs shall be equally braced.	Yes / No.	
33.	Check unskilled labour are not utilized for skilled jobs and only experience persons are deployed for erection.	Yes / No.	
34.	Check a well planed and documented procedure for the entire Construction works of Sub station shall be prepared by contractor and get approved from Power Grid for distribution to Contractors' field staff and Power Grid for follow up.	Yes / No.	
35.	Check no metallic measuring tapes are being used during expansion of charged bays.	Yes / No.	
36.	Check metal ladders are not being used in the vicinity of exposed live electrical equipment.	Yes / No.	

37.	Check one bore well is available for water supply in case Municipal Construction supply is not available	Yes / No.	
38.	Check charged area of a yard should be properly fenced off.	Yes / No.	
39.	Check ladders / lengthy articles / lengthy equipments etc. should always be carried in horizontal position.	Yes / No.	
40.	Check insurance by contractor for the labour to provide adequate coverage for any accident etc.	Yes / No.	

REMARKS IF ANY:

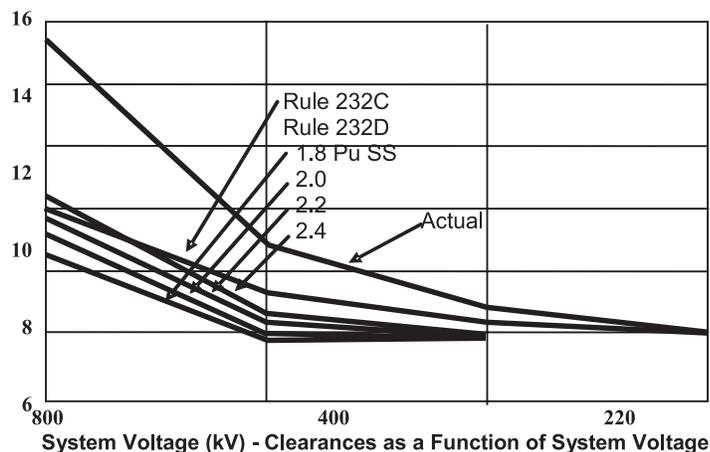
Signature  Name : Designation: Power Grid Rep.	Signature  Name : Designation: Rep. from Contractor	Signature  Name : Designation: Rep. from
--	---	--

## ELECTRO-MAGNETIC FIELD

Power Technologies, Inc. has been requested to review POWERGRID's 132 KV, 220 KV, 400 KV and 800 KV lines with respect to conductor to ground, phase to phase and circuit to circuit clearances and their appropriateness in light of present practice.

Based on a review of POWERGRID's designs, we find that the phase to phase and circuit to circuit clearances are consistent with practices used for line clearances throughout the world. The values used by POWERGRID are generally in the middle range of that used throughout the world and are expected to provide satisfactory performance.

The conductor to ground clearances are within typical limits and meet or exceed the requirements of the National Electrical Safety Code, American National Standard Institute, C2, as shown on Figure.



### Analysis of POWERGRID Transmission Line Clearances

The analysis was based on the following data as supplied by POWERGRID.

#### 800 KV S/c Line

Configuration - Horizontal

Conductor Bundle - Quad CSR Bursitis (35.1 mm id)

Max. conductor sag - 14.56 m

Phase to phase spacing - approx. 15 m.

Ground clearance - 12.4 m (as per IE rules):15 m (maintained to limit max. electric field to 10 KV/m)

Right of way - 85 m

#### **400 KV S/c Line**

Configuration - Horizontal  
Conductor Bundle - Twin ACSR Moose (31.77 mm dia)  
Maximum conductor sag - 12.87 m  
Phase to phase spacing - 10 to 12 m  
Ground clearance - 8.84 m (as per IE rules)  
Right of way - 52 m

#### **400 KV D/c Line**

Configuration - Vertical  
Conductor Bundle - Twin ACSR Moose (31.77 mm dia)  
Maximum conductor sag - 12.87 m  
Phase to phase spacing - 8 to 9 m  
Ckt. to ckt. spacing - 12 to 14 m  
Ground clearance - 8.84 m (as per IE rules)  
Right of way - 52 m

#### **220 KV D/C Line**

Configuration - Vertical  
Maximum conductor sag - approximately 9.8 m  
Phase to phase spacing - 5 to 5.5 m  
Ckt. to ckt. spacing - approximately 10  
Ground clearance - 7.015 m (as per IE rules)  
Right of way - 35 m

#### **132 KV D/c Line**

Configuration - Vertical  
Conductor - ACSR Panther (21 mm dia)  
Maximum conductor sag - approximately 6.6 m  
Phase to phase spacing - approximately 4 m  
Ckt. to ckt. spacing - approximately 7 m  
Ground clearance - 6.1 m (as per IE rules)  
Right of way - 27 m

## **TREE AND CROP COMPENSATION PROCEDURES**

### **Statutory Requirements:**

As per the statutory requirements (IS-5613, Part 3, 1989) all the trees and bushes, including saplings coming in the ROW limit i.e. clearance belt of transmission lines must be cut and removed. The procedure for clearing of trees and crops is as illustrated below.

In exercise of the powers vested with Power Grid Corporation of India Limited (POWERGRID) under Indian telegraph Act 1885, part 3, section 10 to 19 conferred under section 164 of the Electricity Act 2003 through Gazette by India, extra ordinary dated 24th Dec. 2003, has the authority to place and maintain transmission lines under over along or across and posts in or upon, any immovable property. As per the provisions of Indian Telegraph Act 1885 Part III Section 10 (b) which prohibits acquisition of any rights other than that of use only, land for tower and right of way is not acquired and agricultural activities are allowed to continue. However, as per clause 10 (d) of same act stipulates that the user agency shall pay full compensation to all interested for any damages sustained during the execution of said work. Accordingly, POWERGRID pays compensation to land owners towards damages if any to trees or crop during implementation of transmission project as well as during Operation and maintenance phase. The procedure followed for such compensation is as follows:

POWERGRID follows the principle of avoidance, minimization and mitigation in the construction of line in agricultural field having crop due to inherent flexibility in phasing the construction activity and tries to defer construction in cropped area to facilitate crop harvesting. However, if it is unavoidable and is likely to affect project schedule, compensation is given at market rate for standing crops. All efforts are also taken to minimize the crop damage to the extent possible in such cases. As regards trees coming in the Right Of Way (ROW) following procedure is adopted for enumeration:

All the trees which are coming within the clearance belt of ROW on either side of the center line are identified and marked/numbered from one AP to the other and documented. Type, Girth (Measured 1 m. above ground level), approximate height of the tree is also noted for each tree. Trees belonging to Govt., Forest, Highways and other local bodies may be separately noted down or timely follow up with the concerned authorities for inspection and removal. Cashew, Guava, Lemon and other hybrid trees which are not of tall growing nature are not marked for cutting since these trees can be crossed using standard tower extensions if required.

A notice under Indian Telegraph Act is served to the landowners informing that the proposed transmission line is being routed through the property of the individual concerned. The notice

shall contain the particulars of the land, ownership details and the details of the trees/crops inevitably likely to be damaged during the course of the construction of the proposed transmission line and acknowledgement received from land owner. A copy of said notice is further issued to the Revenue Officer, who has been authorized by the State Govt. for the purpose of assessment/valuation and disbursement of compensation to the affected parties.

The revenue officer shall further issue a notice of intimation to the concerned landowner and inspect the site to verify the documents related to the proof of ownership and a detailed Mahazer is prepared for the identified trees and crops inevitably damaged during the course of the construction. For assessing the true value of timber yielding trees help of forest officials is taken and for fruit bearing trees help of Horticulture department is taken.

The Mahazer shall contain the land owner details type of tree/crop, its present age, variety, yielding pattern etc. and the same is prepared at site in the presence of the land owner. These Mahazers are further compiled and a random verification is conducted by the concerned District Collector or his authorized representative in order to ascertain the assessment carried out by the revenue office is genuine and correct. After this process the District collector issues a tree cutting permit to Power Grid Corporation to enable removal / damage to the standing tree/crop identified in the line corridor.

Once the tree/crop is removed / damaged, POWERGRID shall issue a tree cutting/crop damaged notice to the land owner with a copy to the Revenue Officer to process the compensation payment. Based on the above the compensation payment is generated by means of a computerized programme developed by the National Informatics Center exclusively for this purpose. The detailed Valuation statement thus generated using this programme is verified at various levels and approval of payment of compensation is accorded by the concerned District Collectors.

On approval of compensation, the revenue officer shall further intimate the amount payable to the different landowners and POWERGRID arranges the payment by way of Demand Draft to the affected parties. The payment is further disbursed at the local village office after due verification of the documents in presence of other witnesses.

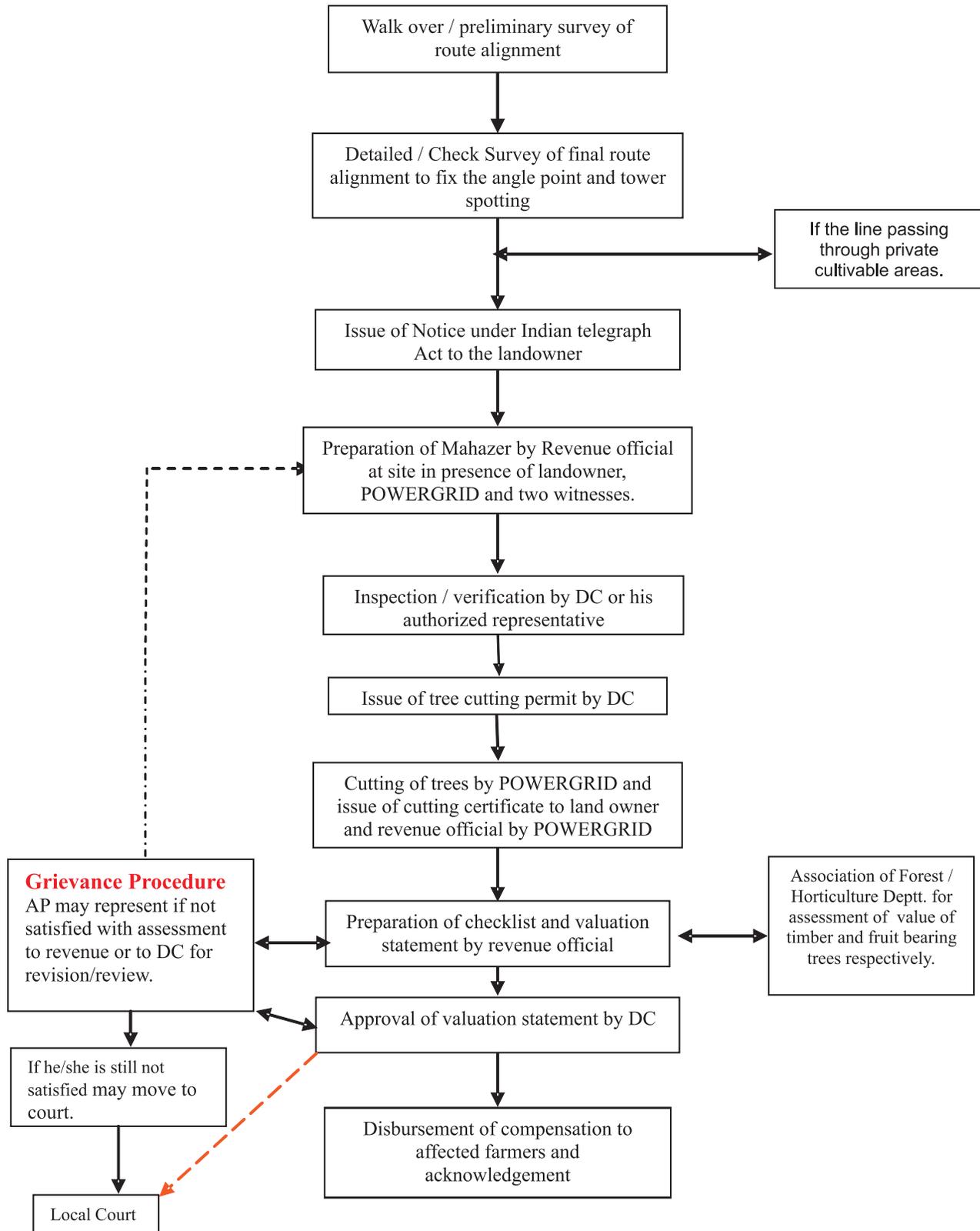
#### **Procedure exclusively followed in Kerala State:**

Due to typical demography of Kerala state and presence of several orchards of Coconut and Rubber, State government in consultation with Kerala State Electricity Board (KSEB) have devised a formula for arriving the compensation which is as follows:

Compensation = yield X constant factor X average market value X future age.

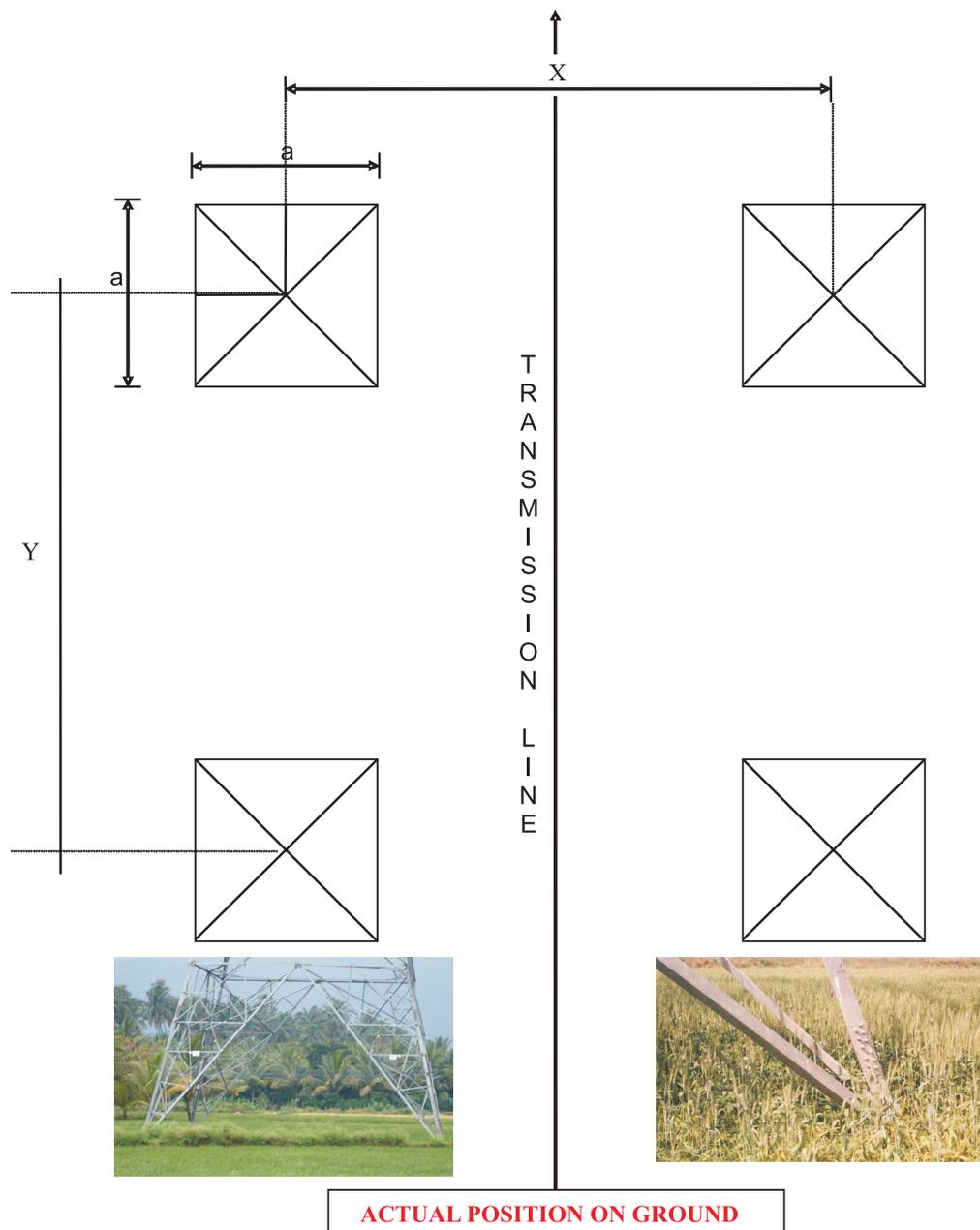
The constant factor is to arrive the net return component for the particular variety of tree in line with the annuity ratio slab prescribed for the balance life of the tree.

## TREE / CROP COMPENSATION PROCESS



## Appendix - XVI

### TYPICAL PLAN OF TRANSMISSION LINE TOWER FOOTINGS



#### INDICATIVE MEASURES

X & Y = 10-15 METERS

a = 300- 450 mm

## **POWERGRID'S SOCIAL ENTITLEMENT FRAMEWORK<sup>1</sup>**

Transmission projects generally do not require large area because land below tower/line is not acquired as per law and only a small piece of land is only acquired for sub-stations. For that too POWERGRID is following and will continue to follow the practice land management to minimize the land requirement to the barest minimum. Generally 20 to 40 hectare of land is required for constructing a substation depending upon the type and voltage level. Even for this 20 to 40 hectare land, POWERGRID try to locate sub station on Government/waste land as far as possible and in the absence of Government land private land is selected for substation. In all such cases a detailed social assessment will be carried out to ascertain the likely impact of acquisition of land on the affected population. POWERGRID social assessment process is follows:

**PRELIMINARY ASSESSMENT:** It will be carried out at the stage of land selection for Sub Station and will cover following aspects:

- i. Total land required and its location
- ii. Current land used pattern
- iii. Likely persons to be affected (local revenue authorities shall be consulted for such data)
- iv. Unit of government, which has jurisdiction for acquisition of such land.

If the preliminary assessment indicates that more than 40 families are getting affected a detailed socio economic survey shall be carried out by 3<sup>rd</sup> party preferably by professionals having similar experience and if the number of families are less than 40 such survey may be undertaken departmentally.

**Cut-Off Date:** To prevent subsequent influx of encroacher or others who wish to take advantage of R&R benefits an eligibility, cut off date is required to be established. For all such cases cut off date for eligibility shall be Section-IV notification under LA act.

**Socio Economic Survey:** Since available data from census report may be inadequate for assessing and planning the R&R action plan for the affected people, a detailed socio economic base line survey shall be carried out as soon as Section IV notification under LA act is published. Survey will cover the affected village/villages in general and affected population in particular including collection

---

<sup>1</sup> The proposed Framework is based on NPRR-2004/2007 and other progressive trends in R&R. However, government of India is considering bringing a comprehensive legislation on R&R. Once, such legislation is passed POWERGRID will incorporate relevant changes in its Framework as needed.

of data from all categories of affected population like land holders, landless, squatters, artisans etc. if any. The detailed terms of reference for such survey is provided as Appendix-XVII. In brief Socio Economic Survey will carry information on following:

**Village Profile:** It will cover its location, demography features, social structure and institutions, natural resources like water, land, forest, grazing area etc. and cultural anthropological, educational and health status and common resources available in the affected village like roads, buildings, school, college, dispensary, club houses, temples etc. To assess the socio economic condition of the affected village and to plan community development programme for entire community.

**Family Profile:** It will cover the demographic profile, name of head of the family and name of other members of the family, the cast and religion, age, sex, education qualification of the individual member.

**Property inventory:** It should contain information on extent of land i.e. homestead, agriculture whether irrigated or un-irrigated and their classification trees standing on them. Houses with number of rooms and its type, farm equipment and live stock, wells, tube wells as well as government land if used by the local people and their details

**Productive assets:** It will cover cropping pattern and productions, live stock production, artisan activity or details of other occupational.

