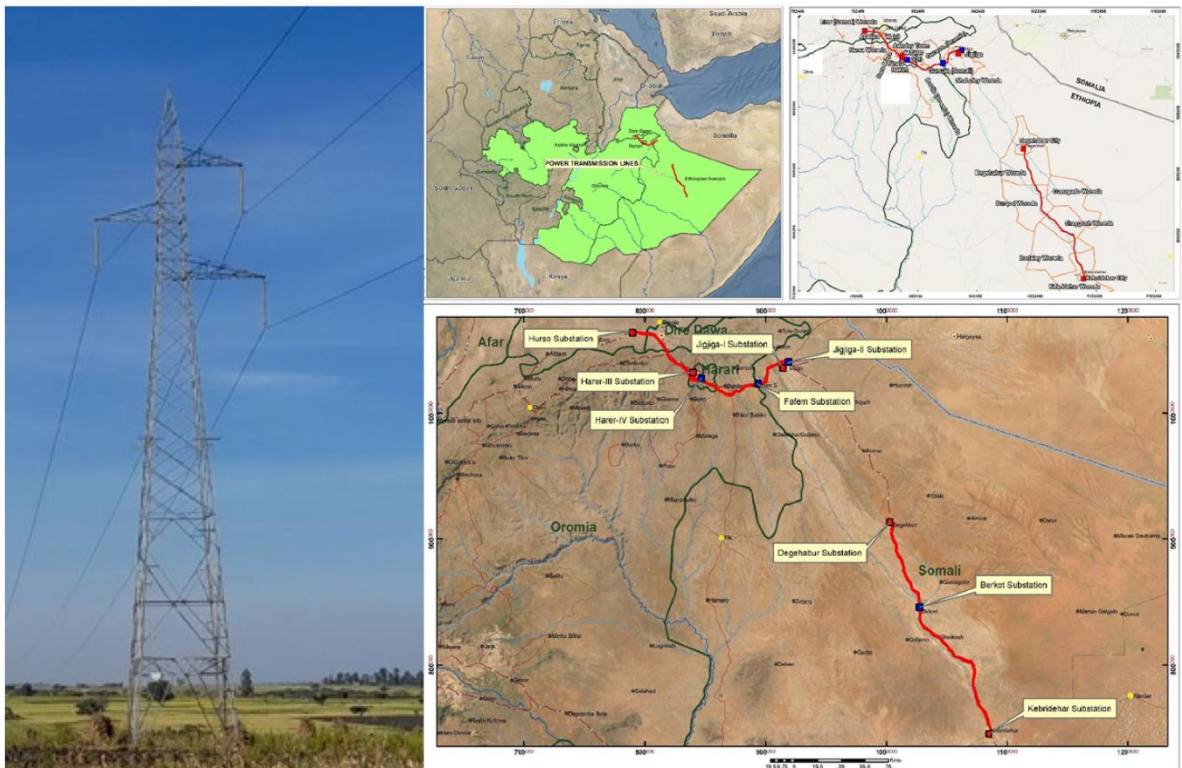




Federal Democratic Republic of Ethiopia  
Ethiopian Electric Power



# Degehabur - Kebridehar 132 kV Transmission Line Project



**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT**

**FINAL REPORT**



**APRIL 2023**



**Federal Democratic Republic of Ethiopia**  
**Ethiopian Electric Power**

**Degehabur – Kebridehar 132 kV Power Transmission Line  
Project**

**Environmental and Social Impact Assessment (ESIA)**

**Final Report**

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## Abbreviations

AfDB	African Development Bank
ARCCH	Authority for Research and Conservation of Cultural Heritage
CDP	Community Development Plan
CESMP	Contractor Environmental and Social Management Plan
CLO	Community Liaison Officer
CRGE	Climate Resilient Green Economy
CSA	Central Statistical Agency
dB	Decibels
EAPP	Eastern Africa Power Pool
EEA	Ethiopian Energy Authority
EEP	Ethiopian Electric Power
EEPA	Ethiopia Environmental Protection Authority
EEU	Ethiopian Electric Utility
EPA	Environmental Protection Authority
EHS	Environment, Health and Safety
EI	Environmental Inspector
EIA	Environmental Impact Assessment
EMF	Electro Magnetic Field
EMU	Environmental Management Unit
EPE	Environmental Policy of Ethiopia
ESA	Environmental and Social Assessment
ESAO	Environmental and Social Affairs Office
ESAP	Environmental and Social Assessment Procedures
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ETB	Ethiopian Birr
EWCA	Ethiopian Wildlife Conservation Authority
FCCC	Framework Convention on Climate Change
FDRE	Federal Democratic Republic of Ethiopia
GBV	Gender Based Violence
GHG	Green House Gas
GoE	Government of Ethiopia
GRC	Grievance Redress Committee
GRP	Grievance Redress Procedure

GRM	Grievance Redress Mechanism
Ha	Hectare
HH	Household
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
HSE	Health Safety, Environment
ISS	Integrated Safeguards System
Km	Kilometer
KV	Kilo Volt
m	Meter
m.a.s.l	Meter Above Sea Level
mm	Millimeter
MoARD	Ministry of Agriculture Rural Development
MoFEC	Ministry of Finance and Economic Cooperation
MoWE	Ministry of Water and Energy
MSIPs	Management Strategy and Implementation Plans
NGO	Non-Governmental Organization
OHL	Overhead Transmission Line
OS	Operation Safeguard
PAP	Project Affected People
PPE	Personal Protective Equipment
RAP	Resettlement Action Plan
RE	Resident Engineer
REA	Regional Environmental Agency
Row	Right of Way
RMCs	Regional Member Countries
SC	Supervision Consultant
SEPs	Site Environmental Plans
STD	Sexually Transmitted Disease
TL	Transmission Line
ToR	Terms of Reference
UNESCO	United Nations Education, Science and Culture Organization
USD	United States Dollar



# 0. Executive Summary

## 0.1 Introduction and Background

Ethiopia's main power supply system is made up of a publicly owned and operated interconnected system with a total 4,418 MW installed generation capacity and there are also small operational and active off-grid self-contained systems supplied by diesel generators and hybrid solar-diesel with a total installed capacity of 21.8 MW in 2021.

The energy sector was identified as a priority sector in Ethiopia as laid in the National Development Plan Accordingly, the Government of Ethiopia, with the support of development partners, prioritized investments in the country's electricity sector, to strengthen and expand transmission capacity to meet the energy needs of the country. Access to electricity has been created so far for 47% of the population with 95% in urban and 32% in rural areas (34 % through the main grid and 11 % using off-grid technologies).

The ultimate goal of the Degehabur – Kebridehar 132 kV Power Transmission Line Project is expanding 132 kV network from Degehabur to Kebridehar through the new Birkot substation.

The nature and impact magnitude of the proposed project, as per the Ethiopian EIA Guideline and AfDB's Environmental and Social Assessment Procedures, it is classified as Schedule 1 and Category 1, respectively. Thus, the project requires an Environmental and Social Impact Assessment (ESIA).

### *Purpose of the ESIA Study*

The fundamental objective of this environmental assessment is to ensure that the proposed road-upgrading project is environmentally sound and contributes to the development of environmental assets. It is also expected to provide a means whereby the overall environmental performance of this project can be enhanced through:

- Identification and evaluation of the potential impacts associated with project implementation and subsequent operation;
- Preparation of plans and recommendations regarding measures that will minimize adverse impacts and enhance beneficial impacts; and
- Present the predictions and options to decision-makers concerning project.

This Executive Summary is aimed at the executive decision makers who require key information without the background detail.

### *Approach and Methodology:*

The approach and methodology adopted for this ESIA follows the established pattern for infrastructure project including high voltage transmission line 132kV Degehabur – Kebridehar and meets the requirements of EPA's guideline (EPA, 2000) and AfDB's Integrated Safeguards System, Policy statement and operational safeguard and Environmental and Social Assessment Procedures.

Generally, the methods and approach employed during this ESIA study include collection and review of relevant previous ESIA study documents, national policies and legislations, AfDB's Integrated Safeguards System (ISS), Environmental, and Social Assessment Procedures (ESAP); field investigation including collection of biophysical and socioeconomic data and extensive community and Stakeholder consultation at various levels. Various quantitative and qualitative data collection and information gathering techniques were used in this assessment

## 0.2 Project Location

The Degehabur – Kebridehar Transmission Line Project is located in South-Eastern Ethiopia, within the Somali National Regional State. It stretches over five Woredas and two administration towns in two zones. These are Kebridehar and Degahabur towns and Degehabur woredas of Jara Zone and Bodaley, Kebridehar and Shaygosh woredas and Kebridehar town of Koraha Zone.

## 0.3 Project Description

The proposed Degehabur – Kebridehar is an expanding 132 kV network from Degehabur to Kebridehar through the new Birkot substation. The project area starts from existing Degehabur Substation extends in south eastern direction by:

- Constructing 77.16 km single circuit 132 kV transmission line from existing Degehabur substation to Birkot substation,
- Constructing 129.02 km single circuit 132 kV transmission line from existing Kebridehar to Birkot new substation
- Construction of new 132/33 kV substations at Birkot
- Extension of existing 132 kV substations at Degehabur and Kebridehar.

## 0.4 Policy and Legal Framework

The Environmental Assessment guideline prepared by the Environmental Protection Authority (EPA) (EPA, 2002) requires development projects to avoid, minimize and reduce adverse impacts on the physical, biological and socio-economic environments.

Various national policies proclamations, regulations, strategies, guidelines and directives as well as Environmental and Social Safeguard Policies and Procedures of African Development Bank have been reviewed with respect to the proposed project activities.

The review to identify all significant environmental, social, and health and safety factors, was conducted in accordance with the applicable national and lender requirements as follows:

- The Constitution of Federal Democratic Republic of Ethiopia (FDRE);
- Environmental Policy, 1997, National Updated Energy Policy of Ethiopia, Water Resources Policies, Health Policy, National Biodiversity Policy 1998, Environmental Impact Assessment Proclamation No. 299-2002, Environmental Pollution Control Proclamation No. 300-2002, Establishment of Environmental Protection Organs (Proclamation No. 295/2002), Labour Proclamation 377/2003 and 156/2019, Directive on Overhead Electric Lines and Quality of supply (no. EEA/1/2005, EIA Procedural Guideline, 2003,
- National Legislation Governing Land Acquisition, Compensation and Resettlement;
- The African Development Bank (AfDB) Environmental & Social Assessment Procedures (ESAP);
- Regional and International / Multilateral Agreement

Therefore, in response to the requirements of the Environment Protection Authority (EPA), EEP has commissioned this ESIA as an integral part of the project design and construction and the finding of this assessment is presented in this report.

## 0.5 Description of the Baseline Environment

Information on existing natural and socio-economic resources is of fundamental importance for evaluation of environmental impacts. The baseline data on the status of the biological and socio-cultural environment of the Project Area have been assembled, evaluated and presented.

### *Physical Environment*

*Topography and Climate:* Degehabur – Kebridehar Power Transmission Line (TL) is situated in the Easter part of Ethiopia and the terrain classification indicates that the TL traverses flat to steep sloping terrain. However, the majority of the route (59.2%) could be classified as being in flat to gently sloping terrain with average slope ranging from 0-8%. Based on the agro ecological zone classification of Ethiopia the proposed TL project area falls in to warm arid low land agro ecological climatic zones.

*Land Use and Land Cover:* The land cover types of along the Degehabur - Kebridehar Power Transmission Line route are classified in to four major land cover classes which include: Exposed soil and rock surface, Grassland, Shrub land and scattered bush and Urban and built-up. However, the TL predominantly traverses Shrub land and scattered bush lands.

*Soils:* Soils along the proposed power TL route vary with parent material and topography. Based on the soils studies of Wabi Shebele River Basin Master Plan Study Projects, the TL crosses four major soils namely: Calcisols, Vertisol, Regosols and Solonchaks, Vertisols being the dominant soil types traversed by the TL

*Geology:* The Degehabur - Kebridehar Power Transmission Line route traverses four major geological formations namely: Hamanlei Formation, Gabredarre Formation Upper unit, Urandab Formation and Alluvial and lacustrine deposits. However, the major part of the route is covered by Urandab Formation Formations.

*Water:* The main water resources in the project area for both humans and animals are pipe installed potable water, collected water in the water tanks, seasonal and annual rivers and streams. The major surface water sources traversed by the proposed project include Erer, Hodale, Sesebene, Beka, and Yengi Rivers

Due to the existing situation of climate change, currently, there is a scarcity of water for cooking and drinking purposes all over the project-affected area.

*Air Quality:* The general transmission line route predominantly crosses the rural settings of the project affected areas. Because of the above-mentioned fact absence of major industries in the area, relatively low commercial and industrial sites, as well as, low population density and limited traffic along the transmission line corridor and the substation sites, it is reasonable to assume that the ambient air quality is good, apart from elevated dust levels close to the existing access road during the dry season caused by passing traffic.

*Ambient Noise:* In terms of human settlement, the baseline environment along the transmission line corridor is mostly rural with sparse settlement patterns. Hence, existing noise levels in the vicinity of the transmission line in both the new and existing substations localities reflect rural acoustical environment and are generally characterized by sounds of nature and minimal road traffic.

### *Biological Environment*

*Flora:* The vegetation cover along the TL is dominated by thorny shrubs and bush vegetation species. The vegetation type is characterized by plants that include drought-tolerant tree and shrub plant species. These plant species are with either small deciduous leaves or leathery persistent ones.

The level of threat on the plants recorded in the project site was assessed using IUCN Red list categories (IUCN 2001) and only six species were evaluated as Least Concern (*Acacia seyal*, *Acacia bussei* and *Acacia tortilis*). However, *Acacia mellifera*, *Commiphora*, *Euphorbia* and *Aloe* species are listed as are not evaluate (NE).

The project corridor and the ecosystem type it belongs is not part of nationally or internationally designated/protected biodiversity area.

The existence of Critical Habitat was also assessed by considering AfDB OS3 Criteria and there is no species with restrict range of distribution and there is no critical habit that will be affected by the project.

**Fauna:** Due to warm arid low land agro climatic conditions in the project area, the native vegetation are characterized by dominantly dwarf drought tolerant shrubs, with small, either deciduous or evergreen leaves and too sparse to sustainably harbour or shelter fauna/wild life species. A vast region of the project-traversed area is under high environmental degradation and the habitat condition is not suitable for many wild animals.

Some of the wild animals which have been observed during the field study were Mongooses, Ground Squirrel, Spotted Hyena, Golden Jackal, Baboon, Guenther's Dikdiks. The highest number of 10 Salt's Dikdik species were observed and recorded during the field work at the project site and close to the asphalt road. These are least concern species according to the 2017 IUCN Red list.

Generally, of all the 38 species of wild mammals recorded for the greater area, 28 species are recorded as Least Concern and 1 species as Data Deficient according to the IUCN's Red List of Threatened Species (IUCN, 2022-2). However, 6 species are evaluated as Threatened (5 species are listed as Vulnerable and 1 species as Endangered) and 3 species as Near Threatened.

**Avifauna:** The project area is not part of the Great Rift Valley system which is a major flyway for migratory birds that enter Ethiopia via the Mediterranean Bab al Mandab of the Red Sea and travel later into East Africa of Kenya, Uganda and Tanzania.

The project area does not have any major wetland habitats that can be used as a congregation of huge flocks of birds in which passage migrants can take the advantage as stop over to refill energy and continue their journey. This study has not also seen any significant number of wetland birds either resident or migratory origin. Similarly, previous studies of the area did not show any concentration of migratory birds.

A total of 28 raptor species have so far been reviewed in a broad spectrum and recorded during the surveys in the project area.

The species in the area are dictated by the nature of habitat and landscapes with passerines being the most abundant. The passerine species present in the area could be broadly categorized into shrub land and grassland species. The vast area of the Ogaden hosts also numerous palaeartic migratory species, some of them in large numbers like the European White Stork.

**Protected/reserved areas, National Parks and Sanctuaries:** The project corridor is neither contiguous with, nor in close proximity with any of the nationally protected areas. There are many birds in the project area. According to Ethiopian Wildlife and Natural History Society (EWNHS, 1996), none of the nationally designated Important Bird Areas (IBAs) are contiguous neither with, nor in close proximity with any of these IBAs.

## **Socio-Economic Environment**

**Demographic Characteristics:** The total population of project affected areas is 989,843 out of which 515,027 (52.0 %) are Males and 474,816 (48.0 %) are females.

**Ethnic, Religious, and Language Composition:** In terms of ethnic composition of the study woredas, almost all are Somali ethnic groups. However, few other ethnic groups also exist in mixed type especially in urban areas (i.e. Amhara and Oromo).

There are no ethnic minority people in and around the project area whose traditional lifestyle could become compromised through the development of the project.

In terms of language composition the Somali language is the widely spoken and the official language of the project-affected area and other languages including Amharic and Oromiffa are also spoken by few urban residents.

Despite lack of updated official data regarding religion composition in project-affected area, almost one-hundred percent of the population in all project influence Woredas are followers of Muslim religion. For example, according to CSA 2007, overwhelming majority (98%) of the population in project-impacted Zones were follower of Muslim religion and other religion combined constituted around 2% of the zonal population.

**Settlement Pattern:** In rural villages of project-affected area, the settlement pattern of the population is mainly dispersed or characterized by scattered settlement pattern. Tukuls and traditional Somali houses types of semi-pastoralist huts (Mobile huts) are observed as dwelling units in rural villages. In contrast, clustered type of settlement pattern with fixed housing structure made of corrugated iron sheet, roofing and cement walls are common in project-affected cities like Degahabur and Kebridehar.

**Livelihood and Economy:** Like many other Woredas of the region, the dominant household economic activity in project-affected area is pastoralism and agro-pastoralism. Instead to the agricultural crops, livestock or cattle rearing are one of the dominant economic activities practiced in the project affected areas

**Livestock:** The total livestock population in the project-affected area is estimated to be 2,305,583. Out of this, Goat 876,849, Sheep 819,984, cattle 166,269, camel 264,743, donkey 24,438, and poultry 153,300 are reported in all project impacted Woredas and city.

**Crop Production:** Farming households grows maize, sorghum, barley, pules and other crops in the area However, recurrent drought for years has affected the overall crop production in most project affected woredas.

**Social Services:** The existing social services and infrastructure found in the project-affected areas are believed to be inadequate. Based on information collected from respective Woreda health bureaus, a total of 206 health institutions in all project-affected woredas and cities and these include 2 Hospitals, 15 health centres, one higher clinic, 12 medium clinics, 48 pharmacy, 12 laboratories, 95 health posts and 21 drug stores. In general, 406 health personnel's are currently providing health service in all health institutions found in project affected Woredas and cities.

Concerning education, totally, in the project affected area there are 133 all level schools (27, kindergartens, 80 primary schools (1-8 grade), 12 high schools (9-10 grade), 9 preparatory schools (11-12 grades) and 1 TVET. In general, there are 81,352 students and 2,156 teachers with various educational qualifications in all educational institutions.

**Energy:** Except some urban area and Kebeles, almost all project affected rural Kebeles and villages along zone of influence (ZOI) are not electrified. The overall coverage for electricity supply throughout the project-affected areas is low. Therefore, solar lantern



and hand torch are the primary household energy source for lighting, while firewood and charcoal are the two dominant household cooking fuel in project affected area.

*Sites of Cultural and Archaeology Importance:* During survey, no visible archaeological evidences and cultural heritage have been identified in and around the proposed project area. Therefore, the project will have no impact on archaeological and cultural heritage sites.

However, the survey results has identified six burial sites along the transmission line corridor. This site is a living heritage, has high social, spiritual and cultural significance for the local community of the project area.

Name	Latitude (N)	Longitude (E)	Type
Cemetery at Degehabur	8°14'5160"N	43°34'003 "E	Modern Islamic Burial
Cemetery Hodale	8°8'4630 N	43°34'3040 "E	Modern Islamic Burial
Gerebo Cemetery	8°51'0916 N	43°36'0310 "E	Modern Islamic Burial
Sendehille Cemetery	8°5'8910 N	43°36'2470 "E	Modern Islamic Burial
Sassabane (Ugur cemetery)	7°52'1430 N	43°40' 4060 "E	Islamic Burial
Hodale Cemetery	7°56'61300 N	43°38'8490 "E	Modern Islamic Burial

Therefore, the project should avoid locating any temporary project activities requiring soil clearing, levelling and excavation in and around the identified burial sites.

Although no know protected cultural, historical or archaeological sites were identified in and around the Project Area, it is recommended the construction contract to make provision for work to be halted and the relevant authorities to be notified, in the event of accidental discovery of archaeological remains. It is also recommended for the Contractor to strictly adopt the chance find procedure presented in this report.

## 0.6 Project Alternatives

As per the Feasibility Study Report (October 2022) prepared by EEP, the prime purpose of this power transmission project is that strengthen the eastern region of the country and delivery of power to Birkot irrigation and town and the surrounding area mainly through construction of 206 km single/double circuit 132kV and 132/33 kV substation at Birkot.

Therefore, for the current project, two alternatives supply options were considered namely:

- i) "No-Project" or "do-nothing" Alternative
- ii) Two Project Supply Alternatives

The above alternatives were evaluated considering the following criteria:

- Biophysical conditions
- Socio-economic benefits
- Economic

Reliable power supply and improved service associated with it are fundamental to meeting the country's development goals and achieving the full benefits of other development initiatives.

Therefore, with the "no-project" alternative, the development objectives for the country and expectations of the community around the project impacted area will be compromised and slowed down.



Therefore, implementation of the proposed Degehabur – Kebridehar 132 kV Transmission Line project as presented in Option I is preferable to “No-project” alternative.

## 0.7 Project Impact and Mitigation Measure

Like all other infrastructure development projects, notwithstanding the far-reaching social and economic benefits, admittedly, the project would have impacts on the biophysical and socio-economic environment that need to be accounted for and avoided or mitigated when and wherever feasible.

Therefore, the benefits as well as potential adverse impacts of the TL project on the physical, biological and socio-economic environment are identified and appropriate benefit enhancement and/or mitigation measures are recommended.

Potential Impacts	Proposed Mitigation/Enhancement Measures
<b>Potential Positive Impacts</b>	
Improved and Reliable Power Supply	<ul style="list-style-type: none"> <li>Strengthen the eastern part of the country, improve the electrical capacity and supply of the Degehabur, Birkot, and Kebridehar towns</li> </ul>
Lay strong basis for continuous rural electrification program	<ul style="list-style-type: none"> <li>The government has set a rural-focused development strategy aimed at improving people's living standards. This energy supply will enable to expand EEU's service to a number of households to connect to the network in the future and contribute to improve the standard of living.</li> </ul>
Lay the foundation for the Future Ethiopia-Somaliland Power Interconnection	<ul style="list-style-type: none"> <li>The proposed project will serve as the foundation for the Ethiopia-Somaliland Power Interconnection.</li> </ul>
Advance Ethio - Somaliland Cooperation and Ties	<ul style="list-style-type: none"> <li>Reduce the likelihood of conflict and the project will also contribute to advance Ethio – Somaliland bond and will raise trust between them.</li> </ul>
Support East Africa Power Pool's (EAPP) Goal	<ul style="list-style-type: none"> <li>Improve power trade and energy integration between Ethiopia and Somaliland. Therefore, implementation of the proposed project fits well into East Africa Power pool goal.</li> </ul>
Improve Ethiopia's Revenue	<ul style="list-style-type: none"> <li>Increase the power connection and enhance capacity to deliver power to the local area and export to Somaliland. This will add foreign currency earning for Ethiopia which ultimately contributes for the growth of national economy.</li> </ul>
Increased economic activity	<ul style="list-style-type: none"> <li>Increase short-term, indirect economic gains will likely result from the construction of the transmission line.</li> </ul>
Employment Opportunities	<ul style="list-style-type: none"> <li>The project will create short term employment opportunities for about 320 workers (151 professionals and 169 semiprofessionals) and unskilled (labourer) including the workers for supporting services will be about 2,250.</li> <li>In addition, the workforce required during operation at the Birkot substation will be 28 workers (13 professionals and 15 semiprofessionals). The job opportunities for operators and workers for supporting services will be about 28.</li> </ul>
Reduce Green House Gas Emission	<ul style="list-style-type: none"> <li>Implementation of the proposed TL project permits to satisfy the energy requirement. Hence, the project will further eliminate the use of fossil combustibles diesel generators and reduce dependence on fuel-wood when burned, would have produced pollutant</li> </ul>

Potential Impacts	Proposed Mitigation/Enhancement Measures
	emissions, particularly CO <sub>2</sub> , for the atmosphere. Therefore, when the demand for energy is supplied by the proposed project, it will lead to a reduction of CO <sub>2</sub> emission.
<b>Potential Adverse Impacts</b>	
<p><b>Land acquisition</b></p> <p>Degahabur-Birkot-Kebridehar 132kV Power Transmission Line Project will have an impact on the existing land use both temporarily and permanently.</p> <p>An estimated 535ha of land (for free corridor (RoW)), 3.88 ha for tower foundation and 9.00 ha for the construction of the new substation at Birkot will be required.</p>	<ul style="list-style-type: none"> <li>▪ Compensation will be undertaken as per the Ethiopian proclamation No. 1161/2019 and regulation No 472/2020 for expropriation of land</li> <li>▪ Awareness creations will be undertaken for the community to inform them the possibility of using the ROW for grazing but not for tree planting and putting structures after the establishment of the transmission line.</li> <li>▪ It is recommended that EEP will prepare a community development plan and undertake community development activities in areas such as water supply, health care, education, agricultural supplies, offset plantation and electricity</li> </ul>
<p><b>Impacts on Households:</b> The construction of the TL Project will affect a total of 179 households (163 male and 16 female HH heads) and 1,380 persons are living in these project affected households.</p>	<ul style="list-style-type: none"> <li>▪ Proper inventory of affected property and census enumeration of PAPs for entitlements.</li> <li>▪ Compensation will be undertaken to the PAPs for the affected houses with regard to loss of house.</li> <li>▪ Compensation will be undertaken as per the Ethiopian proclamation No. 1161/2019 and regulation No 472/2020 for expropriation.</li> </ul>
<p><b>Impacts on farm lands</b></p> <p>The project will affect an estimated 0.82 ha farmland owned by the 124 smallholder farm households.</p>	<ul style="list-style-type: none"> <li>▪ Proper inventory of affected property and census enumeration of PAPs for entitlements.</li> <li>▪ Compensation will be undertaken to the PAPs for the affected houses with regard to loss of house.</li> <li>▪ Compensation will be undertaken as per the Ethiopian proclamation No. 1161/2019 and regulation No 472/2020 for expropriation.</li> </ul>
<p><b>Impacts on housing and structures</b></p> <p>The project will affect 66 houses and related structures belonging to 43 HHs.</p> <p>These houses will be affected only by transmission line corridor and construction of tower pads and not the substation.</p> <p>63 of these houses are Tukul and Somali Traditional houses.</p>	<ul style="list-style-type: none"> <li>▪ Proper inventory of affected property and census enumeration of PAPs for entitlements.</li> <li>▪ Compensation will be undertaken to the PAPs as per the Ethiopian proclamation No. 1161/2019 and regulation No 472/2020 for expropriation for the affected houses with regard to loss of house.</li> </ul>
<p><b>Impacts on Vulnerable and Underserved Group</b></p> <p>In the assessment of vulnerable PAPs, we have identified 43 PAHs that are found to be more vulnerable than other PAPs and therefore require special assistance from the project</p> <p>These are:</p> <ul style="list-style-type: none"> <li>▪ 26 Male headed households (MHH) (elderly people aged 65 and above)</li> <li>▪ 16 FHH (no husband/partner to support with farming tasks and labour-short)</li> <li>▪ PAPs with physical disabilities, mental illnesses or chronically ill persons</li> </ul>	<ul style="list-style-type: none"> <li>▪ Special supplementary resettlement assistance will be provided</li> </ul>

