

Resettlement Planning Document

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COMPENSATION PLAN FOR TEMPORARY DAMAGES

\pm 800kV HVDCBI-POLE TRANSMISSION LINE

FROM BISWANATH CHARİYALI (ASSAM) TO AGRA (UTTAR PRADESH)

Submitted by POWERGRID Corporation of India Limited

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
AP	Affected Person
ASI	Archaeological Survey of India
CP	Compensation Plan
DC	District collector
EA	Executing Authority
ESPP	Environmental Social Policy and Procedure
ESMD	Environment and Social management department
FGD	Focus Group Discussion
GIS	Geographical Information System
GOI	Government of India
GRC	Grievance Redress Committee
ISA	Initial Social Assessment
LA	Land Acquisition
M&E	Monitoring and Evaluation
O&M	Operation and Maintenance
PTCC	Power and Telegraph Coordination committee
RHQ	Regional head Quarter
RO	Resettlement Officer
ROW	Right of Way
RP	Resettlement Plan
R&R	Resettlement and Rehabilitation
SCs	Schedule Castes

GLOSSARY

Block	An administrative sub-division within a district.
Panchayat	Elected Village Council/ the third tier of decentralized governance
Sarpanch	Elected head of the Gram Panchayat
Tehsil	A revenue sub-division, within a district
Zila/District	It is the first administrative division at the state level.



Executive Summary of the Compensation Plan

Description of the Project

Arunachal Pradesh in North Eastern Region & Sikkim of India and Bhutan are endowed with large hydro potential. Generation addition of about 35,000 MW in Arunachal Pradesh and 15,000 MW in Sikkim & Bhutan is expected in future. Considering the growth of power demand of NER including Sikkim and Bhutan, it is estimated that power to the order of about 42,000-45,000 MW would be surplus in these areas. This surplus power is being drawn to one place named Biswanath Chariyali (Assam) Sub-station.

Transfer of bulk power from this (Biswanath Chariyali) has been proposed through ± 800 kV HVDC Transmission line to Agra in Uttar Pradesh in Northern Grid for further dispersal to National Grid.

a)	Project Name	:	± 800 kV, 6000 MW HVDC Bi-pole Transmission Line from Biswanath Chariyali (Assam) to Agra (Uttar Pradesh) including Earth Electrode Lines at both end, Length-1825 KM.
b)	Location	:	Assam, West Bengal, Bihar and Uttar Pradesh
c)	Beneficiary	:	Constituent States of North East, Northern & Western Regions.
d)	Total Cost	:	INR.38,237 million

Sl. No.	Initial Env. Examination Section		Sub-project/Contract Package	
	Name of section as Per IEE	Length in Kms	Package No	Contract Description
1.	Biswanath Chairiyali to Bongaigaon	* 321.0 + 50	A1 A2	Part-I B'chariyali-B'gaon HVDC line-160 Km with Earth Electrode line-50 Km. Part-II B'chariyali-B'gaon HVDC line-165 Km
2.	Bongaigaon to Saharsa	*463.0	A3 A4	Part-I B'gaon-Purnea HVDC line -194 Km Part-II B'gaon-Purnea HVDC line-194 Km
3.	Saharsa to Gorakhpur	*363.5	A5 A6	Purnea-Muzaffarpur HVDC line - 241Km Muzaffarpur-Gorakhpur HVDC line-261 Km
4.	Gorakhpur to Agra via Lucknow	*580.0 + 40	A7 A8 A9	Part-I Gorakhpur-Agra HVDC line-200 Km Part-II Gorakhpur-Agra HVDC line-200 Km Part-III Gorakhpur-Agra HVDC line-200 Km with Earth Electrode line-40 Km.

Benefits of the Project

Bulk power would be transferred uninterruptedly over a long distance with much more transmission reliability and stability. It will also facilitate inter-state trading of exportable power of State sector generation apart from evacuation of power from the central sector Generations. Moreover, it will increase the capacity of National Grid. The per capita consumption of electricity (presently about 370 units) is likely to increase by 2 to 3 % on an average, main beneficiaries being consumers of rural India including agricultural sector, industry, commercial sectors with improved electricity supply stability.



Compensation Principles and Policy Framework

In India, compensation for land acquisition (LA) and resettlement assistance for project-affected people until very recently was generally governed by the Land Acquisition Act (1894), which has been amended from time to time. However, since the LA Act does not cover project-affected persons without titles or ownership records such as encroachers nor requires minimizing project impacts through alternative options, a National Policy on R&R, has been notified in February 2004 by the GOI to address these issues. In the instant case land acquisition is not involved as per law of the land, hence the compensation towards temporary damages to crops and trees shall be governed by the provisions of the The Electricity Act, 2003 and Indian Telegraph Act, 1885.

In addition, Asian Development Bank ADB's Policy of *Involuntary Resettlement* (1995), ADB's Handbook on Resettlement (1998), POWERGRID's *ESPP* (2005) are the guiding policies to identify impacts and to plan measures to mitigate various losses of the sub projects. Based on the inventory of losses, an entitlement matrix has been developed, which recognizes the type of losses. The matrix identifies the affected households/persons, their losses and defines compensation and entitlements.

The CPTD is based on ADB's Involuntary Resettlement Policy (1995) as well as on the Borrower's domestic policy instruments, laws, particularly, Land Acquisition Act, 1884 (LAA), *National Policy on Resettlement and Rehabilitation for Project Affected Persons (NPRR)* (2003), and POWERGRID's Environment and Social Policy & Procedures (ESPP) (2005)¹.

The Compensation Plans for Temporary damages (CPTDs) (for subprojects which only require temporary land acquisition/use)⁴ has been written on the provisions agreed upon in the RF which identifies the broad scope of the project and outline the policy, procedures and institutional requirement for preparing RPs and CPTDs for subprojects under MMF loan. In any case, no AP shall lose any asset before full compensation is awarded.

Disclosure, Consultation and Grievance Redressal

Public consultation/information is an integral part of the project implementation. Public is informed about the project at every stage of execution. During survey also POWERGRID's site officials meet people and inform them about the routing of transmission lines. During the construction, every individual, on whose land tower is erected and people affected by ROW, are consulted. Many such consultations have already been organized and will continue through out the project execution phase.

The draft/summary CP will be disclosed by the POWERGRID to the affected households and other stakeholders by placing it on web site for review and comments on the policy in general and adequacy of the mitigation measures in particular. The CP will be translated into the local language(s) and will be placed at various public offices, places such as *tehsil* and district offices, schools, *panchayat* office and concerned officials and local dignitaries. The summary of CP may be disclosed on the ADB website.

Grievance redressal is built in the process of compensation and affected person/farmer has been provided the authority to provide sufficient proof for basis of assessment of damages as well as he/she has the right of access to all official including the DC and POWERGRID official for any grievance related to assessment/compensation of damages.

Institutional Arrangement and Budget



POWERGRID will be the Executing Agency (EA) for the Project. A CPTD Implementation Unit will be established for each subproject, headed by concerned head of the region (POWERGRID), which will be accountable and responsible for implementation of the CPTD. Each unit will have one or more designated Social Officer depending on number of APs to implement the CP. These officers should be with field level experience of handling RP implementation and community based activities. The Unit will maintain all databases, will closely work with APs.

The Social, Resettlement and Environment Implementation Units will also be responsible for internal monitoring and will prepare progress reports on implementation of the CP. The implementation period of CP shall be a time bound activity and will be implemented and completed along the construction activities of the project.

The total estimated budget towards crop/tree damages and SMP implementation is **Rs. 282.424** million.

Implementation and Monitoring

POWERGRID will be the Executing Agency (EA) for the Project. The implementation and monitoring are critical activities. Monitoring is a continuous process for POWERGRID projects at all the stages are it the site selection, construction or maintenance.

The success of POWERGRID lies in its strong monitoring systems. Apart from the site managers reviewing the progress on daily basis regular project review meetings are held at least on monthly basis which is chaired by Executive Director of the region wherein apart from construction issues the environmental and social aspects of the projects are discussed and remedial measures taken wherever required. The exception reports of these meetings are submitted to the Directors and Chairman and Managing Director of the Corporation. The progress of various on-going projects is also informed to the Board of Directors.



Chapter-1: INTRODUCTION OF THE PROJECT (Biswanath Chariyali-Agra \pm 800kV HVDC Transmission line)

1.0 Background

Arunachal Pradesh in North Eastern Region & Sikkim of India and Bhutan are endowed with large hydro potential. Generation addition of about 35,000 MW in Arunachal Pradesh and 15,000 MW in Sikkim & Bhutan is expected in future. Considering the growth of power demand of NER including Sikkim and Bhutan, it is estimated that power to the order of about 42,000-45,000 MW would be surplus in these areas. Generation addition scenarios of Northern, Western and Southern Regions indicate that these regions would remain in deficit situation during 11th Plan and beyond. Therefore, power from the above generation sources would have to be transmitted to the load centers of NR, WR and SR over long distance through the narrow corridor in north of West Bengal. To optimally utilize the transmission corridor of the Chicken neck area and the difficult terrain of NER, it is necessary to plan evacuation system of major projects in NER and Bhutan in a comprehensive manner keeping in view the future generation expansion.

Generation addition, out of above potential in NER, as presently planned from Lower Subansiri (8x250MW=2000MW) and Kameng (4x150MW=600MW) Hydro Electric Projects in Arunachal Pradesh/Assam is expected to come up by XI Plan, beneficiaries being mainly NER, NR & WR. Evacuation of power from these Hydro Electric Projects has been envisaged with 400kV D/C Transmission systems at Biswanath Chariyali in Assam where 220/400/765kV HVAC power pooling point & \pm 800kV HVDC Terminal is proposed. Transfer of bulk power from this Terminal Stn. (Biswanath Chariyali) has been proposed through \pm 800kV HVDC Transmission line to Agra in Uttar Pradesh in Northern Grid for further dispersal to National Grid.

1.1 Project Highlights

a)	Project Name	: \pm 800 kV, 6000 MW HVDC Bi-pole Transmission Line from Biswanath Chariyali (Assam) to Agra (Uttar Pradesh) including Earth Electrode Lines at both end, Length-1825 KM.
b)	Location	: Assam, West Bengal, Bihar and Uttar Pradesh
c)	Beneficiary	: Constituent States of North East, Northern & Western Regions.
d)	Total Cost	: INR.38,237 million

1.2 Benefits of the project

Bulk power would be transferred uninterruptedly over a long distance with much more transmission reliability and stability. It will also facilitate inter-state trading of exportable power of State sector generation apart from evacuation of power from the central sector Generations. Moreover, it will increase the capacity of National Grid. The per capita consumption of electricity (presently about 370 units) is likely to increase by 2 to 3 % on an average, main beneficiaries being consumers of rural India including agricultural sector, industry, commercial sectors with improved electricity supply stability.

1.3 Scope of presentation in this report

The length of Biswanath Chariyali to Agra \pm 800 kV, 6000 MW HVDC bi-pole line is too long. Preliminary investigation/survey has been carried out in 4 (four packages) to estimate/arrive at for
Compensation Plan for Temporary damages (CPTD) for \pm 800kV HVDC Transmission Line from Biswanath Chariyali(Assam) to Agra(U.P.)



selection of one best feasible alignment route out of at least 3 alternative alignments studied, for detailed survey to be undertaken during execution of main contracts. Therefore, to facilitate preparation of Compensation Plan Temporary Damages (CPTD) for entire project (Line) has been sectioned (in 4 parts) matching Preliminary investigation/survey as under:

Sl. No.	Initial Env. Examination Section		Sub-project/Contract Package	
	Name of section as Per IEE	Length in Kms	Package No	Contract Description
1.	Biswanath Chairiyali to Bongaigaon	* 321.0 + 50	A1 A2	Part-I B'chariyali-B'gaon HVDC line-160 Km with Earth Electrode line-50 Km. Part-II B'chariyali-B'gaon HVDC line-165 Km
2.	Bongaigaon to Saharsa	*463.0	A3 A4	Part-I B'gaon-Purnea HVDC line -194 Km Part-II B'gaon-Purnea HVDC line-194 Km
3.	Saharsa to Gorakhpur	*363.5	A5 A6	Purnea-Muzaffarpur HVDC line - 241Km Muzaffarpur-Gorakhpur HVDC line-261 Km
4.	Gorakhpur to Agra via Lucknow	*580.0 + 40	A7 A8 A9	Part-I Gorakhpur-Agra HVDC line-200 Km Part-II Gorakhpur-Agra HVDC line-200 Km Part-III Gorakhpur-Agra HVDC line-200 Km with Earth Electrode line-40 Km.

* Length as per preliminary/GIS Survey, may not match with the contract packages as above.

A power map showing the Biswanath Chariyali to Agra HVDC transmission line is placed as **Map-1.**

1.4 Measures to minimize impact

In keeping with the ADB policy on Involuntary Resettlement and POWERGRID's Environmental and Social Policy & Procedures'05, the routes of these transmission lines have been finalized to avoid or to minimize impacts towards temporary damages on crops/ trees/ structures if any coming in the Right of Way (ROW) during construction. Further field visits and public consultations helped in developing the measures towards minimizing negative social impacts, if any.