**Income profile:** It will contain information of occupation of individual member of the family (cultivation, service, artisans, wage earner, agricultural labourer, business etc.) with source and average monthly/annual income to assess the losses due to acquisition of land/assets.

Socio Economic Survey shall also identify various **ongoing governmental developmental/training programmes** going on in the area for possible dovetailing them with the IGS offered to PAFs by POWERGRID for restoration of economic level of affected persons. Survey will also identify organisations either government or non government working in the area which can assessed in planning and implementation of R&R activities.

**Public Consultations / Disclosure:** Affected population shall be informed/ consulted on compensation/rehabilitation options through various means like public meeting or displaying such information at key points. Generally, people shall be consulted during the acquisition/survey process and after the draft RAP is prepared to know their opinion and aspirations. All relevant information about the project and details of socio-economic survey, Rehabilitation Action Plan (RAP) etc. shall be available at the designated place (Public information Centre/library) of each substations and will be shared with the public or any interested persons whenever asked/required.

**Identification Record :** Identification record of all PAFs containing name of the head of the family, his age, caste, father's name, village name and name and age of the other family members dependant

on him along with attested photo of Head of the family shall be maintained at site. This record shall be used for allotting unskilled/semi skilled job during construction phase through contractors and for allotment of petty contracts during the operational stage as well as for R&R planning and implementation.

**Budget:** The total cost of R&R including cost of compensation, relocation and rehabilitation, social assessment, planning, implementation, supervision monitoring and evaluation shall be included as the integral part of project cost so that provision for sufficient fund is available to take up the R&R activity as planned.

**Implementation & Monitoring:** Implementation of approved rehabilitation action plan shall be a time bound activity and will be implemented during the first 12 to 15 months of the project execution. If required implementation of RAP may be entrusted to a body (Government or non Government) active in that area. The primary information collected during socio-economic survey will be the base line for monitoring the impact assessment. For monitoring of RAP implementation a Committee under the Chairmanship of concerned head of the region (POWERGRID) and other members including representative of local authorities, panchayat, PAPs, NGOs etc. shall be constituted who will be responsible for overall implementation of RAP and shall forward its quarterly report to the POWERGRID management.

### **Social Entitlement Framework:**

POWERGRID's prime concern is to rehabilitate and resettle people affected by its operations. Its endeavour is always to avoid/minimise hardship to PAPs and their families through options like Land for Land as far as possible, Rehabilitation Assistance and adoption of Income Generating Scheme and training instead of cash because it has been experienced that extending cash compensation does not fully achieve the objective of rehabilitation. POWERGRID while implementing the social entitlement framework gives special attention to this fact and exhaust all options before arriving at cash compensation.

POWERGRID's social entitlements within its Resettlement and Rehabilitation framework will include the following categories and compensation packages

#### **(1) Loss of Land**

This impact primarily affects families' access to space for housing (homestead) and, agricultural land.

- (a) Loss of homestead land may impact owners with valid titles, or customary and usufruct rights. The entitlement options offered to owner will include compensation finalised by revenue authorities on prevailing market rate. In addition to that, all PAFs of this category**

shall be provided with equivalent area of land subject to maximum 150 sq. m. in rural areas and 75 sq. m. in urban areas free of cost. The charges towards registration of such land shall also be borne by POWERGRID.

- (b) Loss of agricultural land is the most prevalent impact and may affect wide range of people ranging from big farmers to marginal farmers. It can be classified into following two categories:

**Persons with valid titles or customary or usufruct rights:** The beneficiary will be the title holder who will be entitled to choose between an alternative land of equivalent productive potential subject to availability preferably within same village/panchayat but not exceeding 1 hectare of irrigated or 2 hectare of un-irrigated land. Registration charges for transfer of this land in the name of affected family shall also be borne by POWERGRID and cash compensation for the extent of land against which replacement land is not provided. Alternate land for allotment to PAFs shall be taken from the State Government or from voluntary sellers at existing land prices to avoid further impact. Since availability of sufficient land in the same area may be a limiting factor therefore the land for land option will be open only to agriculture based PAFs, rendered totally landless by project activities. If the alternate land is wasteland/ degraded land, all eligible PAFs shall be provided one time assistance of Rs. 15,000/- per hectare towards development of land. In case PAFs opt for cash compensation for loss of land or not eligible for land for land option, they will be provided cash compensation at replacement cost which will include compensation as fixed by competent authorities under LA act including solatium and applicable interest plus following rehabilitation assistance based on the severity of losses:

- 750 days of minimum agricultural wages for families losing entire land thus rendered landless. Since these families are losing entire land, which may adversely affect their livelihood if no other source, is available. Keeping this in view, these PAFs shall be encouraged to opt for Income Generating Scheme (IGS) of equivalent amount based on aptitude/skills of PAFs for maintaining a regular income.
- 500 days of minimum agricultural wages for families losing part land and consequently becoming a marginal farmer (< 1 ha. of un irrigated land).
- 375 days of minimum agricultural wages for families losing part land and consequently becoming a small farmer (>1 ha. of un irrigated land).
- 100-200 days of minimum agricultural wages for big farmers or families losing part /negligible amount of land but left with sufficient land to sustain its family.

**Tenants/sharecroppers/leaseholders or Nontitled:** In Indian conditions it has been observed that such persons who do not have title or ownership right on agricultural land do take up cultivation as tenants or sharecropper to sustain their families. Acquisition of such land causes only temporarily

impact on their livelihood because they can shift to some other such land in the area. However, to compensate the temporarily loss they will be entitled to reimbursement of un-expired lease amount and assistance of 200 days of minimum agricultural wages. Individual will be the beneficiary in this case. Titleholder/owner of such land shall not be eligible for rehabilitation assistance in case of leaseholder, sharecropper and tenants. However, nontitled (encroachers) will get 375 days of minimum agricultural wages if they are cultivating the acquired land continuously for last three years from date of section-4 notification which shall be established through Govt. records (Voter list, Ration card etc.) or on the basis of socio-economic survey. If affected person with title to the land have encroached from their legitimate landholding onto land that they do not own, they will be compensated only for the legitimately occupied piece and legitimate assets.

The above mentioned value (amount) of rehabilitation assistance shall not exceed the amount of compensation fixed by competent authorities.

**Availability of Land for allotment to PAPs:** Availability of land for persons opting for “land for land” shall be decided as follows:

- i) POWERGRID will take up the matter with concerned State Government for release of Government land for allotment to the eligible PAPs.
- ii) If Government land is not available, POWERGRID will purchase private land on a willing buyer and seller basis keeping in mind that the purchase of land does not promote any indirect displacement. The land will be purchased from voluntary sellers at existing rates finalised through negotiations.

For purchase of private land a “Land Purchase Committee” shall be constituted by RHQ comprising of representatives of POWERGRID, Local Authorities PAFs, Gram Panchayat or any well reputed person as mutually agreed with the local authorities and PAFs.

## (2) Loss of Structure

This category of impact includes Individuals/families/households losing their houses or shops and other institutional structures.

- (a) **Loss of houses** will impact families with valid title, customary or usufruct rights. The beneficiary unit is the individual having ownership right who will be entitled for cash compensation as finalised by revenue authorities and Rs. 25,000/- as one time assistance (based on prevailing Government of India norms for weaker section housing) for construction of house plus transition benefits like provision of transport or equivalent cash for shifting of material.

In the case of **tenants and leaseholders** the beneficiary unit will be the individual who will be entitled to a lump sum payment equivalent to 6 month rent based on production of proof or Rs. 5,000/- which ever is higher as disturbance allowance to re-establish residence.

In the case of **squatters** the beneficiary unit will be the Household/ family who will be entitled to cost of structure and one time payment ranging between Rs. 5000/- to Rs. 25000/- depending on type structure and family size because family size has direct bearing on extent of impact plus transition benefits like provision of transport or equivalent cash for shifting of material. However, to become eligible for above benefits squatters have to establish that he/she is living there continuously for last 3 years prior to section 4 notifications.

**Cattle shed:** It has been noticed in past that some people have erected a temporarily shed for keeping cattle in their fields which some times are not considered by authorities for any compensation if it is not properly build. Therefore to off set the loss owner of cattle shed shall be entitled to one time payment of Rs. 15,000/- in addition to compensation fixed by revenue authorities.

(b) Loss of shop/l dhaba or institutional structures will affect units with **valid titles, customary or usufruct rights**. The beneficiary will be the individual/owner who will be entitled to cash compensation for structure and Rs. 25,000/- for construction of working shed/shop and rehabilitation assistance equivalent to 1 year income towards disturbance plus transition benefits like provision of transport or equivalent cash for shifting of material. .

In case of **tenants and leaseholders**, the beneficiary will be the individual who will be entitled to a transitional allowance equivalent to 1 year income plus transition benefits like provision of transport or equivalent cash for shifting of material.

In case of **squatters**, the beneficiary will be the individual who will be entitled to a transitional allowance equivalent to 1 year income plus transition benefits like provision of transport or equivalent cash for shifting of material. However, squatters will get these benefits if they are running the acquired shop/establishment for last three years from date of section-4 notification which shall be established through Govt. records (voter list, Ration card etc.) or on the basis of socio-economic survey.

### (3) **Loss of Livelihood/Wage/Occupation**

This impact affects individual access to wage/occupation. However, in case of agricultural labour they can shift to other land since land acquired for substation is quite small in comparison to total available land in the area. But if socio-economic survey finding recognizes certain people who have lost its livelihood due to acquisition of land for substation these individuals will be entitled to rehabilitation assistance equivalent to 625 days of minimum agricultural wages preferably in shape of a Income Generating Scheme of equivalent amount depending upon the aptitude/skills posses by them or alternatively they may be offered units of equivalent amount in joint name of his/her spouse under Monthly Income Scheme for regular income. Apart from this short and need based

training on development of entrepreneurship skills required for successful implementation of selected IGS shall also be organised for such PAFs by POWERGRID.

**Vulnerable group like women headed/SC/ST families etc. under above mentioned categories shall be considered for additional need based benefits.**

#### **(4) Loss of Access to Common Property Resources (CPR) and Facilities**

In this category of impacts, the beneficiary is typically community, and the losses include loss of rural common property resources or urban civic communities. POWERGRID shall try all possible measures to avoid such CPRs for setting up of substation and if it becomes completely unavoidable than it will take following measures to negate its impact:

- (a) In the case of rural common property resources, the beneficiary units will be the community entitled to replacement/ augmentation of common property resources/ amenities or provisions of functional equivalence.
- (b) In the case of urban civic amenities, the beneficiary units will be the community entitled to access to equivalent amenities or services.

#### **(5) Loss of Standing Crops and Trees**

This category of impacts includes standing crops or trees for those with valid title and tenants or lessees

In all cases, the family cultivating the land will be the entitlement beneficiary. In all cases again, the beneficiary family will be entitled to cash compensation at market rate for crops. For fruit bearing trees payment equivalent to 8 years' income and for other trees, compensation as fixed by concerned authorities to the owner of land. In case of tenant/leaseholder/sharecroppers payment for crop may be made to the landowner only if there is a "no objection" certificate from the actual cultivator.

#### **(6) Losses during transition of displaced persons/establishments**

Losses in this category include those during shifting/transport. In all categories, the family or respective individual of commercial or institutional unit will be the beneficiary and will be entitled to provision of transport or equivalent cash (Rs. 10,000/- minimum) for shifting of material/cattle from existing place to alternate place.

#### **(7) Losses to Host Communities**

In this category of impact, the host community, particularly in the resettled area, its access to amenities and services has reduced. The beneficiary host community will be entitled to augmentation of resources to sustain pressure of project affected persons moving from affected site.

### **Other Rehabilitation Measures:**

When alternate land is not available as per above procedures or in cases where a PAF is not entitled to 'land for land' i.e. eligible only for cash compensation as determined by Revenue Authorities, the PAP may exercise one of the following options for his rehabilitation. A variety of income generation enterprise will be offered on the basis of:

- (a) Consultation with PAPs and local government
- (b) Socio-economic survey establishing the need for such schemes

The following are illustrative:

**Dairy, Poultry, Handicrafts, etc.** - are one of the most viable rehabilitation options. Such a project offers a good market for dairy and poultry products and this option is expected to prove beneficial. In some areas, people earn their living through handicrafts or other income generating schemes (**Table -1**). To encourage the PAPs and their families for taking these useful avocations POWERGRID will provide rehabilitation assistance as per the category of entitlements that will preferably be channelised through banks.

**Table -1: List of Income Generating Scheme**

Allied agriculture Vegetable farming Fruit orchards Social forestry	Manufacture of pottery products Decorative Earthen pipes Pots and pans
Livestock rearing Dairying Poultry Piggery Goat rearing Sericulture Pisciculture	Fruit processing and preservation Canned fruits Chips and wafers Dry fruits/vegetables
Processing of cereals & pulses Dal processing Papad making Bakery products Bharbhujia, chana, dalia, manufacturing	Carpentry and blacksmith  Bee Keeping - wax and honey
Ghani processing of edible oil seeds Bullock ghani Improved power ghani Portable power ghani	Fiber products Rope making Ban making

Village match Industry	Bamboo and cane products
Agarbatti Handloom Manufacture of Laundry soap	Manufacture of cane Gur & Khandasari Bullock driven Power driven

**Shops** - also are one of the viable rehabilitation options. A limited number of shops in Substation area if available will be earmarked for allotment to PAFs after appropriate consultation regarding the PAFs capability and aptitude. Any assistance needed by PAFs in formulation of schemes for procuring loans from banks and stabilising the same will be rendered by POWERGRID if so desired.

**Award of Petty Contracts:** All possible efforts shall be made by project authorities to award petty contracts like cleaning, horticulture, etc. on a preferential basis to eligible PAFs.

**Jobs:**

*Jobs with POWERGRID:* POWERGRID projects do not envisage significant job opportunities to the local residents. However, if there is any requirement of job then PAPs shall be entitled for preference, subject to their meeting of job requirement and specification.

*Jobs with Contractors:* Contractors will be persuaded to give jobs to eligible PAPs on a preferential basis where feasible.

**Training** - If the head of the family who is eligible for RA as per entitlement frame work wants to nominate its dependant for vocational training course in lieu of rehabilitation assistance offered to them, POWERGRID may arrange for imparting suitable training. Such training will be imparted through the existing and available training institutions in the vicinity of affected villagers like Polytechnic, ITIs of the State and Central Government. The project authority may meet the cost of training of the persons who are nominated by the head of the eligible PAFs in writing selected from amongst the land oustee families.

Apart from above POWERGRID will organise need based short training for development of required skill and entrepreneurship development for the selected IGs in the affected village through state government/institutions.

**Community Development works:** In addition to above measures, POWERGRID based on outcome of social assessment will also undertake need based developmental work like construction of road, drinking water facility, community centre etc. for overall up-liftment of surrounding, village and community. These works shall be carried out in association with local authorities.

POWERGRID will ensure that all plans are approved by competent authorities; that public consultation takes place at necessary stages; and, that grievance redressal is a priority.

## Definitions:

**Household:** A household is a group of persons who commonly live together and would take their meals from a common kitchen.

**PAPs:** People who lose land, livelihood, homesteads, structures and access to resources as a result of project activities.

**Family:** In relation to a affected person, means, such person and his or her spouse, minor sons, unmarried daughters, minor brothers or sisters, father and mother and other members residing with him and dependent on him for their livelihood.

All adult married sons in respect of title holder shall be considered as separate family for consideration/eligibility for rehabilitation assistance ( Need based assistance to widow daughter separated from her family and living with parents and unmarried sons over the age of 40 may also be considered as special case) having share in the acquired property. However this will not apply to the category of big farmers who are left with sufficient land holding.

**Nomination by PAP:** The head of the family, if so desired, shall be asked to nominate in writing from among the family members whom he/she will like to get the rehabilitation assistance from the company. The nomination made by the head of the family generally will not be allowed to change except in special circumstances. But in no case, he/she will be allowed to change the nomination more than once.

**Holding:** means the total land held by a person as an occupant or tenant or as both.

**Marginal farmer:** means a cultivator with an un-irrigated land holding up to one hectare or irrigated holding up to 1/2 hectare.

**Small farmers:** means a cultivator with an irrigated land holding of 1 hectare or un-irrigated land holding of 2 hectare.

**Big farmers:** means a cultivator with an irrigated land holding of more than 5 ha.

**Agricultural family:** means a family whose primary mode of livelihood is agriculture and includes family of owners as well as sub-tenants of agricultural land, agricultural labourers.

**Agricultural labourer:** means a person, normally resident of the affected area for a period of not less than three years immediately before the declaration under Section-IV who does not hold any land in the affected zone but who earns his livelihood principally by manual labour on agricultural land therein immediately before such declaration and who has been deprived of his livelihood.

**Displaced family:** means any tenure holder, tenant, Government lessee or owner of other property, who on account of acquisition of his complete holding including land and house or other property in the affected village for the purpose of the project is displaced from such land/property.

**Existing Land Price:** Due to regional and state specific variations on productivity of land, land prices vary in different states and even in the same location, depending upon various parameters. The land purchase committee shall finalise the existing land price based on negotiations keeping in mind revenue records and other land market information.

**Customary or Usufruct Rights:** Several communities in India, including tribals, have traditionally enjoyed the benefit of using, without impairing, items like land, trees etc., which they do not own. These customary and usufruct rights vary across the country and are well documented by State Governments. However, its determination is in built in Land Acquisition Process, In case, they are not covered under the records for want of updation of records or even due to ignorance, POWERGRID through its process of Land Acquisition Assessment and Social Assessment may be able to recognise these lapses so that interest of all these person are taken care off through Gram Panchyat / local authorities during assessment and subsequent compensation. POWERGRID will adopt norms of the respective State Governments as per the provisions of LA Process.

**Nontitled(Encroacher):** Persons who have illegally extended/occupy land to which they do not have recognizable legal right or claim they are occupying/ using.

**Squatter:** A person who settles or takes unauthorised possession on public land without title for residential purpose or for carrying out some business activity or person who gets right of pasturage from government on easy terms.

**Non Government Organisations:** any organisation outside the Government machinery duly registered under Society Registration Act and devoted to performing socio-economic voluntary activities.

**Land Purchase Committee (LPC)** shall be formed by nomination in the following steps:

- POWERGRID representative from site to be nominated by the Regional head.
- Representative of Local Authorities to be decided by District Administration.
- Representative of PAPs to be identified and selected by themselves.
- Representative of Gram Panchayat or any other person of repute as mutually agreed with local authorities and PAPs.

**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 mutually agreed with the local authorities and PAPs. This committee will address the grievances of the PAPs. POWERGRID will be represented by a senior official from Region/Corporate Centre. The well reputed person will not be same as the one in the LPC.

## **TERMS OF REFERENCE (TOR) FOR BASELINE SOCIO-ECONOMIC SURVEY AND PREPARATION OF REHABILITATION ACTION PLAN (RAP)**

### **Introduction**

The POWERGRID's policy on Resettlement and Rehabilitation (R&R) is to provide "people displaced/affected by our projects, means to improve or at least restore their former living standards, earning capacity and production levels" through a process in which they participate through their own social and cultural institutions. Therefore, the process of Resettlement and Rehabilitation of the displaced/affected is developed and participatory oriented with emphasis on the need to "ensure that the development fosters full respect for their dignity, human rights and cultural uniqueness". It is further essential "to ensure that indigenous (Tribal) people do not suffer adverse effects during the development process and they receive culturally compatible social and economic benefits".

The initiation of such a development oriented R&R needs to be carefully planned from the outset. This is because the acquisition of land for a development project cause social, economic, cultural and environmental problems which affect the productive assets and sources of income, the habitat, families and kinship, community structure, social relations, cultural identity, traditional authority and potential for mutual help which come out of these.