Potential Impacts	Proposed Mitigation/Enhancement Measures
<p><b>Archaeological, Cultural, Religious and Historical Sites</b></p> <p>There are no any known or documented sites of archaeological, cultural, religious or historical value along the proposed transmission line. However, there is a possibility of chance findings of archaeological artifacts.</p>	<ul style="list-style-type: none"> <li>During construction if there is any accidental “<i>chance findings</i>” of any archaeological artifacts, the contractor shall report to each regional and local culture and tourism offices, following the chance findings procedures.</li> </ul>
<p><b>Public Health and Safety</b></p> <p>Traffic accidents, electrocution generated effects from electromagnetic fields, and the transmission of communicable diseases (STIs, HIV/AIDS) to local people are all potential risks</p>	<ul style="list-style-type: none"> <li>Develop and implement labor influx management and traffic management plans.</li> <li>Place appropriate signs with the local language at appropriate locations.</li> <li>Ensure that local communities receive adequate safety training.</li> <li>Ensure that the work process does not endanger the public.</li> <li>Create awareness of sexually transmitted infections (STIs) and other diseases among local communities through frequent campaigns (with visual aids) and small seminars for men and women separately.</li> <li>Condom distribution and control of informal sector activity near the project site.</li> <li>Conduct Monitoring on a regular basis.</li> </ul>
<p><b>Occupational Health and Safety</b></p> <p>Activities related project construction works could expose construction workers to the risks of accidents and injuries and also exposure to physical hazards from the use of heavy equipment and cranes; trip and fall hazards; exposure to dust and noise; falling objects; work in confined spaces; exposure to electrical hazards; and hazardous materials from the use of tools and machinery; electrocution during stringing and energizing, pushing and pulling construction activity.</p> <p>Workers may also face other health risks and concerns in the camps e.g., communicable diseases.</p>	<ul style="list-style-type: none"> <li>Post appropriate signs at locations including in local language to prevent or minimize accident risks.</li> <li>Develop and implement Traffic Management Plan</li> <li>Provide appropriate personal protective (safety) equipment (PPE) for site workers.</li> <li>Create awareness and continuously remind the labour force about use of safety equipment in the workplace.</li> <li>Conduct regular monitoring of the workforce on proper use and implementation of the safety rules, and on use of the safety devices and facilities provided to them.</li> <li>Maintain records of all accidents arising from the construction activities.</li> <li>Provide first aid station with first aid kits which will be accessible to the workers.</li> <li>Assign a safety officer on the site.</li> </ul>
<p><b>Traffic Load and Safety</b></p> <p>Vehicular traffic is expected to increase due to the nature of activities that will take place such as the transport of equipment and materials to and from the site using the existing road network in the project area</p>	<ul style="list-style-type: none"> <li>Develop and implement traffic management plan for the project.</li> <li>Post adequate road signs to avoid any accidents that may occur due to construction traffic in the project area;</li> <li>Limit construction hours to reasonable daylight hours where the project construction site is located near villages.</li> <li>Sensitive areas susceptible to cause accidents to public traffic during night time will be demarcated and fenced by warning tapes.</li> <li>Measures including reducing traffic speed will also be applied in the vicinity of the sensitive areas.</li> </ul>
<p><b>Vegetation Clearance</b></p> <p>There are predominantly shrubs and bush vegetation species along the TL that could be affected by the project related activities</p>	<ul style="list-style-type: none"> <li>Avoid any unnecessary loss of vegetation.</li> <li>Re-Vegetation.</li> <li>Ensure that all clearance is done with as little disruption to the environment as possible, and only in permitted areas.</li> <li>Inform the project crew that there is remaining</li> </ul>

Potential Impacts	Proposed Mitigation/Enhancement Measures
	<p>vegetation that must not be touched or damaged.</p> <ul style="list-style-type: none"> <li>As much as possible, clearing is done manually.</li> </ul>
<p><b>Noise</b></p> <p>Noise will emanate from the movement of vehicles, transporting construction materials, equipment to the site and the operation of construction equipment, and extraction of construction materials from quarries and borrow pits, where permissible/acceptable human noise levels can be temporarily exceeded due to the operation of lorries and equipment in the working zone.</p>	<ul style="list-style-type: none"> <li>When working within 200 meters of any settlement, clinic, religious building, or other sensitive noise receptors, equipment that produces high noise levels should be suppressed and screened.</li> <li>Regular vehicle maintenance to reduce noise emissions.</li> <li>To reduce noise pollution, all vehicles and equipment must be turned off when not in use.</li> <li>Noise-producing project activities and material transportation must only take place during the day or during normal working hours.</li> <li>Workers in the vicinity of strong noise emissions should use ear plugs.</li> </ul>
<p><b>Soils</b></p> <p>During construction there will be project activities such as vegetation clearance, excavation and backfilling, construction of project structures, and erecting towers as well as vehicle movements. Such activities are likely to expose the soil to wind and water erosion.</p>	<ul style="list-style-type: none"> <li>No vegetation clearance is permitted outside of designated locations, and</li> <li>To prevent erosion, keep topsoil or vegetation removal to a minimum.</li> <li>Ascertain that the building staff is aware of any surviving vegetation that should not be damaged.</li> </ul>
<p><b>Air Quality and dust</b></p> <p>Site clearance, excavation in soil or rock, construction vehicle movements, and loading and unloading of construction materials will all take place throughout construction and decommissioning. Dust and exhaust gas emissions are likely to have an influence on air quality.</p>	<ul style="list-style-type: none"> <li>Develop traffic management plan.</li> <li>Establish and enforce project vehicle speed restrictions, and implement adequate traffic safety risk management, including a code of behavior for truck drivers, to minimize the impact on the population living in and around the project area.</li> <li>Use dust management measures such as water spraying on unpaved access roads, exposed earth, and any on-site stockpiles to reduce dust emissions.</li> <li>Provide workers with proper personal protective equipment (PPE), such as dust masks and protective glasses, in dusty areas.</li> <li>Avoid burning materials that produce a lot of smoke or stink, such as tires, plastic, rubber products, or other materials.</li> <li>Regular maintenance and inspection of construction equipment and vehicles to avoid excessive gaseous emissions.</li> </ul>
<p><b>Health Effects of Electro Magnetic Fields (EMF)</b></p> <p>Electric overhead lines are considered as a source of power frequency, electric and magnetic fields, which may have a perceived health effect.</p>	<p>Both electric fields and magnetic fields decrease as the distance from the source increases. As a precautionary measure, EEP has adopted standard RoW width of 26m for 132kV along the high voltage transmission lines.</p> <p>All settlement and structures will be excluded from the ROW to ensure safety of people from EMF as well as from direct electric shocks.</p>
<p><b>Risks of Electrocutation and Accidents during Maintenance</b></p> <p>Workers will be exposed to the risk of electrocution during the performance of their duties such as repairing towers, transmission lines and its associated components.</p> <p>Locals can also be at risk especially as they are unaware of the risks and potential</p>	<p>During energizing and maintenance works, people should take precautionary measures like protect themselves by keeping the maximum distance between themselves and objects, avoid physical contact of the power line, provide regular awareness for the workers and post safety warning around the work zone, etc.</p>

Potential Impacts	Proposed Mitigation/Enhancement Measures
<p>hazards which makes them vulnerable to the danger of electrocution.</p>	
<p><b>Risk of Electrocution and Collisions of Birds</b></p> <p>There are many birds in the project area. However, according to Ethiopian Wildlife and Natural History Society (EWNHS, 1996), none of the nationally designated Important Bird Areas are found anywhere near the project road.</p> <p>Therefore, the risk of electrocution and collisions of birds is minor.</p>	<p>Therefore, it is recommended to undertake regular monitoring (at least quarterly for the first three years and annually after that) along the transmission line for evidence of birds nesting on the pylons.</p> <p>According to the survey result measures will be recommended if required.</p>
<p><b>Waste Generation and visual amenity</b></p> <p>The proposed project is expected to generate some amounts of wastes during its operation phase. The bulk of the solid waste generated during the operation of the project will consist of inorganic wastes.</p> <p>Some of these waste materials especially the plastic are not biodegradable hence may cause long- term adverse effects to the environment.</p>	<p>No debris or waste materials will be left at the work sites, good housekeeping on site to avoid litter and minimize waste.</p> <p>Rehabilitation of work areas to minimize visual scarring and clearing will be kept to the absolute minimum and should not extend beyond the corridor.</p>
<p><b>Cumulative Impact</b></p> <p>According to the Officials from Woreda administration offices traversed by the TL route, there are no ongoing or known planned infrastructure development projects like roads, other high voltage TL, etc. within the project influence area.</p> <p>Cumulative impacts from traffic and transportation are not also anticipated to be permanent, but rather temporary, occurring during construction.</p>	<p>Therefore, there is no need to carry out a cumulative impact assessment.</p>
<p><b>Uncertainties in Impact Assessment</b></p> <p>The principal uncertainties in this impact assessment are related to land and property expropriation.</p> <p>The actual extent to which the present project will displace families from land and property is not clear because the final design and tower location may change during construction design tower spotting.</p> <p>It is therefore reasonable to expect that the uncertainties regarding land and property canbe satisfactorily resolved prior to project implementation.</p>	<p>The approach provides an effective means of control and in spite of the present uncertainties; it is expected to allow impacts to be reduced to a low and acceptable level.</p>

## 0.8 Public Consultation

Several consultations meetings were held from February 28 to March 30, 2022 in all project woredas and Kebeles with members of the community and stakeholders. These public consultations were carried out with the objective of informing the stakeholders on the potential impacts and seek the participation and contribution of the public and



other stakeholders during the construction of the proposed transmission line and substation projects.

A total of 20 different public and stakeholder consultation meetings were held in the project influence area of which 8 of the meetings were conducted with the local authorities and 12 of the consultation meetings were held with various members of the community (9 consultation meetings were with community representatives (clan leaders, religion leader's elders and other segment of the community members) and 3 exclusively with Women groups). Concerning participants number more than 239 people were consulted of which 58 of them were local officials at Woreda and Kebele Administration level. About 139 of the people and 42 were women were consulted at community level

The study team provided adequate information to the participants about the nature, components and the transmission routes at the beginning of each consultation sessions.

The participants voiced their fears, concerns and uncertainties associated with implementation of the proposed transmission line and substation projects in the localities. They have identified several key issues that EEP need to take into consideration seriously in the course of implementation of the TL project. Critical issues of discussions included matters related to resettlement, land acquisition/expropriation, property registration and administration of compensation payment, infrastructure, and social service facilities.

They were also given the opportunity to propose some measures to avoid or mitigate negative impacts and enhance the potential beneficial impacts.

#### **ESIA Report Disclosure and Clearance**

As the project developer, EEP is responsible for providing correct and up-to-date information on this ESIA to all stakeholders. Therefore, the ESIA full document and executive summary will be uploaded on EEP's and African Development Bank websites as part of the public disclosure process.

The ESIA report will be reviewed and cleared by AfDB. The ESIA document will be sent to the EEPA for review, approval and final clearance.

## **0.9 Livelihood Restoration Strategy and Community Development Plan**

### **Livelihood Restoration Strategy**

To enable PAPs not only to restore their income but also to improve their standard of living, EEP is committed to supporting and providing resources for the implementation of various income restoration and community development schemes for the project affected communities.

The LRP, which directly targets PAPs incorporates various strategies and components including: land-agriculture based strategies (crop production and improvement through various extension package.

Special assistance measures for vulnerable groups of PAPs (elderly and female-headed households and persons with chronic illness).

### **Community Development Support**

The Project affects a sizeable piece of collectively owned land and other land-based resources, which are currently in use for grazing and transhumant migration. Since all grazing land and other land-based resources affected by the Project are collective



property of communities around the project. There is no other sensible mechanism, other than initiating a collectively owned and used Social Development Plan, to earmark compensation payment to communities affected by land acquisition.

It is obvious that PAPs constitute a group of people who are more directly and disproportionately affected but, undesirable impacts of the project are not necessarily confined to PAPs alone. Other members of communities residing around the project influence area would also, to a lesser extent, be affected both directly and indirectly.

Therefore, under the community or social development component, EEP will finance for the following development projects:

- a) Electrification of project Kebeles;
- b) Water supply and cattle watering pond;
- c) Upgrade and Support three existing health facilities
- d) Upgrading an existing TVET
- e) Strengthening an existing veterinary clinic; and

## 0.10 Environmental and Social Management Plan

Environmental and Social Management Plan (ESMP) is necessary to avoid, minimize or offset adverse impacts, enhance positive and beneficial impacts during implementation.

ESMP is used to ensure that environmental and social impacts identified are mitigated during project implementation and operation phase.

The implementation responsibility of the ESMP will be for EEP and EEP's representatives. Construction contractor will be responsible for site specific ESMP preparation and implementing mitigation measures but, the ultimate responsibility to ensure that the proposed mitigation measures lies with EEP. Somali Region Environmental Protection and Rural land administration and Use Bureaus and Woreda line offices will also be responsible in implementing the ESMP.

## 0.11 Environmental Monitoring Plan

Monitoring is an essential component of project implementation. It facilitates and ensures the follow-up of the implementation of the proposed mitigation measures. It helps to anticipate possible environmental hazards and/or detect unpredicted or unforeseen impacts over time.

During the preconstruction phase, monitoring will largely be concerned with checking that the appropriate measures have been incorporated in designs and contract documents. This will be the responsibility of the design consultant's Team Leader assisted by his environmental team members.

During the actual construction period, day-to-day monitoring will be the responsibility of the Engineer's construction supervision staff, with support from the Environmental Specialist attached to the construction supervision team.

Monitoring during the operational phase of the project will be limited to checks relating to the need for normal and special maintenance works, and it is expected that these will be the responsibility of EEP as the organisation responsible for operation and maintenance works.

## 0.12 Grievance Redress Mechanism

Proclamation No. 1161/2019 and AfDB's PS1 require the establishment of a grievance mechanism to receive and facilitate resolution of affected communities' concerns and grievances about the Project's environmental and social performance. The grievance mechanism should seek to resolve concerns promptly, using an understandable and transparent consultative process, and at no cost. The mechanism should not impede access to judicial or administrative remedies.

### Grievance Management Approach

For minor grievances between PAPs, or between PAPs on the one hand and other community members on the other, EEP will refer the matter to relevant community elders for resolution. If the grievances are deemed significant, then EEP in partnership with the Woreda Resettlement Committee (WRC), will facilitate a mediation or negotiation between the parties.

Where a grievance relates to EEP's management of the environmental and social performance or RAP/LRP process, community-based resolution is not appropriate. Grievances relating to these will be dealt with in accordance with the Grievance Redress Mechanism (GRM).

A local Grievance Redress Committee (GRC) will be established, consisting of representatives from PAPs, EEP representative, representative from affected Kebele Administration, religious leaders and elders or influential personalities other than the aggrieved persons.

The grievance mechanism should be adequately disseminated among affected communities in the course of the stakeholder engagement process and its access should be adapted to the social and cultural context.

EEP shall regularly prepare Project construction monitoring reports on the Project environmental and social performance, including consultation activities and grievance management. It is recommended that these reports should be disclosed to EPA, Regional Environment Offices and to different stakeholders including communities with adapted methods.

## 0.13 Capacity Building and Training

### Training and capacity building of relevant organizations

The training programme is to strengthen EEP Environmental and Social Affairs Office (ESAO's) capability in the area of environmental and social impact/risk management and monitoring. This shall include short term specialized trainings and additional and specialized training related to High Voltage Transmission line project.

In an effort to strengthen institutional capacity and environmental awareness, seminar/workshop to be organized under this project shall also be open for individuals from concerned ministries and agencies such as Federal MWIE, EPA, SNR's office of Environmental protection, and Woreda level Environment department, etc.

The objectives of the seminar-workshop is to ensure environmental awareness, knowledge and skill for the implementation and monitoring of this ESIA.

### Training and Capacity Building for construction workers

The EPC Contractor is responsible for informing employees and subcontractors of their environmental and social obligations, and for ensuring that employees are adequately experienced and properly trained to conduct the works in a manner to minimize social & environment impact.

Upon arrival on site, all new employees, including the project Administrators, security personnel and subcontract personnel shall be given ESMP and HSE induction training, carried out by HSE Manager or his representative.

Therefore, the EPC Contractor shall:

- Ensure employees are familiar with the HSE requirements of the Project;
- Develop and provide employees job safety training specific to their jobs;
- Ensure continuous development of its human resource through training and awareness;
- Develop and implement a mechanism for a continuous assessment of competence of the workforce; and
- Maintain all training records by the HSE Office and will be produced on request.

## 0.14 Environmental and Social Mitigation, Management and Monitoring Costs

The total environmental and social mitigation, management, monitoring and training costs are summarized and amounts to some 124.3 million Birr (2.3 million USD). This amount will be allocated to cover implementation of the environmental and social mitigation, management, monitoring programs and social development projects.

It should be noted that no significant increase in construction costs is expected in connection with requiring the Contractor for compliance with environmental protection clauses, since these merely require the contractor to behave in a responsible manner in relation to the environment and in accordance with good construction practice.

Costs associated with several environmental mitigation and management plans shall be an integral part of the construction contract (to be incorporated in unit rates and bill items), and no separate budget is necessary to cover these aspects. The cost estimate has made adequate provisions for contingencies, and it has to be considered as a component of the financial requirement of the project.

## 0.15 Conclusions and Recommendations

### Conclusion

The implementation of the Degehabur – Kebridehar TL and Substation will improve power generation and transmission and will boost electricity supply capacities of the nation in general and the project areas in particular.

Like all other infrastructure development projects, project would also have adverse impacts on the biophysical and socio-economic environment that need to be accounted for and avoided, minimized or mitigated when and wherever feasible. On the bases of existing routing and engineering design (206km length and 26 m width), the proposed TL project would have an estimated 535.6ha corridor including 3.88 ha for tower foundation place will be required. Furthermore, a total of 9.0ha of land will be required for the construction of the new substation at Birkot.

The adverse impacts will be controlled within acceptable limits, provided that the appropriate mitigation measures are adopted. Construction phase impacts will also be mitigated by specific environmental protection clauses included in the construction contract documents, and enforcing compliance with them during construction supervision.

The project corridor is neither contiguous with, nor in close proximity with any of the nationally protected areas like National Parks, Wildlife Sanctuaries, National Priority Forest

Areas and Controlled Hunting Areas. There are no known and observable archaeological and cultural heritage sites within the project corridor. Nevertheless, the possibility exists for the discovery of buried archaeological remains during excavation and site clearance. If that happens, as part of the mitigation program, the Authority for Research and Conservation of Cultural Heritage, ARCCH will conduct additional surveys during the construction and quarrying to determine if any potential sites exist.

## Recommendations

The Degehabur - Kebridehar TL and Substation project is technically feasible and economically attractive. If the benefit enhancement and mitigation measures recommended in this Environmental Impact Statement are adopted, there are no environmental grounds for not proceeding with implementation of the project in the form in which it is presently envisaged. Such a worthwhile scheme, which will bring net benefits to the nation in general and the local communities in particular should be implemented at the earliest possible date.

However, it is recommended for EEP to implement the following:

- 1) **Resettlement Action Plan:** Construction and installation of 206 km long Degehabur - Kebridehar 132 kV Transmission Line Project will affect 179 households (163 male and 16 female HH heads) and 1,380 persons are living in these project affected households. These include an estimated 0.82 ha farmland owned by the 124 smallholder farm households and 66 houses and related structures belonging to 43 HHs. Therefore, the total number of people who will be affected by involuntary resettlement are more than 200 in relation to property expropriation alone and in consequence, it will be necessary for a RAP to be prepared. Therefore, EEP who is the implementing Authority must prepare a RAP once the project is committed for construction.
- 2) **Livelihood Restoration Plan:** Both Operation Safeguard 2 (OS 2): Involuntary Resettlement Land Acquisition, Population Displacement, and Compensation and the recent Expropriation of Landholdings for Public Purposes and Payments of Compensation Proclamation No 1161/2019 prescribe the necessity of livelihood restoration in connection with economic displacement. Thus, based on the entitlement matrix and the project area's socioeconomic baseline, EEP will design a Livelihood Restoration Plan (LRP) that ensures that PAPs, subsequent to their economic displacement, have their livelihood restored and, to the fullest extent possible, improved.
- 3) **Community Development Plan:** All grazing land other land-based resources affected by the Project are collective property of communities around the project. In addition, during the construction phase there are several sources of inconvenience for communities residing around the Project area. Adopting a wider approach, it is therefore proposed that the Project support selected community development initiatives benefitting the entire Project communities and beyond. Therefore, EEP will design and implement a Community Development Plan (CDP).
- 4) **Project designs, specifications, and contract documents:** It is recommended to ensure project designs and specifications incorporate appropriate measures to minimize negative impacts and to enhance beneficial impacts.

It is also recommended to ensure that the appropriate environmental protection clauses have been included in the contract documents to allow control of actions by the contractor, which are potentially damaging to the environment, the community and construction workers.

- 5) *Rural Electrification*: In spite of the fact that PAPs and local authorities were aware that the planned TL project is not a rural electrification initiative, they strongly demanded for electrification of their constituencies and project affected communities in particular.

Their demands for electrifying their homes and communities are fair and legitimate. Therefore, EEP in consultation with EEU give priority to these communities during separate and on-going rural electrification programmes (e.g., UEAP) of the GoE.

- 6) *Maintain Ongoing Stakeholders Engagement*: Maintaining ongoing and transparent discussions and consultations both with members of affected communities and their administrations is in the best interest of the TL project. Such platforms could and should be used to disclose information about the project, to create shared understanding and trust between parties involved in the process.

# 1. Introduction

## 1.1 Background of the Study

Ethiopia's main power supply system is made up of a publicly owned and operated interconnected system with a total 4,418 MW installed generation capacity and there are also small operational and active off-grid self-contained systems supplied by diesel generators and hybrid solar-diesel with a total installed capacity of 21.8 MW in 2021. The Interconnected System (ICS) has a total of 17,838 km of HV transmission lines and the distribution networks are operated by 33 kV, 15 kV, and 0.4 kV composed of 40,337km of 33 kV lines and 26,073 km of 15 kV lines serving 4,129,503 customers. The Ethiopia Electric Power (EEP) was established to manage the high voltage transmission grid infrastructure to cope with growth in energy demand.

The energy sector was identified as a priority sector in Ethiopia as laid in the National Development Plan. Accordingly, the Government of Ethiopia, with the support of development partners, prioritized investments in the country's electricity sector to strengthen and expand transmission capacity to meet the energy needs of the country. Access to electricity has been created so far for 47% of the population with 95% in urban and 32% in rural areas (34% through the main grid and 11% using off-grid technologies). Access to electricity is important for development due to its linkages to agriculture, industry, education and health. Limited and unreliable access and use of energy will significantly slow down the economic and social transformation of the country.

Domestic transmission lines that are ancillary to regional trading networks and provide electricity for rural areas are critical for the domestic movement of the power and transmission systems market in the coming years.

The Degehabur – Kebridehar TL Project has been selected by EEP as one of its key transmission expansion project to meet domestic and growing industrial demand in the project area. The ultimate goal of Power Transmission Project is to expand the 132 kV network from Degehabur to Kebridehar through a new substation at Birkot.

The development of the proposed TL project will involve potential impacts - to the physical, biological and socioeconomic environment that need to be assessed. The Environmental Assessment guideline prepared by Environmental Protection Authority (EPA) (EPA, 2002) requires development projects to reduce adverse effects on the physical, biological and socio-economic environments. The EPA guideline lists schedule of activities that require full ESIA and a project nature of Degehabur – Kebridehar TL Project is included in this. Furthermore, AfDB's Environmental and Social Assessment Procedure (ESAP) and Integrated Safeguards System (ISS) require full ESIA for such kind of projects.

This Report has been prepared following a request by African Development Bank (AfDB), to update to review and update the draft ESIA report prepared by EEP's Environmental and Social Affairs Office for the Degehabur – Kebridehar 132 kV Power Transmission Project to meet the requirements and standards of the AfDB's Environmental and Social Assessment Procedures and National requirements.

Mid-Day International (MDI) Consulting Engineers of Ethiopia was charged with the responsibility review and update the existing draft ESIA report.

## 1.2 Objectives of the Study

The main objective of this ESIA was to provide a means whereby the overall environmental performance of the project can be enhanced through identification of potentially beneficial and adverse impacts associated with project implementation and subsequent operation. It is also to adopt measures to enhance beneficial impacts and to avoid, minimize, or offset



adverse impacts.

This ESIA is also expected to:

- Review of policies, legislation, and institutional frameworks relevant to the planned project and its location within the country;
- Describe the planned project, sub-projects, and project components indicating the relevance of each component (Transmission line and substation), as well as ancillary facilities and its relationship with the biophysical and socioeconomic-environment of the project area of influence;
- Provide baseline information on the physical and biological environment and social, cultural, demographic, and economic characteristics of the population in and around the transmission line corridor;
- Identification and evaluation of the potential environmental impacts associated with project design, implementation/construction, and subsequent operation and to make sure these impacts do not outweigh the expected positive environmental benefits of the proposed projects.
- Identification and recommendation of various mitigation measures into the project design, construction, and operation phases to enhance the sustainability of the project,
- Identification, analysis, and evaluation of the various project alternatives with various indicators, including environmental, technical, economical, etc.
- Inclusive public consultation and Stakeholder engagement to gather Woreda and local authorities and local community member's attitudes towards the project and to identify potentials and challenges for mitigation strategies;
- Identify and recommend indicative environmental management and monitoring plans and indicate a budget for the implementation of ESMP.

### 1.3 Approach and Methodology

The approach and methodology adopted for this ESIA follows the established pattern for infrastructure project including high voltage transmission line like 132 kV Degehabur – Kebridehar and meets the requirements of EPA's guideline (EPA, 2000) and AfDB's Integrated Safeguards System, Policy statement and operational safeguard and Environmental and Social Assessment Procedures

The following section provides the details of the approach and methodology adopted for the ESIA of the proposed Power Transmission and substation Project.

**Definition of the Study Area:** In consideration of the nature and the location of the potential future conditions and consequences, the Study Area has been identified.

Therefore, the Project Area is the area in which implementation will definitely bring about measurable and sometimes significant direct changes to the physical environment and ecology, as well as the social and economic conditions. Therefore, the transmission corridor (ROW), substation, access roads, waste disposal sites, campsites, borrow and quarry sites have been the principal areas of focus for fieldwork and data collection.

**Collection and review of Available Information:** The available preliminary project design information including the draft feasibility study for Degehabur – Kebridehar 132kV Power Transmission Project has been reviewed with the objective to identify potential sources of impact of the project on the environment. The draft ESIA document was reviewed to facilitate a better understanding of the work.

The consultants collected and reviewed published documents, regulations, and CSA's census reports. Information on existing environmental conditions, necessary to provide the background for impact identification and assessment has been obtained from these published sources.

The legislative framework applicable to the proposed project is governed by the Federal Democratic Republic of Ethiopia (FDRE). The national legislative and institutional framework, policies, procedures, guidelines etc. have also been reviewed (See References). African Development Bank Integrated Safeguards System, Policy statement and operational safeguard and Environmental and Social Assessment Procedures (ESAP) were also reviewed.

**Maps and Images:** Topographic maps prepared by Ethiopian Mapping Agency and Central Statistical Authority were also used to identify and delineate villages, resources and facilities that could potentially be affected when the proposed scheme is realized.

The current national and regional conservation area map issued by the Federal Government of Ethiopia is also used. Satellite images have also been used to assess the land use, vegetation cover, infrastructure, settlements and other socio-economic activities within the TL corridor.

**Field Investigation:** Members of the ESIA Team have carried out site investigations between January – February 2023. During the field investigation, information on physical resources, ecological resources, socio-economic aspects, health, cultural and other values in the Project Area has been collected. Various quantitative and qualitative data collection and information gathering techniques were used in this assessment.

**Public Consultations:** The field investigation also included extensive consultations with various community members along the proposed Transmission Line Corridor, as well as different stakeholders and local authorities in the project-affected area. The consultation was carried out to obtain the views of the project affected communities on various aspects of the project, background information relevant to impact assessment (identify any areas of specific concern which needed to be addressed in this assessment) and identification of mitigation measures.

**Description of the Baseline Environment:** Information on the existing natural and socio-economic resources is of fundamental importance for evaluation of environmental impacts. Therefore, the baseline data on the physical, biological and social, cultural and socio-economic setting of the project have been assembled, evaluated and presented.

**Identification of Environmental Impacts:** Key potentially beneficial as well as adverse impacts on the physical, biological and socio-economic environment associated with the construction and operation phases of the project have been identified and quantified where possible.

**Environmental Mitigation and Benefit Enhancement Measures:** Feasible and cost effective mitigation and benefit enhancement measures that may avoid or reduce potentially significant adverse environmental impacts to acceptable levels are identified and recommended.

**Preparation of ESIA Report:** The final step is the preparation of the ESIA report. This report has concentrated on key issues and impacts, which are of importance in terms of affecting the overall environmental performance of the Project.

This report also answers the essential questions needed to establish whether the project as conceived is environmentally and socially viable, or should be modified during construction phase so as to become acceptable.

## 1.4 Report Structure

The content of this ESIA report is designed to meet requirements and guidelines of the EPA as well as African Development Bank Operational Safeguard (OS), Integrated Safeguards System (ISS). Therefore, the content of this ESIA are presented below:

Table 1.1: The structure of the report

Chapter	Description of content
<b>Chapter 1</b>	Presents an overview of the proposed project and its benefits. It gives information on the objectives, scope, and methodology of this ESIA.
<b>Chapter 2</b>	Provides a detailed description of the planned projects and components.
<b>Chapter 3</b>	Summarizes relevant national policy and sector strategy regarding environmental protection in Ethiopia and AfDB's operational Policies and ESAP within which this ESIA is carried out. This chapter also shows how these policies and strategies are incorporated within the environmental framework of the country and those institutions that are responsible for their implementation. It identifies relevant international environmental/social agreements to which the country is a signatory;
<b>Chapter 4</b>	Gives an account of the physical, biological, and socio-economic environments within the Transmission Line Corridor and its influence area;
<b>Chapter 5</b>	Presents a detailed analysis of impacts of the project on the physical, biological and socio-economic environment. Appropriate benefit enhancement and mitigation measures and complementary initiatives shall be identified and recommended to avoid, minimize, compensate or mitigate the adverse environmental and/or social impacts.
<b>Chapter 6</b>	Provides description of the project alternatives and analysis of the same with respect to biophysical environmental, social and economic features (including the "Without Project" option) which could be implemented to address the development needs of the country;
<b>Chapter 7</b>	Presents results of public consultation with project-affected community (including women, youth, elders, etc.) as well as other concerned key stakeholders at Woreda and Kebele levels. Perceptions and attitudes of project affected communities and their leaders have also been presented;
<b>Chapter 8</b>	Presents indicative environmental management plan. It also provides the management responsibilities relating to the mitigation measures associated with specific impacts;
<b>Chapter 9</b>	Contains the environmental monitoring and training, and defines monitoring indicators derived from the baseline survey. It identifies responsibility and specifies the time frame for monitoring and reporting
<b>Chapter 10</b>	Discusses the environmental mitigation, management and monitoring costs
<b>Chapter 11</b>	Contains the conclusions and recommendations.
Tables, figures, annexes, and list of references are incorporated in this ESIA report.	