1.5 Objective of the Compensation Plan (CP)

The Compensation plan is guided by Electricity Act 2003; Asian Development Bank ADB's Policy of *Involuntary Resettlement* (1995), ADB's Handbook on Resettlement (1998), POWERGRID's *Environmental and Social Policy & Procedures* (2005). The primary objective of the CP is to identify impacts and to plan measures to mitigate losses of the subprojects. The CP is based on the general findings of field visits, and meetings with various project-affected persons in the subproject areas. The CP presents (i) type and extent of loss including crop and trees; (ii) principles and legal framework applicable for mitigation of losses; (iii) entitlement matrix, based on the inventory of loss and (iii) budget, institutional framework for the implementation of the plan, including monitoring and evaluation.



SECTION-2

PROJECT IMPACTS

2.0 Minimization of impacts

A. Civil Works Scheduling

For transmission line (only) coming under any subprojects there is no land acquisition involved as per law of the land i.e. in exercise of the powers under Indian telegraph Act'1885, part 3, section 10 to 19 conferred under section 164 of the Electricity Act 2003 through Gazette by India, extra ordinary dated 24th Dec. 2003, has the domain to place and maintain transmission lines under over along or across and posts in or upon, any immoveable property. However, as per clause 10 (d) of same act stipulates that the user agency shall pay full compensation to all interested for any damages sustained during the execution of said work. Therefore, POWERGRID has developed a procedure which is designed to minimize impacts, during the preliminary survey/ investigation (for screening & Scoping of the project with at least 3 alternative route alignments), thereafter during detailed survey (spot)/design followed by foundation work, tower erection and during the stringing of conductors.

a) Towers foundations and footings.

All towers foundations and towers footings are dug and laid, including transportation of material and land clearance, at the end of a crop season to avoid impacts on cultivations and need for compensation. After construction of transmission towers, farmers are allowed to continue agricultural activity below tower.

b) Towers erection.

Because the concrete needs time to dry and settle, all towers are erected normally three weeks later, after the end of the following crop season and before the following one².

c) Stringing.

Given the limited time needed for the stringing, the latter can be done right after the tower construction, before the following crop season.

For this reason no household is expected to be significantly affected.

An estimated 4115 towers (HVDC-3923 & E/E-192) may be erected on the private agriculture land and might impact temporarily a maximum of 4115 households³. However, due care shall be taken to avoid damages to crop/trees by taking up the construction activities during lean period or post harvest season. As per the prevailing norms farming activity shall be allowed after the construction work is completed. All affected farmers will be compensated for all sorts of damages during construction as per the laid down procedure. **Table 2 A** below indicates likely affected households by the subprojects for the purpose of temporary damages during construction of the transmission lines.

¹ Assam, West Bengal, Bihar & UP have 2 crops season

³ The maximum number of affected households was calculated on the basis of experience and land tenure in the affected areas. The corridor has been already defined, though the location of towers might change, and the sample survey substantiated the estimation of a maximum of 2-3 affected households per km.

Compensation Plan for Temporary damages (CPTD) for ± 800 kV HVDC Transmission Line from Biswanath Chariyali(Assam) to Agra(U.P.)



Table:2.A Maximum number of Affected Persons (APs) by the Subprojects in Revenue/Pvt. Land for the purpose of Temporary Damages²

Sub project	Contract Description	Name of the Sections for CPTD	Length in Kms	States involved						Remarks
				Non-significant ⁴ APs	Significant APs	Total APs	Affected Structures	Area of Temporary Damages Ha.)	Trees (nos.)	
A1	Part-I B'chariyali to B'gaon HVDC line-160 Km Earth Electrode line-50Km.	Biswanath Chairiyali to Bongaigaon	321.0 + 50	Assam-2720	Nil	Assam-2720	Thatched Huts-173 nos. including Assam type.	925Ha. out of 2744000Ha. net sown area	17650	Only 0.06 % of net sown area affected
A2	Part-II B'chariyali to B'gaon HVDC line-165 Km									
A3	Part-I B'gaon to Purnea HVDC line -194 Km	Bongaigaon to Saharsa	463.0	West Bengal-1680	Nil	West Bengal-1680	Nil	1264Ha. out of 5463000Ha. net sown area	615	Only 0.025% of net sown area affected.
A4	Part-II B'gaon to Purnea HVDC line-194 Km									
A5	Purnea-Muzaffarpur HVDC line- 241Km	Saharsa to Gorakhpur	363.0	Bihar-4145	Nil	Bihar-4145	Nil	1022Ha. out of 7337000 Ha. net sown area	535	Only 0.034% of net sown area affected
A6	Muzaffarpur-Gorakhpur HVDC line-261 Km									
A7	Part-I Gorakhpur to Agra HVDC line-200 Km	Gorakhpur to Agra via Lucknow	580.0 + 40	Uttar Pradesh-5540	Nil	Uttar Pradesh-5540	Nil	1715Ha. out of 17475000Ha. net sown area	1485	Only 0.028% of net sown area affected
A8	Part-II Gorakhpur to Agra HVDC line-200 Km									
A9	Part-III Gorakhpur to Agra HVDC line-200 Km with Earth Electrode line-40 Km.									
Total			1817	14085	Nil	14085	173	4926 Ha.	20285	

² The number of APs in the table refers to the most conservative option. POWERGRID will schedule civil works in such a way to minimize impacts and substantially reduce the damages to crops and therefore the number of AHH.

³ Resettlement is "significant" where 200 or more people experience major impacts. Major impacts are defined as when the affected people are physically displaced from housing and/or more than 10% of their productive assets (income generating) are lost.

Compensation Plan for Temporary damages (CPTD) for ±800kV HVDC Transmission Line from Biswanath Chariyali(Assam) to Agra(U.P.)



B. ROUTE SELECTION AND STUDY OF ALTERNATIVES

At the system planning stage itself one of the factors that govern the evolution of system is the possible infringement with the forest. Wherever such infringements are substantial, different alternative options are considered. The route/ site selection criteria followed by POWERGRID is detailed below:

While identifying the transmission system for a generation project or as a part of National Power Grid, preliminary route selection is done by POWERGRID based on the Top sheets of Survey of India and Forest Atlas (Govt. of India's Publication). During route alignment all possible efforts are made to avoid the forest area involvement completely or to keep it to the barest minimum, whenever it becomes unavoidable due to the geography of terrain or heavy cost involved in avoiding it.

POWERGRID approach towards Route selection

For selection of optimum route, the following points are taken into consideration:

- (i) The route of the proposed transmission lines does not involve any human rehabilitation.
- (ii) Any monument of cultural or historical importance is not affected by the route of the transmission line.
- (iii) The proposed route of transmission line does not create any threat to the survival of any community with special reference to Tribal Community.
- (iv) The proposed route of transmission line does not affect any public utility services like playgrounds, schools, other establishments etc.
- (v) The line route does not pass through any sanctuaries, National Park etc.
- (vi) The line route does not infringe with area of natural resources.

In order to achieve this, POWERGRID undertakes route selection for individual transmission lines in close consultation with representatives from the Ministry of Environment and Forests and the Department of Revenue. Although under National law POWERGRID has right of eminent domain yet alternative alignments are considered keeping in mind the above-mentioned factors during site selection, *with minor alterations often added to avoid environmentally sensitive areas and settlements at execution stage.*

- As a rule, alignments are generally cited 10-15 km away from major towns, whenever possible, to account for future urban expansion.
- Similarly, forests are avoided to the extent possible, and when it is not possible, a route is selected in consultation with the local Divisional Forest Officer, that causes minimum damage to existing forest resources.
- Alignments are selected to avoid wetlands and unstable areas for both financial and environmental reasons.



In addition, care is also taken to avoid National parks and sanctuaries and any other forest area rich in wild life.

Keeping above in mind the routes of proposed sections of the entire line under **Biswanath Chariyali (Assam) to Agra (Uttar Pradesh) \pm 800 kV, 6000 MW HVDC Bi-pole Transmission Line** has been so aligned so that it takes care of above factors. As such different alternatives were studied with the help of Govt. published data like Forest atlas, Survey of India topo maps, satellite imageries etc. to arrive at most optimum sections of the route which can be taken up for detailed survey and assessment of environmental & social impacts for their proper management.

Section-1 Alignment of Biswanath Chariyali-Bogaigaon \pm 800kV HVDC Transmission Line (Subproject A1 & A2)

The comparative details of these three alternatives are as follows:

Sl. No.	Description	R ₁ (Route 1)	R ₂ (Route 2)	R ₃ (Route 3)
1.	Route Particulars			
i)	Length	320.566 Km	330.033 Km	330.347 Km
2.	Terrain			
a)	Plain	320.566 Km	330.033 Km	330.347 Km
b)	Hill	Nil	Nil	Nil
iii)	Agriculture	The major portion of the line will pass over agriculture land (75 % of the ROW area). etc.	The major portion of the line will pass over agriculture land (70 % of the ROW area etc.	The major portion of the line will pass over agriculture land (75 % of the ROW area).
iv)	Wet/ Marsh	10 %	10 %	10 %
iii)	Other Type of Land	15 % Tea Garden and Sub Urban area	20 % Tea Garden and Sub Urban area	15 % Tea Garden and Sub Urban area
3.	Social Details			
	Name of District	Sonitpur, Udalguri, Baska, Barpeta, Chirang, Kokrajhar	Sonitpur, Udalguri, Baska, Barpeta, Chirang, Kokrajhar	Sonitpur, Udalguri, Baska, Barpeta, Chirang, Kokrajhar
	Town Near Alignment	Biswanath Chariyali, Sotia, Jamuguri, Balipara, Dhekiajuli, Rowta, Udalguri, Tangla, Barama, Tamulpur, Dhamdhama, Pathsala, Barpeta Road, Sarbhog, Bijni, Dhaligaon, Basugaon, Kokrajhar	Biswanath Chariyali, Sotia, Jamuguri, Balipara, Dhekiajuli, Rowta, Udalguri, Tangla, Barama, Tamulpur, Dhamdhama, Pathsala, Barpeta Road, Sarbhog, Bijni, Dhaligaon, Basugaon, Kokrajhar	Biswanath Chariyali, Jamuguri, Balipara, Barama, Dhekiajuli, Rowta, Udalguri, Tangla, Tamulpur, Bijni, Dhamdhama, Pathsala, Barpeta Road, Sarbhog, Dhaligaon, Sotia, Basugaon, Kokrajhar
iv)	House within ROW (Huts)	Thatched hut-166nos. & Assam Type-7 nos.	388	377
f)	Any other relevant Information	-	Some brick kilns are near by the alignment.	Brick kilns in the alignment



Earth Electrode Line at Biswanath Chariyali end (Associated with $\pm 800\text{kV}$ HVDC Terminal in Assam) – 50 Km

Earth Electrode Line being of small length only one alignment is done.

Section-2 Alignment of Bogaigaon-Saharasa $\pm 800\text{kV}$ HVDC Transmission line (Subproject A3 & A4)

The comparative details of these four alternatives are as follows:

S.N	Description	R ₁ (Route 1)	R ₂ (Route 2)	R ₃ (Route 3)
1	Route Particulars			
i)	Length	463 Km	486 Km	495Km
2)	Terrain in (Kms)			
i)	Plain in (Km)	463.171	485.9	494.6
	Hilly	NIL	NIL	NIL
ii)	Agriculture	Paddy, wheat jute, potato, Green Vegetable	Paddy, wheat jute, potato, Green Vegetable	Paddy, wheat jute, potato, Green Vegetable
v)	Wet/marshy	Wet	Wet	Wet
vi)	Estuarine	-	-	-
vii)	Other type of land	Agricultural land	Agricultural land	Agricultural land
3	Social Details			
i)	Name of States /District details (Through which transmission line pass)	Kokrajhar in Assam, Jalpaiguri, Darjeeling, Uttar Dinajpur in West Bengal & Kishenganj, Araria, Madhepura, And Saharsa in Bihar	Kokrajhar in Assam, Jalpaiguri, Darjeeling, Uttar Dinajpur in West Bengal & Kishenganj, Araria, Madhepura, And Saharsa in Bihar	Kokrajhar in Assam, Jalpaiguri, Darjeeling, Uttar Dinajpur in West Bengal & Kishenganj, Araria, Madhepura, And Saharsa in Bihar
ii)	Town in Alignment (Nearby)	Kokrajhar, Barobisa, Alipurduar, Falakata, Dupguri, Jalpaiguri, Siliguri, Islampur, Kishenganj, Araria, Raniganj, Murliganj, Madhepura, Saharsa	Kokrajhar, Barobisa, Alipurduar, Falakata, Dupguri, Jalpaiguri, Siliguri, Islampur, Kishenganj, Araria, Raniganj, Murliganj, Madhepura, Saharsa	Kokrajhar, Barobisa, Alipurduar, Falakata, Dupguri, Jalpaiguri, Siliguri, Islampur, Kishenganj, Araria, Raniganj, Murliganj, Madhepura, Saharsa
iv)	House in ROW	NIL	3	2
e)	Any other relevant information	Less densely Populated Area.	Densely Populated Area.	Densely Populated Area.