A thorough understanding of issues related to social, economic and cultural factors of effected people is absolutely important for formulating an appropriate rehabilitation plan. A detailed socio economic and cultural study can provide such and understanding.

**Objective:** The basic objective of the present study is to carry out a baseline socio-economic survey to generate the necessary data and information, so as to prepare an appropriate Rehabilitation Action plan of effected people. More specifically, the objectives are:

- i) To make an inventory into the extent and nature of adverse impact to be caused by the project
- ii) To identify the villages and urban centers likely to be affected as a result of land acquisition for proposed substation
- iii) To identify the affected persons residing in the area to be acquired for the construction activities of s/s
- iv) To collect baseline demographic and socio-economic characteristics of affected people residing in the affected area
- v) To categorise the PAPs/PAFs under different categories for various benefits and entitlements as per POWERGRID's Social Entitlement Framework

- vi) To understand the peoples reactions towards the project and ascertain their preferences for R&R and
- vii) To prepare an appropriate Rehabilitation Action Plan for improving/restoring the living standards of affected population.

### **Scope of the Study**

The geographical coverage of the survey will be limited to proposed s/s and neighbouring areas likely to be affected by the project. On the basis of survey results and community meeting, the study is expected to prepare, baseline socio-economic report and plans. The study in particular should provide but not necessarily be limited to the following:

- a) Demarcation of project affected areas indicating the structures affected and their use within the required land for the construction
- b) Categorising PAPs/PAFs by village and urban area wise on the basis of loss of resources such as house, occupation and land
- c) Analysis of various demographic details such as sex, age, family composition, literacy levels etc;
- d) Reviewing specific economic, social and cultural losses to the community and suggesting ways and means to mitigate them through R&R process
- e) Recording of occupations, income sources, and other resources owned by them
- f) Identification of vulnerable sections of population such as SC/ST single and women headed families, landless etc and assessment of impacts of the project
- g) General assessment of the role of women and the impact of project on them together with recommendations for enabling to regain their losses
- h) Assessing the living standards of affected people based on selected indicators to monitor their living standards in the post-resettlement situation
- i) Identification of NGOs working in the affected area and its neighbourhood and explore the possibilities of their involvement in the R&R process
- j) Review various on-going Government programs in order to integrate them in the R&R process
- k) Identification of various alternative sites (if required) in the close proximity for possible relocation of affected people

### ***The Action Plans should contain the following aspects:***

- i) Details on entitlement to each affected family/person based on the policy
- ii) Prepare mitigating plans for various vulnerable sections of population
- iii) Identify the alternative economic rehabilitation measures of those who will lose their livelihood

- iv) Evolve an appropriate mechanism for participation of affected community during the implementation of plans
- v) Propose special measures for upbringing those PAPs/PAFs who are below poverty line
- vi) Evolve the method of addressing the grievances and appeals as per provisions of ESPP
- vii) Define the scope for participation of NGOs in the implementation process
- viii) Phase out the implementation schedule and budget requirements and
- ix) Explain the arrangements required for Monitoring and evaluation of R&R activities and the various indicators that need to be used during Monitoring & Evaluation process

### **Methodology**

The study would depend extensively on primary data with the emphasis on observations and discussions. A household survey need to be undertaken to collect information at family level. The relevant secondary information need to be collected from revenue department, census report etc. to supplement the primary survey data. In addition, discussion with the community leaders, NGOs, government officials concern with R&R, will also be part of the study. The important aspect of the study will be participatory appraisal with the involvement of the community to enable them to understand the process of R&R. Some form of photography need to be used to record the existing structures for identification.

### **Tasks**

In order to achieve the above objectives, the following tasks are required to be undertaken

**Task 1: Inception Report:** This task involves in preparation of Inception Report containing the outline of the entire study approach, beneficiary consultation process and preparation of necessary questionnaires.

**Task 2: Enumeration of Project affected Structures:** This task aims at identifying the various structures that are likely to be affected as a result of demarcation of land to be acquired for the construction activities. This includes information such as type of building (formal structure or hut) ownership, use and type of construction. Further, it is also necessary to record the names of persons practicing cultivation or any other activities in the subject land required for construction activities. The identification of project affected structures should be supplemented by photo documentation. At the end of this task, the names of affected families occupying each of the structures should be recorded to prevent inflow of people ineligible for compensation.

**Task 3: Baseline Socio-economic Survey:** This survey aims at collecting information at household level in order to ascertain the present socio-economic status of PAPs/PAFs. The information should

cover demographic profile, occupation, income and expenditure levels, housing conditions, present use of land (type of crops grown) socio-cultural aspects, and details of other relevant information.

**Task 4: Survey of commercial establishments:** This survey aims at collecting detailed information on various petty business and other commercial establishments to be affected. These include type of business carried, number of persons employed and other relevant information in order to determine an appropriate compensation and rehabilitation packages.

**Task 5: Community/Stakeholders participation/Focus group meetings:** The aim of this task is to share the findings of the survey and to get feed back from the community and stakeholders. In addition, the compensation packages, R&R measures etc. need to be discussed in order to know the peoples reactions and attitudes towards their entitlement. This will also provide opportunities to the people to express their preferences towards various entitlements. Further, focus group meeting need to be organized with women and other target groups in order to elicit the information on a particular group for drawing an effective action plans.

**Task 6: Preparation of Action Plans:** Based on the results of baseline survey and community meetings, an appropriate Rehabilitation Action Plan need to be drawn. The task involves preparation of separate resettlement and rehabilitation plans, evolving appropriate mechanism for participation of people during implementation of plans, monitoring & evaluation process, time frame and budgetary requirements.

Some of the above tasks may be required to carry out simultaneously depending upon the requirements.

**Reports:** The consultant shall submit the following reports:

1. An inception report presenting the initial findings and detailed plan of activities with in 15 days from the commencement
2. Monthly progress reports for each calendar month outlining the details of various activities undertaken during the month.
3. A base line socio-economic report containing all the outputs referred under the scope of study.
4. R&R plans with necessary drawings containing all the outputs mentioned under the scope.
5. Photograph/Cassettes used for recording for the existing structure.

**Qualification and required skills:**

The assignment is to carry out by a Social Science institute, an NGO or a consulting firm with an appropriate experience. The specific skills required are Sociology/Anthropology and Economics. The person should have sufficient experience of Socio-Economic studies and preparation of R&R plans.

## **POWERGRID'S PUBLIC CONSULTATION PROCESS**

Public consultation forms an integral part of POWERGRID's project cycle, and will be carried out in Regional/local language for wider/better understanding. The process of consultation and its documentation shall be as follows:

### **Transmission Lines**

1. When planning a transmission line, public consultation is used as an integral tool for screening, assessment and finalisation of route alignment. During initial screening and walkover survey, POWERGRID's staffs meet the public in the route of proposed transmission line. Observations and problems arising from these discussions are given due consideration while finalising the route.
2. During the survey for tower spotting, POWERGRID's site officials meet the public i.e. people coming in the route of the line. This enables POWERGRID to gauge public opinion. At the time of construction, every individual on whose land a tower is to be erected is met with. People coming in the way of the ROW are consulted and their views and suggestions are incorporated thus allowing for public participation.
3. During construction POWERGRID pays the compensation for any damages to each land owner and obtains their final acknowledgement.
4. During maintenance, POWERGRID consults the individual landowners, obtains their approval and pays compensation for any damage to property.

### **Substations**

1. POWERGRID identifies location of the substation and notifies the area under LA Act.
2. Public consultation is a part of LA Act. Under Section 4 of LA Act, a notification is published in the official Gazette and in two local daily newspapers (at least one of which is in the local regional language) about the details of the project. Any objections related to the land to be acquired are made to the collector in writing. Under section 5a, the District Collector hears the public objections by calling a public meeting, if so desired. DC sends report along with recommendations along with details of proceedings to the state government. DC issues notice under section 6 only after he receives the state government's approval.
3. Under Section 6 of LA Act, the DC issues a notice informing the public about the land to be acquired and invites their claims. All effective people informed individually. Compensation is paid to public according to local norms.

4. Besides publication consultation as an integral part of the LA Act, POWERGRID is committed to assessment of all probable impacts associated with land acquisition through its social assessment and management process which includes a socio-economic survey of the proposed substation sites. The socio-economic survey will assess both adverse and positive impacts of the project on aspects such as the natural resource base, developmental potential of the area, economy of the affected area, social structure, norms and traditions. The socio-economic survey will include a complete household census recording members, property with legal rights and resources which are in possession or in use. Appropriate methods such as participatory rural appraisal and questionnaires will be used where necessary.
5. POWERGRID assess the social impacts of its land acquisition based on the socio-economic survey and designs its compensation packages in consultation with the people. POWERGRID organises meetings with the PAPs to evolve the RAP.

In order to further streamline the above process and to facilitate documentation of the same, and to discuss the following:

- complete project plan (i.e. its route and terminating point and substations, if any, in between);
- POWERGRID design standards in relation to approved international standards;
- health impacts in relation to EMF;
- measures taken to avoid public utilities such as school, hospitals, etc.;
- other impacts associated with transmission lines and POWERGRID's approach to minimising and solving them; and
- land acquisition details, proposed R&R measures and compensation packages in line with POWERGRID's policy

POWERGRID uses one or more of the following techniques at various stages. These include:

- (1) **Public meetings:** POWERGRID will hold public meetings during its EAMP process at appropriate locations along the length of the transmission line. Public meetings will include one to one meetings with land owners during transmission tower spotting. Larger group meetings will be organised at strategic distances along the length of the transmission line. These will consist of all or at least most of the people to be directly affected by the concerned project and their local Gram Panchayat leaders.
- (2) **Informal small group meetings:** Informal small group meetings will be conducted during walkover survey to find out local environmental and social issues along the proposed

transmission line route. These meetings will be conducted by ESMT staff at appropriate intervals.

- (3) **Information brochures and Pamphlets:** POWERGRID will make available information and project specific details to the public through Information brochures and Pamphlets. These brochures and pamphlets will contain information on: the overall project plan; design and construction standards; prudent deviations from design standards from transmission towers near schools, hospitals, human habitation; potential impacts and generic mitigation measures; resettlement and rehabilitation; and, compensation.
- (4) **Operating field offices:** Information regarding the proposed transmission line can be accessed by the public from operating field offices. Information will be provided through brochures and pamphlets and any further queries will be responded by POWERGRID's staff.
- (5) **Local planning visits and site visits:** POWERGRID staff will visit field sites. During this time informal contacts will be established with the local people. Reactions of the public to the project will be informally gauged.
- (6) **Response to public Enquires:** ESMC/ESMT will respond to public enquiries by post or through notices in local news papers.
- (7) **Press release inviting comments:** POWERGRID will publish details of proposed transmission routes in two local newspapers. Public will be invited to comment in writing or by meeting concerned POWERGRID officials within a specified period. POWERGRID will then incorporate relevant objections and suggestions.
- (8) **Project coordination committees:** POWERGRID will set up grievance redressal committees to address the complaints and objections that PAP's may have regarding the project, its impacts or mitigation measures.
- (9) **Ombudsman or representative:** For building a consensus on the project its impacts and mitigation measures, the PAPs will be encouraged to elect or appoint a trusted ombudsman or representative.
- (10) **Public Displays:** POWERGRID will show their model projects to public/small representative groups.

### Documentation

The proceedings of the above consultation shall be documented. Details recorded will include date of the meeting, venue, number and possibly the names of the people attended, issues discussed and the outcome of the meeting.

The manager at DHQ will apply combinations of the appropriate techniques at various activities of a project depending upon the field conditions as shown below:

Milestones	Process	Techniques
1. Environmental & social screening & scoping for Tls	<ul style="list-style-type: none"> <li>● Screen &amp; scope Tls from an environmental and social perspective</li> <li>- spot verification</li> </ul>	Informal small group meetings, local planning visits and site visits
2. Environmental & social screening & scoping for SS	<ul style="list-style-type: none"> <li>● Screen &amp; scope SS from an environmental and social perspective</li> <li>- spot verification</li> </ul>	Informal small group meetings, Local planning visits and site visits
3. EAMP	<ul style="list-style-type: none"> <li>● Tls &amp; SS</li> <li>- undertake environmental review and formulate appropriate management measures</li> </ul>	Public meetings, Press release inviting comments
4. SAMP	<ul style="list-style-type: none"> <li>● Tls               <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>● SS               <ul style="list-style-type: none"> <li>- finalise SS site</li> <li>- notify area under LAA</li> <li>- undertake detailed LA census</li> <li>- final negotiations and documentation of agreements</li> </ul> </li> </ul>	Informal small group meetings, local planning visits and site visits, Response to public enquiries  Public meetings, Ombudsment or representative, Public display
5. Execution of Environmental management works	<ul style="list-style-type: none"> <li>● Execute environmental management works</li> <li>- appropriate clearance for Transmission line ROW, etc.</li> <li>- compensatory afforestation</li> </ul>	Information brochures and pamphlets, Operating field offices, Response to public enquiries
6. Execution of Social management works	<ul style="list-style-type: none"> <li>● Tls               <ul style="list-style-type: none"> <li>- pay compensation as agreed and documented in SAMP and execute other measures</li> </ul> </li> <li>● SS               <ul style="list-style-type: none"> <li>- deposit compensation and take possession of land</li> <li>- execute R&amp;R measures as prescribed in the SAMP</li> </ul> </li> </ul>	Information brochures and pamphlets, Operating field offices, Response to public enquiries  Information brochures and pamphlets, Operating field offices, Response to public enquiries



<p>7. Environmental and Social monitoring</p>	<ul style="list-style-type: none"><li>● Monitor EAMP measures<ul style="list-style-type: none"><li>- maintenance of ROW</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 measure</li></ul></li></ul>	<p>Information brochures and pamphlets, Operating field offices, Response to public enquiries, Informal small group meetings</p>
---	--	--

**RECOGNITION OF PROJECT AFFECTED BY SOME SALIENT DOCUMENTS**

Documents		Project Affected Groups								
Document Name	Status	Scope and Applicability	Displaced person	Homestead/Structure		Homestead/Structure		Persons losing livelihood/trade/occupation	Persons depending on CPRs and forest resources/nomads	Host Persons
				With valid title	Others	With valid title	Other (usufruct/customary/patta holder)			
1. Land Acquisition Act, 1984	Legislation (Centre)	Acquires Land for "Public Purpose"	●	●	●	●	●			
2. Maharashtra Project Affected Persons Rehabilitation Act, 1986	Legislation (State)	Irrigation and can be made applicable to other projects	●	●	●	●	●	●		
3. Madhya Pradesh Pariyojana Ke Karan Visthapit Vyakti (Punshthapan) Adhinyam, 1985	Legislation (State)	Irrigation, Power, Public utility	●	●	●	●	●	●		
4. National Rehabilitation and Resettlement Policy, 2007	Policy (Centre)	Public Sector, Government Sector and Private Sector Projects	●	●	●	●	●	●	●	●
5. Orissa Resettlement and Rehabilitation Policy, 2006	Policy (State)	All projects where acquisition of land involved	●	●	●	●	●	●	●	●

**NATURE AND EXTENT OF ENTITLEMENTS RECOGNISED BY SOME SALIENT DOCUMENTS**

Document Name	Nature of Entitlements						Extent of Entitlements					
	Cash	Land	Trade/Occupation/ Livelihood/training		Home- stead/ Structure	Grants/ Allowances	Civic Amenities	Others (community benefits resource base)	Ade- quacy	Replace- ment value	Development benefits	
			Agricultural	Others								
1. Land Acquisition Act, 1984	●	●							●			
2. Maharashtra Project Affected Persons Rehabilitation Act, 1986	●	●	●	●	●		●		●			
3. Madhya Pradesh Pariyojana Ke Karan Visthapit Vyakti (Punshthapan) Adhiniyam, 1985	●	●	●	●	●		●		●			
4. National Rehabilitation and Resettlement Policy , 2007	●	●	●	●	●		●			●	●	
5. Orissa Resettlement and Rehabilitation Policy, 2006	●	●	●	●	●		●			●	●	
6. POWERGRID's Social Entitlement Framework	●	●	●	●	●		●			●	●	
												In addition to above measures, POWERGRID based on outcome of social assessment also undertake need based community developmental work like construction of road, drinking water facility, community centre etc. for overall up-liftment of surrounding, village and community.

**MANAGEMENT SYSTEMS CERTIFICATES**



# Certificate of Registration

**INTEGRATED MANAGEMENT REGISTRATION – PAS 99:2006**

This is to certify that:

**Power Grid Corporation of India Ltd.**  
**"Saudamini"**  
Plot No.2, Sector 29  
Gurgaon 122 001  
Haryana  
India

Holds Certificate No: **IMR 517449**

and operates an Integrated Management Registration in compliance with PAS 99:2006.

The Quality, Environmental and Occupational Health & Safety Management System associated with the design, engineering, procurement, construction, operation & maintenance activities for transmission systems upto 800KV AC & HVDC, Supervisory Control & Data Acquisition (SCADA), energy management system and communication projects.

For and on behalf of BSI:

Head Compliance & Risk India, Harmeet Singh

Originally registered: 17/04/2007

Latest issue: 17/04/2007

Expiry date: 16/06/2010



Page: 1 of 1

This certificate remains the property of BSI and is bound by the conditions of contract. Validity of this certificate can be verified at [www.bsi-global.com/ClientDirectory](http://www.bsi-global.com/ClientDirectory) or telephone +91 11 2692 9000. Further clarifications regarding the scope of this certificate and the applicability of PAS 99:2006 requirements may be obtained by consulting the organization. This certificate is valid only if provided original copies are in complete set.

BSI Management Systems, The Mira Corporate Suites (A-2), Plot 1&2, Ishwar Nagar, New Delhi 110 065, India  
BSI Management Systems is a subsidiary of British Standards Institution.



पावरग्रिड



# Certificate of Registration

## QUALITY MANAGEMENT SYSTEM - ISO 9001:2000

This is to certify that:

**Power Grid Corporation of India Ltd.**  
**"Saudamini"**  
Plot No.2, Sector 29  
Gurgaon 122 001  
Haryana  
India

Holds Certificate No: **FM 87682**

and operates a Quality Management System which complies with the requirements of ISO 9001:2000 for the following scope:

The design, engineering, procurement, construction, operation & maintenance activities for transmission systems upto 800KV AC & HVDC, Supervisory Control & Data Acquisition (SCADA), energy management system and communication projects.

For and on behalf of BSI:

Head Compliance & Risk India, Harmeet Singh

Originally registered: 20/09/2004

Latest issue: 17/04/2007

Expiry date: 16/06/2010



Page: 1 of 1

This certificate remains the property of BSI and is bound by the conditions of contract. Validity of this certificate can be verified at [www.bsi-global.com/ClientDirectory](http://www.bsi-global.com/ClientDirectory) or telephone +91 11 2692 9000. Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2000 requirements may be obtained by consulting the organization. This certificate is valid only if provided original copies are in complete set.

BSI Management Systems, The Mira Corporate Suites (A-2), Plot 1&2, Ishwar Nagar, New Delhi 110 065, India  
BSI Management Systems is a subsidiary of British Standards Institution.

**BSI**  
Management  
Systems



# Certificate of Registration

## ENVIRONMENTAL MANAGEMENT SYSTEM - ISO 14001:2004

This is to certify that:

**Power Grid Corporation of India Ltd.**

**"Saudamini"**

**Plot No.2, Sector 29**

**Gurgaon 122 001**

**Haryana**

**India**

Holds Certificate No: **EMS 87683**

and operate an Environmental Management System which complies with the requirements of ISO 14001:2004 for the following scope:

**The design, engineering, procurement, construction, operation & maintenance activities for transmission systems upto 800KV AC & HVDC, Supervisory Control & Data Acquisition (SCADA), energy management system and communication projects.**

For and on behalf of BSI:

Head Compliance & Risk India, Harmeet Singh

Originally registered: **20/09/2004**

Latest issue: **17/04/2007**

Expiry date: **16/06/2010**



Page: 1 of 1

This certificate remains the property of BSI and is bound by the conditions of contract. Validity of this certificate can be verified at [www.bsi-global.com/ClientDirectory](http://www.bsi-global.com/ClientDirectory) or telephone +91 11 2692 9000. Further clarifications regarding the scope of this certificate and the applicability of ISO 14001:2004 requirements may be obtained by consulting the organization. This certificate is valid only if provided original copies are in complete set.