## 2. Project Description

### 2.1 Project Information

The supply of electrical energy at competitive prices, in sufficient quantity and reliability, and under the aspect of safe supply through reliable equipment, system structures and devices are of crucial importance for the economic development of countries and for the well - being of each individual.

The scope of this project is to develop power transmission development plan for Harar, Jigjiga, Fafem, Birkot and Kebridehar towns and it's surrounding due to the low voltage around the area. Therefore, this Project is designed to reinforce and extend the Ethiopian national high voltage transmission Grid. The Project area starts from the existing Hurso 400 kV substation and extends in the Eastern direction to a major towns of Harar, Fafem and Jigjig. A second arm at 132 kV starts from Kebridehar to Kebridehar via Birkot.

Four (4) new substations will be constructed under this project, three (3) existing substations will be extended, two (2) existing substations will be reconfigured, and one (1) substation will be upgraded. The transmission line from Hurso to Jigjig via Harar will be designed and constructed at 400 kV level but will be operated at 230 kV until the 400 kV transmission line from Debre Zeit to Hurso substation is constructed. The line is at the preparation phase by the World Bank.

**Project Name:** Hurso - Harar IV - Jigjiga II 400 kV & Fafem and Birkot 132 kV Power Transmission Project

**Executive Agency:** Ethiopian Electric Power (EEP)

**Financer:** Africa Development Bank (AfDB) and Korea Economic Development Cooperation Fund (EDCF) under the Korea-Africa Energy Investment Framework (KAEIF) that was signed between AfDB and Korean Exim Bank

### Project Components

#### Component 1: Transmission Lines

Sub-Component 1.1: Construction of 400 kV Transmission line. This sub-component comprises construction of 134 km double circuit 400 kV transmission line from Hurso to Jigjig through Harar substation.

Sub-Component 1.2: Construction of a total of 212 km of 132 kV and 66kV Transmission Lines. This sub-component comprises construction of (a) 202 km single circuit 132kV transmission lines from Degahabur to Kebridehar through Birkot, (b) 2.77 km double circuit 132 kV lines to interconnect the existing Fiq, Harar III & Jigjig II lines to new Fafem and Harar IV substations through Line-in-Line-Out (LiLo) arrangement and, (c) 7 km double circuit 66 kV to replace the existing single circuit 66 kV line from Harar III to Harar II substation.

#### Component 2: Substations

Sub-Component 2.1: Substation construction will involve the construction of four (4) new substations (Harar IV 230/132/33/15 kV, Jigjig II 230/132/33/15 kV, Fafem 132/33 kV and Birkot 132/33 kV). In the future, Harar IV and Jigjig II substations will be upgraded to 400 kV level, consequently, adequate space has been considered in the design of these two substations.



Sub-Component 2.2: Substation extension will include the extension of three (3) existing substations (Hurso, Degahabur and Kebridehar); and reconfiguring of existing 132 kV Jigjig substation and 132 kV Harar III substation and upgrading of 66 kV Harar II substation.

This Chapter provides a general description of the Degehabur – Kebridehar Transmission Line and construction of Birkot 132/33 kV and extension of Kebridehar substation Project and presents an overview of the key elements and activities involved during the construction and operation phases.

## 2.2 Project Location

The Degehabur - Kebridehar Transmission Line Project is located in South-Eastern Ethiopia, within the Somali National Regional State. It stretches over five Woredas and two administration towns in two zones. These are Kebridehar and Degahabur towns and Degehabur woredas of Jara Zone and Bodaley, Kebridehar and Shaygosh woredas and Kebridehar town of Korahe Zone.

The location of the Project Area and the administration map of the TL Corridor are shown in Figure 2.1 and 2.2 respectively.

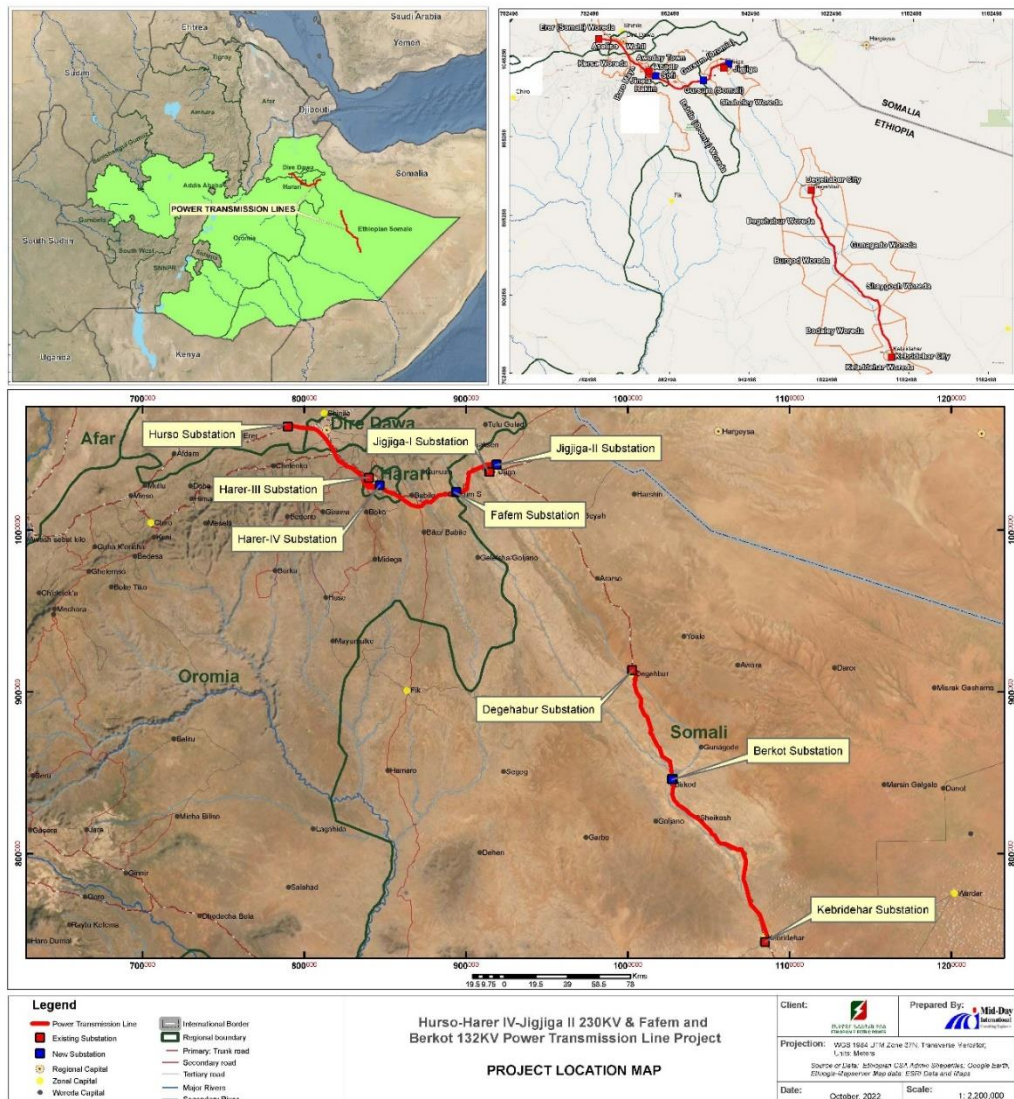


Figure 2.1: Location of the Proposed Degehabur – Kebridehar TL Project

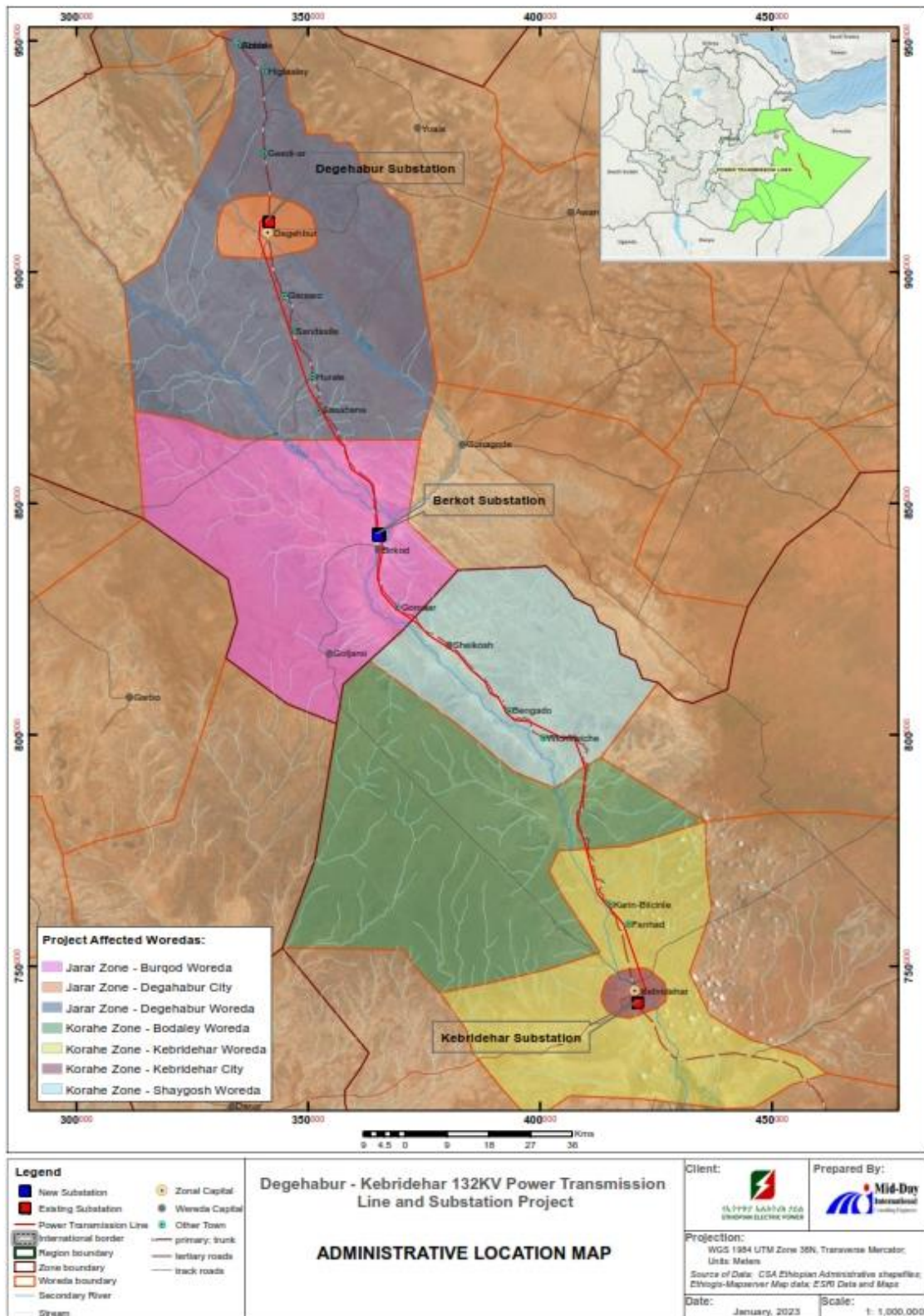


Figure 2.2: Administration Map of the Proposed Degehabur - Kebridehar TL Project



## 2.3 Project Category

Under the criteria of the Environmental Protection Authority (EPA), the Federal Democratic Republic of Ethiopia, the power grid lines above 206 km falls under is a high power transmission line and is a Schedule 1 project. Therefore, it requires an Environmental and Social Impact Assessment (ESIA).

The Degehabur - Kebridehar project is likely to significantly affect environmental or social components. Therefore, under the AfDB's OS 1, the project falls into category 1.

The ESIA report should be submitted to EPA to get Environmental Clearance Certificate (ECC).

## 2.4 Salient Features of the Transmission Line

### 2.4.1 Transmission Line

The proposed Power Transmission Project will strengthen and upgrade the transmission network from Degehabur to Kebridehar through the new Birkot substation.

The proposed transmission lines would be overhead transmission line consists of 132kV. Along the 206 km stretch, it will require the erection of 606 towers, each will be spaced at average distance of 350 m (depending on the terrain and stability of the soil).

The transmission line supporting structures will be steel lattice towers of two types - tension and suspension. Tension towers will be installed in angles and suspension towers will be installed along the line as load bearing support.

The salient features of the 132kV Degehabur - Kebridehar transmission lines are given in Table 2.1. Figure 2.3 is a topographical illustration of the transmission line route.

Table 2.1: Salient Features of Transmission Lines

S/No	Features	
1	Voltage Rating	132kV
2	Type of Transmission Line	Double Circuit
3	Width of T/L Right of Way (RoW)	30m
4	Type of Line Support	Steel towers
5	Conductor	AAAC Ash 180.7 mm <sup>2</sup>
6	Conductor Material	Aluminum Alloy
7	Line Insulator	Disc type, Porcelain
8	Type of Connection	Substation
	Tapping point:	Degehabur Substation
	Termination point:	Kebridehar Substation
9	Number of Angle Towers	46
	Approximate number of towers to erect:	606
10	Average/Standard Tower Height (m)	40
11	Approximate Length of T/L	206km
	Average span between towers over normal topography	300m
12	Total land requires for installing a typical Tower	64m <sup>2</sup> (8m x 8m)
13	Standard Distance between phase-to-phase conductors (approx.)	4m

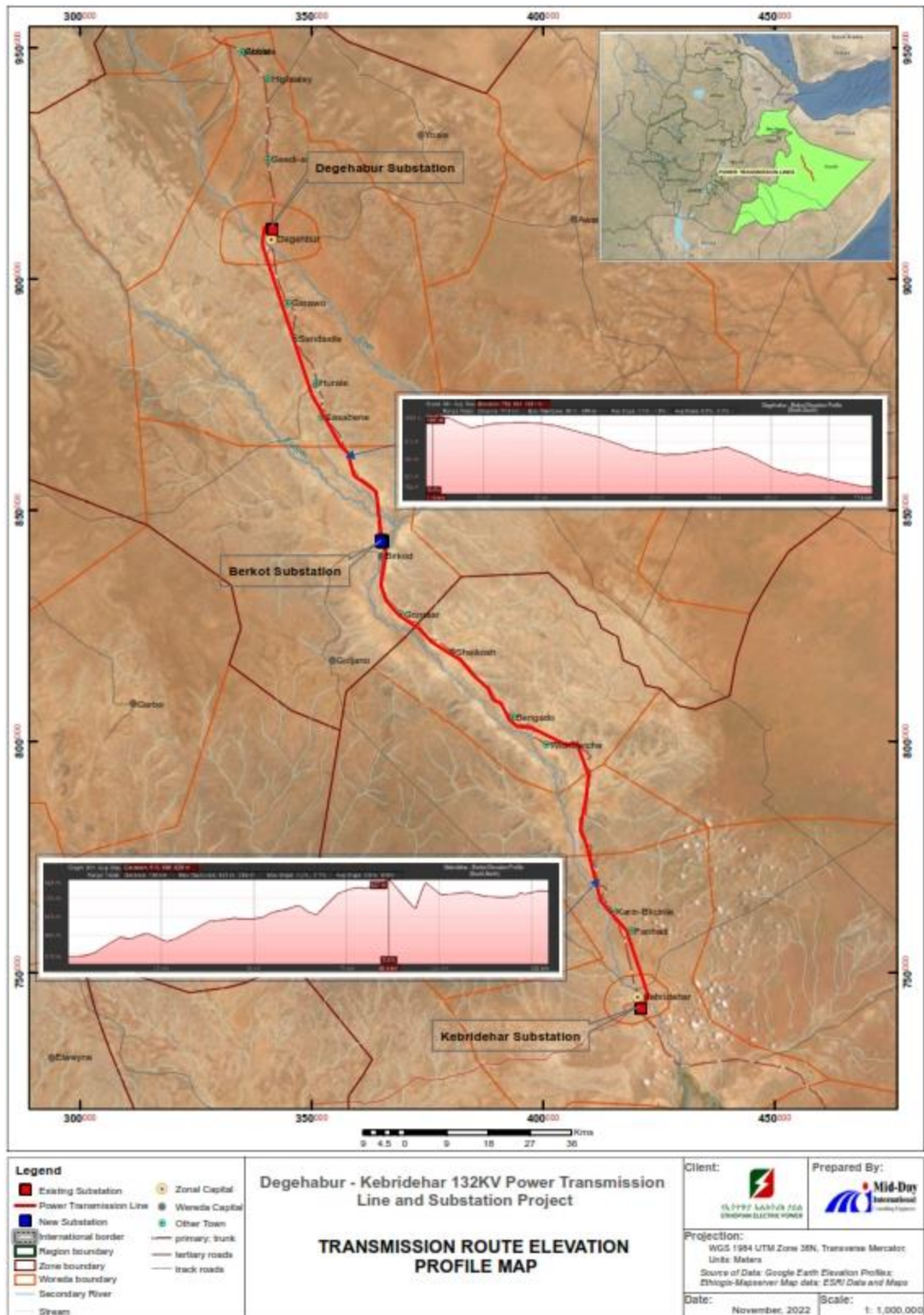


Figure 2.3: The Degehabur - Kebridehar 132 kV Transmission Line Route Overview

## 2.4.2 Towers

The towers shall be self-supported steel lattice type single circuit towers. Lattice structures tend to be used in rural open, unpopulated areas where spans can be lengthened.

Towers come in many small pieces. Each of the many pieces shall be separately manufactured. At the site, each piece shall be tracked, accounted for and assembled in to the finished tower.

Tower loading shall be calculated according to IEC60826 and EN 50341-1. The towers shall be self-supported steel lattice type 132 kV single circuit towers.

Figures 2.4 show typical designs for the main types of transmission towers and typical tower foundation to be constructed.

## 2.5 Right of Way

Right of Way (RoW) is required to ensure the safe construction, maintenance and operation of the power line.

According to the Ethiopian Electricity Agency directives of overhead electric line clearance 30m wide ROW is required for 132kV.

## 2.6 Salient Features of Birkot Substation

**New Birkot Substation:** This will house all the electrical equipment to connect to the new line. A control building will house the control panels to operate these equipment.

The Birkot substation will have an outdoor conventional single bus bar configuration for 132 kV. The electrical layout of all substations will involve different number of line, transformer and bus coupler (if required) according to the size of substation.

The Google location of the proposed new Birkot substation site is shown in Figure 2.5

**Degehabur:** The Degehabur substation is an extension of existing substation and will have an outdoor conventional single bus bar configuration for 132 kV.

And 132/33 kV substation at Berkot by construction of 132kV Single circuit transmission line from Degehabur substation at a distance of 77.2km

**Kebridehar:** The Kebridehar substation is an extension of existing substation and will have an outdoor conventional single bus bar configuration for 132 kV.

a 132kV Single circuit transmission line from Kebridehar at a distance of 129 km to Berkot substation

The Google locations of the existing Degehabur and Kebridehar substations are shown in Figure 2.6.

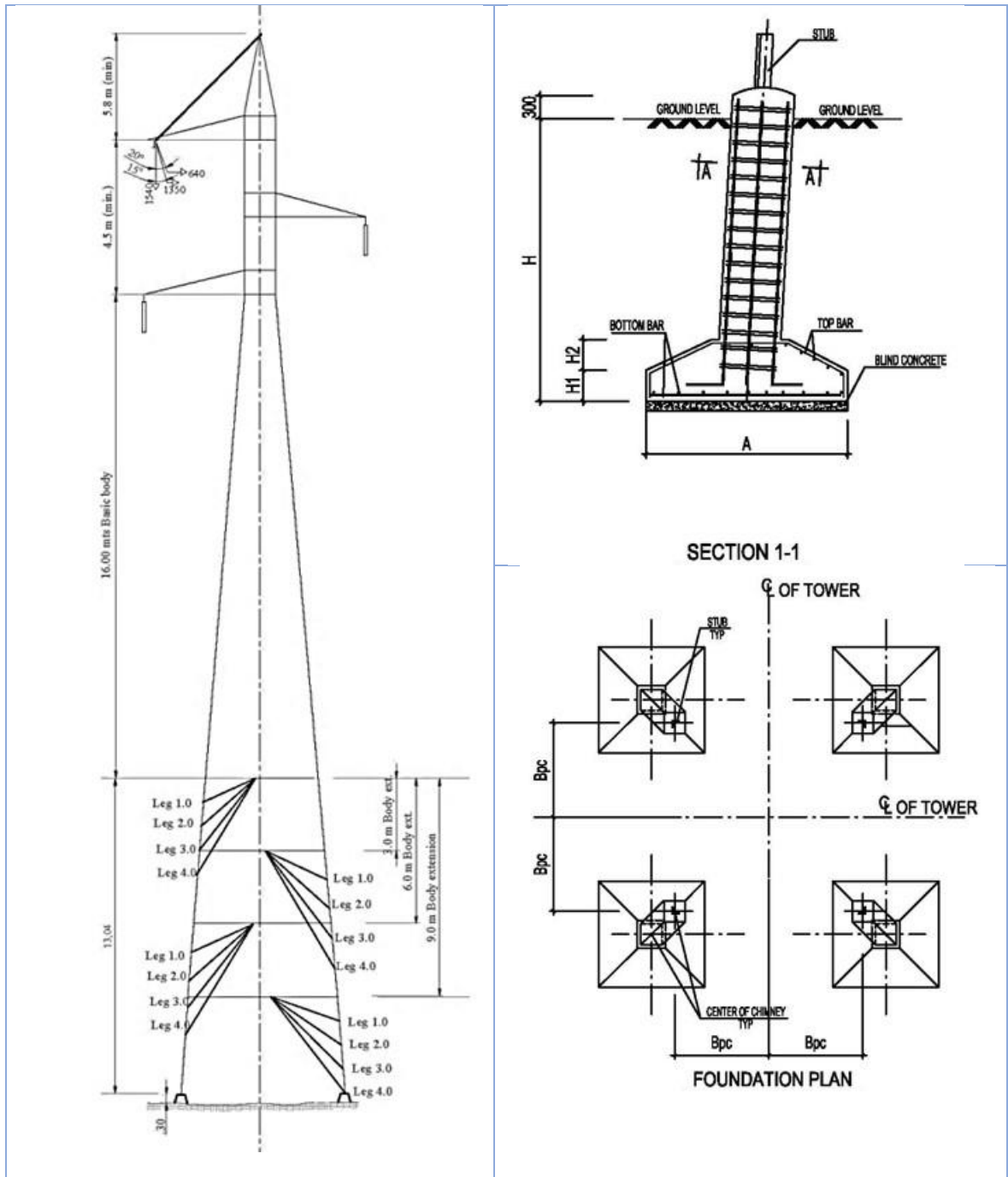


Figure 2.4: Drawings of Typical 132 kV Tower Type (left) and Tower Foundation (right)



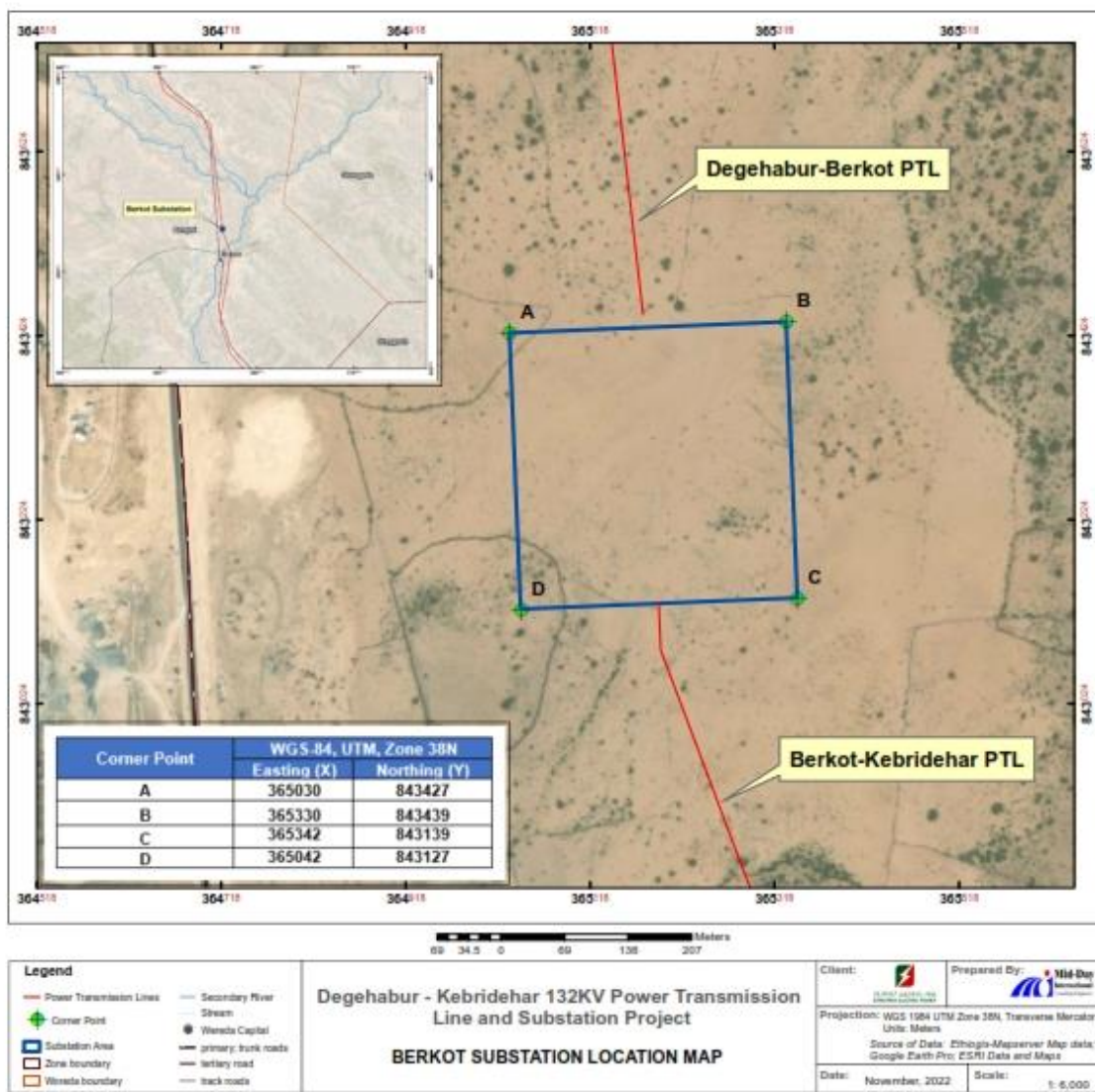
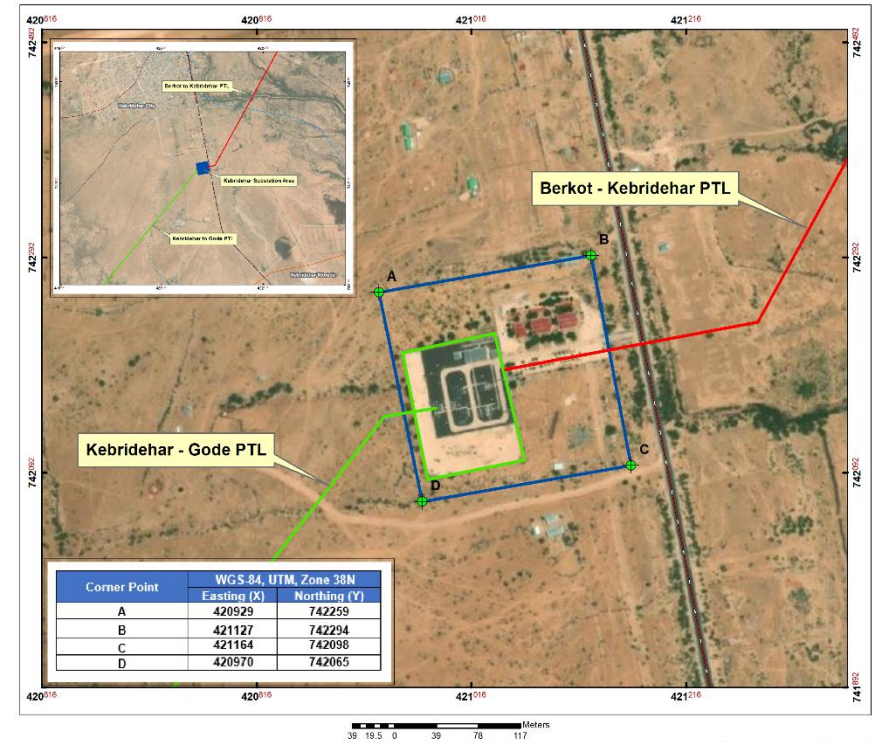
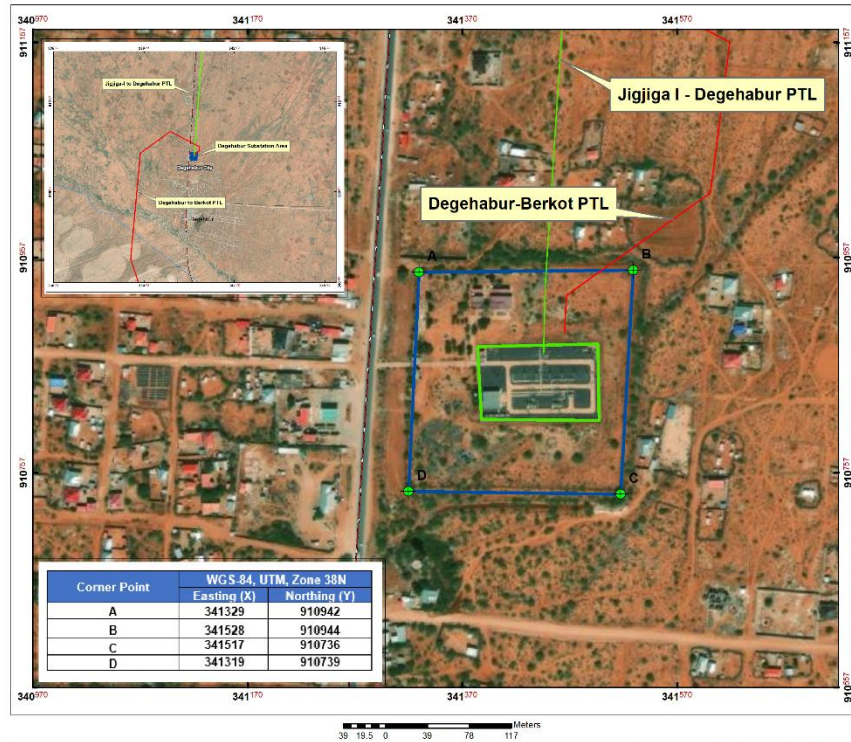


Figure 2.5: Location of the Proposed Birkot substation



**Legend**

- Corner Point
- Existing PTL
- New PTL
- Substation Area
- Existing Substation
- Zonal Capital
- primary trunk roads
- tertiary roads
- back roads
- Secondary River
- Stream

**Degehabur - Kebridehar 132KV Power Transmission Line and Substation Project**

**DEGEHABUR SUBSTATION LOCATION MAP**

Client: Prepared By:

Projection: WGS-1984 UTM Zone 38N, Transverse Mercator, Units: Meters

Source of Data: Ethiopia-Mapserver Map data, Google Earth Pro, ESRI Data and Maps

Date: March, 2023 Scale: 1:4,000

**Legend**

- Corner Point
- Existing PTL
- New PTL
- Substation Area
- Existing Substation
- Wireless boundary
- primary trunk roads
- tertiary roads
- back roads
- Secondary River
- Stream

**Degehabur - Kebridehar 132KV Power Transmission Line and Substation Project**

**KEBRIDEHAR SUBSTATION LOCATION MAP**

Client: Prepared By:

Projection: WGS-1984 UTM Zone 38N, Transverse Mercator, Units: Meters

Source of Data: Ethiopia-Mapserver Map data, Google Earth Pro, ESRI Data and Maps

Date: March, 2023 Scale: 1:4,000

Figure 2.6: Location of the Existing and Proposed Expansion Area for Degehabur (left) and Kebridehar (right) substations



## 2.7 Construction Phase Activities for the TL

The Contractor is required to prepare and submit to the Project Engineer a detailed Method Statements in order to safely construct and install the overhead transmission lines.