Section-3 Alignment of Saharasa –Gorakhpur $\pm 800\text{kV}$ HVDC Transmission line (Subproject A5 & A6)

The comparative details of these three alternatives are as follows:

S.no	Description	R ₁ (Route 1)	R ₂ (Route 2)	R ₃ (Route 3)
1	Route Particulars			
i	Length(Km)	363.528	385	390
ii	State	Bihar , Uttar Pradesh	Bihar , Uttar Pradesh	Bihar , Uttar Pradesh
2.	Terrain	Almost Plain	Almost Plain	Almost Plain



		90% Agriculture	91% Agriculture	92% Agriculture
3.	Environment Details			
i	District details (Through which transmission line pass)	Saharsa, Samastipur, Muzaffarpur, Darbhanga, Siwan, Chhapra, Gopalganj, Vaishali, Deoria, Gorakhpur	Saharsa, Samastipur, Muzaffarpur, Darbhanga, Siwan, Chhapra, Gopalganj, Vaishali, Deoria, Gorakhpur	Saharsa, Samastipur, Muzaffarpur, Darbhanga, Siwan, Chhapra, Gopalganj, Vaishali, Deoria, Gorakhpur
ii	Town in alignment (Nearby)	Saharsa, Rusera, Pusa, Samastipur, Muzaffarpur, Vaishali, Sariya, Musrak, Siwan, Gopalganj, Mirganji, Hathuva, Devoriya, Gorakhpur	Saharsa, Rusera, Pusa, Samastipur, Muzaffarpur, Vaishali, Sariya, Musrak, Siwan, Gopalganj, Mirganji, Hathuva, Devoriya, Gorakhpur	Saharsa, Rusera, Pusa, Samastipur, Muzaffarpur, Vaishali, Sariya, Musrak, Siwan, Gopalganj, Mirganji, Hathuva, Devoriya, Gorakhpur
iii	House within ROW	Nil	4 nos. (Kamlabari, Mahri, Kothia, Hathauri)	9 nos. (Bishunia, Lodhipur, Madhulia, Dharampur, Gopalpur, Nurachak, Dadhua, Begampatti, Chak Suleman)
xi	Any other relevant information, if any	Nil	This route is passing through some low land and marshy area near village Benduli where construction activity will be difficult.	This route is also passing through some low land and marshy area near village Bishunia where construction activity will be difficult.

Section-4 Alignment of Gorakhpur-Agra via Lucknow \pm 800kV HVDC Transmission Line (Subproject- A7, A8 & A9)

The comparative details of these three alternatives are as follows

Sl.No	Description	R ₁ (Route 1)	R ₂ (Route 2)	R ₃ (Route 3)
1.	Route Particulars			
i.	Route Length (Kms)	580	585	588
2.	Terrain	Plain area	Plain area	Plain area
3.	Environment Details			
i)	District Detail in alignment.	Gorakhpur, Santkabirnager, Basti, Faizabad, Barabanki. Lucknow, Unnao, Kanpur Nagar & Dehat, Etawa, Mainpuri, Firozabad, Agra	Gorakhpur, Santkabirnager, Basti, Faizabad, Barabanki. Lucknow, Unnao, Kanpur Nagar & Dehat, Etawa, Mainpuri, Firozabad, Agra	Gorakhpur, Santkabirnager, Basti, Faizabad, Barabanki. Lucknow, Unnao, Kanpur Nagar & Dehat, Etawa, Mainpuri, Firozabad, Agra
	Major town in alignment	Rudrapur, Hariharpur, Mahuli, Jagannathpur, Tanda, Mayabazar, Sahganj.	Rudrapur, Hariharpur, Mahuli, Jagannathpur, Tanda, Mayabazar, Sahganj, Vindwa, Mohanlalganj, Arjun	Rudrapur, Hariharpur, Mahuli, Jagannathpur, Tanda, Mayabazar, Sahganj, Vindwa, Mohanlalganj, Arjun Mau, Navaganj, Unnao, Etawah,

Compensation Plan for Temporary damages (CPTD) for \pm 800kV HVDC Transmission Line from Biswanath Chariyali(Assam) to Agra(U.P.)



		Vindwa, Mohanlalga nj, Arjun Mau, Navaganj, Unnao, Etawah, Fatehabad, Samasabad	Mau, Navaganj, Unnao, Etawah, Fatehabad, Samasabad	Fatehabad, Samasabad
ii)	House within ROW	Nil	Due to fast development few buildings are encountered within the ROW. Due care has been taken to provide sufficient clearance to all such buildings without affecting any displacement	Due to fast development few buildings are encountered within the ROW. Due care has been taken to provide sufficient clearance to all such buildings without affecting any displacement
v)	Any other relevant information	Nil	Nil	Nil

Earth Electrode Line at Agra end (Associated with $\pm 800\text{kV}$ HVDC Terminal in Uttar Pradesh) – 40 Km.

Earth Electrode Line being of small length only one alignment is done.

From the above it may be seen that Careful route selection as Alternative-I above has minimized impact on socially sensitive areas to the barest minimum like avoidance of major towns, villages, inhabited area and comparatively less area involvement of agricultural land with less numbers of huts/structures/houses coming near the corridor of 69 Meter Right of Way (ROW).

Thus, route selected for detailed survey is the most optimum route alignment minimizing the social impact.

2.1 Impact (Crops/Trees/Others)

2.1.1 Corridor of Transmission Line (ROW-Right of way): During Preliminary survey/ investigation carried out in entire route the details of land have been gathered to have a rough idea about the temporary damages might occur during construction of the Transmission Line. The **corridor of width** (ROW-Right of Way) required for $\pm 800\text{kV}$ HVDC Transmission Line is **69 meter** and for Earth electrode line is **22 meter**. A brief description about the type of land in the corridor of above Transmission Line is given **Table: 2.1.1**. Sketch attached as **Appendix 2.1** explains ROW of transmission Lines.

Table: 2:1.1 Type of Land within Corridor of ROW-69 Meter

Sl No	Name of the States	Agricultural land	Tea Garden	Private Plantation	Forest (Km)	Reverine feature	Barren/ unused land	Total
1	Section-1	241+35 Km =1740 Ha.	6.42Km = 44.3 Ha.	25.68Km =177Ha	14.79Km =33.7Ha.	19.26Km =133Ha.	28.89Km =199Ha.	371
2	Section-2	417 Km	0	4.16 Km	1.0 Km	20.0 Km	21.11Km	463

Compensation Plan for Temporary damages (CPTD) for $\pm 800\text{kV}$ HVDC Transmission Line from Biswanath Chariyali(Assam) to Agra(U.P.)



		=2877.3Ha.		= 29 Ha.	=6.9 Ha.	=138 Ha.	=146 Ha.	
3	Section-3	326.6Km =2253 Ha.	0	14.52Km =100.2Ha.	5.3 Km =37 Ha.	9.6 Km =66.24Ha.	5.5 Km =38 Ha.	362
4	Section-4	522+38Km =3685Ha.	0	11.6 Km = 80 Ha.	6.5 Km =35.45Ha	12.87Km =89 Ha.	29Km =200Ha.	619
	TOTAL	1506.6+73Km =10557 Ha.	6.42 Km =44.3Ha.	55.97Km =386.2 Ha.	26.6 Km =113.63Ha	61.73Km =426.24Ha	84.5Km =583Ha	1814.4Km 12110.4Ha

Source: Preliminary Survey, May 2007

2.1.2 Use of Land

According to the preliminary survey, it is noted that most of the affected persons use their land for cultivation purpose. A brief description about the use of land by the affected households is given **Table: 2.1.2**

Table: 2.1.2 Use of Land

Sl No	Name of the States	Agricultural Land (Ha.)	Pvt. Plant'n	Residential	Commercial (Tea garden)	Forestation (Ha)	Others (Ha.)	No Use (Ha.)	Total (Ha.)
1	Assam	1740	177	0	44.3	31.73	133	199	2325
2	West Bengal	1345	29	0	0	3.0	138	146	1661
3	Bihar	2487	100.2	0	0	33.95	66.24	38	2725
4	Uttar Pradesh	4985	80.0	0	0	44.95	89.0	200	5399
7	TOTAL	10557	386.2	0	44.3	113.63	426.24	583	12110

Source: Preliminary Survey, May 2007

2.1.3 Affected Land Area or Actual Impact on Crops and Others: Though ROW is 69 Meter/22 Meter, but average crops affected width/Corridor would be limited to **30Meter** (Maximum) (Conductor would be 28 Meter apart) for HVDC Line and 12 Meter for earth electrode Line respectively.

A sample survey of the affected households was carried out during the alignment survey for the definition of the corridor..

As per POWERGRID strategy and practices all out efforts are made to reduce the damages to crops and to minimize the impact whatsoever. One of the reasons why POWERGRID schedules its construction activities in lean season or post harvest periods. Previous projects executions show only 45 % crop damages on an average even within the area of width 30 meter.

For the purpose of calculation of Loss of crops and others (impact), average 30 meter width has been considered for both the lines though on higher side. It revealed that the most of the affected land may be used within **30 meter wide** is agricultural land where crops/ trees, Private Plantation including Tea exist. A brief description about the type of land in 30 meter corridor (width) of above Transmission Line is given **Table: 2.1.3**.

Table: 2.1.3

Sl No	Name of the States	Agricultural Land (1)	Plant'n Pvt. (2)	Commercial (Tea garden) (3)	Total= (1) + (2) + (3) + (4) (Km)
1	Assam	241+35 Km	25.68Km	6.42 Km	308.1
2	West Bengal	417 Km	4.16	Nil	421.16
3	Bihar	326.6 Km	14.12	Nil	340.72
4	Uttar	522+38 Km	11.6	Nil	571.36

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	Pradesh				
7	TOTAL	1580 Km	55.36 Km	6.42 Km	1642 Km

Actual Impacted area for Crops and Others damage (Social) would be restricted to 30 Meter Maximum width in the Corridor of Agricultural land, Tea garden and Private plantations which works to be 4962 Ha. (1642 Km x 30 meter = 4926 Ha.).

Apart from above, loss of trees within 30 Meter width has also been estimated about 20285 nos. and thatched non residential huts-173 nos. approx. including Assam Type have been considered anticipating worst scenario at field level during construction. However, all care would be taken to avoid these huts.

Sketch/Graphics attached as **Appendix 2.1** explains ROW of transmission Lines and minimized affected areas of crops/trees during construction even less than of width 30 meter.

As the assets of any sorts will not be acquired but for temporary damage to crops/trees or any other structures adequate compensation as per norms shall be effected to all APs. Since there is no significant AHH involved or the APs will not be physically displaced or APs will not lose more than 10% of their productive assets a full RP is not called for. However, Compensation plan for APs towards temporary damage shall be required.



Chapter-3 Socio-economic and Environmental Analysis for Temporary Damages Biswanath Chariyali-Agra \pm 800kV HVDC Transmission line)

3.0 Compensation Plan of Temporary Damages (CPDT) has been prepared for \pm 800 kV HVDC Transmission Line from Biswanath Chariyali (Assam) to Agra (Uttar Pradesh). The transmission lines are constructed with towers normally with 400 meter apart and are strung aerially. As per law of the land, the area under transmission line is not acquired. Since acquisition of land is not involved detailed RP for the lines is not called for. However, for tower foundation a very small area is excavated (See fig-1) and which after construction of tower is resurfaced properly. Thus, there are temporary damages to the land, thereby may be to crops during construction. For assessing and minimizing temporary damages various alternative route alignments are studied, the technically feasible route having minimum adverse impacts on bio-physical and socio-economic features has been selected for detailed assessment. The study has been carried out to estimate Temporary damages and its mitigation plan for the final selected alignment (route).

3.1 Aims of the Study

1. The aims of this study are to assess/estimate temporary damage compensation/mitigation measures to compensate potential adverse impacts.
2. Cover environmental and social parameters which needs to be addressed and compensated in the execution of the projects.
3. Quantify social impacts identified associated with transmission line construction.
4. To identify Vulnerable groups for additional need based cash assistance

3.2 Base line Setting of the Project:-

3.2.1 Socio -economic:

Assam:

Assam is a state rich in natural resources like natural oil, natural gas, coal, rubber, tea and some minerals like granite, limestone and kaolin. It is the largest economy in the North East. It is primarily an agrarian economy with 74% of its population engaged in agriculture and allied activities. Per capita income of Assam continues to lag behind the national average.

Tea is a major industry. Other industries are sugar, jute, silk, paper, plywood, rice and oil drilling. Important cottage industries are handloom, sericulture, manufacture of cane and bamboo articles, carpentry, smithy and manufacture of brass utensils. Assam is the largest producer in the world of the golden colored muga silk.