BSI Management Systems, The Mira Corporate Suites (A-2), Plot 1&2, Ishwar Nagar, New Delhi 110 065, India  
BSI Management Systems is a subsidiary of British Standards Institution.



पावरग्रिड



# Certificate of Registration

## OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM

This is to certify that:

**Power Grid Corporation of India Ltd.**  
**"Saudamini"**

Plot No.2, Sector 29  
Gurgaon 122 001  
Haryana  
India

Hold Certificate No: **OHS 87685**

and operates an Occupational Health and Safety Management System which complies with the requirements of OHSAS 18001:1999 for the following scope:

The design, engineering, procurement, construction, operation & maintenance activities for transmission systems upto 800KV AC & HVDC, Supervisory Control & Data Acquisition (SCADA), energy management system and communication projects.

For and on behalf of BSI:

Head Compliance & Risk India, Harmeet Singh

Originally registered: 20/09/2004

Latest issue: 17/04/2007

Expiry date: 16/06/2010



Page: 1 of 1

This certificate remains the property of BSI and is bound by the conditions of contract. Validity of this certificate can be verified at [www.bsi-global.com/ClientDirectory](http://www.bsi-global.com/ClientDirectory) or telephone +91 11 2692 9000. Further clarifications regarding the scope of this certificate and the applicability of OHSAS 18001:1999 requirements may be obtained by consulting the organization. This certificate is valid only if provided original copies are in complete set.

BSI Management Systems, The Mira Corporate Suites (A-2), Plot 1&2, Ishwar Nagar, New Delhi 110 065, India  
BSI Management Systems is a subsidiary of British Standards Institution.





# Certificate of Registration

## SOCIAL ACCOUNTABILITY SYSTEM - SA 8000:2001

This is to certify that:

**Power Grid Corporation of India Limited**  
**"Saudamini"**  
**Plot No.2, Sector 29**  
**Gurgaon 122 001**  
**Haryana**  
**India**

Holds Certificate No: **SA 524198**

and operates a Social Accountability System which complies with the requirements of the Social Accountability Standard SA 8000:2001 for the following scope:

**The design, engineering, procurement, construction, operation, maintenance activities for transmission systems upto 800KV AC and HVDC, Supervisory Control Data Acquisition (SCADA), energy management system and communication projects.**

For and on behalf of BSI:



Managing Director, BSI India, Venkataram Arabolu

Originally registered: **26/10/2007**

Latest issue: **26/10/2007**

Expiry date: **25/10/2010**



Page: 1 of 3

This certificate remains the property of BSI and is bound by the conditions of contract. Validity of this certificate can be verified at [www.bsi-global.com/ClientDirectory](http://www.bsi-global.com/ClientDirectory) or telephone +91 11 2692 9000. Further clarifications regarding the scope of this certificate and the applicability of SA 8000:2001 requirements may be obtained by consulting the organization. This certificate is valid only if provided original copies are in complete set.

BSI Management Systems India Private Limited, The Mira Corporate Suites (A-2), Plot 1&2, Ishwar Nagar, New Delhi 110 065, India.  
BSI Management Systems India Private Limited is a subsidiary of British Standards Institution.



**DETAILED PROCESS OF A TYPICAL POWERGRID TRANSMISSION PROJECT**

Milestones	Objectives	Process	Responsibility	Product/Decision
<b>I. Project Conceptualisation</b>				
1. Project Identification	<ul style="list-style-type: none"> <li>To identify &amp; conceptualise the project studies</li> <li>To attain consensus on scope and extent of feasibility studies</li> </ul>	<ul style="list-style-type: none"> <li>Identify project in consultation with CEA/ Plg. Comm. / REBs/SEBs, etc.                             <ul style="list-style-type: none"> <li>- Demand-Supply Analysis</li> <li>- Beneficiaries/Subscribers</li> <li>- Technical Configuration</li> <li>- Approximate Costs</li> </ul> </li> <li>Prepare Brief Project Report</li> <li>Discuss with REBs &amp; SEBs individually &amp; collectively on modalities of line maintenance</li> <li>Interact with Funding Agency for posing the project</li> </ul>	<ul style="list-style-type: none"> <li>Engg. Dept.</li> <li>Engg. Dept.</li> <li>Engg. Dept.</li> <li>Corp. Plg. Dept.</li> </ul>	<ul style="list-style-type: none"> <li>Brief Project Report</li> <li>Consensus on scope and extent of feasibility studies</li> </ul>
2. Feasibility Studies	<ul style="list-style-type: none"> <li>To prepare the project Feasibility Report</li> </ul>	<ul style="list-style-type: none"> <li>Evaluate feasibility of project                             <ul style="list-style-type: none"> <li>- Need &amp; Priority Assessment</li> <li>- Technical Options</li> <li>- Route Options (BEE Line Survey)</li> <li>- Environmental &amp; Social Screening &amp; Scoping</li> <li>- Economic/Financial analysis</li> <li>- Implementation Schedule</li> <li>- Project Funding details</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Engg. Dept.</li> <li>Corp. Plg. Dept.</li> <li>Env. &amp; Soc. Mgt. Dept.</li> </ul>	<ul style="list-style-type: none"> <li>Feasibility Report</li> <li>Initial Environment Assessment Report</li> </ul>
3. Preliminary Approvals	<ul style="list-style-type: none"> <li>To obtain approvals from the Internal Management and FA</li> </ul>	<ul style="list-style-type: none"> <li>Section-68 notification under Electricity Act, 2003 from Administrative Ministry;</li> <li>Approval from concerned Regional Power committees (RPCs) for inclusion in BPTA;</li> </ul>	<ul style="list-style-type: none"> <li>Corporate Commercial Deptt.</li> <li>Engg. Dept</li> </ul>	<ul style="list-style-type: none"> <li>Internal Management Approval</li> </ul>

Milestones	Objectives	Process	Responsibility	Product/Decision
		<ul style="list-style-type: none"> <li>Signing of BPTA;</li> <li>Submission of FR to Internal Management;</li> <li>For projects with estimated cost more than Rs. 500 Crore, FR to be forwarded for Financial Appraisal by Independent Agency.</li> <li>Submit FR/Project Implementation Plan (PIP)/Sub Project Appraisal for pre-appraisal by Funding Agencies</li> </ul>	<ul style="list-style-type: none"> <li>Corp. Plg. Dept.</li> <li>Env. &amp; Soc. Mgt. Dept.</li> <li>Corp. Plg. Dept</li> <li>Env. &amp; Soc. Mgt. Dept.</li> </ul>	<ul style="list-style-type: none"> <li>Appraisal of Funding Agencies</li> </ul>
<b>II. Project Planning</b>				
1. Reconnaissance & Preliminary Survey	<ul style="list-style-type: none"> <li>To finalise the most optimal route on the map</li> </ul>	<ul style="list-style-type: none"> <li>Reconnaissance/Walk Over survey <ul style="list-style-type: none"> <li>Walk Over all optional routes identified during BEE line survey</li> <li>Record salient features on either side of routes identified</li> <li>Verify critical issues eg. river, hill, rail, road, power line, telephone line crossing etc.</li> <li>Finalise optimal route on map</li> </ul> </li> <li>Select optional Sub-Station sites</li> <li>Undertake preliminary field survey <ul style="list-style-type: none"> <li>Fix angle tower points on topo sheets along route delineated during walk over survey</li> </ul> </li> <li>Finalise angle tower points on ground and map</li> <li>Finalise type of angle towers (B,C,D)</li> <li>Record all details 50 m on either side of center line on map</li> </ul>	<ul style="list-style-type: none"> <li>Engg. Dept.</li> <li>Env. &amp; Soc. Mgt. Dept</li> <li>Site</li> <li>Engg. Dept.</li> <li>RHQ</li> <li>Site</li> <li>Env. &amp; Soc. Mgt. Dept.</li> <li>Engg. Dept.</li> <li>RHQ</li> <li>Site</li> </ul>	<ul style="list-style-type: none"> <li>Map with all routes verified and optimal route validated</li> <li>Map with final route, tower points and all details 50 m on either side of centre line</li> </ul>
2. Environmental Assessment & Management Planning	<ul style="list-style-type: none"> <li>To prepare environmental assessment &amp; management plans for the project</li> </ul>	<ul style="list-style-type: none"> <li>Prepare Forest Proposal for forest areas</li> <li>Undertake environmental review for other areas based on environmental screening and scoping and suggest appropriate management measures</li> </ul>	<ul style="list-style-type: none"> <li>Env. &amp; Soc. Mgt. Dept.</li> <li>Engg. Dept.</li> <li>RHQ</li> <li>Site</li> </ul>	<ul style="list-style-type: none"> <li>Environmental assessment and management plans for transmission lines and sub-stations</li> </ul>

Milestones	Objectives	Process	Responsibility	Product/Decision
3. MoEF Approvals	<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               <ul style="list-style-type: none"> <li>Nodal officer/PCCF/ Secy. Forest</li> </ul> </li> <li>Forest Proposal to MoEF for conditional approval               <ul style="list-style-type: none"> <li>Recommendation of FAC, Approval of MEF</li> <li>Payment for compensatory afforestation</li> </ul> </li> <li>Forward Compliance report by State Government to MoEF for Final Forest Clearance</li> </ul>	<ul style="list-style-type: none"> <li>Site</li> <li>RHQ</li> <li>Env. &amp; Soc. Mgt. Dept.</li> </ul>	<ul style="list-style-type: none"> <li>In-principle Approval by MoEF</li> <li>Final Forest Clearance by MoEF</li> </ul>
<b>III. Project Approvals</b>				
1. Investment approval	<ul style="list-style-type: none"> <li>To obtain approval from POWERGRID's Board</li> </ul>	<ul style="list-style-type: none"> <li>For projects with estimated cost more than Rs. 500 Crore:               <ul style="list-style-type: none"> <li>To be put up to Committee of Directors along with Financial Appraisal report from Independent Agency;</li> <li>Board Memorandum is put up to the Board along with recommendation of Committee of Directors.</li> </ul> </li> <li>For projects with estimated cost less than Rs. 500 Crore:               <ul style="list-style-type: none"> <li>To be put up to Committee of Directors;</li> <li>Board Memorandum is put up to the Board along with recommendation of Committee of Directors.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Corp. Plg. Deptt.</li> <li>Finance Deptt.</li> <li>Engg. Deptt.</li> <li>Env. &amp; Soc. Mgt. Dept.</li> </ul>	<ul style="list-style-type: none"> <li>Projects approved.</li> </ul>
2. FA	<ul style="list-style-type: none"> <li>To obtain approval from funding agencies</li> </ul>	<ul style="list-style-type: none"> <li>Submit approved FR for approval by FAs               <ul style="list-style-type: none"> <li>Techno-economic scrutiny</li> <li>Environmental scrutiny</li> <li>Social scrutiny</li> <li>Financial Scrutiny</li> <li>Concurrence of constituents</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Corp. Plg. Dept.</li> </ul>	<ul style="list-style-type: none"> <li>Project approved by FAs for loan effectiveness</li> </ul>

Milestones	Objectives	Process	Responsibility	Product/Decision
<b>IV. Detailed Design &amp; Tendering</b>				
1. Detailed Surveys	<ul style="list-style-type: none"> <li>To freeze route alignment and fix tower points</li> </ul>	<ul style="list-style-type: none"> <li>Select survey contractors and award work</li> <li>Undertake detailed field surveys               <ul style="list-style-type: none"> <li>Mark ground profile on topo sheet</li> <li>Check ground profile with field surveys using dumpy level and make necessary changes on topo sheet</li> <li>Fix spots and heights (attachments) for tension and suspension towers</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>RHQ</li> <li>Engg.</li> <li>Cont. Ser. Dept.</li> <li>RHQ</li> <li>Site</li> </ul>	<ul style="list-style-type: none"> <li>Survey contracts awarded</li> <li>Survey Report including profile.</li> </ul>
2. Social Assessment and Management Planning	<ul style="list-style-type: none"> <li>To assess social impact appoint external agency, if required</li> <li>To prepare social assessment and management plans for transmission lines</li> <li>To prepare social assessment and management plans for sub-stations</li> </ul>	<ul style="list-style-type: none"> <li>Select and appoint external agency for the SAMP, If required</li> <li>Negotiate, finalise and document compensation and other management measures</li> <li>Notify under Land Acquisition Act</li> <li>Undertake land acquisition census</li> <li>Assess social impacts of acquisition</li> <li>Negotiate, finalise and document compensation and other management measures</li> </ul>	<ul style="list-style-type: none"> <li>RHQ</li> <li>Env. &amp; Soc. Mgt. Dept.</li> <li>Cont. Ser. Dept.</li> <li>Site</li> <li>RHQ</li> <li>Ext. Agy.</li> <li>RHQ</li> <li>Site</li> <li>Env. &amp; Soc. Mgt. Dept.</li> <li>Ext. Agy.</li> </ul>	<ul style="list-style-type: none"> <li>Agency appointed for SAMP</li> <li>SAMP for transmission lines</li> <li>Social assessment &amp; management plans for sub-stations</li> </ul>
3. Design, Estimates & Finalisation of Specifications	<ul style="list-style-type: none"> <li>To prepare designs and estimates</li> </ul>	<ul style="list-style-type: none"> <li>Design and estimate transmission line, sub-station and other components               <ul style="list-style-type: none"> <li>Typical components</li> <li>Special components</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Engg. Dept.</li> <li>Cont. Ser. Dept.</li> <li>Corp. Mgt. Group</li> </ul>	<ul style="list-style-type: none"> <li>Design and estimates report</li> </ul>

Milestones	Objectives	Process	Responsibility	Product/Decision
	<ul style="list-style-type: none"> <li>To finalise specifications and prepare tender documents</li> </ul>	<ul style="list-style-type: none"> <li>Prepare specifications and tender documents for various packages               <ul style="list-style-type: none"> <li>- Tower package</li> <li>- Conductor &amp; Earthwire package</li> <li>- Earthwire/conductor accessories package</li> <li>- Sub-station packages</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Engg. Dept.</li> <li>Cont. Ser. Dept.</li> </ul>	<ul style="list-style-type: none"> <li>Tender documents</li> </ul>
4. Tendering and Award of Contracts	<ul style="list-style-type: none"> <li>To tender, award work to contractors</li> </ul>	<ul style="list-style-type: none"> <li>Issue Notice Inviting Tenders</li> <li>Proponents submit bids/open bids</li> <li>Evaluate bids (Technical &amp; Commercial)</li> <li>Negotiate with short-listed parties</li> <li>Obtain Management Approval &amp; Award Contracts</li> </ul>	<ul style="list-style-type: none"> <li>Engg. Dept.</li> <li>Cont. Ser. Dept.</li> <li>Fin. Dept</li> <li>RHQ</li> </ul>	<ul style="list-style-type: none"> <li>Contracts awarded for execution of work</li> </ul>
<b>V. Project Implementation</b>				
1. Check Surveys	<ul style="list-style-type: none"> <li>To pegmark tower points on the ground</li> </ul>	<ul style="list-style-type: none"> <li>Undertake check surveys               <ul style="list-style-type: none"> <li>- Peg mark on ground location of towers</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>RHQ, Site</li> <li>Engg. Dept.</li> </ul>	<ul style="list-style-type: none"> <li>Peg marks on ground for towers</li> </ul>
2. Execution of EAMP and SAMP	<ul style="list-style-type: none"> <li>To undertake environmental and social management works as prescribed in EAMP and SAMP</li> </ul>	<ul style="list-style-type: none"> <li>Execute EAMP               <ul style="list-style-type: none"> <li>- Clearance for transmission line ROW</li> <li>- Compensatory afforestation</li> </ul> </li> <li>Execute SAMP               <ul style="list-style-type: none"> <li>- Pay compensation to PAPs of transmission lines</li> <li>- Deposit compensation and take possession of land for substation</li> <li>- Execute R&amp;R measures</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Env. &amp; Soc. Mgt. Dept.</li> <li>Auth. Agcy / EXT. Agcy</li> <li>RHQ</li> <li>site</li> </ul>	<ul style="list-style-type: none"> <li>EAMP and SAMP executed</li> </ul>
3. Tower erection & stringing	<ul style="list-style-type: none"> <li>To erect the towers and string transmission lines</li> </ul>	<ul style="list-style-type: none"> <li>Construct Foundations               <ul style="list-style-type: none"> <li>- Soil investigations</li> <li>- Foundation classification</li> <li>- Excavation, stub setting and Concreting</li> </ul> </li> <li>Erect Towers               <ul style="list-style-type: none"> <li>- Transport of materials</li> <li>- Erection of towers</li> <li>- Tightening and punching</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Engg. Dept.</li> <li>Cont. Ser. Dept.</li> <li>RHQ</li> <li>Site</li> <li>Engg. Dept.</li> <li>Cont. Ser. Dept.</li> <li>RHQ</li> <li>Site</li> </ul>	

Milestones	Objectives	Process	Responsibility	Product/Decision
		<ul style="list-style-type: none"> <li>String transmission lines</li> <li>- Hoisting of insulator strings</li> <li>- Lay out Earthwire and conductors</li> <li>- Final sagging and Fixing accessories</li> </ul>	<ul style="list-style-type: none"> <li>Engg. Dept.</li> <li>Cont. Ser. Dept.</li> <li>RHQ</li> <li>Site</li> </ul>	<ul style="list-style-type: none"> <li>All towers erected with tr. lines strung and accessories installed</li> </ul>
4. Sub-Station Construction	<ul style="list-style-type: none"> <li>To construct substations</li> </ul>	<ul style="list-style-type: none"> <li>Construct core substation and install equipment</li> <li>- Control room</li> <li>- DG set &amp; FFPH building with water tank</li> <li>- Switchyard &amp; cable trenches</li> <li>- Auto transformer/ shunt reactors</li> <li>Construct support infrastructure</li> <li>- Staff quarters, Administration and non residential buildings</li> <li>- Water supply, sewerage, storm water drainage, and approach roads, etc.</li> <li>- Switchyard</li> <li>- Township lighting</li> </ul>	<ul style="list-style-type: none"> <li>Engg. Dept.</li> <li>Cont. Ser. Dept.</li> <li>Opr. Ser.</li> <li>RHQ</li> <li>site</li> <li>Engg. Dept.</li> <li>Cont. Ser. Dept.</li> <li>Opr. Ser.</li> <li>RHQ</li> <li>site</li> </ul>	<ul style="list-style-type: none"> <li>Substation constructed and equipment installed</li> </ul>
5. Testing & Commissioning	<ul style="list-style-type: none"> <li>To test and commission the transmission line and substation</li> </ul>	<ul style="list-style-type: none"> <li>Test all project components</li> <li>- Lines</li> <li>- Substation</li> <li>Undertake appropriate corrective measures</li> <li>Commission the project</li> </ul>	<ul style="list-style-type: none"> <li>Opr. Ser.</li> <li>RHQ</li> <li>Site</li> <li>CEA</li> </ul>	<ul style="list-style-type: none"> <li>Project tested &amp; commissioned</li> </ul>
<b>VI. Operation &amp; Maintenance</b>				
1. Transmission Lines and Sub-Station Operation	<ul style="list-style-type: none"> <li>To ensure efficient and reliable operation of transmission lines and sub-stations</li> </ul>	<ul style="list-style-type: none"> <li>Continuously monitor transmission lines and sub-stations for proper operation</li> </ul>	<ul style="list-style-type: none"> <li>RHQ/Site</li> <li>Sys. Opr. / RLDC</li> </ul>	<ul style="list-style-type: none"> <li>Optimum System availability</li> </ul>
2. Preventive Maintenance	<ul style="list-style-type: none"> <li>To identify any defects in the lines and substations</li> </ul>	<ul style="list-style-type: none"> <li>Patrol the lines and towers, regularly to identify defects of components:</li> <li>- Foundation</li> </ul>	<ul style="list-style-type: none"> <li>RHQ</li> <li>Site</li> <li>Opr. Ser.</li> </ul>	<ul style="list-style-type: none"> <li>All defects identified and classified</li> </ul>