However, the key construction phase activities for the transmission lines and substations will include the following:

- Site Clearing;
- Foundation Excavation;
- Construction of the concrete bases for the transmission line pylons, including stubs implementation;
- Assembly and erection of the towers;
- Cable stringing of the transmission line; and
- Site rehabilitation.

### 2.7.1 Site Clearing

In the ROW other than the access track, clearance of vegetation will be minimised, however vegetation clearance will be required in the immediate area of the tower foundations. Only trees that could damage the transmission line will be cleared. The vegetation cover along the proposed TL corridor are sparse and therefore all clearance of vegetation will preferably be done by hand and will not use heavy machinery.

### 2.7.2 Foundation Excavation

Typical foundation excavation depths for lattice towers depending on the soil condition is about 3 meters. The excavation will be carried out using excavators to open the ground to prepare the foundation solution. Each excavation will be inspected and tested to confirm its suitability.

### 2.7.3 Construction of the concrete bases for the transmission tower:

The foundations are ultimately filled with concrete.

The Contractor is required to safeguard excavations. This may include erecting a temporary fence or warning solution around the excavation to protect the safety of people and animals.

### 2.7.4 Access Roads

Site access roads will be required to provide access to channel all the traffic generated by the construction activities for the safe transport of personnel, equipment and materials.

Access to the transmission line tower location as much as possible will be using existing public highways and access roads. Access to the tower locations will be gained via a short 'spur' from this track. However, where an existing access track is not present, new access tracks will be constructed as much as possible within the ROW.

In addition to providing access to the construction activities, the access road will potentially benefit the local communities after the construction is over by making the transport of people and goods safer, easier and quicker. Moreover, these roads will be used for inspection and maintenance purpose during the operation of the transmission line.

## 2.8 Construction Phase Activities for Substations

The Contractor is required to prepare and submit to the Project Engineer a detailed Method Statements in order to safely construct and install the substations and control room and ancillary facilities.

The key construction phase activities for the substations will include the following:

- Topographical Survey;
- preparation of the construction site, earthwork;
- Establish the work zone and excavation for equipment and control room foundation;
- Foundation work for all buildings, tower & equipment structure and offices and stores;
- Construction of the concrete bases and lay the foundations;
- Laying the foundation and supply of external networks;
- Backfill the foundations and substation yard;
- Install major electrical components;
- Assemble the steel structures and construction of supporting metal structures;
- Assembly and installation of auxiliary systems;
- Construction of the Control Building;
- Construction of compound/internal access road;
- Property Fencing; and
- Cleaning construction waste, landscaping and site rehabilitation.

## 2.9 Land Required for the Project

On the bases of the proposed routing and engineering design (206 km length and 26m corridor/ROW), the project would affect an estimated area of about 535.6 ha of land for the construction and installation of tower foundations and a new substation at Birkot.

Approximately, about 606 transmission towers will be erected and an estimated 3.88 ha of land (606 towers x 8m x 8m ÷ 10,000) permanently occupied by tower pads/ foundation. Total land required for the construction of the new substation at Birkot is 9.0ha.

However, an additional land temporarily will be required for the construction of camps, administration offices, store and workshop.

The impact from the construction works will be progressive and this is because all of the construction area will be required at the same time.

## 2.10 Requirements for Raw Materials/Construction Materials

The construction materials required for Degehabur – Kebridehar Transmission Line and Birkot substation construction include cement, coarse and fine aggregates, sand, reinforcement steel, rough sawn timber, bellies and steel- bar, checker-plate, anchor-bolts, and electric cables.

All materials for concrete and backfill with gravel and sand etc. will come from the nearby existing aggregate production sites where possible.

The location of quarry sites, either new or existing, will be determined by the Contractor to suit his method of working but will be subject to the approval of the Engineer.

## 2.11 Construction Power Requirements

There will be no requirement for electricity for the construction of this Project. However, light may be required to light construction site offices, stores and installation sites.

## 2.12 Water Supply Requirements

Water is one of the main resource during construction and operation phases to be used for different purposes such as for concrete works and drinking and domestic consumption for construction workers.

The Contractor will need to develop its own water supply sources (i.e. to buy water from licensed suppliers or wells) for the construction and the campsites requirements.

## 2.13 Temporary Construction Facilities/ Ancillary Activities

During the works contract, the contractor will establish temporary construction site facilities including the following:

- Temporary site offices
- Campsites
- Material storage yard
- Machinery and equipment storage yard
- Water storage tanks
- Fuel storage tanks
- Toilets and septic tanks
- Canteen facilities
- Access road

The storage area is expected to be the base for a fleet of vehicles to be used for the construction process. Material destined for the transmission line will be trucked from the storage yard to site via public highways and the way leave itself.

The locations of auxiliary activities have yet to be chosen. Therefore, in consultation with the Local government officials and community representatives, the Contractor will arrange the required land.

If the contractor is required to designate land for those activities, Operational Safeguard (OS2) and appropriate compensation payment shall be considered. The Contractor's Environmental and Social Management Plan (C-ESMP) shall include proper mechanisms for management and monitoring of anticipated impacts due to the implementation of these ancillary activities.

## 2.14 Camp Facilities for Construction Workers

The contractor will establish a principal construction camp at convenient location within the specified contract. The facilities will include office and residential accommodation for senior supervisory staff and operatives, plant and vehicle maintenance facilities and storage areas. Subsidiary camps may also need to be established, with considerably reduced facilities.

Camp with all necessary facilities like sanitation, safe water supply, and power supply are established for the workers.

The Contractor may make his own arrangements to use land, probably through the local authorities. However, as much as possible the camp site shall not be within privately owned productive farmland and protected areas.

## 2.15 Contractors' Machinery and Equipment

It is expected that plant-intensive construction methods will be adopted, given the nature and scale of the works. The project contractors will mobilise and operate the following machinery and equipment for construction of the proposed transmission lines and substation will include

- Earth moving machines (excavators, bulldozer, back-hoe loaders, loaders, etc.)
- Compactors and rollers
- Lifting machines (crane, fork lift)
- boring machine,
- Dump trucks, light pickup, crew truck/car hauler
- Water trucks
- Concrete mixers
- vibrating roller
- Concrete vibrators
- Compressors
- Cable drum and drum puller,
- Overhead line rig, static wire reel
- Generators
- Welding machines
- Scaffolding
- Electric cables and pipes
- Various tools

## 2.16 Construction Manpower Requirements

The construction works are usually executed by engaging both local and international contractors. The Contractors will engage skilled manpower as per their requirements to complete the work within given timeline.

Therefore, the construction of this TL project will provide short-term employment opportunity for several local people. Based on similar scale projects in Ethiopia, the required number of skilled and semi-skilled workers is estimated at 320. During the peak construction periods, the job opportunities for unskilled (labourer) including the workers for supporting services will be about 2,250. The opportunity for female ranges between 5% & 10%. This will mainly be in the site project coordination offices. In addition, the workforce required during operation at the Birkot substation will be 13 professional and 15 semi-professional. The job opportunities for operators and workers for supporting services will be about 28.

The construction crews will be different depending on the activity to be performed, e.g. for foundations, tower erection or cable stringing. During different phases of construction work, excavators, pile-workers, foundation and superstructure laborers, carpenters,

electricians, heavy equipment operators, ironworkers, masons, plasterers, plumbers, pipefitters, sheet metal workers, steel fixers, and welders will be engaged whenever necessary.

The technical staff will include civil engineers, electrical engineers, supervisors, and technicians of various trades.

As much as possible unskilled labor will be hired from the local community to avoid labor influx. (i.e. from the villages traversed by the transmission line). These workers will receive adequate training prior to commencement of construction.

## 2.17 Testing and Commissioning

The supplier of each component shall design and construct the respective component to the standard and subject it to testing as required by the relevant standard for that specific component. If the component satisfies the provisions of the standard and related testing criteria, then the individual component shall be considered in compliance with the standard.

To ensure the line performs as per specifications, a number of tests will be undertaken. Therefore, on completion of the work, physical inspection and checking will be carried out for all foundation work, tower erection and stringing to ensure strict adherence to the technical requirements.

During testing, ground clearance for the line will be thoroughly checked. In addition, insulation and continuity test as well as earth resistance of each tower will be carried out before final energization.

## 2.18 Operation and Maintenance for Transmission Line

After completion of the construction, EEP will be responsible for the operation and maintenance of the 132 kV transmission line.

The main activities to be carried out during the operation life of the transmission line include surveillance of the condition of the transmission line routine, emergency maintenance and repairs and vegetation control. Below is the list of O&M works usually conducted for transmission lines:

- Evacuation/transmission or distribution of electric power from power plants/substations to substations/load centres in controlled manner;
- Monitoring of the transmission line from the control room of associated power plants/substations;
- Periodical visual inspection of transmission line routes;
- Fault detection in case of any occurrence of faults;
- Fault correction through replacement or repair works;
- In case of emergency works, commence work immediately following safety procedures and notify authorities immediately upon completion of work;
- In case of regular schedule maintenance works, commence work following safety procedures only after notifying authorities before commencement of work;
- Regular inspection and controlling future land uses within the ROW (TL Corridor) and ensuring that no new structures are constructed. In particular, buildings must be at a minimum distance from the line conductors.
- Regular inspection and controlling vegetation growth on the right-of-way will be controlled to ensure safe and reliable operation of the line. Therefore, vegetation cover shall be cleared occasionally to ensure that vegetation does not interfere with the operation of the lines.
- Vehicular access to the ROW will be required to effect line repairs or to correct any localized erosion or terrain instability problems that might develop. Therefore, inspect and maintain access road as required.

## 2.19 Operation and Maintenance for Substation

The life of a substation is about 40 to 50 years. Replacement and refurbishment work may need to be done from time-to-time. Maintenance of the substation is essential for ensuring its reliability and safety.

Therefore, the main activities to be carried out during the operation life of the substation include:

- Conduct regular inspection and carry out maintenance as required. This may involve replacing some aging equipment or rebuilding certain sections of the substation;
- Regularly monitor and maintain the substation equipment like transformers with associated bay equipment, bus bar coupler, capacitor banks, battery and battery chargers, relays, and underground cables need to be after substation commissioning;
- Measurement of leakage in line current and neutral current of transmission lines;
- Regular inspection and refilling and maintenance of firefighting equipment;



- gardening, plantations, water supply and sanitation are also considered necessary for sound operation of substation; and
- Regularly inspect and keep the substation sites tidy at all times.

## 2.20 Decommissioning

It is anticipated that the Degehabur - Kebridehar power transmission line will be continuously maintained and repaired, and will be operated for several decades.

Because of its long life cycle, the circumstances under which the line might ultimately be decommissioned and abandoned are difficult to foresee. Towers may be upgraded/renewed based on cost/benefit analysis and new technologies.

However, if decommissioning is undertaken, EEP shall be required to prepare specific Decommissioning Management Plan at the time. Therefore, the decommissioning procedure shall include site-specific rehabilitation plans for the footprint of the project. All regulatory requirements will be complied with for the decommissioning phase.

## 2.21 Construction arrangements

It is anticipated that the project will be tendered as two contracts for construction purposes. The construction works will be tendered under International Competitive Bidding procedures acceptable to AfDB the funding agency and to EEP, following pre-qualification of suitably qualified and experienced contractors.

The construction contracts will use the FIDIC Conditions of Contract, with Special Conditions to suit site conditions and the nature and extent of the Works.

## 2.22 Construction supervision

Construction supervision and monitoring is likely to follow the usual practice with a suitably experienced international consultancy firm appointed under international competitive bidding procedures, providing “The Engineer” as defined in the construction contract and other senior supervisory staff. A firm of local consultants, working in joint venture with the international consultant is likely to provide the bulk of the support staff.

## 3. Environmental and Social Policy, Legal & Administrative Framework

Environmental and Social Impact Assessments (ESIA) of infrastructure projects in Ethiopia fall under the jurisdiction of the Environmental Protection Authority (EPA).

The ESIA for the Degehabur -Birkot – Kebridehar 132/ kV Power Transmission Project has been prepared to comply with the Ethiopian (EPA's). In addition, this ESIA has been prepared in compliance with Environmental and Social Assessment Procedures of AfDB African Development Bank (AfDB) Integrated Safeguards System, Policy statement and operational safeguard.

In the following section relevant national policies, strategies, legal and institutional frameworks, guidelines, national and international agreements and AfDB's Integrated Safeguards System are critically reviewed and summarized to make sure that the proposed Power Transmission Project is in line with these legal instruments. Therefore, EEP the project proponent will consult and use these legal instruments as a springboard in the course of project design, construction and operation.

### 3.1 Federal Environmental Policy, Legal and Institutional Framework

The legal instruments which provide the legal framework for environmental protection and management in Ethiopia include the constitution of Ethiopia, environmental and social related sectoral policies and environmental proclamations, and supporting regulations and guidelines.

#### 3.1.1 Constitution of Ethiopia

The Constitution of the Federal Democratic Republic of Ethiopia (FDRE) adopted in 1995 provides the basic and comprehensive principles and guidelines for environmental protection and management. Among other things, the constitution states that everyone has the right to live in a clean and healthy environment and the government will make every effort to provide such an environment.

The Constitution has the following key environmental objectives that have relevance to the development projects.

- Development projects shall not damage or destroy the environment.
- People have the right to full consultation and the expression of their view in the planning and implementation projects that affect them directly.
- Government and citizens shall have the duty to protect the environment

The specific articles of the constitution relevant to the proposed project include:

- i) Article 43 (1) gives broad rights to the peoples of Ethiopia to improve living standards and sustainable development.
- ii) Article 43 (2) acknowledges the rights of the people to be consulted concerning policies and projects affecting their community.
- iii) Article 43 (3) requires all international agreements and relations by the State to protect and ensure Ethiopia's right to sustainable development.
- iv) Article 44 (1) Environmental Rights stipulations that all citizens have the right to a clean and healthy environment

- v) Article 92 (1-4) Environmental objectives are identified as the government would endeavor to ensure that all Ethiopians live in a clean and healthy environment. The design and implementation of programs and projects would not damage nor destroy the environment. Citizens also have a right to full consultation and to the expression of views in the planning and implementation of environmental policies and projects that directly affect them.

The Constitution of Ethiopia includes legal frameworks that protect the Ethiopian citizen's rights to private property and set conditions for expropriation of such property for state or public interests.

The Constitution leaves the detailed implementation of the provisions concerning tenure rights over rural land to be determined by subsequent specific laws to be issued at both the Federal and Regional levels.

### **3.1.2 Federal Relevant Environmental and Sectoral Policies and Strategies**

To support the sustainable development efforts of the country, the Government of Ethiopia has adopted several policies and strategies including environmental and related sectorial policies and strategies, which were developed, based on the provisions of the constitution of Ethiopia.

Table 3.1 below summarizes policies and strategies relevant to the proposed project.

Table 3.1: Summary of relevant policies and strategies

Policies/Strategies	Relevance
<p><b>Environmental Policy, 1997</b></p>	<p>The environment policy adopted in 1997 is Ethiopia’s umbrella policy on environmental management Objective: Its overall objective is to improve and enhance health and quality of life for all Ethiopians, and to promote sustainable social and economic development through the adoption of sound environmental management principles. The specific objective of the policy relevant to the project include:-</p> <ol style="list-style-type: none"> <li>1. To conserve, develop, sustainably manage and support Ethiopia's rich and diverse cultural heritage;</li> <li>2. Prevent the pollution of land, air, and water most cost-effectively;</li> <li>3. To ensure policies and instruments support conservation of biological diversity;</li> <li>4. To ensure that the environment of heritage sites is so managed as to protect the landscape, the monuments, and the artifacts or the fossils as the case may be; and</li> <li>5. To give priority to waste collection and its safe disposal.</li> </ol> <p>Relevance to the Project: Environmental Policy of Ethiopia in particular EIA policies recognizes the need for development projects undertaken by ESIA to address social, socio-economic, political, and cultural impacts, in addition to physical and biological impacts and public consultations to be integrated within ESIA procedures. In addition, each ESIA shall include measures within the design process for both public and private sector development projects and inclusion of mitigation measures and accident contingency plans within environmental impact statements. This policy provides clear directives that are required in promoting sustainable project development and EEP needs to comply with this policy during all project stages.</p>
<p><b>National Updated Energy Policy of Ethiopia</b></p>	<p>The National Energy Policy, formulated in 1994, was updated in 2013. The broad objective of the energy policy is to meet the improved security and reliability of energy supply and be a regional hub for renewable energy, increase access to affordable energy, promote efficiently, cleaner, and appropriate energy technologies and conservation measures, build strong energy institution, ensure environmental and social safety and sustainability of energy supply and utilization and strengthening energy sector financing. Relevance to the project: The policy stresses the need to integrate environmental sustainability into all energy initiatives for the production, transportation, and utilization of energy. It presents the requirement to introduce mandatory environmental and social impact assessment on new energy projects to assess the level of emissions of pollution and determine whether the project will have to be realized and on the type of necessary mitigation measures to be adapted as necessary.</p>

Policies/Strategies	Relevance
<b>Health policy</b>	<p>Objectives: The policy promotes occupational health and safety, development of environmental health, rehabilitation of health infrastructures, appropriate health service management system, carrying out applied health research, provision of essential medicines, and expansion of frontline and middle-level health professionals.</p> <p>Relevance to the Project: Occupational Health and Safety (OHS) provisions will be particularly important for the project, particularly during construction. The employees and workers at the project site shall be initially instructed on health and safety issues and be given the proper health and safety rules, equipment, etc.</p>
<b>Water Resources Policies</b>	<p>Objectives: The overall goal of the water resources policy is to enhance and promote all national efforts towards the efficient and optimum utilization of the available water resources for socio-economic development on sustainable bases. The policies are meant to establish and institutionalize environmental conservation and protection requirements as integral parts of water resources planning and project development.</p> <p>The Policy emphasizes the need to control and ensure that water bodies are protected from indiscriminately discharged industries waste water and other wastes and protect water bodies and water systems from pollution and depletion.</p> <p>Relevance to the Project: The developer is required to comply with stipulations of the policy in the use and exploitation of water resources. In case the construction of the Proposed project may eventually have an impact on water quality in streams, or adjacent lakes, a adequate measures should be implemented to avoid negative impacts.</p>
<b>Wildlife Policies and Legislation</b>	<p>Wildlife Development Conservation and Utilization Policy and Strategy was updated and approved in March, 2005. The main objectives of the Policy and Strategy include:</p> <ul style="list-style-type: none"> <li>▪ Conserve and develop the country's wildlife and habitat; and</li> <li>▪ Enable the resource contribute to the country's economic development and to the benefit of the people.</li> </ul> <p>The specific objectives of the policy include:</p> <ul style="list-style-type: none"> <li>▪ To conserve, manage, develop and sustainably utilize the wildlife resource so that the country can drive the socio-economic and ecological benefit from the resource; and</li> <li>▪ To enable the country to discharge its obligations assumed under the international treaties regarding the conservation and utilization of wildlife and pass the resource and benefits to the coming generation.</li> </ul>
<b>National Biodiversity Policy 1998</b>	<p>Objective: The key objective of this policy is to conserve, develop and utilize the country's biodiversity resources.</p> <p>Relevance to the Project: Integration of biodiversity conservation and development into federal and regional sectorial development initiatives and mobilization of international cooperation and assistance has been identified as the principal strategies for implementing the policy. The project must take note of the biodiversity of the project area and the regional biodiversity initiatives/strategies.</p>



Policies/Strategies	Relevance
<p><b>Revised National Biodiversity Strategy and Action Plan (2015-2020)</b></p>	<p>The Ethiopian Revised National Biodiversity Strategy and Action Plan (NBSAP) was published in 2015. The main goals of the NBSAP are to address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society and awareness of the public and decision-makers on the value of biodiversity and ecosystem service. Ecosystem-based approaches of resource management are recommended as the main implementation strategy required to conserve and sustainably utilize biodiversity to be archived through sustainable management of resources such as participatory forest management, sustainable range land, and aquatic ecosystem management practice.</p> <p>Relevance to the Project: The strategy emphasizes the need to ensure the diverse value and opportunities derived from conservation and sustained use are recognized in all relevant public and private decision making such as national and local development. The Project must give due emphasis to biodiversity resources in the proposed project area and its vicinity.</p>
<p><b>Cultural Policy of Ethiopia</b></p>	<p>Objective: Based on the Constitution, the Council of Ministers of Ethiopia endorsed the Cultural Policy of Ethiopia in October 1997 and amended it in 2016. The amended Federal Democratic Republic of Ethiopia Cultural Policy clearly states strategic issues and strategies regarding the conservation and protection of heritage resources of the country.</p> <p>Article 2 of the Policy states to systematically identify, develop, preserve and use the cultural, historical, and natural heritages of the peoples of Ethiopia, to sustainably apply them for economic, social, and human development, and to facilitate their study, documentation, visibility, and transfer to the next generation.</p> <p>It also devised implementation strategies, which includes:</p> <ul style="list-style-type: none"> <li>▪ The country’s heritages shall be protected and maintained following their cultural and historical values by devising and applying a heritage management system</li> <li>▪ Close relations shall be forged with communities and other partners to protect and manage the country’s heritages. Moreover, the Policy puts down strategic statement regarding “Cultural Resources and Indigenous Knowledge.</li> </ul> <p><b>Relevance to the Project:</b> In planning and implementation of the 132 kV Power Transmission Project, consideration should be taken to protect cultural, historical, and natural heritages of the country in general and the project area in particular.</p>
<p><b>The National Conservation Strategy-1994</b></p>	<p>Objective: The National Conservation Strategy (NCS) which was initiated in 1994 takes a holistic view of natural, human-made, and cultural resources, and their use and seeks to integrate them into coherent framework plans, policies, and investment-related to environmental sustainability. Relevance to the Project: The national conservation strategy evaluated the state of the natural resources, the environment, and the development in Ethiopia aimed at ensuring sustainable use and management of natural resources. Hence, the proposed project should ensure protection, sustainable use, and management of the resource in the project area at different stages of the project.</p>
<p><b>National Policy on Women (1993)</b></p>	<p>This policy requires and emphasizes that government policy, laws, regulations, plans, programs and projects should</p> <ul style="list-style-type: none"> <li>▪ Ensure participation of women in the formulation of government policies, laws, regulations, programs and projects that directly or indirectly benefit and concerns women;</li> <li>▪ Support and encourage participation and involvement of women in implementation and decision-making processes;</li> <li>▪ Guarantee equal access of men and women to the country’s resources.</li> </ul>

Policies/Strategies	Relevance
	<p>Relevance to the Project: The proposed project should consider this policy to ensure women participation and women are benefited from the project during the various phases of the project.</p>
<p><b>National Social Protection Policy</b></p>	<p>The objectives of Social Protection Policy of Ethiopia are the following:</p> <ul style="list-style-type: none"> <li>▪ Protect poor and vulnerable individuals, households, and communities from the adverse effects of shocks and destitution;</li> <li>▪ Increase the scope of social insurance;</li> <li>▪ Increase access to equitable and quality health, education and social welfare services to build human capital thus breaking the intergenerational transmission of poverty;</li> <li>▪ Guarantee a minimum level of employment for the long term unemployed and underemployed;</li> <li>▪ Enhance the social status and progressively realize the social and economic rights of the excluded and marginalized; and,</li> <li>▪ Ensure the different levels of society are taking appropriate responsibility for the implementation of social protection policy.</li> </ul> <p>Relevance to the Project: This policy applicable to the TL project to ensure social protection of project works, vulnerable groups and other members of the community during the various phases of the project.</p>
<p><b>Rural Development Policy and Strategies (ARDPS)</b></p>	<p>These Policy and Strategies were developed with a view to improving rural land administration and reducing the country's vulnerability to drought. The RDPS are an overarching policy and strategic framework incorporating the main principles of: efficient use of human resources, prudent allocation and use of land resources, agricultural development in line with agro-ecology, encouraging specialization, diversification and commercialisation of agricultural production, integration with other sectors, and improving agricultural marketing.</p> <p>Generally, the ARDPS states that Ethiopian who wants to make a livelihood from farming is entitled to have a plot of land free of charge. The government, as a custodian of the land, is responsible for land distribution and has the right to re-distribute existing holdings whenever it needs to do so to ensure access by all who require land as a means of engaging in an agricultural livelihood. It can also utilize land not being used by farmers for various purposes, as it deems necessary. If the government, for whatever reasons, takes land from peasants, it will fully compensate them for the capital and other resources invested on the land. It is in this context that land is referred to, as being government owned in Ethiopia.</p>

### 3.1.3 Federal Proclamations, Regulations, and Directives

Some proclamations and regulations containing provisions for the protection and management of the environment that reflect the principles of the Ethiopian Constitution and Environmental Policy of Ethiopia have been prepared. The following table summarizes proclamations and regulations relevant to the proposed project.