The general land use pattern of the state is given below:

Broad Land use Pattern

Land use	Area in '000 ha	Percentage
Geographical Area	7,844	

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Total Reporting area	7,850	100.00
Forests	1,930	24.58
Not available for cultivation	2,493	31.76
Permanent Pasture & Grazing Land	170	2.17
Land under misc. tree crops & groves	243	3.09
Culturable waste land	87	1.11
Fallow land other than current fallows	69	0.88
Current fallows	114	1.45
Net area sown	2,744	34.96

Source: Land use statistics at a Glance 1996-97, Ministry of Agriculture, GOI, 2000

Population:

Details of population of Assam as per 2001 census are as follows:

Population	26,638,407
Female	12,850,608
Male	13,787,799
Density (Persons per Sq. KM)	340
Urban Population	12.72%
Sex Ratio (Females per thousand males)	932
Literacy	64.28%
Males	71.93%
Females	56.03%

Census survey 2001

Climate:

Assam has four well defined seasons in a year; summer, monsoon, winter and spring. Assam is never extremely cold or hot. Climate of Assam is sub-tropical. Annual rainfall varying from 1,500 mm to 3,750 mm. The average temperature in January ranges from 10°C to 23° C and in July it ranges from 26° C to 32° C.

Water Resources:

Brahmaputra Basin comprises of sub-basin of Subansiri, Jia Bharali, Badeng-Pubnoi, Dhansiri, anas, Champamati, DholaiBuridihing, Disang, Kopili, Kalang and Meghna Basin comprises of sub- Basin of Barak River. Assam is dominated by the Brahmaputra river (length: 2900 km). Its drainage area is roughly 935,500 sq. km

West Bengal:

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Agriculture dominates both the landscape and the economy. Fifty-five percent of the population of West Bengal depends upon agriculture. In fact, agriculture makes a substantial contribution to the state's income. West Bengal accounts for 57.3% of the total jute and 24% of the total tea produced in the country.

The general **land use pattern** of the state is given below:

Land use	Area in ' 000 ha	Percentage
Total Geographical area	8,875	
Reporting Area for land utilisation	8,696	100.00
Forests	1,195	13.74
Not available for cultivation	1,659	19.08
Permanent Pasture & Grazing land	8	0.09
Land under misc. tree crops & groves	80	0.92
Culturable waste land	50	0.58
Fallow land & other than current fallows	29	0.33
Current fallows	212	2.44
Net area Sown	5,463	62.82

Source: Land use statistics at a Glance 1996-97, Ministry of Agriculture, GOI, 2000

Population:

Details of population of West Bengal as per 2001 census are as follows:

Population	80,221,171
Female	38,733,477
Male	4,14,87,694
Density (Persons per Sq. Km)	904
Urban Population	28.03%
Sex Ratio(Females per thousand males)	934
Literacy	69.22%
Males	77.58%
Females	60.22%

Census survey 2001

Climate:

West Bengal has a tropical climate. The plains are hot except during the short winter season. The mountainous region in the north is cold on account of its altitude but there humidity is high. Only four clearly marked seasons with a brief interregnum of spring are observed, namely the hot season, the rainy

Compensation Plan for Temporary damages (CPTD) for ±800kV HVDC Transmission Line from Biswanath Chariyali(Assam) to Agra(U.P.)



season, the post monsoon season corresponding to autumn and the cold season. The average rainfall in the State is 1750 mm. In the Himalayan Region i.e. in northern part the average rainfall ranges from 2500 - 6000 mm. In the southern part average rainfall ranges from 1125 - 1900 mm. The hot season lasts from mid-March to mid-June, with the day temperature ranging from 38° C to 45°C in different parts of the state. Winter, which lasts about three months, is mild over the plains, the average minimum temperature not falling 15° C

Water resources:

The State of West Bengal falls under 3 major River Basins:

• The Brahmaputra Basin - Part of Darjeeling, Jalpaiguri Coochbihar districts.
• The Ganga Basin - Part of Darjeeling, Jalpaiguri and all the remaining districts.
• The Subarnarekha Basin-Parts of Purulia, E&W Medinipur District.

Bihar:

Agriculture is the main economic activity due to very fertile soil, and a number of rivers. The state has suffered from the effects of the caste system and wide spread political corruption. Even in the area of agriculture which should be providing the economic boost to raise the level of living in the State, very inadequate investments have been made. Despite the fertile land, almost nothing has been done in the area of irrigation. The people are as dependent on nature, and at its mercy.

The general **land use pattern** of the state is given below:

Land use	Area in '000 ha	Percentage
<i>Total geographical area</i>	17,388	
Reporting area for land utilisation	17,330	100
Forests	2,949	17.02
Not available for cultivation	3,390	19.56
Permanent pasture and other grazing lands	107	0.62
Land under misc. tree crops & groves	337	1.94
Culturable wasteland	353	2.04
Fallow land other than current fallows	962	5.55
Current fallows	1,895	10.93
Net area sown	7,337	42.34



Source: Land use statistics at a Glance 1996-97, Ministry of Agriculture, GOI, 2000

Population:

Details of population of Bihar as per 2001 census are as follows:

Population	82,878,796
Female	39,724,832
Male	43,153,964
Density(Persons per Sq. KM)	880
Urban Population	10.47%
Sex Ratio(Females per thousand males)	921
Literacy	47.53%
Males	60.32%
Females	33.57%

Census survey 2001

Climate:

Bihar has varied climate. Only four clearly marked seasons with a brief interregnum of spring are observed, namely the hot season, the rainy season, the post monsoon season corresponding to autumn and the cold season. The rainy season begins in June and ends in September. It also experience rainfall during retreating monsoon season. The average rainfall is about 900 mm and maximum being 1800 in some areas. The highest temperature is often registered in May which is the hottest month in the state. Temperature varies in the state from 38° to 45 °C during summer and 7° to 22 °C in winter.

Water resources:

Bihar is richly endowed with water resources, both the ground water resource and the surface water resource. Ganga is the main river which is joined by tributaries with their sources in the Himalayas. Some of them are Saryu (Ghaghra), Gandak, Budhi Gandak, Bagmati, Kamla-Balan and Mahananda. All the above rivers have their impact on the Bihar plain. State also has non-exhaustible source of ground water which is in use for drinking purposes, irrigation and industries.

Uttar Pradesh:

Uttar Pradesh is rich in human and natural assets. Most of State's farm land is well watered and naturally fertile. U.P is the largest producer of food grains and oilseeds in the country. It leads all the states in India in the production of wheat, maize, barley, gram, sugarcane and potatoes. The state (India's sugar bowl) produces about one half of the total sugarcane output in the country. The western region of the state is more advanced in terms of agriculture. Majority of the population depends upon farming as its main occupation. Wheat, rice, sugar cane, pulses, oil seeds and potatoes are its main products. Sugar cane is an important cash crop almost through out the state.

The general **land use pattern** of the state is given below:

Land use	Area in ' 000 ha	Percentage
Total Geographical area	29,441	
Reporting Area for land utilisation	29,794	100.00



Forests	5,150	17.29
Not available for cultivation	3,516	11.80
Permanent Pasture & Grazing land	296	0.99
Land under misc. tree crops & groves	513	1.72
Culturable waste land	945	3.17
Fallow land other than current fallows	832	2.79
Current fallows	1,067	3.58
Net area Sown	17,475	58.65

Source: Land use statistics At a Glance 1996-97, Ministry of Agriculture, GOI, 2000

Population:

Details of population of Uttar Pradesh as per 2001 census are as follows:

Population	166,052,859
Female	78,586,558
Male	87,466,301
Density(Persons per Sq.KM)	689
Urban Population	20.78%
Sex Ratio(Females per thousand males)	898
Literacy	57.36%
Males	70.23%
Females	42.98%

Census survey 2001

Climate:

The climate in Uttar Pradesh varies substantially. The Gangetic plain, which covers three-quarters of the state, is dry and dusty in summer. Winter is severe; the Gangetic plains are fairly cold during winter. The average annual rainfall ranges between 1,000 to 1,200 mm. The temperature varies maximum 45° C to 35° C during summer and 25 ° C to 3 ° C during winter.

Water resources:

The main rivers of the state from west to east are the Yamuna, the Ganga, the Ramganga, the Gomati and the Ghaghara. All the rivers, except the Gomati, emerge from the Himalaya. The Yamuna and the Ganga flow from north-east to south-west in their upper mountainous courses, from north to the south in western parts of the state and thereafter from north-west to south-east joining at Allahabad.

3.2 Power Scenario:

Assam:

Though Assam has an immense power potential based on hydels, natural gas, oil and coal resources, the present rate of exploitation is very low. The installed capacity of power is around 1500 MW as on date. Even in the electrified villages, the quality of supply and the supply hours need to improve significantly. This necessitates specific and sustained actions for expanding access to electricity.

West Bengal:

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West Bengal is one of the few power surplus state and supplies power to its neighboring states. West Bengal has been leading in the power development sector with the state government's ambitious project to install an additional capacity of about 2,470 MW over the next two years. A special project has been taken up in order to raise the proportion of rural hamlets under electrification from 87 per cent to 100 per cent.

Bihar:

The creation of Jharkhand carved out of Bihar resulted in substantial reduction in the installed capacity, both thermal and hydel power in Bihar. The bifurcation saw the installed capacity in the state slip from over 2,000 MW to only about 500 MW currently. In addition to the State sector utilities, BSEB also sources power from other entities such as DVC, NTPC, Chukha Hydro Power Station in Bhutan (through PGCIL) and Tenughat Vidyut Nigam Limited. The per capita Power consumption in Bihar (including Jharkhand) is low at 153 units compared with a national average of around 360 units.

Uttar Pradesh:

Only 16.96% rural house holds in the state are electrified. At present, about 40,000 villages in the state remain to be electrified. Moreover, only about 80% of the urban and 20% of the rural households in the state has access to electricity. The per capita energy consumption in the state is also extremely low at about 188 kWh as against the national average of about 363 kWh. Even in the electrified villages, the quality of supply and the supply hours need to improve significantly to help the consumer, existing and potential, to benefit from the multipliers that electricity access affords. This necessitates specific and sustained actions for expanding access to electricity.

3.3 Per capita Income:

Sl. No.	State	Per Capita Income (2004-'05)
1.	Assam	13633
2.	West Bengal	22497
3.	Bihar	5772
4.	Uttar Pradesh	11477

4.0 Details of land to be traversed through out the Right of Way (ROW): 69 Meter for HVDC Transmission Line and 22 Meter for Earth Electrode Lines at Both ends.

Section-1: Biswanath Chariyali-Bogaigaon \pm 800kV HVDC Transmission Line including Earth Electrode line-50 Km (Subproject A1 & A2)

Land Use	Type	Total Distance	
		Km	%
Cultivation	Agriculture	240.75+35	75 %
Private Plantation		15	8%
Forest	Sparse	-	-
	Moderate	-	-
	Moderately dense	-	-
	Dense	-	-



	Road Side Plantation	0.224	Negligible
Tea Garden		6.42	2%
Shrubs		-	-
Grazing land		28.89	9%
Riverine features		19.26	6 %
Total		371.0	100 %

**Section-2 Bogaigaon-Saharasa \pm 800kV HVDC Transmission line
(Subproject A3 & A4)**

Land Use	Type	Total Distance	
		Km	%
Cultivation	Agriculture	417	90
Private Plantation		4.16	0.90
	Sparse	Nil	0.22
	Moderate	Nil	
	Moderately dense	Nil	
	Dense	Nil	
	Road side plantation	1.00	
Shrubs		7.71	1.67
Grassland		13.4	2.89
Riverine features	7 Major + 26 Minor	20.0	4.32
Total		463.0	100.00

**Section-3 Saharasa –Gorakhpur \pm 800kV HVDC Transmission line
(Subproject A5 & A6)**

Land Use	Type	Total Distance	
		Km	%
Cultivation	Agriculture	326.6	90
Private Plantation		14.52	4
Forest	Sparse	Nil	1.87
	Moderate	Nil	
	Moderately dense	Nil	
	Dense	Nil	
	Road side plantation	6.8	
Shrubs		1.87	0.5
Grassland		3.63	1
Riverine features		9.6	2.65
Total		363.0	100.00

**Section-4 Gorakhpur-Agra via Lucknow \pm 800kV HVDC Transmission Line
including Earth Electrode line-40 Km (Subproject- A7, A8 & A9)**

Land Use	Type	Total Distance	
		Km	%
Cultivation	Agriculture	522+38	90

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Private Plantation		11.6	2
Forest	Sparse	Nil	0.78
	Moderate	Nil	
	Moderately dense	Nil	
	Dense	Nil	
	Reserve+ Strip Plantation ((Road/Canal Xing)	6.5	
Shrubs		12.6	2.17
Grassland		16.4	2.83
Riverine features	4	12.87	2.22
Total		620.0	100.00

From the above it may be observed that out of about total **1788Km** (including Earth Electrode line) line passing through non-forestland (Private/Revenue) **1580.0 km** is cultivated land which is close to 88 %, rest are Tea garden in Assam, Grazing land and of riverine in nature. Tree/crops Compensation will has a major role to play for the implementation of the subprojects besides other compensation towards huts/structures etc mainly in Assam and West Bengal. This has to be dealt with methodically, sincerely & meticulously in consultation with temporary APs (preferably public consultation at least in every 50 Km of the stretch along with Govt./Revenue officials and with proper documentation.