Milestones	Objectives	Process	Responsibility	Product/Decision
		<ul style="list-style-type: none"> <li>- Tower &amp; Hardware fittings &amp; insulators</li> <li>- Conductors &amp; Earthwire</li> <li>- Electrical clearance</li> <li>• Maintain substation components as per schedule</li> <li>- AC plant, Battery system, Bus Bar</li> <li>- Capacitance Voltage Transformer</li> <li>- Curcuit Breaker, Current transformer, DG set</li> <li>- Fire protection system</li> <li>- Isolators &amp; earthing switch</li> <li>- Lightening arrestors, LT switchgears</li> <li>- PLCC system, Protection system</li> <li>- Shunt reactors</li> </ul>	<ul style="list-style-type: none"> <li>• RHQ</li> <li>• Site</li> <li>• Opr. Ser.</li> </ul>	
	<ul style="list-style-type: none"> <li>• To restore all defects</li> </ul>	<ul style="list-style-type: none"> <li>• Restore non-shut down defects as soon as possible</li> <li>• Rest. shutdown defects within min. shutdown time</li> <li>- Request for shut down</li> <li>- Mobilise material and personnel</li> <li>- On receipt of shut-down, repair immediately</li> </ul>	<ul style="list-style-type: none"> <li>• RHQ /Site</li> <li>• Opr. Ser.</li> <li>• Sys. Opr.</li> </ul>	<ul style="list-style-type: none"> <li>• All defects restored</li> </ul>
<b>VII. Project Review</b>				
1. Monthly Review	<ul style="list-style-type: none"> <li>• To monitor project work</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor project work</li> <li>- Supply of material</li> <li>- Type of material</li> <li>- Construction ,Erection and Stringing work</li> <li>- EAMP &amp; SAMP</li> </ul>	<ul style="list-style-type: none"> <li>• Cor. Mon. group</li> <li>• Engg. Dept</li> <li>• Cont. Ser. Dept.</li> <li>• Env. &amp; Soc. Mgt. Dept.</li> <li>• RHQ /Site</li> </ul>	<ul style="list-style-type: none"> <li>• Monthly review report</li> </ul>

Milestones	Objectives	Process	Responsibility	Product/Decision
2. Management Review (Quarterly)	<ul style="list-style-type: none"> <li>To monitor project activity</li> </ul>	<ul style="list-style-type: none"> <li>Complete review with special reference to critical issues including environmental and social issues</li> </ul>	<ul style="list-style-type: none"> <li>CMD</li> <li>Directors</li> </ul>	<ul style="list-style-type: none"> <li>Exceptional Report</li> </ul>
3. Annual Review	<ul style="list-style-type: none"> <li>To review performance of project</li> </ul>	<ul style="list-style-type: none"> <li>Review performance of the project               <ul style="list-style-type: none"> <li>Technical evaluation</li> <li>Environmental evaluation</li> <li>Social evaluation</li> <li>Financial evaluation</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>CMD/ Directors</li> <li>Engg. Dept.</li> <li>Env.&amp;Soc. Mgt. Dept.</li> <li>Fin. Dept., RHQ</li> </ul>	<ul style="list-style-type: none"> <li>Annual review of project as part of POWERGRID Annual Report</li> </ul>

**PROFORMA FOR ENVIRONMENT AND SOCIAL DETAILS FOR  
TRANSMISSION LINE AND SUB-STATIONS**

Environmental and Social details for Transmission Lines				
S.N.	Description	Alignment-I	Alignment-II	Alignment-III
1.	Route particulars			
	i) Length			
	ii) Terrain			
2.	Environmental Details			
	i) Town in) Alignment (Near By)			
	ii) House within ROW			
	iii) Forest In Km / Ha			
	a) Type of forest			
	b) Density of forest			
	c) Type of Fauna & Flora			
	d) Endangered species if any			
	e) Historical/Cultural monument			
	f) Any other relevant information			
3.	Compensation cost			
	i) Crop			
	ii) Forest			
4.	No. of Crossing			
	i) Railway			
	ii) Transmission line			
	iii) River Xing etc			
5.	Construction Problem			
6.	O & M Problem			
7.	Overall Remarks			
8.	Reasons for selection of final route:			

Environment and Social details for Sub-station					
S.N.	Study Point	Alt.I	Alt.II	Alt.III	Remarks
01.	Location				
02.	Village Name				
03.	Size of Land				
04.	Type of Land (Govt./Pvt./others)				
05.	General Geography of Area				
06.	Agricultural/Cropping Pattern Main types of crops Irrigation Facility				
07.	i) Socio-economic condition of area : Profession of existing population Agricultural (Self employment, Merchants, manufacturer, Transporters & Handicrafts etc.) ii) Wage Earner (Skilled/Unskilled Labour) iii) Others if any iv) Natural Resource base v) Political Influence				
08.	No./Name of villages effected I. Partly II. Fully				
09.	Total No. of families likely to be effected				
10.	No. of families whose part holding likely to be acquired				
11.	No. of families whose total holding likely to be acquired Land + Home Land Only Home only				
12.	Caste of PAPs/PAFs a) GC b) OBC c) SC/ST				
13.	General Pattern of Cultivation i.e. By owner On lease (Registered/ Un-registered)				
14.	Loss of Structure House/Shop along with the status of occupants (Owner/Tenant/ Lease holder/squatter)				
15.	Others a) Common property resources like School, Ponds Grazing Ground, Religious Places b) Drainage facility				
16.	Tree/Plantation/Orchards (Approx.)				
17.	Cost of Land				
18.	Reasons for selection				

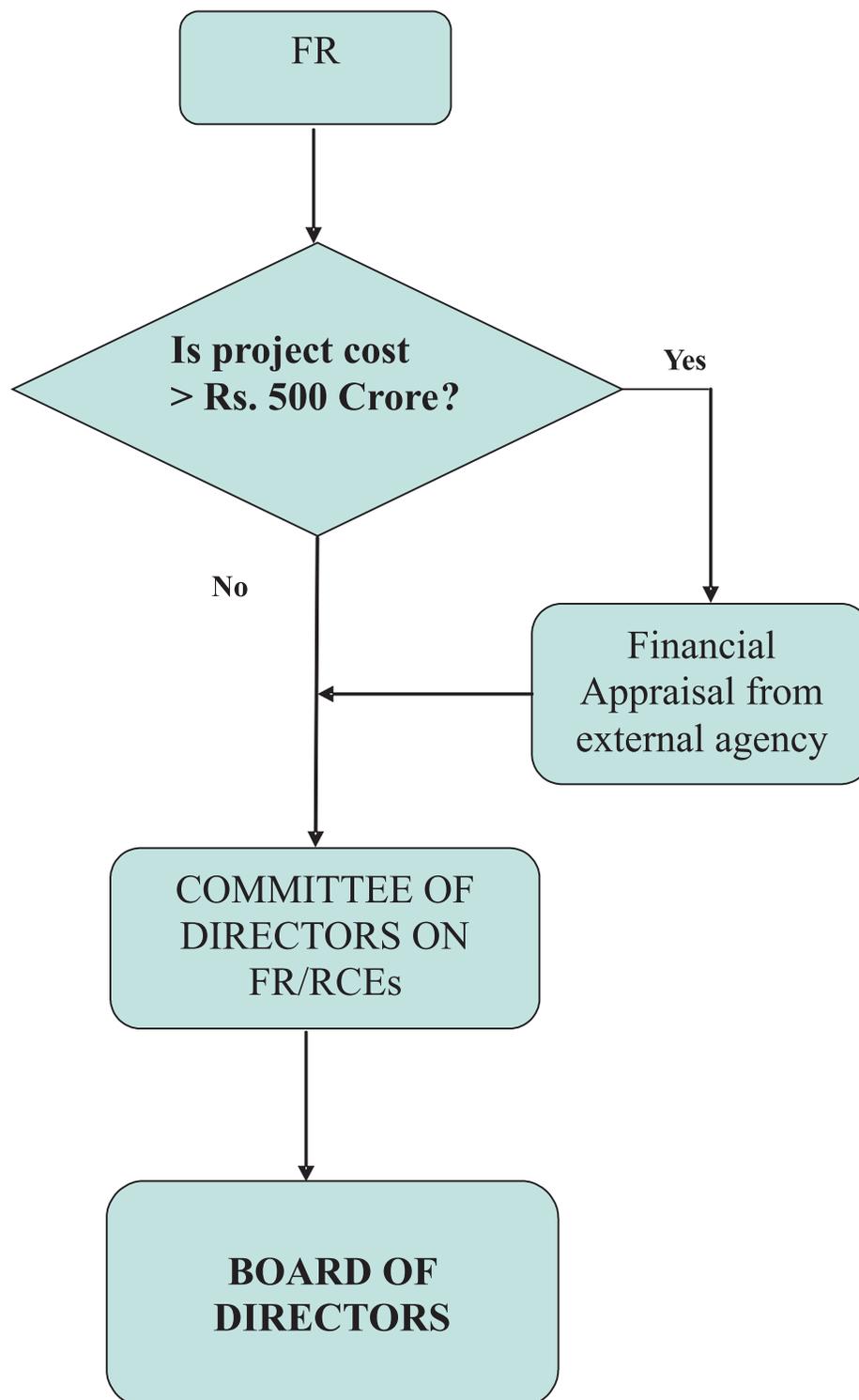
**FORMAT FOR COMPARATIVE STATEMENT OF SITES FOR SUB-STATIONS**

S.N.	Criteria	Site-I	Site-II	Site-III
<b>1.0</b>	<p><b>Land</b></p> <p>1.1 Size (Acre) (Mtr. x Mtr.)</p> <p>1.2 Govt.Private/Forest land</p> <p>1.3 Agriculture/Wasteland</p> <p>1.4 Development</p> <p>1.5 Approximate cost</p> <p>1.6 Type of soil</p> <p>1.7 No. of owners</p> <p>1.8 Environment/Pollution in the vicinity</p> <p>1.9 Location with reference to nearest town</p> <p>1.10 H.F.L. Data</p> <p>1.11 Diversion of Nallah/Canal required</p> <p>1.12 Slope</p> <p>1.13 Extent of levelling required</p> <p>1.14 Land acquisition feasibility</p> <p>1.15 Rate of Govt. land</p> <p>1.16 No. of owners</p> <p>1.17 Exten. of approach</p> <p>1.18 Planned/unplanned development</p> <p>1.19 Size of sites</p> <p>1.20 No. of families displaced</p> <p>1.21 Required Government value</p> <p>1.22 Level of site with ref. to road level</p> <p>1.23 Distance from sea shore</p>			
<b>2.0</b>	<p><b>Approach</b></p> <p>2.1 What are the Obstacles in reaching site</p> <p>2.2 Approach road</p> <p>2.3 Length of approach road</p> <p>2.4 Distance from main road</p> <p>2.5 Unloading facility at Railway Station</p> <p>2.6 No. of Culverts required</p>			



<b>3.0</b>	<b>Community Facilities</b> 3.1 Drinking Water 3.2 Drainage 3.3 a) Post Office b) Telephone c) Telex 3.4 Market 3.5 Security 3.6 Amendability 3.7 Availability of construction water 3.8 Availability of water 3.9 Nearest EHC line 3.10 Length of line between this site & nearest substation 3.11 Length of line estimate 3.12 Additional crossings 3.13 Frontage for line take off 3.14 Telephone/Telegraph line			
<b>4.0</b>	<b>Others</b>			

**INVESTMENT APPROVAL PROCESS**



**CHECKLIST FOR INSPECTION OF TRANSMISSION LINES AND SUB-STATION**

<b>TRANSMISSION LINES</b>			
<b>Non-Shut Down</b>	<b>Shut Down</b>	<b>Defect</b>	<b>Month Date</b>
		<b>FOUNDATION</b>	
A 1		Soil erosion/uneven settlement	
A 2		Any crack/damage to foundation	
A 3		Any crack/damage to retaining wall/revetment	
A 4		Missing/Damage/Earthwire/Strip	
A 5		Earth Cutting from vicinity of foundation	
		<b>TOWER</b>	
B 1		Damaged/Missing Member BWL	
	B 2	Damaged/Missing Member AWL	
B 3		Damaged/Missing nutsbolts BWL	
	B 4	Damaged/Missing nutsbolts AWL	
B 5		Danger plate missing	
B 6		Number plate missing	
B 7		Phase plate missing	
B 8		Protective coating disappeared	
B 9		Step bolts missing	
B 10		Foreign material on Tower viz birds nest	
		<b>HARDWARE FITTINGS &amp; INSULATORS</b>	
	C 1	Surface pollution	
	C 2	Unusual deflection of string	
	C 3	Flash over/Burning mark	
	C 4	No. of fitting damage	
	C 5	No. of disc damage	
		<b>CONDUCTOR AND EARTHWIRE</b>	
	D 1	Strands cut and open	
	D 2	Loose jumpers of conductor	
	D 3	Hanging earthwire	
	D 4	Dislocated/Loose VD of conductor	
	D 5	Missing VD of Conductor	
	D 6	Dislocated/Loose VD of earthwire	

	D 7	Missing VD of earthwire	
	D 8	Spacers Missing	
	D 9	Spacers Dislocated/Loose	
	D 10	Jumper/Hard Spacer missing	
	D 11	Jumper/Hard spacer loose/dislocated	
	D 12	Copper bonds missing	
	D 13	Copper bonds dislocated	
		<b>ELECTRICAL CLEARANCE</b>	
E 1		Details of trees causing/may cause problems	
	E 2	Infringement in clearance of bottom conductors to ground	
	E 3	Infringement in clearance of earthwire to conductor	
E 4		Any new construction seen within the line	
E 5		Well blasting below the line	
		Patrolling done by	
		Signature	
		Counter Signature by Line Section I/C	
1) Comments with signature of Line Section Incharge      Date			

SUB-STATION			
Sl. No.	Activity	Test Results to be Approved By	S/D Period
1	<b>AC PLANT</b>		
	1.1 AHU		
	1.2 Compressors		
	1.3 Condenser Unit		
	1.4 Cooling Towers		
	1.5 Electrical Motor		
	1.6 LT Panels		
	1.7 Water Treatment		
2	<b>BATTERY SYSTEMS</b>		
3	<b>BUSBARS</b>		
4	<b>CAPACITANCE VOLTAGE TRANSFORMER</b>		

<b>5</b>	<b>CIRCUIT BREAKERS</b>		
	5.1 Air Blast CB		
	5.2 CB Operation		
	5.3 Control Cabinet		
	5.4 Measurement		
	5.5 SF6 CB		
<b>6</b>	<b>CURRENT TRANSFORMER</b>		
<b>7</b>	<b>DG SET</b>		
<b>8</b>	<b>FIRE PROTECTION</b>		
	8.1 Compressor		
	8.2 Deluge System		
	8.3 Diesel Engine		
	8.4 Electrical Panel		
	8.5 Fire Alarm System		
	8.6 Fire Extinguish		
	8.7 General		
	8.8 Hydrant System		
	8.9 Jockey Pump		
	8.10 Motors		
	8.11 Pumps		
	8.12 Strainers		
<b>9</b>	<b>ISOLATORS &amp; E/S</b>		
	9.1 Earth Switch		
	9.2 Main Contacts		
	9.3 Marshalling Box		
	9.4 Operating mech.		
<b>10</b>	<b>LIGHTNING ARRESTORS</b>		
<b>11</b>	<b>CT SW. GEARS (ACDB)</b>		
<b>12</b>	<b>PLCC SYSTEM</b>		
<b>13</b>	<b>PROTECTION SYSTEMS</b>		
<b>14</b>	<b>SHUNT REACTORS</b>		
<b>15</b>	<b>TELEPHONE EXCHANGE</b>		
<b>16</b>	<b>WAVE TRAPS</b>		

## Appendix - XXVIII

### POWERGRID'S BASELINE DATA AND EXPERIENCE

POWERGRID's transmission projects are generation linked projects meant for power evacuation and grid strengthening. They include creating and reinforcing inter regional links, augmenting RLDCs and construction of missing links.

POWERGRID at present operates about 69,500 Ckm of EHV transmission lines consisting of 800KV/500KV/440 KV, 220 KV, 132 KV/66KV along with 116 substations (includes Switchyard of generating S/s , AC and DC separate S/s) having a total transmission capacity of 77,200 MVA. The EHV transmission network is spread across the entire length and breadth of the country and is one of the largest EHV power transmission systems in the world. Presently 30201 Ckt. Km. of transmission lines are under construction by POWERGRID consisting 3874 Ckt. Km of 800 KV; 1580 Ckt. Km of  $\pm$  500 KV; 24503 Ckt. Km of 400 KV; 98 Ckt. Km of 220 KV and 146 Ckt. Km. of 132 KV. POWERGRID's transmission lines and substations under operation, maintenance and construction are shown below:

Regions	No. of S/s	Total Ckm Under Operation							Total Ckm Under Construction						Transformation Capacity( MVA )
		800 KV	500 KV	400 KV	220 KV	132 KV	66 KV	Total	800 KV	$\pm$ 500 KV	400 KV	220 KV	132 KV	Total	
NR-I	19	369.49	1630	9892.62	2955.78	58	0	14905.89	983	1580	5138	18	0	7719	14930
NR-II	14	562.5	0	4203.17	1387.71	0	0	6153.38	0	0	2552	34	132	2718	10020
ER-I	10	0	0	4860.8	448.28	92	0	5401.08	937	0	3407	46	0	4390	5958
ER-II	15	0	0	4694.51	1080	326.5	37	6138.01	0	0	1732	0	0	1732	10170
WR-I	7	703.27	0	5538.63	204.56	0	0	6446.46	280	0	7922	0	0	8202	8281.2
WR-II	11	364.37	0	9539.15	938.74	0	0	10842.26	1648	0	0	0	0	1648	10682
SR I	10	0	2737.5	6941.59	0	0	0	9679.13	26	0	0	0	0	26	6649
SR II	16	0	0	5365.28	365.73	0	0	5731.01	0	0	3752	0	0	3752	9342
NER	14	0	0	1868.65	551.31	1764.87	0	4184.83	0	0	0	0	14	14	1185
Total	116	1999.6	4367.5	52904.4	7932.11	2241.11	37	69482.05	3874	1580	24503	98	146	30201	77217

POWERGRID's inter regional HVDC links will facilitate integration of regional grid systems into the national grid and establish an inter-regional flow of surplus power thus avoiding frequent grid collapses. POWERGRID has drawn up a programme for inter-connecting the various power regions of the country through these HVDC links.

POWERGRID has implemented of state-of- the-art Unified Load Despatch and Communication facilities in all regions of the country for economic despatch of power between regions / states and for effective grid management.

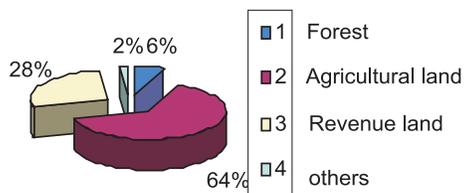
POWERGRID is developing 1200 KV capacity transmission line to transfer more power through such lines thereby reducing the impact on environment and other ROW problems.

