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Environmental & Social Policy & Procedures (ESPP)

Volume I

Assam Electricity Grid Corporation Limited (AEGCL)

&

Assam Power Distribution Company Limited (APDCL)

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Abbreviations

ADB	:	Asian Development Bank
ADCs	:	Autonomous District Councils
AEGCL	:	Assam Electricity Grid Corporation Ltd
APGCL	:	Assam Power Generation Corporation Ltd.
APDCL	:	Assam Power Distribution Company Ltd
ASEB	:	Assam Electricity Board
BoD	:	Board of Directors
CA	:	Compensatory Afforestation
CBD	:	Convention on Biological Diversity
CEA	:	Central Electricity Authority
CEM	:	Chief Executive Member
CF	:	Conservator of Forests
CKM	:	Circuit Kilometers
CPCB	:	Central Pollution Control Board
CPTD	:	Compensation Plan for Temporary Damages
CSGS	:	Central Sector Generation Scheme
DFO	:	Divisional Forest Officer
DL	:	Distribution Line
DPR	:	Detail Project Report
EA	:	Environmental Assessment
EAMP	:	Environment Assessment Management Plan
E & F	:	Environment & Forests
E&S	:	Environmental and Social
EMF	:	Electro Magnetic Fields
EPA	:	Environment Protection Act
ESMP	:	Environmental and Social Management Plan
ESMC	:	Environmental and Social Management Cell
ESPP	:	Environmental and Social Policy Procedures
FEAR	:	Final Environmental Assessment Report
GDP	:	Gross Domestic Product
GHG	:	Green House Gas
GoA	:	Government of Assam
GRC	:	Grievance Redressal Committee
HT	:	High Tension
IEAR	:	Initial Environmental Assessment Report
kV	:	Kilo-volt

kWh	:	Kilo-watt hour
LT	:	Low Tension
MDONER	:	Ministry of Development of North Eastern Region
MoEF	:	Ministry of Environment& Forests
MU	:	Million Units
MVA	:	Million Volt Amperes
MW	:	Mega Watts
NBWL	:	National Board for Wildlife
NE	:	North East
NEC	:	North Eastern Council
NO	:	Nodal Officer
NOC	:	No Objection Certificate
NPV	:	Net Present Value
NSDP	:	Net State Domestic Product
OP	:	Operational Policy
O & M	:	Operation & Maintenance
PCB	:	Polychlorinated Biphenyl
PCCF	:	Principal Chief Conservator of Forests
PMU	:	Project Management Unit
RFCTLARRA	:	The Right to Fair Compensation and Transparency in Land Acquisition Rehabilitation and Resettlement Act, 2013
R & R	:	Rehabilitation & Resettlement
RoW	:	Right of Way
SIA	:	Social Impact Assessment
SF6	:	Sulfur Hexafluoride
SIMP	:	Social Impact Assessment and Management Plan
SMF	:	Social Management Framework
SPCB	:	State Pollution Control Board
T&D	:	Transmission and Distribution
TL	:	Transmission Line
TPDP	:	Tribal People Development Plan
WB	:	World Bank

EXECUTIVE SUMMARY

1 India's North East Region (NER) stretches across the eastern foothills of the Himalayan mountain range and is comprised of seven states including Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura. Geographically the region is connected to the other parts of the country through a small "chicken neck" corridor in the State of West Bengal. With a total population of 45.6 million (2011 census), the sparsely populated NER accounts for about 3.7 percent of India's total population and covers 7.9 percent of India's total geographical area. The vast majority of the region's population lives in rural areas, accounting for 82 percent of the total population as against compared to the national average of 69 percent (2011). A large part of the NER is hilly and, recognized as one of the globe's biodiversity hotspots. Forests cover over 2/3rd of the area, twice exceeding the policy target of 33%. This sparsely populated region is characterized by extraordinary ethnic, cultural, religious and linguistic diversity, with more than 160 Scheduled Tribes (out of 630 in the country) comprising over 400 distinct sub tribal groups, and a large and diverse non-tribal population as well.

2 **Regional Power Transmission and Distribution**. The North Eastern Region (NER) in India is endowed with rich energy resources but faces significant bottlenecks in electricity access and availability levels. The per capita power consumption in NER is one-third of the national average. The region has a shortfall of about 500 MW installed capacity against peak demand of about 1950 MW. No significant generation capacity has been added in the recent past. Therefore, inadequate power supply continues a critical constraint to sustainable growth and economic development in the NER. Some states are generally not able to draw even their allocated share of power from the Central Generating Stations (CGS) through the grid due to poor/ inadequate intra/ interstate transmission and distribution network and no capacity addition towards transmission/distribution power system not done due to fund constraints. The transmission and distribution (T&D) losses are also drastically high (up to 50%) across most of the States as a large number of remote hilly areas are connected through long low tension lines, resulting in low voltages and poor quality of power at consumer end. While generation capacity addition of about 4000 MW program over present installed capacity is already underway, adequate transmission and distribution infrastructure to transmit and distribute this power to consumers within the North-Eastern States is the need of the day.

Project Context

3 In order to create/ augment proper infrastructure of T&D in NER. Government of India (GoI) has formulated a "Composite scheme for transmission and distribution (T&D) in NER" capable of delivering adequate power to most consumers with reliability, aiming to improve the inter-state and

intra-state transmission and sub-transmission infrastructure and reduce system losses in all the NER states. The Govt. of India (GoI) has approached the World Bank to provide US$ 1500 million of IBRD funding support to portion of the scheme **"NER Power System Improvement Project (NERPSIP)"** in three investment tranches each being US$ 500 million for strengthening, augmentation of the intra-state and interstate transmission and distribution schemes (33kV and above and above) and undertake capacity building initiatives across six NER States of Assam, Manipur, Mizoram, Meghalaya, Tripura and Nagaland for World Bank & GoI funding. Ministry of Power (MoP), GoI has appointed POWERGRID, as the **Central Implementing Agency (IA)** to the six North East States for the Project. However, the ownership of the assets shall be with the respective State Governments/ State Utilities, which upon progressive commissioning shall be handed over to them for taking care of Operation and Maintenance of Assets at their own cost.

4 The project's first investment tranche would be implemented over a seven year period (2014-2021) and has two major components, namely:

a) Priority investments for strengthening of intra-state transmission and distribution systems;
b) Technical Assistance for Institutional Strengthening and Capacity Building of power utilities and departments.

5 In the above background, Assam state, one of the states in NER, is contemplating major expansion and augmentation of its transmission & distribution network in near future by implementing projects with the help/grant from GoI and other Multilateral Funding Agencies like the World Bank and ADB. Given the unique socio-economic, cultural and environmental resources, Assam Electricity Grid Corporation Ltd (AEGCL) and Assam Power Generation Corporation Ltd. (APDCL) in Assam is committed to manage them highly sustainably. Towards this, plans have been made by AEGCL/APDCL to prepare an Environment and Social Policy and Procedures (ESPP) to serve as a guiding instrument. AEGCL/APDCL assimilates environmental and social management procedures into its corporate functioning and also layout management procedures and protocol to address them. It outlines AEGCL/APDCL's commitment to deal with environmental and social issues relating to its transmission & distribution projects with a framework for identification, assessment and management of environmental and social concerns at both organizational as well as project levels. For this, POWERGRID, with proven credentials in management of environmental and social issues of large number of power transmission projects both within and outside the country has been mandated to prepare an ESPP for AEGCL/APDCL. Thus, it enables AEGCL/APDCL;

- To establish clear procedures and methodologies for the environmental and social screening, planning, review, approval and implementation of subprojects to be financed under the Project;

- To specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and social concerns related to sub-projects;
- To determine the training, capacity building and technical assistance needed to successfully implement the provisions of the ESPP;
- To ensure adequate financial provisions to meet the management measures to be undertaken to mitigate the impacts.

6 AEGCL/APDCL also believes that the ESPP is dynamic and living document, which shall be further upgraded in light of the experiences gained from field implementation and other relevant factors while mainstreaming the environmental and social concerns in its corporate functioning.

AEGCL/APDCL's Environment & Social Policy

*"AEGCL/APDCL considering the rich natural resources and diverse cultural, religious, social practice and customary laws of the region commits to achieve the goal of sustainable development and shall follow the principle of **avoidance**, **minimization** and **mitigation** during implementation of its projects with complete transparency and due social responsibility."*

7 The key principles of AEGCL/APDCL's Environmental and Social Policy are:

- Avoidance of environmentally and socially sensitive areas while planning project activities;
- Minimization of impacts when project activities occur in environmentally and socially sensitive areas;
- Mitigation of any unavoidable negative impacts arising out of its projects.

Methodology & Approach

8 The ESPP has been prepared following a region/ state specific environmental and social assessments which involved generating information through both primary and secondary sources including consultations and library research. The methodology adopted to identify the potential environment and social impacts is based on experience gained from implementation of similar projects and baseline assessments of work activities anticipated in this proposed project. The methodology takes in to account wide range of receptors:

- Physical & chemical environment (e.g. water, soil, etc.);
- Biological environment (forest, animals, birds, etc.); and
- Communities, social groups and individuals (loss of land, loss of agricultural production, tribal, vulnerable groups (women and backward classes), socio-economic condition, health and safety risks).

9 The basic approach broadly involved following:

- Review of environment & social baseline information from secondary sources;
- Review of existing national & state specific legislations and policy and guidelines of multilateral agencies;
- Review of project related documents; and
- Stakeholders' consultations.

Consultation/ Participation

10 Consultations with key stakeholders including local, state, regional, central government entities and key ministries at the state level and central level as well as with World Bank officials were undertaken to know views and concerns about environmental and social issues/ concerns of the project. This activity ensured appropriate participation and gathering views from the environment and social perspective of all the stakeholders' which is integrated in this ESPP to be adopted during different stages of the project implementation.

Assam at a Glance

11 ***Geography and Governance***. The State of Assam spreads over an area of 78,438 sq km. and lies between 89°5'- 96°1' East and 24°3'- 27°58' North. Assam is surrounded by six of the other Seven Sister States: Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, and Meghalaya. Geographically Assam and these States are connected to the rest of India via a strip of land in West Bengal called the Siliguri Corridor or "Chicken's Neck". Assam shares international borders with Bhutan and Bangladesh.

12 The State of Assam is divided into 4 divisions (namely Upper Assam, Lower Assam, North Assam and Hills and Barak Valley Division) each headed by a Commissioner. The Commissioner oversees the activities of a number of districts. The State of Assam is divided into 27 districts. To further provide regional autonomy and better status within the constitutional framework from the tribes of Assam some of the areas have been incorporated within the sixth schedule of the Constitution of India. The Sixth Schedule provides for administration of certain tribal areas as autonomous entities. There are nine such autonomous regions which have been defined in the State of Assam. The administration of autonomous councils vested in a District Council and of an autonomous region, in a Regional Council. These Councils are endowed with legislative, judicial,

executive and financial powers. Six schedule areas in Assam are Bodoland Territorial Council, Karbi Anglong Autonomous Council, Dima Hasao Autonomous District Council[1].

13 ***Demography.*** The Population of Assam according to the 2011 census stands at 3,12,05,576, making it the 14th most populated State in India. The State makes up about 2.5% of the country's population. The State is spread over an area of about 78,400 sq. km. making it the 16th largest State in the country in terms of area. The density of population per sq km is about 398 and almost equal to the national average. The State has a population growth rate of about 17% which is again very close to the national growth rate. The literacy rate in the State is 72.19% (census 2011) where male and female literacy rates are 78.81% and 67.27% respectively. Sex Ratio in Assam is 958, which is above national average of 940 as per census 2011. The Scheduled Castes (SCs) and Scheduled Tribes (STs) population consists nearly 7.15% and 12.45 % of the total population in the State.

14 ***Forests and Protected Areas.*** The State of Assam is enriched with extensive forest area and also rich with different species and strains of floras and faunas along with valuable forest products. Forest cover constitutes 35.28% of total land area of this State. The recorded forest area of Assam is 26,832 sq. km. Also there are nearly 40 Sacred Groves are identified in Assam. Mostly Sacred Groves are found in Karbi Anglong district. However, some of the monasteries like Shankaradeva maths distributed all over the State also have Sacred Groves. These Sacred Groves are ecologically rich and play important role in the religious and sociocultural life of the local people and homes to many medicinal and aromatic plants. These sacred groves are protected by the community but do not have any legal protection.

15 In Assam 25 protected area networks consisting of 5 National Parks, and 20 Wildlife Sanctuaries (including 2 proposed WLS) are formed. All these National Parks and WLS hold a large number of endangered and local species (refer **Table - 1**). Assam has five Elephant Reserves (Sonitpur ER (1,420 sq km), Dehing-Patkai ER (937 sq km), Kaziranga-Karbi Anglong ER (3,270 sq km), Dhansiri-Lungding ER (2,740 sq km), and Chirang-Ripu ER (2,600 sq km) and Eight Elephant Corridors connects these Elephant Reserves, Protected Forest and nearby forests locating in the neighboring States (viz. Arunachal Pradesh and Meghalaya).

[1] Govt. of Assam has recently created 6 more Autonomous Councils viz. Rabha Hasong Autonomous Council (RHAC), Mishing Autonomous Council (MAC), Tiwa Autonomous Council (TAG), Deori Autonomous Council (DAC), Thengal Kachari Autonomous Council (TKAC) and Sonowal Kachari Autonomous Council (SKAC).

Table - 1: Protected Area Network in Assam

Sl. No.	National Park and Wildlife Sanctuaries	Location (District)	Main Habitat
1.	Kaziranga National Park	Golaghat, Nagaon & Sonitpur	One horned Rhino, Swamp Deer, Wild Buffalo, Tiger, Elephant, Hoolock Gibbon, Capped Langur, Home to 25 globally threatened and 21 near threatened species of birds
2.	Manas National Park	Chirang and Baksa	Rhino, Elephant, Tiger, Pygmy Hog, Hispid hare, Golden Langur, Assamese Macaque, Rhesus Macaque, Leopard, Golden Cat, Fishing Cat, Leopard Cat, Jungle Cat, Large Indian civet, Small Indian civet, Toddy Cat
3.	Orang National Park	Udalguri and Sonitpur	Rhino, Tiger, Maljuria Elephants (male elephants in group), Hog Deer, Wild Pig 222 species of Birds (Greater Adjutant Stork, Lesser Adjutant Stork, Brahminy Duck, Pintail Duck etc.)
4.	Nameri National Park	Sonitpur	Tiger, Leopard, Elephant, Gaur, Wild Pigs, Sambar, Barking Deer, Hispid hare, Slow Loris, Capped Langur, White Winged Wood duck, Palla's fish-eagle, Lesser Adjutant Stork, Greater spotted Eagle, White ramped vulture, Longo billed vulture, Black bellied Term, Rufous–necked Hornbill, Wreathed Hornbill, Great Pied Hornbill etc.
5.	Dibru-Saikhowa National Park	Dibrugarh and Tinsukia	Tiger, Elephant, Leopard, Jungle Cat, Bears, Small Indian Civet, Squirrels, Gangetic Dolphin, Slow Loris, Assamese Macaque, Rhesus Macaque, Capped Langur, Hoolock Gibbon. It is an identifies Important Bird Area (IBA)
6.	Bherjan-Borajan-Padumoni WLS	Tinsukia	Hoolock Gibbon, Capped Langur, Pig-tailed, Macaque, Macaque, Slow Loris and Rhesus Macaque
7.	Panidehing WLS	Sivasagar	Elephants, Lesser Adjutant Stork, Greater Adjutant, Swamp Francolin, Spot-billed Pelican, White-rumped Vulture, Greater Spotted Eagle, Slender-billed Vulture, Pallas's Fish-eagle
8.	Hollongpara Gibbon WLS	Jorhat	7 Primates (Hoolock Gibbon, Stump- tailed Macaque, Capped Langur, Pig-tailed Macaque, Assamese Macaque, Slow Loris and Rhesus Macaque)
9.	Nambor-Doigurung WLS	Golaghat	Gaur, Elephants, Hoolock Gibbon
10.	Garampani WLS	Karbi Anglong	Elephants, White-winged Duck, Lesser Adjutant Stork

Sl. No.	National Park and Wildlife Sanctuaries	Location (District)	Main Habitat
11.	Nambor WLS	Karbi Anglong	Gaur , Elephants, Hoolock Gibbon
12.	East Karbi Anlong WLS	Karbi Anglong	Gaur, Elephants, Tiger, Hoolock Gibbon
13.	Marat Longri WLS	Karbi Anglong	Tigers, Leopards, Gaur, Elephants, Hoolock Gibbon
14.	Burhachapori WLS	Sonitpur	Elephants, Aquatic Birds, Tiger, Bengal Florican
15.	Laokhowa WLS	Nagaon	Elephant, Tiger, Asiatic Wild Buffalo, Bengal Florican
16.	Pabitora WLS	Morigaon	Rhino, Leopards, Barking Deer, Lesser Adjutant, Greater Adjutant, White-bellied Heron, Greater Spotted Eagle
17.	Sonai-Rupai WLS	Sonitpur	White Winged wood duck, Elephant, Tiger, Gaur
18.	Barnadi WLS	Udalguri	Hispid Hare, Pygmy Hog, Elephants, Tiger
19.	Chakrasila WLS	Kokrajhar	Golden Langur, Gaur
20.	Dihing-Patkai WLS	Dibrugarh and Tinsukia	Hoolock Gibbon, Elephants, White Winqed wood duck, Tiqer
21.	Borail WLS	Cachar	Serow, Himalayan Black bear, Hoolock Gibbon
22.	Amchang WLS	Kamrup(Metro	Elephant, Gaur, Leopard
23.	Deepor Beel Wildlife Sanctuary	Kamrup (Metro)	Greater Adjutant Stork, Whistling Teal, Open Billed Stork, Shoveler, Pintail, Garganey, Pheasant tail jacanas
24	North Karbi Anglong Wildlife Sanctuaries (Proposed)	Karbi Anglong	Tiger, Lesser cats, Elephant, Gaur, Sambar, Bears, Barking deer, Rhesus macaque, Hoolock gibbon, Capped langur, Slow loris
25	Bordoibam Bilmukh Bird Sanctuaries (Proposed)	Dhemaji and Lakhimpur	Kingfishers, Large whistling Teal, Lesser Adjutant Stork, Spotted Dove, Pheasant tailed Jacana, Bronze winged Jacana, Indian River Tern, Black Headed Gull, White Wagtail, Black Headed Oriole, Purple Moorhen, Openbill Stork

16 ***Power Scenario.*** The peak demand of the State is 1430 MW. The State's own generation is about 260MW out of their installed capacity of 377 MW as hydel generation (ROR i. e. Run of the Rivers) is negligible due to insufficient rainfall. The allocation of power in the State is depicted in the table below:

Sl. No.	Particulars	Capacity MW	Allotment To Assam		Remarks
			%	MW	
1	Kathalguri (AGBPP)	291	56.5	164	Gas based
2	R C Nagar (AGTPP)	84	45.6	38	Gas based

3	Ranganadi (RHEP)	405	43.3	175	Run on River
4	Loktak (NHPC)	105	29.4	31	Reservoir
5	Khangdong (KHEP)	50	56.3	28	Reservoir
6	Kopili-I (KOP-I)	200	53.5	107	Reservoir
7	Kopili-II (KOP-II)	25	52.3	13	Reservoir
8	Doyang (DHEP)	75	43.8	33	Reservoir
A	**Total CSGS- NER**	**1235**		**589**	
B	**Total CSGS- ER**			**162**	
C TOTAL CSGS				**751**	
1	Lakwa TPS	157	100	157	Gas based
2	Namrup TPS	120	100	120	Gas based
3	Karbi Langpi HEP	100	100	100	Run on River
D	**APGCL TOTAL**	**377**		**377**	
E	**OTHERS**	**31**	**100**	**31**	EIPL, AOD, Champamati HEP etc.
F	**TOTAL AVAILABILITY**			**1159**	

Source: http://www.apdcl.gov.in/irj/go/km/docs/internet/ASSAM/webpage/PDF/prespower.pdf:

17 ***Power Utilities***. Assam Electricity Grid Corporation Limited (AEGCL) responsible for transmission of electricity to the distribution network of Assam could handle hardly 720 MW only in the year 2004. After 2004, on the assistance of Govt. of India and Govt. of Assam, different projects like ADB funding, NLCPR, NEC, TDF were implemented and grid capacity enhanced to handle load in the tune of 1603 MW presently. Since then, AEGCL has incorporated 4949.374 circuit kms of EHV lines and has a transformation capacity of about 4565.80 MVA from existing 54 numbers of EHV (400kV, 220kV, 132kV level) substations. AEGCL has also anticipated for additional transmission lines (around 900 Ckms) and transformation capacities (about 1300 MVA) by constructing new EHV substations (220 kV, 132kV level) and augmenting existing substations with assistance of Govt. of India and other funding resources including ADB.

18 The distribution of power is carried out by APDCL in the whole State of Assam by its three main regions or zones viz. Upper Assam, Central Assam and Lower Assam.

- APDCL- Upper Assam Region: It caters to the consumers of the districts of Golaghat, Jorhat, Sibsagar, Dibrugarh, Tinsukia, in Upper Assam. It has over 6.62 lakhs of consumers connected through 1503.5 Ckt km. of 33 kV lines and 9270.5 Ckt km. of 11 kV lines & 106 nos. of 33/11 KV substations of 896 MVA Capacity.

- APDCL- Central Assam Region: Area of operation of this zone is spread across the Districts of. Cachar, Karimganj, Hailakandi, Nagaon, Sonitpur, North Lakhimpur Dhemaji Morigaon, N.C.Hills & Karbi Anglong. It has around 10.65 lakhs consumers distributed through 2539 Ckm of 33 KV lines and 22284.00 Ckm. of 11 KV network and 98 nos. of 33/11 KV substations with a total capacity of 814.00 MVA .

- APDCL- Lower Assam Region: This zone caters to the energy needs of the consumers of the districts located in lower Assam, namely, Kamrup, Nalbari, Barpeta, Kokrajhar, Bongaigaon, Goalpara and Darrang. It has over 11.94 Lakh consumers of different categories at present connected through 2047 Ckt km 33 kV lines and 9950 Ckt. km of 11 kV network and 105 nos. of 33/11 kV substations with a total capacity of 978.95 MVA.

19 Efforts are underway not only to bridge the gap but also ensure that adequate power is made available to enable boosting of State economy. An abstract of subprojects for the tranche-1 under expansion/augmentation of power system network in the State of Assam is presented in **Table 2**.

Table 2: Summary of subprojects in Tranche- I under NERPSIP

Sl. No.	Name of the subproject	Quantity (Nos.)	Capacity Addition (Km/MVA)	Estimated Cost (in Millions) *
1.	220/132 kV Transmission lines	11	376 km.	10824.80
2.	220/132/33kV substations (New/Augmentation/Extension)	20	1644 MVA	
3.	33 kV Distribution lines (overhead/underground)	38	479.km.	3913.20
4.	33/11kV substations (New)	16	240 MVA	

***The estimated cost includes consultancy fees, contingencies and Interest During Construction (IDC)**

Stakeholder analysis

20 Stakeholder's analysis has been undertaken to identify the issues and the concerns of various stakeholders who are supposed to be either directly or indirectly impacted/benefited or assume a position wherein they can have a significant role to influence the project. The Stakeholder's analysis has been carried out to identify existing relationship and also to understand the roles, responsibilities and relations of these stakeholders in context of shaping the environment and social issues with respect to proposed project. Accordingly, key stakeholders at different levels starting from village/panchayat level up to national level have been mapped to know their issues & expectations with respect to proposed project. The process of consultation with stakeholders involves formal and

informal discussion. A wide range of issues were discussed with various stakeholders that might have environmental / social concern. Some of the key issues are listed below:

1. **Environment Issues**

- Impact on forest and biodiversity area e.g. national parks, sanctuary, biosphere reserves, etc.
- Impact due to waste (Used Oil or E-waste), oil spills, sanitation;
- Occupational health and safety during implementation , operation and maintenance phase;
- Soil erosion and slope un-stability;
- Leakage of SF_6, a the potent greenhouse gas; and
- Any other adverse environment issues.

2. **Social and Institutional Issues**

- Securing land for substation;
- Temporary damages to land, crops, trees or structures during construction;
- Health and Safety risk including HIV/AIDS;
- Community participation during project cycle i.e. planning, implementation and operation
- Tribal/vulnerable groups;
- Locals, Women and Inter agency participation/coordination; and
- Ethnic and cultural conflicts.

Impacts – Social

21 This section identifies the potential social impacts of the proposed projects in terms of the nature, magnitude, extent and location, timing and duration of the anticipated impacts. These impacts are both positive or negative relating to the project design stage, construction stage or the project operation and decommissioning stage.

i. **Positive Impacts**

- Increased economic activity;
- Improved and reliable power supply;
- Employment creation;
- Improved road infrastructure;
- Gender - Access to electricity would improve the quality of life and also reduce the time consumption of women for household activities which will entail availability of more time for other activities.
- Reduced consumption/ reliance of/ on fossil fuels like firewood, charcoal etc.;

- Capacity Building.

ii. Negative Impacts

- Loss of land;
- Restriction on land use;
- Temporary loss of access to Common Property Resources; and
- Health and Safety risk including HIV/AIDS.

Impacts - Environment

22 This section identifies the potential environmental impacts of the proposed projects. These impacts are both positive or negative relating to the project design stage, construction stage or the project operation and decommissioning stage.

i. Positive Impacts

- Availability of power lessen the demand of natural resources like firewood, charcoal etc. resulting in conservation/protection of forest/vegetation.

ii. Negative Impacts

- Clearance of tree within RoW;
- Impacts on forest, wildlife habitats and migratory birds;
- Impacts on drainage, soil erosion & water resources;
- Impacts on traffic and road infrastructure;
- Aesthetic appeal of area;
- Impacts from likely oil spillage;
- Effect of electromagnetic (EMF) fields;
- Leakage SF6; and
- Health & Safety

The potential E & S issues identified shall be managed within the applicable regulatory framework and international best practices.

Policy, Legal and Regulatory Framework

23 AEGCL/APDCL undertakes its Transmission/ Distribution system (33 kV and above) activities within the purview of Constitutional provisions, Policy, Legal, and Regulatory Framework

for environmental and social issues applicable to power transmission & distribution. In addition, the requirements of multilateral funding agencies are also considered in the management procedures for addressing environmental and social issues.

24 The Constitution of India provides for protection of the environment and its improvement as a fundamental duty and the Directive Principles of State Policy under Article 51 A (g) and Article 48 A respectively. The Apex Court has widened the scope of Article 21 (Right to Life) bringing environmental impacts under its ambit. Similarly, the constitutional provisions in regard to social safeguards are enshrined in the Preamble to the Constitution, such as justice, social, economic and political; liberty of thought, expression, belief, faith and worship; equality of status and of opportunity; fraternity assuring the dignity of the individual and the unity and integrity of the Nation. Fundamental Rights and Directive Principles guarantee the right to life and liberty. Health, safety and livelihood been interpreted as part of this larger framework. The provisions on social safeguards are contained in Articles 14, 15, 17, 23, 24, 25, 46, 330, 332, etc.

25 **Sixth Schedule:** In addition to basic fundamental rights, special provisions have been extended to the Tribal Areas of State under the 6th Schedule [Articles 244(2) and 244(A)]. The Sixth Schedule provides for administration of certain tribal areas as autonomous entities. There are nine such autonomous regions which have been defined in the State of Assam. The administration of autonomous councils vested in a District Council and of an autonomous region, in a Regional Council. These Councils are endowed with legislative, judicial, executive and financial powers. Most Council consists of up to 30 members including few nominated members. These constitutionally mandated Councils oversee the traditional bodies of the local tribes. The functions of the autonomous council are:

- Allotment, occupation use or setting apart of land other than reserved forest for agriculture;
- Management of forest (which is not a reserved forest);
- Regulation of jhum cultivation or any other form s of shifting agriculture;
- Village or town administration including public health & sanitation.
- Inheritance of property
- Social customs

The Sixth Schedule envisages establishment of Autonomous Councils (ACs) and gives them elaborate Legislative, Administrative and Judicial powers. The district councils are also empowered to constitute Village councils and Village courts. The Sixth Schedule empowers the Governor to determine the administrative areas of the councils. He is authorized to create new autonomous districts, change the area of existing districts, redefine the boundaries and alter the names of

autonomous districts. In case of Sixth Schedule areas the transfer of land from tribal to non-tribal is not allowed without the prior permission of the District Commissioner. The district council has been empowered to make laws pertaining to land and forest (other than reserve forest). The compensation for the damage to land, property and forest would be governed by the provisions of the rules formulated by the District Councils.

26 **Environment :** Mandatory environmental requirements for AEGCL/APDCL at state level include: sanction of GoA under section 68(1) of the Electricity Act, 2003; Forest clearance under the Forest (Conservation) Act, 1980; During the currency of operations, Regulations on Batteries (Management and handling) Rules, 2001 regarding disposal of used batteries, Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 regarding disposal of used transformer oil, Ozone Depleting Substances (Regulation and Control) Rules, 2000 putting restrictions on use of ozone depleting substances come into force and required voluntary enforcement and provisions under Biological Diversity Act, 2002, E-waste (Management and Handling) Rules, 2011 regarding maintaining records & handling of electronic wastes, the Scheduled Tribes & Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 and Assam Control of Tree Felling Rules, 2012.

27 The Forest (Conservation) Act, 1980 is the key legislation through which the environmental impacts of transmission projects are managed since the current regulation does not require an Environmental Impact Assessment for transmission lines. The legislation requires compensatory afforestation for any forest land diverted for non-forest use in twice the area diverted with afforestation undertaken by the respective state Forest Department. A national fund CAMPA has been created for this purpose. In case projects pass through or are located in designated protected areas, clearances from the Wildlife Board are also required. AEGCL/APDCL has decided to undertake assessment of environmental impacts even for cases where not statutorily mandated in order to confirm compliance with its own policy highlighted in paragraph 6 above.

28 **Social:** Mandatory Social requirements for AEGCL/APDCL at State level include provisions of section 67 & 68 (5 & 6) of the Electricity Act, 2003 for the calculation of compensation for any temporary damages. Involuntary land acquisitions, if any done, for securing private lands for construction of sub-stations, fall under the realm of The Right to Fair Compensation and Transparency in Land Acquisition Rehabilitation and Resettlement Act, 2013 (RFCTLARRA). The provisions of Indian Treasure Trove Act, 1878 as amended in 1949 covers chance finds. The Right to Information Act, 2005 (RTI) ensures citizens to access information under the control of public authorities.

29 **The World Bank** (WB) Operational Policies OP 4.01, 4.04, 4.11 & 4.36/ADB's Safeguard Policy Statement 2009 (SPS 2009) for Environmental and Social Considerations outline funding agencies policy and procedures for Environmental Assessment (EA) of different developmental projects. Depending upon the issues and impacts, the projects are categorized as A, B, and C warranting larger and specialized focus for A and the least for C. This project, as per the WB guidelines, is categorized as A. Likewise, OP 4.10 and 4.12 outlines policy guidelines for managing issues related to tribal people and involuntary resettlement.

30 **RFCTLARRA, 2013** has replaced the old Land Acquisition Act, 1894 and has come into force from 1st January 2014. The new act i.e. RFCTLARRA, 2013 authorizes State Govt. (i.e. GoA) or its authorized Government agency to complete the whole process of acquisition of private land including Social Impact Assessment (SIA), Action Plan for R&R (i.e. Rehabilitation and Resettlement) & its implementation and the AEGCL/APDCL's responsibility is limited to identification and selection of suitable land based on technical requirement and ensuring budget allocation. Conducting Social Impact Assessments (SIA) has been made mandatory under this new act and results of these assessments are shared with all the stakeholders and public hearing held which makes the process transparent and informed. Subsequently, an entitlement package that includes both compensation (for land/structure and assets to land and structure) and R&R as necessary is prepared. Further to this, individual awards are passed and all documents are disclosed in the public domain through local administration and internet. The flow chart of the land acquisition process with schedule prescribed for various activities is illustrated in **Figure 1** below. The entitlements with regard to compensation and assistances towards land acquisition or loss of any assets or livelihood for all categories of people being affected due to land acquisition is briefly outlined in **Table 3**:

Table 3: Compensation and R&R Entitlement Framework for Land Acquisition

A Comprehensive Compensation Package	
Eligibility for Entitlement	**Provisions**
The affected families • **Land Owners: includes any person-** i) whose name is recorded as (he owner of the land or building or part thereof, in the records of the authority concerned; or ii) any person who is granted forest rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 or under any other law for the time being in force; or iii) who is entitled to be granted Patta rights on the land under any law of the State including assigned lands: or iv) any person who has been declared as such by an order of the court or Authority;	**Determination of Compensation :** **1. Market value** of the land • as specified in the Indian Stamp Act, 1899 or • the average of the sale price for similar type of land situated in the village or vicinity, or • consented amount of compensation as agreed in case of acquisition of lands for private companies or for public private partnership project. **whichever is higher** Market value x **Multiplier* between 1 to 2 in rural areas only (No multiplier in urban areas).** **2.** Value of the assets attached to land: Building/Trees/Wells/Crop etc. as valued by relevant govt. authority; **Land compensation = 1+2** **3. Solatium:** 100% of total compensation **Total Compensation** : **1+2+3**

(*) Precise scale shall be determined by the State Govt.
The indicative values of multiplier factor based on distance from urban areas as provided in the act.

