NEPAL ELECTRICITY AUTHORITY

ENVIRONMENTAL AND SOCIALMANAGEMENT PLAN OF SUPPLY AND INSTALLATION OF DISTRIBUTION PROJECTS (33KV TRANSMISSION LINE) UNDER THE GRID SOLAR AND ENERGY EFFICIECY PROJECT VOLUME II



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ABBREVIATIONS AND ACRONYMS

BS	:	Bikram Sambat (Nepali Era)
DADO	:	District Agriculture Development Office
DCC	:	District Coordination Committee
DFO	:	District Forest Office
DoED	:	Department of Electricity Development
ESMF	:	Environment and Social Management Framework
ESMP	:	Environment and Social Management Plan
EPR	:	Environment Protection Rules, 1997
ESSD	:	Environment and Social Studies Department
GoN	:	Government of Nepal
GSEEP	:	Grid Tied and Solar Energy Efficiency Project
GRC	:	Grievance Redress Cell
GRM	:	Grievance Redress Mechanism
HHs	:	Households
IEE	:	Initial Environmental Examination
MoEWRI	:	Ministry of Energy, Water Resource and Irrigation
MoFE	:	Ministry of Forest and Environment
NEA	:	Nepal Electricity Authority
PAS	:	Project Affected Settlement
PMO	:	Project Management Office
SIDP	:	Supply and Installation of Distribution Project
WB	:	World Bank
<u>Units</u>		
ha	:	Hectare
km	:	Kilometer
kV	:	Kilo Volt
m ²	:	Square meter

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1 INTRODUCTION

1.1 Background

Over the past several years, NEA's operations have suffered from deficit of generation capacity and poor system performance at times of peak demand. The network voltages remain excessively low in many part of country. The major cause of the low system voltages has been identified as deficiencies in the distribution system. The network supplying the system is heavily overburdened and has exceeded technical and economic loading levels at many places, causing the consumers to receive power at voltages far below the required level. There is also high system loss in distribution with estimated average value ranging from 60 to 70 percent of the overall peak and energy losses. In particular possibilities of any short-term actions to improve network voltages and enable new consumers to be added to the system at locations where such difficulties exist are to be explored.

The proposed Supply and Installation of Distribution Projects (SIDP) seeks to find solutions to redress the poor supply conditions in NEA's distribution network and to reduce the existing high level of system losses. This project includes supply and installation of 6 nos. of new 33/11kV, 3 MVA substations (SS), 2 nos. of new 33/11kV, 6/8 MVA substations (SS) and 33kV new lines for energizing those SS. However, this study focuses on the study of 6 new 33kV transmission line (TL) of 4 districts to energize those SS. Implementation of project would augment the system capacity which would consequently reduce the load shedding hours to some extent and improve the revenue collection for unutilized usable energy.

The proposed project has been selected avoiding the settlement areas, inbuilt structures, religious places, schools and other community infrastructures wherever possible. During the field study, it has been verified that due to the construction and operation of this proposed project, there shall be no obstruction in planned/proposed/operated hydropower, TL or other development projects in the vicinity. The environmental and social management plan (ESMP) prepared for this subproject includes 6 new 33kV TLs proposed in Ramechhap district (New Khimti-Doramba and New Khimti-Bamti), Sindhuli district (Khurkot and Sindhuli-Lampantar), Kapilbastu district (Buddhi-Gorusinghe), and Gulmi district (Bastu - Marbhung).

1.2 Objectives, rationale and Methodologies for Preparing ESMP Objectives

The objective of the Environment and Social Management Plan (ESMP) is to identify the potentially significant environmental issues and risks of the proposed project and to suggest appropriate mitigation measures to mitigate and/or minimize the adverse impacts so that the project is implemented in an environmentally sound manner. The other general objectives of the study are to:

- Identify, predict and describe/ assess potential environmental and social impacts from the establishment of the 33kV TL.
- Define the roles and responsibilities of all parties involved in project environmental and social management (including monitoring mechanism which should be consistent with the provisions in the project's ESMF);
- Identify, describe and suggest measures for impact avoidance, minimization, and mitigation and their costs;
- Define environment and social management mechanism to ensure the implementation of mitigation measures and monitoring programs; and establish a supervision, monitoring and reporting as well as grievance handling mechanism.

Rationale

Based on the recommendation identified from screening reports, the ESMP is prepared to address the impacts on the particular aspects and describe different measures to mitigate the impacts of the TLs.

Methodology

This ESMP report is prepared in accordance with the recommendations provided in the screening reports of the subproject, field study, consultation with local people/stakeholders and officials. Various methodologies are used to prepare the ESMP; they are:

- Desk study, review of design and maps
- Field Investigation
 - Identification of settlements nearby the TLs.
 - Vegetation sampling.
 - Meetings/Consultations/Public Participation
 - Verification of secondary data/ information and collection of data/ information from the field.

• Consultations: The project team visited the sub-project sites in 2075/01/24 to 2075/02/07. During site visit, 13 consultation meetings were conducted in sample settlements along with the corresponding ward offices. During the consultation meetings, different issues/concerns were raised by the people regarding crop loss along the RoW, impact on land and forest which was noted in the diary by the team members.

Altogether, 112 people participated in the meeting including ward representatives with 88 males and 24 females. The details of the meetings held in different sites including the list of participants and their suggestions are given in Annex I. The team also visited the Ward Office, district level line offices such as, District Coordination Committee (DCC), District Forest Office (DFO) and District Agriculture Development Office (DADO) of the project affected districts. Now, District forest office has reformed as Division Forest Office.

S.N	Subproject Sites	Location	Total	Male	Female
1	New Khimti-Doramba TL	Doramba bazaar, Gumba tole	20	14	6
2.	New Khimti-Bamti TL	Bamtibhandar, Patidhunga and	26	24	2
		Namadi			
3	Khurkot TL	Golanjor-7, Khurkot	7	2	5
4	Sindhuli-Lampantar TL	MarhilloPachrang, Bangring	25	18	7
		Phedi and Hile bhanjyang			
5	Buddhi-Gorusinghe TL	Ghanchaura and Rangai	23	20	3
6	Bastu-MarbhungTL	Bwase, Marbhung	11	10	1
		Total	112	88	24

Table 1-1: Detail of the Consultation Meetings held at Subproject Sites

Source: Field Survey, 2018

The consultation meetings were also participated by indigenous people in most of the sites depending on their presence in the area. Of the total participants during consultations, 38.39% represented different indigenous communities mainly Shrestha, Magar, Tamang and Tharu. The detail of indigenous caste group is given in Table 1-2.

SIDP		

	Table 1-2. Detail of the indigenous caste group meetings held at subproject sites						
S.N	Subproject	Subproject Location		Indigeno	us Participants		
	Sites		Participants				
			Total	Total	Caste		
1	New Khimti-	Doramba bazaar,	20	11	Moktan, Yonjan,		
	Doramba TL	Gumba tole			Tamang and Shrestha		
2	New Khimti-	Bamtibhandar,	26	3	Lama and Sherpa		
	Bamti TL	Patidhunga and					
		Namadi					
3	Sindhuli-	MarhilloPachrang,	25	20	Magar, Shrestha,		
	Lampantar TL	BangringPhedi and			Tamang, Pariyar and		
		Hilebhanjyang			Lama.		
4	Buddhi-	Ghanchaura and	23	5	Tharu		
	Gorusinghe TL	Rangai					
5	Bastu-	Bwase, Marbhung	11	4	Dalit		
	MarbhungTL						
		Total	112	43			

roun montings hold at subproject sites). Dotail of the in

Source: Field Survey, 2018

Consultations with indigenous peoples also involved Free Prior Informed Consent (FPIC) regarding the construction of substations and TLs. The IPs showed concerns in providing priorities for their employment in the project works on the basis of their skills.

1.3 **Project Area Description**

Sindhuli-Lampantar 33kV TL of Sindhuli District:

The proposed Sindhuli-Lampantar 33kV TL from Sindhuli SS will be constructed to run the proposed Lampantar SS (33/11kV, 3MVA) of Tinpatan rural municipality (RM)-10, Mathillo Pachrang of Sindhuli District. Total length of this 33kV TL is about 29.5km. The TL passes through 5.2888 ha of forest area, 5.4811 ha of agricultural land, 0.7705 ha of sand and 0.2596 ha of water body. About 5.2888 ha of the forest land within the RoW of the TL alignment is managed by community/government/ or private forest.

The major part of the proposed TL run parallel to the existing earthen road (Sindhuli-Bhimsthan-Chakmake-Baun Tilpung earthen road). The nearest settlement along the TL are Lungelitar (situated more than 300m from TL alignment), Hilebhanjyang, Jogekhola, Chautara, Pahire, Shakhamadi, Belghari and Mathilo Pachrang, Bangring phedi (situated at 100m to 300m from TL).

Khurkot 33kV TL of Sindhuli District:

The proposed khurkot 33kV TL will be constructed to run the proposed 33/11kV, 3MVA Khurkot SS of Golanjor RM-7, of Sindhuli district. The length of 33kV TL is about 1.647km. The TL passes through 0.2693ha of agricultural land, 0.3812ha of forest area and 0.0083ha of sand area. Altogether the TL passes through 0.6588ha of land. The nearest settlement along the TL is mathillo bara.

New Khimti-Doramba 33kV TLof Ramechhap District:

The proposed New khimti-Doramba 33kV TL will be constructed from New Khimti SS to run the proposed 33/11kV, 3MVA Doramba SS of Doramba RM-2, Bhumithan tole of Ramechhap district. The length of 33kV TL is about 20.09km. The TL passes through 4.4708ha of agricultural land, 2.4689ha of forest area, 0.6222ha of bush area, 0.2918ha of grassland and

0.1823ha of barren land. Almost all section of TL run parallel to the existing earthen road. Altogether the TL passes through 8.036ha of land. The nearest settlement along the TL are Gumba Tole, Barkhopa, Nigalbas, Baluwa, Kukhureahal and Pokharidanda which are from 100m to 600m far from the TL route.

New Khimti-Bamti 33kV TLof Ramechhap District:

The proposed New Khimti-Bamti 33kV TL will be constructed from New Khimti SS to run the proposed 33/11kV, 3MVA Bamti SS of Umakunda RM-2, Simgau tole of Ramechhap district. The length of 33kV TL is about 35.267km. The TL passes through 8.675ha of agricultural land, 3.5332ha of forest area, 1.1857ha of bush area, 0.6574ha of grassland, 0.0302ha of sand area and 0.0253ha of water body. Altogether 14.1068ha of land will be affected by this TL. The major part of the proposed TL run parallel to the existing earthen rural road. However, some portion passes through the forest area. The nearest settlement along the TL are Devitar, Khimti, Khahare, Chachala, Patidhunga, Namadi, Betali, Kattike, Rasnalu, Those, Priti, Kumukasthali which are from 100m to 600m far from the TL alignment.

Buddhi -Gorusinghe 33kV TL of Kapilbastu District

The proposed Buddhi Chowk-Gorusinghe 33kV TL will be constructed to run the proposed 33/11kV, 6/8MVA Gorusinghe SS of Buddhabhumi Municipality-2, Ghanchaura of Kapilbastu District. The length of 33kV TL is about 3.911km which will be tapped from the existing 33kV TL at Buddhi chowk. The proposed TL passes through 0.8575ha of agricultural land, 0.6183ha of forest and 0.0886ha of barren land. Altogether 1.5644ha of land will be affected by this TL. The nearest settlements along the TL are Pratappur, Beldada, Bhutiaya, Ghanchaura which are from 20m to 500m far from the TL route.

Bastu-Marbhung 33kV TL of Gulmi district

The proposed Bastu-Marbhung 33kV TL will be constructed from existing Bastu SS to run the proposed 33/11kV, 3MVA Marbhung SS of Malika RM-8 of Gulmi District. Total length of this 33kV TL is 8.052km. The TL passes through 2.2566ha of agricultural land, 0.8001ha of forest area, 0.0615ha of sand area and 0.1026ha of water body. About 0.8001ha of the forest land within the RoW of the TL alignment is managed by community forest (CF; Bhirmila CF). Altogether 3.2208ha of land will be affected by this TL. The nearest settlement along the TL are Kamalaban, Hulake, Dhanarji bazaar, RangalChaur, chaurasifaat, Arjephulbari, Dhamir Siladi and Kisantari.