### Transmission Lines:

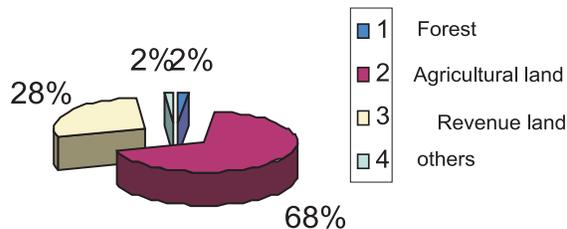
While routing its transmission lines, POWERGRID avoids all environmentally and socially sensitive areas. Most of POWERGRID's transmission towers are located in agricultural fields. The detailed land use classification of transmission tower sites is shown in the table below. A typical tower base spreads over an area of 10m x 10m. Construction activity however takes up more space i.e. 30m x 30m for a tower base.

LAND USE	After 1998-March 2004 Line length		After 1998-March 2004 Line length		April 2004-Dec 2008 Line length		Cumulative Line length up to Dec 2008	
	Ckm	%	Ckm	%	Ckm	%	Ckm	%
Forest	1620	6	382	1.81	291	1.35	2293	3.3
Agricultural land	17388	64.4	14402	68.58	14849	69.12	46693	67.2
Revenue land	7560	28	5880	28	5999	27.93	19384	27.9
Water bodies*	108	0.4	84	0.4	86	0.4	278	0.4
Plantation and orchards*	108	0.4	84	0.4	86	0.4	278	0.4
Mountain*	108	0.4	84	0.4	86	0.4	278	0.4
Urban/Residential areas*	108	0.4	84	0.4	86	0.4	278	0.4
<b>TOTAL</b>	<b>27000</b>	<b>100</b>	<b>21000</b>	<b>100</b>	<b>21483</b>	<b>100</b>	<b>69482</b>	<b>100</b>

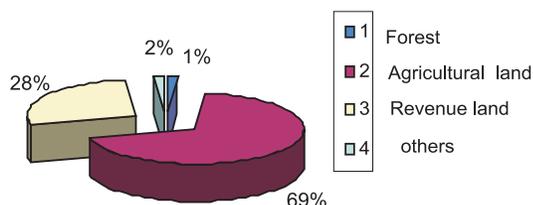
**Land use pattern transversed in 27000 Ckt. km (till 1998)**



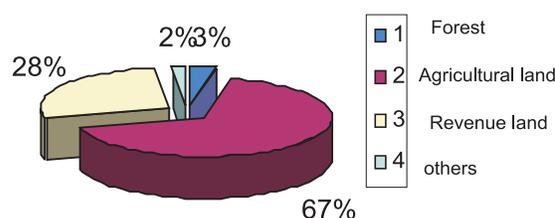
**Land use pattern transversed in 21000 Ckt. km (after 1998- March 2004)**



**land use pattern transversed in 21483 Ckt km (between 2004- Dec 2008)**



**Land use pattern transversed in 69482 Ckt km up to Dec 2008**

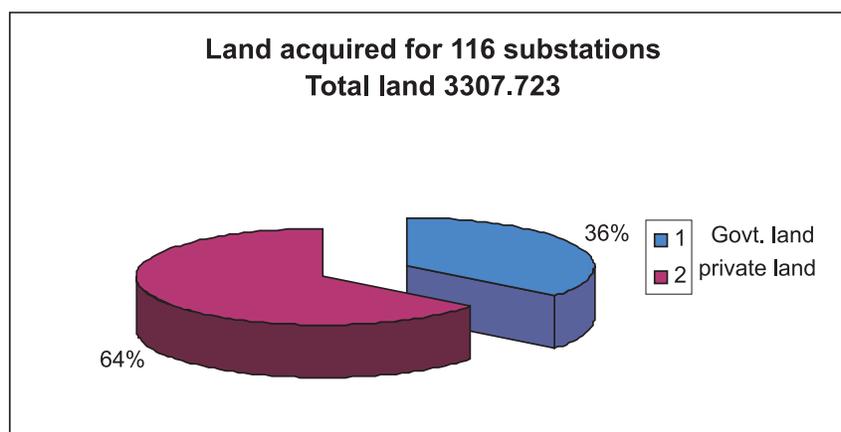


## SUB-STATIONS:

Presently, POWERGRID operates its about 69,500 km trans. line through 116 sub-stations (includes Switchyard of generating S/s, AC and DC separate S/s). POWERGRID avoids all environmentally and socially sensitive areas while selecting a site for its sub-stations. POWERGRID acquired only one homestead in 82 Sub-stations. POWERGRID sub-station sites typically occupy an area of about 20 to 40Ha. Land acquisition details of 116 sub-stations are as shown below.

Total S/S	Total Land Acqd. (Ha)	Type of Land		No. of Families whose part holding acqd.	No. of Families whose total holding acquired			Total
		Govt. (Ha)	Private (Ha)		Land + Home	Land only	Home only	
116	3307.72	1178.40	2129.36	2351	2	577	0	2930

A sub-station site is selected after considering three to five options. Land acquired is usually agricultural or wasteland since POWERGRID avoids environmentally sensitive areas. Most of the private agricultural land is cultivated by landless leaseholders who subsist on agriculture. Hence, usually project affected people are agricultural labour who loose their land and livelihoods.



## Case studies of powergrid's transmission projects

POWERGRID while practicing principle of avoidance, minimisation and mitigation as laid down in ESPP studied different alternatives and taking advantage of inherent flexibility in routing the lines, the route involving minimum forest area and least disturbance to environment is selected for construction of line. The details of alternative studied for some of the projects/transmission line are given below:

### 1. *Talcher-II Transmission system:*

This transmission system involves construction of 1970Km line. The entire power generated from Talcher-II is transmitted to Southern Region constituents viz. Andhra Pradesh, Karnataka, Kerala,

Tamilnadu and Pandichery. The cost of project is Rs 3000 Crores. This transmission system consist of following transmission line:

- Talcher-Kolar +-500KV Transmission line
- Kolar-Hosur-Salem 400KV S/c
- Kolar-Madras 400 KV S/c
- Kolar-Hoody 400KV D/c
- LILO of Cuddapah-Somanhalli (Banglore)400KV S/c at Kolar
- Salem-Udumalpet 400KV S/c

## 2. Raipur - Rourkela 400KV D/C transmission line

Project	Item Description	Alignment-I	Alignment-II	Alignment-III
<b>1) Talcher-II Trans. System</b>				
<b>i) Talcher-Kolar Trans.line</b>	a) Length	1362 km.	1300 km.	1373 km.
	b) Terrain	6% Hilly & 94% Plain	12% Hilly & 88% Plain	9% Hilly & 91% Plain
	Environmental details			
	i) Towns in alignment (Nearby)			
	ii) No. of houses in ROW	Nil	Nil	Nil
iii) Trees/crops & its extent of damage	Major portion of the line passes through areas under dry cultivation. Damage to crops in wet cultivated areas is unavoidable.	Major portion of the line passes through areas under dry cultivation. Damage to crops in wet cultivated areas is unavoidable. Part of the line from Kotanandur to Krishna River crossing, thick mango and cashew gardens in a stretch of about 40 km. near Nyzvid area are encountered. In the last stretch of 50 km. near Kolar thick Hybrid mango, cashew & lemon gardens are encountered.	Major portion of the line passes through areas under dry cultivation. Damage to crops in wet cultivated areas is unavoidable. From Kotanandur to Krishna River crossing thick mango and cas-hew gardens in a stretch of about 40 km. near Nyzvid area are encountered. In the last stretch of 50 km. near Kolar thick hybrid mango, cashew & lemon gardens are encountered.	

4.	iv) Forest involvement			
	a) Forest area (in km.)	32.76	60.00	35.50
	b) Forest area (in ha.)	170.30	312.00	184.60
	c) Type of flora	Sal, Bija, Asan, Mohu, Palas	Sal, Bija, Asan, Mohu, Palas	Sal, Bija, Asan, Mohu, Palas
	d) Type of fauna	Elephant Bear, Sambar, Duck, Mongoose etc.	Elephant, Bear, Sambar, Duck, Mongoose etc.	Elephant, Bear, Sambar, Duck, Mongoose etc.
	e) Endangered species	Nil	Nil	Nil
	Compensation cost	i. Rs. 5.25 crores.	Rs. 6.40 crores.	Rs.8.00 crores
	Construction problem	i) Site is approachable in all seasons. ii) Some difficulties envisaged in approach to forest reaches. However construction problems are relatively less in this alignment.	i) Due to dense forest and want of approach to site it is difficult to carry out the construction work. ii) Forest reaches are in steep hills and it is difficult to place towers on hill cliffs.	i) Line passes in the vicinity of thickly populated area & is crossing Brahmani river twice. ii) Forest reaches highly inaccessible. Low lying areas and many undulated hills are encountered. River crossings spans will be more.
O&M Problems	O&M problems relatively less.	During rainy seasons approaches gets cut off and lack of approach will make O&M work difficult.	Forest reaches are highly inaccessible hence O&M work difficult.	
Overall Remarks	Technically most feasible due to minimum Forest involvement, less damage to crops & minimum O&M problem.	Technically difficult due to involvement of more forest, more damage to crops. Construction/O&M problems due to difficult approaches.	Technically not desirable due to serious right of way problems, involvement of cashew and mango garden.	

From the above comparison it may be noted that alignment-I meets the POWERGRID's criteria of route selection due to minimum involvement of forest, avoidance of thickly populated areas, comparatively better approach availability in all seasons thereby avoiding construction of access roads and less damage of crops, although route length is slightly longer than alignment -II and shorter than alignment-III. This is basically due to avoidance of forest and thickly populated area. Whereas alignment -II & III involve more forest and passing through hills having steep slopes and cashew and mango garden. Keeping all these factors in mind alignment-I has been selected for construction.

<b>ii) Kolar-Salem Trans. line.</b>	a) Length	191.65 km.	195.45 km.	193.60 km.
	b) Terrain	Plain : 80% Hilly : 20%	Plain: 55% Hilly : 45%	Plain : 60% Hilly : 40%
	Environmental details			
	i) Towns in alignment (Near by)	Bangarapet, Kamasandra, Nachikuppam, Palakkodu & Indur town.	Bangarapet, Kamasandra, Nachikuppam, Pala-kkodu & Taram-angalam.	Kolar Gold Fields, Krishnagiri, Karamangalam, Dharmapuri & Omalur.
	ii) No. of houses in ROW	Nil	40	50
	iii) Trees/crops & its extent of damage	Damage to crops in wet cultivated areas is unavoidable during cultivation season.	Damage to crops in wet cultivated areas is unavoidable during cultivation season. The alignment passes through thick dwarf type mango gardens near Bangarapet. Some scattered palmirah, non-fruit bearing trees and some revenue trees along the State Highways.	Damage to crops in wet cultivated areas is unavoidable during cultivation season. There are thick mango gardens near Bangarapet. Some scattered palmirah, non fruit bearing trees and some revenue trees along the State Highways are required to be cut. Damage to trees are comparatively higher in this alignment.
	iv) Forest involvement			
	a) Forest area (in km.)	5.466	6.7	5.8
	b) Forest area (in ha.)	21.32	28.08	23.40
	c) Type of flora	Tamarind, Pungam & Thorny bushes	Tamarind, Pungam & Thorny bushes	Tamarind , Pungam & Thorny bushes
	d) Type of fauna	Antapatis, Rabit, Bear & Deer etc.	Antapatis, Rabit, Jackal & Deer etc.	Antapatis, Wolf, Rabbit & Deer etc.
	e) Endangered species	Nil	Nil	Nil
	Compensation cost	Rs. 2.0 crores (approx.)	Rs. 2.18 crores (approx.)	Rs. 2.18 crores. (approx.)
Construction problem	Right of way problems are less due to less forest area less damage to trees, less hilly areas & easy accessibility for most of locations.	There are more gardens more hilly areas involving heavy revetment and benching and accessibility to locations are difficult.	There are more gardens more hilly areas involving heavy revetment and benching and accessibility to locations are difficult.	

	O&M Problems	O&M problems are comparatively less in this alignment due to more approach roads, less forest area & more plain areas.	O&M problems are comparatively more due to difficult approaches for to locations, more power line crossings and hilly terrain.	O&M problems are maximum due to difficult approaches to locations, maximum power line crossings and more hilly terrain & forest area.
	Overall Remarks	Shortest route, availability of approach roads, minimum ROW problems	Way leave problems & criticality of route, increased line length.	Way leave problems & criticality of route

From the above comparison it may be noted that alignment-I meets the POWERGRID's criteria of route selection due to minimum environmental impact like minimum involvement of forest, avoidance of thickly populated area, comparatively better approach availability thereby avoiding construction of access roads. Keeping all these factors in mind alignment -I has been selected for construction.

<b>iii) Kolar-Madras trans.</b>	a) Length	206 km.	207.5 km.	210 km.
	b) Terrain	The alignment is generally through plain/undulated area.	The alignment is generally through plain/undulated area.	The alignment is generally through plain/undulated area 90% of the terrain is under cultivation.
	Environmental details			
	i) Towns in alignment	Nil	Nil	Nil
	ii) No. of houses in ROW	Nil	Nil	Nil
iii) Trees/crops & its extent of damage	In the wet lands which are irrigated by wells, the alignment passes through fields having paddy & sugarcane. In the dry lands the route passes through fields having dry crops like ragi, jowar, groundnut, cotton etc. as well as palm & neem trees.	In the wet lands which are irrigated by wells, the alignment passes through fields having paddy & sugarcane. In the dry lands the route passes through fields having dry crops like ragi, jowar, groundnut cotton etc. as well as palm & neem trees.	In the wet lands which are irrigated by wells, the alignment passes through fields having paddy & sugarcane. In the dry lands the route passes through fields having dry crops like ragi, jowar, groundnut, cotton etc. as well as palm & neem trees.	

	iv) Forest involvement			
	a) Forest area (In km.)	3.25	4.25	3.75
	b) Forest area (In ha.)	16.9	22.1	19.5
	c) Type of flora	Chiki, Raghu, Bhandhari, Valuthru	Chiki, Raghu, Bhandhari, Valuthru	Chiki, Raghu, Bhandhari, Valuthru
	d) Type of fauna	Rabbits, Rodents etc.	Rabbits, Rodents etc.	Rabbits, Rodents
	e) Endangered species	Nil	Nil	Nil
	Compensation cost	Rs.60.00 lakhs (approx.)	Rs.65.00 lakhs (approx.)	Rs.70.00 lakhs (approx.)
	Construction problem	Right of way problem is less due to involvement of less forest stretches	Right of way problem is more due to involvement of more forest stretches	Right of way problem is more due to involvement of more forest stretches
	O & M Problems	During rainy season O&M may be difficult due to unavailability of approach at some places in cultivation fields	During rainy season O&M may be difficult due to approach under cultivation fields	During rainy season O&M may be difficult approach since 90% of line passing through agricultural field.
	Over All Remarks	Most feasible route. Involvement of forest is less.	Construction cost will higher than alternative-I due to more line length and involvement of more forest.	Construction cost will be higher in comparison to alternative-I & II due to higher line length and it is less feasible
<p>From the above comparison it may be noted that alignment-I having minimum involvement of forest (3.25 km.) as compared with alignment-II (4.25 km.) &amp; alignment III (3.75 km.) and minimum line length is the most optimum route. Keeping all these factors in mind alignment-I has been selected for for construction.</p>				
<b>iv) Kolar-Hoody Trans. line</b>	a) Length	50.871 km.	51.82 km.	51.955 km.
	b) Terrain	Plain	Plain	Plain/Hilly
	Environmental details I) Towns in alignment (Near by area)	Hoody, Kodagihali, Dobanahalli, Toranahalli, Nuglapura, Sipuru, Hunalli, Nallal, Gangapura, Choudenahalli	Hoody, Kodagihalli, Segehalli, Gangapura, Talakonda, Sipure, Marasapura, Huhalli	Hoody, Kodagihalli, Dodupalya, Hoskote

	ii) No. of houses in ROW	None	Some scattered houses	None
	iii) Forest involvement	Nil	Nil	Nil
	Compensation Cost	Rs.15.00 lakhs (approx.)	Rs.18.00 lakhs (approx.)	Rs.20.00 lakhs (approx.)
	Construction problem	Developed approach road, easy for construction and maintenance.	City limit /construction problems.	Less developed approach roads.
	O&M Problems	Negligible due to existing approach road.	At places line passes near city limits, O&M would be difficult.	Operation and maintenance will be comparatively difficult due to less developed approach road.
	Overall Remarks	Shortest routes and no critical/ Way leave problems	Developed area, way leave problems.	More length & less developed approach roads

From the above comparison it may be seen that alignment -I has minimum route length & negligible problem for construction & maintenance. Alignment -I has been selected for construction.

<b>v) LILO of Cuddapah-Banglore at Kolar</b>	a) Length	14.782 km.	17.110 km.	14.5995 km.
	b) Terrain	Plain 85% Hilly 15%	Plain 85% Hilly 15%	Plain 80% Hilly 20%
	Environmental details			
	i) Towns in alignment	None	None	None
	ii) No. of houses in in ROW	None	Some	None
	iii) Forest involvement	Nil	Nil	Nil
	Compensation Cost	Rs.3.696 lakhs (approx.)	Rs.4.27 lakhs (approx.)	Rs.3.65 lakhs (approx.)
	Construction problem	No major problem is envisaged.	Due to houses in alignment way leave problem may be there.	Due to more of hilly terrain, problem will be more.
	O&M problem	No any major problem is envisaged due to availability of approaches.	Due to some houses in ROW maintenance of line may be difficult in such areas.	Due to more of hilly area O&M problem will be comparatively more than alignment-I.