Radial Distance from Urban area (Km)	Multiplier Factor
0-10	1.00
10-20	1.20
20-30	1.40
30-40	1.80
40-50	2.00

B. R&R Package

Elements of Rehabilitation and Resettlement Entitlements for all the affected families (both land owners and the families whose livelihood is primarily dependent on land acquired) in addition to compensation provided above

Sl. No.	Elements of R& R Entitlements	Provision
1.	Subsistence grant/allowance for displaced families	Rs. 3000 per month per family for 12 months

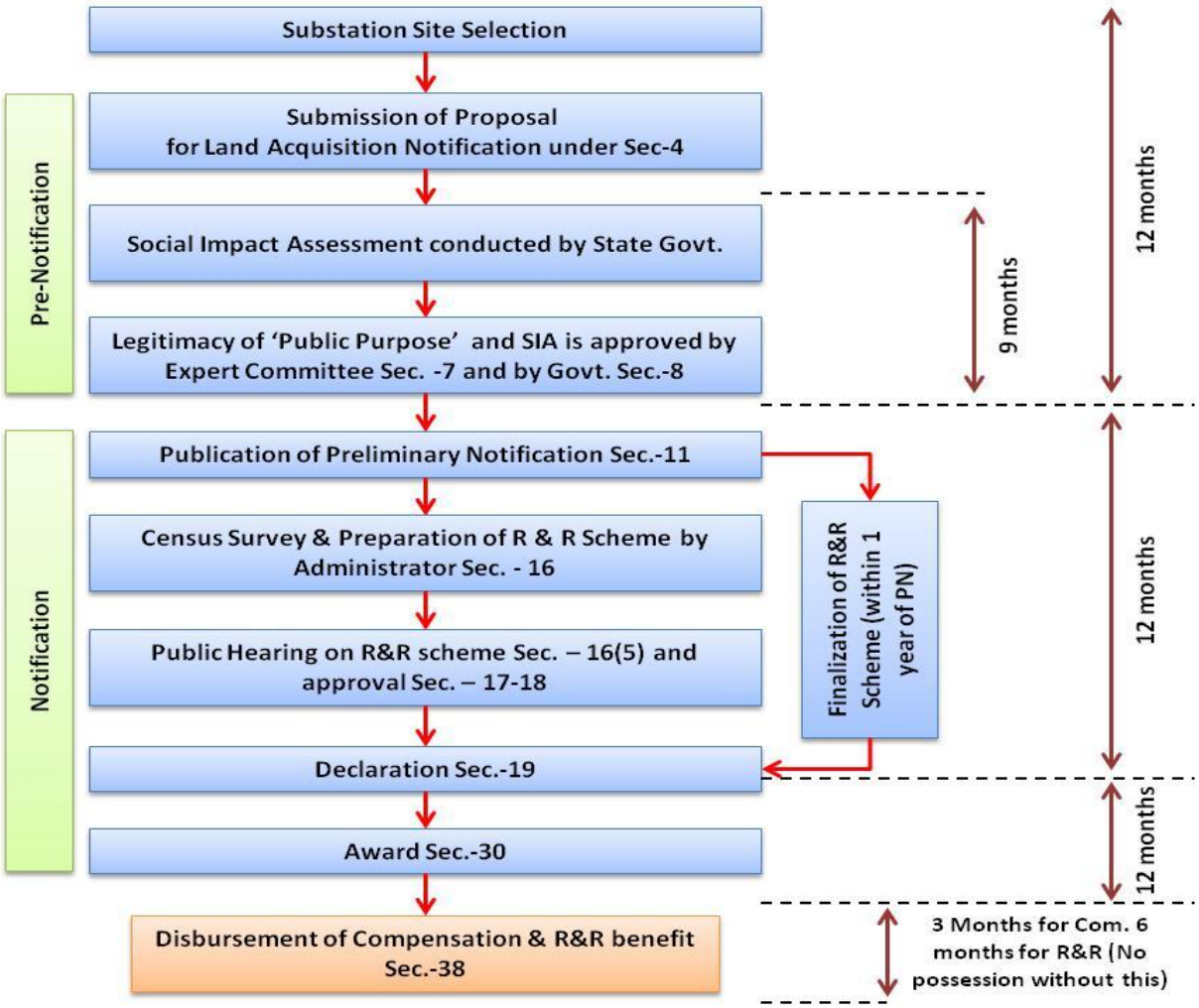
2.	The affected families shall be entitled to:	a. Where jobs are created through the project, mandatory employment for one member per affected family; **or** b. Rupees 5 lakhs per family; **or** c. Rupees 2000 per month per family as annuity for 20 years, with appropriate index for inflation; **The option of availing (a) or (b) or (c) shall be that of the affected family**
3.	Housing units for displacement: i) If a house is lost in rural areas: ii)If a house is lost in urban areas	i. A constructed house shall be provided as per the Indira Awas Yojana specifications. ii. A constructed house shall be provided, which will be not less than 50 sq. mts. in plinth area. **In either case the equivalent cost of the house may also be provided in lieu of the house as per the preference of the project affected family.** The stamp duty and other fees payable for registration of the house allotted to the affected families shall be borne by the Requiring Body.
4.	Transportation cost for displaced families	Rs 50,000/- per affected family
5.	Resettlement Allowance (for displaced families)	Onetime Rs 50,000/- per affected family
6.	Cattle shed/ petty shop cost	Onetime financial assistance as appropriate for construction as decided by St. Govt. subject to minimum of Rs.25,000/-
7.	Artisan/small traders/others (in case of displacement)	Onetime financial assistance as appropriate as decided by State Govt. subject to minimum of Rs.25,000/-

Special Provisions for SCs/STs

In addition to the R&R package, *SC/ST families will be entitled to the following additional benefits:*

1. One time financial assistance of Rs. 50,000 per family;
2. Families settled outside the district shall be entitled to an additional 25% R&R benefits;
3. Payment of one third of the compensation amount at very outset;
4. Preference in relocation and resettlement in area in same compact block;
5. Free land for community and social gatherings;
6. In case of displacement, a *Development Plan is to be prepared*
7. *Continuation of reservation and other Schedule V and Schedule VI area benefits from displaced area to resettlement area.*

Figure 1: Activity Chart RFCTLARRA, 2013



Project Cycle – Integrating Environment and Social Issues/ Concerns and Mitigatory Measures

31 Stakeholder analysis and impact assessments had enabled identifying issues. The same are now placed in the project cycle so as to draw management measures for addressing the same. Key milestones in AEGCL/APDCL's transmission/Distribution (33 kV and above) projects are;

i) Project Conceptualization
ii) Project Planning
iii) Approval
iv) Detailed Design and Tendering
v) Project Implementation
vi) Operation & Maintenance
vii) Review and Monitoring and Evaluation.

Environmental and Social Concerns

32 **Environmental Concerns.**

- Clearing/lopping of Trees within Right of Way (RoW);
- Clearing of Ground Vegetation for Movement of Machinery;
- Disposal of Used Transformer Oil;
- Disposal of Used Battery;
- Disposal of E-waste; and
- Leakage/use of SF_6 gas.

33 **Social Concerns**

- Loss to Standing Crop;
- Change in Land Prices;
- Temporary Loss of Access to Common Property Resources;
- Restriction on Land Use;
- Loss of livelihood due to acquisition of private agricultural land; and
- Loss of homestead, if any.

34 Management measures to address the issues and concerns in respect of social and environment are presented in **Tables 4 and 5** respectively.

Table 4: Social Management Measures

Sl	Potential Issues	Management Measures
1	Loss of land	For Tranche-1, this is an issue as land for only 15 transmission substations out of 36 transmission & distribution substations is available with the Utility (for details refer **Table-5.4 in the main report)**. For remaining 5 transmission and 16 distribution substations, lands will have to be secured a fresh by AEGCL/APDCL through adopting any of the following three methods; i. Purchase of land on willing buyer & willing seller basis on negotiated rate; ii. Voluntary Donation; and iii. Involuntary Acquisition. In case of procurement of land through private purchase, AEGCL/APDCL shall ensure that compensation/rate for land is not less than the rate provided in the new land acquisition act, 2013. In order to comply with this provision AEGCL/APDCL may organize an awareness camp where provisions of new act in respect of basis/modalities of compensation calculation shall be explained to

Sl	Potential Issues	Management Measures
		land owners with specific State provision if any. In the case of voluntary donation of land, the following shall be ensured: • The land user(s) will not be subjected to undue pressure for parting of land; • All out efforts shall be made to avoid any physical relocation/displacement due to loss of land; • The AEGCL/APDCL shall facilitate in extending 'gratitude' to the land donor(s) in lieu of the 'contribution' if so agreed. The same shall be documented in the shape of MoU between donor and utility and subsequently title of land transferred in the name of AEGCL/APDCL. • All land donations and direct purchases will be subject to a review/ approval by a broad based committee comprising representatives of different sections including those from the IA and GoA. In case of land acquired through involuntary acquisition, provisions of RFCTLARRA, 2013 shall be followed. (for details refer **Part – A** of Social Management Framework placed as **Annexure – 3**)
2	Change in land use and population relocation for substations	Due to inherent flexibility in locating substation and very small size of land, AEGCL/APDCL avoids habituated area completely hence no relocation of population on account of setting up of substation is envisaged.
		Although securing land for construction of substations proposed under tranche-1 is an issue, AEGCL/APDCL shall make all out efforts to secure such land wherein possibility of physical relocation/displacement is not envisaged.
3	Change in land use and population relocation due to towers/poles	As per existing law, land for tower/pole and right of way is not acquired and agricultural activities are allowed to continue after construction activity and AEGCL/APDCL pays compensation for all damages including cost of land below tower to its owner without acquiring it. Hence change in land use and resultant relocation of people is not envisaged in T&D projects.
4	Right of Way	Land for tower and right of way is not acquired as agricultural activities can continue. However, the project shall pay full compensation to all the affected persons/ community for any damages sustained during the execution of work. Accordingly, AEGCL/APDCL has formulated appropriate management plan in the form of Compensation Plan for Temporary Damage (CPTD) to minimize the damages and provide compensation plan for temporary damages in consultation with the state government and affected persons and/ or community (for details refer **Part – B** of Social

Sl	Potential Issues	Management Measures
		Management Framework placed as **Annexure – 3**)
5	Impact on Tribals	The population of Assam as per census 2011 was 3,12,05,576. The Scheduled Tribes (STs) population is 38, 84,371 which constitutes 12.4 per cent of the total population of the State. In compliance with Bank's Operational Policy 4.10 (Indigenous Peoples) and special provision of RFCTLARRA, 2013, a Tribal People Development Framework has been prepared (refer **Part - C** of Social Management Framework placed as **Annexure – 3**)
6	Gender/ women participation	Women involvement will be planned through formal and informal group consultations so that their participation is ensured during preparation and implementation of the project.
7	Induced secondary development during construction	AEGCL/APDCL operations are short-lived and do not induce secondary developments during construction.
8	Health and safety of worker/employee/ community	During construction the health and safety aspects of workers and nearby community shall be implemented through contractors with due diligence and compliance of required regulation/guideline through a safety plan AEGCL/APDCL uses best available technology for lines and do not cause any hazards to health and safety.
9	"Chance finds" or discovery of any archaeological artifacts, treasure etc. during excavation	Possibilities of such phenomenon in T&D project are quite remote due to limited and shallow excavations. However, in case of such findings, AEGCL/APDCL will follow the laid down procedure in the Section-4 of Indian Treasure Trove Act, 1878 as amended in1949.
10	Inter Agency Coordination	Exclusive bodies will be set up at state/ district levels for over-seeing, reviewing and guiding the project

Table 5: Environment Management Measures

Sl. No	Potential Issues	Management Measures
1	Minimising adverse impact on forests	AEGCL/APDCL endeavors to circumvent / lessen environmentally sensitive areas such as forest and other ecologically fragile / sensitive areas through optimization of route including use of modern tools like GIS/GPS and other modern techniques.
2.	Clearing/Lopping of trees	Use of extended/special tower to reduce RoW and impact on trees
3.	▪ Vegetation damage ▪ Habited Loss	To minimise damage to vegetation and habitat fragmentation, AEGCL/APDCL utilises hand clearing and transportation of tower material by head loads into forestland and other land as well, wherever possible.

Sl. No	Potential Issues	Management Measures
4.	▪ Habitat fragmentation ▪ Edge effect on flora & fauna	AEGCL/APDCL maintains only a 3m wide strip for O&M and allows for regeneration of vegetation in the other one or two strips and beneath the transmission lines to avoid habitat fragmentation and edge effect. In hilly area this can possibly be totally avoided.
5.	Chances of accident involving elephant in the specified corridor due to placing of poles	APDCL shall try to avoid such area to the extent possible. However, in case avoidance is not possible, suitable design modification in the pole like provision of spike guards, barbed wire fencing or any other arrangement shall be incorporated in such location.
6.	Erosion of soil and drainage along the cut and fill slopes in hilly areas	AEGCL/APDCL would ensure that all cut and fill slopes in TL/DL are adequately protected using standard engineering practices including bio-engineering techniques wherever feasible. All drainage channels along or inside substations shall be trained and connected to main or existing drainage to avoid any erosion due to uncontrolled flow of water.
7.	Chemical contamination from chemical maintenance techniques	AEGCL/APDCL does not use chemicals for forest clearance/RoW maintenance
8.	Poly- Chloro-Biphenyls (PCBs) in electrical equipment	AEGCL/APDCL use mineral oil in electrical equipments. Specification of oil containing PCB less 2 mg/kg (non –detectable level) stated in the tender document
9.	Induced secondary development during construction	AEGCL/APDCL operations are short-lived and do not induce secondary developments during construction
10.	Avian hazards from transmission/distribution lines and towers	Avian hazards mostly encountered in bird sanctuaries area and fly path of migratory bird predominantly related to nesting site. Although the incidence of avian hazards is rare due to the distance between the conductors. AEGCL/APDCL shall take all possible precaution to avoid these areas by careful route selection. However, bird guards are provided to prevent any avian hazards.
11.	Air craft hazards from transmission lines and towers	AEGCL/APDCL as per the requirement of IS 5613 of July'94 provides aviation markers, night-lights for easy identification of towers in notified/selected areas.
12.	Health and safety of worker/employee/community	During construction the health and safety aspects of workers and nearby community shall be implemented through contractors with due diligence and compliance of required regulation/guideline through a safety plan. AEGCL/APDCL uses best available technology for lines and do not cause any hazards to health and safety.
13.	Fire Hazards	Fire hazards are mostly occurred in forest area. However, AEGCL/APDCL uses state of art automatic tripping mechanism for its transmission/distribution and substation that disconnect the line in fraction of seconds to prevent fire hazards. The Forest Department also take precaution like maintaining fire line in the cleared forest

Sl. No	Potential Issues	Management Measures
		area to avoid spread of fire
		Firefighting instruments including fire extinguishers are kept in appropriate place for immediate action in case of any fire hazard.
14.	Pollution	Although pollution is not an issue with transmission/ distribution projects still AEGCL/APDCL will make efforts to further minimise it. Sites are cleared of all the leftover materials and debris to avoid any chance of pollution.
15.	GHG (SF_6 Gas)	Although leakage of SF6 is not a major issue, AEGCL/APDCL will make efforts to reduce the leakage through regular monitoring installing gas pressure monitor/ leak detectors in Circuit Breakers.

35 Other potential environmental and social issues/ concerns and their management measures are described in an EMP, a sample of which is in the Annex-A to the summary. It will be implemented during the execution of the project. Since many provisions of the EMP are to be implemented by the Contractor, to ensure its proper implementation and monitoring, the EMP forms a part of the contract document.

AEGCL/APDCL's Environment and Social Management Procedures (ESPP)

36 AEGCL/APDCL's has developed comprehensive Environment and Social (E&S) management procedures and incorporated them to its project cycle, to ensure that its operation eliminates or minimizes adverse environmental and social impacts. The E&S management procedures identify the relevant issues at early stage of project cycle and follow the basic philosophy of sustainable development along with Principles of Avoidance, Minimization and Mitigation. These three guiding principles are employed in a project right from very beginning i.e. at the time of Project conceptualization & Planning Stage by studying different alternatives line routes for selection of most optimum route to avoid involvement of forests/ biodiversity/Eco-sensitive zone including animal/bird path, protected areas, human habitations etc. to the extent possible. If necessary/required, tall towers are also provided to avoid/minimize the impact. In case it becomes unavoidable due to terrain and line route passes through protected areas additional studies would be conducted by independent agencies to ascertain the impacts and to plan management measures to minimize/mitigate such impacts. A Terms of Reference (ToR), for such assessment, which can be customized for a particular situation/ location/ concern has been prepared and is placed at **Annexure - 19** of the main report**.**

37 Likewise for substation land, AEGCL/APDCL identifies number of potential substation sites based on data collected as per the checklist **(Annexure -16** of the main report) and a comprehensive

analysis for each alternative site is carried out. The analysis considers various site specific parameters that includes infrastructure facilities such as access roads, railheads, type of land viz. Govt., revenue, private land, agricultural land; social impacts such as number of families getting affected; and cost of compensation and rehabilitation giving due weightage to each. Environmental & Social Management process dovetailed in project cycle for appropriate and timely action is outlined in **Figure 2**.

Environmental and Social Risk assessment

38 Environmental and Social Risk Assessment is a vital part of AEGCL/APDCL's environmental and social management strategies. The risk assessment process identifies existing risks, and forecast future potential risks in its power transmission/distribution projects. It is a scientific process that includes cost benefit analysis. The environment and social management procedures developed by AEGCL/APDCL evaluate these risks, both qualitatively and quantitatively, and prioritise them. Based on prioritisation, environment and social management options are selected. AEGCL/APDCL's Risk Management process involves risk preparedness, risk mitigation and the sharing of liabilities (via internal arrangements and insurance).Responsibilities in the event of occurrence of a risk have been illustrated in **Table 6**.

Table 6: AEGCL/APDCL's Risk Responsibility Framework

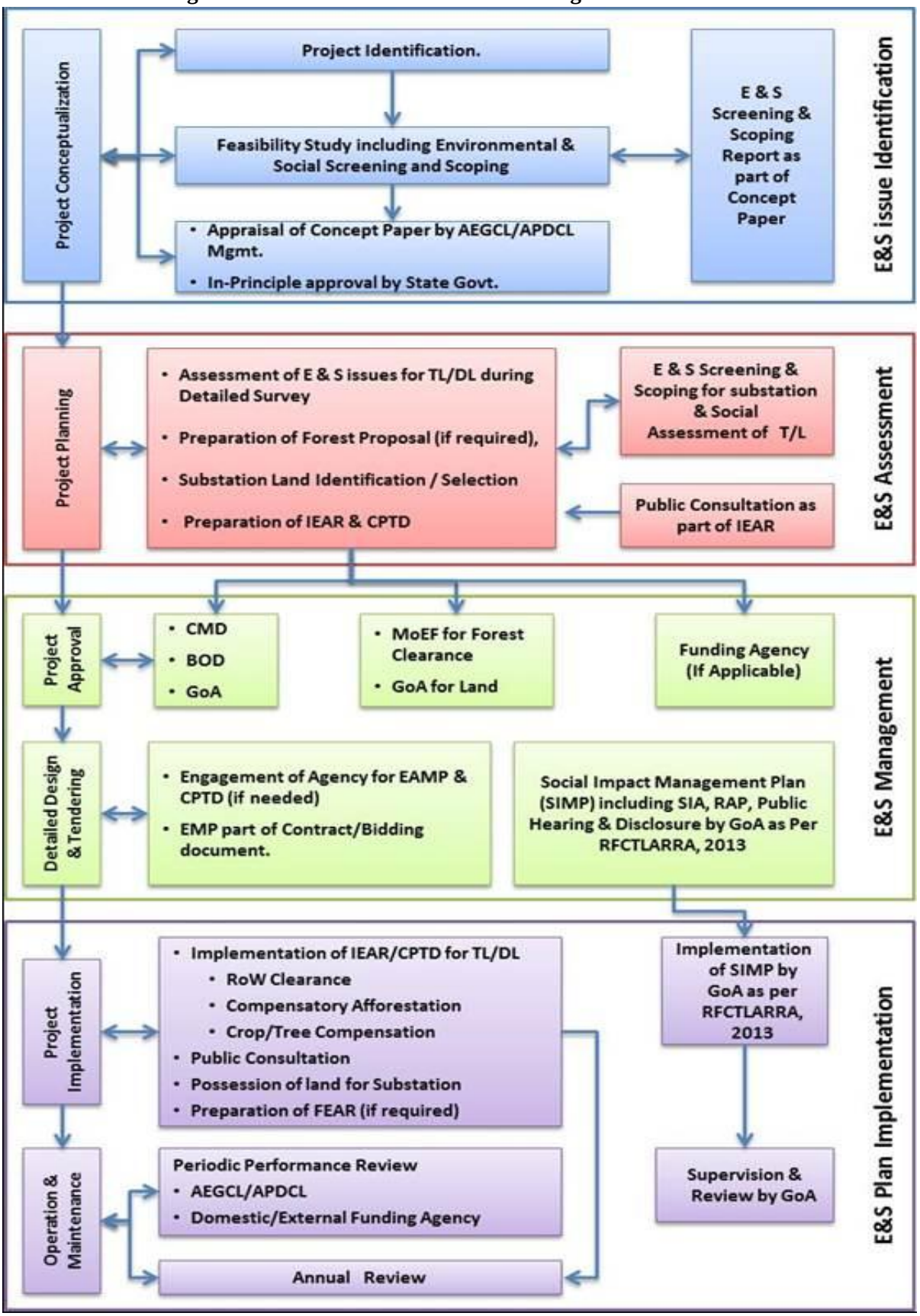
Risk	Key Role-players			
	GOA	*AEGCL/APDCL*	*Contractor*	*Insurers*
Non Compliance ➢ Regulatory[2] ➢ Contractual[3]	 ✓ -	 ✓ -	 ✓ ✓	 - -
Major hazards, e.g. tower fall during construction	-	✓	✓	✓
During O&M	-	✓	-	-
Impacts on health[4] etc.	-	✓	-	-
Force Majeure ➢ Insurable ➢ Non-Insurable	 - ✓	 - ✓	 - -	 ✓ -
Inclusion/ Exclusion of concerned Communities	✓	✓		
Public interest mitigation	✓	✓	-	-

[2] *Regulatory like working in forest/protected areas without statutory clearances.*

[3] *Contractual like noncompliance of condition of clearance like fuel supply to labourer to avoid tree felling, no-work during night times, etc.*

[4] *Impact of health like any case of prolonged exposure to Electro-Magnetic Field (EMF).*

Figure – 2: Environment and Social Management Procedures



Implementation Arrangements

39 To ensure quality and strengthen organizational systems to enable effective implementation of the ESPP, AEGCL/APDCL shall have to set out procedures and work culture which will promote total involvement of all its personnel. To attain assigned goal following shall be ensured:

a) A synchronized system of functioning adopted by Corporate Planning and Corporate Monitoring group, which monitors all activities in the organization;

b) An emphasis on intradepartmental approach to all projects, delineation of departmental responsibilities and the delegation and decentralization of authority resulting in a fast response and quick adjustment to change;

c) A commitment to provide at all times the best possible time bound quality service in all areas of its operations.

40 AEGCL/APDCL's commitment to the ESPP shall have to be developed with these principles. To ensure effective implementation of its ESPP, AEGCL/APDCL's will focus on;

- Strengthening the implementation of the ESPP by deployment of appropriately trained personnel at key levels;
- Reinforcing in-house capabilities by working with specialized external agencies;
- Placing dedicated manpower with specialization in the respective field to deal with and manage the environment and social issues;
- Reviewing progress of the ESPP internally or through external agencies.

41 Corporate office will have overall responsibility for construction, operation, and maintenance of transmission/distribution systems apart from providing necessary support services.

42 For the NERPSIP, the implementing agency (IA) is POWERGRID with its mandate for design and implementation supervision for the project. In consultations with the states, it has put up a tiered structure as follows:

- **Central Project Implementation Unit (CPIU)** - A body responsible for coordinating the preparation and implementation of the project and shall be housed within the IA's offices at Guwahati. The "Project-In-Charge" of IA & Head of each of the SPCU shall be a member of CPIU.

- **State Project Coordination Unit (SPCU)** – A body formed by the Utility and responsible for coordinating with IA in preparing and implementing the project at the State level. It consist of experts across different areas from the Utility and shall be headed by an officer of the rank not below Chief Engineer, from AEGCL/APDCL.
- **Project Implementation Unit (PIU)** – A body formed by the IA, including members of AEGCL/APDCL on deputation, and responsible for implementing the Project across the State, with its personnel being distributed over work site & working in close association with the SPCU/ CPIU. PIU report to State level "Project Manager" nominated by the Project-in-Charge of IA. The IA will have a Core team stationed at the CPIU on permanent basis and other IA officers (with required skills) will visit as and when required by this core team.

Grievance Redressal Mechanism (GRM)

43 Grievance Redress Mechanism (GRM) is an integral and important mechanism for addressing/resolving the concern and grievances in a transparent and swift manner. Many minor concerns of peoples are addressed during public consultation process initiated at the beginning of the project and broadly outlined in **Annexure-23**. For handling grievance, AEGCL/APDCL has already a framework in place. To ensure its implementation, Grievance Redress Committee (GRC) will be established at two places, one at the project/scheme level and another at Corporate/HQ level. The GRCs shall include members from AEGCL/APDCL, Local Administration, Village Panchayat Members, Affected Persons representative and reputed persons from the society and representative from the autonomous districts council in case of tribal districts selected/decided on nomination basis under the chairmanship of project head. The composition of GRC shall be disclosed in Panchayat office and concerned district headquarter for wider coverage.

44 The complainant will also be allowed to submit its complaint to local project official who will pass it to GRC immediately but not more than 5 days of receiving such complaint. The first meeting of GRC will be organized within 15 days of its constitution/disclosure to formulate procedure and frequency of meeting. However, GRC meeting shall be convened within 15 days of receiving a grievance for its solution. GRC endeavor will be to pronounce its decision/ may also refer it to corporate GRC for solution within 30-45 days of receiving grievances. In case complainant/appellant is not satisfied with the decision of GRC they can approach AEGCL/APDCL Corporate level Committee /District Collector or Court of law for solution.

45 The corporate level GRC shall function under the chairmanship of Director (PMU) who will nominate other members of GRC including one representative from corporate ESMC who is conversant with the environment & social issues. The meeting of Corporate GRC shall be convened

within 7-10 days of receiving the reference from project GRC or complainant directly and pronounce its decision within next 15 days.

46 These GRCs shall act as supplement and in no way substitute the legal systems, especially embedded within RFCTLARR Act 2013, The Electricity Act, 2003, and Right to Information Act.

Monitoring & Evaluation

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

48 Since regular and effective monitoring of implementation of EAMP/CPTD for Transmission/Distribution Line and SIMP for substations are crucial for desired result, AEGCL/APDCL shall designate one Manager each for Environment and Social related aspects who will be made responsible for all the activities related to implementation/monitoring of the EAMP and CPTD. Participation of PAPs in the monitoring of EAMP/CPTD/SIMP is also ensured through regular consultation and their active participation. Major monitoring indicator identified for regular monitoring of activities will be carried out by different department at field and will be reviewed by the Nodal Officer (ESMC) on monthly basis. CMD will review ongoing activities on quarterly including environment and social issues and corrective measures if required are implemented at site.

Annex-A: Sample Environmental Management Plan

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
Pre-construction							
1	Location of overhead line towers/ poles/ underground distribution lines and alignment & design	Exposure to safety related risks	Setback of dwellings to overhead line route designed in accordance with permitted level of power frequency and the regulation of supervision at sites.	Tower location and overhead/ underground alignment selection with respect to nearest dwellings	Setback distances to nearest houses – once	Implementing Agency (IA)	Part of overhead lines tower/poles/ laying of underground cable sitting survey and detailed alignment survey and design
2	Equipment specifications and design parameters	Release of chemicals and gases in receptors (air, water, land)	PCBs not used in substation transformers or other project facilities or equipment.	Transformer design	Exclusion of PCBs in transformers stated in tender specification – once	IA	Part of tender specifications for the equipment
			Processes, equipment and systems not to use chlorofluorocarbons (CFCs), including halon, and their use, if any, in existing processes and systems should be phased out and to be disposed of in a manner consistent with the requirements of the Government	Process, equipment and system design	Exclusion of CFCs stated in tender specification – once	IA	Part of tender specifications for the equipment
					Phase out schedule to be prepared in case still in use – once		Part of equipment and process design
3	Transmission/ Distribution line design	Exposure to electromagnetic interference	Line design to comply with the limits of electromagnetic interference from overhead power lines	Electromagnetic field strength for proposed line design	Line design compliance with relevant standards – once	IA	Part of design parameters

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
4	Substation location and design	Exposure to noise	Design of plant enclosures to comply with noise regulations.	Expected noise emissions based on substation design	Compliance with regulations - once	IA	Part of detailed siting survey and design
		Social inequities	Careful selection of site to avoid encroachment of socially, culturally and archaeological sensitive areas (i.e. sacred groves, graveyard, religious worship place, monuments etc.)	Selection of substation location (distance to sensitive area).	Consultation with local authorities/ autonomous councils -once		Part of detailed siting survey and design
5	Location of overhead line towers/poles/ laying of underground distribution line & alignment and design	Impact on water bodies	Avoidance of such water bodies to the extent possible. Avoidance of placement of tower inside water bodies to the extent of possible	Tower/pole location and overhead/ underground line alignment selection (distance to water bodies)	Consultation with local authorities– once	IA	Part of tower/pole sitting survey and detailed underground /overhead line alignment survey and design
		Social inequities	Careful route selection to avoid existing settlements and sensitive locations	Tower/pole location and overhead/ underground line alignment selection (distance to nearest dwellings or social institutions)	Consultation with local authorities/ autonomous councils and land owners – once	IA	Part of detailed tower/pole sitting and overhead/underground alignment survey and design
			Minimise impact on agricultural land	Tower location and overhead/ underground line alignment selection (distance to agricultural land)	Consultation with local authorities/ autonomous councils and land owners – once		

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
			Careful selection of site and route alignment to avoid encroachment of socially, culturally and archaeological sensitive areas (i. g. sacred groves, graveyard, religious worship place, monuments etc.)	Tower/pole location and overhead/ underground line alignment selection (distance to sensitive area)	Consultation with local authorities/ autonomous councils -once		
6	Securing lands for substations.	Loss of land/ income change in social status etc.	In the case of Involuntary Acquisitions, Compensation and R&R measures are extended as per provision of RFCTLARRA, 2013	Compensation and monetary R&R amounts/ facilities extended before possession of land.	As per provisions laid out in the act	State Govt.	Prior to award/start of substation construction.
7	Line through protected area/ precious ecological area	Loss of precious ecological values/ damage to precious species	Avoid siting of lines through such areas by careful site and alignment selection (National Parks, Wildlife Sanctuary, Biosphere Reserves/ Biodiversity Hotspots)	Tower/pole location and overhead/ underground line alignment selection (distance to nearest designated ecological protected/ sensitive areas)	Consultation with local forest authorities - once	IA	Part of detailed siting and alignment survey /design
			Minimize the need by using RoW wherever possible	Tower/pole location and overhead/ underground line alignment selection	Consultation with local authorities and design engineers - once	IA	Part of detailed sitting and alignment survey /design
8	Line through identified Elephant corridor / Migratory bird	Damage to the Wildlife/ Birds and also to line	Study of earmarked elephant corridors to avoid such corridors, Adequate ground clearance, Fault clearing by Circuit Breaker, Barbed wire wrapping on towers, reduced spans etc., if applicable	Tower/pole location and overhead/ underground line alignment selection. Minimum/maximum ground clearance	Consultation with local forest authorities – once. Monitoring – quarterly basis	IA	Part of detailed sitting and alignment survey /design and Operation

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
			Avoidance of established/ identified migration path (Birds & Bats). Provision of flight diverter/ reflectors, bird guard, elevated perches, insulating jumper loops, obstructive perch deterrents, raptor hoods etc[5]., if applicable	Tower/pole location and overhead/ underground line alignment selection	Consultation with local forest authorities - once	IA	Part of detailed sitting and alignment survey /design and Operation
9	Line through forestland	Deforestation and loss of biodiversity edge effect	Avoid locating lines in forest land by careful site and alignment selection	Tower/pole location and overhead/ underground line alignment selection (distance to nearest protected or reserved forest)	Consultation with local authorities – once	IA	Part of detailed sitting and alignment survey/design
			Minimise the need by using existing towers, tall towers and RoW, wherever possible		Consultation with local authorities and design engineers – once		
			Measures to avoid invasion of alien species	Intrusion of invasive species	Consultation with local forest authorities - once		
			Obtain statutory clearances from the Government	Statutory approvals from Government	Compliance with regulations – once for each subproject		
			Consultation with autonomous councils wherever required	Permission/ NOC from autonomous councils	Consultation with autonomous councils – once during tower placement		

[5] As per International/National best practices and in consultation with concerned forest/wildlife Authority.

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
10	Lines through farmland	Loss of agricultural production/ change in cropping pattern	Use existing tower or footings wherever possible.	Tower/pole location and overhead/ underground line alignment selection.	Consultation with local authorities and design engineers – once	IA	Part of detailed alignment survey and design
			Avoid sitting new towers on farmland wherever feasible	Tower/pole location and overhead/ underground line alignment selection	Consultation with local authorities and design engineers – once		Part of detailed sitting and alignment survey /design
11	Noise related	Nuisance to neighbouring properties	Substations sited and designed to ensure noise will not be a nuisance	Noise levels	Noise levels to be specified in tender documents – once	IA	Part of detailed equipment design
12	Interference with drainage patterns/ irrigation channels	Flooding hazards/ loss of agricultural production	Appropriate sitting of towers to avoid channel interference	Tower/pole location and overhead/ underground line alignment selection (distance to nearest flood zone)	Consultation with local authorities and design engineers – once	IA	Part of detailed alignment survey and design
13	Escape of polluting materials	Environmental pollution	Transformers designed with oil spill containment systems, and purpose-built oil, lubricant and fuel storage system, complete with spill clean up equipment.	Equipment specifications with respect to potential pollutants	Tender document to mention specifications – once	IA	Part of detailed equipment design /drawings
			Substations to include drainage and sewage disposal systems to avoid offsite land and water pollution.	Substation sewage design	Tender document to mention detailed specifications – once	IA	Part of detailed substation layout and design /drawings

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
14	Equipments submerged under flood	Contamination of receptors	Substations constructed above the high flood level(HFL) by raising the foundation pad	Substation design to account for HFL (elevation with respect to HFL elevation)	Base height as per flood design- once	IA	Part of detailed substation layout and design /drawings
15	Explosions /Fire	Hazards to life	Design of substations to include modern fire fighting equipment Provision of fire fighting equipment to be located close to transformers	Substation design compliance with fire prevention and control codes	Tender document to mention detailed specifications – once	IA	Part of detailed substation layout and design /drawings
Construction							
16	Equipment layout and installation	Noise and vibrations	Construction techniques and machinery selection seeking to minimize ground disturbance.	Construction techniques and machinery	Construction techniques and machinery creating minimal ground disturbance- once at the start of each construction phase	IA (Contractor through contract provisions)	Construction period
17	Physical construction	Disturbed farming activity	Construction activities on cropping land timed to avoid disturbance of field crops (within one month of harvest wherever possible).	Timing of start of construction	Crop disturbance –Post harvest as soon as possible but before next crop – once per site	IA (Contractor through contract provisions)	Construction period
18	Mechanized construction	Noise, vibration and operator safety, efficient operation	Construction equipment to be well maintained.	Construction equipment – estimated noise emissions	Complaints received by local authorities – every 2 weeks	IA (Contractor through contract provisions)	Construction period

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
		Noise, vibration, equipment wear and tear	Turning off plant not in use.	Construction equipment – estimated noise emissions and operating schedules	Complaints received by local authorities – every 2 weeks	IA (Contractor through contract provisions)	Construction period
19	Construction of roads for accessibility	Increase in airborne dust particles	Existing roads and tracks used for construction and maintenance access to the line wherever possible.	Access roads, routes (length and width of new access roads to be constructed)	Use of established roads wherever possible – every 2 weeks	IA (Contractor through contract provisions)	Construction period
		Increased land requirement for temporary accessibility	New access ways restricted to a single carriageway width within the RoW.	Access width (meters)	Access restricted to single carriage –way width within RoW – every 2 weeks	IA (Contractor through contract provisions)	Construction period
20	Construction activities	Safety of local villagers	Coordination with local communities for construction schedules, Barricading the construction area and spreading awareness among locals	Periodic and regular reporting /supervision of safety arrangement	No. of incidents- once every week	IA (Contractor through contract provisions)	Construction period
		Local traffic obstruction	Coordination with local authority/ requisite permission for smooth flow of traffic	Traffic flow (Interruption of traffic)	Frequency (time span)- on daily basis	IA (Contractor through contract provisions)	Construction period
21	Temporary blockage of utilities	Overflows, reduced discharge	Measure in place to avoid dumping of fill materials in sensitive drainage area	Temporary fill placement (m^3)	Absence of fill in sensitive drainage areas – every 4 weeks	IA (Contractor through contract provisions)	Construction period
22	Site clearance	Vegetation	Marking of vegetation to be removed prior to clearance, and	Vegetation marking and clearance	Clearance strictly limited to target	IA (Contractor	Construction period

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
			strict control on clearing activities to ensure minimal clearance.	control (area in m^2)	vegetation – every 2 weeks	through contract provisions)	
			No use of herbicides and pesticides				
23	Trimming /cutting of trees within RoW	Fire hazards	Trees allowed growing up to a height within the RoW by maintaining adequate clearance between the top of tree and the conductor as per the regulations.	Species-specific tree retention as approved by statutory authorities (average and max. tree height at maturity, in meters)	Presence of target species in RoW following vegetation clearance – once per site	IA (Contractor through contract provisions)	Construction period
		Loss of vegetation and deforestation	Trees that can survive pruning to comply should be pruned instead of cleared.	Species-specific tree retention as approved by statutory authorities	Presence of target species in RoW following vegetation clearance - once	IA (Contractor through contract provisions)	Construction period
			Felled trees and other cleared or pruned vegetation to be disposed of as authorized by the statutory bodies.	Disposal of cleared vegetation as approved by the statutory authorities (area cleared in m^2)	Use or intended use of vegetation as approved by the statutory authorities – once per site	IA (Contractor through contract provisions)	Construction period
24	Wood/ vegetation harvesting	Loss of vegetation and deforestation	Construction workers prohibited from harvesting wood in the project area during their employment, (apart from locally employed staff continuing current legal activities)	Illegal wood /vegetation harvesting (area in m^2, number of incidents reported)	Complaints by local people or other evidence of illegal harvesting – every 2 weeks	IA (Contractor through contract provisions)	Construction period
25	Surplus earthwork/soil	Runoff to cause water pollution, solid waste disposal	Soil excavated from tower footings/ substation foundation disposed of by placement along roadsides, or at nearby house blocks if requested by landowners	Soil disposal locations and volume (m^3)	Acceptable soil disposal sites – every 2 weeks	IA (Contractor through contract provisions)	Construction period