Figure 1-1: Project Location Map





Figure 1-2: Google Image of Subproject Sites

1.4 Construction Planning

The implementation of the proposed project comprises the construction of a new six 33kV TLs. The estimated period of the project completion is 18 months.

1.4.1 Preliminary Works

Preliminary works for the proposed project consist of contract award, the detail engineering and design study and mobilization of the contractors. The detail design study will carry out the preparation of longitudinal profiles, geological field test and laboratory testing, etc.

1.4.2 Land

The project requires a total of 39.3868ha of land for pole foundation and RoW clearance of 6 new 33kV TLs. These lands will not be acquired by the project permanently, however, these lands will be affected due to the construction of the subproject.

There are altogether around 2015 number of poles required for 6 new 33kV TL alignments. The land required for each pole foundation is 250 x 250mm which is very minimal. So, the project will not acquire this land, however it will provide direct cash compensation to the landowner for utilizing his/her land for pole foundation. Breakdown of the land requirement and number of poles for 6 new 33kV TL alignments are presented in Table 1-3 and Table 1-4 respectively.

33kV TL alignment takes 4m (2m in each side from center line) RoW according to Electricity Regulation 2051. According to which, the proposed subproject requires 39.374ha of land for RoW clearance. Out of which 22.251ha falls under agriculture land (cultivate +non-cultivated land). Breakdown of the land requirement for RoW clearance of 6 new 33kV TL alignments are presented in Table 1-31-5. There is no any provision from government to compensate for loss of crops under RoW of 33kV TL due to project activities. However, the project will provide cash compensation for the loss of crops and private trees along the TL alignment on the basis of NEA's practices of other 33kV TL project.

				Land	use (ha)	
S.N	Subproject sites	Length (km)	Agricultural Land (ha)	Forest (ha)	Others (Grassland, Barren land Bush, Sand and Water Body) (ha)	Total
1	New Khimti-Doramba TL	20.09	4.4708	2.4689	1.0963	8.036
2	New Khimti-Bamti TL	35.267	8.675	3.5332	1.8986	14.1068
3	Khurkot TL	1.647	0.269	0.3812	0.0083	0.6588
4	Sindhuli-Lampantar TL	29.5	5.4811	5.2888	1.0301	11.8
5	Gorusinghe TL	3.911	0.9935	0.4579	0.113	1.5644
6 Bastu-Marbhung TL		8.052	2.2566	0.8001	0.1641	3.2208
	Total	98.467	22.1463	12.9301	4.3104	39.3868

Table 1-3: Breakdown of total land required for the sub-project (Poles+RoW)

Source: SIDP

		Number of Poles						
S.N	Subproject sites	Agricultural Land	Forest	Others (Grassland, Barren land, Bush and sand)	Total			
1	New khimti-Doramba TL	226	125	55	406			
2	New Khimti-Bamti TL	433	177	93	703			
3	Khurkot TL	16	24	-	40			
4	Sindhuli-Lampantar TL	290	280	46	616			
5	Gorusinghe TL	53	25	5	83			
6	Bastu-Marbhung TL	122	45	-	167			
	Total	1140	576	199	2015			

Table 1-4: Breakdown of the number of poles required for sub-project

Source: SIDP

Table 1-5: Break	down of th	ne land	require	d for th	e RoW o	nly	
				1 21	aduca (h	2)	

			Landuse (ha)					
S.N.	Subproject sites	Length (km)	Agricultural Land (ha)	Forest (ha)	Others (Grassland, Barren land Bush, Sand and Water Body) (ha)	Total		
1	New khimti-Doramba TL	20.09	4.4694	2.4681	1.0959	8.0334		
2	New Khimti-Bamti TL	35.267	8.6723	3.5321	1.898	14.1024		
3	Khurkot TL	1.647	0.2692	0.381	0.0083	0.6585		
4	Sindhuli-Lampantar TL	29.5	5.4793	5.287	1.0298	11.7961		
5	Gorusinghe TL	3.911	0.9932	0.4577	0.113	1.5639		
6 Bastu-Marbhung TL		8.052	2.2558	0.7998	0.1641	3.2197		
	Total	98.467	22.1392	12.9257	4.3091	39.374		

1.4.3 Requirement of Workforce

During the construction stages of the TL project, altogether approximately 45 people will be employed in each site for construction activities and transportation of materials including 15 unskilled, 20 semi-skilled and 10 skilled human resources. The workforce will be used for entire construction period.

1.4.4 Materials

The main materials required for construction works related with theTL will be: Steel Tubular Poles, ACSR Conductors, Disc & Pin Insulators with hardware, Pole accessories, Stay sets and other essential materials as per site requirements. Such materials will be procured by the contractor in turnkey basis before construction work starts. And other ancillary materials will be sand, cement and aggregate for TL pole foundation construction and safety measures where applicable as per site condition.

2 EXISTING ENVIRONMENTAL AND SOCIAL SETTINGS

This project includes the construction of 6 new TL alignment located in four districts i.e., New Khimti-Doramba and New Khimti-Bamti 33kV TL in Ramechhap district, Khurkot 33kV TL, Sindhuli-Lampantar 33kV TL in Sindhuli district, Buddhi -GorusingheTL in Kapilbastu district, and Bastu-Marbhung 33kV TL in Gulmi district. For the study of existing environmental and social settings, the study area is defined as the area of TL alignment. The settlement area, agricultural land, forests or other vegetation and places having built up infrastructures or facilities that falls under RoW of TL alignment are under the scope of the study. The RoW of 33kV TL is 4m (2m in each side from central line) as defined by Electricity Regulation, 2051. Any built-up infrastructures or settlement area, forest area falls under this area is defined as highly impacted area.

2.1 Environmental Baseline

2.1.1 Physical Environment

The topography, land use, climatic condition, geomorphology and geology, air and noise condition, watershed and drainage pattern that shall be influenced due to the construction of this project has been discussed in physical environment. The detail of the physical environment of five sub-project area are given the table below.

S.N	Subproject	Description
	sites	
1	New khimti- Doramba TL	 The altitudinal variation along proposed TL alignment is from 655masl to 2165masl; Temperate, Sub-tropical and Upper Tropical climate prevail along the TL, influenced by monsoon rains from June to September and dry weather from October to May. Absolute extreme maximum and minimum temperature prevail in Ramechhap district are 36.5°C in May and 6.2°C in January respectively; Located in Lesser Himalayan zone which consists of rocks such as schist, phylite, gneiss, quartzite, granite, limestone etc. The TL alignment consists of colluvial soil; The subproject area is apparently clean in terms of pollution level on air and noise as the subproject lies in rural area. The subproject area is not industrialized, so the only source of air and noise pollution is vehicular movement along the earthen road. Biomass burning for cooking contributes little pollutants to the ambient air; The main stream which drains the subproject area is Tamakhoshi River; Land restricted for the TL for pole foundation and RoW clearance is about 8.036ha which includes agricultural land, forest, grassland, bush and barren land.
2	New Khimti- Bamti TL	 The altitudinal variation along proposed TL alignment is from 655masl to 3011masl; Temperate, Sub-tropical and Upper Tropical climatic prevail along the TL, influenced by monsoon rains from June to September and dry weather from October to May. Absolute extreme maximum and minimum temperature prevail in Ramechhap district are 36.5°C in May and 6.2°C in January respectively; Traverses Higher Himalayan zone and Lesser Himalayan zone. Higher Himalayan zone consists of rocks such as gneiss, schists and marbles whereas Lesser Himalayan zone consists of rocks such as schist, phylite, gneiss, quartzite, granite, limestone etc.

Table 2-1: Summary of Physical Environment

S.N	Subproject	Description				
	sites					
		 The subproject area is apparently clean in terms of pollution level on air and noise as the subproject lies in rural area. The subproject area is not industrialized, so the only source of air pollution is from dust, smoke generated by vehicular movement along the earthen road. Biomass burning for cooking contributes little pollutants to the ambient air. The main source of noise pollution in the subproject area is the vehicular movement along the earthen road and paved road. Others source of noise in the area relates to the anthropogenic activities of rural population such as talking playing radio television, barking of dogs, calls of bird and animals and whispering of winds. In general the noise level in the area is near to the natural state. The main stream which drains the subproject area is Khimti River; Land restricted for the TL for pole foundation and RoW clearance is about 14.1068ha which includes agricultural land, forest, grassland, sand and water body. The major river crossing along the TL alignment is Tamakoshi River and Khimti River by one time each. 				
3	Khurkot TL	 The altitudinal variation along proposed TL alignment is from 674masl to 888masl; Upper Tropical climate prevail along the TL, influenced by monsoon rains from June to September and dry weather from October to May. Absolute extreme maximum and minimum temperature prevail in Sindhuli district are 32.5°C in April and 7.1°C in January respectively; Located in Lesser Himalayan zone which consists of rocks such as schist, phylite, gneiss, quartzite, granite, limestone; The subproject area is not industrialized, so the only source of air and noise pollution is due to vehicular movement along the BP Highway. Combustion emission by vehicles contaminates ambient air. The overall status of air and noise quality found to be within the acceptable limit; The rivulet which drains the sub-project area is Adherikhola; Land restricted for the TL for pole foundation and RoW clearance is about 0.6588ha which includes forest, acricultural land and sand. 				
4	Sindhuli- Lampantar TL	 The altitudinal variation along proposed TL alignment is from 408masl to 728masl; Upper Tropical climate prevail along the TL, influenced by monsoon rains from June to September and dry weather from October to May. Absolute extreme maximum and minimum temperature prevail in Sindhuli district are 32.5°C in April and 7.1°C in January respectively; The sub-project area is apparently clean in terms of pollution level on air and noise as the sub-project lies in rural area. The sub-project site is not industrialized, so the only source of air pollution is from dust, smoke generated by vehicular movement along the earthen road. Biomass burning for cooking contributes little pollutants to the ambient air; The main source of noise pollution in the sub-project area is the vehicular movement along the earthen road. Others source of noise in the area relates to the anthropogenic activities of rural population such as talking playing radio television, barking of dogs, calls of bird and animals and whispering of winds. In general the noise level in the area is near to the natural state; The main stream which drains the sub-project area is Chadaha khola; 				

S.N	Subproject	Description					
	sites						
		• Land restricted for the TL for pole foundation and RoW clearance is about 11.8ha					
		which includes agricultural land, forest, sand and waterbody.					
		• The altitudinal variation along proposed TL alignment is from 119masl to 127masl;					
		Lower Tropical climate prevail along the TL, influenced by monsoon rains from					
		June to September and dry weather from October to May. Absolute extreme					
		maximum and minimum temperature prevail in Kapilbastu district are 42.7°C in					
		May and 5.4°C in January respectively;					
		• Located in Terai consisting of old and new alluvium, both of which constitute as					
		alluvial deposits mainly of sand, clay, silt, gravels and coarse fragments;					
		• The subproject area is apparently clean in terms of pollution level on air and noise					
	Buddhi-	as the sub-project lies in rural area. The subproject site is not industrialized, so the					
5	Gorusinghe	only source of air pollution is from dust, smoke generated by vehicular movement					
0	TL	along the earthen road. Biomass burning for cooking contributes little pollutants to					
		the ambient air;					
		• The main source of noise pollution in the sub-project area is the venicular					
		the enthreneganic activities of rural period source of hoise in the area relates to					
		television barking of dogs, calls of hird and animals and whispering of winds. In					
		deneral the noise level in the area is near to the natural state.					
		 The main stream which drains the subproject area is Belwa Gurudwa Nala: 					
		 Land restricted for the TL for pole foundation and RoW clearance is about 					
		1.5644ha which includes agricultural land, forest and barren land.					
		The altitudinal variation along proposed TL alignment is from 914masl to					
		1295masl;					
		• Sub-tropical climate, influenced by monsoon rains from June to September and					
		dry weather from October to May. Absolute extreme maximum and minimum					
		temperature prevail in Gulmi district are 31.8°C in May and -2°C in February					
		respectively;					
		• Located in Lesser Himalayan zone which consists of rocks such as schist, phylite,					
		gneiss, quartzite, granite, limestone;					
		• The subproject area is apparently clean in terms of pollution level on air and noise					
	Bastu-	as the subproject lies in rural area. The subproject area is not industrialized, so					
6	Marbhung	the only source of air pollution is from dust, smoke generated by vehicular					
	TL	movement along the earthen road.					
		• The main source of noise pollution in the subproject area is the vehicular					
		movement along the earthen road. Others source of noise in the area relates to					
		the anthropogenic activities of rural population such as talking playing radio					
		television, parking or dogs, calls or pild and animals and whispering of Winds. In					
		The main stream which drains the sub-project area is Chhaldikhola.					
		 The main stream which trains the sub-project died is childukhold, Land restricted for the TL for pole foundation and PoW clearance is chaut. 					
		• Land resulcted for the TL for pole foundation and Row clearance is about 3.2208ha which includes agricultural land forest sand and water body.					
		 The major river crossing along the TL alignment is Chhaldi khola by one time. 					
		 Land restricted for the TL for pole foundation and RoW clearance is about 3.2208ha which includes agricultural land, forest, sand and water body. The major river crossing along the TL alignment is Chhaldi khola by one time. 					