	Overall remarks	Shortest routes and no critical way leave problem	Line length more, Populated area	Way leave problem, hilly area
From the above comparison it may be seen that alignment -I has minimum route length & negligible problem for construction & maintenance. Alignment -I has been selected for construction.				
<b>vi) Salem-Udumalpet TL.</b>	a) Length	137 km.	143 km.	143.50 km.
	b) Terrain	The alignment is generally through plain/undulated area.	The alignment generally passes through plain/undulated area.	The alignment is through plain / undulated land.
	Environmental details			
	i) Towns in alignment	Nil	Sankari	Lakkapuram
	ii) No. of houses in ROW	Nil	125	65
	iii) Trees/crops & its extent of damage	The alignments passes through fields having coconut trees as well as crops like paddy, sugar cane, banana, oil seeds, cotton etc. In the dry lands the route passes through fields having dry crops like ragi, jowar, groundnut (rainfed), cotton (rainfed) etc. as well as palm & neem trees.	The route is passing through irrigated lands. The pattern of crops is same as alignment-I. The number of coconut trees is comparatively higher than the other two routes.	Compared to Alignment I & II the percentage of dry crops are more in this route. The type of crops is same. The number of coconut trees is quite high in this route.
	iv) Forest involvement	Nil	Nil	Nil
	Compensation cost	Rs. 2.10 crores (approx.)	Rs. 2.70 crores (approx.)	2.50 crores (approx.)
	Construction problem	i) No major construction problem	i) During S.W & N.E., monsoon (July-Aug-ust & Oct.-Nov.) the approaches through	i) During S.W & N.E., monsoon (July-August & Oct.-Nov.) the approaches through paddy, sugar-cane and

			<p>paddy, sugar-cane and banana cultivated areas will be difficult.</p> <p>ii) Thickly populated area and tower spotting become difficult.</p>	<p>banana cultivated areas will be difficult.</p> <p>ii) Thickly populated area and tower spotting become difficult</p>
	O&M Problems	<p>a) Since the major portion of the line is almost following parallel to the existing line, O&amp;M will be easy due to existing approach path.</p>	<p>a) Maintenance of line may be difficult in the thickly populated areas.</p> <p>b) The proposed route is far away from the existing S/c line, the advantage of having the two lines closer for O&amp;M purpose is lost.</p>	<p>a) Maintenance of line may be difficult in areas with limited approach roads.</p> <p>b) One cement factory with in radius of 1 km. at Sankari &amp; few lime stone quarries are also located near the route</p>
	Overall Remarks	<p>a) The alignment is almost parallel and close to the existing 400 KV S/c Salem-Udumalpet line for about 75% of the entire route. This proximity to the existing line will be beneficial for maintenance of the line.</p> <p>b) Construction cost of the line will be less.</p> <p>c) TNEB power line crossings 66KV &amp; above is less. This will help in cost reduction and less problems during construction.</p>	<p>a) Right of way problem will be more in the densely populated areas, particularly in Sankari town &amp; RS area which comes in the alignment.</p> <p>b) Construction cost of line will be higher due to the higher line length.</p> <p>c) The number of 66 kV &amp; above TNEB power line crossings are more than alignment-I and this will increase the cost and more problems during construction.</p> <p>d) Due to high density of population and development in the area has</p>	<p>a) The route involve number of 66 kV &amp; above TNEB power line crossings.</p> <p>b) Construction cost will be higher due to more number of angle points and increased line length.</p> <p>c) Considerable impact will be there on the environment due to presence of more number of houses &amp; trees in the alignment.</p> <p>d) A major cement factory within 1 km. radius of the proposed alignment may cause problems to the line during O&amp;M stage due to heavy pollution.</p>

		d) The disturbance to the inhabitants to the areas is low and also the number of trees affected in the route is comparatively lesser. Apart from lower compensation cost, the environmental impact will be much less.	necessitated more number of angle points and subsequent increase in length. e) Environmental impact more due to routing of alignment through densely inhabited areas and presence of large number of houses and trees in the electrical corridor.	
--	--	---	--	--

From the above comparison it may be seen that alignment I meets the POWERGRID criteria of route selection best due to minimum environmental impact like avoidance of thickly populated areas, comparatively better approach there by avoiding construction of access roads and less compensation cost. Alignment - I is parallel and close to existing line. This proximity will be beneficial for O&M of line. Whereas alignment II & III are passing through populated area and far away from the existing transmission line. Presence of cement factory and limestone quarries along alignment-III in 1 km. radius may cause environmental problems to transmission line also. Keeping all these factors in mind alignment - I has been selected for construction.

<b>vii. Raipur-Rourkela 400 D/C KV TL.</b>	a) Length	400Km	393Km	402Km
	b) Terrain	Hilly & plain	Hilly & plain	Hilly & plain
	Environmental details			
	i) Towns in Alignment (Nearby)	Sundergarh, Belpahar, Raigarh	Rajgangpur, Belpahar, Raigarh	Birkeria, Ghunghuti, Raigarh
	ii) No. of houses in ROW	Some houses are expected in ROW	Nil	Some houses are expected in ROW
	iii) Forest Invol.			
	a) Forest area (in km.)	31.5	14.4	22.5
	b) Forest area (in ha.)	163.8	74.88	117
	c) Type of flora	Sal, Bija, Asan, Mohu, Palas	Sal, Bija, Asan, Mohu, Palas	Sal, Bija, Asan, Mohu, Palas
	d) Type of fauna	Jackal, fox, monkey etc.	Jackal, fox, monkey etc.	Jackal, fox, monkey etc
e) Endangered species	Nil	Nil	Nil	
Compensation Cost (Rs. in lacs.)	50.00	20.0	45.0	

	Construction problem	Anticipated due to dense forest, poor approach as well as presence of some houses in the ROW.	All locations are approachable in all seasons.	Line is passing through thickly populated area, dense forest and some of tower locations are at high hills, approach is difficult and no. of EHV crossing .
	O&M Problems	O&M problem are comparatively more due to involvement of more forest and difficult approaches.	O&M problem are comparatively less in this alignment due minimum involvement of forest, existence of approach road.	O&M problem is more due to approaches, populated area.
	Overall Remarks	Long route length, high forest area and due to ROW problem the route is not feasible.	Technically most feasible due to minimum Forest involvement, less existence of easy approaches & minimum O&M problem and no river (Mahanadi) crossing.	Technically not desirable due to us right of way problems, involvement of more forest, difficult approaches, No. of EHV line crossing & Mahanadi river crossing twice.

From the above comparison it may be noted that alignment-II meets the POWERGRID's criteria of route selection due to minimum involvement of forest, avoidance of populated areas, and comparatively better approach availability in all seasons thereby avoiding construction of access roads. Route length is also less than alignment -I and alignment-III. Keeping all these factors in mind alignment-II has been selected for construction.

## **ILLUSTRATIVE DISASTER CONTROL PLAN FOR FIRE INCIDENTS**

Group - 1 : Main Co-ordination Group

Group - 2 : Fire Fighting Group

Group - 3: Vehicle Group

Group - 4 : First Aid Group/Medical Group

### **1. Responsibility of Main Co-ordination Group**

*In case of fire in areas other than switchyard equipment*

- A) Operate alarm system
- B) Inform all fire stations
- C) Inform fire brigade what material is on fire
- D) Inform Senior Officers
- E) To ensure that hydrant pump operates during the entire period of fire fighting

### **2. Responsibility of Fire Fighting Group**

- A) Fire fighting core gang employees to assemble immediately near the spot of fire and start fire fighting with hydrants till the arrival of fire brigade
- B) After the arrival of fire brigade, fire fighting core group employee should be available for the assistance of the fire brigade

*In case of fire in any equipment covered by emulsifier systems*

- A) Follow step No. A,B,C,D, as above of 1
- B) The concerned emulsifier should operate automatically, if not, then it is to be operated manually
- C) Fire fighting Group shall ensure that the above steps are taken in time

### **3. Responsibility of the vehicle group**

- A) To call all drivers
- B) To ensure presence of all vehicles
- C) To send injured person by jeep (s) to hospital

### **4. Responsibility of First Aid / Medical Group**

- A) First Aid core gang employees to be assembled immediately near the control room
- B) To inform C.M.O. government hospital
- C) To decide priority for treatment among the injured. Restoration of breathing & stoppage of bleeding to be given top most priority
- D) To render first aid on the spot where ever possible
- E) To arrange for shifting of injured to identified nursing homes in co-ordination with the vehicle group.

## **TABLE OF CONTENT FOR INITIAL ENVIRONMENT ASSESSMENT REPORT (IEAR) FOR SUB PROJECT**

**Section - I: Project Description:** Brief description of the background, objective of the project, resultant benefit and scope of the work

**Section – II: Base line data:** Description of the relevant physical, physiographical, and socio-economic condition of the project area including description of natural resources base like forest resources or any other environment sensitive areas like National Park sanctuary etc. along with description of climatic condition, population and other demographic features of the project area.

**Section -III: Policy, Legal and Regulatory framework:** Description of the policy, Legal and Regulatory framework applicable to transmission project and the environmental requirement under which environment assessment has been carried out.

**Section – IV: POWERGRID Approach for Route Selection:** Brief description of the environmental criteria for selection of route and sub station(if applicable) description of alternative studies made for proposed route of transmission line including systematic analysis of different alternative studied with reference to particular environmental & social parameters like involvement of forest, protected areas, significant economic benefit associated with the project and without the project etc. and reason for selection of proposed route.

**Section – V: Screening of potential Environmental impact, evaluation and mitigative measures:** Description of the criteria for identification of potential impact due to project location, construction and operation on the environment (clearing of forest/vegetation) public health, landscape etc. its extent magnitude, duration and significance. The section will also list different measures like design modification, variation in alignment compensation etc. to either completely avoid or to mitigate such impact to the extent possible. Section also details out process of public consultation for the given project and peoples reaction/suggestion if any and a conclusion regarding further studies required for selected impacts if any.

**Section – VI: Monitoring and organization support structure:** Describing of the monitoring plan reporting pattern/frequency, cost estimate, external monitoring requirement/timing for potential environment & social issues with detailed Environment Management Plan (EMP)and proposed organization support structure for the same including training needs if so felt.

Enclosures:

- 1) Original Topo map with alternative route marked
- 2) Public Consultation details like list of participants, photos etc.
- 3) Any other supporting documents.

**TABLE OF CONTENT FOR FINAL ENVIRONMENT ASSESSMENT REPORT (FEAR)  
FOR SUB PROJECT**

**Section - I: Project Description:** Brief description of the background, objective of the project, resultant benefit and scope of the work

**Section – II: Base line data:** Description of the relevant physical, physiographical, and socio-economic condition of the project area including description of natural resources base like forest resources or any other environment sensitive areas like National Park sanctuary etc. along with description of climatic condition, population and other demographic features of the project area.

**Section -III: Policy, Legal and Regulatory framework:** Description of the policy, Legal and Regulatory framework applicable to transmission project and the environmental requirement under which environment assessment has been carried out.

**Section – IV: Major Features of Final Route & Environment Impact:** Brief description of the environmental criteria for selection of route and major features of final route alignment, details of forest involvement including number of trees and species of the trees likely to be effected. The details of forest clearance and environmental impact matrix describing in brief the extent of impact of transmission line.

**Section – V: Potential Environmental Impact, Evaluation and its Management:** Description of the measures adopted and under implementation for identified impact due to project location, design, construction, O&M details of public consultation and its documentation, details of contractual conditions regarding safeguard issues under scope of contract for compliance and conclusion listing the category of the project based on the impact and analysis.

**Section – VI: Monitoring and Organization Support Structure:** Description of the monitoring plan, reporting pattern/frequency, external monitoring requirement/timing for potential environment & social issues with compliance status of Environment Management Plan (EMP) and organization support structure.

Enclosures:

- 1) Original Topo / GIS map with Final route marked
- 2) Public Consultation details like list of participants, photos etc.
- 3) Copy of Forest proposal and Compensatory Afforestation plan.
- 4) Forest approval letters
- 5) Tree, crop compensation details
- 6) Contract conditions regarding safeguard issues.
- 7) Budget/Expenditure
- 8) Compliance details of safety checklist/measures

## **GUIDELINES FOR PREPARING REHABILITATION ACTION PLAN (GUIDELINES: WORLD BANK)**

The Resettlement Action Plans will adhere to the policy objectives of POWERGRID's ESPP. In adhering to the Environmental and Social policy, the RAP will incorporate all resettlement and rehabilitation measures necessary to ensure compensation for assets acquired at replacement cost, and mitigation of loss of livelihood for all Project Affected Persons (PAPs), on the basis of the Social Entitlement Guidelines which reconciles the policies of the Government of India with the Operational Manual (OP 4.12) of the World Bank, and shall serve as the basis for preparation of the RAP. However in its past experience POWERGRID has acquired only one homestead in all its projects.

### **Preparatory Steps**

Preparatory steps will include.

- Determination of extent of adverse social impacts through a Social Assessment and Management plan (SAMP) for each project as the basis for determining scope of the RAP.
- Preparation of a detailed Terms of Reference for the consultants (if necessary) on the basis of the specific R&R issues emerging from the SAMP.
- Make available to the consultants a copy of the ESPP, SAMP, and the project design with detailed maps of the project for which the RAP is being commissioned.

### **Resettlement Plan Objectives**

Preparation of the Resettlement Action Plan (RAP) is being commissioned as an integral part, and one of the major components of the Social Assessment Process described in the ESPP. The need for the RAP has been identified by the preliminary findings of the SAMP and the analysis of expected social impacts which require appropriate mitigation measures for all PAPs who, on the basis of an established cut-off date, will be losing land, or other assets or livelihood, as a result of project implementation. The RAP will incorporate all R&R measures necessary to ensure compensation for assets acquired at replacement cost and mitigation of loss of livelihood for all PAPs.

Outline of RAP:

#### **1. Project Description**

- Physical, social and economic characteristics of the project area;
- Major features of the proposed project;

- Relevant maps of the project site (s) and the project area
- Summary description of the extent of land acquisition needed for the project and its expected adverse social impact - results of the SAMP;
- Analysis of major social groups likely to be adversely affected, and their special characteristics in relation to the project;
- Impact on archaeological sites and cultural property;
- Overview of the R&R steps envisaged within the project.

## **2. The Social Assessment Process**

- Preceding stages of the Social Assessment Process leading to preparation of the RAP;
- Consultation process with different stakeholders used during the Social Assessment Process; if different forms of consultation have been used for different stakeholders e.g. government agencies, potential user groups, PAPs and NGOs, the consultative processes should be described separately.

## **3. Census Data and Social Impact Assessment**

Socio-economic data of project area and expected social impact of the proposed project based on the census and socio-economic survey:

- Details of land and other assets to be acquired on a temporary or permanent basis for the project;
- Data on occupation and income levels of PAPs;
- Access to benefits, and negative consequences on different social groups - landowners vs. tenants/landless labourers, large farmers vs. small owner-operators, owners vs. squatters, males vs. females, local vs. regional/national beneficiaries - equity issues;
- Changes in the tenurial status and patterns of resource use by different social groups as a result of the project;
- Extent of relocation of PAPs required for the project;
- Data on the proposed resettlement site (s) and host population (s) including existing pattern of land use, existing infrastructure and services and economic opportunities for the additional population at the resettlement site (s) and host population (s), including existing pattern of land use, existing infrastructure and services and economic opportunities for the additional population at the resettlement site (s)
- Access to social services prior to the project, and after completion of the project;
- Impact on poverty in the project area

- Socio-economic impact of improvement in infrastructure facilities like road, communication etc. generally related to developmental project.

#### **4. Policy of Entitlements**

- National, state, and local Laws and Rules on land acquisition and resettlement applicable and relevant to this project;
- Eligibility policy and criteria for different categories of PAPs, cut-off dates for eligibility;

#### **5. Participation**

- Previous experience of the local population (particularly negative experiences) with development projects and resettlement;
- R&R implementation, and R&R monitoring;
- Institutional mechanisms to facilitate participation;
- Expected outputs of participation by stage of project cycle.

#### **6. Consultation and Grievance Procedures**

- Major R&R issues to be discussed with PAPs;
- Process and time table proposed for project affectees;
- Public information, and information dissemination program to ensure project affectees are informed about process of project implementation and R&R issues, on a continuing basis;
- Mechanisms established, such as Grievance Committee, for redressal of grievances.

#### **7. Implementation Mechanisms and Due Process**

Implementation procedures proposed for delivery of key entitlements and the process for establishment of adequate replacement cost summarize information in the form of a complete entitlement Matrix (see Table 1 for format), and add explanatory notes to clarify the following points, as relevant to the project.

- Land-for-land provisions, including the location, quality, and present economic use of the land being provided in replacement of acquired land;
- Additional incentives provided to supplement land-for-land provisions, including cost of relocation, subsidy for inputs to develop the land compensation for need to create new network of services and inputs, etc.
- Determination of replacement cost, form of compensation and modality of payment;
- Provisions made to compensate tenants share-croppers and others with temporary tenure or lease on property.

- Acquisition of resources managed as common property (CPRs)
  - Replacement Value of CPRs
  - Compensation for CPR among its multiple owners/users
  - Access to CPRs after project completion or alternative arrangements to avoid depriving PAPs of the benefit stream from CPRs.
- Measures proposed to provide additional services to PAPs (e.g. special measures to ensure that they are included among the beneficiaries of the project through access to project related services, employment opportunities, or public social services) in lieu of the personal loss they are incurring for a public good.

## **8. Analysis of Alternatives and Assessment of Resettlement Sites**

- Alternatives to project design identified during RAP preparation, particularly those alternatives where minor modification to the project may reduce adverse effects, resulting in significant R&R benefits;
- Provision of improved services to the host population (to avoid future conflicts with the resettled population).

## **9. Income Generation Programs**

- Existing skills and employment pattern of PAPs;
- Adverse impacts on employment pattern due to acquisition of land or other assets, or due to relocation;
- Feasibility analysis of income generation programs at the resettlement site (s) or at the existing location during the life of the project, and in the post-project period;
- Training needs of PAPs in context of employment opportunities and market demands of post-project situations, and describe how project will ensure fulfilment of training needs;
- Access to credit and micro-enterprise support to meet the PAPs needs for capital and other inputs for rehabilitation of livelihoods;
- Institutional arrangements to manage Income Generation programs on a sustained basis - initiation, implementation, handing over, sustainability.

## **10. Institutional Capacity and Responsibility**

- Which agency will be responsible to implement R&R activities?
- Previous experience of the agency in undertaking R&R (the previous experience should be described and evaluated);

- Organizational structure to manage R&R activities for the project.
- Resources available for R&R, including staffing, financial resources and other facilities;
- Budget for R&R agency, including extent of financial authority;
- Capacity, experience, and resources of PAPs organisation within the project area;
- Capacity, experience and resources of NGOs active within the project are;
- Coordination mechanisms between R&R agency, local administration, PAPs and NGOs;
- Technical Assistance needs and plans for staff capacity building

### **11. Budget for R&R Operations**

- Assumptions underlying the budget and Total Estimated Cost of R&R Operations
  - Estimated cost of land acquisition and resettlement under the project;
  - Initial capital investment for rehabilitation activities;
  - Recurring costs for continued provision of rehabilitation and mitigation measures;
  - Cost of administrative overheads implementation management;
  - Allocation for contingencies;
- Detailed costs with identification of all major cost item for expenditure during the first phase of implementation (minimum two years);
- Sources of funding, and financing responsibility by component;
- Budgetary process and timing of expenditure;
- Authorisation process regarding spending, and devolution of financial powers for R&R to the field level;
- Financial accountability process - the audit mechanism.

### **12. Monitoring & Evaluation**

- Procedures and organisational set-up for internal monitoring of progress in R&R operations - M&E structure within implementing agency;
- Monitoring and reporting procedures and formats to be followed for reporting progress with R&R;
- Participatory monitoring - PAP responsibilities;
- Provision for external, independent monitoring mechanism of R&R;
- Project supervision - Bank responsibility;
- Funding sources for M&E.

### 13. Action Plan for Implementation

Prepare an Action Plan with a time line for R&R implementation, coordinated with the proposed time table for project activities, beginning with a start date well enough in advance to make the land available for project construction when it is needed.

- Summarize coverage of the plan (time period, location of sites);
- Draw up a list of key tasks to be performed to deliver the entitlements provided in the RAP (use the Entitlement Matrix as a checklist for activity list), ensure that all activities related to the following are included.
  - o land acquisition
  - o resettlement
  - o rehabilitation
  - o Income generation programs
  - o consultation processes
  - o monitoring of R&R impacts
- Incorporate critical activities/events related to project construction implementation which will have a bearing on the time frame;
- Prepare a Plan of Operations for R&R activities, for the first phase (minimum 24 months) using the following format:

Activities	Responsi- bility	Monitoring Indicator	Time Frame										

**Table 1: Entitlement Matrix: Compensation, Relocation and Rehabilitation**

Type of Loss/ Impacts <sup>2</sup>	Definition of entitlement / right	Definition of entitled person/unit	Application guidelines	Additional services / benefits	Implementation Issues	Organisation(s) responsible
1. Loss of land						
2. Loss of structure						
3. Loss of livelihood						
4. Loss of access to common resources and facilities						
5. Loss of standing cross/trees						
6. Loss during transition/displacement						
7. Loss to Host Communities						

<sup>2</sup> The first column of this matrix is indicative of generic types of losses. There are likely to be variations between projects. In preparing the RAP, the boxes in the first column should be expanded on the basis of the first column of the R&R Matrix in Section 4 : Policy of Entitlements of this RAP. If further sub-divisions are called for, based on different types of agricultural land, types of tenancy contracts, or types of wage employment, the matrix should be expanded to specify entitlements for each of those variations.