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
26	Substation construction	Loss of soil	Loss of soil is not a major issue as excavated soil will be mostly reused for filling. However, in case of requirement of excess soil the same will be met from existing quarry or through deep excavation of existing pond or other nearby barren land with agreement of local communities	Borrow area sitting (area of site in m^2 and estimated volume in m^3)	Acceptable soil borrow areas that provide a benefit - every 2 weeks	IA (Contractor through contract provisions)	Construction period
		Water pollution	Construction activities involving significant ground disturbance (i.e. substation land forming) not undertaken during the monsoon season	Seasonal start and finish of major earthworks(P^H, BOD /COD, Suspended solids, others)	Timing of major disturbance activities –prior to start of construction activities	IA (Contractor through contract provisions)	Construction period
27	Site clearance	Vegetation	Tree clearances for easement establishment to only involve cutting trees off at ground level or pruning as appropriate, with tree stumps and roots left in place and ground cover left undisturbed	Ground disturbance during vegetation clearance (area, m^2)	Amount of ground disturbance – every 2 weeks	IA (Contractor through contract provisions)	Construction period
				Statutory approvals	Statutory approvals for tree clearances – once for each site		
28	Substation foundation/Tower erection disposal of surplus earthwork/fill	Waste disposal	Excess fill from substation/tower foundation excavation disposed of next to roads or around houses, in agreement with the local community or landowner.	Location and amount (m^3)of fill disposal	Appropriate fill disposal locations – every 2 weeks	IA (Contractor through contract provisions)	Construction period
29	Storage of chemicals and materials	Contamination of receptors (land, water, air)	Fuel and other hazardous materials securely stored above high flood level.	Location of hazardous material storage; spill reports (type of material	Fuel storage in appropriate locations and receptacles –	IA (Contractor through contract	Construction period

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
				spilled, amount (kg or m^3) and action taken to control and clean up spill)	every 2 weeks	provisions)	
30	Construction schedules	Noise nuisance to neighbouring properties	Construction activities only undertaken during the day and local communities informed of the construction schedule.	Timing of construction (noise emissions, [dB(A)]	Daytime construction only – every 2 weeks	IA (Contractor through contract provisions)	Construction period
31	Provision of facilities for construction workers	Contamination of receptors (land, water, air)	Construction workforce facilities to include proper sanitation, water supply and waste disposal facilities.	Amenities for Workforce facilities	Presence of proper sanitation, water supply and waste disposal facilities – once each new facility	IA (Contractor through contract provisions)	Construction period
32	Influx of migratory workers	Conflict with local population to share local resources	Using local workers for appropriate asks	Avoidance/reduction of conflict through enhancement/ augmentation of resource requirements	Observation & supervision–on weekly basis	IA (Contractor through contract provisions)	Construction period
33	Lines through farmland	Loss of agricultural productivity	Use existing access roads wherever possible	Usage of existing utilities	Complaints received by local people /authorities - every 4 weeks	IA (Contractor through contract provisions)	Construction period
			Ensure existing irrigation facilities are maintained in working condition	Status of existing facilities			
			Protect /preserve topsoil and reinstate after construction completed	Status of facilities (earthwork in m^3)			
			Repair /reinstate damaged bunds etc after construction completed	Status of facilities (earthwork in m^3)			

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
		Loss of income.	Land owners/ farmers compensated for any temporary loss of productive land as per existing regulation.	Process of Crop/tree compensation in consultation with forest dept.(for timber yielding tree) and Horticulture deptt.(for fruit bearing tree)	Consultation with affected land owner prior to implementation and during execution.	IA	During construction
34	Uncontrolled erosion/silt runoff	Soil loss, downstream siltation	Need for access tracks minimised, use of existing roads.	Design basis and construction procedures (suspended solids in receiving waters; area re-vegetated in m^2; amount of bunds constructed [length in meter, area in m^2, or volume in m^3])	Incorporating good design and construction management practices – once for each site	IA (Contractor through contract provisions)	Construction period
			Limit site clearing to work areas				
			Regeneration of vegetation to stabilise works areas on completion (where applicable)				
			Avoidance of excavation in wet season				
			Water courses protected from siltation through use of bunds and sediment ponds				
35	Nuisance to nearby properties	Losses to neighbouring land uses/ values	Contract clauses specifying careful construction practices.	Contract clauses	Incorporating good construction	IA (Contractor through contract provisions)	Construction period
			As much as possible existing access ways will be used	Design basis and layout	Incorporating good design		
			Productive land will be reinstated following completion of construction	Reinstatement of land status (area affected, m^2)	Consultation with affected parties – twice –		

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
		Social inequities	Compensation will be paid for loss of production, if any.	Implementation of Tree/Crop compensation (amount paid)	Consultation with affected parties – once in a quarter	IA	Prior to construction
36	Flooding hazards due to construction impediments of natural drainage	Flooding and loss of soils, contamination of receptors (land, water)	Avoid natural drainage pattern/ facilities being disturbed/blocked/ diverted by on-going construction activities	Contract clauses (e.g. suspended solids and BOD/COD in receiving water)	Incorporating good construction management practices-once for each site	IA (Contractor through contract provisions)	Construction period
37	Equipment submerged under flood	Contamination of receptors (land, water)	Equipment stored at secure place above the high flood level(HFL)	Store room level to be above HFL (elevation difference in meters)	Store room level as per flood design-once	IA	Construction period
38	Inadequate siting of borrow areas (quarry areas)	Loss of land values	Existing borrow sites will be used to source aggregates, therefore, no need to develop new sources of aggregates	Contract clauses	Incorporating good construction management practices – once for each site	IA (Contractor through contract provisions)	Construction period
39	Health and safety	Injury and sickness of workers and members of the public	Safety equipment's (PPEs) for construction workers Contract provisions specifying minimum requirements for construction camps Contractor to prepare and implement a health and safety plan. Contractor to arrange for health and safety training sessions	Contract clauses (number of incidents and total lost-work days caused by injuries and sickness)	Contract clauses compliance – once every quarter	IA (Contractor through contract provisions)	Construction period
40	Inadequate construction stage monitoring	Likely to maximise damages	Training of environmental monitoring personnel	Training schedules	No. of programs attended by each person – once a year	IA	Routinely throughout construction period

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
			Implementation of effective environmental monitoring and reporting system using checklist of all contractual environmental requirements	Respective contract checklists and remedial actions taken thereof.	Submission of duly completed checklists of all contracts for each site - once		
			Appropriate contact clauses to ensure satisfactory implementation of contractual environmental mitigation measures.	Compliance report related to environmental aspects for the contract	Submission of duly completed compliance report for each contract – once		
Operation and Maintenance							
41	Location of line towers/poles and overhead/ underground line alignment & design	Exposure to safety related risks	Setback of dwellings to overhead line route designed in accordance with permitted level of power frequency and the regulation of supervision at sites.	Compliance with setback distances ("as-built" diagrams)	Setback distances to nearest houses – once in quarter	AEGCL/ APDCL	During operations
42	Line through identified bird flyways, migratory path	Injury/ mortality to birds, bats etc due to collision and electrocution	Avoidance of established/identified migration path (Birds & Bats). Provision of flight diverter/reflectors, elevated perches, insulating jumper loops, obstructive perch deterrents, raptor hoods etc., if applicable	Regular monitoring for any incident of injury/mortality	No. of incidents- once every month	AEGCL/ APDCL	Part of detailed siting and alignment survey /design and Operation
43	Equipment submerged under flood	Contamination of receptors (land, water)	Equipment installed above the high flood level (HFL) by raising the foundation pad.	Substation design to account for HFL ("as-built" diagrams)	Base height as per flood design – once	AEGCL/ APDCL	During operations
44	Oil spillage	Contamination of land/nearby water bodies	Substation transformers located within secure and impervious sump areas with a storage capacity of at least 100% of the capacity of oil in	Substation bunding (Oil sump) ("as-built" diagrams)	Bunding (Oil sump) capacity and permeability - once	AEGCL/ APDCL	During operations

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
			transformers and associated reserve tanks.				
45	SF_6 management	Emission of most potent GHG causing climate change	Reduction of SF6 emission through awareness, replacement of old seals, proper handling & storage by controlled inventory and use, enhance recovery and applying new technologies to reduce leakage	Leakage and gas density/level	Continuous monitoring	AEGCL/ APDCL	During Operations
46	Inadequate provision of staff/workers health and safety during operations	Injury and sickness of staff /workers	Careful design using appropriate technologies to minimise hazards	Usage of appropriate technologies (lost work days due to illness and injuries)	Preparedness level for using these technologies in crisis – once each year	AEGCL/ APDCL	Design and operation
			Safety awareness raising for staff.	Training/awareness programs and mock drills	Number of programs and percent of staff /workers covered – once each year		
			Preparation of fire emergency action plan and training given to staff on implementing emergency action plan				
			Provide adequate sanitation and water supply facilities	Provision of facilities	Complaints received from staff /workers		
47	Electric Shock Hazards	Injury/ mortality to staff and public	Careful design using appropriate technologies to minimise hazards	Usage of appropriate technologies (number of injury incidents, lost work days)	Preparedness level for using these technology in crisis – once a month	AEGCL/ APDCL	Design and Operation
			Security fences around substations	Maintenance of fences	Report on maintenance – every 2 weeks		
			Barriers to prevent climbing on/ dismantling of transmission towers	Maintenance of barriers			

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
			Appropriate warning signs on facilities	Maintenance of warning signs			
			Electricity safety awareness raising in project areas	Training /awareness programs and mock drills for all concerned parties	Number of programs and percent of total persons covered – once each year		
48	Operations and maintenance staff skills less than acceptable	Unnecessary environmental losses of various types	Adequate training in O&M to all relevant staff of substations & transmission/ distribution line maintenance crews.	Training/awareness programs and mock drills for all relevant staff	Number of programs and percent of staff covered – once each year	AEGCL/ APDCL	Operation
			Preparation and training in the use of O&M manuals and standard operating practices				
49	Inadequate periodic environmental monitoring.	Diminished ecological and social values.	Staff to receive training in environmental monitoring of project operations and maintenance activities.	Training/awareness programs and mock drills for all relevant staff	Number of programs and percent of staff covered – once each year	AEGCL/ APDCL	Operation
50	Equipment specifications and design parameters	Release of chemicals and gases in receptors (air, water, land)	Processes, equipment and systems using chlorofluorocarbons (CFCs), including halon, should be phased out and to be disposed of in a manner consistent with the requirements of the Govt.	Process, equipment and system design	Phase out schedule to be prepared in case still in use – once in a quarter	AEGCL/ APDCL	Operations
51	Transmission/ distribution line maintenance	Exposure to electromagnetic interference	Transmission/ distribution line design to comply with the limits of electromagnetic interference from overhead power lines	Required ground clearance (meters)	Ground clearance -once	AEGCL/ APDCL	Operations
52	Uncontrolled growth of	Fire hazard due to growth of	Periodic pruning of vegetation to maintain requisite electrical	Requisite clearance (meters)	Assessment in consultation with	AEGCL/ APDCL	Operations

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
	vegetation	tree/shrub /bamboo along RoW	clearance. No use of herbicides/ pesticides		forest authorities - once a year(pre-monsoon/post-monsoon		
53	Noise related	Nuisance to neighbouring properties	Substations sited and designed to ensure noise will not be a nuisance.	Noise levels {dB(A)}	Noise levels at boundary nearest to properties and consultation with affected parties if any - once	AEGCL/ APDCL	Operations

1.0 Project Context

1 India's North East Region (NER) stretches across the eastern foothills of the Himalayan mountain range and is comprised of seven states including Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura. Geographically the region is connected to the other parts of the country through a small "chicken neck" corridor in the State of West Bengal. With a total population of 45.6 million (2011 census), the sparsely populated NER accounts for about 3.7 percent of India's total population and covers 7.9 percent of India's total geographical area. The vast majority of the region's population lives in rural areas, accounting for 82 percent of the total population as against compared to the national average of 69 percent (2011). A large part of the NER is hilly and, recognized as one of the globe's biodiversity hotspots. Forests cover over 2/3rd of the area, twice exceeding the policy target of 33%. This sparsely populated region is characterized by extraordinary ethnic, cultural, religious and linguistic diversity, with more than 160 Scheduled Tribes (out of 630 in the country) comprising over 400 distinct sub tribal groups, and a large and diverse non-tribal population as well.

2 The North Eastern Region (NER) in India is endowed with rich energy resources but faces significant bottlenecks in electricity access and availability levels. The per capita power consumption in NER is one-third of the national average. The region has a shortfall of about 500MW installed capacity against peak demand of about 1950 MW. No significant generation capacity has been added in the recent past. Therefore, inadequate power supply continues a critical constraint to sustainable growth and economic development in the NER. Some states are generally not able to draw even their allocated share of power from the Central Generating Stations (CGS) through the grid due to poor/inadequate intra/interstate transmission and distribution network and no capacity addition towards transmission/distribution power system not done due to fund constraints. The transmission and distribution (T&D) losses are also quite high (up to 50%) across most of the States as a large number of remote hilly areas are connected through long low tension lines, resulting in low voltages and poor quality of power at consumer end. While generation capacity addition of about 4000 MW program over present installed capacity is already underway, adequate transmission and distribution infrastructure to transmit and distribute this power to consumers within the North-Eastern States is the need of the day.

3 In order to create/ augment proper infrastructure of T&D in NER keeping in mind future requirement, the Government of India (GoI) has drawn a "Composite scheme for transmission and

distribution (T&D) in NER" capable of delivering adequate power to most consumers with reliability, aiming to improve the inter-state and intra-state transmission and sub-transmission infrastructure and reduce system losses in all the NER states. This in background, GoI has approached the World Bank to provide US$ 1500 million of IBRD funding support to a portion of the scheme christened: **"NER Power System Improvement Project (NERPSIP)"**. The investments are proposed to be made in three different tranches, each being US$ 500 million. The key objectives include strengthening, augmentation of the intra-state and interstate transmission and distribution schemes (up to 33kV) and undertake capacity building initiatives across six NER States of Assam, Manipur, Mizoram, Meghalaya, Tripura and Nagaland. Ministry of Power (MoP), GoI has appointed POWERGRID, the CTU, as Implementing Agency for the Project in six North Eastern States. However, the ownership of the assets shall be with the respective State Governments/State Utilities, which upon progressive commissioning shall be handed over to them for taking care of Operation and Maintenance of Assets at their own cost.

4 The first tranche under the NERPSIP would be implemented over a seven year period (2014-2021) and has two major components, namely:

(a) Priority investments for strengthening of intra-state transmission and distribution systems;
(b) Technical Assistance for Institutional Strengthening and Capacity Building of power utilities and departments.

1.1 State Specific Details – Assam

5 The State of Assam is spread over an area of about 78,438 sq. km with a population of 3,11,57, 436 (as per Census 2011). The State of Assam faces significant bottlenecks in electricity access and availability levels. The present per capita energy consumption is of the order of 205 units (kWh) against the regional per capita consumption of about 258 units and national per capita consumption of about 779 units. The peak demand of the State is 1430 MW. The State's own generation is about 260MW out of their installed capacity of 377 MW as hydel generation (ROR i. e. Run of the Rivers) is negligible due to insufficient rainfall. The total availability of power at present is around 800 MW including less than 500 MW from the CSGS during peak hours as against allocation of 751 MW. Future peak & energy demand in the State is likely to grow exponentially due to expansion industrialization/new industry/tea industry/ other infrastructure developments, 100% electrification rural households etc. by the end of 12th five year plan (2012-17).The State's electricity demand forecast is to reach 2,222 MW by 2019-20 widening the deficit by more than 500 MW. APDCL is making efforts to minimize this 400 MW deficit by procuring 100-150 MW from the open market at a much higher rate than the normal rate of procurement by the Company. Enhance

allocation of additional 490 MW i .e. 240 MW from Pallatana Power Project of ONGC in Tripura & 250 MW from Bongaigaon Thermal Power Station of NTPC at Bongaigaon would add up to some extent to minimize the demand-availability gap of power in Assam.

6 Besides this, the present Intra-State transmission system of the State is quite old & weak and is unable to cater to the growing power requirements of the State. Although the present T&D system covers many areas of the State, it is inadequate in its reach and due to non-availability of redundant T&D system, outage of any transmission system element results in long term power shortages making the system highly unreliable. Besides, some of the network elements have undergone long term outage due to break-down. Therefore, it has become essential to address the above situation through remedial measures in the transmission and distribution (T&D) system. Accordingly, phase-wise strengthening of transmission & sub-transmission system has been proposed. The Power Map of Assam indicating the existing and proposed T&D network is placed in **Figure 1.1**. Summary of subprojects to be implemented in the State in Tranche-1 under NERPSIP along with capacity addition and cost is shown in **Table 1.1** below.

TABLE 1.1: SUMMARY OF SUBPROJECTS IN TRANCHE- I UNDER NERPSIP

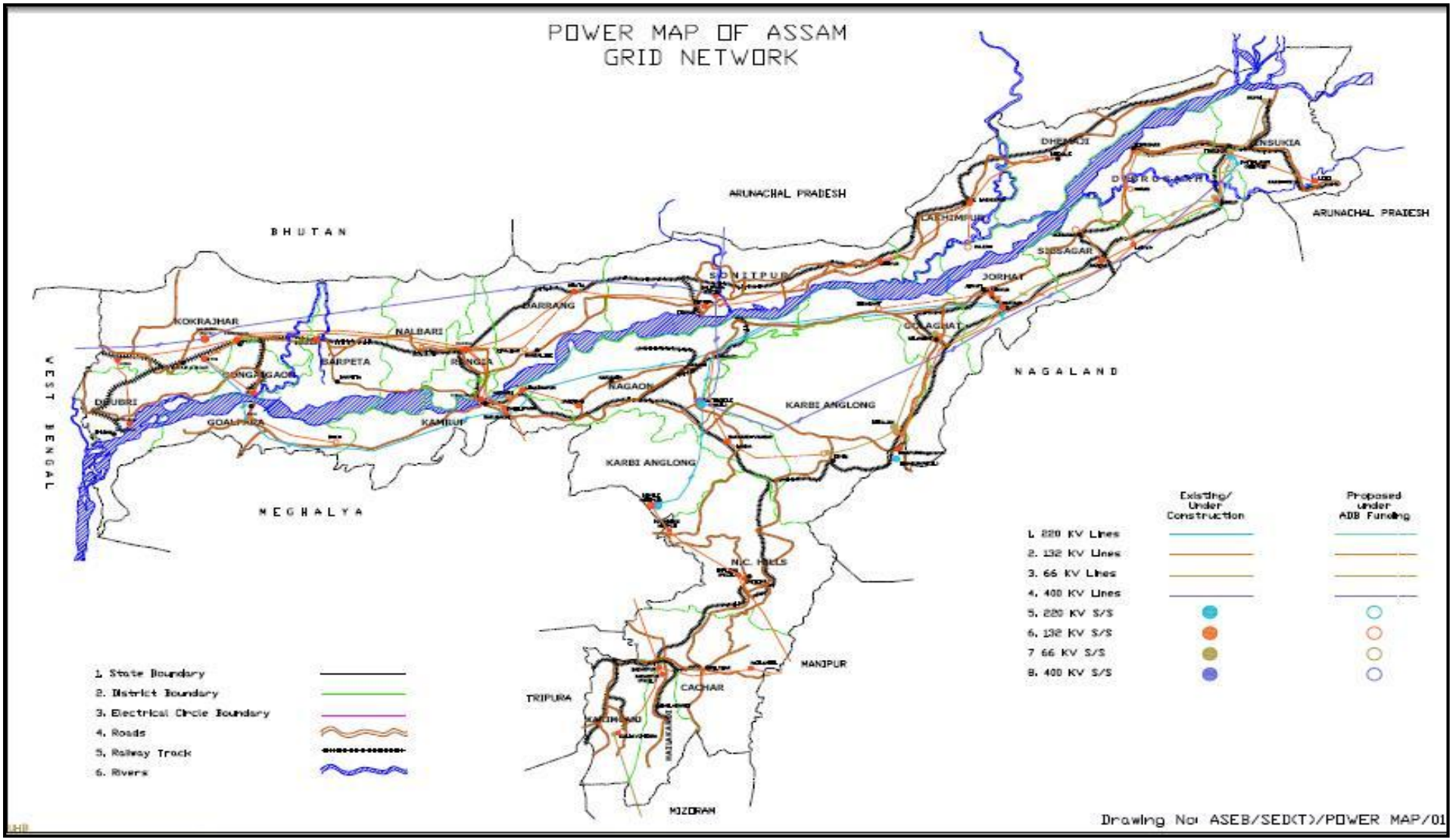
Sl. No.	Name of the subproject	Quantity (Nos.)	Capacity Addition (Km/MVA)	Estimated Cost (in Millions)*
1.	220/132 kV Transmission lines	11	376 km.	10824.80
2.	220/132/33kV substations (New/Augmentation/Extension)	20	1644 MVA	
3.	33 kV Distribution lines (overhead/underground)	38	479.km.	3913.20
4.	33/11kV substations[6] (New)	16	240 MVA	

***The estimated cost includes consultancy fees, contingencies and Interest During Construction (IDC)**

7 The prime objective of the project/subproject is to improve the power sector in the State of Assam and capacity building to achieve sustainable development in the long term. The Project is expected to facilitate connection to remote/virgin area, to enhance the capacity & reliability of the system, to improve voltage profile & to reduce losses and ultimately to enhance satisfaction for all categories of consumers which in turn will spur growth & overall development in the whole State.

[6] *The substation of 33/11 kV is installed for stepping down the voltage from 33 kV to 11 kV level to facilitate its further transmission to distribution network for its logical use by consumers after further stepping down to 433 V level. The electrical installations in the said substation comprises of transformers, breakers, capacitors etc. and other protection/controlling devices to ensure required power flow".*

FIGURE 1.1 : POWER MAP OF THE STATE ASSAM



2.0 Environment and Social Context – Assam

8 Environment and Social Policy and Procedures (ESPP): As the AEGCL/APDCL are contemplating major expansion and augmentation of their transmission & distribution network in near future by implementing projects with the help/grant from GoI and Multilateral Funding Agencies like the World Bank, ADB, it attaches high significance towards managing environment and social issues and the associated concerns. In this context, POWERGRID, with proven credentials in management of environmental and social issues of large number of power transmission projects both within and outside the country has been mandated to prepare Environment and Social Policy and Procedures (ESPP) for AEGCL/APDCL.

9 The AEGCL/APDCL's ESPP is based on POWERGRID's ESPP with updation/ incorporation of state specific requirements/processes including central legislations after extensive review and gap analysis with active participation/support of AEGCL/APDCL officials and field verifications. The ESPP of AEGCL/APDCL assimilates environmental and social management procedures into its corporate functioning and also layout management procedures and protocol to address them. It outlines AEGCL/APDCL's commitment to deal with environmental and social issues relating to its transmission & distribution projects with a framework for identification, assessment and management of environmental and social concerns at both organizational as well as project levels. Thus, it enables AEGCL/APDCL:

- To establish clear procedures and methodologies for the environmental and social screening, planning, review, approval and implementation of subprojects to be financed under the Project;
- To specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and social concerns related to sub-projects;
- To determine the training, capacity building and technical assistance needed to successfully implement the provisions of the ESPP;
- To ensure adequate financial provisions to meet the management measures to be undertaken to mitigate the impacts.

Environment & Social Policy Statement

"AEGCL/APDCL considering the rich natural resources and diverse cultural, religious, social practice and customary laws of the region commits to achieve the goal of sustainable development and shall follow the principle of ***avoidance****,* ***minimization*** *and* ***mitigation*** *during implementation of its projects with complete transparency and due social responsibility."*

10 AEGCL/APDCL also believes that the ESPP is dynamic and living document, which shall be further upgraded in light of the experiences gained from field implementation and other relevant factors while mainstreaming the environmental and social concerns in its corporate functioning.

2.1 Approach/ Methodology

11 The ESPP has been prepared following a region/ state specific environmental and social assessments which involved generating information through both primary and secondary sources including consultations and library research. The methodology adopted to identify the potential environment and social impacts is based on experience gained from implementation of similar projects and baseline assessments of work activities anticipated in this proposed project. The methodology takes in to account wide range of receptors:

- Physical & chemical environment (e.g. water, soil, etc.);
- Biological environment (forest, animals, birds, etc.); and
- Communities, social groups and individuals (loss of land, loss of agricultural production, tribal, vulnerable groups (women and backward classes), socio-economic condition, health and safety risks).

12 The basic approach broadly involved following:

- Review of environment & social baseline information from secondary sources;
- Review of existing national & state specific legislations and policy and guidelines of multilateral agencies;
- Review of project related documents; and
- Stakeholders' consultations.

2.2 Consultation/ Participation

13 Consultations with key stakeholders including local, state, regional, central government entities and key ministries at the state level and central level as well as with World Bank officials were undertaken to know views and concerns about environmental and social issues /concerns of the project. This activity ensured appropriate participation and gathering views from the environment and social perspective of all the stakeholders' which is integrated in this ESPP to be adopted during different stages of the project implementation. A detailed analysis of stakeholder consultations is presented in **Section-4**.

2.3 Structure of the Report

14 **Chapter 1 & 2** provide the context from a regional, state and project level social and environmental scenarios as well as approach and methodology adopted for conducting assessments and preparing ESPP. **Chapter 3** presents an overview of Assam State in respect of its social, economic, cultural, environment, infrastructure and administrative fronts. Stakeholder Analysis is presented in **Chapter-4**. While Chapters 1-3 lays foundation to both social and environmental front, subsequently, **Chapters 5 and 6** deal with issues, impacts and measures thereof in respect of social and environmental aspects. Integrating social and environmental management into the overall project cycle is made in the next chapter i.e. **Ch-7.** The remaining **chapters (8-12)** deal with implementation arrangements, capacity building, grievance redressal mechanism, monitoring & evaluation and budget.

3.0 Assam - An overview

15 Assam is one of the seven north-eastern states (together called as 'seven sisters'), which is situated just below the eastern Himalayan foothills. The State of Assam spreads over an area of 78,438 sq km. and lies between 89°5'- 96°1' East and 24°3'- 27°58' North. Assam is surrounded by six of the other Seven Sister States: Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, and Meghalaya. Geographically Assam and these States are connected to the rest of India via a strip of land in West Bengal called the Siliguri Corridor or "Chicken's Neck". Assam shares international borders with Bhutan and Bangladesh. A significant geographical aspect of Assam is that it contains three of six physiographic divisions of India - The Northern Himalayas (Eastern Hills), The Northern Plains (Brahmaputra plain) and Deccan Plateau (Karbi Anglong). The River Brahmaputra, the life-line of Assam becomes a braided river (at times 10-16 km wide) and with tributaries, creates a flood plain. The hills of Karbi Anglong, North Cachar are now eroded and dissected are originally parts of the South Indian Plateau system. In the south, the River Barak originates in the Barail Range (Assam-Nagaland border) flows through the Cachar district with a 40–50 km wide valley and enters Bangladesh with the name Surma River. The Brahmaputra and the Barak rivers are part of the National Waterway 2 and 6 respectively and together cover almost 1000 Km across the State.

16 Due to the influence of Brahmaputra and Barak rivers the State is bestowed with vast alluvial plains and dense forests, tracts of paddy and tea. Assam is also endowed with petroleum, natural gas, coal, limestone and many other minor minerals such as magnetic quartzite, kaolin, clay and feldspar. A small quantity of iron ore is also available in western parts of Assam. The Upper Assam districts are major reserves of oil and gas. It is estimated that Assam and surrounding region possess around 150 million tonnes of petroleum reserves. Presently, Assam is the 3rd largest producer of petroleum (crude) and natural gas in the country accounting for 16% and 8% respectively of the total production of this mineral in the country. A Tertiary coal belt is located in Tinsukia, Dibrugarh, Sivasagar, Karbi Anglong and Dima Hasao districts with an estimated reserve of 370 million tonnes.

3.1 History

17 Assam State and adjoining regions have evidences of human settlements from all the periods of the Stone ages. More recently, the Assam Province was one among major eight provinces of British India. With the partition of India in 1947, Assam became a constituent State of India, but the district of Sylhet of Assam (excluding the Karimganj subdivision) gave up to Pakistan (which later became Bangladesh).

18 Further, the State has been divided several times since 1970 to satisfy national aspirations of the tribal populations living within the then borders of Assam. These are chronologically presented below:

- 1963: Nagaland (comprising of Naga Hill Districts);
- 1970: Meghalaya (Khasi Hills, Jantia Hills and Garo Hills);
- 1972: Aurunachal Pradesh (the North East Frontier Agency);
- 1972: Mizoram (Mizo Hills)

3.2 Governance and Administration

19 The State of Assam is divided into 4 divisions (namely Upper Assam, Lower Assam, North Assam and Hills and Barak Valley Division) each headed by a Commissioner. The Commissioner oversees the activities of a number of districts. In total the State of Assam is divided into 27 districts (refer **Table-3.1**).

TABLE 3.1: ADMINISTRATIVE SETUP IN ASSAM

Sl. No.	District	District Head Quarter	Sub- districts
1	Kokrajhar	Kpokrajhar	Gossaigaon, Bhowraguri, Dotoma, Kokrajhar Golokganj, Dhubri, Bagribari, Bilasipara Chapar
2	Dhubri	Dhubri	Gossaigaon,Agamoni, Golokganj, Dhubri Bagribari, Bilasipara, Chapar, South Mankachar
3	Goalpara	Goalpara	Lakhipur, Balijana, Matia, Dudhnai, Rangjuli
4	Barpeta	Barpeta	Barnagar, Kalgachia, Baghbor, Chenga, Barpeta, Sarthebari, Bajali, Sarupeta, Jalah
5	Morigaon	Morigaon	Mayong, Bhuragaon, Laharighat, Morigaon, Mikirbheta
6	Nagaon	Nagaon	Kaliabor, Samaguri, Rupahi, Dhing, Nagaon, Raha, Kampur, Hojai, Doboka, Lanka
7	Sonitpur	Tezpur	Dhekiajuli, Chariduar, Tezpur, Na-Duar, Biswanath, Helem, Gohpur
8	Lakhimpur	North Lakhimpur	Narayanpur, Bihpuria, Naobaicha, Kadam, North Lakhimpur, Dhakuakhana, Subansiri
9	Dhemaji	Dhemaji	Dhemaji, Sissibargaon, Jonai, Dhakuakhana Subansiri, Gogamukh
10	Tinsukia	Tinsukia	Sadiya, Doom Dooma, Tinsukia, Margherita
11	Dibrugarh	Dibrugharh	Dibrugarh West , Dibrugarh East, Chabua Tengakhat, Moran, Tingkhong, Naharkatiya
12	Sivasagar	Sivasagar	Dimow, Sivasagar, Amguri, Nazira, Sonari Mahmora
13	Jorhat	Jorhat	Majuli, Jorhat West, Jorhat East, Teok, Titabor Mariani
14	Golaghat	Golaghat	Bokakhat, Khumtai, Dergaon, Golaghat, Morangi,

Sl. No.	District	District Head Quarter	Sub- districts
			Sarupathar
15	Karbi Anglong	Diphu	Donka, Diphu, Phuloni, Silonijan
16	Dima Hasao	Haflong	Umrangso, Haflong, Mahur, Maibong
17	Cachar	Silchar	Katigora, Silchar, Udarbond, Sonai, Lakhipur
18	Karimganj	Karimghanj	Karimganj, Badarpur, Nilambazar, Ramkrishna Nagar, Patharkandi
19	Hailakandi	Halakandi	Algapur, Hailakandi, Lala, Katlichara
20	Bongaigaon	Bongaigon	Bongaigaon ,Boitamari, Srijangram, Bijni, Sidli
21	Chirang	Basugaon	Kokrajhar, Bengtal, Sidli, Bongaigaon, Bijni, Barnagar
22	Kamrup	Amingaon	Goreswar, Rangia ,Koya, Kamalpur, Hajo, Chhaygaon, Goroimari, Chamaria, Nagarbera, Boko, Palasbari, North Guwahati
23	Kamrup Metropolitan	Guwahati	Azara, North Guwahati, Guwahati M Corp, Dispur, Sonapur, Chandrapur
24	Nalbari	Nalbari	Barama, Tihu, Pachim NA;bari, Barkhetri, Barbhag, Nalbari, Banekuchi, Ghograpar, Baganpara
25	Baksa	Musalpur	Barnagar, Bajali, Sarupeta, Jalah, Goreswar. Rangia, Barama, Tihu, Ghograpar, Baksa, Baganpara, Tamulpur, Pathorighat
26	Darrang	Mangaldoi	Khoirabari, Pathorighat, Sipajhar, Mangaldoi, Kalaigaon, Dalgaon
27	Udalguri	Odalgalgiri	Khoirabari, Pathorighat, Mangaldoi, Kalaigaon, Dalgaon, Harisinga, Udalguri, Mazbat, Dhekiajuli

20 To further provide regional autonomy and improve status of the tribes within the constitutional framework some of the areas of Assam have been incorporated within the sixth schedule of the Constitution of India. This schedule provide for administration of tribal areas as autonomous areas. The administration of the autonomous areas is vested in the district council. These councils are endowed with legislative, judicial executive and financial powers. They are also expected to oversee the traditional bodies in local tribes. The following first 3 Autonomous Councils (ACs) in sixth schedule areas enjoy these privileges. Six schedule areas in Assam are Bodoland Territorial Council, Karbi Anglong Autonomous Council, Dima Hasao Autonomous District Council[7].

[7] Govt. of Assam has recently created 6 more Autonomous Councils viz. Rabha Hasong Autonomous Council (RHAC), Mishing Autonomous Council (MAC), Tiwa Autonomous Council (TAG), Deori Autonomous Council (DAC), Thengal Kachari Autonomous Council (TKAC) and Sonowal Kachari Autonomous Council (SKAC).

- **Bodoland Territorial Council:** the Bodoland Territorial Areas Districts comprising four 4 (four) Administrative Districts as- Udalguri, Baksa. Chirang, Kokrajhar;

- **Karbi Anglong Autonomous Council:** The Karbi Anglong came into being as a full fledged separate district The council covers the three sub-divisions of , Diphu, Bokajan and Hamren;

- **Dima Hasao Autonomous District Council:** The Dima Hasao Autonomous District Council is an autonomous council constituted to administer the district and to develope the Dimasa people. It covers the two sub divisions of Haflong and Maibang;

21 The Councils consists of thirty members, 26 are elected and not more than four persons are nominated by the Governor on the advice of the Chief Executive Member for a term of five years. Villages having more than 50% of the tribal population there shall be a Village Council. Each Village Council shall consist of 10 (Ten) elected members out of which 5 (Five) will be form Scheduled Tribe community. Out of 5 (Five) reserved seats 1 (One) shall be reserved for a women member.

3.3 Demographic Profile

22 The Population of Assam according to the 2011 census stands at 3,11,57,436, making it the 14th most populated State in India. The State makes up about 2.5% of the country's population. The State is spread over an area of about 78400 sq. km. making it the 16th largest State in the country in terms of area. The density of population per sq km is about 397 and almost equal to the national average. The State has a population growth rate of about 17% which is again very close to the national growth rate. The literacy rate in the State has increased from 63.25% (census 2001) to 72.19% (census 2011). The male and female literacy rates are 78.81% and 67.27% respectively. Sex Ratio in Assam is 958, which is above national average of 940 as per census 2011 compared to the sex ratio of 932 in 2001. In Assam 14.10% people live in urban regions. The total population living in urban areas is 43,98,542. However, still 85.90 percent of total population of Assam lives in the rural areas. The demographic profile is presented in **Table 3.2**.