2.1.2 Biological Environment

Vegetation and forest resources, mammals and birds and rare and protected species of flora and fauna found in the subproject area are studied in biological environment. The summary of the biological environment of the subproject area is given the tables below.

S.N	Subproject sites	Description
1	New Khimti-	A total of 6.18km of TL alignment passes through forest land.
	Doramba TL	Major community forests (CF) along the TL alignment are Kakling CF,
		Haleshwor CF, LukuwaSurkey CF, Sallaghari CF.
		Major tree species found are Gurans, Chilaune, Lankuri, Kafal, Kutmero etc.
		Major wild animals are Mriga, Dumsi, Jackal, Kharayo and Langur.
		The area does not lie within protected area (national park, wildlife reserve or
		conservation area).
2	New Khimti-	A total of 8.83km of TL alignment passes through forest land.
	BamtiTL	Major CF along the TL alignment are Dhadesisneri patal CF, Mahavhirdarkha
		CF, Dhodkakharka CF, Burke CF, Bhangehodumpa CF, Dikidabresetovhir
		CF, Jalkali CF, Ranipokhari CF, Ramite CF, KhahareHaluwa CF.
		Major tree species found in the CFs are Uttis, Salla, Khotesalla.
		Major wild animals are Mriga, Dumsi, Jackal, Chituwa and Kharayo.
		The area does not lie within protected area (national park, wildlife reserve or
		conservation area).
3	KhurkotTL	A total of 0.95km of TL alignment passes through forest land.
		Panchakanya CF is affected by the project.
		Major tree species found in the CFs are Salla and Sal.
		Major wild animals are Mriga, Chituwa, Badhar and Goral.
		The area does not lie within protected area (national park, wildlife reserve or
	<u> </u>	conservation area).
4	Sindhuli-	A total of 13.2km of TL alignment passes through forest land.
	Lampantar I L	As reported by locals, CF along the route are Jwalamukhi CF, JanaShakti
		CF, Jalakanya CF, Janajyoli CF, Budhunaknola, Kunueshwon CF, Shivalaya
		(Survedava CE)
		(Suryoudya CF). Major tree species found in the CEs are Sal. Chilaune. Sai. Bhalave etc.
		Major wild animals are Mrida, Badhar
5	Buddhi-	A total of 1 54km of TL alignment passes through forest land
5	GorusingheTl	lanamukhi CE and Jay Mahalaxmi CE along with Government Forest are
	Gordsinghere	potentially affected forests
		Major tree species found in the CEs are Sal. Chilaune. Sai. Barro and Harro
		Major wild animals are Mriga and Badhar
		The area does not lie within protected area (national park, wildlife reserve or
		conservation area).
6	Bastu-Marbhung	A total of 2km of TL alignment passes through forest land.
	TL	Potentially affected CFs along the alignment are Vhirmila Jamunepata CF
		and Bhalkhada CF.
		Major tree species found in the CFs are Paiyun, Salla, Khari and Naspati.
		Major wild animals are Ghoral, Jackal, Langur.
		The area does not lie within protected area (national park, wildlife reserve or
		conservation area).

Table 2-2: Detail of the biological environment of the subproject sites.

Source: Field Visit, 2018

Table 2-3: Detail of the n	najor CFs, Major	Tree Species, Wildlife an	d NTFPs of Subproject Area
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S.N.	Subproject	Major CFs along	Major Tree Species	Wildlife (mammals and birds)	NTFPs
	sites	TL alignment			
1	New Khimti- Doramba TL	Kakling CF, Haleshwor CF, LukuwaSurkey CF, Sallaghari CF.	Gurans (Rhododendron spp.), Utis (Alnusnepalensis), Chilaune (Schimawallichii), Lankuri (Fraxinusfloribunda), Kafal (Myricaesculenta), Paiyun (Prunus cerasoides), Dudhilo (Ficusneriifolia), Kutmero	Mammals:Mriga(Muntiacusmuntjak),Dumsi(Hystrixindica),Jackal(Canisaureus),Kharayo(Lepusnigricollis),Badhar(Macacamulatta),Langur(Semnopithecusentellus),Salak(Manis spp.)Birds:Kalij(Lephuraleucomelanos)	Kiwi, Alaichii, Chiraito, Pakhanbed, Bojho, Sungava, Jatamashi, Nagbeli etc.
2	New Khimti- Bamti TL	Dhadesisneripatal CF, Mahavhirdarkha CF, Dhodkakharka CF, Burke CF, Bhangehodumpa CF, Dikidabresetovhir CF, Jalkali CF, Ranipokhari CF, Ramite CF, KhahareHaluwa CF.	Uttis (<i>Alnusnepalensis</i>), Salla viz. KhoteSalla, BhangeSalla, ThingreSalla, PatuleSalla, Khasru (<i>Quercus</i> spp.), Dudhilo (<i>Ficusneriifolia</i>), Banjh (<i>Quercus</i> spp.), Nimaro (<i>Ficusauriculata</i>)	Mammals:Mriga(Muntiacusmuntjak), Jackal (Canisaureus),Chituwa (Pantherapardus),Kharayo (Lepusnigricollis),Thar (Hemitragus spp.),Bandhel (Sus scrofa),Badhar(Macaca mulatta),Bat(Pteropusgiganteus) etc.Birds:Birds:Kalij(Lephuraleucomelanos),Dhukur(Streptopeliachinensis),Sparrow(Passer domesticus),Kaag(Corvussplendens),Gauthali(Hirundo spp.) etc.Herpetofauna:Muse sarpa,Andhosarpa,Panisarpa andvarious types of lizards	Kiwi, Aru, Khurpani, Naspati, Junar, Lokta, LauthSalla, ChiraitoTintalle etc.

Existing Environmental and Social Settings

S.N.	Subproject	Major CFs along	Major Tree Species	Wildlife (mammals and birds)	NTFPs
	sites	TL alignment			
3	Khurkot TL	Panchakanya CF	Salla (Pinusroxburghii)	Mammals: Mriga	chiraito (Swertia spp.), Kurilo
			and Sal (Shorearobusta).	(<i>Muntiacusmuntjak</i>), Chituwa	(Asparagus racemosus), Mango
				(<i>Panthera pardus</i>), Badhar	(Mangiferaindica), Tuni
				(Macaca mulatta), Goral	(Toonaciliata), Banana (Musa spp.)
				(Naemorhedus goral)	etc.
				Birds: Kafalpakyo	
				(Cuculusmicropterus), Mayur	
				(<i>Pavocristatus</i>), Kalij	
				(Lephuraleucomelanos)	
4	Sindhuli-	Jwalamukhi CF,	Sal (Shorearobusta),	Mammals: Mriga	chiraito (Swertia spp.), Kurilo
	Lampantar TL	JanaShakti CF,	Chilaune	(<i>Muntiacusmuntjak</i>), Badhar	(Asparagus racemosus), Mango
		Jalakanya CF,	(Schimawallichii), Saj	(Macaca mulatta)	(Mangiferaindica), Banana (Musa
		Janajyoti CF,	(<i>Terminaliaspp.</i>), Barro		spp.) etc.
		Budhunakhola,	(<i>Terminaliabellirica</i>), Harro	Birds:	
		Kundeshwori CF,	(Terminaliachebula),	Kalıj(<i>Lephuraleucomelanos</i>),	
		Shivalaya CF,	Bhalayo	Dnukur (Streptopeliachinensis),	
		Janajagaran CF,	(Semecarpusanacardium)	Sparrow (Passer domesticus),	
		Goresidana CF,	, Botdnayero	Kaag (Corvusspiendens) etc.	
		Jarayotar CF,	(Lagerstroemia parvitiora),		
		Pachrang CF	Badanar		
		(Suryodaya CF).	(Antocarpusiakoocha),		
			(Artooorpuolokoooho)		
			(Artocarpusiakoucha), Bukh Katabar (Artocarpus		
			integra) etc		
5	Buddhi-	Janamukhi CE and	Sal (Shorearobusta)	Mammals: Chituwa (Panthera	
5	Gorusinghe	JavMahalaxmi CF	Harro (Terminalia	pardus) Nilgain () Bandel (Sus	
	TI	ouymanalaxiiii Or	chebula) Barro	scrofa)	
			(Terminalia bellirica)	(Semnopithecusentellus) Bandar	
			Amala	(Macacamulatta), Jackal (Canis	
			(Phyllanthusemblica).	aureus) etc.	
			Sisau (<i>Dalbergia sissoo</i>).	Birds: Suga	
			Saaj (<i>Terminalia</i> spp.),	(Psittaculacyanocephala),	
			Botdhayero		

Existing Environmental and Social Settings

S.N.	Subproject	Maior CFs along	Major Tree Species	Wildlife (mammals and birds)	NTFPs
	sites	TL alignment			
6	Bastu- Marbhung TL	Vhirmila Jamunepata CF and Bhalkhada CF.	(Lagerstroemia parviflora), Khayer (Acacia catechu), Teak (Tectonagrandis) and Masala (Eucalyptus spp.) etc. Paiyun, Salla, Khari, Naspati.	Dhukur(Streptopeliachinensis), Koili(Surniculuslugubris) etc. Herpetofauna: Common lizard (Calotesspp.), Krait (Bungarusspp.), Hareu (Trimeresurusspp.) etc. Mammals: Ghoral (Naemorhedus goral), Jackal (Canis aureus), Langur (Semnopithecusentellus), Malsapro (Martes flavigulia) etc. Birds: Dhukur (Streptopeliachinensis), Sparrow (Passer domesticus), Kaag (Convussplendens) Pigeop	timur, chiraito etc.
				(Columbia livia) etc.	

Source: Field Visit, 2018

2.2 Socio-economic and Cultural Environment

The subproject sites of proposed SIDP include 7 rural municipalities (RMs) and two municipality of four districts of Nepal. The detail of the locations of the proposed 33kV TL are given in the tables below.

S.N.	Subproject Sites	District	Project RM/Municipality*	Previous project area VDCs/ Municipality*
1	New Khimti-		Manthali*	Phulasi, Chanakhu and Puranagau
	Doramba TL		Doramba RM	Dadhuwa and Doramba
		Ramechhap	Umakunda RM	BamtiBhandar, Kubukasthali and Pritee
2	New Khimti- Bamti TL		Gokulganga RM	Those, Rasnalu, Betali, Namadi and Farpu
			Manthali*	Gelu
3	Khurkot TL		Golanjor RM	Bhimeshwor
			Kamala mai *	Kamala mai* and
_	Sindhuli-	Sindhuli		Ranichuri
4	Lampangtar TL			Bhimsthan,
			Tinpatan RM	Jarayotar and
				Lampantar
5	Buddhi- Gorusinghe TL alignment	Kapilbastu	Buddhabhumi*	Buddhabatika
6	Bastu-Marbhung	Gulmi	Dhurkot RM	Bastu, DhurkotRajasthal and Wagla
			Malika RM	Dhamir and Marbhung

Table 2-4: Detail of the location of the proposed 33kV 1	Table 2-4:	Detail of	the locati	on of the	proposed	33kV TL
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Note: *- municipality

The total area of the project area (Wards) is 736.99sq.km. According to Central Bureau of Statistics (CBS) 2011, the total population of project area is 119,065 with 55,038 male and 64,027 female which occupies 0.45% of the total population of the country (26,494,504). There are diverse ethnic caste groups residing in the subproject wards along with indigenous caste groups; Magar, Tamang, Sherpa, Muslim, Tharu, Chaudhary and others and dalit caste groups Kami and Sarki. The detail is given in Table 2-5.