Some tribal group may also be involved in some stretches of Assam portion. Most of them are in the main stream, they can not be treated as indigenous people (Adivashi). However, proper care needs to be taken in identifying them while doing detail survey during execution of the work in Assam particularly along with Govt./Revenue officials, if identified any, some weight-age shall be given for mitigation measures probably categorized them in vulnerable group.

5.0 Construction Management:-

5.1 Soil & Surface Geology:

In plain areas impact on soil & geology will be almost negligible as the excavated pit material is stacked properly and back filled as well as used for resurfacing the area. On hill slopes where soil is disturbed will be prone to erosion is suitably protected by revetment, breast walls, proper drainage is done. Besides extensive leg /chimney extension shall be used to avoid benching or cutting of slopes to minimize the impact on slope stability

5.2 Agriculture areas:

The land requirement for erection of tower legs is very small i.e. for each leg of tower actual construction area ranges from 0.45 to 0.7m. a small square area of about 0.2 sq.m. to 0.49 sq.m. depending on the type of tower. Four such square pieces of land will be required to place the legs of tower. The area that becomes unavailable because of the erection of tower legs for an average ± 800 kV HVDC transmission tower approximately 1sq.m. of land. This impact on agriculture land is negligible. However, after construction is over agriculture activity can continue.

5.3 Crops:



Construction of line in crop season is avoided as far as possible. In case when installation of towers impacts on agricultural activity, detailed survey is conducted looking at existing crops, general crop patterns, seasonal particulars, nature and extent of yield. This data is compiled and analysed to study the extent and nature of impact. Format for crop compensation is similar to that of tree compensation. The compensation is in terms of yield/hectare and rate/quantity for prevailing crops in the area. Based on this, total compensation is calculated in consultation with revenue authorities. Compensation is paid to the owners and their acknowledgement obtained.

5.4 Trees:

Construction of line in fruit bearing season is avoided as far as possible. Tree **compensation** is calculated on basis of tree enumeration, tree species and an estimate of the yield. In case of fruit bearing trees compensation will be calculated on the basis of 8 years yield (assessed by revenue/horticulture department). Market rates of compensation are assessed by the relevant government authorities. The total estimate is submitted for approval to the competent authority. Payments are made to owners in the presence of local revenue authorities or village head/ *Sarpanch* and respective acknowledgements are obtained. In orchards dwarf trees are allowed to grow.

5.5 Other Damages:

Like bunds, water bodies, fish ponds, approach paths, drainage and irrigation canals etc are at best avoided. However, if damaged compensation as per practice the state govt. revenue department assess the cost of damage. The total estimate is submitted for approval to the competent authority. Payments are made to owners in the presence of local revenue authorities or village head/ *Sarpanch* and respective acknowledgements are obtained and POWERGRID pays the compensation. Hindrances to power, telecom carrier & communication lines etc. shall be paid as per Govt. norms.

8.0 Preliminary Social Assessment:

Preliminary investigation/survey carried out while arriving at nearly final alignment out of at least 3 alternative alignments⁵ for taking up detailed survey reveals that

- 1. Section-I** involves agricultural land/ tea garden land about 1784.3 Ha. of land with about 17650 trees (Mixed- Beate nuts etc), about 173 nos. of huts/ structures. Temporary affected Persons (APs) is about 2720 nos.
- 2. Section-2** involves agricultural land about 2877 Ha. of land with about 615 trees (Mixed- Beate nuts etc), Temporary affected Persons(APs) is about 1680 nos.
- 3. Section-3** involves agricultural land about 2253 Ha. of land with about 535 trees (Mixed). Temporary affected persons (APs) are about 4145.
- 4. Section-4** involves agricultural land about 3685Ha. of land with about 1485 trees (Mixed), Temporary affected Persons (APs) is about 5540.

⁵ Detailed design is available. Nonetheless, as the impact depends on the implementation schedule, the beginning of civil works will be linked to the final survey and the disbursement of compensation.

Compensation Plan for Temporary damages (CPTD) for ± 800 kV HVDC Transmission Line from Biswanath Chariyali(Assam) to Agra(U.P.)



Impact Due to Project Location and Design

Environmental & Social impact of transmission line projects are not far reaching and are mostly localized to ROW. However, transmission line project has some affects on natural and socio-culture resources. These impacts can be minimized by careful route selection. 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 / GPS in route selection has resulted access to updated/latest information, through satellite images and further optimization of route having minimal environmental& Social impact. Moreover, availability of various details, constraints like topographical and geotechnical details, forest and environmental & Social details etc. help in planning the effective mitigative measures including engineering variations depending upon the site situation/location. In the instant project also, these techniques are used and detailed survey using GIS/GPS is in progress to assess possible impact and engineering /technical estimation. Physical detail survey shall be taken up during actual construction and actual impact would be known, implemented applying mitigation measure as planned and monitored/audited. Although, all possible measures have been taken during the finalization of route alignment for the proposed transmission line but due to peculiarity of terrain and demography of the area where project is being implemented, some environmental & social impacts may be there. The explanations in brief with regard to specific environment/Social review criteria based on preliminary survey are as follows:

(i) Resettlement

As described earlier all measures are undertaken by POWERGRID at line routing stage itself to avoid settlements such as cities, villages etc. It may be seen from the above description of proposed route alignment and also keeping in mind that no land is acquired for tower foundation as per existing law, the project does not require any resettlement of villagers/APs.

The proposed project does not involve construction of any new substation and no fresh land acquisition is involved hence, R&R issue shall not be involved. However, compensation towards damages of crops/trees and other damages, if any shall be paid to APs as per prevailing practices/procedures of land of the law under Electricity Act, 2003.

(ii) Land value depreciation

Based on past experience land prices are generally expected to rise in the areas receiving power. Further, transmission lines generally pass through uninhabited area, agriculture fields and forests, where the land-use is not going to change in foreseeable future. Therefore, the value of land will not be adversely affected to a significant degree.

(iii) Encroachment into other valuable lands

Impacts on agricultural land will be restricted to the construction phase and when large-scale maintenance measures are required. Some stretch of the line will pass through Agricultural fields. Agricultural land will be lost at the base of the tower, which is estimated to be 0.2-1 sq. m per average farm holding (**Fig-1**). The proposed project envisages constructing 1727 Km of HVDC Line which involves approximately 4320 towers. Construction of these towers will result in loss of approx. **4320 sq. m. or 0.4320 ha. of land**. For Earth Electrode Line of 90 Km, about 240 towers of 220kV class shall be



used and construction of these towers will result in loss of approx. **240sq. m. or 0.024 ha.** of land. Thus, total Land loss would be **0.456 Ha.** only including forest land which is insignificant.

In areas where line will traverse agricultural land, compensation will be paid to owners for any crop damage or any other temporary damages incurred as a result of construction activities. POWERGRID field staff will consult affected villagers and local revenue department and apprise him about the project and tower location, which shall be erected in the agricultural land, for compensation. Revenue department, after evaluating the loss due to construction activity and productivity of land arrives at the compensation cost which is paid to farmers. Based on preliminary survey, has been estimated towards cost compensation of crops/tree or any other temporary damages during construction in the state of Assam, West Bengal, Bihar and Uttar Pradesh. Agricultural activities will be allowed to continue following the construction period. If bunds or other on-farm works are disturbed during construction or maintenance, they will be 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 will be paid to the owner in an amount determined by the estimated loss from the tree/plant to be assessed by Rev./Forest authority. For fruit bearing trees, estimation of loss of products would be done over an eight year period. Agricultural lands under private ownership will be identified, and in accordance with normal POWERGRID procedures compensation will be paid to the affected villagers/people (APS) as per compensation plan for temporary damages (CPTD).

Critical Social Review Criteria

(i) Loss of irreplaceable resources

The transmission projects do not involve any large scale excavation and land is lost to the extent of 0.2-1 sq m only for each foundation. Total land loss including forest land would be around 0.456 Ha. which is negligible/insignificant. However, compensation for the loss of crops/trees/any structure etc shall be paid to APs for the area of damaged to mitigate the impacts probably 3 times i.e. during foundation work, tower erection & stringing as per the prevailing situation during construction, which are well documented.



CHAPTER -4 INSTITUTIONAL FRAMEWORK/ENTITLEMENTS

A. COMPENSATION FRAMEWORK

POWERGRID will be the Executive Agency (EA) for the project.

This Compensation Plans for Temporary Damages (CPTDs) (for subprojects which only require temporary land acquisition/use)⁶, has been written based on the provisions agreed upon in the RF which identifies the broad scope of the Project and outlines the policy, procedures and institutional requirements for preparing RPs and CPTDs for subprojects under the MFF loan. In any case, no AP shall lose any asset before full compensation is awarded.

CPTD need to be prepared for the subprojects as no resettlement impacts are expected and impacts are likely to be only on a temporary basis.

B. Resettlement Policy and Framework applicable to the Project

The CPTD is based on ADB's Involuntary Resettlement Policy (1995) as well as on the Borrower's domestic policy instruments, laws, particularly, Land Acquisition Act, 1884 (LAA), *National Policy on Resettlement and Rehabilitation for Project Affected Persons (NPRR)* (2003), and POWERGRID's Environment and Social Policy & Procedures (ESPP) (2005)⁷. The RF that it will be revised if any major changes in the relevant policies and laws are introduced during the life of the program.

A comparison between NPRR, ESPP and ADB's Resettlement Policy is provided in Table 1.

Table 1: Comparison of NPRR, RR Policy of POWERGRID and ADB Resettlement Policy

Policy Principle	NPRR	ESPP	ADB	Remarks
1. Resettlement must be avoided wherever possible; and if unavoidable it should be minimized	√	√	√	
2. Affected persons must be compensated to replace their lost assets and to restore/improve	√	√	√	However, replacement cost is not clearly identified.

⁶ Both the RPs and the CPTDs will be prepared according to ADB's guidelines for the preparation of short or full RPs, and POWERGRID's Environment and Social Policy & Procedures (ESPP).

⁷ Additionally, the Indian Telegraph Act and Indian Electricity Supply Act are relevant for construction of transmission lines. The Indian telegraph Act, 1885 is usually followed which does not include any sort of land acquisition for construction of transmission pillars and lines. The telegraph authority may, from time to time place and maintain a telegraphic line under, over, along or across, and post in or upon, any immovable property provided that telegraph authority shall not exercise the powers conferred by this section except for the purpose of a telegraph established or maintained by the Central Government, or to be so established or maintained. The Central Government shall not acquire any right other than that of user only in the property under, over, along, across, in or upon which the telegraph authority places any telegraph line or posts. The telegraph authority shall do as little damage as possible, and, when it has exercised those powers in respect of any property other than that referred to, shall pay full compensation to all persons interested for any damage sustained by them by reason of the exercise of those powers. In case of property and dispute other than that of a local authority where the power is to be exercised, the District Magistrate may, in his discretion, order that the telegraph authority shall be permitted to exercise them.