Table 3.2: Summary of relevant Proclamations and Regulations

Proclamations/ Regulations/Directives	Relevance
<p><b>Environmental Impact Assessment Proclamation No. 299-2002</b></p>	<p>Objectives: This Proclamation has made EIA a mandatory legal prerequisite for the implementation of major development projects. The key objective of the proclamation on Environmental Impact Assessment No. 299/2002 is to make EIAs mandatory for specific categories of projects implemented either by the public or by the private sector. The general provisions of the Proclamation outline the following processes for implementation and licensing as:</p> <ol style="list-style-type: none"> <li>1. Implementation of any project that requires an EIA is subject to an authorization from the Environmental Protection Authority (EPA) or from Regional Environmental Agency (REA);</li> <li>2. Any licensing agency shall, before issuing an investment permit, trade, or an operating license for any project ensure that the EPA or the relevant REA has authorized its implementation;</li> <li>3. The EPA or the relevant REA (depending on the degree of expected impacts) may waive the requirement for an EIA;</li> <li>4. A licensing agency shall either suspend or cancel a license that has already been issued, in the case that the EPA or the REA suspends or cancels the environmental authorization;</li> <li>5. Approval of the ESIA report or the granting of authorization by the EPA or the REA does not exonerate the proponent from liability for damage;</li> </ol>
<p><b>Environmental Pollution Control Proclamation No. 300-2002</b></p>	<p>Objective: This proclamation is promulgated to eliminating or, when not possible mitigate pollution as an undesirable consequence of social and economic development activities.</p> <p>The main objective of the proclamation on Environmental Pollution Control is to provide the basis for the set-up of standards on protection of ambient environment in Ethiopia and to endorse the respect of these standards. The proclamation prescribes the principle of the “polluter pays” for all individuals, businesses, industries, etc.</p> <p>Therefore, development projects shall minimize the generation of pollutants to an amount not exceeding the limit set by the relevant environmental standard and dispose of it in an environmentally sound manner (Article 4 (1)). In addition, the developers shall have the obligation to handle equipment, inputs, and products in a manner that prevents damage to the environment and human health (Article 4(2)). Any violation of these standards is a punishable act.</p>
<p><b>Establishment of Environmental Protection Organs (Proclamation No. 295/2002)</b></p>	<p>Objective: The objective of this Proclamation is to allocate mandates to separate organizations for environmental development and management activities on one hand and environmental protection regulations and monitoring, on the other hand, to ensure sustainable use of environmental resources and avoid possible conflicts of interest and duplications of effort. It is also intended to establish a system that fosters coordinated but differentiated duties among environmental protection agencies at federal and regional levels. The developer is</p>

Proclamations/ Regulations/Directives	Relevance
	required to get an environmental clearance certificate from the relevant environmental protection agency before project implementation.
<p><b>Solid Waste Management Proclamation No. 513/2007</b></p>	<p>Objectives: This proclamation sets the rules for sustainable management of wastes to achieve social and economic development out of projects and preserve nature and protect the environment.</p> <p>The development of transmission line projects will generate waste that will need to comply with this proclamation. A solid waste management plan should be prepared and incorporated along with the environmental and social management plan. Measures to assure monitoring and verification of the proper implementation of the solid waste management plan shall be included in the environmental monitoring plan.</p>
<p><b>Directive on Overhead Electric Lines and Quality of supply (no. EEA/1/2005)</b></p>	<p>This Directive is issued by the Ethiopian Electricity Agency (currently replaced by Ethiopian Energy Authority) according to the authority vested in it by Articles 55, 67, and 69 of Electricity Operations Council of Ministers Regulations No. 49/1999.</p> <p>Article 6, 7, and 8 of this directive include the minimum standard distance of different voltage for clearance of overhead electric lines, clearance from other lines, and clearance from vegetation corresponding to electric lines from the ground for a road accessible to vehicular traffic, a building or structure, track of a small gauge railway/tramway system and clearance from vegetation as well as other lines.</p>
<p><b>Labour Proclamation 377/2003 and 156/2019</b></p>	<p>This proclamation provides various statements on working conditions and occupational health and safety conditions. The proclamation obliges that an employer shall take the necessary measures to adequately safeguard the health and safety of the workers.</p> <p>Components are as follows: women shall not be discriminated against as regards employment and payment based on their sex. It is prohibited to employ women on the type of work that may be listed to be particularly odious or harmful to their health. An employer shall not terminate the contract of employment of a woman during her pregnancy and until four months of her confinement reformulated by Labour Proclamation No.156/2019 until four months after her confinement. Grant leave to pregnant women without deducting her wage; adhere to the occupational health and safety requirements provided in the proclamation; take appropriate steps to ensure that workers are properly instructed and notified concerning the hazard of their respective occupation and the precautions necessary to avoid accident and injury to health; provide workers with protective equipment, clothing, and other materials and instruct them of its use; and Ensure that the workplace and premises do not cause danger to the health and safety of the workers.</p> <p>The proclamation also states that no one may employ persons under 15 years of age.</p> <p>Public Health and Safety: Article 92 of the Labour Proclamation states the fundamental obligations of an employer concerning putting in place all the necessary measures to ensure that workplaces are safe, healthy, and free of any danger to the wellbeing of workers. In the same article the employer is obliged to take particular measures to safeguard the health and safety of the workers, as follows:</p> <ul style="list-style-type: none"> <li>▪ To comply with the occupational safety and health requirements;</li> <li>▪ Take appropriate steps to ensure that workers are properly instructed;</li> </ul>

Proclamations/ Regulations/Directives	Relevance
	<ul style="list-style-type: none"> <li>▪ Establish an occupational, safety, and health committee;</li> <li>▪ Provide workers with protective equipment, clothing, and other materials and instruct them of its use;</li> <li>▪ Ensure that all processes of work shall not be a source or cause of physical, chemical, biological, ergonomic, and psychological hazards to the health and safety of the workers.</li> </ul> <p>Article 93 provides the obligations of workers of the required co-operation and practice of the regulation and instruction given by the employer to ensure safety, health, and working conditions at workplaces.</p> <p>Public health and safety addresses concerns of adjacent communities with regards to project construction, operation, and decommissioning activities, and that might negatively impact water, ambient air, or cause issues due to sanitation and wastewater / solid waste mismanagement. The project developer is required to comply with key areas and basic descriptions of hygiene and sanitation needs for enforcement of water and food sanitation; waste management, and ambient pollution controls.</p> <p>The construction of the Transmission Line project, its operations, and eventual decommission will need to fully comply with the labor proclamation. The enforcement of occupational health requirements and standards in workplaces also includes medical care, sickness benefit, old-age benefit, employment injury benefit, maternity benefit, invalidity benefit, and survivors' benefit.</p>

### 3.1.4 Environmental Guidelines

The Ethiopian Environmental Protection Authority (EPA) has prepared several environmental guidelines. The guidelines provide a list of projects and activities, which require full, preliminary, or no EIA. Table 3.3 below summarizes of details of major environmental guidelines relevant to the 132 kV Power Transmission Project.



Table 3.3: Summary of environmental guidelines relevant to the proposed project

No.	Name of Guideline	Summary
1	EIA Guideline, 2000	<p>This Environmental Impact Assessment (EIA) Guideline document provides a background to environmental impact assessment and environmental management in Ethiopia. In essence, the document aims at being a reference material to ensure effective environmental assessment and management practice in Ethiopia for all parties who engage in the process.</p> <p>The guideline recommends implementing a cleaner production strategy- alternative products, production processes, raw materials, energy sources, preventing or reducing waste, waste recycling, re-use, and introducing water and energy-saving measures.</p>
2	EIA Procedural Guideline, 2003	<p>According to the environmental impact assessment procedural guidelines published by Ethiopian Environmental Protection Authority (EPA) (2003) the various stages to be followed in Environmental Impact (EA) of public and private development projects include the following processes:-</p> <p><b>Pre-screening Consultation:</b> The application of pre-screening is proposed in recognition of its importance that before screening or scoping process the proponent and the respective environmental or sectoral agencies establish contact and hold a consultation on how best to proceed with the EA.</p> <p><b>Screening:</b> The screening is the process of determining whether or not a proposed project requires EA and the level at which the assessment should occur. At this stage, a proponent initiates the process by submitting the project profile or an Initial Environmental Examination (IEE) report after undertaking an Initial Environmental Assessment (IEA), to the relevant environmental agency. Based on this report, a decision would be made whether an EIA is required and whether a preliminary assessment or a full-scale EIA has to be undertaken.</p> <p><b>Scoping:</b> It is the process that defines the key issues that should be included in the environmental assessment which aims at the identification of boundaries of EA studies, important issues of concerns, significant effects, and factors to be considered.</p> <p><b>Environmental Impact Study:</b> The purpose of undertaking an environmental impact study is to generate sufficient information on significant impacts that enable the preparation of an environmental impact study report. The steps of this study include impact prediction, impact analysis, consideration of alternatives, preparation of management plan (mitigation, monitoring activities), and preparation of contingency plan.</p> <p><b>Reviewing:</b> The review process serves to examine and determine whether the EIA report is an adequate assessment of the environmental effects and sufficient relevance and quality for decision making</p> <p><b>Decision Making:</b> The possible decisions to be made by the environmental agency include a request for supplementary or new EA report, approval of the EA report or performance reports at various stages in the project cycle; approval of the implementation of the proposal with or without conditions; approval subject to ongoing investigation or rejection.</p> <p><b>Systematic follow-ups (monitoring and auditing of impacts):</b> Systematic follow-ups are undertaken to ensure that the anticipated impacts are maintained within the levels predicted, to see that the</p>

No.	Name of Guideline	Summary
		unanticipated impacts are managed and or mitigated before they become problems, to realize benefits expected, and provide information for a periodic review and alteration of an impact management plan and to enhance environmental protection through good practice at all stages of the project.
		<p>Licensing and Permit: To get an investment permit a proponent should submit a letter of approval or environmental clearance certificate to a licensing agency awarded by an appropriate environmental agency.</p> <p>Licensing agency is any organ of government empowered by law to issue an investment permit, trade or operating license, or work permit or register a business organization as a case may be. The licensing agencies are required to ensure that before issuing licenses and permits, proponents submit authorization or a letter of approval or environmental clearance certificate awarded by the appropriate environmental agency.</p>
3	<b>Guideline for Environmental Management Plan, 2004</b>	The purpose of this guideline is to give guidance on the design and proper implementation of the Environmental and Social Management Plan (ESMP). The guideline outlines the necessary measures for the preparation of an Environmental Management Plan (EMP) for proposed developments in Ethiopia and the institutional arrangements for the implementation of EMPs.

### 3.1.5 Institutional Framework

Ethiopia has a federal-level government comprising various ministries and authorities responsible for setting national policy and legislation and regional structures with powers delegated to the regional government.

Several institutions are involved in environmental protection and management. At the federal level, the Ethiopian Environmental Protection Authority (EPA) is the main Environmental Protection Organ.

Regional environmental protection agencies have also been established, which decreed that each national regional state should establish an independent regional environmental agency.

Table 3.4: Summary of Institutional Arrangement for environmental and related responsibilities of relevant institutions

No.	Institutional Arrangement	Relevance
1	Federal	<p>The Ethiopian Environmental Protection Authority (EEPA) is the Federal institution for managing the Environment of Ethiopia. In 2021, the Environment and Forest and Climate Change Commission was renamed and restructured to the Ethiopian Environmental Protection Authority</p> <p>EEPA is responsible to ensure the realization of the environmental rights, goals, objectives and basic principles enshrined in the Constitution. As well as the Environment Policy of Ethiopia through coordinating appropriate measures, establishing systems, developing programs and mechanisms for the welfare of humans and the safety of the environment.</p> <p>It is mandated to formulate or initiate and coordinate the formulation of strategies, policies, laws and standards as well as procedures and up on approval monitor and enforce their implementation. It is also responsible for the synergistic implementation and follow-up of international and regional environmental agreements. Including those pertaining to hazardous chemicals, industrial wastes and anthropogenic environmental hazards in which Ethiopia is a party. The proposed project will need to engage with the EPA to obtain the required environmental clearance and permits</p> <p>The Ethiopian Electric Power (EEP): EEP focuses on project development, the construction and operations of the generating plants supplying the national interconnected system, of the transmission network, including the exports to neighboring countries, and for overall planning and system management. The primary purposes of EEP re-establishment are to:</p> <ul style="list-style-type: none"> <li>▪ Undertake feasibility studies, design, and survey of electricity generation, transmission, and substation; to contract out such activities to consultants as required;</li> <li>▪ Undertake electricity generation, transmission, and substation construction, and upgrading. EEP shall contract out such activities to contractors as required;</li> <li>▪ Lease electricity transmission lines as required;</li> <li>▪ Sell bulk electric power; and</li> <li>▪ In line with directives and policy guidelines issued by the Ministry of Finance and Economic Cooperation (MOFEC), negotiate and sign agreements with local and international finance sources.</li> </ul> <p>EEP’s Environmental and Social Office (ESO): EEP’s Environmental and Social Office is one of the functional areas of EEP to address the major environmental and social issues in the power sector development. The Office is responsible to ensure the power generation and transmission construction is environmentally sustainable and socially acceptable. It works in line with the environmental proclamations, policies, and international conventions. The Office is responsible to ensure EEP’s power sector projects are in full compliance with the approved environmental and social management plan.</p> <ul style="list-style-type: none"> <li>▪ Facilitating the integration of environmental concerns into electric power projects;</li> <li>▪ Conduct or supervise environmental assessment for EEP;</li> <li>▪ Ensure that mitigation measures, conditions and specifications are fully implemented during construction and resolving</li> </ul>

No.	Institutional Arrangement	Relevance
		<p>problems as encountered;</p> <ul style="list-style-type: none"> <li>▪ Supervise restoration of the construction area to its natural state that was affected during the construction period of a project;</li> <li>▪ Facilitate and ensure compensation payment for material damage in the implementation of power projects;</li> <li>▪ Monitoring proper implementation during resettlement and post resettlement of communities;</li> </ul> <p>Submit ESIA and other environmental review documents to EPA for review and approval and clarify request;</p> <ul style="list-style-type: none"> <li>▪ Conduct and supervise community safety program around electric power lines, plants, etc., and monitor its implementation;</li> <li>▪ Conducting periodic environmental monitoring during construction activities (dumping areas, health, and safety, discharge of untreated water, dust pollution, etc.); and</li> <li>▪ Advise on environmental and social issues for EEP investments</li> </ul> <p><i>Ethiopian Energy Authority (EEA):</i> EEA serves as the power sector regulator with functions including licenses/permits, power purchase agreements, and tariffs. The Authority is also responsible for energy efficiency and energy conservation in particular to set-up standards, carryout testing, and labeling of appliances, industrial and commercial audits. EEA is also responsible for the negotiation of tariffs for fully off-grid Independent Power Projects (IPPs)</p> <p>The proposed Power Transmission Project will need to engage with the appropriate authorities/ministries to implement and obtain the required permits.</p> <p><i>The Ministry of Labor and Skills (formerly MOLSA):</i> According to Proclamation No.1263/2021): A Proclamation to provide for the definition of the powers and duties of the executive organs of the FDRE, Ministry of Labor and Skills shall have the following powers and duties:</p> <ul style="list-style-type: none"> <li>▪ Initiate policies, strategies and laws with respect to labor and employment and skill;</li> <li>▪ Establish a system to prevent occupational accidents and occupational diseases; issue occupational health and safety standards and supervise their implementation;</li> <li>▪ Establish a system for the expansion of efficient, accessible and equitable job opportunity and employment;</li> <li>▪ Monitor and follow up the proper implementation of labor laws;</li> <li>▪ Encourage and support employers and workers to form association and thereby exercise their right of collective bargaining; register employers' association and trade unions established at national level;</li> <li>▪ Coordinate and follow up the job creation initiatives including rural job creation conducted by different sectors, shall force others to send report.</li> </ul>

No.	Institutional Arrangement	Relevance
		<p><i>Authority for Research and Conservation of Cultural Heritage (ARCHH) :</i></p> <ul style="list-style-type: none"> <li>▪ Responsible for preservation of cultural and historical assets;</li> <li>▪ Protection and conservation of cultural heritage from manmade and natural hazards;</li> <li>▪ Has the power of issuing building permission for any work to be carried out in an area declared reserved by the Council of Ministers;</li> <li>▪ Removal of any cultural ruins is to be carried out under strict supervision of the responsible authority, the ARCCCH</li> <li>▪ If buried archaeological remains or cultural heritage sites are discovered during excavation and site clearance , ARCCCH will be called to conduct additional surveys during the construction and quarrying to determine if there is a need to change the location of the project layout (such as when the finding is irremovable remains of cultural or archaeological importance) &amp; conservation, preservation, restoration. Construction will resume only after authorization is provided by the ARCCCH.</li> <li>▪ Receive reports give appropriate direction on how to handle the discovered cultural resource .This may include conservation, preservation, restoration or salvage</li> </ul>
2	Regional	<p><i>Regional Environmental Agencies/Bureau:</i></p> <p>Proclamation 803/2013 empowers each region to establish its independent environmental agency with the responsibilities to coordinate and follow-up efforts to ensure public participation in the decision-making process, to play an active role in coordinating the formulation, implementation, review, and revision of regional conservation strategies as well as to foster environmental monitoring, and protection and regulation.</p> <ul style="list-style-type: none"> <li>▪ Set up its environmental unit with the responsibilities to coordinate and follow-up to ensure that its activities are in harmony with national efforts to protect and preserve the environment.</li> <li>▪ coordinate and follow-up efforts to ensure public participation in the decision-making process, to play an active role in coordinating the formulation, implementation, review, and revision of regional conservation strategies as well as to foster environmental monitoring, protection, and regulation.</li> <li>▪ provide environmental clearance certificate through reviewing ESIA reports with their respective region</li> </ul> <p>Sectorial Environmental Units: Each Federal and Regional organization dealing with environmental matters is required by Proclamation No 803/2013 to set up its Environmental Unit with the responsibility to coordinate and follow-up to ensure that its activities are in harmony with national efforts to protect and preserve the environment.</p> <p><i>Sector Offices from Project Affected Woredas and Kebeles:</i> Will be involved oversight of the land acquisition process, review and verify the valuation process and compensation schedule and participate in the implementation of the resettlement packages and compensation payments</p>



## 3.2 Energy Policy, Regulation, and Proclamation with Emphasis for Energy Transmission and Distribution

### 3.2.1 Energy Policy

The National Energy Policy, formulated in 1994, was updated in 2013. The broad objective of the energy policy is to meet the improved security and reliability of energy supply and be a regional hub for renewable energy, increase access to affordable energy, promote efficiently, cleaner, and appropriate energy technologies and conservation measures, build strong energy institution, ensure environmental and social safety and sustainability of energy supply and utilization and strengthening energy sector financing.

The specific policy objectives and policy instruments relevant to energy transmission and distribution include:

- To strengthen environmental and safety management practices with policy instruments such as enforcing environmental rules and regulations that reduce environmental pollution during power generation and transmission; and,
- Provide adequate, reliable, and affordable electricity supply to meet growing power demand for socio-economic development with relevant policy instruments including expanding the electric power generation capacity through public investment and power transmission infrastructure and distribution network; supporting local manufacturing of power generation, transmission, and distribution equipment and materials and promoting R&D on electricity generation, transmission and distribution.

### 3.2.2 Proclamation on Energy

Energy Proclamation (No. 810/2013) was issued in January 2014. Under Article 4, the proclamation provides the powers and duties of the Ethiopian Energy Authority (EEA), which was established by the Council of Ministers Regulation No.308/2014.

The powers and duties of EEA, among several others, include the following:

- Formulate long-term, medium-term, and short-term energy efficiency and conservation strategy and program at national and sectoral levels;
- Issue energy audit code, energy efficiency standards code, energy efficiency labeling code, grid code, customers' service code, technical inspection code, quality service standard code, building electrical installation code, technical standard code, and other codes and supervise the implementations of same; and
- Approve electric power purchase and network service agreements.
- Article 16 states that any generation, transmission or distribution & sale, import or export licensee:
- May enter the land or the premises in the holding of any person after securing prior permission from the person to carry out the installation of new electricity supply, or to carry out activities required to connect, repair, upgrade, inspect or remove electrical lines; and
- Shall have the right to cut or lop trees or to remove crops, plants, or other things that obstruct the construction or operation of electrical works or may cause danger to electrical lines.

Article 17 deals with the Compensation issue and states that the licensee shall pay compensation, under the relevant law, for damages caused to the property of a landholder while performing the activities provided under Article 16 of this Proclamation.

Article 18 contains provisions on Expropriation of Land and it states that where the public interest so justifies, any generation, transmission, distribution and sale, import or export licensee may be made the beneficiary of an expropriation measure, taken following the relevant law, by the government over private landholdings.

### 3.2.3 Regulations on Electricity Operations

The Council of Ministers Regulations No. 49/1999 was issued in 1999 according to Article 28(1) of the Electricity Proclamation No. 86/1997 to provide the regulations of electricity operations in the country.

The provisions of the proclamation relevant to the proposed transmission line projects are described below. As part of the Standards of Safety, Technical and Quality of Service (general safety requirements for Transmission Lines and Substations):-

- Sub-article 47(2) prohibits undertaking any type of construction work or growing trees under electric power lines or within the distance of horizontal clearance thereof;
- Article 49 (Line Rout) states that in the process of line route selection, size and character of load, reliability of power sources, positions of substations, future expansion possibilities, safety, and environmental impacts as well as construction and operational costs shall be taken into consideration;
- Article 58 provides the requirements for Clearance from Buildings and Structures. Sub-article (1) states that the horizontal distance from conductors to any point of a building or structure shall, with maximum wind, be at least 4.5 meters. If the requirement stated under Sub-Article (1) cannot be fulfilled, the height of the conductor from the building or structure shall, at maximum temperature and with conductor broken in the neighboring span, be at least 5.5 meters;
- Similarly, Article 59 provides the safety requirements for Clearance from Trees. According to Sub-article (1), the vertical distance of conductors from trees shall be at least 1.5 meters plus the minimum distance between live and un-energized parts. In the case of fruit trees, the distance shall be 4m plus the minimum distance between live & un-energized parts as per Sub-article (2). The distances stated above shall be maintained by the expected tree growth (Sub-article 3).

## 3.3 Directive on Clearance of Overhead Electric Lines and Quality of Supply

This Directive (No. EEA/1/2005) was issued by the Ethiopian Electricity Agency according to the authority vested on it by Articles 55, 67, and 69 of Electricity Operations Council of Ministers Regulations No. 49/1999. The objective of this Directive is to set standards for the clearance spaces associated with transmission and distribution lines for the protection of persons from risk and property from damage, as well as to specify the quality of supply voltage.

Relevant articles of the directives to the proposed transmission line projects (with voltage 132, 230, and 400kV) are described below:

Article 6 of the Directive sets standards for the clearance of overhead electric lines.

Sub-Article 6.1.5 applies for a line with a voltage exceeding 132kV but not exceeding 230kV: 10.5 meters above a road accessible to vehicular traffic and 8.0 meters above any other point.

Article 7: Clearance from Vegetation

Sub article 7.1 states that the growth of trees under overhead electric lines shall not be allowed. An overhead electric line shall not, at any time, be closer to vegetation in all directions than the following minimum distances corresponding to the voltage of the line: Sub-Article 7.1.4 applies to a line exceeding 132kV but not exceeding 230kV 15.0 meters.

### 3.4 Legislation Governing Land Acquisition, Compensation, and Resettlement

The following section presents the review of the legal and regulatory framework governing land acquisition, compensation, and resettlement. The constitutional, federal legal, and administrative instrument framework governing the land acquisition, compensation, and resettlement include:

- The Constitution of Federal Democratic Republic of Ethiopia;
- Expropriation of Landholdings for public purposes and payments of compensation proclamation No. 1161/2019;
- Rural land administration and land use proclamation (Proclamation No. 456/2005);
- Payment of compensation for property situated on landholdings expropriated for public purposes regulation (Regulations No. 472/2020).

#### 3.4.1 Proclamation on Expropriation of Landholding (Proclamation No.1161/2019)

The federal proclamation on expropriation of landholding for a public purpose, payments of compensation, and resettlement (Proclamation No.1161/2019) repealed "Expropriation of Landholdings for Public Purposes and Payment of Compensation, Proclamation No. 455/2005".

The new proclamation has become necessary to address the steadily growing urban population, which requires more land for building houses, infrastructure, and for the redevelopment of the urban slums to invigorate investment and other services. For development activities in rural areas, it defines the powers and responsibilities of authorities, which are in charge of property valuation, payment of compensation, and resettlement. It rectifies and fills gaps envisaged in the former law and includes other provisions to make the system of expropriation of land holdings and payment of compensation more appropriate and fairer and decision-making processes and grievances procedure related to the expropriation and payment of compensation more effective.

The proclamation states that the landholder whose land has been expropriated shall be paid compensation for the property on the land and the permanent improvement made on the land. The amount of compensation for the property on the land shall cover the cost of replacing the property anew.

The Proclamation requires compensation and resettlement for land expropriation to sustainably restore and improve the livelihood of displaced people.

Specific clauses from the expropriation of landholding for a public purpose, payments of compensation, and resettlement (proclamation No. 1161/2019) are highlighted in Table 3.5.

**Table 3.5: Summary of Relevant Clauses from Proclamation No.1161/2019**

Theme	Relevant Sections
<b>Institutional responsibility</b>	<p>Part IV, Article 25, requires and authorizes Woredas or Urban Administrations to organize consultative meetings with people that are going to be displaced on the type, benefits, and generally the process of the project.</p> <p>To pay compensation, implement resettlement packages, maintain a record of the property located on the expropriated land and support and ensure the improvement of the livelihood of displaced farmers and pastoralists and maintain records and evidence relating to the displaced.</p>
<b>Land Requiring Body</b>	<p>Article 9 states that land requiring body shall submit to the city or Woreda administration the decision that shows the size and exact location of the land to be expropriated at least one year before the commencement of the project</p>
<b>Landholder notifications for expropriation, compensation, and land handover</b>	<p>Article 8 sub-articles 1-9 require the city Administration or Woreda:</p> <ul style="list-style-type: none"> <li>▪ To consult landholders who are to be displaced at least one year before they handover their holdings on the type, benefits, and general process of the project</li> <li>▪ To collect landholding rights and conduct inventory, amount, and size of all compensable properties from displaced people or their legal representatives. Properties added after the expropriation notification is given to the landholder are not compensated</li> <li>▪ To notify the landholder or his agent in writing to hand over the land expropriated for public purpose with the description of the amount of compensation to be paid and/or the size and location of the land or house in-kind compensation</li> </ul> <p>The landholder may be forced to hand over the land within 120 (one hundred and twenty) days of the payment in cash or in-kind compensation; or after the cash is deposited in the bank.</p> <p>Where there is no permanent property or crop on the expropriated land, the landholder shall hand over his landholding within 30 (thirty) days of the payment of compensation to the City or Woreda Administration.</p> <p>Where the land expropriated is under illegal occupation, the occupant shall evacuate without claim for compensation within 30 (thirty) days of notice.</p>
<b>Removal of Utility Lines</b>	<p>Article 10 (1-6) indicates that the City or Woreda Administration shall request in writing the utility line owner organizations to reply if they have utility lines over or underground on the land to be expropriated.</p> <p>The owner of the utility lines on the expropriated land shall estimate the value of the utility line to be affected and send it with evidence to the City or Woreda Administration that requested it under sub-article 1 of this Article within 30 (thirty) days of receiving the request.</p> <p>The utility line-owner shall remove utility lines and clear the land within 60 (sixty) days after the payment has been made.</p> <p>The utility line-owner shall remove complex utility lines and clear the land within 120 (one hundred and twenty) days after the payment has been made.</p>
<b>Compensation</b>	<p>Article 12 (1-6) highlights that a landholder is entitled to payment of compensation for his property situated on the land and for permanent improvements made on the land. The amount of compensation for the property on the land shall cover the cost of replacing the property anew. Compensation for permanent improvement to land shall be equal to the current value of capital and labor expended on the land.</p>

Theme	Relevant Sections
	<p>Article 13 further requires that in addition to the compensation payable under Article 12, rural landholders whose landholding has been permanently expropriated shall, in addition, be paid displacement compensation and land substitution. The amount of compensation given to the temporarily displaced people shall not be greater than the amount of compensation given to permanently displaced people.</p> <p>A rural landholder whose landholding has been provisionally expropriated shall be paid displacement compensation for lost income based on the highest annual income secured during the last three years preceding the expropriation of the land until repossession of the land.</p>
<b>Valuation of Property</b>	<p>Article 17 (1-3) states that compensation for the property situated on land to be expropriated shall be evaluated by a certified private institution or individual consultant evaluators based on a nationally approved valuation method.</p> <p>Where there is no private certified property valuation organization or individual Consultant, the valuation shall be an Autonomous Government Organization established for this purpose.</p> <p>Where the organizations under sub-articles 1 and 2 of this article do not exist, it shall be, considering the location of the expropriated land evaluated by valuation committee established by the relevant Urban or Woreda Administrations comprising proper professionals.</p>
<b>Grievance resolution</b>	<p>Article 18 (1-3) indicates that regional states and city administrations shall establish complaint hearing bodies and appeal hearing councils, which shall have jurisdiction to entertain grievances arising from decisions under this proclamation</p> <p>Article 19 further states that any person who receives an order of expropriation of his landholding or who has an interest or claim on the property to be expropriated may file an application within 30 (thirty) days of service of the order to the Complaint Hearing Body, which is established as per sub-article 1 of Article 18 of this proclamation</p>

### 3.4.2 Council of Ministers Regulations No. 472/2020

This regulation repealed the Council of Ministers Regulation on Payment of Compensation for Property Situated on Landholdings Expropriated for Public Purposes (Regulation No. 135/2007).

This Regulation contains property valuation and compensation methods and formulae that should be used in calculating compensation for various properties. It also contains lump sum compensation to be paid for severed social relationships and moral damages.

The regulation also sets the provision of land expropriation procedure, propriety right to develop the land to be expropriated, and provision of substitute of land, housing and resettlement, and shareholder rights of the displaced. The compensation items are categorized and presented in Table 3.6 below.