The summary of the socio-economic and cultural baseline of the subproject sites is presented in Table 2-4, 2-5, 2-6 and 2-7.

S. Subproject		RM/Mun*	Ward	Area	ННе	Population			Рор.	Caste/	
N.	sites	Rivi/iviun	no	(sq.km)	ппъ	Total	М	F	IVI/F	Density	Ethnic group
4	New Khimti-	Manthali*	9,10,1 3,14	48.13	2395	11107	4926	6181	79.70	231	Chhetri, Brahmin, Majhi, Janajati and dalit.
1	Doramba TL	Doramba RM	1,2	49.40	1810	8003	3643	4360	83.56	162	Tamang, Newar, Magar, Thami and Pahari.
		Manthali*	12,13	7.85	590	2643	1135	1508	75.28	337	Magar, Brahmin, Janajati and dalit.
		Likhu RM	6	21.96	968	4278	1951	2327	83.84	195	Chhetri, Newar, Tamang, Magar, Sunuwar.
2	New Khimti- Bamti TL	Gokulga nga RM	2,3,4,5 ,6	120.79	3861	17429	8070	9359	86.23	144	Chhetri, Tamang, Newar, Magar,
		Umakunda RM	2,3,4	62.34	1873	8679	4020	4659	86.27	139	Chhetri, Rai, Sherpa, Tamang and dalit.
3	Khurkot TL	Golanjor RM	5,7	39.38	1007	5119	2486	2633	94.42	130	Chhetri, Rai, Sherpa, Tamang and dalit.
4	Sindhuli-	Kamala mai*	7, 11, 12	110.26	3042	14886	7002	7884	88.81	135	Magar, Tamang, Newar, Brahmin, Chhetri and dalit
4	TL	Tinpatan RM	1,2,3,5 ,10	132.97	3007	16020	7762	8258	93.99	120	Tamang, Brahmin, Chhetri, and dalit.
5	Buddhi- Gorusinghe TL	Buddha bhumi*	1,2,4	107.98	1023	20919	9796	11123	88.08	194	Chaudhari, Tharu, Brahmin, Chhetri and dalit.
6	Bastu- Marbhung	Malika RM	7,8	27.94	1651	74.9	3276	4133	79.26	265	Chhetri, Brahmin, dalit (Sarki and kami).
	TL	Dhurkot RM	5,6,7	37.80	2231	9494	4057	5437	74.62	251	Chhetri, Brahmin, dalit (Sarki and kami)
			Total	736.99	21,899	119,065	55,038	64,027			

Table 2-5: Ward level Social Baseline of the Subproject Sites

Source: CBS 2011

Note: Mun*= Municipality, HH= Household, M= Male, F= Female, M/F= Male/Female ratio, *=Area in Km², **= Persons/km²

Accessibility:

All the subproject sites are accessible by road round the year. And the construction work will not be affected by the condition of the existing roads. The detail of the access roads to the subproject sites is given in Table.2-6.

	Table 2-0. Detail of the access roads to the sub-project sites									
S.N.	Subproject Sites	Name of the access road to	Remarks							
		subproject sites								
1	New Khimti-Doramba TL	Mulkot-Sitkha-Doramba Khimti-Kukhureaahal-Daduwa-Doramba	1 motorable road from north region (gravel) and one from western region (earthen).							
2	New Khimti-Bamti TL	Chuchure-Deurali-Bamti One earthen road besides the SS site	The site is 700m far from Bamtibuspark.							
3	Sindhuli-Lampangtar TL	Sindhuli-Bhimsthan-Chakmake- BaunTilpung road	The site is beside the road							
4	Khurkot TL	B.P. highway (Banepa-Bardibas road)								
5	Buddhi-Gorusinghe TL	East-West highway Tikar-Buddhi-Bijgauri earthen road	About 4500m south from the site The road goes beside the SS site.							
6	Bastu-Marbhung TL	Tamghas-Simaltari-Chaurasi- Purkotdaha road	The site is beside the road.							

Table 2-6: Detail of the access roads to the sub-project sites

Source: Field Survey, 2018

Settlements:

There are altogether 1,628 households in the nearby settlements of subproject sites. All settlements have mixed social groups comprising of different indigenous people, Dalits and Brahmin/Chhetries.

S.N	Subproject	Distance from	Name of the	Total	Community Characteristics/ Major	
	Site	Nearest	Nearest	HHs	IP Groups	
		Settlement	Settlements			
		200m	Gumba Tole,	20	Majority of Tamang and Dalit	
			Ghyangdada	30	community	
		350m	Bhirdada	25	Tamang Community	
4	New Khimti-		Barkhopa,	10	Tamang	
I	Doramba TL		Nigalbasa	12		
			Daduwa, Baluwa	34	Tamang	
			KukhureAhal	20	Tamang	
			Pokhari dada	70	Tamang	
		700m		100	Majority of Chhetri, Jananati and	
		70011		bazaar	100	Dalit.
		150m	Singau	20	Sherpa community	
	Now Khimti		Sisneri	35		
2	Bomti Tl	200m	Preeti	55		
		1.4km	Those	70		
		130m	Kattike	40	Chhetri, Brahmin and Sunuwar	
		270m	Chachala	65	Sharki and Newar	
		170m	Khahare	80	Chhetri	
3	Khurkot Tl	150m	Mathillo Bara	14	Dalit, Newar, Chhetri and Magar	
3		15011	Matrillo Dara	14	community.	
	Sindhuli	150m	MathilloPachran	04	Magar, Brahmin and dalit	
4	Lampantar TI	13011	g	54	community	
			Birutar			

Table 2-7: Detail of the nearest settlement of the subproject sites

		200m	Shakhamadi	285	Brahmin, Chhetri, Magar, Newar and Majhi
			Pahire	25	
			Chautara	37	
			Katere	15	
		90m	Bhimsthan	67	
		100m	Jogekhola	15	Magar, Tamang, Dalit
	Buddhi- Gorusinghe TL	1500m	Ghanchaura	500	Tharu, Magar, Gurung, Brahmin,
5			village	500	Chhetri
		350m	Pratappur village	100	Chaudhary, Brahmin and Chhetri.
		1.5km	Bwase	10	Chhetri, Brahmin, Sarki and Kami.
			Siladi	9	
	Bootu		Fulbari	30	
6	Marbhung Tl		Chaurasi	30	
			RamgalChaur	20	Kumal
			Dhanarje	15	
			Hulake	10	

Source: Field Survey, 2018

Educational Institutions, Health Services, Market centers and other Social Infrastructures:

There are some educational institutions, market center and other social infrastructures near the subproject sites (within 100m to 1km). The detail is given in Table 2-8.

S.N.	Subproject	Distance	Electric	Educational	Religious	Market	Others
	sites		Lines	Institution	Sites		
1	New Khimti- Doramba TL alignment	70m	-	-	Mane	-	-
	Sindhuli-	300m	-	Saraswoti Secondary school, Shakhamadi	-	-	-
2	LampantarTL alignment	350m	-	-	Shiv Temple, Ratamate	-	Sindhuli- Bhimsthan- BaunTilpung road.
3	Buddhi- GorusingheTL alignment	350m	-	Saraswoti Adarsha Primary School, Ghanchaura	Shiv Temple, Durga Temple, Ghanchaura	-	Tikar buddhi- Bijgauri road

Table 2-8: Built up Infrastructures around the sub-project sites

Source: Field Survey, 2018

3 ASSESSMENT OF IMPACTS AND MITIGATION MEASURES

The SIDP is classified as category B on environmental ground due to limited adverse environmental and social impacts which are site specific, largely reversible and can be readily addressed through mitigation measures. The subproject sites do not locate in a sensitive ecosystem, and has avoided areas of historical and cultural significance. The land to be used for the SSs has already been acquired by NEA and there is no issue of encroachment. The main impacts of TLs are associated with the clearing of shrub vegetation and leveling the land, RoW land in agricultural and forest area, waste management and management of labor camps at the sites. Moreover, most of the associated impacts are limited to the construction phase and are temporary in nature.

3.1 Environmental Impacts (Physical and Biological)

The environmental impacts include physical and biological impacts on the existing environment due to the construction of the subprojects during construction and operation phase. The adverse or negative impacts related to social issues and the potential mitigation measures required are presented in Table 3-1.

S.N.	Subproject	Potential	C/O	Impacts	Mitigation Measures
	Sites	Issues	Phase		
Phys	ical Issues				
1	All subproject sites	Change in Landuse	С	The land use changes due to the erection of poles and clearance along RoW of the TL in the existing land. A total of 39.3868ha land in RoW along RoW of six TLs will be affected. Breakdown of land required for all six TLs are given in Table 1-3.	The camp sites are proposed in substation area and barren land and temporary facilities will be rehabilitated to original status to minimize the land use impacts.
			0	erection of any type of public and private structures except for plantation of dwarf trees species.	cultivation.
2	All subproject sites	Air Quality	С	The construction activities consist of RoW clearance, excavation work, concreting etc. These activities will generate dust in the surrounding area of project sites. Apart from these activities, movement of transporting vehicles carrying the construction materials along earthen road will generate fugitive as well as combustion emissions and will cause temporary impact on air quality and thus may cause problem on health of construction workers and local people living near to the construction sites. Open burning of solid wastes from labour camps and use of firewood as cooking fuel will also pollute surrounding air.	 Water will be sprayed through tanker on the earthen road to reduce the dust problem. Regular inspection and maintenance of construction vehicles and machinery will be done. Helmets and air mask will be provided to labor force working in areas susceptible to dust pollution. Open burning of solid wastes at workers camps and work sites will be prohibited. Clean fuel other than firewood as cooking fuel will be provided to the workers There is no significant impact on air quality during
			0	operation phase.	the operation and maintenance period. So no mitigation measure is required.
3	All subproject sites	Noise Quality	С	Noise will be generated due to construction vehicles and equipment. The emission of noise and vibrations are inevitable during construction though only	 Maintenance of all vehicles and construction machinery will be done. Earmuffs will be provided to the workers as per the requirement.

S.N.	Subproject	Potential	C/O	Impacts	Mitigation Measures
	Sites	Issues	Phase		
				insignificant interruption in noise quality has been expected for the 33kV TL project.	 The construction work will be limited to daytime as far as possible. Inform local neighborhood community before construction activities start about planned civil works how they could be affected by them. Carry out noise construction activities and transports during normal working hours, never at night time or Saturdays
			0	Noise generated during the operational phase will generally result from vehicular movement which is expected to be negligible.	No mitigation required during this phase.
4	All subproject sites	Waste Management	С	The improper disposal of solid waste like cement bags, iron bar and other leftover construction materials and wastes from worker camps might cause sanitary problem to workers involved and local people around the project sites.	 Domestic type solid wastes are biodegradable which will be managed by burying in pit; Recyclable wastes (such as glass, paper, plastic, etc.) will be collected separately to be sent for recycling. Separate waste containers (drums, bins, skips or bags) will be provided for different types of waste; No waste will be disposed along public road or in the surrounding area of project sites; Construction workers will be instructed for proper storage and handling procedures of construction waste and other solid wastes. The contractor will be responsible for the establishment of the waste management system at the construction and camp areas.
			0	The personnel who work during operation period will generate domestic solid waste.	The domestic wastes will primarily consist of organic food waste because this is easily biodegradable and non-hazardous. It will be managed by burying in pits and subsequently covering with soil.