## **GUIDE LINES FOR TRIBAL PEOPLE DEVELOPMENT PLAN**

If initial scoping and preliminary assessments establish/determine that indigenous peoples\*(referred to as tribals in India) will be affected by the proposed project interventions a detailed social assessment will be undertaken to identify issues and prepare a Tribal People Development Plan (TPDP) for affected Indigenous people as per the following strategy:

### **Criteria for TPDP Requirement:**

The need for a full TPDP due to acquisition of land belonging to/used by tribal people will be established on the basis of the following criteria:

1. Significant adverse impacts on customary rights of use and access to land and natural resources
2. negative impacts on the socio-economic and cultural identity of tribal communities;
3. impacts on health, education, livelihood and social security status;
4. any other impacts that may alter or undermine indigenous knowledge and customary institutions.

If, the impacts are insignificant<sup>3</sup>, then specific actions in favour of the tribal people will have to be integrated into the Rehabilitation Action Plan (RAP) and community / tribal development plan for the sub-projects will be prepared This would ensure appropriate mitigations and benefits to the indigenous people.

### **Objectives of TPDP**

Based on both country's constitutional and legal provisions, and other developmental strategies and multilateral agencies policy on indigenous people, the objectives of the tribal development strategy are to ensure:

1. that affected tribal/ST people benefit from the project;
2. that they are included in the entire process of planning, implementation and monitoring of the project;
3. that affected tribal/ST people receive benefits from the project that are at least on par with or better than those received by the rest of the population thereby requiring special measures and preferences to tribal people over others;

---

<sup>3</sup> If impacts are insignificant or no tribal communities are affected, a full Tribal People Development Plan (TPDP) may not be required but impacts and mitigation measures can be dealt through the RAP. Impacts are considered to be significant when tribals as communities are affected by the Project thereby requiring a full and separate TPDP.

4. that a basis is provided for the tribal groups in the area to receive adequate development focus.

In order to prepare a TPDP, following steps will be undertaken:

1. Based on social assessment, baseline data on the tribal people (subsistence, employment, community networks) affected by the project will be established.
2. Policy guidelines available at the national and state level regarding ST, and POWERGRID “Social Entitlement Framework” will be used to address tribal issues in relation to the interventions at the project level.
3. Since indigenous people’s issues are sensitive, the POWERGRID will include in the team of consultant, staff with adequate knowledge and experience of working among tribal groups for assisting in the planning and implementation of the TPDP.
4. Wherever possible, tribal groups will be given employment opportunities on preferential basis
5. All community development plans carried out by POWERGRID will be designed and implemented with the active involvement of tribal groups of the project area

#### **Consultation, Disclosure:**

As mentioned above, TPDP will be prepared in consultation with the tribal people both affected and those living in the vicinity of the project area. It will be ensured that such consultations are based on the principle / concept of “Free, Prior informed consultation”. They will be informed of the measures proposed and their views will be taken into account in finalizing the plan to ensure broad community support. A summary of such consultation is incorporated in the TPDP. The Plan will be translated into the local language(s) and made available before implementation.

The tribal institutions and organizations in the affected area will also be involved in implementing the TPDP and in resolving any disputes that may arise. Social Management Plan will ensure that adequate funds are made available for the TPDP.

#### **Monitoring and Evaluation**

The internal monitoring of TPDP implementation will be done by ESMC and ESMT, to facilitate ESMC and ESMT, a person with tribal development experience will be engaged both for supervising and guiding TPDP implementation. In a way, this person will be solely responsible for overall implementation of TPDP activities and to report on quarterly basis the progress in TPDP implementation to the Corporate ESMD who in turn will appraise higher management. A set of monitoring indicators will be defined during the TPDP preparation and implementation for reviewing the progress. In addition, an external independent monitor will be engaged to undertake monitoring

of the TPDP implementation. Specific Reporting / monitoring formats will be prepared in consultation with socio-economic consultant/based on important issues for an effective internal and external monitoring.

### **The content of the TPDP**

The following information shall be included in the TPDP

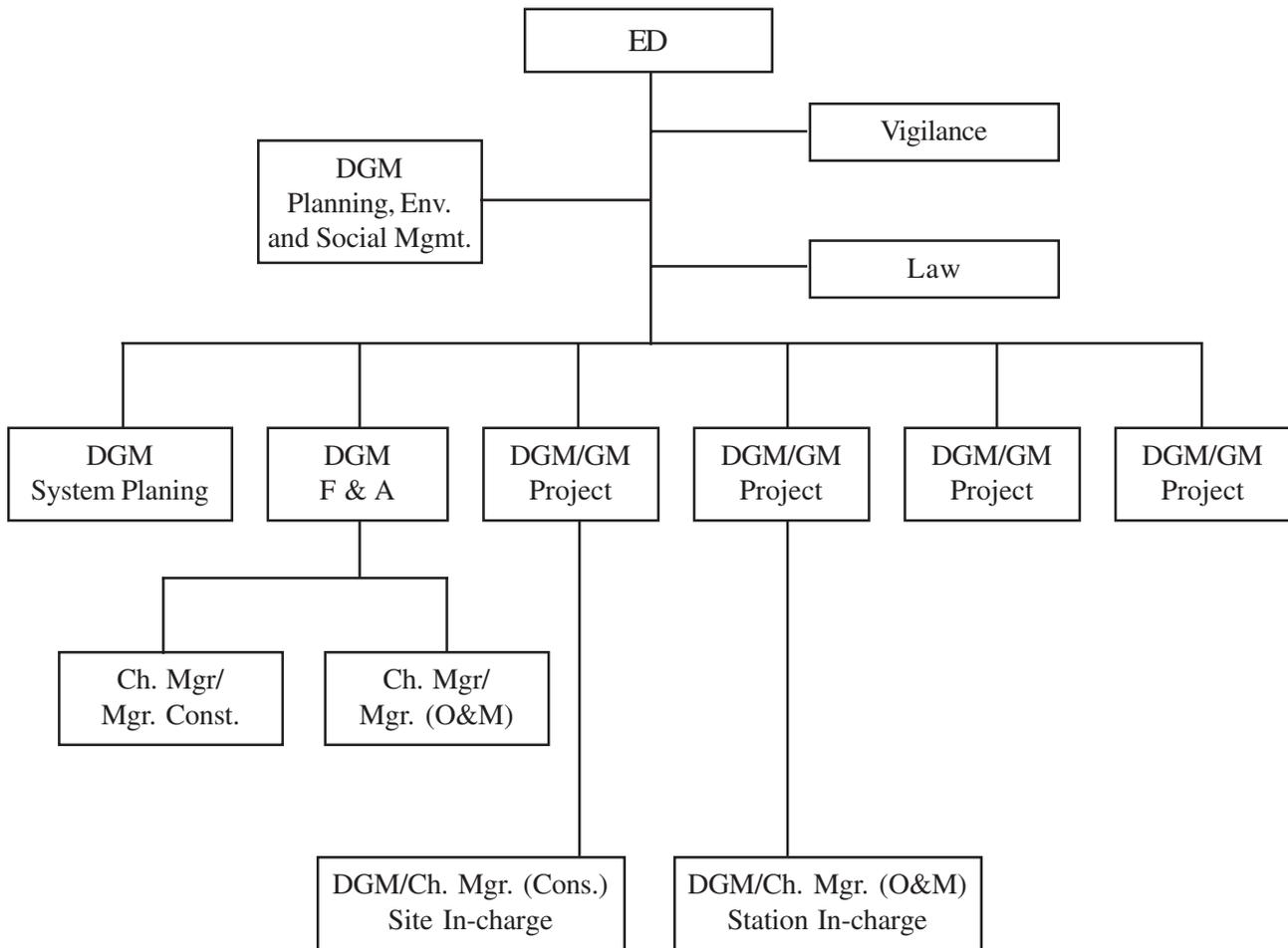
- Maps
- Description followed by analysis of the social structure of the population.
- Inventory of the resources and analysis of the sources of income of the population
- Information about the systems of production practiced by tribals
- Relationship of tribal groups to the proposed project
- Examination of land tenure issues including lands under customary rule and assurance of continued use of these resources by the groups involved.
- Strategy for local participation including mechanisms defined with the assistance and in consultation with indigenous peoples for their participation in decision making process throughout project planning, implementation and evaluation cycle.
- Summary of Public Consultation process.
- Identification of development interventions or mitigation activities including measures to enhance tribal participation in the activities proposed under the project
- An implementation schedule with benchmarks to assess progress
- Monitoring and evaluation, including specific indicators
- Detailed cost estimates/budget and financing plan and sources of funds for the TPDP covering planned activities.
- Organisation support/ institutional capacity like the government institutions responsible for tribal development.

---

\* Indigenous People (IP) referred as tribal in India are the distinct groups identified based on their social, cultural, economic, and political traditions and institutions, which are distinct from the mainstream or dominant society and culture. Tribal with similar cultural characteristics are known as 'Adivasi' in Hindi and are recognized as Schedule Tribes (STs) as per the Indian Constitution.

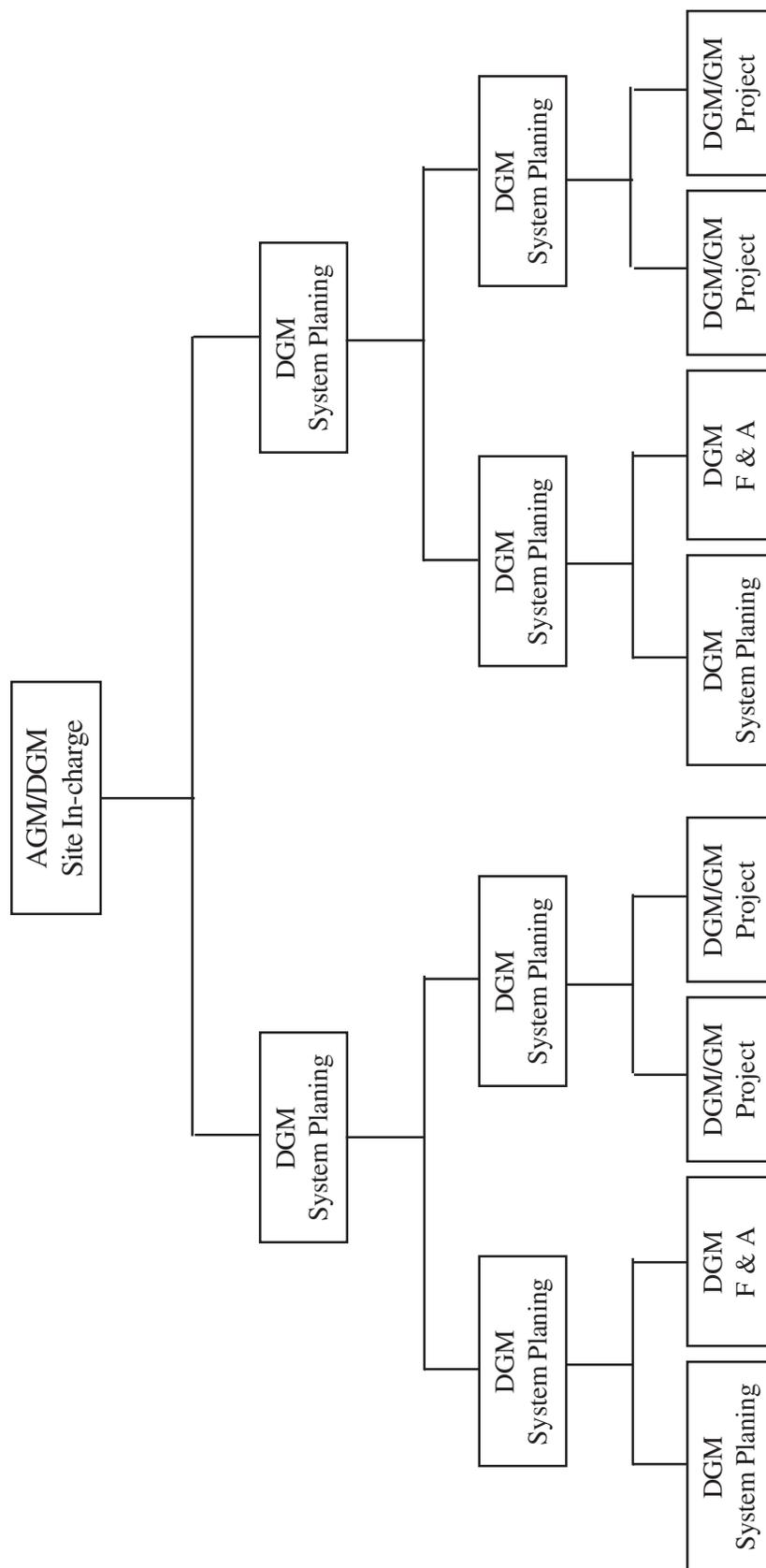


**ORGANISATIONAL STRUCTURE OF HRQ.**





**ORGANISATIONAL STRUCTURE OF SITE OFFICE**



## **DEPARTMENTAL PROFILES**

### **Corporate Planning:**

This department plays a pivotal role in deciding the future course of action to be taken by the organisation. The important functions performed by the department are:

- a. Strategic planning, long range and short range planning, avenues for diversification/ expansion, Private Sector & Joint Venture participation.
- b. International fund mobilisation, Project Approval, Technical Services and Coordination.
- c. Financial projections, Computer modelling, Policy issues, Monitoring of funds utilisation and debit
- d. Coordination with Continental/European International Financial Institutions.
- e. Developing Management Information System/LAN support & maintenance.

### **Engineering:**

Responsible for design, execution and commissioning of Transmission system projects. This department is broadly divided into three groups viz.

Group I: Substation Engineering;

Group II: System Engineering & Feasibility Study

Group III: Transmission Line Engineering.

Each group is further divided into subgroups based on Regions/Equipment/functions. The main functions of the department are:

1. All Pre-award & Post award activities related to substations such as:
  - Technical specifications for the equipment & Bill of Quantities;
  - Technical Bids evaluation & Pre-award discussions; Substation layout;
  - Civil Engineering activities related to substation construction/expansion & infrastructure;
  - Detailed Engineering (Approval of drawings etc.)
2. Feasibility report preparation & doing operation studies.
3. All pre-award & post-award activities for the transmission lines.

### **Law:**

This department is headed by Chief Law Officer who reports to Director (Personnel). Main functions are:

1. Advisory
  - Vetting documents/correspondence done by various other departments and rendering legal advice to various officers/regions of POWERGRID.
2. Litigations
  - Looking after the arbitration cases and court cases.
3. Transfer of Assets
  - All legal aspects involved in the transfer of Assets.

### **Contracts Services:**

Contracts department is primarily involved in Pre-award activities of projects. Major activities include:

1. Release of Notice Inviting Tenders
2. Receipt of tenders
3. Tender evaluation (financial bid only)
4. Award of contract
5. Monitoring of supply contracts

### **Regional Headquarters:**

RHQs coordinate and control functions of the various site offices. RHQ functions include finance, personnel and administration, vigilance, etc. with the organisational structure closely resembling that of the corporate headquarters. Major activities include:

1. Coordination and control of ongoing construction projects
2. Engineering and Field Quality Assurance and Communication
3. Coordinating O&M of substation and transmission lines
4. Planning of shutdown for routine and planned maintenance
5. Coordination with the REBs on behalf of the region
6. Grid control of the region through IOCC
7. Environmental and Social management, coordination and monitoring

### **Site office:**

The main activities of site office include:

1. Construction of transmission lines and substations
2. Operation and Maintenance of substation and transmission lines
3. Engineering and Field Quality Assurance and Communication
4. Testing and Commissioning
5. Implementation of EAMP/SAMP





upgraded ESPP in different regions of the country. These consultations were organized at Trichy (Tamil Nadu) in Southern region, Amritsar (Punjab) in Northern region, Jabalpur (Madhya Pradesh) in Central region, and Jeypore (Orissa) in Eastern region covering all major regions of the country. Prior to conducting of such regional consultation workshop, notices were published in local dailies in both English and local languages in respective areas inviting general public for participation. The large numbers of people who participated were PAPs, representatives of communities, social organizations, officials of government organizations and concerned citizens

**नव भारत**

**पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड**  
(भारत सरकार का उद्योग)  
**POWER GRID CORPORATION OF INDIA LIMITED**  
(A Government of India Enterprise)

**आम सूचना**

पावरग्रिड द्वारा दिनांक 17.08.2004 को 11.00 घंटे सुबह 400/220 के.वी. उच्चवोल्ट, सुनाम नाम के नाम, पटन रोड जखलपुर (म.प्र.) में वर्ष-2004 में परिवर्धित किए जाने वाले इलेक्ट्रिक लाइनों का सर्वेक्षण एवं मापन के लिए कुल 400/220 के.वी. उच्चवोल्ट पर पावरग्रिड कारपोरेशन का आवेदन प्रस्तावित है. उपरोक्त स्थानों में आवेदन है कि ये कृषक/अपरिभक्त होकर अपने कृषक/अपरिभक्त के लिए उच्चवोल्ट की नीति संबंधी दस्तावेजों/अवकाश/अवकाश, जखलपुर के पर्यावरण में उपलब्ध है. अधिकारों के विषय में <http://www.powergridindia.com> में भी देखा जा सकता है.

-सही-  
मुख्य अधिकारी, जनसंपर्क विभाग  
400/220 के.वी. उच्चवोल्ट, सुनाम नाम के नाम, पटन रोड, जखलपुर- 481002 (म.प्र.)

**पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड**  
(भारत सरकार का उद्योग)  
**POWER GRID CORPORATION OF INDIA LIMITED**  
(A Government of India Enterprise)

**PUBLIC NOTICE**

POWERGRID proposes to conduct a consultation programme at the 419/220 KV Substation, Near Subbiah Village, Patna Road, Jabalpur (M.P.) on 17th August 2004 at 11:00 A.M. on its Corporate Environmental & Social Policy and Procedures (ESPP) being revised in 2004. Interested persons are requested to attend & offer their valuable suggestions. For reference the policy document of ESPP is available in the office of the E&S. Information can be accessed at web site <http://www.powergridindia.com>.

Sd/-  
(S. J. Huzaradar)  
De. General Manager  
400/220 KV Sub Station  
Near Subbiah Village, Patna Road,  
Jabalpur - 481002

**सततक सूचना**

पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड (भारत सरकार का उद्योग) के मुख्यालय में 17/08/2004 को सुबह 11:00 बजे 400/220 के.वी. उच्चवोल्ट पर पावरग्रिड कारपोरेशन का आवेदन प्रस्तावित है. उपरोक्त स्थानों में आवेदन है कि ये कृषक/अपरिभक्त होकर अपने कृषक/अपरिभक्त के लिए उच्चवोल्ट की नीति संबंधी दस्तावेजों/अवकाश/अवकाश, जखलपुर के पर्यावरण में उपलब्ध है. अधिकारों के विषय में <http://www.powergridindia.com> में भी देखा जा सकता है.



The main issue emerged from these regional workshops was regarding compensation fixed by district authorities for acquired land, trees and 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 also eligible for such RA. People seem to be satisfied with the explanation, however, they suggested that unmarried sons, widow daughters may 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 October 7, 2004. 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 day long consultation workshop began with a welcome address by the Executive Director, Environment and Social Management Department (ESMD). Chairman and Managing Director, POWERGRID in his keynote address 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 will take up the issue of compensation against acquired land with concern government department for doing the needful. The discussion on the modified ESPP was spread over the morning and the afternoon sessions. The discussion was facilitated by members of the review committee as independent observer. Several participants commended POWERGRID for the initiative to organize such open consultation and also making their operations more transparent. The workshop concluded with the address by Additional General Manager, ESMD, who thanked all the participants and reiterated POWERGRID's commitment to the goal of sustainable development.

### **Stakeholders / Public Consultation on Safeguard Diagnostic Review (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 and 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.