TABLE 3.2: DEMOGRAPHIC PROFILE

Sl. No.	District	District Head Quarter	Geo. Area (Sq. k.m.)	Population (2011)	Male Population	Female Population	Growth Rate (%)	Sex Ratio	Literary (%)	Density /Sq. k.m.
1	Kokrajhar	Kpokrajhar	3296	887142	452905	434237	5.21	959	55.16	269
2	Dhubri	Dhubri	2176	1949258	997848	951410	24.44	953	47.32	896
3	Goalpara	Goalpara	1824	1008183	513292	494891	22.64	964	55.90	553
4	Barpeta	Barpeta	2282	1693622	867004	826618	21.43	953	52.97	742

5	Morigaon	Morigaon	1551	957423	486651	470772	23.34	967	56.39	617
6	Nagaon	Nagaon	3973	2823768	1439112	1384656	22.00	962	60.58	711
7	Sonitpur	Tezpur	5204	1924110	983904	940206	15.55	956	57.61	370
8	Lakhimpur	North Lakhimpur	2277	1042137	529674	512463	17.22	968	65.59	458
9	Dhemaji	Dhemaji	3237	686133	351249	334884	19.97	953	61.65	212
10	Tinsukia	Tinsukia	3790	1327929	680231	647698	15.47	952	60.12	350
11	Dibrugarh	Dibrugharh	3381	1326335	676434	649901	11.92	961	66.69	392
12	Sivasagar	Sivasagar	2668	1151050	589216	561834	9.44	954	70.68	431
13	Jorhat	Jorhat	2851	1092256	556805	535451	9.31	962	72.78	383
14	Golaghat	Golaghat	3502	1066888	543161	523727	12.75	964	67.65	305
15	Karbi Anglong	Diphu	10434	956313	490167	466146	17.58	951	58.27	92
16	Dima Hasao	Haflong	4888	214102	110802	103300	13.84	932	65.80	44
17	Cachar	Silchar	3786	1736617	886284	850333	20.19	959	67.61	459
18	Karimganj	Karimghanj	1809	1228686	625864	602822	21.90	963	64.73	679
19	Hailakandi	Halakandi	1327	611156	337890	321406	12.58	951	66.65	461
20	Bongaigaon	Bongaigon	1093	738804	375818	362986	20.59	966	58.75	676
21	Chirang	Basugaon	1923	482162	244860	237302	11.34	969	53.90	251
22	Kamrup	Amingaon	3105	1517542	778461	739081	15.69	949	65.59	489
23	Kamrup Metropolitan	Guwahati	955	1253938	647585	606353	18.34	936	79.84	1313
24	Nalbari	Nalbari	1052	771639	396006	375633	11.99	949	68.91	733
25	Baksa	Musalpur	2457	950075	481330	468745	10.74	974	60.29	387
26	Darrang	Mangaldoi	1585	928500	475273	453227	22.19	954	52.45	586
27	Udalguri	Odalgalgiri	2012	831668	421617	410051	9.61	973	56.50	413

Source: Census of India, 2011

23 As per census 2011, the total Scheduled Tribes (STs) population is 38,84,371 which constitute 12.4 per cent of the total population of the State. The State has registered 17.4 per cent decadal growth of ST population in 2001-2011. Only two districts viz. Karbi Analong & Dima Hasao are having ST population more than 50 %. Major tribes in the State are Boro (35.05%). Miri (17.51 %), Karbi (11.08%), Rabha (7.62 %), Kachari (6.52%) which are having 5 per cent or above of total ST population. The demographic status of ST Population is presented in table below.

Name of ST	**Number of house-holds**	**Total Population**			**Sex ratio**	**Literacy (%)**	**Main worker**	**Marginal worker**
		Total	**Male**	**Female**				
Chakma	430	2,032	1,043	989	948	28.0	79.7	20.3
Dimasa, Kachari	23,689	1,02,961	51,832	51,129	986	70.1	73.3	26.7

Garo	4,674	25,315	12,684	12,631	996	64.2	62.6	37.4
Hajong	152	436	223	213	955	66.5	82.4	17.6
Hmar	2,794	15,745	7,964	7,781	977	92.9	78.8	21.2
Khasi, Jaintia, Synteng, Pnar, War, Bhoi, Lyngngam	3,426	15,936	7,916	8,020	1013	42.9	83.5	16.5
Any Kuki Tribes	6,223	33,399	17,220	16,179	940	84.0	75.5	24.5
Lakher	36	37	20	17	850	42.9	66.7	33.3
Man (Tai speaking)	324	1,269	644	625	970	89.7	82.0	18.0
Any Mizo (Lus-hai) tribes	222	880	419	461	1100	94.4	91.4	8.6
Karbi	78,588	4,30,452	2,17,758	2,12,694	977	67.9	65.1	34.9
Any Naga tribes	5,390	29,767	14,905	14,862	997	80.7	73.6	26.4
Pawi	3	3	1	2	2000	100.0	100.0	0.0
Syntheng	5	5	2	3	1500	33.3		
Lalung	3,604	18,252	9,128	9,124	1000	52.9	69.0	31.0
Barmans in Cachar	2,405	6,716	3,398	3,318	976	76.0	73.4	26.6
Boro, Boro-kachari	2,90,517	13,61,735	6,82,931	6,78,804	994	70.6	68.6	31.4
Deori	8,612	43,750	21,938	21,812	994	83.3	61.7	38.3
Hojai	134	642	327	315	963	61.5	82.9	17.1
Kachari, Sonwal	60,002	2,53,344	1,27,692	1,25,652	984	85.4	62.6	37.4
Lalung	37,694	1,82,663	91,340	91,323	1000	73.3	63.6	36.4
Mech	2,380	9,883	4,968	4,915	989	87.7	63.9	36.1
Miri	1,17,825	6,80,424	3,45,786	3,34,638	968	69.3	60.8	39.2
Rabha	65,611	2,96,189	1,48,887	1,47,302	989	75.1	66.2	33.8
Dimasa	4,522	19,702	9,738	9,964	1023	84.6	66.1	33.9
Hajong	7,716	34,253	17,385	16,868	970	61.3	69.4	30.6
Singhpho	533	2,342	1,175	1,167	993	85.8	66.1	33.9
Khampti	251	1,106	566	540	954	85.9	62.1	37.9
Garo	25,870	1,36,077	68,594	67,483	984	76.6	66.0	34.0
Total	**7,94,768**	**38,84,371**	**19,57,005**	**19,27,366**	**985**	**72.1**	**65.9**	**34.1**

Source: Statistical Profile of scheduled Tribes in India, 2013 published by Ministry of Tribal Affaires

1.4 Land, Agriculture and Forests

24 Bestowed with the resources of two major rivers the economy of Assam continues to be predominantly agrarian. Over 70 percent of the State's population relies on agriculture as farmers, as agricultural laborers, or both for their livelihood. The principal food crops produced in the State are rice (paddy), maize (corn), pulses, potato, wheat, etc., while the principal cash crops are tea, jute, oilseeds, sugarcane, cotton, and tobacco. Tea is the most important cash crop in Assam and the State is well known world-wide for its tea. The total land area under tea cultivation (gardens) was estimated at over 229,000 hectares in 1989, employing an average of over half-a-million people per day.

25 There are two broad types of land tenure systems operate in the State:

- Revenue administration under government operates in the plains outside the areas under the Sixth Schedule;
- Customary land tenure system under Village level authority operates in the Autonomous Council Areas. Cadastral survey is not done in these areas and hence the land records are maintained by traditional means;

26 In the non-scheduled areas of Assam have three types of land – patta (individual ownership), Aksonia (temporary) patta and non-patta or khas land or CPRs. Patta land is owned in perpetuity on payment of a tax. Aksonia patta is usually for one year. Khas land is considered State property and its inhabitants are treated as encroachers.

27 In the six schedule areas of Assam traditional system of land tenure is practiced by some of the tribes. The Karbi villages communal ownership is the norm. They do not have a fixed boundary or name since they keep shifting. The Mikri tribes have are apportioned land to Household, each house being allotted its own fields. Male members of a household limit their labour to their own fields. However the Dimasa of North Cachar Hills has moved towards individual pattas from the community ownership. The families that have changed over to individual land have introduced also a share for women in its inheritances. Property is inherited through men but the clan and family name come from women. The Mishing tribes have shifted from the Jhum to settled agriculture.

28 Forest cover constitutes 35.28% of total land area of this State. The State of Assam is enriched with extensive forest area and also rich with different species and strains of floras and faunas along with valuable forest products. The recorded forest area of Assam is 26,832 sq. km. The Forest Cover Map and district wise forest cover of Assam is presented in **Figure 3.1** & **Table 3.3** respectively. **Figure 3.2** shows the Forest and Wildlife Habitats of Assam.

FIGURE 3.1: FOREST COVER OF ASSAM

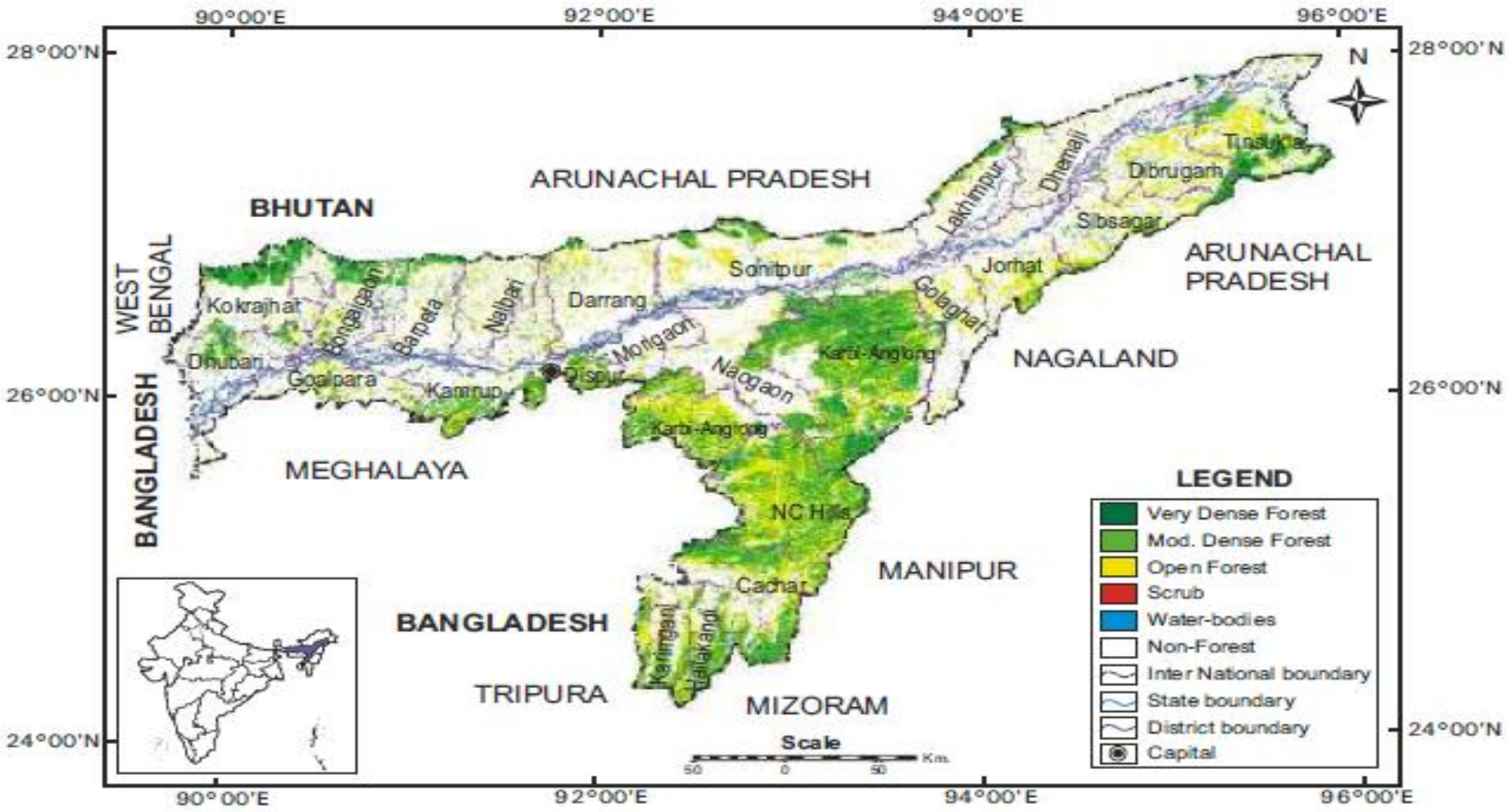


TABLE 3.3: DISTRICT-WISE FOREST COVER

District	Geographical Area (sq. km.)	Very Dense Forest (sq. km.)	Moderately Dense Forest (sq. km.)	Open Forest (sq. km.)	Total (sq. km.)	Percent of Geographic Area (%)
Barpeta	3,245	35	177	183	395	12.17
Bongaigaon	2,510	33	267	221	521	20.76
Cachar	3,786	81	974	1,186	2,241	59.19
Darrang	3,481	12	91	365	468	13.44
Dhemaji	3,237	7	124	161	292	9.02
Dhubari	2,798	21	197	194	412	14.72
Dibrugarh	3,381	29	165	561	755	22.33
Goalpara	1,824	1	71	265	337	18.48
Goalghat	3,502	6	122	397	525	14.99
Hailakandi	1,327	13	373	403	789gc	59.46
Jorhat	2,851	2	112	495	609	21.36
Kamrup	4,345	68	608	753	1,429	32.89
Karbi-Anglong	10,434	566	3,801	3,593	7,960	76.29
Karimganj	1,809	3	317	544	864	47.76
Kokrajhar	3,169	208	701	211	1,120	35.34
Lakhimpur	2,277	4	118	171	293	12.87
Morigaon	1,704	6	41	86	133	7.81
North Cachar Hills	4,888	135	1,543	2,592	4,270	87.36
Naogaon	3,831	40	352	402	794	20.73
Nalbari	2,257	4	70	208	282	12.49
Sibsagar	2,668	8	144	540	692	25.94
Sonitpur	5,324	56	279	621	956	17.96
Tinsukia	3,790	106	698	730	1,534	40.47
Grand Total	**78,438**	**1,444**	**11,345**	**14,882**	**27,671**	**35.28**

Source: State Forest Report, 2013

29 Sacred Groves are the small patches of forest, owned and protected by the community. So far 40 Sacred Groves are identified in Assam. These Sacred Groves locally called "Than" and "Madaico" in Assam. Mostly Sacred Groves are found in Karbi Anglong district. However some of the monasteries like Shankaradeva maths distributed all over the State also have Sacred Groves. These Sacred Groves are ecologically rich and play important role in the religious and sociocultural

life of the local people and homes to many medicinal and aromatic plants and also as repositories of several endemic and endangered plants.

3.5 Protected Areas & Wetlands

30 In Assam 25 protected area networks consisting of 5 National Parks, and 20 Wildlife Sanctuaries (including 2 proposed WLS) are formed. All these National Parks and WLS hold a large number of endangered and local species. The Protected Area Network is presented in **Figure 3.2.**

TABLE 3.4: LISTS OF PROTECTED AREA

Sl. No.	National Park / Wildlife Sanctuaries	Location (District)	Main Habitat
1.	Kaziranga National Park	Golaghat, Nagaon & Sonitpur	One horned Rhino, Swamp Deer, Wild Buffalo, Tiger, Elephant, Hoolock Gibbon, Capped Langur, Home to 25 globally threatened and 21 near threatened species of birds
2.	Manas National Park	Chirang and Baksa	Rhino, Elephant, Tiger, Pygmy Hog, Hispid hare, Golden Langur, Assamese Macaque, Rhesus Macaque, Leopard, Golden Cat, Fishing Cat, Leopard Cat, Jungle Cat, Large Indian civet, Small Indian civet, Toddy Cat
3.	Orang National Park	Udalguri and Sonitpur	Rhino, Tiger, Maljuria Elephants (male elephants in group), Hog Deer, Wild Pig 222 species of Birds (Greater Adjutant Stork, Lesser Adjutant Stork, Brahminy Duck, Pintail Duck etc.)
4.	Nameri National Park	Sonitpur	Tiger, Leopard, Elephant, Gaur, Wild Pigs, Sambar, Barking Deer, Hispid hare, Slow Loris, Capped Langur, White Winged Wood duck, Palla's fish-eagle, Lesser Adjutant Stork, Greater spotted Eagle, White ramped vulture, Longo billed vulture, Black bellied Term, Rufous–necked Hornbill, Wreathed Hornbill, Great Pied Hornbill etc.
5.	Dibru-Saikhowa National Park	Dibrugarh and Tinsukia	Tiger, Elephant, Leopard, Jungle Cat, Bears, Small Indian Civet, Squirrels, Gangetic Dolphin, Slow Loris, Assamese Macaque, Rhesus Macaque, Capped Langur, Hoolock Gibbon. It is an identifies Important Bird Area (IBA)
6.	Bherjan-Borajan-Padumoni WLS	Tinsukia	Hoolock Gibbon, Capped Langur, Pig-tailed, Macaque, Macaque, Slow Loris and Rhesus Macaque
7.	Panidehing WLS	Sivasagar	Elephants, Lesser Adjutant Stork, Greater Adjutant, Swamp Francolin, Spot-billed Pelican, White-rumped Vulture, Greater Spotted Eagle, Slender-billed Vulture, Pallas's Fish-eagle
8.	Hollongpara Gibbon WLS	Jorhat	7 Primates (Hoolock Gibbon, Stump- tailed Macaque, Capped Langur, Pig-tailed Macaque, Assamese Macaque, Slow Loris and Rhesus Macaque)

Sl. No.	National Park / Wildlife Sanctuaries	Location (District)	Main Habitat
9.	Nambor-Doigurung WLS	Golaghat	Gaur, Elephants, Hoolock Gibbon
10.	Garampani WLS	Karbi Anglong	Elephants, White-winged Duck, Lesser Adjutant Stork
11.	Nambor WLS	Karbi Anglong	Gaur , Elephants, Hoolock Gibbon
12.	East Karbi Anlong WLS	Karbi Anglong	Gaur, Elephants, Tiger, Hoolock Gibbon
13.	Marat Longri WLS	Karbi Anglong	Tigers, Leopards, Gaur , Elephants, Hoolock Gibbon
14.	Burhachapori WLS	Sonitpur	Elephants, Aquatic Birds, Tiger, Bengal Florican
15.	Laokhowa WLS	Nagaon	Elephant, Tiger, Asiatic Wild Buffalo, Bengal Florican
16.	Pabitora WLS	Morigaon	Rhino, Leopards, Barking Deer, Lesser Adjutant, Greater Adjutant, White-bellied Heron, Greater Spotted Eagle
17.	Sonai-Rupai WLS	Sonitpur	White Winged wood duck, Elephant, Tiger, Gaur
18.	Barnadi WLS	Udalguri	Hispid Hare, Pygmy Hog, Elephants, Tiger
19.	Chakrasila WLS	Kokrajhar	Golden Langur, Gaur
20.	Dihing-Patkai WLS	Dibrugarh and Tinsukia	Hoolock Gibbon, Elephants, White Winqed wood duck, Tiqer
21.	Borail WLS	Cachar	Serow, Himalayan Black bear, Hoolock Gibbon
22.	Amchang WLS	Kamrup (Metro)	Elephant, Gaur, Leopard
23.	Deepor Beel Wildlife Sanctuary	Kamrup (Metro)	Greater Adjutant Stork, Whistling Teal, Open Billed Stork, Shoveler, Pintail, Garganey, Pheasant tail jacanas
24	North Karbi Anglong Wildlife Sanctuaries (Proposed)	Karbi Anglong	Tiger, Lesser cats, Elephant, Gaur, Sambar, Bears, Barking deer, Rhesus macaque, Hoolock gibbon, Capped langur, Slow loris
25	Bordoibam Bilmukh Bird Sanctuaries (Proposed)	Dhemaji and Lakhimpur	Kingfishers, Large whistling Teal, Lesser Adjutant Stork, Spotted Dove, Pheasant tailed Jacana, Bronze winged Jacana, Indian River Tern, Black Headed Gull, White Wagtail, Black Headed Oriole, Purple Moorhen, Openbill Stork

31 Assam has 46 Important Bird Area (IBA) which are shown in **Figure 3.2** below. These bird areas inhabits a large number of avifauna (resident as well as migrates).

32 Assam has five Elephant Reserves (Sonitpur ER (1,420 sq km), Dehing-Patkai ER (937 sq km), Kaziranga-Karbi Anglong ER (3,270 sq km), Dhansiri-Lungding ER (2,740 sq km), and Chirang-Ripu ER (2,600 sq km) and Eight Elephant Corridors connects these Elephant Reserves, Protected Forest and nearby forests locating in the neighboring States (viz. Arunachal Pradesh and Meghalaya). Some of these corridors are 0.5 km wide and are proximity to or on the major

settlement. Brief description of these eight corridors in Assam is detailed below and also presented in **Figure 3.2**.

- **Kotha-Burhidihing:** This corridor connects the Kotha Reserve Forest (Digboi Forest Division) and adjacent elephant populations of Changlang district of Arunachal Pradesh with the Burhidihing Reserve Forest (Doom Dooma Forest Division) thereby maintaining the linkage with Tarai Reserve Forest, Kakojan Reserve Forest and Nalani Reserve Forest. Length of the corridor is 6 km. and width is 1 km. Major Settlements in the corridor are Monogaon and Takeli pathar.

- **Upper Dihing East-Upper Dihing West Block at Bogapani:** The corridor lies between the Upper Dihing East and West blocks of forestland and passes through Bogapani tea estate and a few settlements (viz. Bogapani and Panbari). This 3 km. long and 0.5 km. wide elephant corridor constitutes of Reserve Forest and some forest land which are leased to tea gardens and patta land.

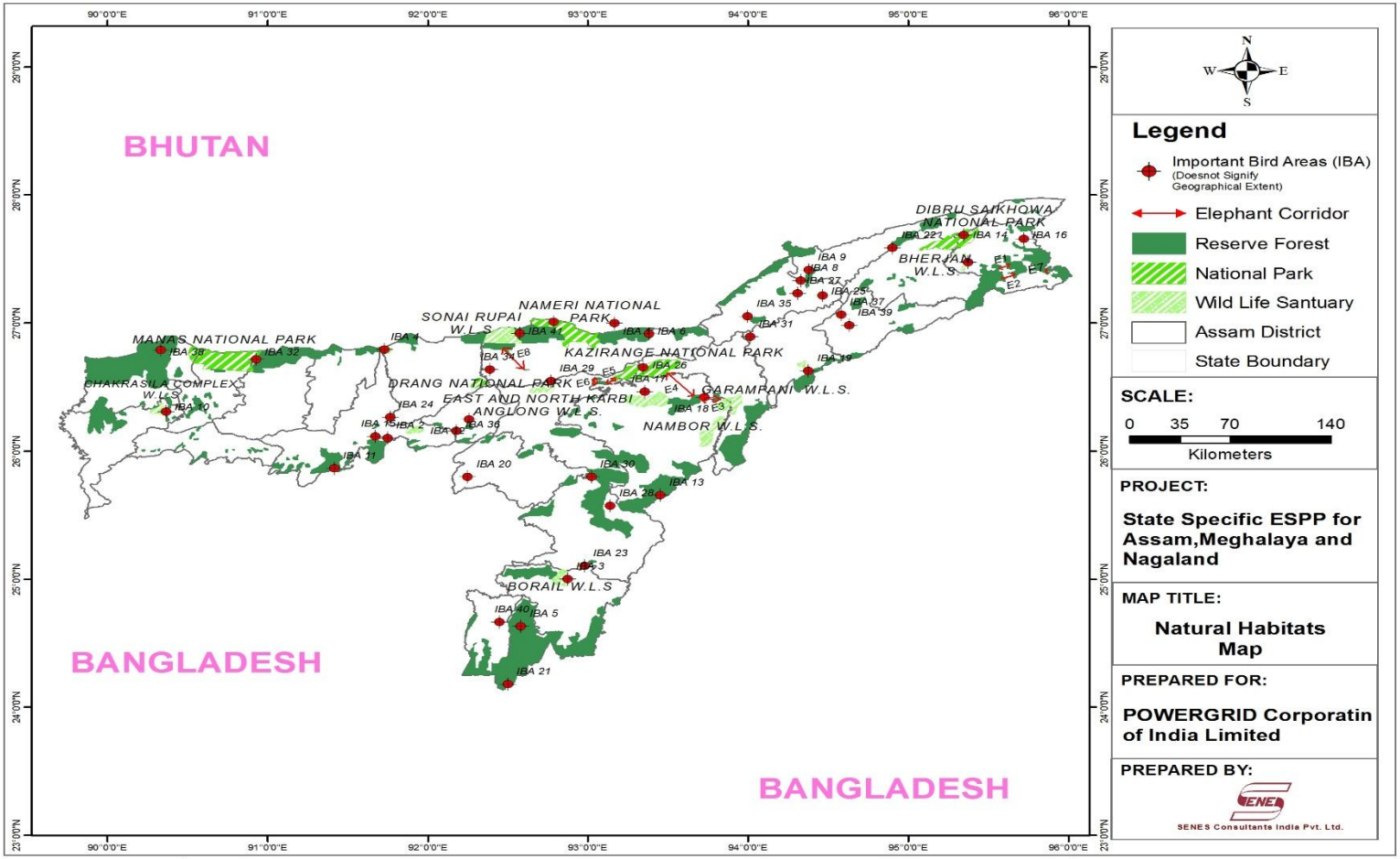
- **Upper Dihing East-Upper Dihing West Block between Golai-Pawai:** This corridor is primarily of Reserve Forest and patta land, connecting Upper Dihing East and West blocks for elephant movement. This corridor has witnessed crop depredation by elephant resulting discontinuation of cultivation by the adjacent villagers in 2000-2001. Again new settlements have started coming in the 6-7 km. long and 0.5 km. wide corridor.

- **Kalapahar-Daigurung:** This corridor, located about 22 km. from Silonijan (Karbi Anglong) on the Silonijan-Chokikhola road is a small patch forest located between Sotiona and Parolijan village (Parolijan River). It is encircled by two hills, namely Kalapahar and Risak on either side connecting Kaziranga National Park via Kalioni Reserve Forest. Length of the corridor is 2 km. and width is 2 km.

- **Kaziranga-Karbi Anglong at Panbari:** This 1 km. long and 0.85 km. wide corridor consisted of Reserve forest and Kaziranga National Park and connects elephant habitats of Kaziranga National Park with the Karbi Anglong forest.

- **Kaziranga-Karbi Anglong at Kanchanjuri:** This corridor connects the elephant habitats of Kaziranga National Park with Brahapahar and Karbi Anglong forests. Under Eastern Assam Wildlife Division this corridor area passes through tea gardens and is close to NH 37. Length of the corridor is 2km.and width is 0.5 km. consisting of Reserve forest and proposed addition (4rd addition) to Kaziranga National Park.

FIGURE 3.2: FOREST AND WILDLIFE HABITATS OF ASSAM



Elephant Corridor					
Sl_no	Name	Length / Width	Sl_no	Name	Length / Width
E1	Upper Dihing East-West Block At Bogapani	3km , 0.5km	E5	Kaziranga-Karbi Anglong at Kanchanjuri	2km , 0.5km
E2	Upper Dihing East-West Block Between Golai-Paeai	6-7km , 0.5km	E6	Kukurakata-Bagsar at Amguri	0.8km , 0.5km
E3	Kalpahar-Daigurung	2km , 2km	E7	Kotha-Burhidihing	6km , 1km
E4	Kaziranga-Karbi Anglong at Panbari	1km , 0.85km	E8	Charduar-Singri hill	30km , 1.5km

Sl_No	IBA Site	Area (Ha)
IBA1	Papum Reserve Forest	106300
IBA2	Amchang Hills	7400
IBA3	Barail Range	80000
IBA4	Barnadi Wildlife Sanctuary	2622
IBA5	Bauwwa Beel	70
IBA6	Behali Reserve Forest	14000
IBA7	Bherjan-Borajan-Podumoni Wildlife Sanctuary	774
IBA8	Bordoibam-Bilmukh Bird Sanctuary	1125
IBA9	Bordoloni: Sampora	3000
IBA10	Chakrashila Complex	5300
IBA11	Chandubi Lake and adjoining areas	2000
IBA12	Deobali Jalah, Sialmari, Haibargaon, Khutikatia (Nagaon)	1000
IBA13	Dhansiri Reserve Forest	77000
IBA14	Dibru: Saikhowa Complex	80000
IBA15	Deepor Beel Bird Sanctuary	414
IBA16	Dum Duma, Dangori and Kumsong Reserve Forests	6050
IBA17	East and North Karbi Anglong Wildlife Sanctuaries	31781
IBA18	Garampani, Nambor and Doigrung	15000
IBA19	Gibbon (Hollongapar) Sanctuary	2098
IBA20	Habang	1000
IBA21	Innerline, Katakal and Barak Reserve Forests	130000
IBA22	Jamjing and Sengajan	9500
IBA23	Jatinga	1000
IBA24	Jengdia Beel and Satgaon	500
IBA25	Jhanjimukh: Kokilamukh	2500
IBA26	Kaziranga National Park	84980
IBA27	Kuarbari Dalani	15
IBA28	Langting-Mupa Reserve Forest	49300
IBA29	Laokhowa and Burhachapori Sanctuaries	11417
IBA30	Lumding: Marat Longri	67400
IBA31	Majuli	88000
IBA32	Manas National Park	50000
IBA33	Nameri National Park	20000
IBA34	Orang National Park	7881
IBA35	Pabho Reserve Forest	4900
IBA36	Pabitora Wildlife Sanctuary	3883
IBA37	Pani-Dihing Bird Sanctuary	4000
IBA38	Ripu and Chirang Reserve Forests	120000
IBA39	Sibsagar Tanks	150
IBA40	Son Beel	1500
IBA41	Sonai-Rupai Wildlife Sanctuary	22000

- **Kukurakata-Bagser at Amguri:** This corridor falls under Eastern Assam Wildlife Division, connecting the elephant habitats of Kaziranga National Park and Kukurakata Reserve Forest with Bagser Reserve Forest and the forest of Karbi Anglong. Length of the corridor is 0.8 km.and width 0.5 km. Amguri is the major settlement in the corridor.

- **Charduar-Singri hill:** This corridor (Sonitpur West Forest Division) passes through tea gardens and settlements of Sonitpur district and is known to have very man-animal conflict. Several major settlements (viz. Posabasi, Panchnoi, Dipabasti, Rowmari basti etc.) lay in this 30 km. long and 1.5 km wide elephant corridor.

33 Wetland plays an important role in preserving biodiversity and wildlife and also support livelihood of indigenous people. Assam State has as many of 11178 wetlands. These wetlands are mainly of natural (Lakes/Ponds, Ox-bow lakes/ Cut-off meanders, High altitude wetlands, Riverine wetlands, Waterlogged, River/Stream) and manmade (Reservoirs/Barrages, Tanks/Ponds, Waterlogged). The Brahamputra and Barak are two important rivers of Assam. Deepor beel, Dhir beel, Sareswar beel, Sone beel, Tamaranga beel and Sonai beel are some of the important wetland sites of Assam.

- **Deepor Beel:** This is a fresh water lake, on the southern bank of the Brahmaputra River (Kamrup District), covering an area of about 900 ha. It is one of the largest natural wetland in Assam, has been notified as Wildlife Sanctuary. This WLS homes to Greater Adjutant Stork, Lesser Adjutant Stork, Baer's Pochard, Spot-billed Pelican, White-rumped Vulture, Greater Spotted Eagle, Slender-billed Vulture, Pallas's Fish-eagle and Spoon-billed Sandpiper;

- **Dhir Beel:** Situated 30 km from Kokrajhar town at the base of Chakrashila Wildlife Sanctuary. The wetland covering 1003 ha is rich in aquatic flora and fauna and is a breeding ground for fish. Adjacent to Dhir, there is another Lake- Diplai. These twin lakes attract a lot migratory birds in winter including Near Threatened Ferruginous Duck and the Vulnerable Baer's Pochard Aythya baeri. Swamp Francolin Francolinus gularis;

- **Sareswar Beel:** This is a shallow, freshwater lake on the floodplain to the north of the Brahmaputra River in lower Assam. The total area of the beel is about 1700 ha. A great diversity of resident and migratory waterfowl are found in the lake. Both the lesser adjutant (Leptoptilos javanicus) and greater adjutant (L. dubius) are regular in the winter months;

- **Sone Beel:** is the largest wetland in Assam. It is in Karimganj district of southern Assam. The lake is 12.5 km long and 3.9 km wide, with a 35.4 km shoreline. It is home to a large number of

resident bird species and more than 150 species of birds have been recorded. The lake attracts thousands of waterfowl;

- **Tamaranga Beel:** is actually a complex of wetlands known as Tamaranga -Dalani-Bhairab Complex, situated only 30 km south from Bongaigaon town. This is an important freshwater lake (beel) and has been listed as a Site of Global Importance in the Directory of Asian The beel attracts many migratory birds and is a good breeding ground for resident water birds.;

- **Sonai Beel** is a cluster of natural lakes namely Nandini, Mer, Sonai, Raumari, Dobarani, and Patiabandha beel in Marigaon district of Assam. The wetlands are important for a wide variety of resident and migratory waterfowl, The Bengal Florican Houbaropsis bengalensis occurs in the wetland site;

3.6 Economy

34 Among eight States of the North Eastern Region, Assam is most industrially advanced State. There are several large, medium and small scale industries based on the resources like agriculture, forest and mineral available here. Two main large scale industries are OIL and Natural Gas which make up 50% of India's on-shore production and Tea which make up 53% of all India production. Papers, cement, Petrochemical are some other industries of Assam. At current prices, Assam's net State domestic product (NSDP) is about INR 1461.99 billion in 2013-14. Agricultural sector accounts for about 27 percent of NSDP where industrial sector accounts only 14%. The comprehensive detail about Assam State is placed at **Annexure 1.**

3.7 Power Scenario

35 The peak demand of the State is 1430 MW. The State's own generation is about 260MW out of their installed capacity of 377 MW as hydel generation (ROR i. e. Run of the Rivers) is negligible due to insufficient rainfall. The allocation of power in the State is depicted in the table below:

TABLE 3.5 ALLOCATION OF POWER TO ASSAM

Sl. No.	Particulars	Capacity MW	Allotment To Assam		Remarks
			%	MW	
1	Kathalguri (AGBPP)	291	56.5	164	Gas based
2	R C Nagar (AGTPP)	84	45.6	38	Gas based
3	Ranganadi (RHEP)	405	43.3	175	Run on River
4	Loktak (NHPC)	105	29.4	31	Reservoir

5	Khangdong (KHEP)	50	56.3	28	Reservoir
6	Kopili-I (KOP-I)	200	53.5	107	Reservoir
7	Kopili-II (KOP-II)	25	52.3	13	Reservoir
8	Doyang (DHEP)	75	43.8	33	Reservoir
A	**Total CSGS- NER**	**1235**		**589**	
B	**Total CSGS- ER**			**162**	
C	**TOTAL CSGS**			**751**	
1	Lakwa TPS	157	100	157	Gas based
2	Namrup TPS	120	100	120	Gas based
3	Karbi Langpi HEP	100	100	100	Run on River
D	**APGCL TOTAL**	**377**		**377**	
E	**OTHERS**	**31**	**100**	**31**	EIPL, AOD, Champamati HEP etc
F	**TOTAL AVAILABILITY**			**1159**	

Source: http://www.apdcl.gov.in/irj/go/km/docs/internet/ASSAM/webpage/PDF/prespower.pdf:

36 The gas based thermal power stations are generating far below their full capacity due to inadequate supply of gas etc. Under this situation, at present, Assam is receiving less than 500 MW from the CSGS during peak hours as against allocation of 751 MW. Total availability of power at present is around 800 MW including State's own generations of about 260 MW. APDCL is making efforts to minimize this 400 MW deficit by procuring 100-150 MW from the open market at a much higher rate than the normal rate of procurement by the Company. Enhance allocation of additional 490 MW i .e. 240 MW from Pallatana Power Project of ONGC in Tripura & 250 MW from Bongaigaon Thermal Power Station of NTPC at Bongaigaon would add up to some extent to minimize the demand-availability gap of power in Assam.