Table 3.6: Summary of Relevant Clauses from Council of Ministers Regulations No. 472/2020

Theme	Relevant Sections
<p><b>Compensation Assessments</b></p>	<p><b>Compensation for Building (Article 16):</b> The amount of compensation for a building shall be determined based on the current cost price of construction materials of the demolished building and current labor cost. It shall include also the current cost for constructing floor tiles of the compound, septic tank, and other structures attached to the building and the estimated cost of demolishing, lifting, reconstructing, installing, and connecting utility lines of the building. The amount of compensation for a building shall be determined based on the current market price per square meter for a similar building or the current cost of constructing a comparable building.</p> <p><b>Compensation for fences:</b> The amount of compensation for a fence shall be determined by calculating the cost of an existing square meter or meter cube needed to rebuild a similar fence with the demolished fence or by producing a single value if the construction material of the fence cannot be estimated per square meter (Article 17).</p> <p>Compensation for property to be Relocated (Article 18): The amount of compensation for a relocated property shall be determined by computing the estimated costs of labor, material, and transport to be incurred at market value for removing, transferring, and installing the property.</p> <p><b>Compensation for Crops (Article 19):</b> The amount of compensation payable will be based on the amount of products available and the market value that the product could produce if the crop or vegetable were harvested. Compensation for crop surplus will be determined based on the current market price of the leftover produce. If one crop is produced more than once in one year, the amount of the crop produced during the year will be the sum of the products produced during the year.</p> <p><b>Compensation for perennial crops (Article 20):</b> Where the perennial crop is ripe when the land is expropriated, the owner may collect the fruit within a prescribed time and where the owner fails to collect the products within the specified time, he shall be compensated for the production. Where the land is urgently required and the owner is not given adequate time to collect the production, he shall be compensated the market price of one-year production based on the average yield of similar perennial crop production in the area. The cost incurred to grow the perennial crop shall be calculated based on the local market and shall be paid.</p> <p><b>Compensation for fruitless trees (Article 21):</b> The amount of compensation for trees shall be determined based on the level of growth of the tree, and the current local price per cubic meter or unit. The owner of trees may, instead of compensation, cut and collect the trees within the period fixed.</p> <p><b>Compensation for protected grass (Article 22):</b> The amount of compensation for protected grass shall be determined based on the productivity of the land and the current local market price of the grass per square meter. The owner of protected grass may, instead of compensation, cut and gather the grass within the period fixed</p> <p><b>Compensation for a licensed miner (Article 23):</b> The compensation shall be paid for the landholder by a licensed miner shall be determined based on mining law and compensation shall not be paid for a miner who holds land without a license.</p>

Theme	Relevant Sections
	<p><b>Compensation for Burial-ground (Article 24):</b> The amount of compensation for a burial-ground shall be determined by the estimating costs to be incurred for removing the gravestones, preparing another burial-ground, transferring and relocating the corpse, and for conducting religious and cultural ceremonies to the process.</p> <p><b>Compensation for rural land (Article 25):</b> The amount of annual production of the three years of production shall be calculated at the present rate before the rural owner is removed.</p> <p><b>Compensation for permanently displace rural landholder (Article 26):</b> Where substitute land to be given to the expropriated landholder and where the residential or commercial building of the holder is to demolished, he shall be given freely a comparable house for two years or a two year estimated rental value for his demolished houses a resettlement compensation. Where a substitute house is to be given to the displaced house owner, he shall be paid a one-year rent as resettlement compensation.</p> <p><b>Compensation for permanently displaced urban landholder (Article 28):</b> Where substitute land to be given to the displaced urban landholder, and where the property is a residential or commercial building, a comparable building shall be given for two years free of charge or he shall be entitled to a two years rental based on the demolished building and current price.</p> <p><b>Compensation for severed social relationship and moral damage(Article 30):</b> the amount of compensation for severed social relationship and moral damage shall be 25,000- 60,000</p>
<p><b>Valuation formula (Article 13 (1-6))</b></p>	<p>Compensation for building = Current building cost + permanent improvement cost</p> <p>Compensation for Fence = unit price of the fence in meter square /meter cube X total size of the fence in meter square /meter cube` Compensation for relocated property = cost of removal + cost of loading/offloading+ cost of transport +cost of installation or and connection</p> <p>Compensation for crops = area per hectare x current market value of crop per quintal production per hectare in quintal +cost of permanent improvement on land</p> <p>Compensation for ripe perennial crops =yield of the perennial crop from a single plant /legs in kilogram x the number of plats legs + cost incurred to grow perennial crops with the current +cost of permanent improvement on land</p> <p>Compensation for unripe perennial crops = number of plant legs X cost incurred to grow</p> <p>Compensation for fruitless trees =(large trees in number X Local current price of one tree +(medium tree in number X local current price of one tree)+(small tree in number x local current price of one tree) +(number of seedling/unripe tree x local current price of one seedling unripe tree)+cost of permanent improvement on land</p> <p>Compensation for protected grass = area covered by the grass with square meter x yield of grass with a current local per meter square +cost of permanent improvement on land</p>

Theme	Relevant Sections
	<p>Burial Ground compensation =cost of corpse pickup burial ground preparation cost +cost of corpse transport and relocation +cost of religious and cultural ceremonies</p> <p>For rural landholder who does not receive replacement farmland displacement compensation = annual income x15</p> <p>For rural landholder who is not granted replacement farmland and is temporarily removed developmental compensation = Temporary land lease rate per hectare x Annual income per year</p>
<b>Support for displaced people</b>	<p>Support for displaced rural landholders shall be determined by the directive that shall be issued by regional states. Two years house rent shall be paid to displaced urban landholders and support units they build a new house where they are given substitute land</p>
<b>Providing substitute land or housing</b>	<p>Where the displaced are elderly and people with disabilities, three shall be given substitute land sin accessible and convenience areas as much as practical .substitute housing shall be provided where substitute land is not given and the displaced pays the full price at once</p>
<b>Resettlement package</b>	<p>Resettlement package: This package shall contain residential housing, livelihood option, social services like roads, health clinics, schools religious site, training counseling, credit access, etc.</p>

### 3.4.3 Rural Land Administration and Land Use Proclamation No. 456/2005

Rural Land Administration and Land Use Proclamation, No. 456/2005, also has provisions pertinent to rights of rural landholders, landholding certification, tenure security, and laws that are applicable when a rural landholder surrenders his/her landholding upon payment of compensation for losses such land expropriation might entail. Specific clauses from the Rural Land Administration and Land Use Proclamation No. 456/2005 are highlighted in Table 3.7.

Table 3.7: Summary of Relevant Clauses from Rural Land Administration and Land Use Proclamation No. 456/2005

Theme	Relevant Sections
<b>Holding right</b>	Holding right means the right of any peasant farmer or semi-pastoralist and pastoralist shall have to use rural land for' purpose of agriculture and natural resource development, lease and bequeath to members of his, family or other lawful heirs. It includes the right to acquire "property produced on his Land thereon by his labor or capital and to sale, exchange and Bequeath same (Article 2 (4)).
<b>Communal holding</b>	Communal holding" means rural land which is given by the Government to local 'residents for common grazing, forestry, and other social services (Article 2 (12)).
<b>State holding</b>	State holding means rural land demarcated and those lands to be demarcated in the future at federal or regional states holding and includes forest lands, wildlife protected areas, state farms, mining lands, lakes, rivers, and other rural lands (Article 2(13)).
<b>Acquisition of land</b>	Peasant farmers/pastoralists engaged in agriculture for a living shall be given rural land free of charge (Article 5(1a)) Any citizen of the country who is 18 years of age or above and wants to engage in agriculture for a living shall have the right to use rural land. Children who lost their mothers and fathers due to death or other situation shall have the right to use rural land through legal guardians until they attain 18 years of age (Article 5(1b)).
<b>Women rights</b>	Women who want to engage in agriculture shall have the right to get and use rural land (Article 5(1c))
<b>Security of Tenure</b>	Any holder of rural land shall be given a holding certificate to be prepared by the competent authority that indicates the size of the land, land use type and cover, level of fertility and borders, as well as the obligation and right of the holder (Article 6(3)).
<b>Compensation</b>	Holder of rural land who is evicted for purpose of public use shall be given compensation Proportional to the development he has made on the land and the property acquired, or shall be given substitute land thereon. Where the rural landholder is evicted by the federal government, the rate of compensation would be determined based on the federal land Administration law. Where the rural landholder is evicted by regional governments, the rate of compensation would be determined based on the rural land administration laws of the regions (Article 7(3)).
<b>Transfer of rural land use rights</b>	Peasant farmers, semi-pastoralists, and pastoralists who are given holding certificates can lease to other farmers or investors land from their holding of a size sufficient for the intended development in a manner that shall not displace them, for a period to be determined by rural land administration laws of regions based on particular local conditions (Article 8(1))
<b>Dispute Resolution</b>	Where a dispute arises over rural landholding rights, an effort shall be made to resolve the dispute through discussion and agreement of the concerned parties. Where the dispute could not be resolved through agreement, it shall be decided by an arbitral body to be ejected by the parties or be decided per the rural land' administration laws of the region (Article 12)

### 3.5 Ethiopia's Climate Resilient Green Economy (CRGE) Strategy

In 2011, the CRGE strategy has been issued and coordinated by the then Environmental Protection Authority and the Ministry of Finance and Economic Cooperation (MoFEC) of Ethiopia. The Climate Resilient Green Economy (CRGE) is Ethiopia's overarching framework and a national strategy towards a green economy with the main objective to protect the country from the adverse effects of climate change and to build a green economy that will help realize Ethiopia's ambition to reach middle-income status before 2025.

The objective of the strategy is to identify green economy opportunities that could help Ethiopia reach its ambitious growth targets while keeping greenhouse gas emissions low. The CRGE strategy has identified four priority sectors (pillars): Agriculture and forestry, power and industry, transportation and buildings as instrumental that will support Ethiopia's developing green economy and for reaching middle-income status by 2025

Under the CRGE strategy, an energy and water sector resilience strategy has been developed with the following three objectives:-

- To identify the economic and social impacts of current climate variability and future climate change on water and energy in Ethiopia (The Challenge).
- To identify priority ways that the water and energy sectors can build climate resilience and reduce the impact of climate variability and climate change (The Response).
- To map the necessary steps to finance and implement measures in the water and energy sectors to build climate resilience in Ethiopia (Implementation) and deliver an integrated climate-resilient green economy.

Accordingly, climate resilience strategy for water and energy identified eleven strategic priorities under four major priority sub-sectors and one cross-cutting response. These include:

- Power generation/expansion (diversify energy mix & improve energy efficiency);
- Energy Access (improve the efficiency of biomass use and accelerate non-grid energy access);
- Irrigated and industrial agriculture (accelerate irrigation plans, support resilience of rain-fed agriculture, and balance water demands);
- Access to WASH (accelerate universal access to WASH and enhance the climate resilience of self-supply); and
- Cross-Cutting response (data systems for decision-support and accelerating the delivery of existing plans).

### 3.6 Regional and International / Multilateral Agreement

In addition to national environmental legislations, Ethiopia is also a party to some regional and international conventions and protocols about the environment which are of relevance to the project.

**The international agreement to which Ethiopia is a signatory includes:**

*Convention on Biological Diversity, 1992:* The three goals of this convention are the conservation of biodiversity; the sustainable use of the components of biodiversity; and the fair and equitable sharing of the benefits arising from the use of genetic resources.



The Convention was ratified by Ethiopia by Proclamation No. 98/94, on May 31, 1994. By Proclamation No. 362/2003; Ethiopia has ratified the Cartagena Protocol on Biosafety to the Convention on Biological Diversity.

United Nations Framework Convention on Climate Change (FCCC), 1992: Ethiopia ratified this convention through Proclamation No. 97/1994 on May 2/1994. This convention takes into account the fact that climate change has transboundary impacts. The basic objective of this convention is to provide for agreed limits on the release of greenhouse gases into the atmosphere to prevent the occurrence of climate change. It also aims to prepare countries to minimize the impact of climate change should it occur.

*The Basel Convention, 1989:* The objective of the Basel Convention is to control and regulate the transboundary movement of hazardous wastes and their disposal adopted on 22 March 1989. The Bamako Convention of 1991 plays a similar role at the level of the African continent.

Ethiopia ratified the Basel Convention through its Proclamation No. 357/2002. Its amendment was ratified through Proclamation No. 356/2002. The country has also ratified the Bamako Convention through Proclamation No. 355/2002.

*The Stockholm Convention:* In the year 2002, Ethiopia fully accepted and ratified the Stockholm Convention on Persistent Organic Pollutants by proclamation No. 279/2002 designed to ban the use of Persistent Organic Pollutants (POPs). The EPA has the full mandate to implement the Convention at the national level.

*The Rotterdam Convention:* The Rotterdam Convention on Prior Informed Consent (PIC) relates to prior informed consent in the context of international trade in specific hazardous chemicals and pesticides. The federal EPA is the organ responsible for the domestic implementation of this convention, which has been ratified by Ethiopia Proclamation No. 278/2002.

*Convention on the protection of World Cultural and Natural Heritage:* Each state party to this Convention recognizes the duty of ensuring the identification, protection, conservation, preservation, and transmission to the future generation of the culture and natural heritage situated on its territory, belongs primarily to the state. Ethiopia has ratified this convention in 1997.

Convention on the means of prohibiting and preventing the Elicit, Import, Export, and Transfer of ownership of cultural property: The states parties undertake to oppose such practices with the means at their disposal, and particularly by removing their causes, putting a stop to current practices, and by helping to make the necessary preparations. Ethiopia ratified this convention in 2003.

*UNESCO's Conventions and Recommendations:* Standards for the protection and management of cultural heritage, in general, have been issued by a variety of institutions; foremost among these is the United Nations Educational, Scientific and Cultural Organization (UNESCO); the International Council on Monuments and Sites (ICOMOS); the Council of Europe (COE); and national governments. Most of these standards pertain to material culture, often termed 'tangible' cultural heritage; however, there is increasing attention also to 'intangible' heritage, including the products and processes of artistic and creative expression.

The definition for 'tangible' cultural heritage used by the World Bank is similar to that of UNESCO and other cultural heritage organizations. It is: ".movable or immovable objects; sites; structures; groups of structures and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural

The UNESCO standard-setting documents consist mainly of conventions and recommendations. The five UNESCO conventions regarding cultural heritage treatment include armed conflict (1954); illicit trade (1970); world heritage (1972); underwater cultural heritage (2001); and intangible cultural heritage (2003). Of the five, the 1972 'World Heritage Convention,' which provides for the designation of World Heritage Sites, is by far the most popular and widely known. Ethiopia has been a member of UNESCO since 1976.

In addition to the conventions, from 1956 to 1980, UNESCO issued recommendations to encourage international and regional cooperation, and especially, improvement in the management of cultural heritage at the national level. Recommendations were issued on numerous subjects, including international competitions in architecture and town planning (1956); safeguarding the beauty and character of landscapes and sites (1962); prohibiting and preventing the illicit export, import, and transfer of cultural property (1964); preservation of cultural property endangered by public or private works (1968); protection, at the national level, of the cultural and natural heritage (1968); safeguarding and contemporary role of historic areas (1976) and protection of movable cultural property (1978).

*ICOMOS Charters:* ICOMOS, a non-governmental international organization comprised of cultural heritage practitioners, issues standard-setting documents in the form of charters. The ICOMOS charters are drafted by experts and agreed upon by the membership through a formal process. ICOMOS charters treat the following topics: conservation and restoration of monuments and sites (1964), historic gardens and landscapes (1982), conservation of historic towns and urban areas (1987), protection and management of the archaeological heritage (1990), underwater cultural heritage (1996), cultural tourism (1999), historic timber structures (1999), and built vernacular heritage (1999). National committees also may create charters of these the Australia ICOMOS Charter for Places of Cultural Significance of 1999 (the 'Burra' Charter), is by far the most influential and widely known.

## 3.7 Environmental and Social Safeguard Policies and Procedures of African Development Bank

### 3.7.1 The Integrated Safeguards Systems (ISS) of the AfDB, 2013

Environmental and Social sustainability is a key to economic growth and poverty reduction in Africa. The Bank's Strategy for 2013-2022 emphasizes the need to assist regional member countries in their efforts to achieve inclusive growth and transition to green growth. In addition, the Bank is committed to ensuring the social and environmental sustainability of the projects it supports. The ISS is designed to promote the sustainability of project outcomes by protecting the environment and people from the potentially adverse impacts of projects. The safeguards aim to:

- Avoid adverse impacts of projects on the environment and affected people, while maximizing potential development benefits to the extent possible;
- Minimize, mitigate, and/ or compensate for adverse impacts on the environment and affected people when avoidance is not possible; and
- Help borrowers/clients to strengthen their safeguard systems and develop the capacity to manage environmental and social risks.

The Bank requires that borrowers/ clients comply with these safeguards' requirements during project preparation and implementation. The Integrated Safeguards Policy Statement sets out the basic tenets that guide and underpin the Bank's approach to environmental safeguards significance.

They may be located in urban or rural settings and may be above or below ground, or underwater. Their cultural interest may be at the local, provincial or national level, or within the international community.” (The World Bank, Operational Policy 4.11 - Physical Cultural Resources, July 2006).

In addition, the Bank has adopted five OSs, limiting their number to just what is required to achieve the goals and optimal functioning of the ISS. Given the proposed project nature and scope, all OSs are triggered and are discussed in the below sections.

### **Operational Safeguards (OS 1): Environmental and Social Assessment**

This overarching safeguard governs the process of determining a project’s environmental and social Category and the resulting environmental and social assessment requirements. The objective of this Operational Safeguard (OS) is to ensure that financed projects by Bank operations are environmentally and socially compatible, and also ascertain that it contributes to sustainable development including those related to climate change vulnerability. It also ensures that appropriate decisions are taken through the comprehensive analysis of various activities and their respective likely impacts. This OS will be triggered as the project likely to have potential (adverse) environmental risks and impacts on its area of influence.

This section covers areas related to the general environment i.e. physical (land, water, air, climate,), socio-economic and cultural (occupational, gender, human well-being, and safety; physical cultural resources) of the community, transboundary, global impacts including pollution control (greenhouse gas (GHG) emissions), and vulnerability to climate-change effects. Environmental and Social Impact Assessment (ESIA) is conducted to identify the various hazards or risk assessment and recommended the respective mitigation measures to be included in the environmental and social management plan (ESMP). Given the nature and scope of the proposed 132 kV Power Transmission Project, this OS 1 is triggered because the project has different environmental and social impacts this project has been subjected to full ESIA to meet this policy requirement which makes the proposed project eligible for the African Development Bank (AfDB) financing.

The Environment and social assessment will include the project area of influence, a comprehensive scoping of the project’s components, consideration of alternatives, and assessment of impacts, including cumulative impacts, where relevant.

**Operation Safeguard 2 (OS 2):** Involuntary Resettlement Land Acquisition, Population Displacement, and Compensation. This safeguard consolidates the policy commitments and requirements set out in the Bank’s policy on involuntary resettlement and it incorporates refinements designed to improve the operational effectiveness of those requirements. In particular, it embraces comprehensive and forward-looking notions of livelihood and assets, accounting for their social, cultural, and economic dimensions. It also adopts a definition of community and common property that emphasizes the need to maintain social cohesion, community structures, and the social interlink ages that common property provides.

The safeguard retains the requirement to provide compensation at full replacement cost; reiterates the importance of resettlement that improves standards of living, income earning capacity, and overall means of livelihood; and emphasizes the need to ensure that social considerations, such as gender, age, in the project outcome, do not disenfranchise particular project-affected people. Given the nature of the proposed project that will have an impact on both economical and physical displacement, this OS 2 is triggered.

### Operation Safeguard 3 (OS3): Biodiversity and Ecosystem Service

The overarching objective of this safeguard is to conserve biological diversity and promote the sustainable use of natural resources. It translates into OS requirements the Bank's commitments in its policy on integrated water resources management and the UN Convention on Biological Diversity. The safeguard reflects the importance of biodiversity on the African continent and the value of key ecosystems to the population, emphasizing the need to "respect, conserve and maintain the knowledge, innovations, and practices of indigenous and local communities to protect and encourage customary use of biological resources, following traditional cultural practices that are compatible with conservation or sustainable use requirements. Given the nature of the proposed project, which will have an impact on some of the habitats along the TL route, this OS 3 is triggered.

**Operation Safeguard 4 (OS4):** Pollution Prevention and Control, Greenhouse Gas, Hazardous Materials and Resource Efficiency. This operational safeguard covers the range of impacts of pollution, waste, and hazardous materials for which there are agreed to international conventions and comprehensive industry-specific standards that other multilateral development banks follow. It also introduces vulnerability analysis and monitoring of greenhouse gas emissions levels and provides a detailed analysis of the possible reduction or compensatory measures framework. Due to the nature and scale of the project, this OS 4 is triggered, as the project potentially intervenes in some resource utilization and generates wastes and hazardous materials during the construction phase that ultimately pose harmful risks to human health and the environment.

**Operational Safeguard 5 (OS5):** Labour Conditions, Health, and Safety. This safeguard establishes the Bank's requirements for its borrowers or clients concerning workers' conditions, rights, and protection from abuse or exploitation. It covers working conditions, workers' organizations, occupational health and safety, and avoidance of child or forced labor. It also ensures greater harmonization with most other multilateral development banks. Given the nature and scale of the proposed project which involves the establishment of a workforce, therefore, this OS 5 is triggered.

### 3.7.2 The African Development Bank (AfDB) Environmental & Social Assessment Procedures (ESAP)

The key purpose of ESAP (2015) is to improve decision-making and project results by ensuring that Bank-financed operations conform to the requirements laid out in the operational standards (Oss) and are thus sustainable.

The Environmental and Social Assessment (ESA) process outlined in the ESAP provides a way to improve a project environmentally, socially and in relation to climate change, thereby enhancing its benefits and in order of priority – avoiding, minimizing, mitigating or compensating for adverse impacts.

Effective implementation of the ESAP will help to avoid incurring costs and implementation delays as a result of unanticipated problems. It will also reduce the need for project conditionality as remedial measures can be taken in advance and incorporated into project design or project alternatives can be considered.

According to the Bank's ESAP, the various environmental and social assessment processes (phase), tasks to be performed, roles and responsibilities for the Bank and its borrowers and clients to be applied and flowed during the entire project cycle and relevant to the proposed project include:-

Country programming (project phase1): to develop and update baseline data on regional member countries (RMCs) environmental and social components, policies,

programs and capacities to better integrate environmental and social dimensions into lending priorities.

Project identification phase (project phase 1): screening exercise focuses on the environmental and social dimensions of a project to categorize it in one out of four categories based on the potential adverse environmental and social impacts of the project

Project preparation (project phase 3): define the scope of the Environmental and Social Assessments (ESA) to be completed by the Borrower based on the project category. During project preparation, the scoping exercise

Appraisal phase (project phase 4): review and clearance of ESIA studies by the Safeguards and Compliance Division. Finally, the procedures require the public disclosure of summaries in accordance with specified deadlines. For Category 1 projects, these shall be disclosed for 120 days for public sector projects and at least for 60 days for private sector operations. All category 2 operations shall be disclosed for 30 days before Board deliberations.

Project phase 5: loan negotiations, board presentation and loan signature

Project implementation phase (project phase 6): the Borrowers shall ensure the implementation of Environmental and Social management Plans developed to address adverse impacts, while monitoring the project impacts and results. Operational staff shall supervise the Borrowers' work and verify compliance through supervision missions and/or environmental and social audits, whenever necessary. Audits undertaken during the completion phase and post-completions shall also aim to assess the environmental and social sustainability of the results.

Project Phase 7: Project completion (Auditing compliance at completion)

Project Phase 8: Post Completion (Evaluating post completion)

The Bank's ESAP include 5 operational Safeguard (OS) Objectives and those applicable to ESIA & relevant to the proposed project are briefly described below.

### **3.8 Comparison of the National legislations and the AfDB's Operational Standards**

The comparison of the National legislations and the AfDB's Operational Standards (OSs) indicated that AfDB's OSs have equivalent national environmental and land related legislations. However, there are few gaps between the AfDB's OSs and the national requirements. In general, the AfDB's requirements appear to be more stringent than the national requirements.

The following tables (Table 3.8 and Table 3.9) summarize the gaps and proposed recommendations to bridge the identified gaps between the AfDB's OSs and the subsequent national requirements relevant to the proposed TL project.



Table 3.8: Summary of Comparison of Ethiopian Environmental related Legislation and AfDB's OSs and recommendations to Address Gaps

Theme	AfDB's OS	National Legislation & Regulations	Gaps Identified	Recommendation
<b>Environmental and social assessment</b>	<p><b>Operational Safeguard 1(OS1) The specific objectives of OS 1 are to:</b></p> <ul style="list-style-type: none"> <li>Mainstream environmental, climate change, and social considerations into Country Strategy Papers (CSPs) and Regional Integration Strategy Papers (RISPs);</li> <li>Identify and assess the environmental and social impacts and risks- including those related to gender, climate change and vulnerability-of Bank lending and grant-financed operations in their areas of influence;</li> <li>Avoid or, if avoidance is not possible, minimise, mitigate and compensate for adverse impacts on the environment and on affected communities;</li> <li>Provide for stakeholders' participation</li> <li>Ensure the effective management of environmental and social risks in projects during and after implementation;</li> </ul>	<p><b>The Constitution of FDRE states that:</b></p> <ul style="list-style-type: none"> <li>Development projects shall not damage or destroy the environment.</li> <li>The rights of the people to be consulted with respect to policies and projects affecting their community.</li> <li>Right to full consultation and the expression of their view in the planning and implementation projects that affect them directly.</li> <li>Government and citizens shall have the duty to protect the environment</li> </ul> <p><b>EIA Guidelines</b> list of projects and activities which require full, preliminary and no EIA and stress for the need to conduct EIA and community consultation for development projects</p>	<ul style="list-style-type: none"> <li>Avoidance or minimization of E&amp;S impacts are not specified in the national legislations and EIA Guidelines</li> <li>National legislation &amp; Guidelines are very much focused on the environmental aspect when compared with the social aspect</li> </ul>	<p>The proposed project aims to avoid, minimize and mitigate all the E&amp;S impacts and risks identified. Hence Both the national &amp; AfDB's requirements shall be applied</p>
<b>Biodiversity, renewable resources and ecosystem services</b>	<p><b>OS 3: Biodiversity and ecosystem services. The specific objectives of the OS3 are to:</b></p> <ul style="list-style-type: none"> <li>Conserve biological diversity and ecosystem integrity by avoiding or, if avoidance is not possible, reducing and minimizing potentially harmful impacts on biodiversity;</li> <li>Endeavour to reinstate or restore biodiversity, including, where some impacts are unavoidable, through implementing biodiversity offsets to</li> </ul>	<p>National Biodiversity Policy (1998) &amp; Revised National Biodiversity Strategy and Action Plan (2015-2020)</p> <p>The key objectives of the policy and strategy are to:</p> <ul style="list-style-type: none"> <li>conserve, develop and utilize the country's biodiversity resources</li> <li>mainstreaming biodiversity across government and society and awareness creation for public and decision makers on the value of biodiversity and ecosystem service and recommend Ecosystem based approaches of resource management as</li> </ul>	<ul style="list-style-type: none"> <li>Avoidance or minimization of E&amp;S impacts are not specified in the national Biodiversity Policy</li> </ul>	<p>Since one of the aim of the proposed project is avoiding, minimizing and mitigate all the E&amp;S impacts and risks identified, both the national &amp; AfDB's requirements shall be applied</p>



Theme	AFDB's OS	National Legislation & Regulations	Gaps Identified	Recommendation
	<p>achieve “not net loss but net gain” of biodiversity;</p> <ul style="list-style-type: none"> <li>Protect natural, modified, and critical habitats; and</li> <li>Sustain the availability, and</li> <li>Productivity of priority ecosystem services to maintain benefits to the affected communities and sustain project performance.</li> </ul>	<p>main implementation strategy required to conserve and sustainably utilize biodiversity</p>		
<p><b>Pollution prevention, &amp; control and resource efficiency</b> (hazardous or non-hazardous wastes. discharge of pollutants into the air, surface and groundwater, land and soil, nuisance odors, noise, vibration, electromagnetic energy and the creation of potential visual impacts)</p>	<p>OS 4: Pollution prevention and control, hazardous materials and resource efficiency</p> <p>The OS4 requires that the client</p> <ul style="list-style-type: none"> <li>shall apply pollution prevention and control measures consistent with national legislation and standards, applicable international conventions, and internationally recognized standards and good practice - particularly the WB EHS) Guidelines</li> <li>implement financially feasible and cost-effective measures for improving efficiency in the project’s consumption of resources such as energy, water, raw materials, and other resources</li> </ul>	<p><b>Environmental Pollution Control Proclamation No. 300-2002:</b> The main objective of proclamation on Environmental Pollution Control is to provide basis for the set-up of standards on protection of ambient environmental in Ethiopia and to endorse the respect of these standards.</p> <p><b>Solid Waste Management Proclamation (No. 513/2007):</b> This proclamation sets the rules for sustainable management of wastes in order to achieve social and economic development out of projects and preserve nature and protect environment</p> <p><b>Water Resources Management Policy, 1999:</b> The Policy emphasize the need to control and ensure that water bodies are protected from indiscriminately discharged industries waste water and other wastes and protect water bodies and water systems from pollution and depletion</p> <p><b>Hazardous Waste Management &amp; Disposal Control Proclamation (Pro. No.1090/2018):</b> The main objectives of the proclamation are:</p> <ul style="list-style-type: none"> <li>To create a system for the environmentally sound management and disposal of hazardous Waste</li> </ul>	<p>AfDB's/WB's ESHS requirements are covered under the three national proclamations</p>	<p>No further action is recommended</p>