Policy Principle	NPRR	ESPP	ADB	Remarks
their living standards				
3. Affected persons should be fully involved and consulted in the planning and implementation of resettlement	√	√	√	
4. Compensation for lost assets must be on the basis of replacement cost	Not defined	√	√	
5. Transaction and transition costs	√	√	√	
6. Wherever feasible land should be an option for compensating loss of land	√	√	√	
7. An RP should be prepared in every instance where involuntary resettlement occurs	Only required where over 500 families are affected in plain areas and 250 or more families are affected in hilly areas	Only for permanent acquisition for s/s. For Transmission lines land remains with APs. Crop and tree compensation or compensation for other damages will be awarded.	√	500 families is about 2,500 persons in the Indian context and this is over 10 times the ADB requirement which is 200 persons or more.
8. The RP must be disclosed to the affected people before finalization	√	√	√	
9. Application of policy	The Indian NPRR only applies to projects displacing 500 families or more in plain areas and 250 families or more in hilly areas	All cases where land acquisition is required.	In all cases where involuntary resettlement occurs	ADB has three categories of impact: A (Significant); B (Not Significant) and C where no involuntary resettlement impacts are foreseen.
10. Entitlements under the policy	Chapter VI of the NPRR defines flat entitlements without considering the specific impact on a case by case basis. For example, For acquisition of strips of land for railway lines, highways, transmission lines and pipelines, only an ex-gratia	- Specific entitlements have been made in this policy for different categories of losses. Land will be compensated as per replacement cost and amount for rehabilitation assistance is provided in this policy.	Each impact must be defined and appropriate entitlements assigned on the basis of the basic principles of replacing lost assets and	



Policy Principle	NPRR	ESPP	ADB	Remarks
	payment of Rs 10,000/= per family is to be paid.		restoring livelihoods	
11. Recognition of untitled persons such as squatters and encroachers	X	√	√	NPRR states that the landless, forest dwellers, tenants and artisans are more severely affected but no mention is made of specific entitlements for them.
12. Surveys and census required	√	√	√	NPRR & ESPP require survey findings to be disclosed to the affected persons with a view to inviting objections and suggestions
13. Social networks and cultural links should be preserved	√	√	√	
14. Recognition of vulnerable groups including indigenous people.	√	Additional rehabilitation grant for vulnerable groups	√	NPRR and PGCIL gives preference to STs in land allotment. Additional financial assistance is also defined for them. Their traditional rights to natural resources in the area will be recognized.
15. Grievance Redress Procedure	√	√	√	NPRR requires a Grievance Redress Cell to be set up under a Commissioner for R & R.
16. Organization and Management of Resettlement	√	√	√	NPRR will set up a National Monitoring Committee chaired by the Secretary Department of Land Resources, under the Ministry of Rural Development and comprising seven other Secretaries.
17. Common property resources should be replaced	√	√	√	
18. All costs relating to resettlement and rehabilitation must be borne by the requiring agency and included in project costs	√	√	√	

ADB's Involuntary Resettlement Policy: ADB's policy requires:

The objectives of the ADB's policy on involuntary resettlement should be to (i) avoid involuntary resettlement wherever feasible; and (ii) minimize resettlement where population displacement is unavoidable, and ensure that displaced people receive assistance, preferably under the project, so that



they would be at least as well-off as they would have been in the absence of the project, as contemplated in the following paragraphs.

Involuntary resettlement should be an important consideration in project identification. The three important elements of involuntary resettlement are (i) compensation for lost assets and loss of livelihood and income, (ii) assistance for relocation including provision of relocation sites with appropriate facilities and services, and (iii) assistance for rehabilitation to achieve at least the same level of well-being with **the project as without it**. Some or all of these elements may be present in projects involving involuntary resettlement. For any project that requires relocating people, resettlement should be an integral part of project design and should be dealt with from the earliest stages of the project cycle, taking into account the following basic principles:

(i) Involuntary resettlement should be avoided where feasible. (ii) Where population displacement is unavoidable, it should be minimized by exploring all viable project options.

(iii) If individuals or a community must lose their land, means of livelihood, social support systems, or way of life in order that a project might proceed, they should be compensated and assisted so that their economic and social future will generally be at least as favorable with the project as without it. Appropriate land, housing, infrastructure, and other compensation, comparable to the without project situation, should be provided to the adversely affected population, including indigenous groups, ethnic minorities, and pastoralists who may have usufruct or customary rights to the land or other resources taken for the project.

(iv) Any involuntary resettlement should, as far as possible, be conceived and executed as a part of a development project or program and resettlement plans should be prepared with appropriate time bound actions and budgets. APs should be provided sufficient resources and opportunities to reestablish their homes and livelihoods as soon as possible.

(v) The affected people should be fully informed and closely consulted on resettlement and compensation options. Where adversely affected people are particularly vulnerable, resettlement and compensation decisions should be preceded by a social preparation phase to build up the capacity of the vulnerable people to deal with the issues.

(vi) Appropriate patterns of social organization should be promoted, and existing social and cultural institutions of APs and their hosts should be supported and used to the greatest extent possible. APs should be integrated economically and socially into host communities so that adverse impacts on host communities are minimized. One of the effective ways of achieving this integration may be by extending development benefits to host communities.

(vii) The absence of formal legal title to land by some affected groups should not be a bar to compensation. Affected persons entitled to compensation and rehabilitation should be identified and recorded as early as possible, preferably at the project identification stage, in order to prevent an influx of illegal encroachers, squatters, and other nonresidents who wish to take advantage of such benefits. Particular attention should be paid to the needs of the poorest affected persons including those without legal title to assets, female-headed households and other vulnerable groups, such as indigenous peoples, and appropriate assistance provided to help them improve their status.



(viii) The full costs of resettlement and compensation, including the costs of social preparation and livelihood programs as well as the incremental benefits over the "without project" situation, should be included in the presentation of Project costs and benefits.

(ix) To better assure timely availability of required resources and to ensure compliance with involuntary resettlement procedures during implementation, eligible costs of resettlement and compensation may be considered for inclusion in Bank loan financing for the project, if requested.

ADB's support for projects requiring significant involuntary resettlement should include assistance to the government and other project sponsors to (i) adopt and implement the above objectives and principles of the Bank's policy on involuntary resettlement within their own legal, policy, administrative and institutional frameworks; (ii) build the capacity of the government and other project sponsors to effectively plan and implement involuntary resettlement in the projects; and (iii) strengthen the DMC's capacities and macro frameworks for involuntary resettlement. Where serious differences on major aspects between project sponsors and affected persons are evident, adequate time should be allowed for the government and other project sponsors to resolve these differences before the Bank commits support for the project. If requested by the government, the Bank should be prepared to assist as appropriate. The government and project sponsors are responsible for resolving the differences.

For projects or programs involving displacement of people and for projects that are likely to encounter significant social resistance, the social preparation of the adversely affected persons and their communities into which they will be resettled would be an important means to obtain their cooperation for the project to proceed. For all public and private sector projects that involve significant involuntary resettlement, the government and other project sponsors should be assisted in preparing and submitting to the Bank, before loan appraisal, a satisfactory resettlement plan with time-bound actions and budgets.

All APs will be provided with compensation for their property acquired or damaged by the Project. The LAA will be applicable for the compulsory acquisition of land. They will also receive 'rehabilitation assistance' if their land is permanently acquired, their income source is adversely affected, their homes are fully or partially affected, or other properties such as commercial structures or agricultural structures, crops, trees, and other facilities or access to properties are damaged or reduced because of the Project. Lack of legal documents of their customary rights of occupancy or land titles shall not affect their eligibility for compensation. In case of land acquisition, RF stipulates the payment of compensation based on assessed replacement cost of land and structures and at current market rates for crops and trees.

7. An Entitlement Matrixes for the subprojects, is given in Table 2.

Table 2: Entitlement Matrix

SN	TYPE OF ISSUE/IMPACT	BENEFICIARY	ENTITLEMENT OPTIONS
1.	Loss of crops and trees	Owner	Compensation at market rate for crops and 8 years income for fruit bearing trees. APs will be given advance notice to harvest their crops. Timber will be retained by the owner.
2.	Tenant loss of access by share croppers/leaseholders to crops and /or trees	Tenant/ sharecropper/ leaseholder	Only the cultivator will get compensation at market rate for crops and 8 years income for fruit bearing trees. APs will be given advance notice to harvest their crops.



SN	TYPE OF ISSUE/IMPACT	BENEFICIARY	ENTITLEMENT OPTIONS
3.	Loss of structure		
a)	House		
(i)	with valid title, or customary or usufruct rights	Titleholders	Cash compensation at replacement cost (without deduction for salvaged material) plus Rs. 25,000/- assistance (based on prevailing GOI norms for weaker section housing) for construction of house plus transition benefits as per category-6
(ii)	Tenant, leaseholder	Individual	Lump sum payment equivalent to 6 month rent (on production of proof) or Rs. 5000/- which ever is higher to re-establish residence
(iii)	Non-titled	Household / Family	Cash compensation for structure + Lump sum payment ranging between Rs. 5000 to Rs. 25000/- (depending on type of structure and family size) as one time payment towards disturbance + Transition benefits as per category-6.
(iv)	Cattle shed	Owner/ Family	Cash compensation as fixed by authorities plus Rs. 3000/- for re-construction of cattle shed.
b)	Shop/ Institutions		
(i)	with valid title, or customary or usufruct rights	Individual	Cash compensation plus Rs. 10000/- for construction of working shed/shop plus rehabilitation assistance equivalent to 1 year income plus transition benefits as per category-6
(ii)	tenants, leaseholder	Individual	Transition allowance equivalent to 1 year income + transition benefits as per category-6
(iii)	Non-titled	Individual	Cash compensation for structure plus transition allowance equivalent to 1 year income plus transition benefits as per category-6
4.	Other damages (if applicable)	All APs	Replacement cost as assessed by the concerned authority.
5.	Additional benefits for IPs and other Vulnerable groups⁸	IPs	In addition to compensation of losses as per above, vulnerable groups will receive additional compensation based upon individual needs as assessed..

C Procedure of Tree/crop compensation

⁸ POWERGRID recognizes the relevance of addressing, in a meaningful manner, the needs of the most vulnerable amongst the APs., additional compensation will be assessed on a case-by-case basis in consultation with local authorities.

Compensation Plan for Temporary damages (CPTD) for ± 800 kV HVDC Transmission Line from Biswanath Chariyali(Assam) to Agra(U.P.)



In exercise of the powers vested with Power Grid Corporation of India Limited (POWERGRID) under Indian telegraph Act'1885, part 3, section 10 to 19 conferred under section 164 of the Electricity Act 2003 through Gazette by India, extra ordinary dated 24th Dec. 2003 has the domain to place and maintain transmission lines under over along or across and posts in or upon, any immoveable property. As per the provisions of Indian Telegraph Act1885 Part III Section 10 (b) which prohibits acquisition of any rights other than that of use only, land for tower and right of way is not acquired and agricultural activities are allowed to continue. However, as per clause 10 (d) of same act stipulates that the user agency shall pay full compensation to all interested for any damages sustained during the execution of said work. Accordingly, POWERGRID pays compensation to land owners towards damages if any to trees or crop during implementation of transmission project as well as during Operation and maintenance phase. The procedure followed for such compensation is as follows:

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

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

A notice under Indian Telegraph Act, 1885 is served to the land owners informing that the proposed transmission line is being routed through the property of the individual. The notice shall contain the particulars of the land, ownership details and the details of the trees/crops inevitability likely to be damaged during the course of the construction of the proposed transmission line and acknowledgement received from land owner. A copy of said notice is further issued to the Revenue Officer, who has been authorized by the State Govt. for the purpose of assessment/valuation and disbursement of compensation to the affected parties.

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

The Chitahs (Revenue record) shall contain the land owner details type of tree/crop, its present age, variety, yielding pattern etc. and the same is prepared at site in the presence of the land owner. These Chitahs are further compiled and a random verification is conducted by the concerned District Collector or his authorized representative in order to ascertain the assessment carried out by the revenue office is



genuine and correct. After this process the District collector issues a tree cutting permit to Power Grid Corporation to enable removal / damage to the standing tree/crop identified in the line corridor.

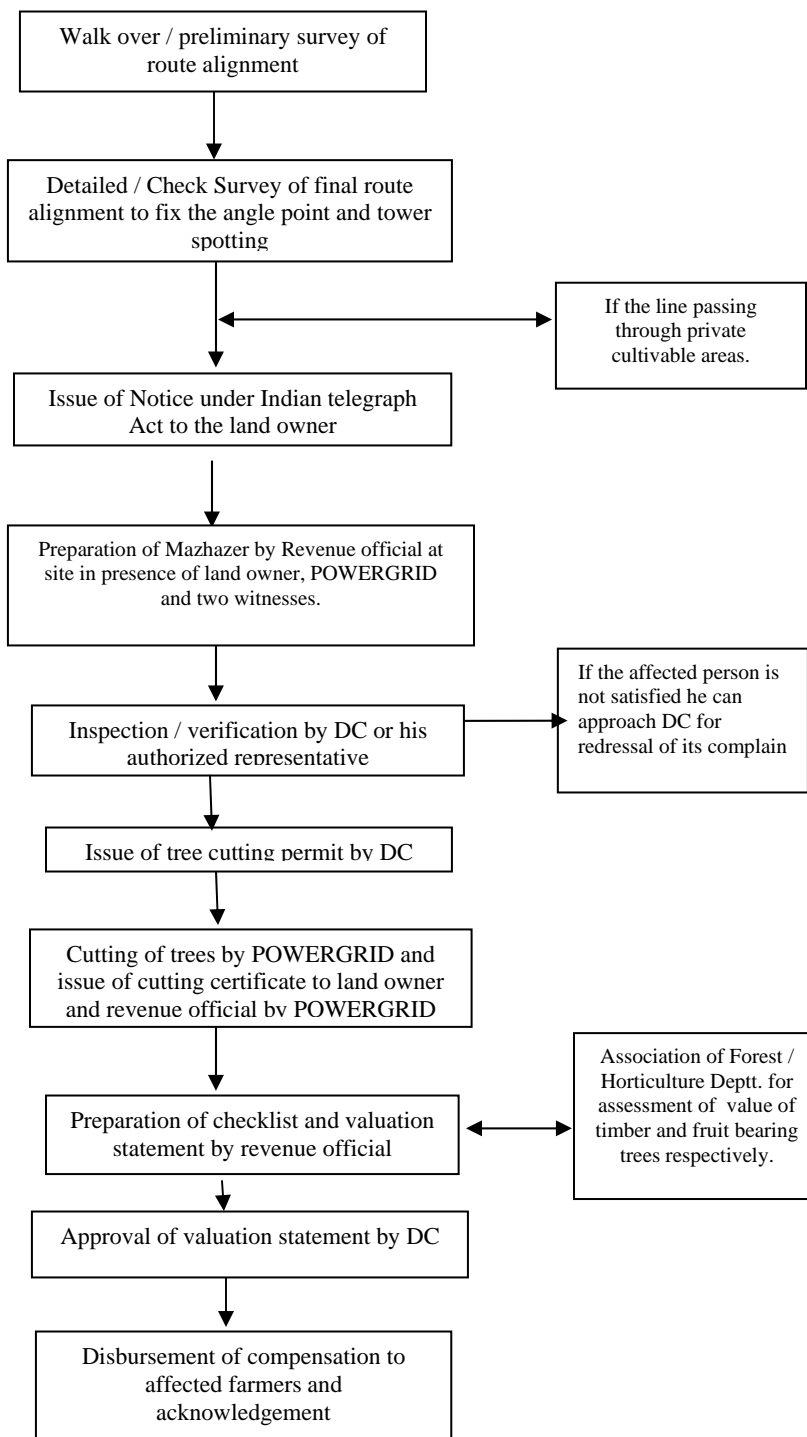
Once the tree/crop is bound to be removed / damaged, POWERGRID shall issue a tree cutting/crop damaged notice to the land owner with a copy to the Revenue Officer to process the compensation payment. Based on the above the compensation payment is prepared for this purpose. The detailed Valuation statement is verified at various levels and approval of payment of compensation is accorded by the concerned District Collectors.