37 Assam Electricity Grid Corporation Limited (AEGCL) deals with transmission of electricity to the distribution network of Assam as well as it is also helping other States of the NE-Region to evacuate their share of power from Central Sectors by utilizing the grid network of AEGCL at different points. In the year 2004, the AEGCL could handle hardly 720 MW only. After 2004, on the assistance of Govt. of India and Govt. of Assam, different projects like ADB funding, NLCPR, NEC, TDF were implemented and grid capacity enhanced to handle load in the tune of 1603 MW presently. Since then, AEGCL has incorporated 4949.374 circuit kms of EHV lines and has a transformation capacity of about 4565.80 MVA from existing 54 numbers of EHV (400kV, 220kV, 132kV level) substations. AEGCL has also anticipated for additional transmission lines (around 900 Ckms) and transformation capacities (about 1300 MVA) by constructing new EHV substations (220

kV, 132kV level) and augmenting existing substations with assistance of Govt. of India and other funding resources including ADB. After completion of these projects at the end of 2014, AEGCL can handle 1694 MW power and at the end of 12th Plan, AEGCL could be able to handle 1998 MW. As per 18th EPS (Electric Power Survey) of CEA, the peak load demand of Assam is projected to be 1817 MW on March, 2017.

38 The distribution of power is carried out by APDCL in the whole State of Assam. There are three main regions or zones of APDCL.

- **APDCL- Upper Assam Region:** It caters to the consumers of the districts of Golaghat, Jorhat, Sibsagar, Dibrugarh, Tinsukia, in Upper Assam. It has over 6.62 lakhs of consumers connected through 1503.5 Ckt km. of 33 kV lines and 9270.5 Ckt km. of 11 kV lines & 106 nos. of 33/11 KV substations of 896 MVA Capacity.

- **APDCL- Central Assam Region:** Area of operation of this zone is spread across the Districts of. Cachar, Karimganj, Hailakandi, Nagaon, Sonitpur, North Lakhimpur Dhemaji Morigaon, N.C.Hills & Karbi Anglong. It has around 10.65 lakhs consumers distributed through 2539 Ckm of 33 KV lines and 22284.00 Ckm. of 11 KV network and 98 nos. of 33/11 KV substations with a total capacity of 814.00 MVA.

- **APDCL- Lower Assam Region:** This zone caters to the energy needs of the consumers of the districts located in lower Assam, namely, Kamrup, Nalbari, Barpeta, Kokrajhar, Bongaigaon, Goalpara and Darrang. It has over 11.94 Lakh consumers of different categories at present connected through 2047 Ckt km 33 kV lines and 9950 Ckt. km of 11 kV network and 105 nos. of 33/11 kV substations with a total capacity of 978.95 MVA.

39 APDCL has initiated many reforms in the distribution sector with the assistance of ADB under its flagship programme viz. Assam Power Sector Development Project (APSDP) resulting in strengthening of Distribution Sector in addition to improvement of Transmission system of Assam. The programme has also helped in improvement/ modernization of communication system, up gradation of SCADA (SLDC), installation of new SCADA (RTU) resulted in better management of the system. Execution of the works under APSDP results in T&D loss reduction from 42.5% in 2003 to 29.6% in 2009. Apart from above, many projects under APDRP and RAPDRP schemes are under implementation for distribution and sub-distribution level to boost the reliability of overall distribution network.

40 The State has taken major initiatives in rural electrification and as on March' 2014, a total of 24,404 (96.2%) villages have been electrified as presented in **Table 3.6**.

TABLE 3.6: STATUS OF ELECTRIFICATION IN ASSAM

Total inhabited villages as per 2011 census	Villages electrified as on 31-03-2014 (Provisional)(#)		%age of villages electrified as on 31-08-2014	Un-electrified villages as on 31-08-2014
	Numbers	%age		
24,372	24,404	96.2	96.8	824

Source: http://cea.nic.in/reports/monthly/dpd_div_rep/village_electrification.pdf

3.8 Road Ahead

41 Future peak & energy demand in the State is likely to grow exponentially due to expansion industrialization/new industry/tea industry/ other infrastructure developments, 100% electrification rural households etc. by the end of 12th five year plan (2012-17). The State's electricity demand forecast is to reach 2,222[8] MW by 2019-20 widening the deficit by more than 500 MW.

42 To cater to the fast growing load growth of the State, a comprehensive expansion program in generation capacity addition (which is already underway with public and private sector investment) needs to be supported with an adequate transmission/evacuation and distribution system also with a view to reduction in T&D loss. Therefore, augmentations/ construction/strengthening of an efficient and adequate Transmission/distribution infrastructure is of utmost necessity so that power can be efficiently and reliably distributed to the end-users. Assam needs significant investments for improving its transmission and distribution network. Under the proposed World Bank funding for NERPSIP in Assam, the investments envisaged for expansion and strengthening of transmission and distribution system are expected to facilitate bridge of gap between demand and supply. Details of proposed expansion/augmentation of power system network in the State of Assam with the financial support amounting to Rs. 1435.55 Crores from GoI and World Bank is placed at **Annexure 2**.

[8] as per 18th EPS survey report

4.0 Stakeholder Analysis

43 The prime objective of the proposed investment is to strengthen the power sector in the State of Assam and capacity building to achieve sustainable development in the long term. The implementations of schemes with proposed investments are expected to facilitate power delivery to remote/virgin areas, to enhance the capacity & reliability of the system, to improve voltage profile & to reduce losses and ultimately to enhance satisfaction for all categories of consumers which in turn will spur growth & overall development in the whole State. The schemes are designed / developed to fulfill the above objectives in the following way:

- To feed the remote or unconnected areas.
- To meet the growing demand, both in domestic & industrial segments.
- To improve reliability and quality of power through bi-furcation/trifurcation of existing 11kV very long overloaded feeders and connection of the different sections of 11 kV feeder/ line so formed to new substations.
- To improve availability of power by augmenting the capacity of existing overloaded power transformers.
- Reduction in technical losses due to improvement in voltage profile/power quality.

44 Stakeholder's analysis has been undertaken to identify the issues and the concerns of various stakeholders who are supposed to be either directly or indirectly impacted/benefited or assume a position wherein they can have a significant role to play on project implementation. The Stakeholder's analysis has been carried out to identify existing relationship and also to understand the roles, responsibilities and relations of these stakeholders in context of shaping the environment and social issues with respect to proposed project. The details of the key stakeholders identified at various levels from national level up to village/panchayat level and their issues & expectations with respect to proposed project has been provided in **Table 4.1.** The process of consultation with stakeholders involves formal and informal discussion. A wide range of issues were discussed with various stakeholders that might have environmental/ social concern. These are listed below.

TABLE 4.1: KEY STAKEHOLDERS AND THEIR EXPECTATIONS/ISSUES

No.	Levels	Key Stakeholders	Expectations and Issues
A	National Level	Government of India	Improvement of overall power scenario of State and timely implementation of project to achieve the intended objective i.e. power to all to facilitate inclusive growth, through enhanced access of

No.	Levels	Key Stakeholders	Expectations and Issues
		Ministry of Power	consumers to Grid connected power supply, besides improving its availability, adequacy, reliability and affordability.
		World Bank	Strengthening of T&D networks of State & Capacity development of Utility and ensuring implementation of environment and social safeguards.
		POWERGRID	Would expect active support from state utility and other stakeholders for timely implementation of project with intended benefits like providing electricity supply to remote or unconnected area.
B	Regional Level	DoNER	Economic development of the North Eastern region
		NEC	
C	State Level	Department of Power	Proper coordination for timely implementation of project with intended benefits.
		State Power Corporations	Availability of land and other clearances for timely implementation projects. Capacity building activities to enable undertaking such projects on their own in future.
		Tribal Welfare Department/ Autonomous District Council	Ensuring recognition and protection of tribal institutions, property and their social, cultural, religious values and practices due to proposed intervention Proper coordination and approvals for utilization/acquisition of land within ADC areas and for carrying out other physical interventions in these areas as necessary.
		State Forest Department	Protection of forest and protected areas, timely processing of approvals for utilization of forest land with minimum loss or implication to state forest
		Utilities like Water supply, PHE, Oil & Gas etc.	During implementation –coordination for timely shifting of utilities as necessary and secured power supply to enhance efficiency of their activities.
		Local NGOs	Proper information dissemination at the local community level and act as watch dog to oversee implementation as per applicable legal provisions.
		Media	Coordination for information dissemination
D	District Level	District Administration – Revenue Department	Project intervention would ensure requirement of minimum land area and affect minimum people as far as possible. Regular co-ordination/ consultation between implementation agency and projected affected persons for early resolution of grievances & conflict management.

No.	Levels	Key Stakeholders	Expectations and Issues
E	Village Level	Village council heads, members, etc.	Implementation of project in their area would create employment and increase business opportunity to local and development of area though better accessibility of quality and reliable supply of power. Protection of right of the affected persons and early resolution of grievances during project implementation. Proper coordination and approvals for utilization/ acquisition of land within ADC areas and for carrying out other physical interventions in these areas as necessary
		Informal groups	Local community leaders, elders, community groups, women groups etc. be involved and consulted to address issues related to compensation, employment opportunity due to project activity and coordination as necessary.
		SC	Mutually agreed measures to address any adverse issues due to project activity.
		ST	Tribal Groups heads, Council heads be consulted and involved in addressing all possible impact arisen due to project activity in the area.
		Women	Women groups – be included in all consultation and be made part of decision making process related to project in their domain.
F	Panchayat level	Panchayat members	Access to the communities in general and the affected families in particular. Secondly during implementation of the project activities for substations and especially the transmission/ distribution lines the permission and consultations with the panchayat is necessary as their role in accessing and convincing local communities is important.

5.0 Issues, Impacts and Management Measures – Social

45 Key social/ institutional issues emanating from stakeholder analysis relate to the following:

- Securing/Alienation of land for substation;
- Temporary damages to land, crops, trees or structures during construction;
- Community participation during project cycle i.e. planning, implementation and operation;
- Health and Safety risk including HIV/AIDS;
- Tribal/vulnerable groups;
- Locals, Women and Inter agency participation/coordination.

5.1 Impacts – Social

46 This section identifies the potential social impacts of the proposed projects in terms of the nature, magnitude, extent and location, timing and duration of the anticipated impacts. These impacts are both positive or negative relating to the project design stage, construction stage or the project operation and decommissioning stage.

i. Positive Impacts

- Increased economic activity;
- Improved and reliable power supply;
- Employment creation;
- Improved road infrastructure;
- Gender Issues - Access to electricity would improve the quality of life and also reduce the time consumption of women for household activities which will entail availability of more time for other activities.
- Less reliance of fossil fuels like firewood, charcoal etc.;
- Capacity Building.

ii. Negative Impacts

- Loss of land
- Restriction of land use and land rights
- Temporary loss of access to Common Property Resources and
- Health and Safety risk including HIV/AIDS

5.2 Management Framework – Social

47 Based on the issues to be addressed and impacts likely to occur, appropriate management measures have been drawn for implementation to mitigate the possible impacts due to proposed project interventions. While for positive impacts, enhancement measures are suggested; for negative impacts suitable mitigation measures has been included. Details of potential socials issues and its management framework and measures are outlined in ESPP. Apart from this AEGCL/APDCL has developed a standard Environment Management Plan (Refer Annex.- A attached in ES) for its transmission and distribution projects which shall be made part of contract document for proper implementation by the Contractor. Summary of potential social issues and corresponding management measures is provided below in **Table 5.1**. Key principles governing the drawing of management measures and some 'definitions' are presented initially for a better reading of the measures.

5.3 Principles

48 The basic principles that guide this Social Management Framework (SMF) are:

- Avoidance socially sensitive areas while planning project activities;
- Minimisation of impacts when project activities occur in socially sensitive areas;
- Mitigation of any unavoidable negative impacts arising out of its projects;
- Optimization of land requirement; and
- Greater transparency through involvement of community and other stakeholders.

5.4 Definitions

49 Following definitions will be applicable unless otherwise stated specifically;

"Administrator" means an officer appointed for the purpose of rehabilitation and resettlement of affected families under sub-section *(l*) of section 43;

"Affected area" means such area as may be notified by the appropriate Government for the purposes of land acquisition;

"Affected family" includes;

i) a family whose land or other immovable property has been acquired;

ii) a family which does not own any land but a member or members of such family may be agricultural labourers, tenants including any form of tenancy or holding of usufruct right, share-croppers or artisans or who may be working in the affected area for three years prior to

the acquisition of the land, whose primary source of livelihood stand affected by the acquisition of land;

iii) the Scheduled Tribes and other traditional forest dwellers who have lost any of their forest rights recognised under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 due to acquisition of land;

iv) family whose primary source of livelihood for three years prior to the acquisition of the land is dependent on forests or water bodies and includes gatherers of forest produce, hunters, fisher folk and boatmen and such livelihood is affected due to acquisition of land;

v) a member of the family who has been assigned land by the State Government or the Central Government under any of its schemes and such land is under acquisition;

vi) a family residing on any land in the urban areas for preceding three years or more prior to the acquisition of the land or whose primary source of livelihood for three years prior to the acquisition of the land is affected by the acquisition of such land;

"Appropriate Government" means,—

i) in relation to acquisition of land situated within the territory of, a State, the State Government;

ii) in relation to acquisition of land situated within a Union territory (except Puducherry), the Central Government;

iii) in relation to acquisition of land situated within the Union territory of Puducherry, the Government of Union territory of Puducherry;

iv) in relation to acquisition of land for public purpose in more than one State, the Central Government, in consultation with the concerned State Governments or Union territories; and

v) in relation to the acquisition of land for the purpose of the Union as may be specified by notification, the Central Government:

Provided that in respect of a public purpose in a District for an area not exceeding such as may be notified by the appropriate Government, the Collector of such District shall be deemed to be the appropriate Government;

"Authority" means the Land Acquisition and Rehabilitation and Resettlement Authority established under section 51;

"Collector" means the Collector of a revenue district, and includes a Deputy Commissioner and any officer specially designated by the appropriate Government to perform the functions of a Collector under this Act;

"Commissioner" means the Commissioner for Rehabilitation and Resettlement appointed under sub-section (/) of section 44;

"Cost of acquisition" includes;

i) amount of compensation which includes solatium, any enhanced compensation ordered by the Land Acquisition and Rehabilitation and Resettlement Authority or the Court and interest payable thereon and any other amount determined as payable to the affected families by such Authority or Court;

ii) demurrage to be paid for damages caused to the land and standing crops in the process of acquisition;

iii) cost of acquisition of land and building for settlement of displaced or adversely affected families;

iv) cost of development of infrastructure and amenities at the resettlement areas;

v) cost of rehabilitation and resettlement as determined in accordance with the provisions of this Act;

vi) administrative cost,—

a) for acquisition of land, including both in the project site and out of project area lands, not exceeding such percentage of the cost of compensation as may be specified by the appropriate Government;

b) for rehabilitation and resettlement of the owners of the land and other affected families whose land has been acquired or proposed to be acquired or other families affected by such acquisition;

c) cost of undertaking 'Social Impact Assessment study':

"Displaced family" means any family, who on account of acquisition of land has to be relocated and resettled from the affected area to the resettlement area;

"Family" includes a person, his or her spouse, minor children, minor brothers and minor sisters dependent on him:

Provided that widows, divorcees and women deserted by families shall be considered separate families;

"Holding of land" means the total land held by a person as an owner, occupant or tenant or otherwise;

"Infrastructure project" shall include any one or more of the items specified in clause *(b)* of sub-section (7) of section 2:

"Land" includes benefits to arise out of land, and things attached to the earth or permanently fastened to anything attached to the earth;

"Landless" means such persons or class of persons who may be,—

i) considered or specified as such under any State law for the time being in force; or

ii) in a case of landless not being specified under sub-clause (0. as may be specified by the appropriate Government;

"Land owner" includes any person,—

i) whose name is recorded as (he owner of the land or building or part thereof, in the records of the authority concerned; or

ii) any person who is granted forest rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 or under any other law for the time being in force; or

iii) who is entitled to be granted Patta rights on the land under any law of the State including assigned lands: or

iv) any person who has been declared as such by an order of the court or Authority;

"Local authority" includes a town planning authority (by whatever name called) set up under any law for the time being in force, a Panchayat as defined in article 243 and a Municipality as defined in article 243P, of the Constitution;

"Marginal farmer" means a cultivator with an un-irrigated land holding up to one hectare or irrigated land holding up to one-half hectare:

"Market value" means the value of land determined in accordance with section 26;

"Notification" means a notification published in the Gazette of India or, as the case may be, the Gazette of a State and the expression "notify" shall be construed accordingly;

"Patta" shall have the same meaning as assigned to it in the relevant Central or State Acts or rules or regulations made thereunder;

"Person interested" means—

i) all persons claiming an interest in compensation to be made on account of the acquisition of land under this Act;

ii) the Scheduled Tribes and other traditional forest dwellers, who have lost any forest rights recognised under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006;

iii) a person interested in an easement affecting the land;

iv) persons having tenancy rights under the relevant State laws including share-croppers by whatever name they may be called; and

v) any person whose primary source of livelihood is likely to be adversely affected;

"Project" means a project for which land is being acquired, irrespective of the number of persons affected;

"Public purpose" means the activities specified under sub-section (/) of section 2;

"Requiring Body" means a company, a body corporate, an institution, or any other organisation or person for whom land is to be acquired by the appropriate Government, and includes the appropriate Government, if the acquisition of land is for such Government either for its own use or for subsequent transfer of such land is for public purpose to a company, body corporate, an institution, or any other organisation, as the case may be, under lease, licence or through any other mode of transfer of land;

"Resettlement Area" means an area where the affected families who have been displaced as a result of land acquisition are resettled by the appropriate Government;

"Scheduled Areas" means the Scheduled Areas as defined in section 2 of the Provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996;

"Small farmer" means a cultivator with an un-irrigated land holding up to two hectares or with an irrigated land holding up to one hectare, but more than the holding of a marginal fanner.

TABLE 5.1: MANAGEMENT MEASURES TO ADDRESS POTENTIAL SOCIAL ISSUES

Sl.	Potential Issues	Management Measures
1	Loss of land	For Tranche-1, this is an issue as land for only 15 transmission substations out of 36 transmission & distribution substations is available with the Utility (for details refer **Table-5.4)**. For remaining 5 transmission and 16 distribution substations, lands will have to be secured a fresh by AEGCL/APDCL through adopting any of the following three methods; i. Purchase of land on willing buyer & willing seller basis on negotiated rate; ii. Voluntary Donation; and

Sl.	Potential Issues	Management Measures
		iii. Involuntary Acquisition. In case of procurement of land through private purchase, AEGCL/APDCL shall ensure that compensation/rate for land is not less than the rate provided in the new land acquisition act, 2013. In order to comply with this provision AEGCL/APDCL may organize an awareness camp where provisions of new act in respect of basis/modalities of compensation calculation shall be explained to land owners with specific State provision if any. In the case of voluntary donation of land, the following shall be ensured: • The land user(s) will not be subjected to undue pressure for parting of land; • All out efforts shall be made to avoid any physical relocation/displacement due to loss of land; • The AEGCL/APDCL shall facilitate in extending 'gratitude' to the land donor(s) in lieu of the 'contribution' if so agreed. The same shall be documented in the shape of MoU between donor and utility and subsequently title of land transferred in the name of AEGCL/APDCL. • All land donations and direct purchases will be subject to a review/ approval by a broad based committee comprising representatives of different sections including those from the IA and GoA. In case of land acquired through involuntary acquisition, provisions of RFCTLARRA, 2013 shall be followed. (for details refer **Part – A** of Social Management Framework placed as **Annexure – 3**)
2	Change in land use and population relocation for substations	Due to inherent flexibility in locating substation and very small size of land, AEGCL/APDCL avoids habituated area completely hence no relocation of population on account of setting up of substation is envisaged.
		Although securing land for construction of substations proposed under tranche-1 is an issue, AEGCL/APDCL shall make all out efforts to secure such land wherein possibility of physical relocation/displacement is not envisaged.
3	Change in land use and population relocation due to towers/poles	As per existing law, land for tower/pole and right of way is not acquired and agricultural activities are allowed to continue after construction activity and AEGCL/APDCL pays compensation for all damages including cost of land below tower to its owner without acquiring it. Hence change in land use and resultant relocation of people is not envisaged in T&D projects.
4	Right of Way	Land for tower and right of way is not acquired as agricultural activities can continue. However, the project shall pay full compensation to all the affected persons/ community for any damages sustained during the execution of work. Accordingly, AEGCL/APDCL has formulated appropriate management plan in the form of Compensation Plan for Temporary Damage (CPTD) to minimize the damages and provide

Sl.	Potential Issues	Management Measures
		compensation plan for temporary damages in consultation with the state government and affected persons and/ or community (for details refer **Part – B** of Social Management Framework placed as **Annexure – 3**)
5	Impact on Tribal	The population of Assam as per census 2011 was 3,12,05,576. The Scheduled Tribes (STs) population is 38, 84,371 which constitutes 12.4 per cent of the total population of the State. In compliance with Bank's Operational Policy 4.10 (Indigenous Peoples) and special provision of RFCTLARRA, 2013, a Tribal People Development Framework has been prepared (refer **Part - C** of Social Management Framework placed as **Annexure – 3**).
6	Gender/ women participation	Women involvement will be planned through formal and informal group consultations so that their participation is ensured during preparation and implementation of the project.
7	Induced secondary development during construction	AEGCL/APDCL operations are short-lived and do not induce secondary developments during construction.
8	Health and safety of worker/employee /community	During construction the health and safety aspects of workers and nearby community shall be implemented through contractors with due diligence and compliance of required regulation/guideline through a safety plan AEGCL/APDCL uses best available technology for lines and do not cause any hazards to health and safety.
9	"Chance finds" or discovery of any archaeological artifacts, treasure etc. during excavation	Possibilities of such phenomenon in T&D project are quite remote due to limited and shallow excavations. However, in case of such findings, AEGCL/APDCL will follow the laid down procedure in the Section-4 of Indian Treasure Trove Act, 1878 as amended in1949.
10	Inter Agency Coordination	Exclusive bodies will be set up at state/ district levels for over-seeing, reviewing and guiding the project

50 Implementation viz., operationalization of the management measures necessarily needs to be done in the realm of regional/ national/ international legal and regulatory stipulations. The same is discussed below.

5.5 Legal and Regulatory Framework

51 The applicable acts, rules, and relevant policies in the context of the project are presented in **Table- 5.2**. The Project Authority will ensure that project implementation is consistent with provision of such legal framework

TABLE 5.2 : LEGAL AND REGULATORY PROVISIONS - SOCIAL

Sl. No.	Acts, Rules and Policies	Relevance/ Applicability to the project
1. Constitutional Provisions		
1	6th Schedule of the Constitution	Provisions provide Special Power to ADC Area for the support/ development of Tribal. Any activity sited in ADC area needs their consent. The Sixth Schedule provides for administration of tribal areas as autonomous entities. The administration of an autonomous district is vested in a District Council and of an autonomous region, in a Regional Council. These Councils are endowed with legislative, judicial, executive and financial powers. These institutions were expected to integrate these areas with the modern system of administration while preserving the traditional autonomy and local self-governing institutes of the tribal people.
II. Provisions Law of the Land/Rules		
2.	The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013	The Act provides for enhanced compensation and assistances measures and adopts a more consultative and participatory approach in dealing with the Project Affected Persons. As and when this Act becomes effective and adopted by the State of Assam then AEGCL/APDCL, too shall be bound by and would need to comply with relevant provisions of the Act. The salient features of the provisions of the new RFCTLARRA, 2013 are given in **Annexure- 4.**
3.	Electricity Act, 2003 (EA, 2003)	Transmission line projects are constructed under the ambit of Electricity Act, 2003 following the provisions of Section 67 & 68 of act. Under the provisions of **Section 68(1):-**Prior approval of the Govt. of Assam (GoA) is a mandatory requirement to undertake any new transmission project 66kV upward and for distribution project of 33kV system in the State which authorizes APDCL to plan and coordinate activities to commission a new Transmission/distribution project. The electricity act under Section 164 has a provision to grant licensee the power of Telegraph Authority as provided in the Indian Telegraph Act, 1885[9]. GoA on request of AEGCL may by order in writing/through notification authorize them for using powers of telegraph authority after fulfilling the requirement as laid down in the rules thereof. The salient features of the Electricity Act 2003 are given in **Annexure- 5**.
4.	Rights of Way (RoW) and Compensation	In case of agricultural or private land damages, Section-67 and or Section-68 (5 & 6) of the Electricity Act, 2003 and Section-10 of the Indian Telegraph Act, 1885 if vested with power under section 164 of the

[9] POWERGRID, the designated Implementing Agency has already been vested with powers of telegraph authority by GoI vide Gazette Notification dated Dec.24, 2003.

Sl. No.	Acts, Rules and Policies	Relevance/ Applicability to the project
		Electricity Act are followed for assessment and payment of compensation towards such damage.
5.	The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006	The act recognizes and vests the forest rights and occupation in forest land to forest dwelling. Scheduled Tribes and other traditional forest dwellers who have been residing in such forests for generations but whose rights could not be recorded, and provides for a framework for recording the forest rights so vested and the nature of evidence required for such recognition and vesting in respect of forest land. The definitions of forest dwelling Schedule Tribes, forestland, forest rights, forest villages, etc. have been included in Section 2 of the Act. The Union Ministry of Tribal Affairs is the nodal agency for implementation of the Act while field implementation is the responsibility of the government agencies. The applicability of the act linked with forest clearance process under Forest (Conservation) Act, 1980 w.e.f. August 2009 by MoEF shall be followed by AEGCL/APDCL.
6.	The Right to Information Act, 2005	The Act provides for setting out the practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, the constitution of a Central Information Commission and State Information Commissions and for matters connected therewith or incidental thereto.
7.	Indian Treasure Trove Act, 1878 as amended in 1949	The Act provides for procedures to be followed in case of finding of any treasure, archaeological artifacts etc. during excavation. Possibilities of such discoveries are quite remote due to limited and shallow excavations. However, in case of such findings AEGCL/APDCL will follow the laid down procedure in the Section-4 of Act.
8.	Ancient Monuments & Archaeological Sites and Remains Act, 1958	The act has been enacted to prevent damage to archaeological sites identified by Archaeological Survey of India. During route alignment, all possible efforts are made to avoid these areas. Wherever it becomes unavoidable AEGCL/APDCL will take necessary permission under this act.
9.	The Assam Ancient Monuments and Records Rule, 1964	This Act prevents construction of building or carrying out any activity e.g. Excavating, blasting or any operation of a like nature inside archaeological site. AEGCL/APDCL shall comply with the requirements of this rule.
III. World Bank OP (Operational Policy)		

Sl. No.	Acts, Rules and Policies	Relevance/ Applicability to the project
10.	OP 4.12 – Involuntary Resettlement	This policy covers direct economic and social impacts that both result from Bank-assisted investment projects, and are caused by the involuntary taking of land. To avoid or minimize involuntary resettlement and, where this is not feasible, assist displaced persons in improving or at least restoring their livelihoods and standards of living in real terms relative to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher. Comparison between World Bank Policy (OP 4.12) Requirements and RFCTLARR Act, 2013 is placed in **Table 5.3**
11.	OP 4.10 – Indigenous Peoples	This policy contributes to the Bank's mission of poverty reduction and sustainable development by ensuring that the development process fully respects the dignity, human rights, economies, and cultures of Indigenous Peoples. The Bank provides project financing only where free, prior, and informed consultation results in broad community support to the project by the affected Indigenous Peoples. Such Bank-financed projects include measures to (a) avoid potentially adverse effects on the Indigenous Peoples' communities; or (b) when avoidance is not feasible, minimize, mitigate, or compensate for such effects Bank-financed projects are also designed to ensure that the Indigenous Peoples receive social and economic benefits that are culturally appropriate and gender and inter generationally inclusive. The project shall ascertain broad community support for the project based on social assessment and free prior and informed consultation with the affected Tribal community, if any.

TABLE 5.3: ANALYSIS OF REQUIREMENT UNDER WB POLICY (OP 4.12) AND RFCTLARR ACT 2013

S. No.	World Bank Involuntary Resettlement Requirement	RFCTLARRA, 2013	Remarks and provisions in RFCTLARR Act, 2013
Policy objectives			
1	Avoid involuntary resettlement (IR) wherever feasible	√	Social Impact assessment (SIA) should include: (i) whether the extent of land proposed for acquisition is the absolute bare minimum extent needed for the project; (ii) whether land acquisition at an alternate place has been considered and found not feasible. **[Section 4 sub-section 4(d) and 4(e)]**
2	Where resettlement cannot be avoided, resettlement activities should be conceived and executed as a development programme by providing sufficient resources to enable Affected Persons (APs) to	√	The cumulative outcome of compulsory acquisition should be that affected persons become partners in development leading **[Preamble of the RFCTLARR Act]**

	share in project benefits.		
3	APs should be meaningfully consulted and provided opportunities to participate in planning and implementing resettlement programs.	√	Whenever a SIA is required, the appropriate Government shall ensure that a public hearing is held at the affected area, after giving adequate publicity about the date, time and venue for the public hearing, to ascertain the views of the affected families to be recorded and included in the SIA Report. **[Section 4 (1), 5, 45 (2)]**
4	APs should be assisted in their efforts to improve their livelihoods and standards of living, or at least restore them, to pre-displacement levels or to pre-project levels.	√	The cumulative outcome of compulsory acquisition should be that affected persons become partners in development leading to an improvement in their post acquisition social and economic status and for matters connected therewith or incidental thereto. **[Preamble of the RFCTLARR Act]**
Coverage of Impacts			
5	Involuntary taking of land resulting in loss of income sources or means of livelihood, whether or not the affected persons must move to another place	√	Preamble of the said Act envisages restoration of livelihood as one of the guiding principle. In the definition of affected family in includes 'a family which does not own any land but a member or members of such family may be agricultural labourers, tenants including any form of tenancy or holding of usufruct right, sharecroppers or artisans or who may be working in the affected area for three years prior to the acquisition of the land, whose primary source of livelihood stand affected by the acquisition of land; and further, a distinction is made between affected family and displaced family in the definition (i.e) a displaced family means any family, who on account of acquisition of land has to be relocated and resettled from the affected area to the resettlement area. **[Section 3 sub-section c (ii) and k]**
	Involuntary taking of land resulting in loss of assets or access to assets		In the definition of affected family, it includes 'a family whose land or other immovable property has been acquired' **[Section 3 sub-section c (i)]**
6	Involuntary restriction of access to of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons.	√	In the definition of affected family in includes 'family whose primary source of livelihood for three years prior to the acquisition of the land is dependent on forests or water bodies and includes gatherers of forest produce, hunters, fisher folk and boatmen and such livelihood is affected due to acquisition of land' **[Section 3 sub-section c (vi)]**
Eligibility Criteria			
7	Those who have formal legal rights to land (including customary and traditional rights recognized under the laws of the	√	In the definition of affected family, it includes 'a family whose land or other immovable property has been acquired' **[Section 3 sub-section c (i)]**

	country)		
8	Those who do not have formal legal rights to land **at the time the census begins but have a claim to such land or assets--provided that such claims are recognized under the laws of the country or become recognized through a process identified in the resettlement plan**	√	In the definition of affected family, it includes 'the Scheduled Tribes and other traditional forest dwellers who have lost any of their forest rights recognized under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 due to acquisition of land'; and also includes 'a member of the family who has been assigned land by the State Government or the Central Government under any of its schemes and such land is under acquisition'; a family which does not own any land but a member or members of such family may be agricultural laborers, tenants including any form of tenancy or holding of usufruct right, share-croppers or artisans or who may be working in the **affected area for three years prior to the acquisition of the land**; a family residing on any land in the urban areas for preceding three years or more prior to the acquisition of the land or whose primary source of livelihood **for three years prior to the acquisition** of the land is affected by the acquisition of such land **[Section 3 sub-section c (ii),(iii) and(v)]**
Measures/Entitlements			
9	Ensure APs are informed about their options and rights pertaining to resettlement	√	Whenever a SIA is required, the appropriate Government shall ensure that a public hearing is held at the affected area, after giving adequate publicity about the date, time and venue for the public hearing, to ascertain the views of the affected families to be recorded and included in the SIA report. **[Section 5]**
10	Ensure APs are provided prompt and effective compensation at full replacement cost for losses of assets attributable directly to the project.	√	Though explicitly not stated, the compensations are expected to be much more than replacement costs. Total compensation and monetary benefits under R & R have to paid to PAPs before possession of land is granted. **{Section -38 (1)}**
11	If there is physical relocation, provide APs with (i) assistance(such as moving allowances) during relocation; and (ii) residential housing, or housing sites, or, as required, agricultural sites for which a combination of productive potential, locational advantages and other factors is at least equivalent to the advantages	√	The Rehabilitation and Resettlement Award shall include all of the following..... (c) particulars of house site and house to be allotted, in case of displaced families; (d) particulars of land allotted to the displaced families; (e) particulars of one time subsistence allowance and transportation allowance in case of displaced families. **[Section 31 sub-section 2(c), (d) and (e)] and schedule-3**

	of the old site.		
12	Provide relocation assistance to displaced persons	√	Each affected family is to be given one time Resettlement Allowance of Rs. 50,000/-
13	Particular attention to be paid to the needs of vulnerable groups among those displaced, especially those below the poverty line, the landless, the elderly, women and children, indigenous peoples, ethnic minorities, or other displaced persons who may not be protected through national land compensation legislation	√	The act provides for special provisions and assistance for scheduled caste and scheduled tribe in scheduled area. **[Section 41]** Further the act recognizes widows, divorcees and women deserted by families as separate families **[Section sub-section (m)]**
14	Provision of compensation and of other assistance required for relocation, prior to displacement, and preparation and provision of resettlement sites with adequate facilities, where required. In particular, taking of land and related assets may take place only after compensation has been paid and, where applicable resettlement sites and moving allowances have been provided to the displaced persons.	√	Total compensation and monetary benefits under R & R have to paid to PAPs before possession of land is granted. **{Section -38 (1)}.**
15	Preference should be given to land- based resettlement strategies for displaced persons whose livelihoods are land-based.	√	Land for land is recommended in irrigation projects and in projects where SC/ST is involved equivalent land. [**Section 41 &Second Schedule S.No.2]**
16	Cash compensation levels should be sufficient to replace the lost land and other assets at full replacement cost in local markets.	√	Method of valuation of land and considering the higher value as base with multiplying factor of 1-2 and the 100 solatium with 12% interest comes out to be more than replacement cost for land. For structure, tree and crops, valuation by appropriate authority will be equivalent to replacement value with provision of expert assistance. **[Section 26 sub-section 1 and 2, Section 29 and Section 30]**
17	Appropriate and accessible grievance mechanisms are established for these groups.	√	For the purpose of providing speedy disposal of disputes relating to land acquisition, compensation, rehabilitation and resettlement, establish by notification. one or more Authorities to be known as

			"the Land Acquisition, Rehabilitation and Resettlement Authority" **[Section 51 sub-section 1]**
18	In new resettlement sites or host communities, infrastructure and public services are provided as necessary to improve, restore, or maintain accessibility and levels of service for the displaced persons and host communities.	√	In every resettlement area as defined under this Act, the Collector shall ensure the provision of all infrastructural facilities and basic minimum amenities specified in the Schedule-3 of the Act. **[Section 32]**
19	Disclose the resettlement plan, including documentation of the consultation in an accessible place and a form and language(s) understandable to affected persons and other stakeholders.	√	Discloser of R&R Scheme along with records of public hearing to be put in public domain by uploading on specified website as well as placement in Panchayat/ Municipality in **vernacular language**. **{ Sec. 19 (4)}**
20	Monitor and assess resettlement outcomes, their impacts on the standards of living of displaced persons.	√	Provision of post implementation social audit by R&R Commissioner Rehabilitation & Resettlement Committee to carry out post implementation social audit in consultation with Gram Sabha/ Municipality. **{ Sec. 44 (3) & 45}**

52. From the above analysis it may be noted that the only difference between the provisions of new act and World Bank policy is in respect of the cut-off date for determining eligibility for non-titleholders. As per the act such eligibility criteria is dependence on acquired land three years preceding the acquisition whereas same eligibility is the date of commencement of the survey. However, such strict criterion in the act is to safeguard the interest of genuine persons and to discourage influx of outsiders and people with vested interest. The same eligibility criteria of three years preceding land acquisition notification (Sec-4 under LAA) was accepted by Bank in case of POWERGRID's ESPP in 2005 and also during comprehensive analysis under UCS in 2009.