Theme	AFDB's OS	National Legislation & Regulations	Gaps Identified	Recommendation
OHS' Labour Conditions, Health and Safety	<p><b>OS 5: Labour conditions, health and safety:</b> OS5 Requires client concerning workers' conditions, rights and protection from abuse or exploitation. It also covers working conditions, workers' organizations, occupational health and safety, and avoidance of child or forced labour.</p>	<ul style="list-style-type: none"> <li>▪ Prevent the damage to the human or animal health, the environment, biodiversity and property due to the mismanagement of hazardous waste.</li> </ul> <p><b>Health policy, 1993:</b> The policy promotes occupational health and safety, development of environmental health, rehabilitation of health infrastructures, appropriate health service management system, attention to traditional medicines, carrying out applied health research, and provision of essential medicines and expansion of frontline and middle level health professionals.</p> <p><b>Labour Proclamation 377/2003 &amp;156/2019:</b> The proclamation provides overall requirements for labour and working conditions as well as occupational health and safety requirements and conditions at the workplace. The Proclamation has a provision requires the employer to have an obligation to safeguard workers from accidents and injuries</p> <p><b>Occupational Safety and Health Directive, 2007:</b> The main objective of this Directive is the overall management of worker health and safety at the workplace. The Proclamation identifies in details the requirements that should be considered throughout the project's various phases in relation to occupational health and safety. This includes requirements for air emissions and dust control, use of protective equipment, monitoring, sound level limits for construction activities for workers, working in confined spaces, sanitary facilities, working in high temperatures, prevention of injuries, electrocution, fire prevention and safety, drinking water, etc.</p>	AfDB's OS5 / WB's OHS requirements are covered in the national policies, proclamations & directives	No further action is recommended

Table 3.9: Summary of Comparison of the Ethiopian Land Related Legislation and AfDB's OSs and Recommendations

Theme	AfDB's OS	National Legislation	Gaps Identified	Recommendation
Policy Objectives	<p><b>The OS 2 requires that</b></p> <ul style="list-style-type: none"> <li>Involuntary resettlement should be avoided where feasible, or minimize resettlement impacts where involuntary resettlement is unavoidable, exploring all viable project designs</li> <li>Displaced people should receive significant resettlement assistance, preferably under the project, so that their standards of living, income earning capacity, production levels and overall means of livelihood are improved beyond pre-project levels</li> <li>A mechanism should be established for monitoring the performance of involuntary resettlement programs in Bank operations and remedying problems as they arise so as to safeguard against ill-prepared and poorly implemented resettlement plans</li> </ul>	<p>The Constitution of Ethiopia and Proclamation No.1161/2019 give power to Woreda or City administrations to expropriate rural or urban landholdings for public purpose where it believes that it should be used for a better development</p> <p>Proclamation No.1161/2019 allows compensation and resettlement assistance and compensation for the expropriated land shall sustainably restore and improve the livelihood of displaced people</p> <p>Article 7(5) states that the cost of removal, transportation and erection shall be paid as compensation for a property targeted for the project.</p>	<ul style="list-style-type: none"> <li>Avoidance or minimization of involuntary resettlement is not specified in the Ethiopian legislation.</li> <li>Proclamation No 1161/2019 allows for a complaints and grievance process.</li> <li>Proclamation No 1161/2019 allows for some form of support to the displaced persons and allows consultative meetings with people that are going to be displaced on the type; benefits; and generally, the process of the project but does not explicitly specify consultation with affected persons through the process</li> <li>The national proclamation does not indicate the need to establish a mechanism to follow up and monitor proper implementation and performance of involuntary resettlement programs and check for any failure or sustainability of the resettlement plans</li> </ul> <p>The national proclamation allows resettlement assistance &amp; compensation for expropriated land &amp; to sustainably restore and improve the livelihood of displaced people but does not clearly specify the livelihood restoration is at least to previous levels or beyond.</p>	<p>AfDB's OS2 overall objectives shall be applied to avoid or minimize involuntary resettlement and to ensure livelihood improved beyond pre-project levels</p>
Impacts	AfDB's OS2 identifies project-related land	The Constitution of the Federal Republic	The impacts recognized by the	In order to fill the identified

Theme	AfDB's OS	National Legislation	Gaps Identified	Recommendation
	<p>acquisition and restrictions on land and covers economic, social and economic impacts involving involuntary loss of land, involuntary loss of other assets, or restrictions on land use and on access to local natural resources that result in:</p> <ul style="list-style-type: none"> <li>▪ Relocation or loss of shelter by the people residing in the project area of influence;</li> <li>▪ Loss of assets (including loss of structures and assets of cultural, spiritual, and other social importance) or restriction of access to assets, including national parks and protected areas or natural resources; or</li> <li>▪ Loss of income sources or means of livelihood as a result of the project, whether or not the people affected are required to move</li> </ul>	<p>of Ethiopia, Proclamation No.1161/2019, Proclamation No. 456/2005, and Council of Ministers Regulations No. 472/2020: consider compensation for movable and immovable/improvements on land.</p> <p>The compensation value of a movable property is determined by cost of removal cost of loading and offloading, cost of transport and cost of installation and/or connection</p> <p>The legislation also recognizes the loss of land use rights and advocates for allocation of replacement land wherever possible.</p> <p>Compensation for permanent improvement to land shall be equal to the current value of capital and labor expended on the land and where the property on the land can be relocated and continue its service as before, the cost of removing, transporting, and erecting the property shall be paid as compensation. The Legislations also include Compensation for severed social relationship moral damage; Resettlement package including residential housing, livelihood option ,social services like road, health clinic, schools ,religious site ,training counseling and credit access</p> <p>In addition, the Constitution (Article 44(2)) requires that all persons displaced or whose livelihoods are displaced are provided with monetary or alternative compensation including relocation with state assistance.</p>	<p>national law are limited to livelihood and economic losses. The law is silent on the measures to control other risks associated with displacement. Impacts on livelihoods and economic loss can easily trigger other risks like food insecurity, disrupted access to common property (grazing land and watering points etc.), and joblessness for poorer households who sell labor. Such risks are not covered by the law and need to be mitigated. Furthermore, restriction of access to assets is not covered in the national legislations, proclamations and regulation.</p> <p>Compensation for severed social relationship moral damage is not addressed in AfDB's OS2</p>	<p>gaps both the national and AfDB's OS2 shall be applied to the proposed TL Project</p>

Theme	AfDB's OS	National Legislation	Gaps Identified	Recommendation
Displaced people	<p>AfDB's involuntary resettlement policy &amp; OS2 defines three groups of displaced people are entitled to compensation or resettlement assistance for loss of land or other assets taken for project purposes:</p> <ul style="list-style-type: none"> <li>▪ Those who have formal legal rights to land or other assets recognized under the laws of the country concerned: people who are physically residing at the project site &amp; who will be displaced or may lose access or suffer a loss in their livelihood as a result of project activities</li> <li>▪ Those who may not have formal legal rights to land or other assets at the time of the census/evaluation but can prove that they have a claim that would be recognized under the customary laws of the country: people who may not be physically residing at the project site or persons who may not have any assets or direct sources of livelihood derived from the project site, but who have spiritual and/or ancestral ties with the land and are locally recognized by communities as customary inheritors. Depending on the country's customary land use rights, they may also be considered to have a claim if they are sharecroppers, tenant farmers, and seasonal migrants or nomadic families losing user rights.</li> <li>▪ Those who have no recognizable legal right or claim to the land they are occupying in the project area of influence and who do not fall into either of the two categories described above, if they themselves or witnesses can demonstrate that they occupied the project area of influence for at least six months prior to a cut-off date established by the borrower or <u>client</u> and acceptable to the Bank. These groups may be entitled to resettlement assistance other than compensation for land to improve their former living standards (compensation for loss of livelihood activities,</li> </ul>	<p>According to Expropriation of land for public purpose and valuation, compensation and resettlement Council of Ministers Regulations No. 472/2019", A written notice shall be sent to all concerned land holders and proof of receipt by such landholders shall be provided. But do not specify proof of legitimate possession of the expropriated landholding and ownership of the property entitling compensation.</p>	<p>The National legislation is silent on land users without recognizable legal right to the land they occupy. Whereas, AfDB's OS2 those who have no recognizable legal right or claim to the land and who do not fall into either of the two categories and that they occupied the project area of influence for at least six months prior to a cut-off date established by the borrower or client may be entitled to resettlement assistance other than compensation</p>	<p>Where there is a conflict between the national law and AfDB's OS2 shall be applied to those PAPs without legal title.</p>

Theme	AfDB's OS	National Legislation	Gaps Identified	Recommendation
	common property resources ( Common property resources are those that have value in their entirety, are used communally, and are owned either by the government or by more than one individual on a shared or communal basis) structures and crops, etc.			
Eligibility Criteria for compensation	Those with formal rights, informal rights and users without any form of right but with a claim on land including those who occupied the project area of influence for at least six months prior to a cut-off date established by the borrower or client are eligible	According to Expropriation of land for public purpose and valuation, compensation and resettlement Council of Ministers Regulations No. 472/2019", A written notice shall be sent to all concerned land holders and proof of receipt by such landholders shall be provided. But do not specify proof of legitimate possession of the expropriated landholding and ownership of the property entitling compensation.	The national legislation does not provide clear guidance on how claimants without possession of proof of ownership will claim for compensation. Whereas, AfDB's OS2 states that, for people who do not have use rights over the land but if they occupy for at least six months may be entitled to resettlement assistance other than compensation.	Both the national an AfDB's Os2 shall be considered to fill the gaps identified.
Cut-off date	AfDB: The client establishes a cut-off date for eligibility that is acceptable to the Bank and the borrower or client documents the cut-off date(s) and disseminates information about it (them) throughout the project area of influence in a culturally appropriate and accessible manner, before taking any action on clearing land or restricting local community access to land. Dissemination methods for the cut-off date may include local newspaper advertisements, declarations on the local radio and / or over loud speakers, leaflet distribution, the convening of community meetings etc.	The Civil Code Proclamation No. 165/1960 indicates that buildings or improvements on land made after the issuance of the expropriation order will be not be considered for compensation. This implies that the issuance of the expropriation order marks the cut-off date.	According to the national legislation, the expropriation order/notification is expected to be issued at least 1 year prior to the expropriation. AfDB's OS2 also requires cut-off date to be determined before taking any action on clearing land or restricting local community access to land.	There are no gaps between the national and AfDB OS2 requirements. Hence no further recommendation is made communicated to the community and PAPs.
Compensation	According to AfDB's involuntary resettlement policy & OS2 Affected people shall be compensated for all their losses at full replacement costs	Proclamation No. 1161/2019, Article 12 (2, 3 & 4) requires that the amount of compensation shall be based on replacement cost of the property. It further specifies that the value shall be equal to the value of capital and labour expended on the land. The articles further require that for relocatable	Despite all the provisions, there are noticeable inconsistencies between Proclamation No.1161/2019 and the valuation formula set out in the Council of Ministers Regulations No. 472/2020.Transaction costs like the rural land use payment and income tax imposed on users of rural land	The AfDB's requirements for compensation must be followed as per OS2, thus the projects will follow the compensation of all lost assets at full replacement cost



Theme	AfDB's OS	National Legislation	Gaps Identified	Recommendation
		<p>property, the cost of removal transport and reinstallation shall be factored into the compensation. In addition, the rural land holders shall also be paid displacement allowance on top of compensation estimated as 15 times the average annual income for the past 5 years prior to expropriation. Valuation formula are provided in Regulation No. 472/2020</p>	<p>(cultivated or not) are not put into consideration. The valuation formula proposed for this project has been updated to include such sums. The project proponent shall ensure that the compensation awards include such sums.</p>	
<p>Timing of compensation payments</p>	<p>According to AfDB's OS2, compensation for all losses shall be paid before their actual move; before land and related assets are taken; and, if the project is implemented in phases, before project activities begin for each particular phase.</p>	<p>The Constitution (Article 40(8) requires that expropriation of private property for public purposes shall be subject to advance compensation payment commensurate to the value of the property</p> <p>Proclamation No. 1161/2019, requires that compensation shall be paid in advance of taking into possession of the expropriated immovable and permanent improvements on land.</p> <p>However, in certain conditions (objection to compensation payments and other related grievances), the authorized authority is empowered to take over property prior to conclusions on the appeal by the PAP (Civil Code Proclamation No. 165/1960, Article 1478).</p>	<p>There is a gap in Proclamation No 1161/2019 to allow land to be expropriated before necessary measures for resettlement take place, particularly before the displaced person has been paid. This can have serious consequences for those affected, as they may be displaced without shelter or livelihood.</p>	<p>Payment of compensation and support for displaced person should always be effected before the land is handed over or before project activities begin as per the requirements of WB OS2</p> <p>To ensure that all compensations are paid prior to possession of the expropriated property, projects shall institute accessible, objective, systematic and empowered grievance management mechanisms that will allow for swift handling and conclusion of all grievances.</p> <p>In addition, to avoid objections to compensation payments, involvement of the affected entities early in the process with clear transparency about the compensation rates will be essential.</p>

## 4. Baseline Environment

### 4.1 General

The Degehabur – Kebridehar Power Transmission Line (TL) and Substation Project is situated in the eastern part of Ethiopia and covers approximately 206 km long with 26m wide route corridor (Right-of-Way (ROW)).

Information on existing natural and socio-economic resources is of fundamental importance for evaluation of environmental impacts. The contemporary and standard tools were used to investigate the physical, biological and social environment along the TL corridor. Physical observation, Key Informant Interview (KII), stakeholder consultation, transect walk, analysis of satellite image and Geographic Information System were the major tools and techniques employed for detail baseline study.

The environmental parameters were collected, measured and presented in ways, which are consistent with applicable environmental standards, norms and requirements of both national and international guidelines. Secondary data from the study area were used where it is available and relevant.

In this chapter, the baseline data on the status of the physical, biological and socio-cultural environment along the transmission line corridor have been assembled, evaluated and presented.

### 4.2 Physical Environment

#### 4.2.1 Land Form & Topography

The physical features that affect route selection and the associated physical environment that could be affected by the power transmission line include topography or terrain, soil, geology and land use and land cover.

Degehabur - Kebridehar Power Transmission Line (TL) traverses flat plains and steep sloping terrains including small hills and ridges. However, the majority of the route (59.2%) could be classified as being in flat to gently sloping terrain with average slope ranging from 0 - 8%.

The project starts at Degahabur existing Substation at an elevation of 1,091 meter above sea level (m asl). The elevation gradually falls to 782 m asl at km 77.6 at Birkot new substation and then the elevation gradually continues to fall to 515 m asl at km 130 when it reaches at Kebridehar existing substation (See Figure 4.1 and Figure 4.2).



Photo 1: Partial View of topography along the TL route

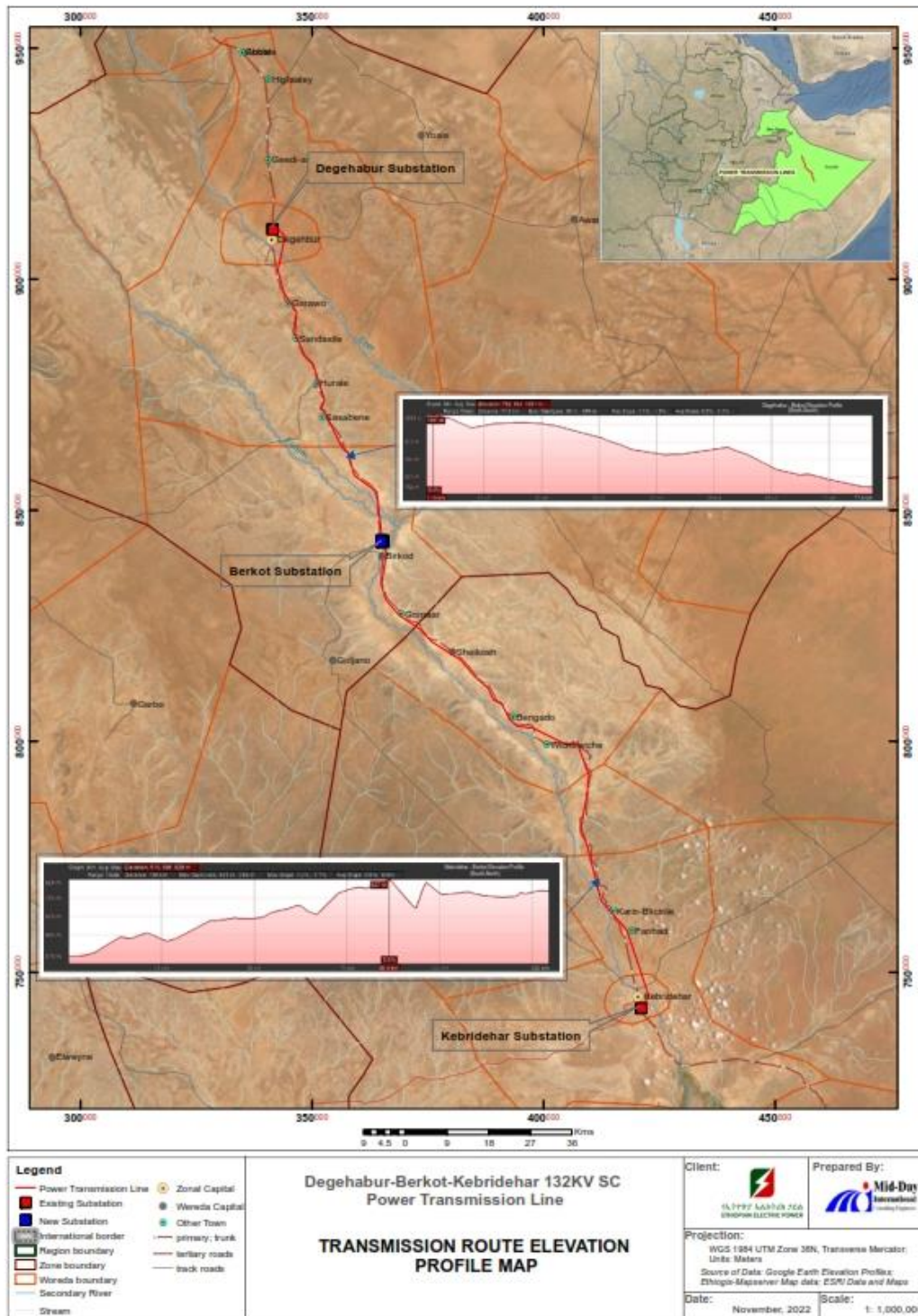


Figure 4.1: Profile of Degehabur - Kebridehar Power Transmission Line Route



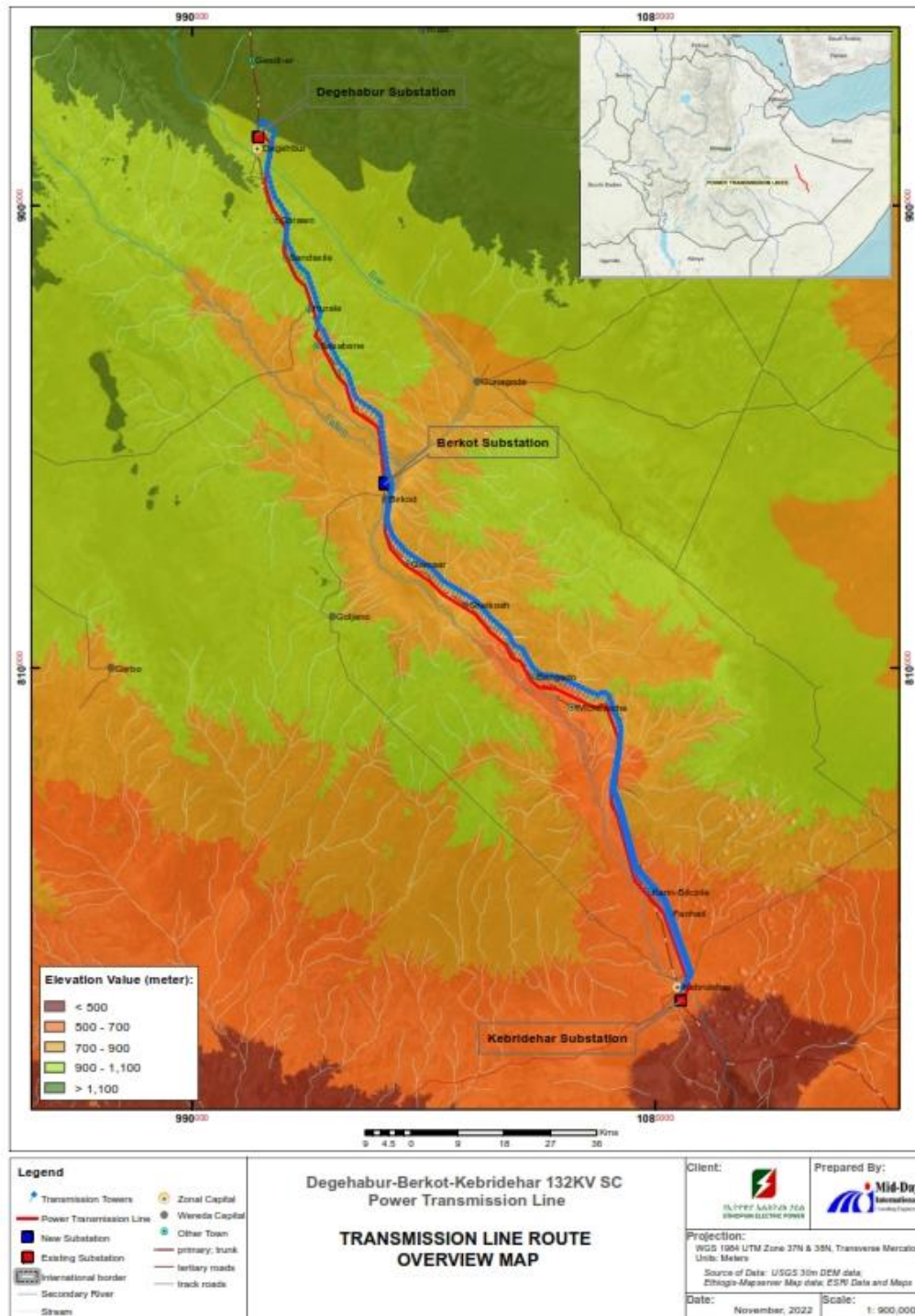


Figure 4.2: Elevation range along the Degehabur – Kebridehar Power TL Route

Based on the slope analysis result, the TL corridor has various slope classes with flat to steep topographic characteristics. The major part of the route traverses through an average slope ranging from 0-8% and covers 75% of the TL route followed by steep topography (30-50%) which covers about 30.4% of the total route corridor.

Generally, 59.2% of the total TL route corridor has an average slope  $\leq$  8% and 25% of the corridor has slope exceeding 8%.

Major topographic features and slope categories along the transmission line route corridor are presented in Table 4.1 and Figure 4.3.

Table 4.1: Slope categories of the TL Route

S. No	Average Slope (%)	Approximate Section (km)	Proportions of the total (%)
1	Flat or almost flat (0 – 3)	46.39	22.5
2	Gently sloping (3 – 8)	75.66	36.7
3	Moderately sloping (8 – 15)	25.37	12.3
4	Sloping (15 – 30)	9.02	4.4
5	Steep (30 – 50)	49.74	24.1
	<b>Total</b>	<b>206.18</b>	<b>100.0</b>

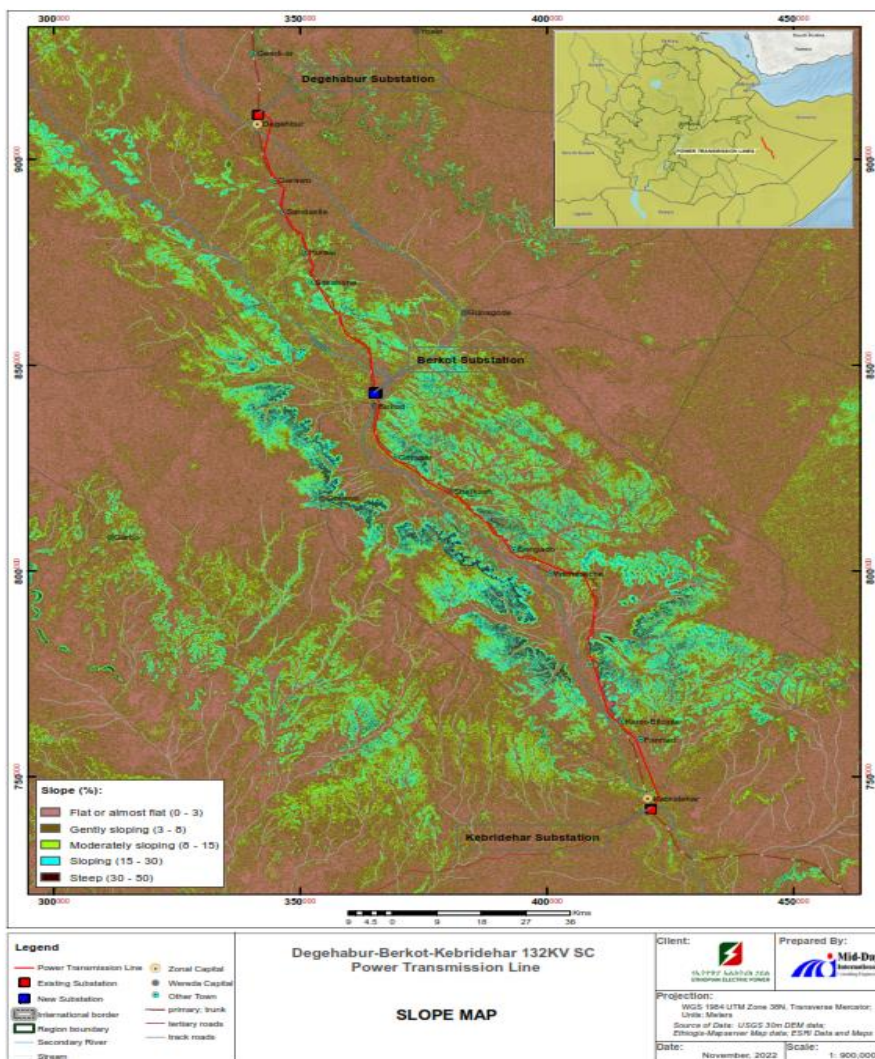


Figure 4.3: Slope along the Transmission Route



### 4.2.2 Climate

Based on the agro-ecological zone classification of Ethiopia (MOARD, 2005), the Somali Region has warm and hot arid low land agro ecological zones. In similar pattern, the proposed project area falls in to warm arid lowland agro-ecological climatic zones.

**Rainfall:** The temporal variations of mean monthly rainfall at Degehabur and Kebridehar meteorological stations are presented in Figure 4.4. The rainfall distribution at the two sites have similar rainfall patterns with two main rainy seasons from April - May at both sites and the second rainy season from September - November in Degehabur and from October - November in Kebridehar.

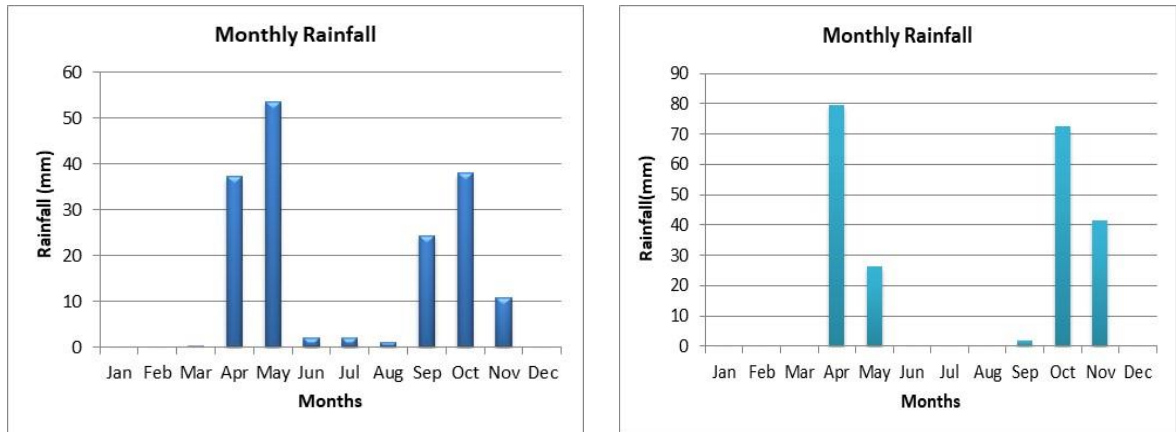


Figure 4.4: Monthly Rainfall Pattern at Degehabur (Left) & Kebridehar (Right) Meteorological Stations

**Temperature:** The temperature recorded at Degehabur and Kebridehar Meteorological Stations shows that maximum temperature ranges between 28.2-35.1°C and 33.1 - 38.8°C respectively. While the minimum temperature ranges between 14.1 - 21.9°C and 14.6 - 22.2°C.

Figure 4.5 below show the monthly temperature variation at Degehabur and Kebridehar Meteorological Stations.