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

In any case, no tree/crop shall be removed or damaged before the compensation is awarded.



TREE / CROP COMPENSATION PROCESS





CHAPTER -5 STAKEHOLDERS' PARTICIPATION AND CONSULTATION

Public consultation/information is an integral part of the project implementation. Public is informed about the project at every stage of execution. During survey also POWERGRID's site officials meet people and inform them about the routing of transmission lines. During the construction, every individual, on whose land tower is erected and people affected by ROW, are consulted.

Public consultation using different technique like Public Meeting, Small Group Meeting, informal Meeting as per Environmental **Social Policy & Procedures of POWERGRID (ESPP)** shall be carried out during different activities of project cycle. During such consultation the public is informed about the project in general and in particular about the following:

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

During walkover and preliminary survey following consultation with the villagers and public has already taken place:

Section 1: ± 800 kV HVDC Transmission Line: Biswanath Chariyali - Bongaigaon

Public Consultations:

Sl. No.	Village	No. of people attended	Date	Remarks
1.	Saikia Chuburi	41	03.05.07	Meeting attended by Gram Pradhan, School Teacher and Villagers etc. Photograph is annexed as Annexure-I
2.	Hapa Gaon	29	10.06.07	
3.	Singimari	163	24.06.07	
4.	Jamadarbari	55	10.06.07	
5.	Sarangia	46	10.06.07	

Informal Group Meetings

Sl. No.	Village Name	Date	No. of People	Remarks
1.	Nagshankar, Dist..Sonitpur	20/11/06	25	School Teacher Villagers, Panchayat representative
2.	Kokakuli, Dist..Sonitpur	05/10/06	20	
3.	Thelamara, Dist..Sonitpur	12/12/06	19	
4.	Baligaon, Dist. Udalgari	05/05/06	30	



5.	Awnajuli, Dist. Udalgari	07/07/06	16	attended
6.	Batabari, Dist. Udalgari	15/11/06	26	
7.	Udalguri, Dist. Udalgari	07/06/06	29	
8.	Silakuti, Dist. Baga	10/05/06	17	
9.	Ahompethar, Dist. Barpeta	09/09/06	22	
10.	Khagrabari, Dist. Chirang	14/09/06	19	

Section- 2: \pm 800 kV HVDC Transmission Line: Bongaigaon-Saharsa

Public Consultation:

Sl. No.	Villages	Date of meeting	No of villagers	Remarks
1.	West Barogharia	03.07.07	22	Public consultation program, pamphlets, List of participants and photographs enclosed.
2.	Sarada Pally	03.07.07	23	
3.	Petki	04.07.07	22	
4.	Lichipukuri	04.07.07	22	

Informal Group Meeting:

Sl. No.	Location	Dates /Times	No. of Attendance	Remarks
1.	Pundibari	15.06.07	15	Includes various stack, village panchayet representative, school teacher, residents of villages etc.
2.	Tangramari	15.06.07	12	
3.	Putimari	16.06.07	13	
4.	Fakirpara	16.06.07	14	
5.	Rajganj	22.06.07	20	
6.	Balabari	22.06.07	20	
7.	West Barogharia	03.07.07	22	
8.	Sarada Pally	03.07.07	23	
9.	Petki	04.07.07	22	
10.	Lichipukuri	04.07.07	22	

Section-3: \pm 800 kV HVDC Transmission Line: Saharsa – Gorakhpur

Public Consultation:

Sl. No.	Name of Villages	Date of Meeting	No. of Villagers	Remarks
1.	Rampur	04.06.2007	16	Public concentration program, pamphlets, list of participants and photographs enclosed as PC1
2.	Singhiya Khurd	04.06.2007	16	
3.	Husepur	04.06.2007	16	
4.	Anant Kamtaul	03.06.2007	16	
5.	Lalu Chapra	05.06.2007	17	
6.	Shampur	05.06.2007	17	
7.	Balbhadrapatti	29.06.2007	20	
8.	Ramnagar	29.06.2007	18	



Informal Group meeting:

Sl. No.	Locations	Dates	No. of Attendees	Remarks
1.	Rampur	20.05.2007	20	Includes various stack, village panchayat representative, school teacher, residents of villages etc.
2.	Kishanpur	20.05.2007	11	
3.	Khajuri	20.05.2007	16	
4.	Singhiya Khurd	21.05.2007	12	
5.	Husepur	21.05.2007	13	
6.	Anant Kamtaul	22.05.2007	16	
7.	Rasulpur	22.05.2007	15	
8.	Lalu Chapra	22.05.2007	17	
9.	Bagani	24.05.2007	16	
10.	Shampur	24.05.2007	19	
11.	Balbhadrappatti	26.05.2007	20	
12.	Pipra	26.05.2007	11	
13.	Ramnagar	29.05.2007	18	

Section-4 - \pm 800 kV HVDC Transmission Line: Gorakhpur-Agra

Public Consultation:

Sl. No.	Village	No. of people attended	Date	Remarks
1.	Bhaktipur	17	16.06.07	Meeting attended by Gram Pradhan, School Teacher and Villagers etc. Photograph is annexed as Annexure-I
2.	Lalpur	20	17.06.07	
3.	Raipur	12	28.06.07	
4.	Rampur	14	29.06.07	
5.	Nagari	14	27.06.07	
6.	Usraha	20	28.06.07	
7.	Bahaudeenpur	18	29.06.07	

Informal Group meeting:

S. No.	Name of Village	No. of people attended	Date	Remarks
1.	Bhaktipur	8	1.05.07	Meeting attended by Villager's and Woman of the village, School Teacher and representative of Panchyat etc.
2.	Bhahwat pur	7	1.05.07	
3.	Lalganj	6	3.05.07	
4.	Raineya	9	3.05.07	
5.	Lalpur	12	7.05.07	
6.	Nutan purwa	7	7.05.07	
7.	Barapurwa	6	9.05.07	
8.	Akbarpur	5	9.05.07	
9.	Lalpal pur	11	10.05.07	
10.	Raipur	9	10.05.07	
11.	Raghu nath khera	8	10.05.07	



12.	Laharipurwa	10	12.05.07
13.	Jaitipur	7	12.05.07
14.	Fatehabad	15	25.04.07
15.	Bhadan	10	25.04.07
16.	Mainpuri	12	25.04.07
17.	Safai	15	25.04.07
18.	Bahadurpur	10	25.04.07
19.	Simaria	10	26.04.07
20.	Kuderkot	15	27.04.07
22.	Kakwan	10	27.04.07
23.	Bithur	07	27.04.07
24.	Ajgian	10	28.04.07
25.	Paripar	20	28.04.07

There were altogether 24 public consultations and 58 informal group meetings held till July '07 in Assam, West Bengal, Bihar & Uttar Pradesh during preliminary survey/investigations of the entire proposed HVDC route.

During consultations/interaction processes with people of the localized areas POWERGRID field staffs explained benefit of the project, impacts of Transmission line, payment of compensation for damaged of crops, trees, huts etc as per Indian Electricity Act 2003 and Telegraph Act 1885 and measures to avoid public utilities such as schools, hospital etc. People more or less welcomed the construction of the proposed project. Likely affected people (APs) requested for timely payment of compensation towards crops etc if damaged during construction activities at the market rate. Their queries were replied to satisfaction and it was assured that compensation would be paid in time after Revenue department fixed/award the amount. Photographs of the consultation are being attached with **Annexure:**

Besides above, the following queries were also raised/asked by the people of the villages during Public consultation and informal group meetings: –

1. Would they be benefited of electricity in their villages through this particular line?
2. Whether huts or any damage if coming under corridor would be compensated or not?
3. Whether local people will be engaged during construction?
4. Whether land compensation due to tower location shall be paid?
5. Whether villages will be electrified by POWERGRID?
6. Will there be any harm due to Transmission line?

POWERGRID field staffs explained above questions as follows:

1. POWERGRID will transmit the electricity to State Electricity Boards (SEB) and villagers will be provided electricity by SEBs.
2. Any type of damages occur during construction, compensation towards the extent of damages etc. are to be assessed by Revenue dept. at the request and initiative of POWERGRID and will be borne/ compensated by POWERGRID.
3. All the unskilled work will be done through engagement of local labourers and construction materials like coarse aggregate, sand would be supplied by local traders apart from engagement



of local material transport/vehicles. There will be direct and indirect economic benefit to the local people during construction.

4. Land acquisition is not required for the purpose of transmission line. Legal status of land would remain with the individuals even after construction of transmission line. Hence, land compensation is not payable. However, villagers can continue agricultural activity
5. Village electrification is being undertaken by State Govt. and POWERGRID does have any direct role in this matter. It was informed that all villages are supposed to be electrified latest by 2012 as per planning of Govt. of India.
6. POWERGRID towers are normally more than 42 meter height and they maintain sufficient electrical clearance (above 12 meter) and as such no harm is anticipated.

4.3 Plan for further Consultation and Community Participation during Project Implementation

The process of such consultation is to be continued during project implementation and even during O&M stage. The progress and proposed plan for Public consultation is as follows:

S.No.	Activity	Technique	Schedule
1.	Detailed/Check survey	Public Meeting at different places (50-100 Km) en-route final route alignment of line	Public meeting during January'07 to June'07
2.	Construction Phase	Localized group meeting, Pamphlet/Information brochures, Public display etc.	During entire construction period
3.	O&M Phase	Information brochures, Operating field offices, Response to public enquiries, Press release etc.	Continuous process as and when required.



CHAPTER 6: Institutional Arrangements

IMPLEMENTATION AND MONITORING

1. For subprojects POWERGRID will implement the CPTD Program and will do the overall coordination, planning, implementation, financing and maintaining all databases, work closely with APs and other stakeholders. The database will be managed by POWERGRID through its Regional ESMC staffs by collecting input from the field staffs which may be monitored/audit by the external monitoring agency, if required.
2. POWERGRID will ensure that local governments are involved in the plans implementation to facilitate all settlement of compensation related activities before commencing civil works
3. Based on regularly updated social assessment & compensation data, a central database will also be maintained by POWERGRID. Roles and responsibilities of various agencies are in **Table 4**.

Table 5.1: Agencies Responsible for CPTD Implementation

Activity	Agency Responsible
Implementing CPTD	Field staffs, POWERGRID
Updating the CPTD	ESMC (RHQ), POWERGRID
Review and Approval of CPTD	POWERGRID
Verification survey for identification of APs	POWERGRID field staffs & Revenue officials
Survey for identification of plots for Crop/Tree/ other damages Compensation	POWERGRID & Revenue officials
Consultation and disclosure of CPTD to APs	POWERGRID & Revenue officials
Compensation award and payment of compensation	Revenue Dept / Competent Authority
Fixing of Replace cost and assistance	Revenue Dept / Competent Authority
Payment of replacement cost compensation	POWERGRID
Takeover temporary possession of land/houses	POWERGRID and Revenue Department
Hand over temporary possession land to contractors for construction	POWERGRID
Notify construction starting date to APs	POWERGRID field staffs
Compensation to particularly for vulnerable groups	POWERGRID field staffs
Restoration of temporarily acquired land to its original state including restoration of private or common property resources	Contractors subject to monitoring by POWERGRID
Development, maintenance and updating of Compensation database	POWERGRID
Development, maintenance and updating of central database	POWERGRID
Internal monitoring	POWERGRID
External monitoring	POWERGRID & Revenue officials

4. Disclosure of CPTD

The draft/summary CPTD will be disclosed by the POWERGRID to the affected households and other stakeholders by placing it on web site for review and comments on the policy in general and adequacy of the mitigation measures in particular. The CPTD will be translated into the local language(s) and will be placed at various public offices, places such as *tehsil* and district offices, schools, *panchayat* office and concerned officials and local dignitaries. The summary of CP will be disclosed on the ADB website.