5.6 Mitigation Measures

53 The likely/associated social impact of transmission & distribution line projects are not far reaching and are mostly localized to near vicinity/ ROW. Many such impacts can be minimized through careful route selection and siting of substations. Sound design/ engineering variations also play a major role in planning effective mitigative measures depending upon the site

situation/location. The major social issues that need attention and proper care under this project are as follows;

a) Substation: Land for substations is an issue as fresh lands will be required for construction of substations. AEGCL/APDCL shall secure/acquire the required land either through direct purchase on willing buyer & willing seller basis on negotiated rate or by invoking provisions of RFCTLARRA, 2013. However, efforts will be made to secure such land wherein possibility of physical relocation/displacement is not envisaged. Details of land availability status of substations are provided in **Table – 5.4.**

TABLE 5.4: LAND AVAILABILITY FOR SUBSTATION

Sl. No.	Name of the substation	Scope of work	Land Status
A. Transmission Substations			
1	220/132 kV Amingaon (GIS)	New	Land for 5 new substations (i.e. *Behiating, Silapather, Guwahati Medical College, Paltanbazar, & Sarupather) and all extension substations* are available with AEGCL. For remaining 6 new substations, the required land shall be secured either through direct purchase on willing buyer & willing seller basis on negotiated rate or by invoking provisions of RFCTLARRA, 2013
2	220/132 kV Behiating (New Dibrugarh)	New	
3	132/33 kV Guwahati Medical College (GIS)	New	
4	132/33 kV Chapakhowa	New	
5	132/33 kV Silapather	New	
6	132/33 kV Hazo	New	
7	132/33 kV Paltanbazar (GIS)	New	
8	132/33 kV Tangla	New	
9	132/33 kV Sarupather	New	
10	132/33 kV Tezpur New	New	
11	132/33 kV Teok	New	
12	220/132 kV Rangia	Augmentation	
13	220/132 kV Tinsukia	Augmentation	
14	132/33 kV Dhemaji SS	Augmentation	
15	132/33 kV Sonabil	Augmentation	
16	132/33 kV Rupai	Augmentation	
17	132/33 kV Kahilipara	Augmentation	
18	132/33 kV Kamakhya (GIS)	Augmentation	
19	220/132 kV Samaguri	Augmentation	
20	132/33 kV Dhaligaon	Augmentation	
B. Distribution Substations			
1	33/11 kV substation (16 Nos.)	New	APDCL has identified land for these substations and the required lands shall be secured either through direct purchase on willing buyer & willing seller basis on negotiated rate or by invoking provisions of RFCTLARRA, 2013.

Thus Land for tranche-1 and subsequent investments under future tranches can be secured through three following methods;

i) Purchase of land on willing buyer & Willing Seller basis on negotiated rate;
ii) Voluntary Donation; and
iii) Involuntary Acquisition.

In case of procurement of land through private purchase, AEGCL/APDCL shall ensure that compensation/rate for land is not less than the rate provided in the new land acquisition act, 2013. The finalization of land price/negotiation shall be through a committee. In order to comply with this provision AEGCL/APDCL may organize an awareness camp where provisions of new act in respect of basis/modalities of compensation calculation shall be explained to land owners with specific State provision if any.

In case of voluntary donation of land the following shall be ensured:

- The land user(s) will not be subjected to undue pressure for parting of land;
- All out efforts shall be made to avoid any physical relocation/displacement due to loss of land;
- The AEGCL/APDCL shall facilitate in extending 'gratitude' to the land donor(s) in lieu of the 'contribution' if so agreed. The same shall be documented in the shape of MoU between donor and utility and subsequently title of land transferred in the name of AEGCL/APDCL
- All land donations (as well as purchases) will be subject to a review/ approval from a committee comprising representatives of different sections including those from the IA and GoA.

In case of land acquired through involuntary acquisition, provisions of RFCTLARRA, 2013 shall be adopted. RFCTLARRA, 2013 has replaced the old Land Acquisition Act, 1894 and has come into force from 1st January 2014. The new act i.e. RFCTLARRA, 2013 authorizes State Govt. (i.e. GoA) or its authorized Government agency to complete the whole process of acquisition of private land including Social Impact Assessment (SIA), Action Plan for R&R (i.e. Rehabilitation and Resettlement) & its implementation and the AEGCL/APDCL's responsibility is limited to identification and selection of suitable land based on technical requirement and ensuring budget allocation.

Safeguards against land acquisition

54 Conducting Social Impact Assessments (SIA) has been made mandatory under this new act and results of these assessments are shared with all the stakeholders and public hearing held which makes the process transparent and informed. Subsequently, an entitlement package that includes both compensation (for land/structure and assets to land and structure) and R&R as necessary is prepared. Further to this individual awards are passed and all documents are disclosed in the public domain through local administration and internet. The flow chart of the land acquisition process with schedule prescribed for various activities is illustrated in **Figure 5.1** below. The entitlements with regard to compensation and assistances towards land acquisition or loss of any assets or livelihood for all categories of people being affected due to land acquisition is briefly outlined in **Table – 5. 5** below.

TABLE 5.5: COMPENSATION AND R&R ENTITLEMENT FRAMEWORK FOR LAND ACQUISITION

A Comprehensive Compensation Package	
Eligibility for Entitlement	**Provisions**
The affected families • **<u>Land Owners: includes any person</u>**- v) whose name is recorded as (he owner of the land or building or part thereof, in the records of the authority concerned; or vi) any person who is granted forest rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 or under any other law for the time being in force; or vii) who is entitled to be granted Patta rights on the land under any law of the State including assigned lands: or viii) any person who has been declared as such by an order of the court or Authority;	**Determination of Compensation :** **4. Market value** of the land • as specified in the Indian Stamp Act, 1899 or • the average of the sale price for similar type of land situated in the village or vicinity, or • consented amount of compensation as agreed in case of acquisition of lands for private companies or for public private partnership project. **whichever is higher** Market value x **Multiplier* between 1 to 2 in rural areas only (No multiplier in urban areas).** **5.** Value of the assets attached to land: Building/Trees/Wells/Crop etc. as valued by relevant govt. authority; **Land compensation = 1+2** **6. Solatium:** 100% of total compensation **Total Compensation** : **1+2+3**
(*) Precise scale shall be determined by the State Govt. The indicative values of multiplier factor based on distance from urban areas as provided in the act.	

Radial Distance from Urban area (Km)	Multiplier Factor
0-10	1.00
10-20	1.20
20-30	1.40
30-40	1.80
40-50	2.00

B. R&R Package

Elements of Rehabilitation and Resettlement Entitlements for all the affected families (both land owners and the families whose livelihood is primarily dependent on land acquired) in addition to compensation provided above

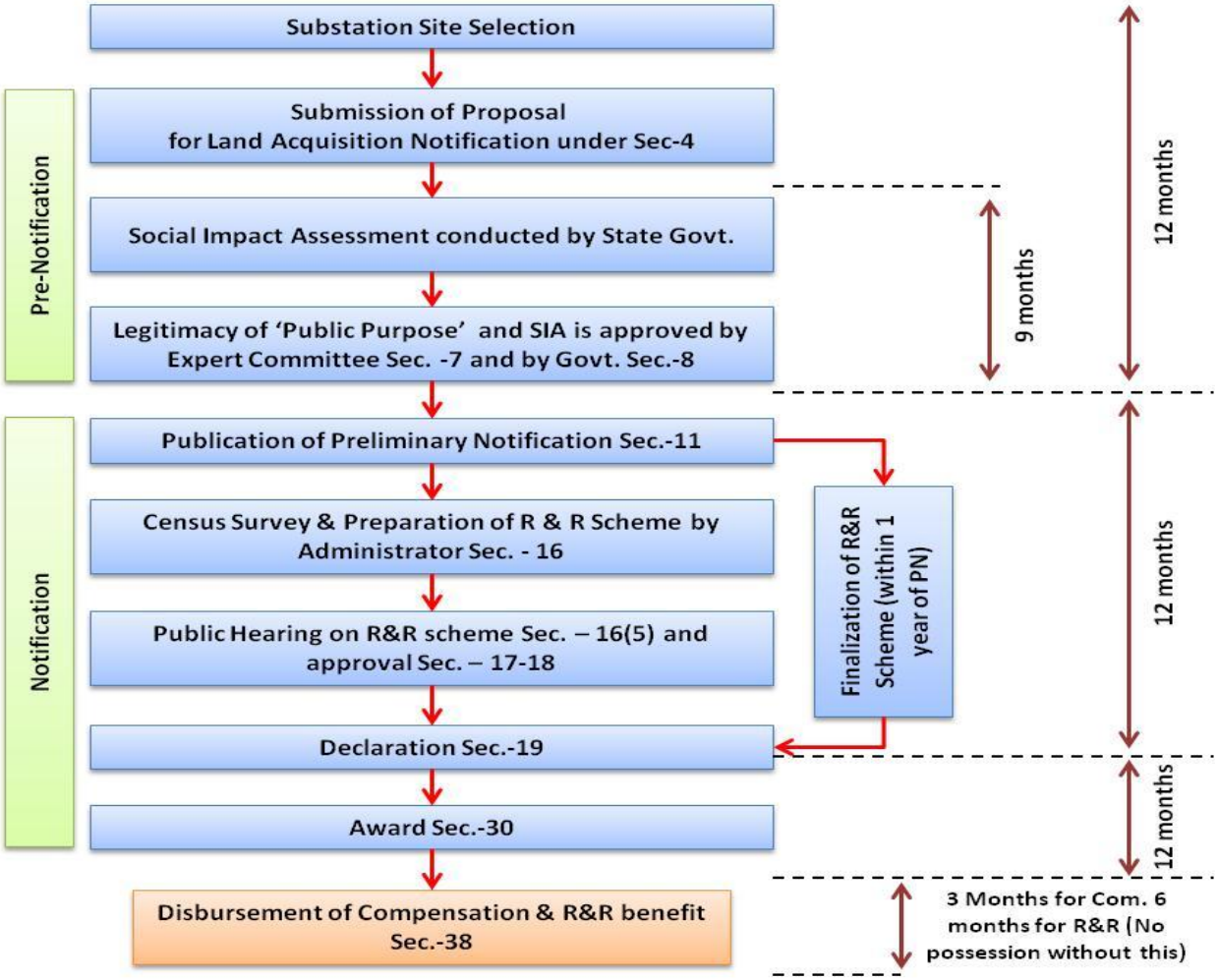
Sl. No.	Elements of R& R Entitlements	Provision
1.	Subsistence grant/allowance for displaced families	Rs. 3000 per month per family for 12 months
2.	The affected families shall be entitled to:	d. Where jobs are created through the project, mandatory employment for one member per affected family; **or** e. Rupees 5 lakhs per family; **or** f. Rupees 2000 per month per family as annuity for 20 years, with appropriate index for inflation; **The option of availing (a) or (b) or (c) shall be that of the affected family**
3.	Housing units for displacement: iii) If a house is lost in rural areas: iv) If a house is lost in urban areas	iii. A constructed house shall be provided as per the Indira Awas Yojana specifications. iv. A constructed house shall be provided, which will be not less than 50 sq. mts. in plinth area. **In either case the equivalent cost of the house may also be provided in lieu of the house as per the preference of the project affected family.** The stamp duty and other fees payable for registration of the house allotted to the affected families shall be borne by the Requiring Body.
4.	Transportation cost for displaced families	Rs 50,000/- per affected family
5.	Resettlement Allowance (for displaced families)	Onetime Rs 50,000/- per affected family
6.	Cattle shed/ petty shop cost	Onetime financial assistance as appropriate for construction as decided by St. Govt. subject to minimum of Rs.25,000/-
7.	Artisan/small traders/others (in case of displacement)	Onetime financial assistance as appropriate as decided by State Govt. subject to minimum of Rs.25,000/-

Special Provisions for SCs/STs

In addition to the R&R package, *SC/ST families will be entitled to the following additional benefits:*

8. One time financial assistance of Rs. 50,000 per family;
9. Families settled outside the district shall be entitled to an additional 25% R&R benefits;
10. Payment of one third of the compensation amount at very outset;
11. Preference in relocation and resettlement in area in same compact block;
12. Free land for community and social gatherings;
13. In case of displacement, a *Development Plan is to be prepared*
14. *Continuation of reservation and other Schedule V and Schedule VI area benefits from displaced area to resettlement area.*

FIGURE 5.1: ACTIVITY CHART RFCTLARRA, 2013



Right of Way: Land for tower and right of way is not acquired and agricultural activities are allowed to continue. However, the law stipulates that the licensee shall have to pay full compensation to all

interested for any damages sustained during the execution of work. Accordingly, AEGCL has formulated appropriate management plan in the form of Compensation Plan for Temporary Damage (CPTD) to minimize the damages and provide compensation plan for temporary damages in consultation with revenue department and affected person based on assessment (refer Part - B of Social Management Framework placed as **Annexure – 3**). The detailed process for crop/tree compensation is placed at **Anexure 6 & Annexure 6a**. The entitlement matrix for planning compensation for possible impact is as follows:

Entitlement Matrix for CPTD

S. No	ISSUE/IMPACT	BENEFICIARY	ENTITLEMENT OPTIONS
1.	Land area below tower base.	Owner	100% land cost at market value as ascertained by revenue authorities or based on negotiated settlement without actual acquisition/title transfer.
2.	Loss/damage to crops and trees in line corridor	Owner/Tenant/ sharecropper/ leaseholder	Compensation to actual cultivator at market rate for crops and 8 years income for fruit bearing trees*. APs will be given advance notice to harvest their crops. All timber* will be allowed to retain by the owner.
3.	Other damages (if applicable)	All APs	Actual cost as assessed by the concerned authority.
4.	Loss of structure		
(i)	House	Titleholders	Cash compensation at replacement cost (without deduction for salvaged material) plus Rs. 25,000/- assistance (based on prevailing GOI norms for weaker section housing) for construction of house plus transition benefits as per category-5 below.
(ii)	Shop/ Institutions/ Cattle shed	Individual/ Titleholders	Cash compensation plus Rs. 10000/- for construction of working shed/shop plus transition benefits as per category-5 below
5.	Losses during transition under (i) & (ii) above for Shifting / Transport	Family/unit	Provision of transport or equivalent cash for shifting of material/ cattle from existing place to alternate place

S. No	ISSUE/IMPACT	BENEFICIARY	ENTITLEMENT OPTIONS
6	Tribal/ Vulnerable APs	Vulnerable APs10	One time additional lump sum assistance not exceeding 25% of total compensation on recommendation of State Authority/ADC/VC.

* Assistance/help of Forest department for timber yielding trees and Horticulture department for fruit bearing trees shall be taken for assessing the true value.

b) Tribal People: The population of Assam as per census 2011 was 3,12,05,576. The Scheduled Tribes (STs) population is 38, 84,371 which constitutes 12.4 per cent of the total population of the State. In compliance with Bank's Operational Policy and special provision of RFCTLARRA, 2013, a Tribal People Development Framework has been prepared (refer Part - C of Social Management Framework placed as **Annexure – 3**).

d) Gender: Women will be involved through formal and informal consultations so that their participation is ensured during preparation and implementation of the project. To enable this, efforts will be made to deploy as many women community volunteers as possible and conduct gender sensitization capacity building programs for all the project staff.

5.7 Health and Safety Requirements

55 AEGCL/APDCL maintains safety as a top priority, apart from various labour laws dealing with workers' health and safety, such as the Workmen's Compensation Act. AEGCL/APDCL ensures the implementation of health and safety as per the norms the said act which is an integral part of the contractors' activities. EHS guidelines of AEGCL/APDCL (**Annexure-7** for detailed checklist) are developed on the basis of World Bank EHS guidelines to be adopted by AEGCL/APDCL.

5.8 Exposure to Electro Magnetic Fields (EMF)

56 There have been some concerns about the possibility of an increased risk of cancer from exposure to electromagnetic radiation from overhead transmission lines. However, a review by the World Health Organization (WHO) held as part of the International EMF Project (1996), concluded that: "From the current scientific literature there is no convincing evidence that exposure to radiation field shortens the life span of humans or induces or promotes cancer".

[10] Vulnerable APs include scheduled tribes residing in scheduled areas/ physically handicapped/ disabled families etc.

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

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

The ICNIRP guideline for the general public (up to 24 hours a day) is a maximum exposure level of 1,000 mG or 100 μT. AEGCL/APDCL shall follow the best international practices while designing its system to maintain acceptable prescribed EMF level.

5.9 General Safety Standards

57 AEGCL/APDCL will follow all applicable standards concerned with safety for transmission, distribution and erection of Substation. These include IS: 5613 – recommendation on safety procedures and practices in electrical work as per CEA (Measures relating to Safety and Electric Supply) Regulation, 2010 notified in the Gazette on 20th Sept. 2010 (**Annexure- 8**).

6.0 Issues, Impacts and Management Measures - Environment

58 Environmental issues of T&D projects are manageable given the inherently small 'foot print' of towers and flexibility in siting facilities within a relatively large host area and are mostly localized to ROW. However, transmission line project may have some adverse effects on natural resources. These impacts can be minimized by careful route selection and siting of substations. In order to get latest information and further optimization of route, modern survey techniques/tools like GIS, GPS aerial photography are also applied. Introduction of GIS and GPS/Google earth/IBAT in route selection result in access to updated / latest information, through satellite images and further optimization of route having minimal environmental impact. Moreover, availability of various details, constraints like topographical and geotechnical details, forest and environmental details help in planning the effective mitigation measures including engineering variations depending upon the site situation / location. In the instant project also these techniques are to be used for minimizing/mitigating such issues.

6.1 Environmental issues

A) <u>Transmission/Distribution lines</u>

59 The key environmental issues associated with installation of transmission/distribution lines are:

1) Clearing of Trees within Right of Way

60 Right of Way (RoW) width for the transmission/distribution line depends on the line voltage. The maximum permissible width of RoW on forest land and minimum clearance between Trees and conductors as specified in IS: 5613 and by MoEF guidelines are given in **Table 6.1**.

61 At present, a width clearance of 3 m is allowed below each conductor for the movement of tension stringing equipment (**Annexure - 9)**. Trees on such strips are felled/lopped to facilitate stringing and maintenance of RoW. After completion of stringing, natural regeneration or dwarf tree/medicinal tree plantation is allowed to a certain height. Trimming or pruning is done with the permission from the local forest officer to maintain required electric clearance as necessary during operation and maintenance. In hilly areas where adequate clearance is already available, tree will not be cut/felled in 3 meter strip beneath for RoW except working clearance as stringing is done manually only. As compared to transmission line, distribution line requires only small right of way and therefore felling of trees is much less than that requires for laying of transmission lines. Generally stringing of distribution line is carried out manually and therefore trimming/pruning of tree branches are only required instead of large nos. tree cutting Felling, lopping of tree can open up forest canopy allowing more sunlight into under storey where it can lead to edge effect and allow for proliferation of socio-phytic weeds. This can have added repercussions within a semi evergreen or evergreen biotope.

TABLE 6.1: ROW CLEARANCE BETWEEN CONDUCTORS AND TREES

Transmission Voltage (In kV)	Max. ROW (In Meters)	Min^{m}. Clearance (in meters) between conductor & Trees *
11	7	2.6
33	15	2.8
66	18	3.4
110	22	3.7
132	27	4.0
220	35	4.6
400 D/C & S/C	46	5.5

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

2) Clearing of Ground Vegetation for Movement of Machinery: Machinery and equipment is used for installation of transmission and distribution lines, towers/poles and construction of substations and may require clearing of ground vegetation for its movement. This activity causes temporary disturbance to the forest, orchards, plantation and agriculture etc. AEGCL/APDCL wherever possible utilises the existing path / access roads for the movement of man and machinery.

The existing roads which cannot support heavy machinery load are upgraded and thus the village infrastructure is improved. In areas where lines traverse agricultural land, compensation is paid to owners for any crop damage incurred as a result of construction activities. Agricultural activities are allowed to continue following the construction period. If bunds or other on-farm works are disturbed during construction or maintenance, they are restored to the owner's satisfaction following cessation of construction or maintenance activities. In the event that private trees are felled during construction or maintenance operations, compensation is paid to the owner as determined by the forest / horticulture departments.

3) Aesthetic appeal of an area: Erection of transmission/distribution towers and lines some time affects the aesthetics of the area. However, measures like painting of towers/poles in grey or green to merge with the background and planting trees along roads running parallel to transmission/distribution lines in consultation with Forest Department, if feasible would be undertaken by AEGCL/APDCL to buffer visual effect.

B) <u>Substations</u>

62 The key environmental issues associated with construction of substation are:

1) **Clearing of Ground Vegetation:** The land requirement for substations varies from 0.3 acres to 10 acres depending upon no. of bays. The ground vegetation needs to be cleared to enable construction activity.

2) **Used Transformer Oil:** As a part of routine maintenance, transformer oil is changed every 10-15 years. The used transformer oil is categorised as hazardous wastes as per Hazardous waste (Management, Handling and Trans-boundary) Rules, 2008 and its unscientific disposal in environment may lead to soil and water contamination.

3) **Used Battery:** Used lead acid battery is a pollutant and therefore its improper handing & disposal may lead to contamination of soil and water.

4) **E-waste:** The Electrical and Electronic Equipment (EEE) have hazardous / toxics substances in their components which may cause harm/pose risk to health and environment during handling after its expiry & full usage.

5) **SF_6 gas** is a highly potential Green House Gas (GHG) being used in Circuit Breaker. Mishandling and leakage etc can lead to its escape into the atmosphere causing global warming.

6.2 Principles

63 The basic principles that guide EMF are:

- Avoidance environmentally sensitive areas while planning project activities;
- Minimisation of impacts when project activities occur in environmentally sensitive areas;
- Mitigation of any unavoidable negative impacts arising out of its projects; and
- Greater transparency through involvement of community and other stakeholders through consultation

6.3 Definitions

"Adverse environmental effect" means any irreversible harmful affect on natural environment;

"Battery" means lead acid battery which is a source of electrical energy and contains lead metal;

"Central Pollution Control Board" means the Central Pollution Control Board constituted under sub-section (1) of section 3 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974);

"Forest" The word "forest" must be understood according to its 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 "forest land", occurring in Section 2, will not only include "forest" as understood in the dictionary sense, but also any area recorded as forest in the Government record irrespective of the ownership;

"E-waste" means waste electrical and electronic Equipments, whole or in part or rejects from their manufacturing and repair process, which are intended to be discarded;

"Hazardous waste" means any waste which by reason of any of its physical, chemical, reactive, toxic, flammable, explosive or corrosive characteristics causes danger or is likely to cause danger to health or environment, whether alone or when in contact with other wastes or substances, and shall include- (i) waste specified under column (3) of Schedule-I, (ii) wastes having constituents specified in Schedule-II if their concentration is equal to or more than the limit indicated in the said Schedule, and (iii) wastes specified in Part A or Part B of the Schedule-III in respect of import or export of such wastes in accordance with rules 12, 13 and 14 or the wastes other than those specified in Part A or Part B if they possess any of the hazardous characteristics specified in Part C of that Schedule;

"**Environment"** means land, water, air, living organisms and interacting natural systems;

"Environmental assessment" means the process of assessing the environmental effects of a project in order to evaluate their significance, and may include identifying measures to prevent, minimize, mitigate or compensate for adverse environmental and social effects. Environmental and social assessment is the responsibility of the project sponsor;

"**Mitigation measures**" means methods to reduce, eliminate or compensate for adverse environmental and social effects;

"State Pollution Control Board" means the State Pollution Control Board or the Pollution Control Committee constituted under sub-section (1) of section 4 of the Water(Prevention and Control of Pollution) Act, 1974 (6 of 1974);

6.4 Legal and Regulatory Framework

64 The applicable acts, rules, and relevant policies in the context of the project are presented in **Table- 6.2.** The Project Authority will ensure that project activities implemented are consistent with provisions of such legal framework.

TABLE 6.2: LEGAL AND REGULATORY PROVISIONS – ENVIRONMENT

Sl. No.	Acts, Notifications and Policies	Relevance/ Applicability to the project
I.	**Constitutional Provisions (India)**	
a	Article 48 A	The State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country.
b	Article 51 A (g)	It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures.
II.	**Provisions Law of the Land/Rules**	
1.	Electricity Act, 2003 (EA, 2003)	Transmission line projects are constructed under the ambit of Electricity Act, 2003 following the provisions of Section 67 & 68 of act. Under the provisions of **Section 68(1):-**Prior approval of the Govt. of Assam (GoA) is a mandatory requirement to undertake any new transmission project 66kV upward and for distribution project of 33kV system in the State which authorizes APDCL to plan and coordinate activities to commission a new Transmission/distribution project. The electricity act under Section 164 has a provision to grant licensee

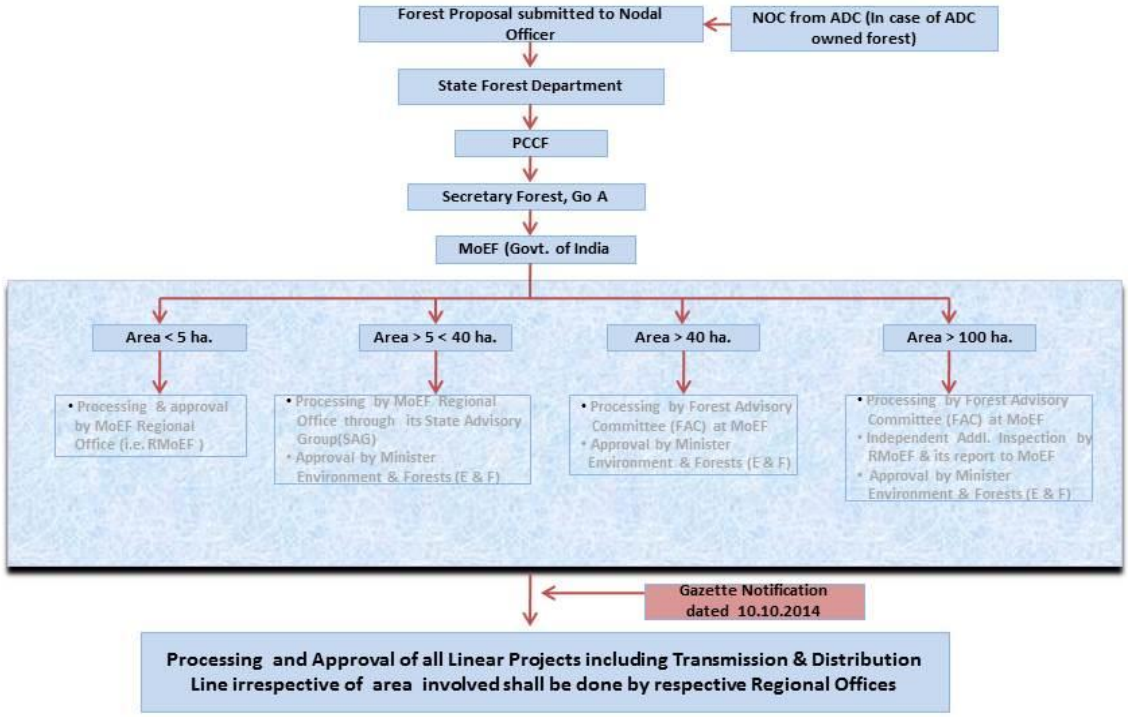
Sl. No.	Acts, Notifications and Policies	Relevance/ Applicability to the project
		the power of Telegraph Authority as provided in the Indian Telegraph Act, 1885[11]. GoA on request of AEGCL may by order in writing/through notification authorize them for using powers of telegraph authority after fulfilling the requirement as laid down in the rules thereof. The salient features of the Electricity Act 2003 are given in **Annexure- 5**.
2.	Forest (Conservation) Act, 1980	This Act provides for the conservation of forests and regulates the diversion of forest land to non-forestry purpose. When any transmission/distribution line traverses forest land, prior clearance is mandatorily required from Ministry of Environment and Forests (MoEF), GoI under the Forest (Conservation) Act, 1980. The approval process of forest clearance in brief, as per set procedure in the guideline under the act and rules is shown in **Figure 6.1** below. Flow charts for forest clearance process and procedure of online submission of application are provided in **Annexure- 10 & 10a** respectively**.**
3.	The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006	The act recognizes and vests the forest rights and occupation in forest land to forest dwelling. Scheduled Tribes and other traditional forest dwellers who have been residing in such forests for generations but whose rights could not be recorded, and provides for a framework for recording the forest rights so vested and the nature of evidence required for such recognition and vesting in respect of forest land. The definitions of forest dwelling Schedule Tribes, forestland, forest rights, forest villages, etc. have been included in Section 2 of the Act. The Union Ministry of Tribal Affairs is the nodal agency for implementation of the Act while field implementation is the responsibility of the government agencies. The applicability of this act has also been linked with forest clearance process under Forest (Conservation) Act, 1980 w. e. f. August 2009 by MoEF which AEGCL/APDCL needs to comply with.
4.	Environment (Protection) Act, 1986	It is umbrella legislation for the protection and improvement of environment. This Act as such is not applicable to transmission/ distribution projects of AEGCL/APDCL. Project categories specified under the schedule of the EIA notification is provided in **Annexure - 11**. Even then some limited compliance measures notified under this EPA, 1986 are to be adhered to relevant rules and regulations under the EPA, 1986 applicable to the operations of AEGCL/APDCL.

[11] POWERGRID, the designated Implementing Agency has already been vested with powers of telegraph authority by GoI vide Gazette Notification dated Dec.24, 2003.

Sl. No.	Acts, Notifications and Policies	Relevance/ Applicability to the project
i)	Ozone Depleting Substances (Regulation and Control) Rules, 2000	As per the notification, certain control and regulation has been imposed on manufacturing, import, export, and use of these compounds.
ii)	Batteries (Management and Handling) Rules, 2001	As per notification, Being a bulk consumer AEGCL/APDCL to ensure that the used batteries are disposed to dealers, manufacturer, registered recycler, re-conditioners or at the designated collection centers only. A half-yearly return is to be filed as per Form-8 (**Annexure - 12***)* to the Assam State Pollution Control Board
iii)	Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008	As per notification, used oil is categorized as hazardous waste and require proper handling, storage and disposed only to authorized disposal facility (registered recyclers/ reprosessors) Being a bulk user, AEGCL/APDCL shall comply with provision of said rules. AEGCL/APDCL, as bulk user of transformer oil which is categorized as Hazardous Waste, shall comply with the provisions of the said rules (refer **Annexure - 13** for MoEF notification dated 24th September 2008) if the practice of storing of used oil is maintained. In case it is decided to outsource the process of recycle of used oil to registered recycler as per the provisions of notification then AEGCL/APDCL shall submit the desired return in prescribed form to concerned State Pollution Control Board at the time of disposal of used oil.
iv)	E-waste (Management and Handling) Rules, 2011	As per notification, bulk consumers like AEGCL/APDCL is to dispose e-waste generated by them in environmentally sound manner by channelizing to authorized collection centers/ registered dismantler/ recyclers/return to producers. AEGCL/APDCL, being a bulk consumer of electrical and electronics equipments shall maintain record as per Form-2 (**Annexure-14**) for scrutiny by Assam State Pollution Control Board.
5.	Biological Diversity Act, 2002	This act is not directly applicable to transmission projects because it deals with the conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected therewith. AEGCL/APDCL abides by the provision of the act wherever applicable, and avoids Biosphere Reserves during route alignment.

Sl. No.	Acts, Notifications and Policies	Relevance/ Applicability to the project
6.	Assam control of Tree Felling rules, 2002	To control felling of trees, this Rules provide for registration of tree plantation raised on non-forest land with the Divisional Forest Officer except for trees including Aam, Jamun, Kathal, Eucalyptus, Poplar, a species of home grown Bamboo, Leteku, Paniol, Madhuriam which do not require felling permission. AEGCL/APDCL follows all provisions of this rule for felling of trees from non-forest land.
7.	The Right to Information Act, 2005	The Act provides for setting out the practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, the constitution of a Central Information Commission and State Information Commissions and for matters connected therewith or incidental thereto.
8.	Rights of Way(RoW) and Compensation	In case of agricultural or private land the provisions of section- 67 and or section-68 (5 & 6) of the Electricity Act, 2003 and section-10 of the Indian Telegraph Act, 1885 are followed for assessment and payment of compensation towards such damages
III	**World Bank OP (Operational Policy)**	
1	OP- 4.01: Environmental Assessment	To ensure the environmental and social soundness and sustainability of investment projects. Support integration of environmental and social aspects of projects in the decision-making process.
2	OP- 4.04: Natural Habitats	To promote sustainable development by supporting the protection, conservation, maintenance, and rehabilitation of natural habitats and their functions.
3	OP-4.11: Physical Cultural Resources (PCR)	To preserve PCR and in avoiding their destruction or damage. PCR includes resources of archeological, paleontological, historical, architectural, and religious (including graveyards and burial sites), aesthetic, or other cultural significance.
4	OP-4.36: Forests	To realize the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development, and protect the vital local and global environmental services and values of forests

FIGURE 6.1: APPROVAL PROCESS OF FOREST CLEARANCE



Note: MoEF has made online submission of application mandatory w.e.f. 15th August 2014 (refer Annexure- 10a).

6.5 Assessment of Environment Impact

65 This section identifies the potential environment impacts due to intervention of project in terms of the nature, magnitude, extent and location, timing and duration of the anticipated impacts. These impacts are both positive or negative relating to the project design stage, construction stage or the project operation and decommissioning stage;

i. Positive Impacts

- Availability of power lessen the demand of natural resources like firewood, charcoal etc. resulting in conservation/protection of forest/vegetation.

ii. Negative Impacts

- Clearance of tree within RoW;

- Impacts on forest, wildlife habitats and migratory birds;
- Impacts on drainage, soil erosion & water resources;
- Impacts on traffic and road infrastructure;
- Aesthetic appeal of area;
- Impacts from likely oil spillage;
- Effect of electromagnetic (EMF) fields;
- Leakage SF6; and
- Health & Safety

6.6 Management Framework

66 Based on the outcome of impact assessment appropriate management measures has been suggested in ESPP for implementation to mitigate the possible impacts due to proposed project interventions. While for positive impacts enhancement measures are suggested; for negative impacts suitable mitigation measures has been included. Detailed of potential environment issues and its management measures are outlined in ESPP. Apart from this, AEGCL/APDCL has developed an Environment Management Plan (EMP) (Refer Annex.- A attached in ES) which includes detail of anticipated impacts along with mitigation measures, monitoring and implementation schedule for its transmission and distribution projects. The EMP provisions shall be made part of bidding/contract document for proper implementation by the Contractor. Summary of key potential environmental issues and its management measures is presented below in **Table 6.3**.

TABLE 6.3: POTENTIAL ENVIRONMENTAL ISSUES AND ITS MANAGEMENT MEASURES

Sl. No	Potential Issues	Management Measures
1	Minimising adverse impact on forests	AEGCL/APDCL endeavors to circumvent / lessen environmentally sensitive areas such as forest and other ecologically fragile / sensitive areas through optimization of route including use of modern tools like GIS/GPS and other modern techniques.
2.	Clearing/Lopping of trees	Use of extended/special tower to reduce RoW and impact on trees
3.	▪ Vegetation damage ▪ Habited Loss	To minimise damage to vegetation and habitat fragmentation, AEGCL/APDCL utilises hand clearing and transportation of tower material by head loads into forestland and other land as well, wherever possible.