S.N.	Subproject	Potential	C/O	Impacts	Mitigation Measures	
	Sites	Issues	Phase			
Biolo	gical Issues					
1	New Khimti-		С	There will be impact on 2.47ha of forest area with approximate loss of 1482 number of trees (>10cm DBH)	Compensatory plantation in the ratio of 1:25 (37050 seedlings), fencing and take care for 5 years. An estimated amount for this work is NRs 5,526,000 .	
	Doramba TL		0	Only trees which grow under the RoW after some years might need to be cleared. Regular trimming of tall trees will allow growth of shrubs and short trees	-	
2	New Khimti- Bamti TL		С	There will be impact on 3.53ha of forest area with approximate loss of 1588 number of trees (>10cm DBH)	Compensatory plantation in the ratio of 1:25 (39700 seedlings), fencing and take care for 5 years. An estimated amount of NRs 5,844,000 is required for the project	
			0	Only trees which grow under the RoW after some years might need to be cleared. Regular trimming of tall trees will allow growth of shrubs and short trees	-	
3	Khurkot TL	Impact on Forest Area and Standing Trees		С	There will be impact on 0.38ha of forest area with approximate loss of 275 number of trees (>10cm DBH)	Compensatory plantation in the ratio of 1:25 (6875 seedlings), fencing and take care for 5 years. An estimated amount of NRs. 1,905,000 is required for the project
			0	Only trees which grow under the RoW after some years might need to be cleared. Regular trimming of tall trees will allow growth of shrubs and short trees	-	
4	Sindhuli- 4 Lampantar TL		and Standing Trees	and Standing Trees	С	There will be impact on 5.29ha of forest area with approximate loss of 1058 number of trees (>10cm DBH)
			0	Only trees which grow under the RoW after some years might need to be cleared. Regular trimming of tall trees will allow growth of shrubs and short trees	-	
	Buddhi- Gorusinghe TL		С	There will be impact on 0.62ha of forest area with approximate loss of 496 number of trees (>10cm DBH)	Compensatory plantation in the ratio of 1:25 (12400 seedlings), fencing and take care for 5 years. An	

S.N.	Subproject	Potential	C/O	Impacts	Mitigation Measures
	Sites	Issues	Phase		
					estimated amount of NRs 2,568,000 is required for
5					the project.
				Only trees which grow under the RoW after some years	
			0	might need to be cleared. Regular trimming of tall trees	-
				will allow growth of shrubs and short trees.	
					Compensatory plantation in the ratio of 1:25 (16500
	Bastu- Marbhung TL		C	There will be impact on 0.8ha of forest area with	seedlings), fencing and take care for 5 years. An
			Ŭ	approximate loss of 660 number of trees (>10cm DBH)	estimated amount of NRs 3,060,000 is required for
6					the project
				Only trees which grow under the RoW after some years	
			0	might need to be cleared. Regular trimming of tall trees	
				will allow growth of shrubs and short trees.	
					Minimization of habitat loss, compensatory
				Restriction in movement of wild fauna, loss of habitat,	plantation, restriction on hunting and poaching,
	All subproject	Impacts on	С	possibility of hunting and poaching activities by laborers	supply of alternative fuel to workers, restriction on
7	sitos	wildlife		are the potential impacts.	illegal felling of trees, restriction on extraction of
					forest products.
			0	Avian collisions, impacts due to on site/off site	_
			Ŭ	maintenance activities.	

Note: C: Construction Phase; O: Operation Phase

3.2 Social Impacts

The social impacts would not be significant and are mostly restricted to the subproject areas and its immediate surroundings. The project will affect some section of agricultural land for pole foundation and RoW clearance which are discussed below.

Social screening has already been carried out in all sites and no major adverse social impacts are identified during screening. However, the construction works will affect the people of nearby communities in different ways viz. noise, dust, accidents, vibrations as well as issues related to labor management (labor camp, hygiene and sanitation, potential conflict between labor and locals etc.) which should be managed by the project and contractors. The labor camp will be established within the substation area which has already described in Volume I report. The adverse or negative impacts related to social issues and the potential mitigation measures required are presented in Table 3-2.

The project works for TL do not result any kind of physical or economic displacement of the locals. All land areas to be used for pole foundation and TLs are free from squatters and encroachers. Most part of the TL passes through the barren land along the road side. Some portion of the TL passes through the cultivated land causing minor impacts on land, crop/ tree losses as discussed below.

Right of Way Land: The impact on RoW land of TL is the key adverse impact which will affect the local people. The project will require 39.374ha land for RoW clearance for subproject, out of which 22.1392ha is under agricultural land. All the agricultural land are not cultivated. Major parts of it are found barren during the site visits as it is along the road site. Tentative 30% of total i.e. around 6.6418ha of agricultural land is cultivated. And there may be the loss of standing crops during construction period due to project activities. Detail of the agricultural land in each subproject is given in Table 1-5.

The objective of the project is to avoid all the cultivated land as far as possible. If it is unavoidable, preference will be given for the construction of TL during post harvesting or lean agricultural season so that standing crops are not damaged or the damage is minimum. In case of the loss of crops and private trees along the TL alignment due to project activities, the project will provide cash compensation for the loss. The compensation rate will be fixed on the basis of the productivity of crop and economic value of private trees of the area determined by district agriculture office under the leadership of project manager, representative of corresponding ward, and the affected people. The compensation will be given prior to the start of construction activities.

Land for Pole Foundation: The 33 kV TLs require 0.0126ha of land for installation of 2015 numbers of poles in all subproject sites. Out of total, 1140 numbers of poles will be erected on agricultural land. The area for a single pole foundation is 250mm*250mm. Thus, the land requires for a single pole foundation is very minimal (i.e. 0.00001ha), and its impact is also very minimal. The total numbers of poles and the area required for it is presented in the table below.

				A		
			otal Land	Agricultural land		
S.N.	Subproject sites	No. of Area required			Area required	
		Poles	for Poles	NO. OF POIES	for Poles	
1	New khimti-Doramba TL	406	0.0025	226	0.0014	
2	New Khimti-Bamti TL	703	0.0044	433	0.0027	
3	Khurkot TL	40	0.0003	16	0.0001	
4	Sindhuli-Lampantar TL	616	0.0039	290	0.0018	
5	Gorusinghe TL	83	0.0005	53	0.0003	
6	Bastu-Marbhung TL	167	0.001	122	0.0008	
	Total	2015	0.0126	1140	0.0071	

 Table 3-2: Detail of Poles and the area required for its foundation.

The construction works do not lead to other major adverse impacts to the local people, particularly in terms of loss of their properties viz. houses, income, employment or their access to natural resources related to their livelihoods.

Cash Assistance: The project will provide cash compensation for the land required for pole foundation and RoW land. Since, the land requires for a single pole foundation is very minimal, the project will not acquire it rather, it will provide flat amount of cash assistance to the landowner for the loss of land. The cash assistance is estimated to be NRs. 5,000 for each pole foundation. The estimated amount is on the basis of the practices done by funded project of NEA in other 33kV TL and pole. During the construction work, the project will collect all the details of land owners where the exact pole will be erected, and line will be passed. The identified landowner will be compensated with the amount base on the number of poles erected in his/her land. For the compensation, a requisition form will be developed by the project and will distribute to the owner to submit to NEA along with the landownership certificate, citizenship certificate, recommendation letter from the RM/Municipality is also considerable. After receiving the application, the compensation will be provided to the landowner by cash of cheque.

Impacts on Indigenous People: From the field survey, it was found that the settlements near by the subproject sites are characterized by mixed caste groups including indigenous community. During the project construction, if such caste groups will be impacted or the core settlement of such indigenous group will be affected by project activities, then the project will provide some assistance to such groups. The assistant will be in the form of community support program to certain targeted community or logistic or transportation support for taking compensation from project or any others, showing the nature of impact. In addition to this, the project may also provide new opportunities for them in different ways i.e. employment in project works, increased business opportunities around the project areas, transfer of skills etc.

Consultations, Communication and Documentation: The project will do regular consultation and communication with the stakeholders (affected people and ward representatives) before and during construction to inform them about the progress of the project and its impact and also collect their opinions and views regarding the project. Records of consultations will be documented and maintained by the project.

SN	Subproject	Potential	C/O	Impacts	Mitigation Measures		
0.11.	Sites	Issues	Phase	Impaoto			
Comr	non Issues		-				
1	All subproject sites:	Constructio n related transportati on and hauling of materials	С	Increase in traffic flow from the transportation of construction materials. There may be the transportation related impacts such as dust and gas emission, chances of road accidents and also there may be the issues of pedestrian safety in the nearby settlements of subproject sites.	 Avoid overloading trucks and cover trucks to minimize dust pollution and loss of load from trucks during transportation. Use water sprays or covered chutes to reduce dust emission during loading and unloading of materials from barges. Maintain crushing and mixing plants in good working condition so as to reduce emission from the plant. As far as possible, plan truck trips during low traffic hours. Implement safety procedures during transport to reduce the potential for road accidents. Keep traffic signs around the construction sites. 		
2	All subproject sites	Occupation al Health and safety of employees	C	Impact on health and safety of the workers and there may be the occupational injuries to the workers.	 An on-site medical facility and first-aid will be provided for the construction workers. Personal protective equipment (Hard hats, gloves and steel-toed shoes with rubber soles) for workers will be provided, when necessary, to minimize health and safety risks. Education on basic hygienic practices to minimize spread of tropical diseases, including information on methods of transmission and protection will be given. Prohibition of drugs and alcohol use in construction site. Fencing of the construction sites with sign boards required. Implement a system of penalties for violation of rules and regulations. All occupational health and safety requirements are in place on sites in the operation period. Operational Manual and professional training manual will be at all time in the facility. There will be sufficient fund available to carry out periodic maintenance and repairs of equipment. 		
3	All subproject sites	Change in the	0	The construction of the 33kV TL would result in an unmitigable visual impact because it would create a change to the existing	The significant impact of the TL on aesthetic value cannot be mitigated completely.		

Table 3-3: Social Impacts and their Mitigation Measures

e N	Subproject	Potential	C/O	Imposto	Mitigation Magguroa
3.IN.	Sites	Issues	Phase	impacts	Willyation Measures
		aesthetic value		landscape. It would introduce blockage and glare. This may destroy natural beauty. However, the magnitude of the impact is low as the project work will create minimum inconvenience to the public.	
4	All subproject sites	Labor influx and labor camps	C	Increase in the number of labor leads to the issue of health and sanitation of the workers and also the solid waste management produced in the labor camp.	 Since the number of labor will be very small for each subproject site, labor camp will be established within the premises of substation area. The labor camp will be provided with simple dry pit toilet constructed on hard ground and far from water sources. First aid kits will be maintained for preliminary treatment in emergencies. The domestic solid waste generated in the project area will be either buried in designed landfill areas or converted in to compost. Hand pump will be installed in the terai area (Gorusinghe SS) and in hilly area (other SSs), either piped water from nearby community or tanker will be provided to the workers for drinking water purpose.
				destroyed.	
				Specific Issues	
1	All subproject sites	Land, crop and tree loss in private land	С	Altogether 1140 no of poles will be erected in agricultural land. The TLs, with 2m of RoW from the central line, pass through the agricultural land causing restriction in land use i.e. house/building construction, tree plantation.	 Since the area occupied by a single pole is very minimal (i.e. 0.00001ha) the project will not acquire it. Rather, it will provide flat amount of cash assistance to the landowner for the loss of land. The cash assistance is estimated at NRs. 5,000 for each pole foundation. A total of NRs. 5,700,000 has been estimated for such assistance to a total of 1140 no. of pole foundation. The Project will start paying cash assistance prior to the installation of poles. Records of cash assistance paid to the land owners will be documented and maintained properly.

S.N.	Subproject Sites	Potential Issues	C/O Phase	Impacts	Mitigation Measures
			0	No impacts is seen during this phase.	No mitigation measure is required.
			С	Altogether 22.1392ha of TL alignment passes along agricultural land. Among the agricultural land, only 6.6418ha (30% of total) are cultivated. There may be loss of standing crops and some trees during construction period.	Preference will be given for the construction of TL during post harvesting or lean agricultural season so that standing crops are not damaged or the damage is minimum. In case of the loss of crops and private trees along the TL alignment due to project activities, the project will provide cash compensation for the loss. The compensation rate will be fixed on the basis of the productivity of crop and economic value of private trees of the area determined by district agriculture office under the leadership of project manager, representative of corresponding ward, and the affected people.
			0	No impacts is seen during this phase.	No mitigation measure is required.
2	All subproject sites	Structure loss	С	During site visit, there seems no any structures under TL alignment.	If there any structure is found under RoW of TL during construction period, the project will provide compensation to the owner and the structure will be removed. For the compensation, a compensation determination committee (CDC) will be formed under the chairmanship of Chief District Officer (CDO) of the concerned district and include the chairman of affected RMs/municipality, representative of Land revenue office and Project.
3	All subproject sites	Impact on Forest Area and Standing Trees	С	A total of 12.9257ha forest land falls under sub-projects TL alignment. A total of 5559 no. of trees will be cut down during project construction period for RoW clearance.	Compensatory plantation in the ratio of 1:25 (138975 seedlings) with coordination of corresponding CFs, fencing and take care of it for 5 years will be done. An estimated amount for this is NRs 23,157,000.
4	All subproject sites	Indigenous People (IP) and Gender issues	С	Indigenous people and women may likely to be affected adversely.	If such caste groups will be impacted or the core settlement of such indigenous group will be affected by project activities, then the project will provide some assistance to such group. The assistant will be in the form of community support program to certain targeted community or logistic or transportation support for taking compensation from project or any others, showing the nature of impact.