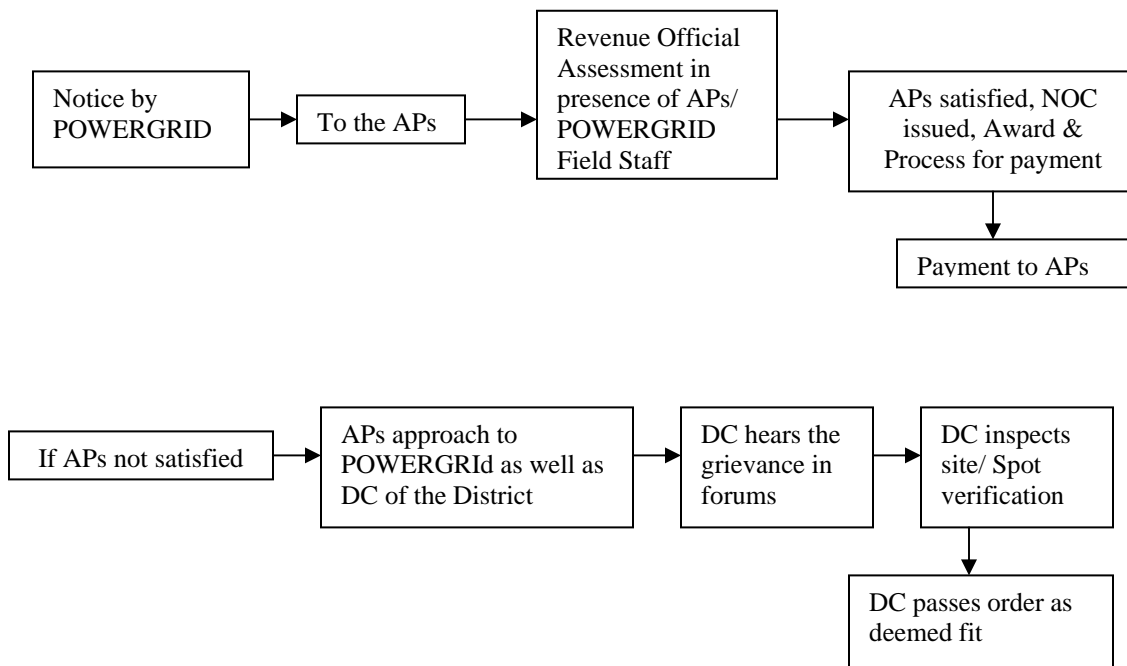
The collection of comments will take place after one month of the disclosure of the CPTD, followed by the compilation of the comments and responses received. Subsequently, the POWERGRID will organize further public consultation meetings with the stakeholders to share the views of public on the Plan for all



possible clarifications. The feedback from the consultation will be reviewed and incorporated in the revised and final CPTD. The consultation process will continue throughout the project implementation period.

5. Grievance Redressal Mechanism

Grievance redressal is built in the process of compensation because after the notice the revenue officials assess the damages based on actual site condition and the version of land owner. After the preliminary assessment owner is given a chance to substantiate the claim if he is not satisfied with the assessment. If the owner is not satisfied he/she is allowed to access the higher authority for any grievance towards compensation that is generally addressed in open forum and in the presence of many witnesses. Process of spot verification and random checking by the district collector (**DC**) also provides forum for raising the grievance towards any irregularity/complain. Apart from this, POWERGRID officials also listen to the complaints of affected farmers and the same are forwarded to revenue official for doing the needful.



6. Monitoring and Evaluation

6.1. Internal monitoring will be the responsibility of POWERGRID and its internal monitoring will include: (i) administrative monitoring: daily planning, implementation, feed back and trouble shooting, individual AP file maintenance, and progress reports; (ii) socio-economic monitoring: Compensation of



crops/trees or any other damages, demolition if any, salvaging materials, dates for consultations, and number of appeals placed; and (iii) post-implementation monitoring of the APs.

6.2. Monitoring and reports documenting progress on compensation implementation of CPTD completion reports will be provided by POWERGRID to ADB for review.

6.3. POWERGRID will engage the services of an independent agency/External monitoring, if required. The external agency will report its findings simultaneously to the POWERGRID and to ADB twice a year. Provisions have been made in the compensation budget component for engaging an external monitor, if required. The internal monitoring report will be submitted quarterly to the INRM for review where as the external monitoring report will be submitted yearly to the INRM for review.

7.0 Executing Agency

POWERGRID will be the Executing Agency (EA) for the Project. The implementation and monitoring are critical activities shall be followed as per Implementation chart/Schedule. Monitoring is a continuous process for POWERGRID projects at all the stages are it the site selection, construction or maintenance.

The success of POWERGRID lies in its strong monitoring systems. Apart from the site managers reviewing the progress on daily basis regular project review meetings are held at least on monthly basis which is chaired by Executive Director of the region wherein apart from construction issues the environmental aspects of the projects are discussed and remedial measures taken wherever required. The exceptions of these meetings are submitted to the Directors and Chairman and Managing Director of the Corporation. The progress of various on-going projects is also informed to the Board of Directors. Following is the organization support system for proper implementation and monitoring of Environmental & Social Management Plan:

7.1 Corporate Level

An Environmental Management Cell at corporate level was created within POWERGRID in 1992 and subsequently upgraded to an Environment Management Department (EMD) in 1993 and in 1997 it has been further upgraded to Environment & Social Management Deptt. (ESMD) by incorporating social aspect of project. Briefly, the ESMD's responsibilities are as follows:

- Advising and coordinating RHQs and DHQs to carry out environmental and social surveys for new projects.
- Assisting RHQs and DHQs to finalise routes of entire power transmission line considering environmental and social factors that could arise enroute
- Help RHQs and DHQs to follow-up with the state forest offices and other state departments in expediting forest clearances and the land acquisition process of various ongoing and new projects
- Act as a focal point for interaction with the MOEF for expediting forest clearances and follow-ups with the Ministry of Power.
- Imparts training to POWERGRID's RHQs & DHQs on environment and social issues and their management plan.
-

7.2 Regional Level



At its Regional Office POWERGRID has an Environmental and Social Management cell (ESMC) to manage Environmental and Social issues and to coordinate between ESMD at the corporate level and the Divisional Headquarters. The key functions envisaged for ESMC are:

- Advising and coordinating field offices to carry out environmental and social surveys for new projects envisaged in the Corporate Investment Plan
- Assisting the ESMD and DHQs to finalise routes of entire power transmission lines considering the environmental and social factors that could arise en-route
- To follow-up forest clearances and land acquisition processes with state forest offices and other state departments for various ongoing and new projects
- Acting as a focal point for interaction with the ESMD and DHQs on various environmental and social aspects.

7.3 Site Office

At the Divisional Headquarters level, POWERGRID has made the head of the division responsible for implementing the Environmental and Social aspect of project and are termed as Environmental and Social Management Team (ESMT). Key functions of the ESMT are:

- Conduct surveys on environmental and social aspects to finalise the route for the power transmission projects
- Conduct surveys for the sites to being considered for land acquisition
- Interact with the Forest Departments to make the forest proposal and follow it up for MOEF clearance.
- Interact with Revenue Authorities for land acquisition and follow it up with Authorised Agencies for implementation of Social Management Plan (SMP).
- Implementation of Environment Management Plan (EMP) and SMP
- Monitoring of EMP and SMP and producing periodic reports on the same.

7.4 Staff Training on Environment and Social Issues

Environment and social Management Department (ESMD) in association with HRD organizes training program on Environment and Social Management (E & S M) including ISO-14001 requirement. Till date more than 400 officials of POWERGRID have been imparted training on E & S aspects during the last 6 years. Selected officials have also been nominated to attend The World Bank sponsored training program on R&R at different places like Hyderabad, Bangalore and Udaipur. Four officials have also been deputed to Japan for AOTS training program on Environment Management.

Executives at ground levels have shown remarkable improvement in appreciating/dealing with these issues. Apart from these, dedicated program in all other technical training program one slot is invariably provided particularly for Environmental & Social issues and it's Management.



CHAPTER 7: SCHEDULE OF CPTD IMPLEMENTATION

Assuming Award letter for execution of work to be placed in 3rd quarter (Q3) of 2008 the following work Schedule is drawn for implementation of CPTD.

SCHEDULE

Sl. No.	Activity	2008				2009				2010				2011				2012	
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	H1	H2
1.	Initial CPTD Matrix disclosure	—																	
2.	Detailed Survey				—	—	—	—	—	—	—	—	—	—	—	—	—		
3.	Public Consultation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
4.	Compensation Plan				—	—	—	—	—	—	—	—	—	—	—	—	—		
i)	Issue of Notice to APs				—	—	—	—	—	—	—	—	—	—	—	—	—		
ii)	Preparation of APs list				—	—	—	—	—	—	—	—	—	—	—	—	—		
iv)	List Finalisation																		
v)	Assessment by Revenue Official					—	—	—	—	—	—	—	—	—	—	—	—		
vi)	Assessment disclosure				—	—	—	—	—	—	—	—	—	—	—	—	—		
vii)	Compensation Payment				—	—	—	—	—	—	—	—	—	—	—	—	—		
5.	Civil Works				—	—	—	—	—	—	—	—	—	—	—	—	—		
6.	Review/ Activity Monitoring				—	—	—	—	—	—	—	—	—	—	—	—	—		
i)	Monthly				—	—	—	—	—	—	—	—	—	—	—	—	—		
ii)	Quarterly				—	—	—	—	—	—	—	—	—	—	—	—	—		
iii)	Half yearly				—	—	—	—	—	—	—	—	—	—	—	—	—		
iv)	Annual						—				—				—				
7	Grievances				—	—	—	—	—	—	—	—	—	—	—	—	—		
i)	Grievance redressal, if any				—	—	—	—	—	—	—	—	—	—	—	—	—		
8.	CPTD Documentation						—	—	—	—	—	—	—	—	—	—	—		
9.	Ext. Auditing, if required										—			—		—		—	



SECTION 8 BUDGETS FOR COMPENSATION PLAN FOR TEMPORARY DAMAGES (CPTD)

BUDGET:

Sufficient Budget has been provided to cover all compensation towards crops losses, other damages, and assistance to APs. 100% affected trees will be compensated as per entitlement matrix As per POWERGRID's previous projects and strategy for minimization of impacts (described in Section -2 of this document) an average of 45% of the affected land is expected for compensation for crops and other damages. Structure will be avoided to the extent possible. However, may any structure be affected Budget provisions are available to cover all damages as per entitlement matrix. In any case no residential structure shall be affected.

Therefore, provisions of Budget Expenditure for implementation of CPTD for the subprojects considering corridor of 30 meter maximum (though affected part of corridor for compensation of crops/other damages would be about 45% as per POWERGRID's projects previous practices) have been worked out as follows:

Area Likely to be affected (30 meter width/corridor) = 4926 Ha. (Section 2 Impact)

- i) Affected area for Crops (1580 Km X 30 M) = 4740 Ha.
- ii) Affected area for Tea (6.42Kmx 30 M) = 20 Ha.
- iii) Affected area for Trees (Pvt. Plantation- 55.36Kmx30M) = 166 Ha.
(Tree-20285 nos.)

Sl. No.	Description of Compensation	Qty. (Area/ Nos)	Rate as prevailing Market (Rs.)	Total Cost Rs. in Million	Remarks
1.	Crops (4740 Ha.)				As per POWERGRID strategy & Practices this is further minimized.
a	Paddy	1896 Ha.	31,000 per Ha.	58.776	
b	Wheat	2844 Ha.	28,000 per Ha.	79.632	
2.	Tea	20 Ha.	600,000 per Ha.	12.000	
3.	Tree (166 Ha.)	20285 nos.	5,000 per no.	101.430	
4.	Thatched huts	173 nos.	30,000 per no.	5.190	
	Sub-Total			257.028	

Summary of *Budget Estimate for CPTD

A. Compensation	Rs. 257.028 Million
B. i) Man-power involved for SMP implementation & Monitoring (Rs.10, 000/-x 1642 Km)	Rs. 16.420 Million
ii) Ext. Audit (LS), if reqd.	Rs. 0.750 Million
C. Contingent cost 3% (A + B)	Rs. 8.226Million
Total Budget Provision (A+B+C)	Rs.282.424Million

Note: '*' Budget estimate is only indicative



Annex 1

Area Impacted by the Transmission line and the Tower Erection.

POWER GRID CORPORATION OF INDIA LTD.
ESM DEPTT.(ESMD),
Secor-29, Plot no.-2, Gurgaon-122001