Sl. No	Potential Issues	Management Measures
4.	▪ Habitat fragmentation ▪ Edge effect on flora & fauna	AEGCL/APDCL maintains only a 3m wide strip for O&M and allows for regeneration of vegetation in the other one or two strips and beneath the transmission lines to avoid habitat fragmentation and edge effect. In hilly area this can possibly be totally avoided
5.	Chances of accident involving elephant in the specified corridor due to placing of poles	APDCL shall try to avoid such area to the extent possible. However, in case avoidance is not possible, suitable design modification in the pole like provision of spike guards, barbed wire fencing or any other arrangement shall be incorporated in such location
6.	Erosion of soil and drainage along the cut and fill slopes in hilly areas	AEGCL/APDCL would ensure that all cut and fill slopes in TL/DL are adequately protected using standard engineering practices including bio-engineering techniques wherever feasible. All drainage channels along or inside substations shall be trained and connected to main or existing drainage to avoid any erosion due to uncontrolled flow of water.
7.	Chemical contamination from chemical maintenance techniques	AEGCL/APDCL does not use chemicals for forest clearance/RoW maintenance
8.	Poly- Chloro-Biphenyls (PCBs) in electrical equipment	AEGCL/APDCL use mineral oil in electrical equipments. Specification of oil containing PCB less 2 mg/kg (non – detectable level) stated in the tender document
9.	Induced secondary development during construction	AEGCL/APDCL operations are short-lived and do not induce secondary developments during construction
10	Avian hazards from transmission/distribution lines and towers	Avian hazards mostly encountered in bird sanctuaries area and fly path of migratory bird predominantly related to nesting site. Although the incidence of avian hazards is rare due to the distance between the conductors. AEGCL/APDCL shall take all possible precaution to avoid these areas by careful route selection. However, bird guards are provided to prevent any avian hazards.
11	Air craft hazards from transmission lines and towers	AEGCL/APDCL as per the requirement of IS 5613 of July'94 provides aviation markers, night-lights for easy identification of towers in notified/selected areas.
12	Health and safety of worker/employee/community	During construction the health and safety aspects of workers and nearby community shall be implemented through contractors with due diligence and compliance of required regulation/guideline through a safety plan. AEGCL/APDCL uses best available technology for lines and do not cause any hazards to health and safety.

Sl. No	Potential Issues	Management Measures
13	Fire Hazards	Fire hazards are mostly occurred in forest area. However, AEGCL/APDCL uses state of art automatic tripping mechanism for its transmission/distribution and substation that disconnect the line in fraction of seconds to prevent fire hazards. The Forest Department also take precaution like maintaining fire line in the cleared forest area to avoid spread of fire
		Firefighting instruments including fire extinguishers are kept in appropriate place for immediate action in case of any fire hazard.
14.	Pollution	Although pollution is not an issue with transmission/ distribution projects still AEGCL/APDCL will make efforts to further minimise it. Sites are cleared of all the leftover materials and debris to avoid any chance of pollution.
15.	GHG (SF_6 Gas)	Although leakage of SF6 is not a major issue, AEGCL/APDCL will make efforts to reduce the leakage through regular monitoring installing gas pressure monitor/ leak detectors in Circuit Breakers.

7.0 Integration of environment and social management measures into overall project cycle

67 In the previous section, ESPP outlines various management measures to address the potential environment and social impacts based on the outcome of identification and impact assessment process during different stages of project activities. In order to address identified environment and social issues due to proposed project interventions, the suggested management measures has been dovetailed in to the project cycle so that it can be taken care off at appropriate level and at appropriate time (refer ESPP for detail management procedures). **Figure - 7.1 and 7.2** below illustrates link between different stages of project cycle and management measures to be undertaken to address the environment and social issues.

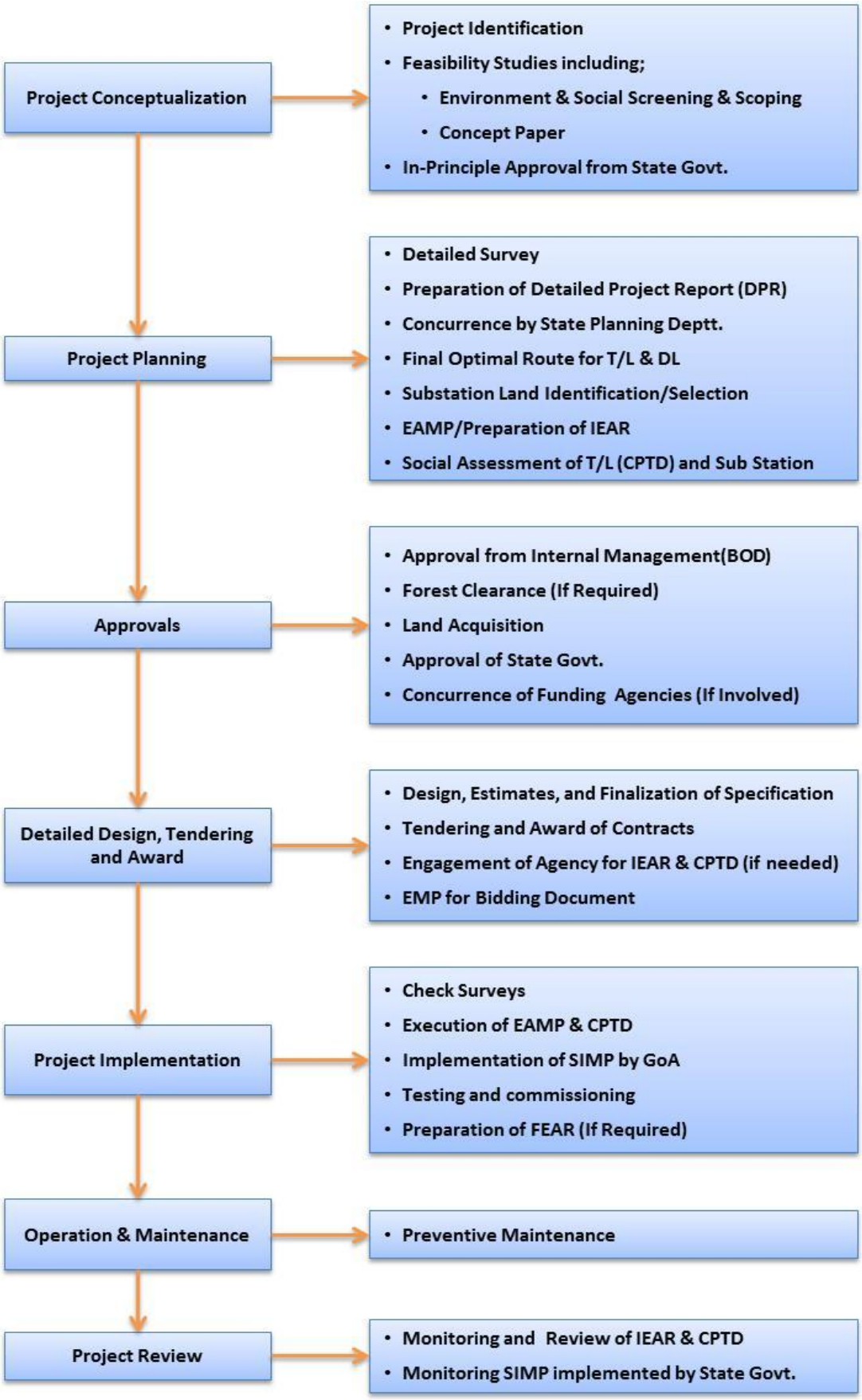
7.1 Project Cycle

68 In order to address environmental and social issues arising out of construction, operation and maintenance of transmission and distribution projects in the State of Mizoram, it become pertinent to review typical AEGCL/APDCL's project cycle so as such issues are attended at appropriate time. The key milestones of such projects cycle are:

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

Figure 7.1 outlines the detailed process of typical transmission outlines the detailed process for a typical transmission project and is summarized in subsequent sections.

FIGURE 7.1: PROJECT CYCLE OF A TYPICAL TRANSMISSION/DISTRIBUTION PROJECT



7.1.1 Project Conceptualisation

69 AEGCL/APDCL identifies the need for a new project in consultation with the Central Electricity Authority (CEA) and Regional Electricity Boards (REB). A power transmission project is identified according to the demand and supply of a given region based on generating companies.

70 After the need identification, feasibility studies are conducted that include environmental, social, economic, and financial assessments. The project is prioritized and implementation schedule is developed. As a part of the study, AEGCL/APDCL develops various options for the location of transmission lines that consider avoidance of environmentally and socially sensitive area. During desk study various options of line routes are plotted on a Forest Atlas map or SOI (Survey of India) map or Google Earth map using a "BEE Line" (the shortest distance between origin of proposed Transmission Line (TL)/Distribution Line (DL) and the substations sites) avoiding environmentally and socially sensitive area. At least 3 (three) alternative are marked subject to site verification. During the route alignment surveys/walkover surveys, all possible efforts are made to avoid forest, sacred grove, and archaeological sites, historical and cultural places etc.

71 Based on the above studies a concept paper is prepared indicating all the components environmental, social, techno-economic and cost estimate. Approval for the "Concept Paper" is obtained from the Board of Directors of the AEGCL/APDCL. Since financial approval of project may take longer time, certain critical project preparatory activities, such as preliminary or detailed survey, forest clearance, and land acquisition process are initiated with special permission of the Board of Directors (BoD). Such provisions/actions also facilitate more in-depth and timely assessment of environment & social issues due to availability of better lead time.

72 In case of transmission project this "Concept Paper" after the appraisal/ recommendation of AEGCL management, is forwarded to Planning Deptt., GoA for the in-principle approval and subsequent Budget allotment or posing to different funding agency.

7.1.2 Project Planning

73 During this stage, Detailed Surveys are carried out and two or three route alternatives are studied in detail. Field officers record all critical information such as rivers, hills, railway crossings, telephone, and power transmission lines. Additionally, environmental and social details are also noted in the prescribed pro-forma for evaluation of alternatives (**Annexure - 15**).

74 During such survey further attempt is made to minimize involvement of forestland and areas of significant natural resources, human habitation and areas of cultural importance by realigning the route for optimization, if possible. If forestland is unavoidable after completion of survey on the finalized route, environmental assessment limited to forest area is undertaken by AEGCL/APDCL with the help of authorized agencies (Forest Department/GoA) to formulate forest proposal including its assessment and management plan. Local forest authorities certify that the final route so selected involves the barest minimum of forestland. The complete forest proposal is processed and recommended/forwarded by GoA to MoEF for obtaining forest clearance with an undertaking from AEGCL/APDCL to bear the cost of compensatory afforestation, NPV etc. as per guidelines. In case of forest under Autonomous District Council, NOC of the Council is required. Similarly, in non-forest land under the Autonomous District Council area, it is important to obtain the consent of the village council and also the land owners. Consultations are held with the village council for identification of the landowner and obtaining their consent for the RoW. In case of community owned land the NOC is obtained from the village council only.

75 AEGCL/APDCL identifies number of potential substation sites suiting technical requirement based on data collected as per the checklist (refer **Annexure-16**) and a comprehensive analysis for each alternatives carried out. The analysis considers various site specific parameters that includes infrastructure facilities such as access roads, railheads, type of land viz. government private land, agricultural land; social impacts such as number of families getting cost of compensation and rehabilitation giving due weightage to each. An initial examination of the selected site is done to ascertain the scope and extent of social assessment.

76 A Map/Land Plan Proforma register is prepared in association with the Land Revenue Department, Government of Assam indicating the name of land owners, cultivator/planters , total area of the land required, no. of fruit bearing trees, non-fruit bearing trees, crops etc. in Once these documents are ready the same is sent to the District Collector concerned for initiating the acquisition proceedings as per the RFCTLARRA, 2013 Land acquisition for the selected site is generally carried out only after the approval of the project by GoA.

77 After identification and assessment of possible impacts, project specific Environment Assessment Management Plan (EAMP) is prepared including the Initial Environment Assessment Report (IEAR) to mitigate adverse impact arising due to project activity. Similarly Social Assessment of transmission line is also undertaken to develop a project specific Management Plan in the form of Compensation Plan for Temporary Damages (CPTD). The CPTD is a document prepared after social assessment of likely impacts on land by installing towers or poles during construction of

transmission/distribution lines. The CPTD also contains the compensation procedure for tree/crop/land damages as per the prevailing regulation/guidelines**.**

7.1.3 Project Approvals

78 The DPR so finalised and recommended by AEGCL/APDCL management (BoD) is forwarded to State Govt. and funding agency (if applicable) for concurrence and fund/budget allocation**.**

7.1.4 Detailed Design and Tendering

79 AEGCL/APDCL after detailed design, finalization of specifications for line and substation starts the tendering process and contracts are awarded to competent contractors through bidding process. Similarly engagement of agency (if required) for IEAR and CPTD implementation is also undertaken. During bidding process, project specific EMP is included in the contract document for implementation by the contractors/subcontractors.

7.1.5 Project Implementation

80 Before the start of implementation, AEGCL/APDCL informs the general public about the project and invites their suggestion, if any. When construction starts AEGCL/APDCL's field staff and contractors conduct check survey to authenticate tower spotting done in the profile based on detailed survey.

81 AEGCL/APDCL's field staff and contractors conduct check survey to verify the ground profile and make necessary changes wherever required. Field staff fixes tower spots and heights (extensions) wherever necessary for tension towers. Construction, erection, & stringing of towers and substations are then initiated. Due care is taken to minimize / mitigate environmental impacts. Health & Safety aspects are also given utmost importance. AEGCL/APDCL tests all lines and substations prior to commissioning of the project.

82 Once the check survey is completed, AEGCL approach District Administration for acquisition/procuring the land. Negotiations are held with the owners of the land for compensation towards locating the tower/pole. The payment of compensation has been made as per the rates assessed / fixed by the Deputy Commissioner / District Collector. The consultation with the land owners is primarily limited to their agreeing to part with their land and receiving compensation. In case there are any grievances regarding the tower location, consultation are held with the owner to resolve them and also convince them to part with their land. The District Administration also gets

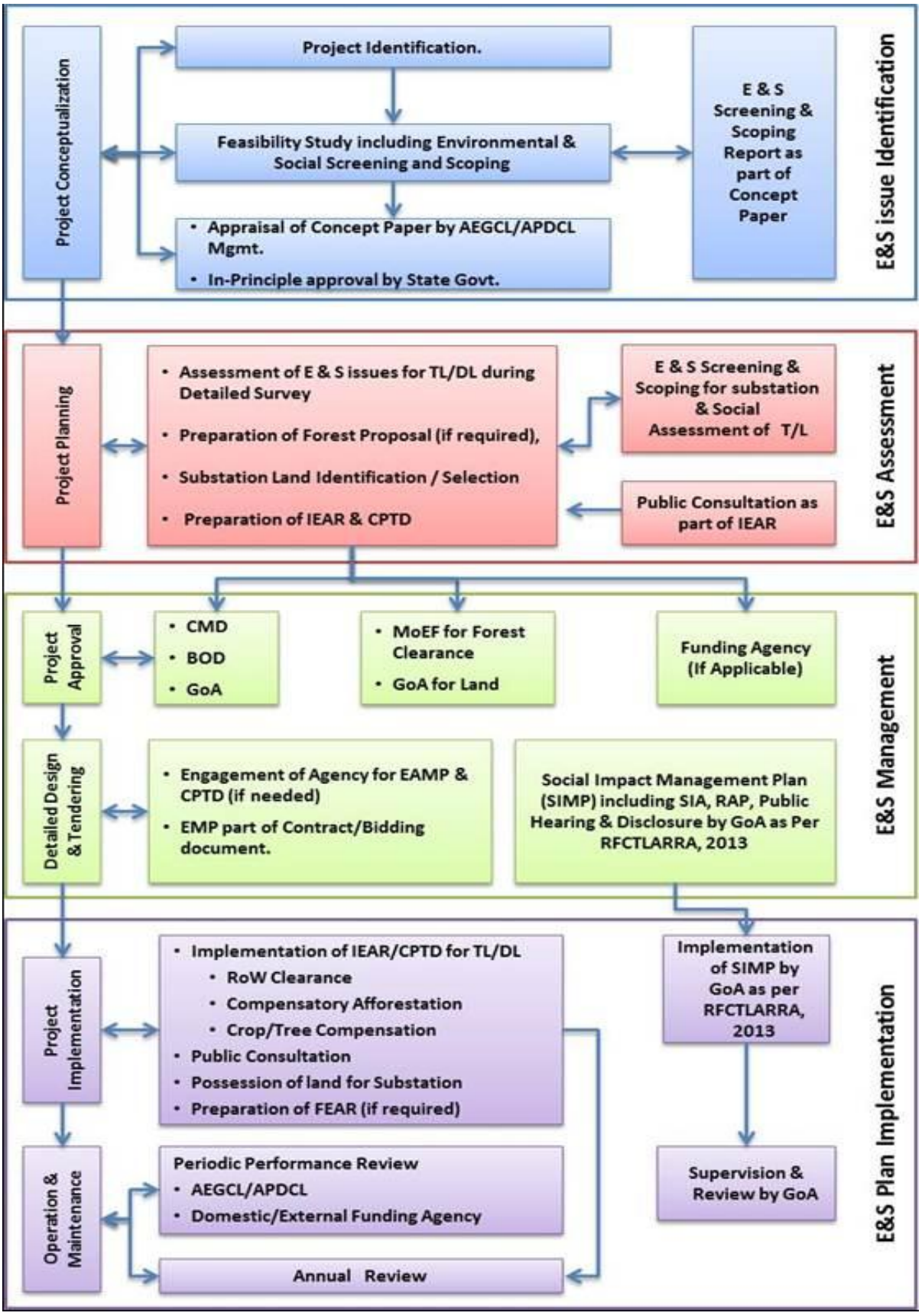
involved in the process. However, in case they fail to come to a consensus then the tower locations may be shifted meeting technical requirements.

83 If there is any changes necessary, site modification is done/noted in the profile/ datasheets, wherever required for final documentation and resubmission for reference/record. Civil Construction work is then initiated for transmission /distribution line followed by tower/pole erection & stringing. Simultaneously works of substation are also initiated. During the construction stage due care is taken to minimise / mitigate environmental impacts. AEGCL/APDCL also gives utmost importance to health & safety of workers, employees and nearby communities. During construction the health and safety of workers and nearby communities shall be taken care by contractors by compliance of required regulation/guideline through a "Safety Plan" (refer **Annexure - 7** for checklist for health & safety and **Annexure- 17** for Safety Plan). Before test charges both transmission/distribution lines and substations, pre-commissioning check and testing are rigorously done by AEGCL/APDCL to ensure safety of commissioning of the project/subproject. Implementation of IEAR and CPTD are also to be taken up in parallel to above work.

7.1.6 Operation and Maintenance

84 AEGCL/APDCL continuously monitors the transmission lines and substations. These lines and substations are patrolled regularly to identify faults and its rectification. The Divisional and Sub-Divisional offices carry out monitoring of line in accordance with the O & M checklists provided for inspection of transmission/sub-transmission lines and substations (**Annexure - 18).**

FIGURE 7.2: ENVIRONMENTAL AND SOCIAL MANAGEMENT PROCEDURES



7.2 Project Conceptualization

85 Conceptualization of projects/subprojects necessarily entails identification of potential E & S issues that may require evaluation in relation to its nature, magnitude and measures to address them. Screening and scoping process enable this evaluation.

86 The environmental screening and scoping report forms an integral part of project feasibility study i.e. 'Concept Paper', which is put up to State Govt. for in-principle approval of the project after appraisal/recommendation of AEGCL/APDCL management. The E & S issues identification process for any AEGCL/APDCL project will include the following:

- E & S screening and scoping for transmission/distribution lines;
- Appraisal/approval of Concept paper by Internal Management & State Govt;

87 The objectives, process and output of each of these steps are discussed below;

7.2.1 Environment & Social Screening and Scoping for Trans./Distribution Lines

A. Objectives

- Objective is to identify environmental and social sensitive areas, issues, and possible management measures for the entire alternatives route for comparative study and analysis, suggest any other alternative if necessary and to outline scope of environmental assessment and management planning after screening.

B. Process

- The AEGCL/APDCL would mark the BEE line and at least 3 alternatives on a topographic sheet, satellite imagery or any higher level map of 1:50,000 scale. The map should show the environmental and social sensitivities (e.g. settlements, forests, vegetated areas, terrain, water bodies and water courses, administrative boundaries etc.);

- AEGCL/APDCL will identify the environmental and social sensitivities along the BEE line based on secondary information (topographic sheet, forest atlas, satellite imagery and census record). Field Units would carry out spot verification or walk-over survey to confirm the environmental and social sensitivities identified during the desktop review. They would also identify alternatives to circumvent the environmental and social issues. Environmental and social details are also noted. (Refer **Annexure - 15** for alternative analysis format to gather relevant environment and social information for transmission lines and substations).

- During walkover survey/ spot verification views, consultations are held with the village council to obtain their consent and also the landowners for routing the line along the village. Views of public and any other related information (like public views and necessary inputs about surroundings/ villages/crops etc.) are noted for screening/scoping. After comparison and analysis of all E & S parameters so gathered for all alternatives and considering other significant economic benefit associated with the project/subproject, the most optimum route having minimum environment & social impact is selected for further investigation.

- Site office will consults with State forest departments if the line is passing through forest areas. Revenue authorities will be consulted for their views on revenue/other lands.

C. Output

- Environmental & social screening and scoping report as part of the Concept Paper detailing environmental and social issues, environmentally sensitive areas etc.

7.2.2 Approval

88 The Concept Paper is appraised by the internal management and forwarded to the State Government for approval.

7.3 Project Planning

89 At this stage detail study and survey of the route alignment is carried out and route alignment is finalised for transmission/distribution line. Also tentative locations of substation are identified and E&S screening is conducted. After screening and scoping exercise, specific management plan is prepared for the project. Following activities are conducted in this stage;

- Environment and Social Screening & Scoping for substation;
- Environmental Assessment and Management Planning (EAMP/IEAR);
- Social Assessment for TL (CPTD).

7.3.1 Environment and Social Screening for substation

A. Objectives

- Objective of this process is to identify environmental and social sensitivities associated with the project and to outline scope for land acquisition.

B. Process

- AEGCL/APDCL will identify tentative locations of the substation village/revenue map and collect information from secondary source as per checklist (**Annexure- 16**).

- Field office would carry out spot verification to confirm the environmental and social sensitivities identified during the desktop review. Based on the findings, detail analysis of each alternative consultation would also be initiated. In case of Autonomous District Council (ADC) areas consultation would be carried out with the council to obtain their approval. Efforts are also made to identify the owner of the land from the Revenue Department/Village Council (VC). Based on the findings, detail analysis of each alternative including no of PAP's, CPR religious and social utilities etc the analysis would be carried out.

- Field office will consult revenue authorities for their views on selected sites and shortlist the optimum site.

C. Output

- E&S screening and scoping document would detail the E & S issues etc. and views of revenue dept. & feasibility of land acquisition.

7.3.2 Environmental Assessment and Management Planning

A. Objectives

- The objective of the stage is to prepare IEAR along with the EAMP.

B. Process

- While finalizing the route alignment during detailed survey, the involvement of forest area is ascertained. If protected areas (Wildlife Sanctuaries, National Parks, Biosphere Reserves, etc.) or any notified/recognized migratory path/fly path is encountered in spite of utmost care/optimization, a separate biodiversity assessment study through an independent expert/agency shall be carried out as part of the Environment Assessment (EA) process. The Terms of Reference of the biodiversity assessment study is provided in **Annexure - 19**. In case of forest involvement, forest proposal is prepared for transmission/distribution line with the help of Forest Department which includes details of species and girth wise classification of trees to be felled, cost benefit analysis, identified degraded forest land, details of Compensatory Afforestation (CA) enumerated on a map and preparation of CA scheme. Various digitalized map of diverted and CA area, NOC/certificate from DC under FRA, 2006 etc. are submitted along with the forest proposal. In case of forest controlled by ADC AEGCL/APDCL shall obtain NOC from the Council before the formal process of forest clearance can be initiated.

- AEGCL/APDCL would prepare IEAR detailing significant E&S issues identified during screening and scoping and would formulate a project specific Environment Management Plan (EMP) (**Annexure - 20** for contents of IEAR).

- Public Consultations are carried out for the final route alignment/site to ascertain views/suggestion of, affected person and other stakeholders.

C. Output

- The IEAR details out potential E&S issues and associated with the specific transmission /distribution line. The management measures to overcome these are specified in the EAMP and Biodiversity Assessment Report (if applicable).

7.3.3 Social Assessment for Temporary Damages for TL (CPTD)

A. Objectives

- To prepare Compensation Plan for Temporary Damages (CPTD)

B. Process

- On identification of route for laying transmission line, AEGCL will access all likely damage to the land due to foundation, erection and stringing works.

- AEGCL will prepare management plan to minimize damage and compensation plan for temporary damages in consultation with revenue dept. and affected persons. The compensation plan will be periodically updated during check survey and finalization of tower location (refer **Annexure – 3 (B) &21** for contents of CPTD).

C. Output

- CPTD shall present assessment of temporary damages and associated management measures including compensation plan.

7.4 Project Approval

90 Environment and social management steps are initiated during approvals stage of project cycle. The Detail Project Report including the EAMP after recommendation of internal management is forwarded to State Govt. and funding agency (if applicable) for concurrence and budget allocation/funding. Procedure of forest clearance (If needed) is initiated by submitting forest proposal

to concerned authority. If land acquisition is involved, request/indent for the same is to be placed to State Government as per RFCTLARRA, 2013. During this stage, following activities are undertaken:

7.4.1 Forest Clearance

A. Objectives

- To obtain forest clearance from MoEF

B. Process

- AEGCL/APDCL submits a forest proposal request through online on MoEF forest clearance web portal (http://forestsclearance.nic.in)[12]. On receiving the request Nodal Officer (NO) after scrutiny forward the same to concerned Divisional Forest Officer (DFO) for assessment of the land proposed to be diverted for the transmission/distribution line and for formulation of proposal. In case of forest in the Six Schedule areas forest proposal is processed only after the NoC is obtained from the village/district council for lines passing through forest areas owned by them.

- After formulation, DFO recommend the proposal to CF (Conservator of Forests) and again send to CCF to NO and PCCF (Principal Chief Conservator of Forests) who will forward it to State Secretary of Forests and finally to MoEF.

- Forest clearance is issued in two stages Stage-I & Stage-II. Stage-I approval is conditional on AEGCL/APDCL on depositing the cost of compensatory afforestation and Net Present Value to forest Dept. and fulfilling any other stipulated conditions. Work in forest area can be undertaken after realizing the fund by MoEF deposited towards CA & NPV by AEGCL/APDCL. State Govt. informs MoEF about compliance of conditions and MoEF grant final approval.

C. Output

- Forest clearance from MoEF

7.4.2 State Government Approval

A. Objectives

- To obtain approvals from GoA for DPR for budget allocation/fund

[12] *For details refer* ***Annexure – 9a***

B. Process

- AEGCL/APDCL submits DPR including the environment and social component of the project to State Govt. through its State Planning Dept.

C. Output

- Approval of State Government for the project

7.4.3 Social Impact Management Plan (SIMP) for substation

A. Objective

- To prepare SIMP by State Government

B. Process

- On confirmation of the scheme the AEGCL/APDCL would submit a proposal for land acquisition detailing the extent of land and the affected area to be notified and acquired for the project by the State government. In accordance with the RFCTLARRA, 2013 the responsibility of preparation of the SIMP rests with GoA. The preparation of the SIMP including the SIA, RAP and the Public Disclosure would be carried out by the Rehabilitation and Resettlement Commissioner of the State Government. Procedures expected to be adopted by GoA is described below.

1. Establishment of Institutions

As per RFCTLARRA, 2013 the following bodies are to be established permanently in the state (to cater to all projects proposed in future):

- The State Social Impact Assessment Unit
- The office of the Commissioner Rehabilitation & Resettlement
- The State Level Monitoring Committee

For a particular project, the following bodies will be established:

- The Expert Group to appraise the SIA
- The office of the Administrator Rehabilitation & Resettlement
- Project Level Committees

2. Social Impact Assessments[13]

- State SIA Unit, after the receipt of a request from Government of Assam, will prepare a detailed project specific Terms of Reference (ToR) for each proposed case of land acquisition,
- Based on the nature and extent of the work involved, costs involved are decided and require depositing the same with the Unit.
- SIA Unit deploys an external professional agency (or individuals) for the conduction of SIA.
- The first step in the SIA will involve building up a detailed understanding of the proposed project and reviewing its stated public purpose. The project should be screened to ensure that it meets the cause of "public purpose".
- The SIA shall conduct a detailed land assessment, list out accurately the number of PAPs, socio-economic as well as cultural profile of the PAPs as well as that of their environ, and asses the nature and extent of impacts likely to occur as a result of the project intervention.
- Impacts are to be identified at different phases of the project cycle- planning, construction and O&M. Same time efforts are to be made on assessing: (i) direct/ indirect impacts; and (ii) differential impacts – on women, children, elderly and disabled. The latter can be done through gender impact assessments and/ or vulnerability and resilience mapping.
- Following the above assessment, a SIMP is prepared encompassing a comprehensive compensation as well as R&R entitlements in respect of each PAP.
- Formal public hearing/s will be held in the affected areas with the specific purpose of presenting the main findings of the SIA, seeking feedback on its contents, and making sure that any omissions or additional information and views are incorporated into the final documents. These hearings will be held in all the GPs and/ or Village Council whose lands are proposed to be acquired.
- Explicit consent will be required in the case of lands in respect of tribal areas from ADC and the Village Councils.
- Every Social Impact Assessment (SIA) conducted will be formally appraised by an Expert Group, which will then make a written recommendation to the Government on whether or not the proposed land acquisition should proceed. Final decision to accept or not, and go ahead or not, rests with Government of Assam.

[13] The responsibility to carry out SIA and preparation of R & R Plan , its disclosure, approval etc. is in the domain of State Government and not under Utility (AEGCL/APDCL)

3. Disclosure

The final SIA Report and SIMP will be published in the local language and made available:

- The Panchayat, Municipality or Municipal Corporation and the offices of the District Collector, Sub-Divisional Magistrate and the Tehsil;
- Published in the affected areas; and
- Uploaded on the websites of the government.

4. Compensation and Rehabilitation and Resettlement (R&R)

- Based on the SIMP, the Collector shall discuss the Package in a meeting with the Rehabilitation and Resettlement committee at project level, and submit the Package to Commissioner Rehabilitation and Resettlement along with his/ her remarks.
- The Commissioner Rehabilitation and Resettlement shall, after due vetting, accords approval to the scheme and make it available in public domain.
- After approval of R & R plan by Commissioner R & R, the Collector shall issue two awards one for land compensation based on procedures described in act & State's rules and second for R & R as per approved SIMP.

5. *Special Provisions for SCs/STs*

As far as possible, no acquisition of land shall be made in the Scheduled Areas and where such acquisition take place it shall be done only as a demonstrable last resort. In addition to the R&R package, SC/ST families will be entitled to the following additional benefits;

- One time financial assistance of Rs. 50,000 per family;
- Families settled outside the district shall be entitled to an additional 25% R&R benefits;
- Payment of one third of the compensation amount at very outset;
- Preference in relocation and resettlement in area in same compact block;
- Free land for community and social gatherings;
- In case of displacement, a *Development Plan is to be prepared*
- Continuation of reservation and other benefits of Schedule V and Schedule VI area from displaced area to resettlement area

C. Output

- Social Impact Management Plan (SIMP) including SIA, RAP and Public Disclosure by GoA.
- Tribal People Development Plan (TPDP) (if applicable).

7.4.4 Funding Agency Concurrence/Acceptance (if applicable)

A. Objectives

- To obtain concurrence of funding agencies related to E & S components of the projects.

B. Process

- AEGCL/APDCL submits DPR and various reports on environment and social like IEAR, CPTD to funding agencies for appraisal and concurrence.

C. Output

- Acceptance/concurrence of funding agencies

7.5 Detailed Design & Tendering

91 During this stage, following environment & social management activities are undertaken;

- AEGCL/APDCL shall either implement IEAR/CPTD in-house or engage outside agencies that are capable of executing such task;
- Project specific EMP to be made part of contract/bidding document for implementation by contractors/subcontractors.

7.5.1 Project Implementation

92 During this phase various environment and social management plan prepared for the project are implemented and monitored. This includes

- Execution of EMP & EAMP
- Execution of CPTD

7.5.2 Execution of EMP & EAMP

A. Objectives

- To undertake environmental management works

B. Process

- EAMP (IEAR) is implemented taking into account appropriate working clearance & ROW (by cutting/ felling/pruning trees etc. and other measures identified in clearance). Forest dept. undertakes CA Scheme.

- Other mitigation measures enlisted in EMP are executed by AEGCL/APDCL and Contractor.
- AEGCL/APDCL shall initiate the process (for WB funded projects) and prepare a Final Environmental Assessment Report (FEAR) (refer **Annexure - 22** for contents of FEAR.)

C. Output

- Tangible proof execution of EMP/EAMP and preparation of FEAR containing compliance of mitigation measures as listed in IEAR, EMP implementation and details of forest clearance etc.

7.5.3 Execution of CPTD

A. Objectives

- To carryout social management works as prescribed in CPTD

B. Process

- AEGCL will pay the compensation in consultation with revenue authority and affected persons and execute any other measures as agreed and documented in the CPTD for transmission line.

C. Output

- Tangible proof of execution of social management measures and RoW free of encumbrance.

7.5.4 Execution of SIMP

A. Objectives

- SIMP to be executed by GoA as per RFCTLARRA, 2013

B. Process

93 The execution of the SIMP is the responsibility of the GoA. However, the following process is to be facilitated by AEGCL/APDCL:

- AEGCL/APDCL deposits cost for land and R & R measures as per award issued under RFCTLARRA, 2013 to concerned authority/State Government;
- Transfer of compensation and monetary R & R benefits to affected persons account by GoA;

- Possession of land by AEGCL/APDCL.

C. Output

- Possession of land

7.6 Operation and Maintenance (O&M)

94 The environment & social works undertaken in earlier phase of project cycle are monitored in this period. Besides this AEGCL/APDCL being a member of State R&R committee shall monitor implementation Social Impact Assessment Management Plan for acquisition of land (if involved) by GoA as per the provisions of RFCTLARRA, 2013 (Salient features are outlined in **Annexure - 4**). However, AEGCL/APDCL may also take part on implementation and monitoring, if called for as they are responsible for implementation of project.

7.6.1 Environmental Monitoring

A. Objectives

- To monitor work undertaken as part of EAMP

B. Process

- Regular patrolling of RoW and CA;
- Monitoring of substation on daily basis;
- Others mitigation measures outlined in EMP are monitored and supervised as per the plan;
- Periodic monitoring report would be prepared not only on the observation of the EAMP Implementation but also will include the corrective actions which have been proposed and the action plan for the implementation of such actions.

C. Output

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

7.6.2 Social Monitoring

A. Objectives

- To monitor work undertaken as part of CPTD & SIMP

B. Process

- CPTD implementation during maintenance works monitored;

- If land acquisition is involved, AEGCL/APDCL (as member of State R & R committee) monitored SIMP implemented by GoA as per the provisions of RFCTLARRA 2013.

C. Output

- Periodic monitoring reports containing updates of execution of CPTD and SIMP execution.

7.7 Review

- Circle office of AEGCL/APDCL at Corporate office shall monitor and review of E&S activities of the Transmission and Distribution project on monthly basis along with field office.
- The implementation/performance of environmental and social management measures along with other project works shall be reviewed by AEGCL/APDCL management initially every quarter for a period of at least 1 (one) year as this ESPP will be inducted in its corporate functioning first time in implementation of AEGCL/APDCL's Transmission/ Distribution Project.
- AEGCL/APDCL Management shall undertake annual review of ESPP implementation to obtain feedback on problems/limitations/stakeholders expectations for deliberations and incorporating changes/improvement in the document for its smooth implementation.

95 A summary of the processes AEGCL/APDCL will follow for environmental and social management are summarized in **Table 7.1** below.