Note: C: Construction Phase; O: Operation Phase

Table 3-4: Cost Estimate for Environmental and Social Impact Mitigation											
		So	cial Mitig	ation		Enviror	nmental Mitigatio	on			
S. N.	Subproject Sites	Total no of Poles	Cost for each pole	Total cost (a)	Total forest area (ha)	No of trees loss	No of Compensatory Plantation	Total cost (b)	Total Cost (a+b)		
1	New Khimti- Doramba TL	226	5,000	1130000	2.47	1482	37050	5,526,000	6,656,000		
2	New Khimti- Bamti TL	433	5,000	2165000	3.53	1588	39700	5,844,000	8,009,000		
3	Khurkot TL	16	5,000	80000	0.38	275	6875	1,905,000	1,985,000		
4	Sindhuli- Lampantar TL	290	5,000	1450000	5.29	1058	26450	4,254,000	5,704,000		
5	Buddhi- Gorusinghe TL	53	5,000	265000	0.48	496	12400	2,568,000	2,798,000		
6	Bastu- Marbhung TL	122	5,000	610000	0.8	660	16500	3,060,000	3,670,000		
	Total	1140		5,700,000	12.93	5559	138,975	23,157,000	28,857,000		

3.3 Environment Mitigation Plan

The identified environmental and social impacts due to project activities and the corresponding mitigation measures as well as the responsibilities are explained in the table below

						Estimated	Institutional Responsibility	
S.N	Issues	Impacts	Mitigation Measures	Location	Timing of Action	Mitigation Cost (NRs)	Implementatio	Super vision
Α.	Common issu	ies for all sub stations:				·	·	
	Change in	Temporary land in RoW will be required for clearance.	The camp sites are proposed in substation area and barren land and temporary facilities will be rehabilitated to original status to minimize the land use impacts.	Subproject Sites	Construction phase.	Project Cost	Contractor	GSEEP/ ESSD
1	Landuse/ Temporary land	The land under the RoW will be restricted for the erection of any type of public and private structures except for plantation of dwarf trees species.	The land under the RoW will not be restricted for the cultivation of crops by the owners as they were doing before the project.	Subproject Sites	Operation phase	-	-	
2	Air Quality	The construction activities such as site clearance, excavation work, cut-fill work for the levelling, concreting and vehicular movement etc. will generate dust in the surrounding area of project sites	Spraying water along earthen road near settlement, maintenance of construction vehicles and helmets and air mask for labor force.	Subproject Sites	Construction phase.	Project Cost	Contractor	GSEEP/ ESSD
3	Noise Quality	Noise generated by construction vehicles degrade noise quality of surrounding area of project sites	Regular inspection and maintenance of construction vehicles and machinery, earmuffs for the workers as per the requirement and limiting the construction work in daytime.	Subproject Sites	Construction phase.	Project Cost	Contractor	GSEEP/ ESSD

Table 3-5: Environmental Impact and Mitigation Matrix

4	Waste management	The improper disposal of solid waste like cement bags, iron bar and other leftover construction materials and wastes from workers might cause sanitary problem to workers involved and local people around the project sites. The personnel who work during operation period will generate domestic solid waste.	Domestic type solid wastes will be managed by burying in pit. Recyclable wastes will be collected separately to be sent for recycling. Drums, bins, skips or bags will be provided for different types of waste collection. Construction workers will be instructed for proper storage and handling procedures of construction waste and other solid wastes. Domestic solid waste will be managed by burying in pits and subsequently covering with soil.	Construction sites and camp site. Subproject sites	Construction phase. Operation phase	Project Cost	Contractor	GSEEP/ ESSD
5	Construction related transportation and hauling of materials	There may be the transportation related impacts such as dust and gas emission, chances of road accidents and also the issues of pedestrian safety.	Use water sprays or covered chutes to reduce dust emission during loading and unloading of materials from barges. Regular inspection and maintenance of construction vehicles to reduce emission impacts As far as possible, plan truck trips during low traffic hours. Implement safety procedures during transport to reduce the potential for road accidents. Keep traffic signs around the construction sites.	Construction site and surround settlement.	Construction phase.	Included in Project Cost	Contractor	NEA/ ESSD
6	Health and Safety	The project activities will have direct impact on health and safety of the workers and there may be the occupational injuries to the construction workers.	An on-site medical facility will be designed to cater for primary health care needs of workers; Personal protective equipment (Hard hats, gloves and steel-toed shoes with rubber soles) for workers will be provided; Education on basic hygienic practices to minimize spread of tropical diseases,	Construction site and surround settlement.	Construction phase.	Included in Project Cost	Contractor	NEA/ ESSD

			Fencing of the construction sites					
7	Change in the aesthetic value	The construction of the TL would result in an unmitigable visual impact because it would create a change to the existing landscape. It would introduce blockage and glare and this may destroy natural beauty.	The significant impact of substations on aesthetic value cannot be mitigated completely.	Subproject sites	Operation phase	-	-	-
9	Labor influx and labor camps	Increase in the number of labor leads to the issue of health and sanitation of the workers and also the solid waste management produced in the labor camp.	Since the number of labor will be very small for each subproject site, labor camp will be established within the premises of substation area. The labor camp will be provided with simple dry pit toilet far from water sources. First aid kits will be maintained for preliminary treatment in emergencies. The domestic solid waste generated in the project area will be either buried in designed landfill areas or converted in to compost. Hand pump will be installed in the terai area (Gorusinghe SS) and in hilly area (other SS sites) either piped water from nearby community or tanker will be provided to the workers for drinking water purpose.	Subproject sites	Construction phase.	Project Cost	Contractor	NEA/ ESSD
В.	Specific issue	2S						
1	Impact on land for pole foundation and RoWland	 Altogether 1140 no. of poles will be erected in agricultural land. 	 Cash assistance/ Compensation for each pole will be provided by the project. The estimated assistance/compensation rate is NRs. 5,000 for each pole 	Subproject sites	Construction phase.	Project cost	GSEEP	NEA/ ESSD

			foundation. A total of NRs.					
			5,700,000 has been estimated					
			for 1140 no of pole foundation.					
			• Preference will be given for the					
			construction of TL during lean					
		• Altogether 55.03km of	season so that standing crops					
		TL alignment passes	will not be damaged or will have					
		along agricultural land.	minimum damage. In case of the					
		There may be loss of	loss of crops along the TL					
		standing crops during	alignment due to project					
		construction period.	activities, the project will provide					
			cash compensation for the loss.					
			The compensation rate will be					
			fixed on the basis of the					
			productivity of the area					
			determined by district					
			agriculture office under the					
			leadership of project manager,					
			representative of corresponding					
			ward, and the affected people.					
			Records of cash					
			assistance/compensation will be					
			documented and maintained					
			properly.					
2	Impact on	A total of 12.93ha forest	Compensatory plantation in the ratio					
	Forest Area	land falls under sub-	of 1:25 (138975 seedlings), fencing					
	and Standing	projects TL alignment. A	and take care for 5 years will be					
	Irees	total of 5559 no of trees	done. An estimated amount for this	Subproject	Construction	Project	00555	NEA/E
		will be cut down during	is NRs 23,157,000.	sites	phase.	Cost	GSEEP	SSD
		project construction						
		period for RoW						
		clearance.						

4 MONITORING AND REPORTING MECHANISM

Monitoring is an essential aspect of environmental and social management plan. An Effective monitoring of the whole project cycle, will assist for the implementation of monitoring plan and coordination of work of the project with concerned stakeholders as well as identify the unexpected problems/outcomes that might come in physical, biological and socio-economical sector and facilitate the correction of those. Land use pattern, settlement, health and safety, infrastructure, implementation of the mitigation measures including payment of cash assistance/ compensation etc. are the key indicators for monitoring.

NEA/ESSD is responsible for regular monitoring and reporting of the implementation of the project. Ministry of Energy, Water Resource and Irrigation (MoEWI), Department of Electricity Development (DoED) and local bodies will also be involved during the monitoring.

The environmental and social monitoring and reporting will be carried out at project impact areas quarterly focusing on outcomes, outputs and implementation progress for each subproject sites.

The experts from ESSD will visit project site at periodic interval for the environmental monitoring of the project and prepare the monitoring report and will submit the quarterly report to project management office (PMO). PMO will be responsible for the distribution of report to the concerned agencies. The detail of monitoring parameters, schedule, method and agencies to be consulted during construction and operation phases for physical, biological and socio-economic and cultural environment is presented in table given below.

4.1 Environmental Monitoring Plan

A monitoring program, required for the project to evaluate the application and effectiveness of mitigation measures, is formulated in three phases.

a. Preconstruction Monitoring

Since the construction work of the project will start immediately, preconstruction monitoring is not required for the proposed SIDP.

b. Construction Monitoring

Impact and compliance monitoring will be conducted during this phase of project development.

Impact Monitoring

Impact monitoring will be carried out to assess actual level of impact due to project construction. The impact monitoring includes:

- monitoring of the impacts of the project on physical, biological and socioeconomic & cultural environment of the area;
- monitoring of the accuracy of the predicted impacts;
- identify the emerging impacts due to project activities or natural process and develop remedial action; and
- monitoring of the effectiveness of mitigation measures.

Compliance Monitoring

The compliance monitoring will be conducted to monitor the compliance of the proposed mitigation measures and monitoring activities. The compliance monitoring will mainly focus on;

- compliance of the tender clause;
- compliance of the mitigation measures including payment of cash assistance/compensation, number of grievances filed and resolved, etc. and compensatory tree plantation ; and
- timely and adequately implementation of Environmental Management Plan.

S.N.	Parameter	Indicators	Method	Location	Schedule
Α	Construction Monitori	ng			
Impac	t Monitoring				
Physic	cal Environment				
1	Air Quality	Dust around the project area	Observation	Settlements near to the TL	Twice in a season
2	Noise Quality	Decibel (dBA) as per GoN Standard	Measurement of noise using sound level meter	Settlements near to the TL	Twice in a season
3	Waste Management	Unpleasant odour and visual impact	Observation	Labor camp/ construction sites	Monthly during construction
4	Landuse	Changes in landuse	Observation	Near poles	Once during construction
5	Construction related transportation and hauling of materials	Use of water spray and placement of hoarding board around the construction sites	Direct observation	Construction area	Construction period
6	Occupational Health and Safety issues including labor camp and, avoid use of child labor	Impacts on health of the workers; No. of accidents; use of personal protective instrument by the workers	Inspection of the construction place; Records of diseases and accidents	Sub-project area (construction sites)	Continuous during construction period
Biolog	ical Environment	•	•		
7	Vegetation Clearance and felling of trees	No of trees felled for RoW clearance	Discussions with Users Group, local people and DFO and Observation of the area and tree counting.	All sub project sites	During construction period
7	Wildlife	Wildlife habitat and clearance	Observation, discussion with local people, keeping records on wildlife, birds and reptiles killed.	All sub project sites	During construction period
Social	Environment				
8	Land loss/RoW land	Area to be occupied by a single pole and cash assistance/compensation payment for pole foundations/ RoW land	Consultation with the affected people, CDC decision, project records	Affected area	During construction
9	Crop/fruit/ tree loss	Actual damage to standing crop or loss of cropping season for particular area and	Observation and discussion with the affected people, contractors and project	All sub project sites (affected area)	Construction period

Table 4-1: Monitoring Plan

S.N.	Parameter	Indicators	Method	Location	Schedule
		compensation payment for crop/fruit/tree losses			
10	Health and Safety	Impacts on health of the workers; No. of accidents	Inspection of the construction place; Records of accidents	All sub project sites	Continuous during construction period
Comp	liance Monitoring	·			
1	Provision of clauses related to environmental and social safeguard mitigation measures in tender document and allocation of adequate budget for implementation of environmental mitigation measures identified in ESMP and monitoring works	Yes/No	Review, inquiry and consultation	Kathmandu Office	Preconstruction phase

Note: E and S issues and Mitigation measures identified in this ESMP will be subject to updated during the project construction period and mitigation measures will be implemented accordingly if any.