TABLE 7.1: ENVIRONMENTAL AND SOCIAL ASSESSMENT & MANAGEMENT PROCESS OF A TYPICAL T & D PROJECT

Milestones	Objectives	Process	Responsibility	Product/Decision
I. Project Conceptualisation				
1. Environmental and Social Screening & Scoping for Transmission /Distribution Lines	▪ To identify environmentally and socially sensitive areas, issues and possible management measures ▪ To suggest alternate transmission line routes, if necessary ▪ To outline the scope of Environmental Assessment (EA) and Social Assessment (SA) studies	▪ Screen and scope Transmission Lines from an environmental and social perspective ➢ Desk Review ➢ Spot Verification ➢ Informal Public Consultation ➢ Consultation with Forest Dept.& Revenue Authorities	▪ ESMC, PMU ▪ Engg. Dept.	▪ Environmental & Social screening and scoping documents as part of Concept Paper.
2. Environmental & Social approval	▪ To obtain environmental & social approvals from the AEGCL/APDCL management and In-principle approval by State Govt.	▪ Submit 'Concept Paper' (with E&S screening & scoping details) to AEGCL/APDCL Management	▪ Engg. Dept ▪ Field office ▪	▪ AEGCL/APDCL Management Appraisal.
		▪ Submit 'Concept Paper' (with E &S screening and scoping details) for In-principle approval by State Govt	▪ Engg. Dept ▪ Field Office	▪ In-Principle approval by State Govt.
II. Project Planning				
▪ Environmental and Social Screening and Scoping for substations	▪ To identify substation lands avoiding/ minimising environmentally and socially sensitive areas, ▪ Selection of proper site which has minimal impact ▪ To suggest alternate substation sites , if necessary ▪ To outline scope of land acquisition	▪ Screen and scope substation sites from an environmental and social perspective ➢ Desk Review ➢ Spot Verification ➢ Consultation with Revenue Authorities ➢ Informal Public view	▪ Engg. Dept. ▪ Field office	▪ Environmental & social screening and scoping documents for substations
▪ Environmental Assessment & Management Planning	▪ To prepare IEAR for the project/sub-projects.	a. Forest Areas ➢ Tree Enumeration ➢ Cost-benefit Analysis ➢ Compensatory Afforestation	▪ Circle office ▪ Field Office ▪ Auth. Agencies	▪ IEAR ➢ Environmental review ➢ Forest Proposal

Milestones	Objectives	Process	Responsibility	Product/Decision
		b. Other Areas ➢ Undertake environmental review and formulate appropriate management measures c. Public Consultation ➢ To inform/record public views for refinement / review if needed		➢ Environmental Management Measures ➢ Views of Public
▪ Social Assessment for Temporary Damages for TL	▪ To prepare Compensation Plan for Temporary Damages(CPTD)	▪ Undertake assessment of land area likely to be affected by putting up tower and line and extent of damages during foundation, erection & stringing works. ▪ Formulate appropriate management plan to minimize impact and prepare compensation plan	▪ Circle office ▪ Field office ▪ Authorised Agencies	▪ CPTD ➢ Social review ➢ Management measures ➢ Compensation plan
III. Project Approvals				
1. State Govt.	▪ To obtain project approval from GoA	▪ Submit DPR (with EAMP and Social Screening and Scoping details) to Planning Dept./GoA for their review	▪ Field Office ▪ PMU,ESMC ▪ Engg. Dept.	▪ Project approved by State Govt.
2. Financial Agency's Acceptance	▪ To obtain acceptance from FA for environmental & social components of Concept Paper or IEAR & CPTD	▪ Submit DPR along with IEAR and CPTD to Financial Agency for acceptance	▪ Field Office ▪ PMU,ESMC ▪ Engg. Dept.	▪ Acceptance/concurrence by FA
3. Forest Clearance	▪ To obtain Forest Clearance	▪ Submit forest proposal to concerned authority. ▪ Forest Proposal to MoEF for	▪ Field Office ▪ PMU,ESMC ▪ Engg. Dept.	▪ Final Forest Clearance by MoEF

Milestones	Objectives	Process	Responsibility	Product/Decision
		conditional approval after recommendation by GoM ▪ Forward Compliance report by GoM to MoEF for Final Forest Clearance	▪	
IV. Detailed Design & Award				
1. Environment Assessment and Social Management Measures	▪ To appoint a suitable agency to implement IEAR/CPTD , if required	▪ Select and appoint suitable agency for IEAR/CPTD implementation, if required	▪ Field office ▪ PMU,ESMC	▪ Agency appointed for IEAR/CPTD
	▪ To include EMP part of bidding/contract document for implementation by contractor	▪ EMP included in bidding /contract document	▪ Field Office ▪ PMU,ESMC	▪ EMP part of contract document
V. Project Implementation				
1. Execution of Environmental Management Works	▪ To undertake environmental management work as prescribed in environmental assessment management plan	▪ Execute environmental management works ➢ Appropriate clearance for transmission line ROW, etc. ➢ Compensatory Afforestation ➢ EMP by contractor	▪ Authorised Agency ▪ Field office	▪ Environmental management measures executed
	▪ Preparation of Final Environment Assessment Report(FEAR), If required (for WB funded project)	▪ Compliance to mitigation measures listed in ➢ IEAR ➢ EMP ➢ Forest clearance	▪ Field office ▪ Contractors	▪ FEAR for FA
2. Execution of CPTD for TL & SIMP for Substation	▪ To undertake social management work as prescribed in CPTD	▪ Transmission lines ➢ Pay compensation in consultation with Revenue Authority and affected persons as agreed & documented in	▪ PMU,ESMC ▪ External Agency ▪ Field Office	▪ Social management measures executed

Milestones	Objectives	Process	Responsibility	Product/Decision
		CPTD and execute other measures ▪ Substations ➢ Deposit cost for land and R & R measures as per award ➢ Transfer of compensation money to affected persons a/c ➢ Possession of land	▪ AEGCL/APDCL	▪ Possession of land
VI. Operation & Maintenance				
1. Environmental & Social Monitoring	▪ To monitor work being undertaken as part of EAMP, CPTD & SIMP	▪ Monitor EAMP measures ➢ Maintenance of ROWs ➢ Progress on compensatory afforestation ➢ Compliance to EMP as per schedule	▪ Field office	▪ Periodic monitoring reports
		▪ Monitor CPTD measures ➢ Appropriate compensation and other measures during maintenance of towers and lines ▪ Monitor SIMP measures undertaken by State Government as per RFCTLARRA, 2013(If land acquisition involved)	▪ Field office ▪ Field office	
VII. Project Review				
1. Annual Environmental & Social Review	▪ To review annually the EAMP and the CPTD of its projects	▪ Review and report on environmental and social performance of project during construction operation and maintenance	▪ Field Office ▪ Corporate office	▪ Annual environmental and social review report

7.8 Risk Management Framework

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

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

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

98 AEGCL/APDCL, based on its environmental and social risk assessment process, decides on management options to eliminate or minimizes environmental and social impacts. The risk management process includes risk preparedness, risk mitigation and the sharing of liabilities (via Internal Arrangements and Insurance). Responsibilities in the event of occurrence of a risk have been illustrated **Table 7. 2.**

Internal Arrangement

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

Insurance

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

TABLE 7.2: AEGCL/APDCL' RISK RESPONSIBILITY FRAMEWORK

Risk	Key Role-players			
	GOA	*AEGCL/APDCL*	*Contractor*	*Insurers*
Non Compliance ➢ Regulatory[14] ➢ Contractual[15]	 ✓ -	 ✓ -	 ✓ ✓	 - -
Major hazards, e.g. tower fall during construction	-	✓	✓	✓
During O&M	-	✓	-	-
Impacts on health[16] etc.	-	✓	-	-
Force Majeure ➢ Insurable ➢ Non-Insurable	 - ✓	 - ✓	 - -	 ✓ -
Inclusion/ Exclusion of concerned Communities	✓	✓		
Public interest mitigation	✓	✓	-	-

[14] *Regulatory like working in forest/protected areas without statutory clearances.*

[15] *Contractual like noncompliance of condition of clearance like fuel supply to labourer to avoid tree felling, no-work during night times, etc.*

[16] *Impact of health like any case of prolonged exposure to Electro-Magnetic Field (EMF).*

8.0 Implementation Arrangements

101 Ministry of Power (MoP), GoI has appointed POWERGRID as Design cum Implementation Supervision Consultant (i.e. Project Management Consultant-PMC) now changed to Implementing Agency (IA). However, the ownership of the assets shall be with respective State Govt's /State Utilities, which upon progressive commissioning shall be handed over to them for taking care of Operation and Maintenance of assets.

101 The arrangement for monitoring and reviewing of project from the perspective of environment and social management will form part of overall arrangements for project management and implementation environment. Following implementation arrangement has been proposed at different levels for smooth implementation of this project;

8.1 Administrative Arrangement for Project Implementation

- **Central Project Implementation Unit (CPIU)** - A body responsible for coordinating the preparation and implementation of the project and shall be housed within the IA's offices at Guwahati. The "Project-In-Charge" of IA & Head of each of the SPCU shall be a member of CPIU.
- **State Project Coordination Unit (SPCU)** – A body formed by the Utility and responsible for coordinating with IA in preparing and implementing the project at the State level. It consist of experts across different areas from the Utility and shall be headed by an officer of the rank not below Chief Engineer, from AEGCL/APDCL.
- **Project Implementation Unit (PIU)** – A body formed by the IA, including members of AEGCL/APDCL on deputation, and responsible for implementing the Project across the State, with its personnel being distributed over work site & working in close association with the SPCU/ CPIU. PIU report to State level "Project Manager" nominated by the Project-in-Charge of IA. The IA will have a Core team stationed at the CPIU on permanent basis and other IA officers (with required skills) will visit as and when required by this core team.

8.2 Review of Project Implementation Progress:

102 To enable timely implementation of the project/subprojects, following committee has been setup to review the progress;

- **Joint Co-ordination Committee (JCC):** IA and SPCU nominate their representatives in a body called JCC to review the project. PMC shall specify quarterly milestones or targets, which shall be reviewed by JCC through a formal monthly review meeting. This meeting forum shall be

called as Joint Co-ordination Committee Meeting (JCCM).The PMC shall convene & keep a record of every meeting. MoP, GoI and The Bank may join as and when needed. Minutes of the meeting will be shared with all concerned and if required, with GoI and The Bank.

- **High Power Committee (HPC):** The Utility in consultation with its State Government shall arrange to constitute a High Power Committee (HPC) consisting of high level officials from the Utility, State/ District Administration, Law enforcement agencies, Forest Department. etc. so that various permission/ approvals/ consents/ clearances etc. are processed expeditiously so as to reach the benefits of the Project to the end consumers. HPC shall meet on bimonthly basis or earlier, as per requirement. This forum shall be called as High Power Committee Meeting (HPCM) and the SPCU shall keep a record of every meeting. Minutes of the meeting will be shared with all concerned and if required, with GoI and The Bank.
- **Contractor's Review Meeting (CRM):** Periodic Review Meeting will be held by officials of PIU with Contractors at field offices, State Head Quarters (PIU location) and if required with core team of PMC at Guwahati. These shall be called "Contractor's Review Meeting" (CRM). PIU shall keep a record of all CRMs, which shall be shared with all concerned and if required, with GoI and The Bank.

103 A review will be held among MoP, GoI, The Bank, State Government., Utility and IA, at four (4) months interval or earlier if needed, primarily to maintain oversight at the top level and also to debottleneck issues that require intervention at GoI/ State Government level. Minutes of the meeting shall be prepared by PMC and shared with all concerned

8.3 Implementation Arrangement for Environment & Social Management by AEGCL/APDCL

104 ESPP implementation requires a robust and efficient institutional framework based on organizational requirements, training needs and information management system. This section captures these institutional arrangements for ESPP implementation by its employees who collectively have experience of laying and maintaining substations, transmission and distribution lines. Moreover, services of leading environment/social institutes/individual experts specializing in the relevant discipline may be utilized in the initial stage, if needed. Independent specialist may also be engaged to deal with complex and technical issues like wildlife management. POWERGRID who has also been chosen as Project cum Design Consultant and now redesignated as Implementing Agency has vast experience of implementation of thousands of kilometers transmission lines in the country and abroad. POWERGRID is also leader in development and subsequent implementation of ESPP in

the country. The service of POWERGRID's trained and experience personnel shall be utilised for training and establishment of institutional framework of AEGCL/APDCL. Moreover, successful implementation of provision of ESPP requires involvement and support of higher officials of AEGCL/APDCL who shall regularly monitor/review E&S aspects of transmission and distribution project.

8.3.1 Organisational Requirements

105 To ensure quality and strengthen organizational systems to enable effective implementation of the ESPP, AEGCL/APDCL shall have to set out procedures and work culture which will promote total involvement of all its personnel. To attain assigned goal following shall be ensured:

a) A synchronized system of functioning adopted by Corporate Planning and Corporate Monitoring group, which monitors all activities in the organization;

b) An emphasis on intradepartmental approach to all projects, delineation of departmental responsibilities and the delegation and decentralization of authority resulting in a fast response and quick adjustment to change;

c) A commitment to provide at all times the best possible time bound quality service in all areas of its operations.

106 AEGCL/APDCL's commitment to the ESPP shall have to be developed with these principles. To ensure effective implementation of its ESPP, AEGCL/APDCL's will focus on;

- Strengthening the implementation of the ESPP by deployment of appropriately trained personnel at key levels;
- Reinforcing in-house capabilities by working with specialized external agencies;
- Placing dedicated manpower with specialization in the respective field to deal with and manage the environment and social issues;
- Reviewing progress of the ESPP internally or through external agencies.

107 Corporate office will have overall responsibility for construction, operation, and maintenance of transmission/distribution systems apart from providing necessary support services (refer **Figure 8.1).**

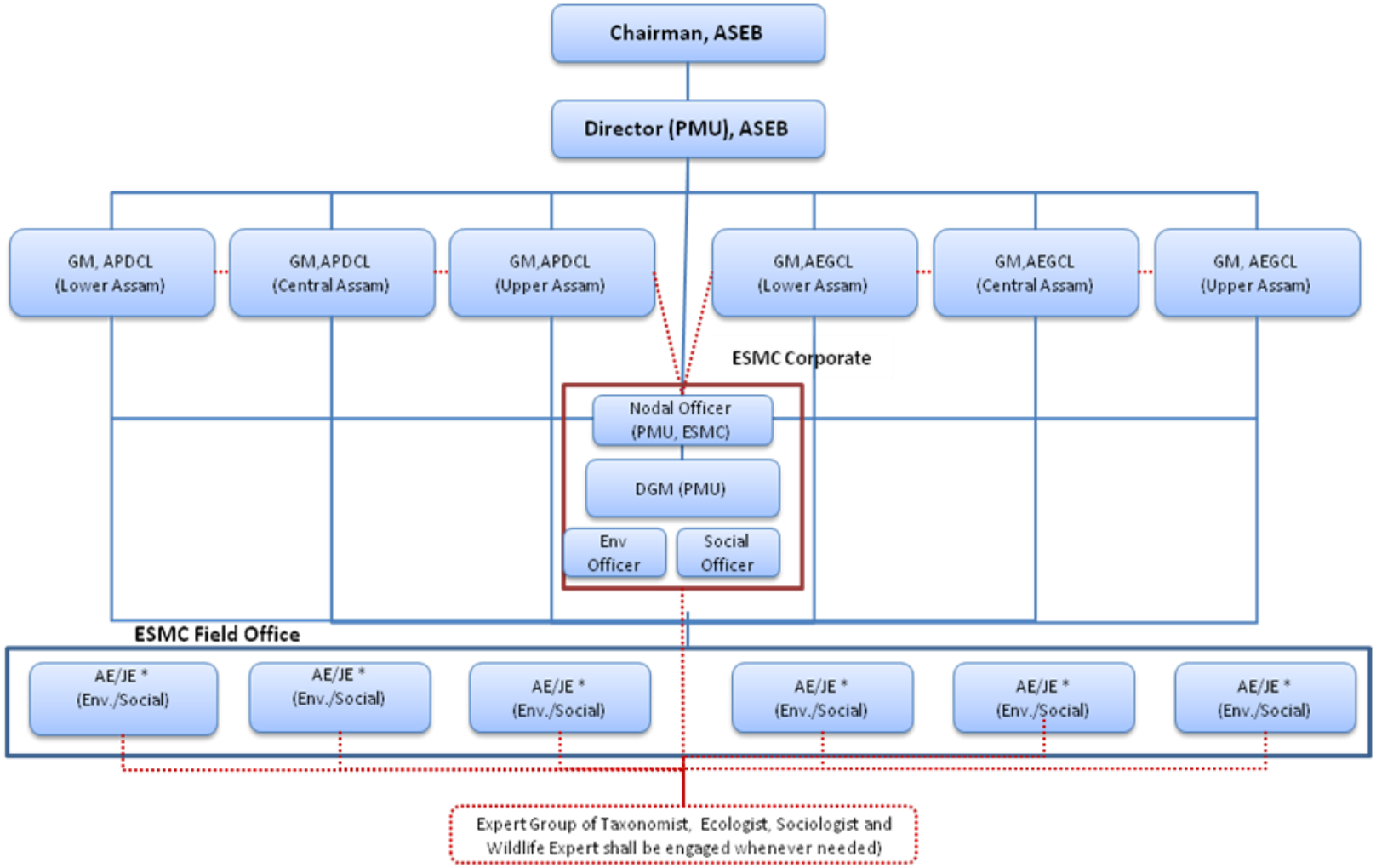
8.3.2 Organisational Structure and Responsibilities

108 An appropriate organizational structure has been developed at the corporate, ESMC and field level to help effective implementation of the ESPP document. The organizational flowchart of

AEGCL/APDCL for the ESPP is given in **Figure 8.1**. The key responsibilities of ESMC will include:

- Coordinating environmental and social commitments and initiatives with various multilateral agencies, GoA and MoEF.
- Coordination of all environmental activities related to a project from conceptualization to operation and maintenance stage.
- Advising and coordinating /Site office to carry out environmental and social surveys and route alignment for new projects.
- Advising site offices to follow-up with the state forest offices and other state departments for expediting forest clearances and other E&S issues of various projects.
- Providing a focal point for interaction with the MoEF for expediting forest clearances
- Training of Circle and Site officials on E&S issues arising out of Transmission/ Distribution projects and their management plan.
- Training of other departments to familiarize them with the ESPP document.

FIGURE 8.1: AEGCL/APDCL'S ORGANIZATION CHART WITH ARRANGEMENT FOR ESPP IMPLEMENTATION



*** Through redeployment of personnel after due training with dual responsibility in the initial stage**

TABLE 8.1: RESPONSIBILITY ALLOCATION FRAMEWORK FOR THE E&S ASSESSMENT & MANAGEMENT PROCESS

Milestones	Process	Output / Indicators	Responsibility			
			Internal			External
			Preparation /Execution	Review	Approval	Preparation
I. Project Conceptualisation						
Environmental & Social Screening and Scoping for Transmission/ Distribution Lines	Screen and scope Transmission/ Distribution Lines from an environmental & social perspective	E & S screening and scoping documents as part of Concept Paper	Circle (Site) office	Engg. Dept. ESMC	AEGCL/APDCL Management Appraisal	Pre-appraisal by Planning Deptt., GoA
Environmental & Social approval	Submit Concept paper (with E&S details) for Management Approval	AEGCL/APDCL Mgmnt. Appraisal	ESMC Corp.Plg.	ESMC Engg. Dept. Corp. Plg.	AEGCL/APDCL Management Appraisal	In-principle approval by GoA
II. Project Planning						
Environmental & Social Screening and Scoping for substations	Screen and scope substations sites from an environmental & social perspective Consultation with Revenue Authorities	E & S Screening and Scoping reports for substation sites Scope for land acquisition	Circle office ESMC	ESMC Engg. Dept. Corp. Plg.	AEGCL/APDCL Management Approval	Ext. agency like revenue, forest dept etc. for Social Screening & Scoping
Environmental Assessment and Management Planning	To prepare EAMP ▪ Trans./Distribution line ▪ Substations ▪ Public Consultation (line)	Environmental/ Assessment Management Plan	ESMC Circle office	ESMC	AEGCL/APDCL Management Approval	State Forest Dept
Social Assessment for Temporary Damages for TL	To prepare CPTD ▪ Assessment of temporary damages ▪ Compensation plan	Compensation Plan for Temporary Damages (CPTD)	ESMC Circle office	ESMC	AEGCL/APDCL Management Approval	Revenue Dept

Milestones	Process	Output / Indicators	Responsibility			
			Internal			External
			Preparation /Execution	Review	Approval	Preparation
	▪ Public consultation					
III. Project Approvals						
Forest Clearance	▪ Submit forest proposal to State Govt ▪ Forest Proposal to MoEF for 1st stage approval ▪ Compliance to MoEF for Final Forest Clearance	Final Forest Clearance by MOEF	ESMC Circle office	ESMC Finance Deptt.	AEGCL/APDCL Management Approval	RMoEF/MoEF
State Govt.	Submit DPR (with E & S details) to State Govt.	Project approval by State Govt.	Circle Office Corp. Plg.	ESMC Corp. Plg.	AEGCL/APDCL Management Approval	Budget/fund allocation
FA Acceptance	Submit IEAR and CPTD to Funding Agencies for appraisal	IEAR and CPTD concurrence by FA	ESMC Corp. Plg.	ESMC Corp. Plg. Dept.	Internal Management Approval	Detailed appraisal and concurrence
IV. Detailed Design & Award						
1. IEAR/CPTD Implementation	Engage authorised agencies for E & S management plan work	Authorised agencies engaged to execute management works	ESMC Circle office Engg. Dept.	Corp. Plg. ESMC /Circle office Engg. Dept.	Management Approval	Monitoring /Supervision
2.EMP part of bidding documents	Project specific EMP to be included in bidding document	EMP part of contract document	Circle office	ESMC	Management Approval	Monitoring /Supervision
V. Project Implementation						
Execution of Environmental	Execute environmental	Environmental management measures	Circle office	ESMC	Management	Environment management works

Milestones	Process	Output / Indicators	Responsibility			
			Internal			External
			Preparation /Execution	Review	Approval	Preparation
Management Works	management works(IEAR)	executed	Authorised agency	Circle office	Approval	executed
Execution of CPTD & SIMP	▪ Execute CPTD for TL ▪ SIMP for Substations (SIA/GoA)	CPTD (TL – by AEGCL) SIA/GoA (for substations)	Circle office SIA/GoA	ESMC Circle office Corp. Plg. SIA	Management Approval SIA/GoA	Social management works executed Possession of Land
VI. Operation & Maintenance						
Environmental & Social Monitoring	▪ Monitor EAMP & CPTD (TL) measures ▪ Monitor SIMP Measures by SIA/GoA	Periodic monitoring reports Periodic monitoring reports (SIA)	ESMC Circle Office Circle office SIA/GoA	ESMC Circle office O&M Circle office	Management Approval SIA/GoA	Periodic monitoring report Periodic monitoring reports
VII. Project Review						
Periodic Environmental & Social Review	Review and report on E & S performance of project during construction, O &M	Annual environmental and social review report	Circle office ESM/Circle office	Corp. Plg. Engg. Dept Fin. dept	Management Approval	FA appraisal GoA

9.0 Training & Capacity Building

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

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

110 Based on the training needs identification ESMC and Field office are key organizational support groups identified, which need to have the required competence to integrate the ESPP document within all departments. The skill requirement for these groups is depicted in **Table 9-1**. Based on skill requirement/improvement at all levels for proper implementation of ESPP, a training programme focusing personnel from Corporate Office, ESMC and Field office is developed (**Table 9-2**) which will be implemented by the Human Resource Department. These training programs are to be conducted with the help of local and national training institutions and experts in various aspects of environmental and social management.

TABLE 9.1: AEGCL/APDCL'S SKILL REQUIREMENT

Milestones	Environment and Social Management Cell (ESMC) at Circle office	Engineering Department	Corporate Planning Department	Field office
Environmental & Social Screening and Scoping for Transmission Lines	ESPP & Project Cycle Dom./Ext. FA Requirement EA & SA process Env. & Soc. issues identification & management technique Negotiation skills Mitigation techniques	E & S issues identification skills EA & SA process		EA & SA process Env. & Soc. issues identification & management technique Negotiation skills Mitigation techniques
Environmental & Social approval			EA & SA process ESPP & project cycle FA requirement E&S mgmt. Techniques	
Environmental & Social Screening and Scoping for substation sites	Env. & Soc. issues identification skills EA & SA process	E & S issues identification skills EA & SA process		E & S issues identification skills EA & SA process
Environmental Assessment and Management Planning	EA process EM techniques Risk assessment Forest proposal process Comp. afforestation process	EA process EM techniques		EA process EM techniques Risk assessment Forest proposal process Comp. afforestation process
Forest Clearance	Forest proposal process Compensatory afforestation process	Forest clearance process		Forest proposal process Compensatory afforestation process

Milestones	Environment and Social Management Cell (ESMC) at Circle office	Engineering Department	Corporate Planning Department	Field office
GoA Approvals	FA requirements Awareness of Central/State laws, policies on environment and social aspects		Central and Ext. FA requirements Awareness of Central/State laws, policies on environment and social aspects	
FA acceptance	FA requirements Awareness of Central/State laws, policies on environment and social aspects		Central & Ext. FA requirements Awareness of Central laws, policies on E&S aspects	
Social Assessment for Temporary Damages	SA process, Public consult skills SM process	SA process SM techniques		SA process, Public consult skills SM process
Concurrence of FA for CPTD /SIMP			GoI/GoA & Ext. FA requirements Awareness of GoI/GoA laws, policies on environment and social aspects	
Consultation for IEAR/CPTD works	Skill to assess Consultation capabilities to meet IEAR/ CPTD			
Execution of EAMP works	EM techniques Compensatory Afforestation process	EM process		EM techniques Comp. Afforestation process
Execution of CPTD	SM process SM techniques	SM process		SM process SM techniques
Monitoring	Monitoring Techniques			Monitoring techniques
Annual E & S Review	Review process			

TABLE 9.2: SKILL DEVELOPMENT PROGRAM

Course	Training Schedule	Duration Of Programme	For Awareness/ Orientation and for Training of Staff	Department
• ESPP • Policy • Contents of ESPP • How AEGCL/APDCL will implement the ESPP	Workshop	1/2 day or 1 day	All Senior staff (Dir., ED, GM, AGM and Proposed ESPP Team at Circle office	All
• ESPP • Policy • Project cycle • E&S assessment and Management process	Workshop	2 days	Proposed ESPP Team and relevant staff	ESMC Engg. Dept. Corp. Plg. Legal Dept. Fin. Dept.
• RFCTLARRA, 2013 • SIA • R & R Planning • Public consultation	Workshop	2 days	Interface with State Govt. Agencies like SIA, R & R Commissioner and External Expert	
• ESPP • Project cycle • EA&SA process • Env. & Soc. issue identification • Public consultation • Risk Assessment & Management • EAMP & CPTD	Training Programme	3 days	Proposed ESPP Team and relevant staff	ESMC/Circle office Site/Field Officials

10.0 Grievance Redressal Mechanism (GRM)

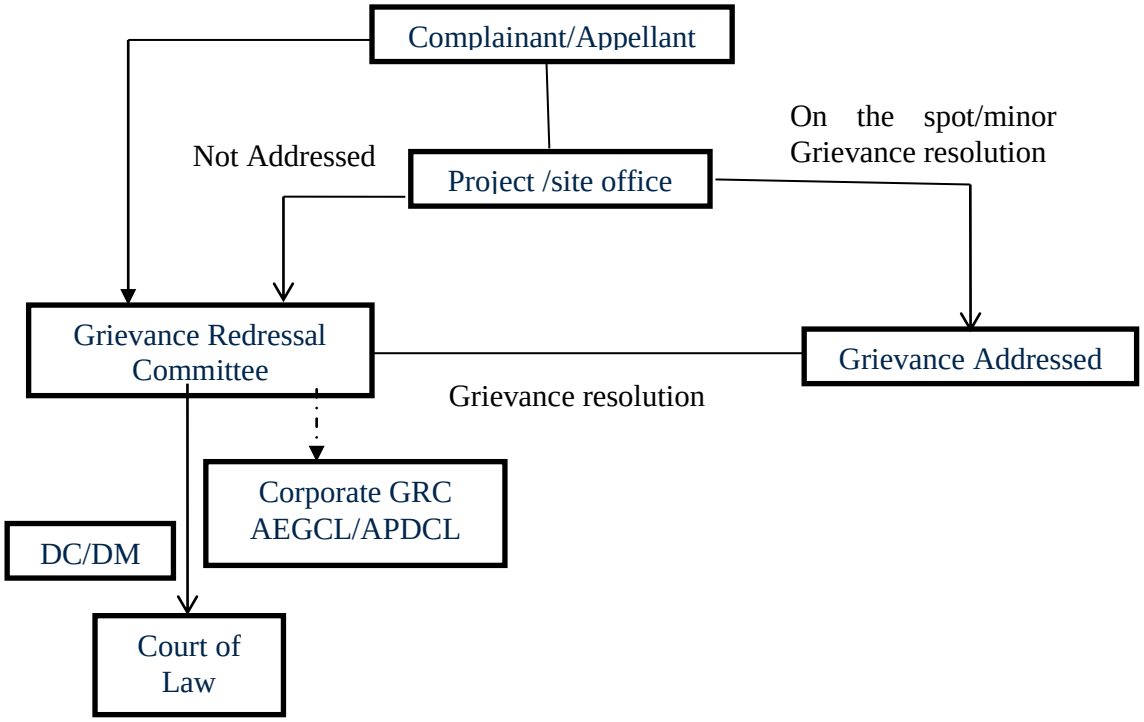
111 Grievance Redress Mechanism (GRM) is an integral and important mechanism for addressing/resolving the concern and grievances in a transparent and swift manner. Many minor concerns of peoples are addressed during public consultation process initiated at the beginning of the project and broadly outlined in Annexure-23. For handling grievance, AEGCL/APDCL has already a framework in place. To ensure its implementation, Grievance Redress Committee (GRC) will be established at two places, one at the project/scheme level and another at Corporate/HQ level. The GRCs shall include members from AEGCL/APDCL, Local Administration, Village Panchayat Members, Affected Persons representative and reputed persons from the society and representative from the autonomous districts council in case of tribal districts selected/decided on nomination basis under the chairmanship of project head. The GRC is aimed to provide a trusted way to voice and resolve environment & social concerns of the project, and to address affected person/community concerns in a time bound manner without impacting project implementation. The composition of GRC shall be disclosed in Panchayat office and concerned district headquarter for wider coverage.

112 The complainant will also be allowed to submit its complaint to local project official who will pass it to GRC immediately but not more than 5 days of receiving such complaint. The first meeting of GRC will be organized within 15 days of its constitution/disclosure to formulate procedure and frequency of meeting. However, GRC meeting shall be convened within 15 days of receiving a grievance for its solution. GRC endeavor will be to pronounce its decision/ may also refer it to corporate GRC for solution within 30-45 days of receiving grievances. In case complainant/ appellant is not satisfied with the decision of GRC they can approach AEGCL/APDCL Corporate level Committee /District Collector or Court of law for solution.

113 The Field /Site Office shall keep records of all grievances received including: contact details of complainant, date that the complaint was received, nature of grievance, agreed corrective actions and the date these were effected, and final outcome.

114 The corporate level GRC shall function under the chairmanship of Director (PMU) who will nominate other members of GRC including one representative from corporate ESMC who is conversant with the environment & social issues. The composition of corporate GRC shall be communicated to all project head who is also the chairman of project level GRC. The meeting of Corporate GRC shall be convened within 7-10 days of receiving the reference from project GRC or complainant directly and pronounce its decision within next 15 days. The flow chart showing Grievance Redressal Mechanism is presented in **Figure 10.1**.

FIGURE 10.1: FLOW CHART SHOWING GRIEVANCE REDRESSAL MECHANISM



Complainant/Appellant can approach only the Court of Law directly during ongoing Grievance Redressal process.

115 The above referred GRCs are meant to act as supplement/ complement and in no way substitute the legal systems, especially embedded within RFCTLARR Act 2013, The Electricity Act, 2003, and Right to Information Act.

11.0 Monitoring & Evaluation

115 Vigorous and continuous monitoring of all its activities including environment and social aspects and its mitigation measures would be the key success of AEGCL/APDCL's project completion. Regular monitoring of activities will be carried out by different department at field and will be reviewed by the Nodal Officer (ESMC) on monthly basis. CMD will review ongoing activities on quarterly including environment and social issues and corrective measures if required are implemented at site.

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

117 Since regular and effective monitoring of implementation of EAMP/CPTD for Transmission/Distribution Line and SIMP for substations are crucial for desired result, AEGCL/APDCL shall designate one Manager each for Environment and Social related aspects who will be made responsible for all the activities related to implementation/monitoring of the EAMP and CPTD. Further, for effective monitoring/implementation of mitigative measures, help of District Magistrate (DM) / Deputy Commissioner (DC) and other officials of local administration is solicited wherever required. Participation of PAPs in the monitoring of EAMP/CPTD/SIMP is also ensured through regular consultation and their active participation. Major monitoring indicator identified for effective monitoring is presented in **Table -11.1.**

TABLE 11.1: MONITORING INDICATORS

Sl. No.	Project Activity/ Stage	Monitoring Indicator	Frequency	Responsibility
1	Pre-Construction	Tower Location and Line alignment w.r.t. Distances from; • Set back from nearest dwellings or social institutions	Once - at time of detailed siting and alignment survey and design	AEGCL/APDCL

Sl. No.	Project Activity/ Stage	Monitoring Indicator	Frequency	Responsibility
		• Water bodies • Agricultural land • Ecological protected area • Reserved forests • Elephant corridors/Bird's Migratory Paths • Flood Zone		
		Exclusion of PCB in transformer	Once – As part of tender specification	AEGCL/APDCL
		Exclusion of CFC in electrical or other equipment	Once – As part of tender specification	AEGCL/APDCL
		EMF strength	Once – part of detailed alignment survey	AEGCL/APDCL
		Noise level from Substation	Once – built in design criteria and specified in tender	AEGCL/APDCL
		Sewage disposal system	Once – in tender specification	AEGCL/APDCL
		Oil spill containment provision & spill cleanup	Once – Built in product specification	AEGCL/APDCL
2.	Planning/Approval /Construction	Government Clearances	Once for each subproject	AEGCL/APDCL
		Fire prevention and fire protection equipment monitoring	Once – in tender specification	AEGCL/APDCL
		Crop/tree disturbance during construction	Periodically when required	AEGCL/APDCL
		Availability of land for Substation (New) ✓ Method of acquisition ✓ SIA start/ disclosure date ✓ Expert group recommendation ✓ No. of PAPs	Periodic monitoring as per provisions RFCTLARRA, 2013	GoA and AEGCL/APDCL

Sl. No.	Project Activity/ Stage	Monitoring Indicator	Frequency	Responsibility
		✓ Date of Award ➢ Compensation ➢ R & R ✓ Payment of Compensation ✓ Implementation of R&R plan (SIMP) Implementation of Tribal People Development Plan (if required)	Regular as per SMF (c) provisions	
		Compensation for temporary loss of, trees/ crops. Monitoring of CPTD ➢ Number of APs ➢ Date of issuance of Notice ➢ Determination of compensation ➢ Compensation Amount ➢ Compensation paid	Once a month/quarter – Based on consultation with PAP	AEGCL/APDCL
		Air borne dust emissions during construction	Every two weeks	AEGCL/APDCL assigned contractor
		Noise during construction	Once – during construction machinery specification or SOS	AEGCL/APDCL and assigned contractor
		Vegetation marking and clearance	Every two weeks – strictly limited to target vegetation	AEGCL/APDCL assigned contractor
		Trimming and cutting of trees in ROW	Once per site – Identification of presence of target species with height following vegetation clearance plan	AEGCL/APDCL assigned contractor
		Disposal of cleared vegetation	Once per site – as approved by statutory	AEGCL/APDCL assigned contractor

Sl. No.	Project Activity/ Stage	Monitoring Indicator	Frequency	Responsibility
			authorities	
		Health & safety of workers	Once in quarter	AEGCL/APDCL assigned contractor
		Disposal of excavated soil	Every 2 weeks	AEGCL/APDCL assigned contractor
		Disposal of excavated soil	Every 2 weeks	AEGCL/APDCL assigned contractor
3	Operation and Maintenance	Effectiveness of Training programs and plan	Once a year	AEGCL/APDCL
		Implementation of SIMP (other development works, infrastructure facilities etc.) within 15-18 months of possession of land.	Periodic monitoring as per provisions RFCTLARRA, 2013	GoA and AEGCL/APDCL(being a member of State R & R committee)
		Implementation of CPTD during maintenance work	Periodically when required	AEGCL/APDCL
		Compliance with transmission tower setback conditions	Once in quarter	AEGCL/APDCL
		Maintenance of ground clearance to comply with limits of EMF	Once	AEGCL/APDCL
		Noise levels at boundary nearest to substations	Once a year	AEGCL/APDCL

12.0 Budget

118 Adequate financial provision is required to meet the management measures to be undertaken to mitigate the impacts as underlined in ESPP. Based on past experience of implementation of similar projects, AEGCL/APDCL estimates about 5-10 % overall project towards such measures for which necessary budget provisions shall be made during planning stage itself.