4.2 Environment Mitigation and Monitoring Cost

Environment Mitigation Cost

Total mitigation cost for the proposed project is estimated to be **NRs 28,857,000** which is around 4% of the total project cost **(NRs 721,992,830)**.

S.N	Environment Realm	Amount						
1	Biological	23,157,000						
2	Social	5,700,000						
	Total	28,857,000						

Environment Monitoring Cost

The monitoring costs for the proposed project has already estimated in Volume I report. No addition monitoring cost is required for the proposed project.

GSEEP/NEA has prime responsibility for implementing the proposed mitigation measures and NEA/ESSD for the monitoring activities. GSEEP/NEA has an obligation to carry out all these activities along with cost.

5 GRIEVANCE REDRESS MECHANISM (GRM)

Grievance redress mechanism (GRM) must be established to allow project affected families/households (PAFs/HHs), community or other stakeholder to appeal any disagreeable decisions, practices and activities arising from compensation for assets, environmental and community concerns related to project. GRM for any infrastructure project provides an effective approach for complaints and resolution of issues made by the affected community in a reliable way. Considering this, Grievance redress mechanism will be established to allow project affected families/households (PAFs/HHs), community or other stakeholder to make appeal on any disagreeable decisions and practices arising due to project works. GRM provides an effective approach for filing complaints and their resolution effectively and timely. Considering this, a Grievance Redress Cell (GRC) has already been established at project level on 2072/05/11 as required by the project's Environment and Social Management Framework (ESMF).The GRC consists of the following members.

Project Coordinator, Coordinator Project Manager, 33kV DSE & R Component, Member Secretary Officer from Concern Rural Municipality/Municipality, Member Secretary, from Concern Rural Municipality/Municipality, Member

The field level GRC will be formed accordingly with representative from Project, representative from NEA local distribution office and representative from concern ward of RM/Municipality after the commencement of field work in the site. They will collect the grievance from the local people and try to solve the dispute if any accordingly. Till then the project level GRC will look after the grievances, if any. The GRC maintains registration books and files to keep the records of complaints filed by the affected people and community. The GRC seeks to resolve the issues quickly in order to expedite the project works without resorting to expensive and time-consuming legal actions. The budget for setting up the grievance cell has been provided by the PMO itself.

All the grievances or complaints filed at local level will be resolved by the field level GRCs. However, grievances not resolved locally or beyond the capacity of local GRC will be forwarded to the GRC at the center which will be responsible to address them on a timely manner.

6 THE STUDY TEAM

The following personnel were involved during the ESMP of the proposed SIDP:

S.N	Name	Designation/Expertise	Address	Phone No.			
1	Rabindra Pd. Chaudhary	Director (Team Coordinator)					
2	Poonam Pokharel	Asst. Director (Team Leader/Socio-economist)	NEA-ESSD	01-6611580			
3	Nagendra Mulmi	Civil Engineer					
4	Kabita Poudyal	Environmentalist					

Table 6-1: ESMP Team

Annex I Project Related Photographs and Minutes of Consultation Meeting



Picture I: Consultation Meetings at Sub-project Site



Supply and Installation of Distribution Projects (33kV Substation and Lines) NEA, 2018 <u>PRA Checklist</u>

District : Ramechhap Location (area) : Doramba, Land No-2. Village/Tole Doramba Bazar. No. Of Participants : Dote : 2875-01-25

Participant's Profile

S.N.	Name	Caste/ Ethnicity	Main Occupation	Ph. No.	Signature
1	Khadka Bdr, Shrestha.	Let		9851190386	Carta
2	Narayan Shrestha.		4-21-17-121 FIELITAN	985404034, 6	Dura De
3	Rajkumar 11		. म. 12 वीक	9814841010	al
4	Bam Bdr. Tamang		Parinin, sant	9841815093	Die .
5	Prakash Moktan	1.19	युवा किमान	30.013033.	andall
6	Pranisha Tamang.		Jieun		and the
7	Ranjit Moktan.	1.1	AST HOLD	9841255211	1 Sam
8	Amar Moktan.		XIE	984420 2554	
9	Bal Bdr. Shrestlia.			984/10 90511	929
10	Kalpana		arghand	0861570816	Ch=T:
11	Poonan Porchard.	नोर्डती	hisnit	1201212210	P. J.
12	1				₹÷
13	hogh is				



नेपाल विद्युत प्राधिकरण वातावरण तथा सामाजिक अध्ययन विभाग

नेपाल विद्युत प्राधिकरणद्धारा प्रस्तावित ग्रिड सोलार तथा इनर्जि इफिसियन्सि आयोजना अन्तर्गत Supply and Installation of Distribution Projects (33kV Substation and Lines) कार्यान्वयन गर्दा आयोजना प्रभावित क्षेत्रमा पर्न सक्ने वातावरणीय प्रभावहरुका बारेमा ने.वि.प्रा., वातावरण तथा सामाजिक अध्ययन विभाग, भक्तपुरबाट प्रारम्भिक वातावरणीय परिक्षण (IEE)/Enviornment Management Plan प्रतिवेदन तयार गर्ने सिलसिलामा खटिआएका वातावरणीय अध्ययन टोली तथा स्थानियबासी, सरोकारवालाहरु विच निम्न मिति, समय र स्थानमा छलफल गरी निम्नलिखित रायसुभाव संकलन गरियो।

स्थान : जिल्ला : . रामद्राप

गर्ड : २र्म्बाटोल

मिति :.... उपस्थिती

..... समय:.....

क.सं.	नाम थर	पद ∕ पेशा	ठेगाना/संस्था	सम्पर्क नं	हस्ताक्षर
۹.	Mita a size .	HAIM	Jzericia - 2.	98230186.	a
٩.	रवित महत	Pareneil	·. ·.	984983515	Stata.
३.	रन्मम अहत	.u,	··· · ·	9817654501	quiat.
۲.	राज्याल थो-जन	92 44 45	5 6	9843870:481	mon
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φ.	HUMHEN	ह्रम्ह	. J)		10 M 19 1
9.	HANGI HERI	क्षेत्र	رد		
۶.	Zalari MERI	ह्रान्ड	з,	2. 1. 1	
٩.	YEOSTE HERI	क्रमन	۰,		
90.	HET, HERI	हमन्द्र	1,		

रायसुभाव :

flat Richt 311Kan 211321 · Raugetsi ide NUM गहरांग हरे र अन्य दिकामका कार्य पाने आउमा आउने KILAIN HALL HAURTHE



नेपाल विद्युत प्राधिकरण वातावरण तथा सामाजिक अध्ययन विभाग

नेपाल विद्युत प्राधिकरणद्धारा प्रस्तावित ग्रिड सोलार तथा इनर्जि इफिसियन्सि आयोजना अन्तर्गत Supply and Installation of Distribution Projects (33kV Substation and Lines) कार्यान्वयन गर्दा आयोजना प्रभावित क्षेत्रमा पर्न सक्ने वातावरणीय प्रभावहरुका बारेमा ने.वि.प्रा., वातावरण तथा सामाजिक अध्ययन विभाग, भक्तपुरबाट प्रारम्भिक वातावरणीय परिक्षण (IEE)/Enviornment Management Plan प्रतिवेदन तयार गर्ने सिलसिलामा खटिआएका वातावरणीय अध्ययन टोली तथा स्थानियबासी, सरोकारवालाहरु विच निम्न मिति, समय र स्थानमा छलफल गरी निम्नलिखित रायसुभाव संकलन गरियो।

स्थान : जिल्ला : राजेदाय	न.पा./गा.पा./वडा नं:	8
ठाउँ :	मिति :	समयः

उपस्थिती

क.सं.	नाम थर	पद∕पेशा	ठेगाना/संस्था	सम्पर्क नं	हस्ताक्षर
۹.	अंग्रेस के जानी	OZNUA	111Ain 1	RIN KADEMAD	red
٩.	HAN EQUA KITAN	GIN	2012 (650-8.	3000028073	27
₹.	STUTIM ATOS	DZILLIA .		RTARE VERAZ	her
۲.	केंदा के कार्की	WINITUR (i li	STX9068085.	tridiat
۲.	मिन के करनेत	021111	a - 1. 1. 1. 1.	STAREZEASE	he
¥.	and a conch	नेपारु आमी	9	3689378889	ang.
9.	गुज्य वे कार्ती	95	- 10		रानन
5.	ADTA-B-ATAP	OHILI	<i>*</i> i x	8/08/2021/8/0	- Ohon'
٩.	Gallon Ent	ETEM OZIAMILA	Is	368802791.5	10.
90.	नगोन्द्र मुल्मी			SCX37 CX U91	All

रायसुभाव :

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Supply and Installation of Distribution Projects (33KV sub-stations and Lines)

IEE/EMP



नेपाल विद्युत प्राधिकरण वातावरण तथा सामाजिक अध्ययन विभाग खरिपाटी, भक्तपुर

Supply and Installation of Distribution Projects (33KV substations and Lines) को प्रारम्भिक वातावरणीय परीक्षण (IEE) तथा वातावरणीय व्यवस्थापन योजना (EMP) का लागि तयार गरिएको

आयोजना क्षेत्रमा पाइने वन. वन्यजन्त र वनस्पति सम्वन्धि प्रश्नावली अनुसूचि -२०७४

नेपाल विद्युत प्राधिकरण प्रस्तावक रहेको Supply and Installation of Distribution Projects (33KV substations and Lines) आयोजना कार्यान्वयन गर्दा आयोजना प्रभावित गाउँपालिका/नगरपालिकाहरुमा रहेको वन, वन्यजन्त् तथा जैविक वातावरणको वस्तुस्थिति बारेमा ने.वि.प्रा., वातावरण तथा सामाजिक अध्ययन विभाग, भक्तपरवाट प्रारम्भिक वातावरणीय परीक्षण (Initial Environmental Examination - IEE) तथा वातावरणीय व्यवस्थापन योजना (EMP) तयार गर्ने सिलसिलामा खटिआएका वातावरणीय अध्ययन टोली तथा स्थानीयबासी, सरोकारवालाहरु बिच निम्न मिति, समय र स्थानमा छलफल गरी निम्न प्रश्नावली अनुरुप विवरण संकलन गरियो ।

स्थान : जिल्ला : रामेदाप..... गाउँपालिका / नगरपालिका: क्रीव्रत्नरंका वडा नं / ठाउँ : 2 / नामाडि

मिति : समय:.....

आयोजनाको नजिकको प्रस्ताबित संरचना (AP No....../ RoW AP...... to AP......Substation/Switchyard.....)

क.सं.	विवरण दिनेको नाम ं थर	उमेर	स्थायी ठेगाना	सामुदायिक वन∕संस्था	पद∕पेशा	सम्पर्क न.	हस्ताक्षर
٩	utar Lasopi		जीवन्त्रंत्रा-५	उभ्रभीत्ता, रामी छा-	3. 349 11ADI	354055543	K-
२	EG grosid	62	2 1	रमित सा.व.	349100	5583905581	2000
ħ	समन रवड्का	2%	p	रामिल छा वे	3497105	STASZELVI	caller of
لا	रेमन खड़का	29	,,	रमेत खा व.	3481751	STABLLERO	amit
x	214121(0) 20500		1)	शम्मि छा.व.	3499700	SI&3IX8150	OJSK
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૭	देवी खड़का	38	1)	रमित छा-व	349minto	8888264888	
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वातावरणीय अध्ययन टोलीका सदस्यहरु

क.सं.	विवरण लिनेको नाम थर	ठेगाना	पद ∕ पेशा	सम्पर्क न.	ह स्ताक्षर
٩	पूनम पोरवरेल	弄·用·用·	सहायक मिरेशक		Jona -
२	कविता पीड्याल	A. 19. 51.	erma culta		Jeaber
Ŗ	नर्गन्द्र मुल्मी	ने वि प्रा	মান্দ্রন হালনিয়		

नेपाल विद्युत प्राधिकरण

वातावरण तथा सामाजिक अध्ययन विभाग



Supply and Installation of Distribution Projects (33kV Substation and Lines) NEA, 2018 <u>PRA Checklist</u>

District RAMECHHAP

Location (area) :....

RM/ward U.MAKD/KDA Village/Tole BAM11 Date: 2075/11/26

No. Of Participants :....

Participant's Profile

S.N.	Name	Caste/ Ethnicity	Main Occupation	Ph. No.	Signature
1	KHAMBA DHOAJ BASNET	CHHETR	CHARD	9854040568	es;
2	SURVA BASNET	17	ASS. SUB Engeneer	2692123495	APAG
3	PASANO LAMA	SHERPA	LAMA	9868103053	ares.
4	DURUA KHADAKA	CHHERRA	1	2860102135	A
5	singoning karki			9864 11.070 N	cin
6	Ruding Bahadur Baim	et i,		0040431004	20
7	Aruparang snenpg	Sherpa	1. 191	1.194.4	mad
8	1306 Ends conhahane	dalih	all starts		
9	have have Barren	cuelone			aren
10	Kanal Benef		1 (C.B.).	98419944	0
11		a star a		JON1032555	-may
2					10,000
3			1		



and the second se	Supply and Installation of Distribution Projects (33kV Substation and Lines)
	NEA. 2018
	PRA Checklist
	District :
	Location (area) :
	No. Of Participants :
	Participant's Profile

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S.N.	Name	Caste/ Ethnicity	Main Occupation	Ph. No.	Signature
1	ponyahani Bhujel.	19	ने जिल्ला	STREGKTOT	te,
2	युव कुमारी पोर्करल	10.0	सामाजी क जीत्य	ETAPEVTAGE	5
3	क्ति वेहाकूर पर्धार	1.1	के। भारता मही	A STORESCOTE	Tand
4	मेंद्रिती प्रेण्पोर्क्स्ल			STARLAXERS	2. A
5	51511 go 3167H			STOSEDST9X	SITIS
6	1-CIALOL STELGIS			5222232323	GAZL
7	7648 - 560	~		5298232289	-
8	धनमायां पर्यया			-	चंत्रमाया
9	राम प्रसाद जोतम		funition C	STOGTIZZER	Beg
10	ATTS AF SKAIHIS.	21	TI.545	ELESOZ KROB	28-14
11	रनम धोवीला			3	Hon .
12	chian disaim	1 - <u>1</u> - <u>1</u> - 6			1 1.4
13		1.1.1	1.1.1		Kaber

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नेपाल विद्युत प्राधिकरण वातावरण तथा सामाजिक अध्ययन विभाग

नेपाल विद्युत प्राधिकरणद्धारा प्रस्तावित ग्रिड सोलार तथा इनर्जि इफिसियन्सि आयोजना अन्तर्गत Supply and Installation of Distribution Projects (33kV Substation and Lines) कार्यान्वयन गर्दा आयोजना प्रभावित क्षेत्रमा पर्न सक्ने वातावरणीय प्रभावहरुका बारेमा ने.वि.प्रा., वातावरण तथा सामाजिक अध्ययन विभाग, भक्तपुरबाट प्रारम्भिक वातावरणीय परिक्षण (IEE)/Enviornment Management Plan प्रतिवेदन तयार गर्ने सिलसिलामा खटिआएका वातावरणीय अध्ययन टोली तथा स्थानियबासी, सरोकारवालाहरु विच निम्न मिति, समय र स्थानमा छलफल गरी निम्नलिखित रायसुफाव संकलन गरियो।

उपस्थिती

स्थान : जिल्ला : रिनिन्द्रुली	न.पा./गा.पा./वडा नं: 7-1412 हो	-10
ठाउँ : सग्रेशहरते पदा (5;	मिति : 20.6% 109. (2. ट.	समयः.

क.सं.	नाम थर	पद ∕ पेशा	ठेगाना/संस्था	सम्पर्क नं	हस्ताक्षर
۹.	2059 98/65 +15/5	24141	17-1475-90	SCENOZAYCE	Lorg
२.	and asigt thank	216	, ,,	5595550202	Cuer
२.	HA asig(1)	· . 11	1	
۲.	HIM asis min	,,	, ,)	ST8098(XII	2524155
X.	यक्त वहादुर मगर		- n	-	017- 2
۴.	An artige com	t)		- 5	Sal 56
9.	न्यत्र वहादु (पुलाम)	~``~	- 17		F27
5.	मनु पूलाम	MUSILE	,,	5268029200	मिन
۹.	नजे-रू म्रल्मी			Telling and the	
90.	at-4 5.65			3 1 1	The second second

समय:....

रायसुभाव :



नेपाल विद्युत प्राधिकरण वातावरण तथा सामाजिक अध्ययन विभाग

नेपाल विद्युत प्राधिकरणद्धारा प्रस्तावित ग्रिंड सोलार तथा इनर्जि इफिसियन्सि आयोजना अन्तर्गत Supply and Installation of Distribution Projects (33kV Substation and Lines) कार्यान्वयन गर्दा आयोजना प्रभावित क्षेत्रमा पर्न सक्ने वातावरणीय प्रभावहरुका बारेमा ने.वि.प्रा., वातावरण तथा सामाजिक अध्ययन विभाग, भक्तपुरबाट प्रारम्भिक वातावरणीय परिक्षण (IEE)/Enviornment Management Plan प्रतिवेदन तयार गर्ने सिलसिलामा खटिआएका वातावरणीय अध्ययन टोली तथा स्थानियबासी, सरोकारवालाहरु विच निम्न मिति, समय र स्थानमा छलफल गरी निम्नलिखित रायसुभाव संकलन गरियो।

मिति : 📩 ० ७४ १०९ । ३.० - समय:

उपस्थिती

क.स.	नाम थर	पद∕पेशा	ठेगाना∕ संस्था	सम्पर्क नं	हस्ताक्षर
۹.	मुपत लामा	ofM	कमलामाई-७	STARETONO	4740
२.	शाम्त्री माया स्पष्तत	a	11	STALE92AT2	2 TTen
३.	मीता वत	·····	· · · · · · · · · · · · · · · · · · ·	ST08 TO 0385	हिन्हा.
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۲. د	विनय स्माङतम	विद्यार्थी	$\dot{\nu}$	5002603988	Brand
4.	कुमारी क्रमान्तामाड.	Plasie	.,,		JAN 12
<u>.</u>	समिलां तामाङ	विद्यार्थी	11	-	Tinten
5.	मनम प्रोतिल				Yoz;
۲.	attani uiszum			1997 - 1989 - 1989 - 1989 - 1989 - 1989 - 1989 - 1989 - 1989 - 1989 - 1989 - 1989 - 1989 - 1989 - 1989 - 1989 -	Vabele
90.	नगो-द भ्रेलमी	1			Ali

रायसुभाव :

Su	pply and Installation of Distribution Projects (33kV Substation and Lines) NEA, 2018	
District :	RM/ward : JIICI-UIT - (<i>o</i> ·
Location (area) :	ک بر معلم Village/Tole	
No. Of Participants :	Date: 2062/09/29	

.

Participant's Profile

S.N.	Name	Caste/ Ethnicity	Main Occupation	Ph. No.	Signature
1	रोमवराफुर डेवडीर	1.8	937 3 EYET	984419820	220
2	Suzya Basad laundel		Engineer	9840859601	Zinta
3	Man Maya Pues		ANIM	9041224110	The
4	Menuka Adhikari		VITA	9011101000	fr
5	Salina Basyal		HOA	9860000621	home
6	Kalpana pukind	1.1	ANN	100009904	11 11 11
7	Duga Dev.		L.A.	91007528564	hite.
8	Poonan Porchard,		Service.	180102012	projet
9	Kabita Poudgeal	1.1	Low H'Senviro		7000 =
10	Nagendra mulmi		LOUVE CEMINO		Raves
11	0		<u> </u>		ng
12		1			
13					

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	Supply	and Installation	n of Distribution	Projects	
AN ALL TRENT		NEA, 2	018		
	~	PRA Che	<u>cklist</u>		
District	con u Mata	के मान	RM/ward :	GRAH -T. LTI	.13.
Locatio	n (area) :	े तडा क	Village/Tole :		
	Deutlinia entr	50.05			
NO. OI	Participants :		Date: 2062	10 2 10 3	
NU. UI	Participants :	Participant's	Date : <u>2068</u> s Profile	10.9.10.2 .	1.20
	Participants :	Participant's	Date : <u>2068</u> s Profile	1.6.9.1.6.2 .	
S.N.	Participants :	Participant's Caste/ Ethnicity	Date : <u>2068</u> s Profile Main Occupation	<u>].6.4.1.6.2</u> . Ph. No.	Signature
s.n. 1	Name D Si T Si T	Participant' Caste/ Ethnicity	Date : <u>2068</u> s Profile Main Occupation	1.6.я.1.6.2 . Ph. No. ST К.62 135 T	Signature
s.n. 1 2	Name 25,7 276 070-471 216	Participant's Caste/ Ethnicity	Date :: <u>2068</u> <u>s Profile</u> Main Occupation	Ph. No. ST&627357 ST&273799	Signature

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S.N.	Name	Caste/ Ethnicity	Main Occupation	Ph. No.	Signature
1	25:1 2116		वडा सपस्य	578621250	-250
2	कल्पना चार्झल		वङा सदस्य	ST82727899	april 0
3	farig gon (2] 45,	1127	वर्ध संदह्य	STEGIZZER	Saile
4	रिशिवरतन प्रः - रीहारी		পথ্য হুম্মিন	ST95K80382.	Bur
5	र्गाहला पार्डल		वर्जनारी	8-16209829	am
6	हिमकाला नरुराई	1. 14 1	स्वंग्र सेविडा-	S- K6×K3709	12mag
7	मराज प्र वास्त		ast. a.	BERRALLES	, खत
8 2	वेदबाम कार्राई		रव्यान्यि	328868888	-40
9	यमलाल नरुराई		1/		your
10	भ्रम्म धोव्हील		नोकाी	State State	yos
11		1 Advent	2.1.1.1.1.1.1.1		
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नेपाल विद्युत प्राधिकरण वातावरण तथा सामाजिक अध्ययन विभाग

नेपाल विद्युत प्राधिकरणद्धारा प्रस्तावित ग्रिड सोलार तथा इनर्जि इफिसियन्सि आयोजना अन्तर्गत Supply and Installation of Distribution Projects (33kV Substation and Lines) कार्यान्वयन गर्दा आयोजना प्रभावित क्षेत्रमा पर्न सक्ने वातावरणीय प्रभावहरुका बारेमा ने.वि.प्रा., वातावरण तथा सामाजिक अध्ययन विभाग, भक्तपुरबाट प्रारम्भिक वातावरणीय परिक्षण (IEE)/Enviornment Management Plan प्रतिवेदन तयार गर्ने सिलसिलामा खटिआएका वातावरणीय अध्ययन टोली तथा स्थानियबासी, सरोकारवालाहरु विच निम्न मिति, समय र स्थानमा छलफल गरी निम्नलिखित रायसुभाव संकलन गरियो।

	Carl In Carlos Co.	
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उपास्यता		

क.सं.	नाम थर	पद∕पेशा	ठेगाना/संस्था	सम्पर्क नं	हस्ताक्षर
۹.	Zoguoi) 43	कुछि/सामामनिव	9 572in-3,	9857050180	Shing ?
२.	2000 TO STAN	20.35. 4.4	3.3.7	9816244930	B Bar
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नेपाल विद्युत प्राधिकरण वातावरण तथा सामाजिक अध्ययन विभाग

नेपाल विद्युत प्राधिकरणद्धारा प्रस्तावित ग्रिड सोलार तथा इनर्जि इफिसियन्सि आयोजना अन्तर्गत Supply and Installation of Distribution Projects (33kV Substation and Lines) कार्यान्वयन गर्दा आयोजना प्रभावित क्षेत्रमा पर्न सक्ने वातावरणीय प्रभावहरुका बारेमा ने.वि.प्रा., वातावरण तथा सामाजिक अध्ययन विभाग, भक्तपुरबाट प्रारम्भिक वातावरणीय परिक्षण (IEE)/Enviornment Management Plan प्रतिवेदन तयार गर्ने सिलसिलामा खटिआएका वातावरणीय अध्ययन टोली तथा स्थानियबासी, सरोकारवालाहरु विच निम्न मिति, समय र स्थानमा छलफल गरी निम्नलिखित रायसुफाव संकलन गरियो।

उपस्थिती

स्थान : जिल्ला : को प्रियम्त	न.पा./गा.पा./वडा नं: 45 -	3
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Issues raised by the public during Consultation meetings:

- 1. Priority will be given to the locals in employment of project work.
- 2. Local are very happy for the construction of substation and TL.
- 3. TL alignment should go along the existing road side so that there should be minimum impact on agriculture land.