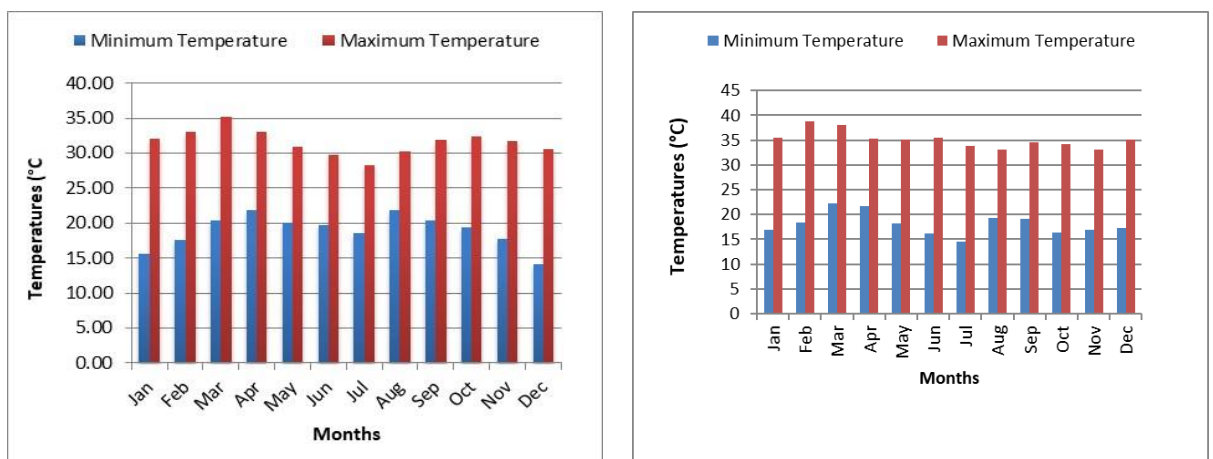


Figure 4.5: Monthly Minimum and Maximum Temperature Variation at Degehabur (Left) and Kebridehar (Right) at Meteorological Stations

### 4.2.3 Land Use/Land Cover

The land cover and land use assessment was carried out with the objective to determine the extent of land cover types and to verify the types of land users and land uses that would be affected during construction and operation phases of the proposed power transmission line project.

The land cover types along the Degehabur - Kebridehar Power TL route are classified in to four major land cover classes. The following section presents detail description of these major land cover types and specific land uses identified along the TL route. Table 4.2 below presents the major land cover types along the proposed power TL route.

Table 4.2: Major Land Cover Types Crossed by the Proposed TL Route

Sl. No	Land Use/Land Cover Types	Approximate Section (km)	Percent (%)
1	Exposed soil and rock surface	3.16	1.5
2	Open Bush land	44.49	21.6
3	Shrub land and scattered bush	152.88	74.2
4	Urban and built-up	5.65	2.7
<b>Total</b>		<b>206.18</b>	<b>100.0</b>

The land cover map (Figure 4.6) reveals that the power transmission line route generally crosses four major land cover types which includes exposed soil and rock surface, open bushland, shrubland and scattered bush and urban and build up areas, the major land cover traversed being shrublands and scattered bushes covering 74.2% or 152.88 km of the total route length.

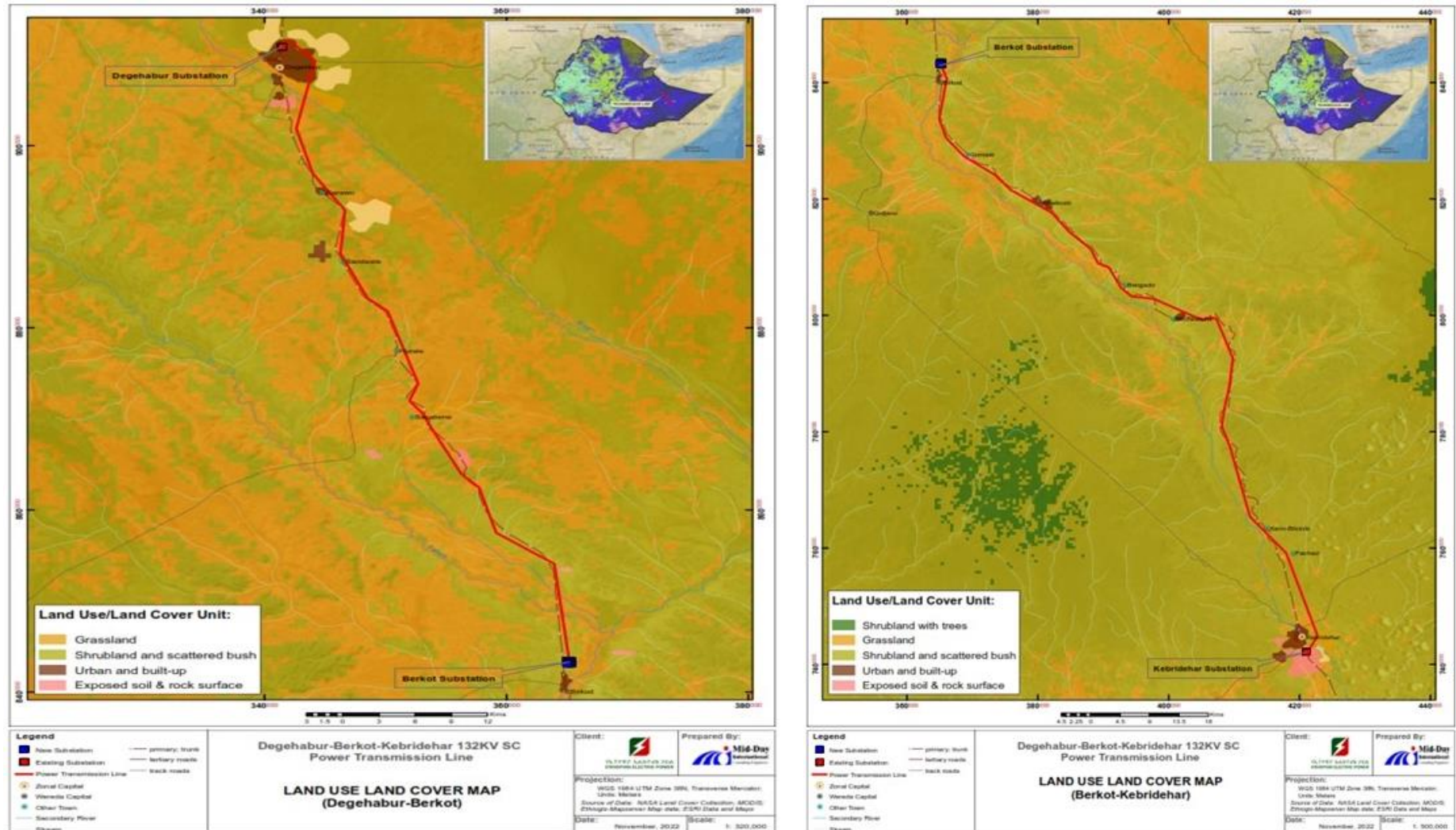


Figure 4.6: Land Cover Map of the Power Transmission Line Route



The following section presents detail descriptions of the different land cover types along the transmission line route.

**Shrub land and scattered bushes:** Shrub lands are multi-stemmed plant predominantly with height of less than 2 meter and 20-50% crown/ canopy cover. These land cover types are characterized by the occurrence of shrubs and scattered bushes and few trees.

The shrub vegetation cover is relatively dense and it exists in association with multi-story scattered bush plants. Patches of dense shrubs interspersing grasslands with some scattered bush trees are the typical characteristics of shrub and scattered bush lands. These land cover types exist also in association with grass vegetation.

Open shrub land and scattered bushes are the dominant land cover types traversed for a total length of 152.88 km long (or 72.2% the route length). These land cover types are used for pastoral livestock grazing, browsing and fuel wood collection.



Photo 2: Open Shrub Land Cover Types

**Open bushland:** Open bushlands are also multi-stemmed woody plant with a but predominantly with height of 2 - 7 meter and 20 - 50% crown/canopy cover.

These land cover types include areas where the dominant land cover is dominated by bush vegetation. But, they also exist in association with grasslands and shrublands. These land cover types are the second dominant land cover types along the TL route which occupy about 22.6% of the route length.

These land cover types are used for pastoral livestock grazing, browsing and fuel wood collection.



Photo 3: Open Bush Lands

**Urban and built-up:** These land cover types include settlement areas and occupy about 2.7% or 5.65 km of the total TL route.



Photo 4: Partial View of typical Settlement within the project area

**Exposed soil and rock surface:** These land cover types are also called barelands which include areas where the dominant covers are exposed rocks and exposed soil surfaces.

For short periods during the rainy seasons, patches of vegetative cover could develop and grazed and browsed while for most of the years these land cover types remain to be bare lands. Exposed soil and rock surface types cover 1.5% of the route length.





Photo 5: Exposed soil and rock surface

#### 4.2.4 Soils

Soils along the proposed power TL route vary with parent material and topography. Based on the soils studies of Wabi Shebele River Basin Master Plan Study Projects, the TL crosses four major soils which include: Calcisols, Fluvisols, Regosols and Solonchaks. However, Fluvisols (44.9%) are the dominant soil types traversed by the TL (Table 4.3 and Figure 4.7).

Table 4.3: Table showing the soil type along the Power Transmission Line Route

S/No	Major Soil Type	Approximate Section (km)	Percent (%)
1	Calcisols	73.23	35.5
2	Fluvisols	92.50	44.9
3	Regosols	5.56	2.7
4	Solonchaks	34.89	16.9
<b>Total</b>		<b>206.18</b>	<b>100.0</b>

**Fluvisols:** Fluvisols are predominant along the TL covering about 44.9% of the route. These major soil groups are depositional soils which receive fresh sediments from the surrounding areas. Therefore, the soils show very little or no profile development. The soils are moderately deep to deep, moderately well drained, medium to light textured and are stratified. Their color is variable differing from yellowish brown to dark reddish brown.

**Calcisols:** Calcisols are the second dominant soils along the TL occupying about 73.23 km or 35.5% of the power TL route. These soils are characterized by redistribution of limestone in their profiles, with calcic horizon within 200cm of the surface and a calcic horizon within 100cm from the surface. The soils are formed by translocation of calcium carbonate from the surface horizon to an accumulation layer at some depth.

They generally occur on flat to gently undulating lands and can be characterized by their whitish appearance when dry and lack of vegetation.

They are shallow to deep, well drained, yellowish white and red, medium textured soils with many calcareous nodules. Structure is weakly developed, usually massive with loose consistence when dry. They have strong calcareous reaction and nodules.

Calcisols are common in calcareous alluvial/colluvial parent material. Due to high calcium carbonate content. These soils are characterized by continuous horizon of carbonate accumulation



**Solonchaks:** Solonchaks are soils having high concentration of salt or a salic horizon starting within 50cm of the surface. The soils are moderately well drained, very deep, fine and medium textured soils dominantly found on flat to almost flat topography. These soils cover only 16.92% of the TL route length.

**Regosols:** These soil units develop on unconsolidated parent materials derived from different parent rocks. They resemble Leptosols and are usually associated with them. They differ from Leptosols by their soil depth and profile development. Regosols cover only 2.7% of the total TL route.

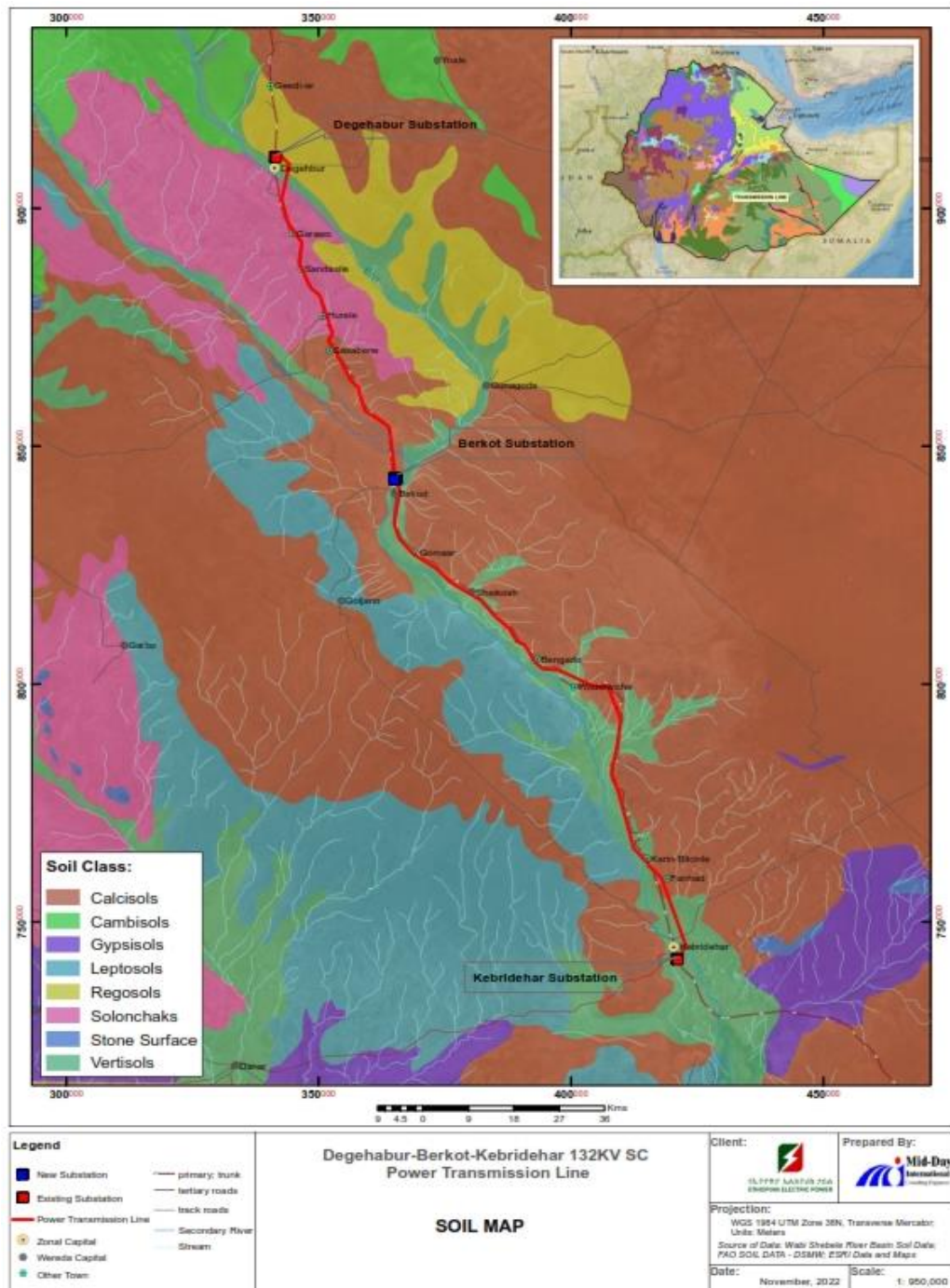


Figure 4.7: Soil Map of the TL Route

## 4.2.5 Geology

According to the Geological Survey of Ethiopia and Wabi Shebele River Basin Integrated Resource Development Master Plan Studies (GSE, 1996 & MoW, 2004), Degehabur – Kebridehar Power Transmission Line route traverses four major geological formations namely: Hamanlei Formation, Gabredarre Formation Upper unit, Urandab Formation and Alluvial and lacustrine deposits. However, the major part of the route is covered by Urandab Formations. Coverage of each geological formation and their spatial distribution are presented in Table 4.4 and Figure 4.8 respectively.

Table 4.4: Major geological formations the TL route

Sr. No	Type of Geology	Description	Route Crossing (km)	Proportion of Coverage (%)
1	Hamanlei Formation	Oxfordian limestone and shale.	60.53	29.4
2	Gabredarre Formation Upper unit	Kimmeridgia -Tithonian	32.92	15.9
3	Urandab Formation	Oxfordian-Kimmeridgian marl and shaly limestone	108.42	52.6
4	Alluvial and lacustrine deposits	Sand, silt, clay, diatomite, limestone and beach sand.	4.30	2.1
<b>Total</b>			<b>206.18</b>	<b>100.0</b>

Brief description of each geological formation along the proposed power transmission line route is presented as follows:-

**Urandab Formation:** This formation is the dominant geological formation along the route, which covers about 52.6% of the total TL route length.

The Urandab Formation was named after Urandab village near a locality in the eastern Ogaden represented by both dark-grey and black organogenic shales and lesser degree by limestones. Such rocks are typical of examples of oil source rocks and are deemed as one of the major unit generating hydrocarbon.

The Urandab Formation is relatively deep marine sediment. The upper part of the Urandab Formation shows the swallowing of the sea which continued upward into the overlying Gabradarre Formation.

**Hamanlei Formation:** The Hamanlei Formation is the village of Hamanlei in the Ogaden area from which it is named after.

Adigrat formation grades upward through a transition zone of dolomites, evaporites and limestones into a thick transgression Jurassic carbonate-evaporite unit known as

Hamanlei Formation is an important potential petroleum reservoir and source unit and is a major target for petroleum companies for petroleum exploration. The Hamanlei Formation is subdivided into three lithologic sub-units: Lower Hamanlei, Middle Hamanlei and Upper Hamanlei.

The Hamanlei formation covers about 29.4% of the total TL route.

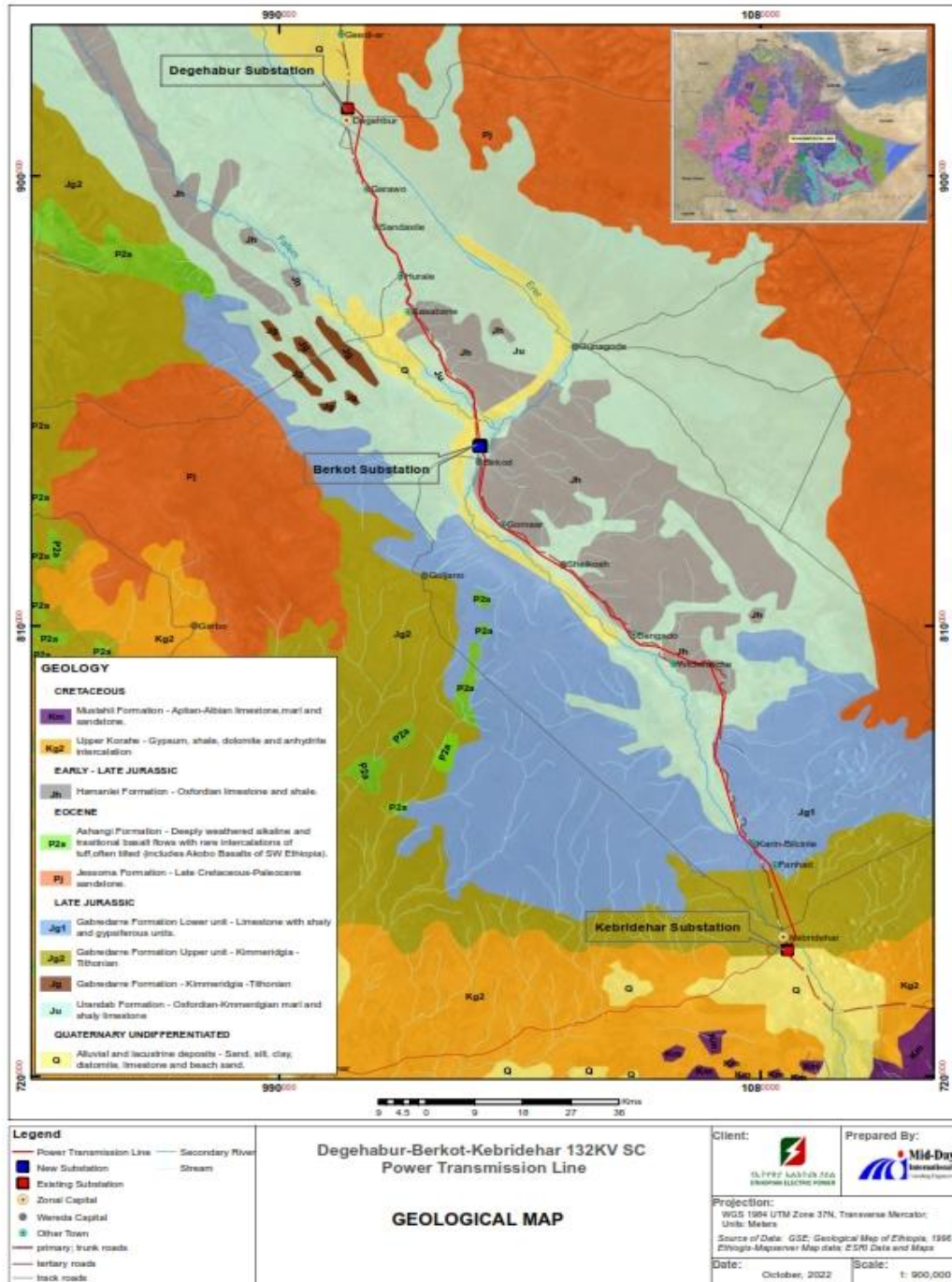


Figure 4.8: Geological Map of the Power Transmission Line Route

**Gabredarre Formation Upper unit:** The Gabradarre Formation (Jg) is named by Gabredarre village in eastern Ogaden and the formation consists of thinly bedded alternating of oolitic and marly limestones, interbedded in the upper part with gypsum and shale.

The upper most beds of the Gabredarre Formation are completely dolomitised. The mega fossils are corals, bivalves and brachiopods

Generally shallow marine water condition existed across the entire Ogaden Sedimentary Basin at the end of the deposition of the Gabredarre Formation. From the Kimmeridgian to the Tithonian, the Gebredarre Formation was deposited in an upward shallowing carbonate plat form environment. It covers about 15.9% of the TL route length.

**Alluvial and lacustrine deposits:** These formations represent sediments of fluvial origin and the recent alluvial deposits of gravel, sand, silt and clay. Extensive alluvial deposits occur along the major river courses and low-lying areas. These formations are predominantly found on lower reaches of river valleys, which occupy thick alluvial deposits of silt clay and gravels. Alluvial deposits are grey to brownish and reddish brown in colour.

These deposits cover only 2.1% of the total TL route.

#### 4.2.6 Water Resources and Drainage Networks

The main water resources in the project area that are used for humans and animal are from piped, seasonal and perennial rivers. Due to existing situation of climate change, currently there is scarcity of water for cooking and drinking purposes in all over the project affected area.

Despite the fact that the project area is water scarce, based on stakeholders' consultation, there has been no conflict due to water resources usage in all community sites traversed by the project.

The power transmission line crosses several streams and rivers which are tributaries of the Wabi Shebele River. Major rivers and streams traversed by the proposed project include Erer, Hodale, Sesebene, Beka, and Yengi Rivers.

The major rivers and streams crossed by the transmission line are depicted in Figure 4.9.



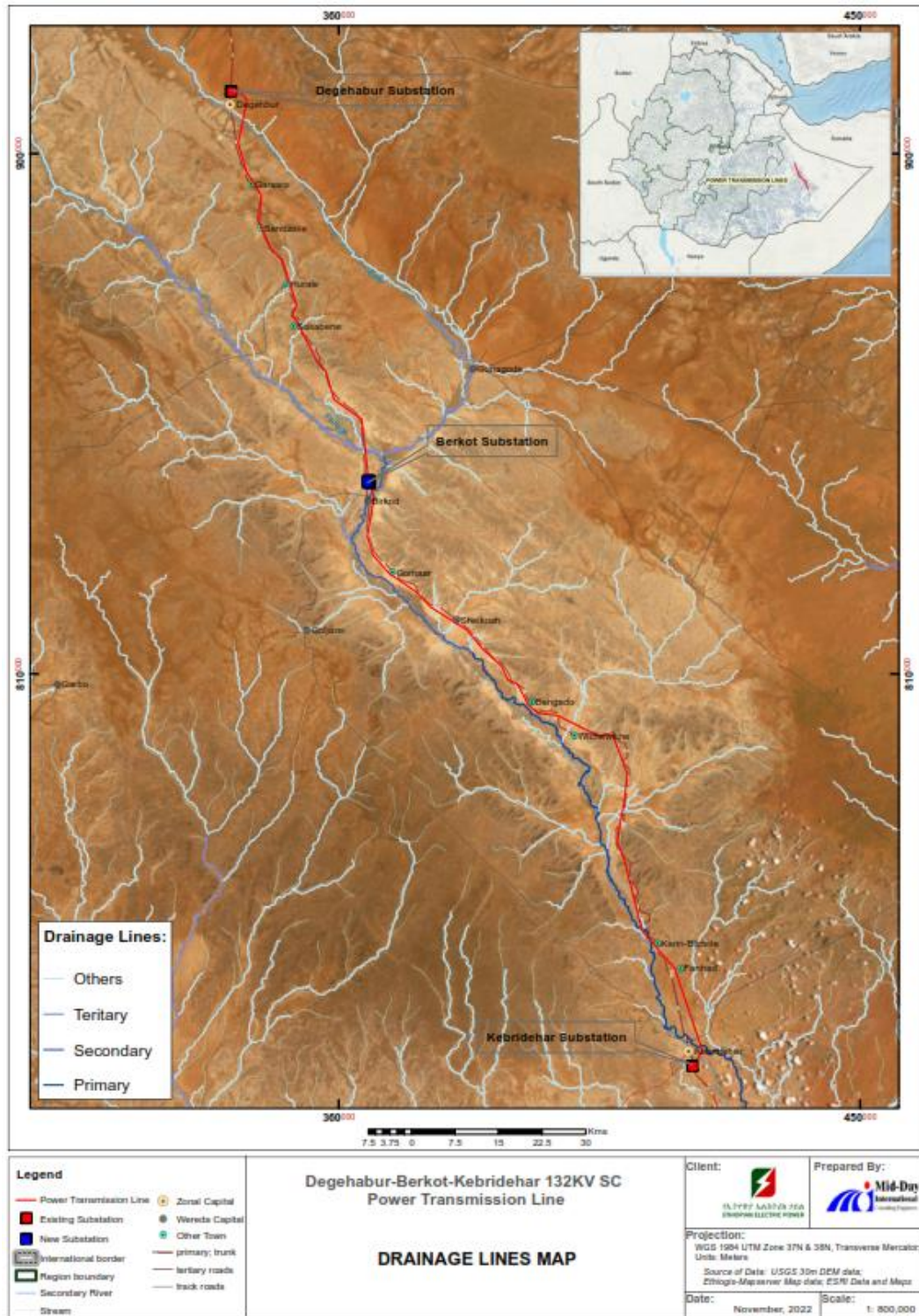


Figure 4.9: Drainage Network along the Proposed TL Route

#### 4.2.7 Air Quality

The air quality along the proposed transmission line route corridor, the new and existing substation sites is generally good. Absence of major industries in the area, relatively low commercial and industrial sites, as well as, low population density and limited traffic along the transmission line corridor and the substation sites, it is reasonable to assume that the ambient air quality is good, apart from elevated dust levels close to the existing



access road during the dry season caused by passing traffic. This is likely to be the case even during construction adjacent to the access road, since traffic volumes will not be high enough to result in significant air quality degradation.

#### 4.2.8 Ambient Noise

The baseline environment along the transmission line corridor is mostly rural with sparse settlement patterns.

Hence, existing noise levels in the vicinity of the transmission line in both the new and existing substations localities reflect rural acoustical environment and are generally characterized by sounds of nature and minimal road traffic.

However, there are vulnerable targets (school, clinic, worship place, local administration offices, etc.) exposed to noise and vibration from the project and construction of new or upgrading of existing access road.

### 4.3 Biological Environment

#### 4.3.1 Terrestrial Ecology: Forest and Vegetation

##### 4.3.1.1 Objective

The objective of forest and vegetation study was to assess the baseline and establish the habitat types and flora species along the Degehabur - Kebridehar Power TL route corridor and the baseline assessment include:

- Identification of the type of forest and vegetation species along the TL route and new substation area;
- Identification of the presence of any flora species of local or international (IUCN Red List) conservation concern; and
- Assessment of the biodiversity value and ecosystem services that may be provided to local communities (e.g. medicine, firewood, water collection, etc.).

##### 4.3.1.2 Materials and Methods

###### Desk Work

The methodology of the study involved both the desk and the filed works. During the desk work, information from secondary sources have been reviewed. Including the Wabi Shebele Master Plan Study and other studies on vegetation and flora species recorded within the study region in general and the project area in particular. Write-up and compilation of the report has also been part of the desk work.

###### Field Visit

On-site visit to the project area and primary data collection to establish base line information have been conducted during the field work on 7 and 8 January 2023. The field visit to the project area was for data collection to establish the baseline information of the project area. Furthermore, during the field visit local people of the area were interviewed and asked questions regarding the local name and uses of vegetation/flora species in the project area.

###### Habitat Classification

The project are and the access road can be classified as “Modified Habitat” and “Natural Habitat”). This is because the original natural vegetation of the area has been much

modified by centuries of human use, principally clearance for agriculture, lopping for fuel, charcoal and browse, and extremely heavy pressure from livestock. The Birkot substation site also comprise of natural habitat of shrubs and bushes.

#### 4.3.1.3 Description of the landscape and Vegetation Types along the TL Route corridor

The original natural vegetation of the area has been much modified by centuries of human use, principally clearance for agriculture, lopping for fuel, charcoal and browse, and extremely heavy pressure from livestock and by the construction of both railway lines. As a result areas along and close to the road are sparsely vegetated, and the soil surface is generally bare due to the destruction of ground cover by livestock.

The general landscape and topography of the transmission line route corridor can be classified as plains, hilly and ridges with flat too steep to very steep topography. However, the majority of the TL route is predominantly plain land with flat to gently sloping topography. Based on the agro ecological zone classification of Ethiopia the proposed TL project area falls in to warm arid low land agro ecological climatic zones.

#### 4.3.1.4 Vegetation Types

Two major land cover types identified along TL route include shrublands and bushlands with scattered trees, shrublands dominated by *Acacia* species being the dominant land cover type of the project area.

According to the Ethiopian vegetation type and distribution classification, the vegetation of the power TL project falls in the *Acacia-Commiphora* vegetation type. This vegetation type is known for its varying soils, topography, and diverse biotic and ecological elements.

This vegetation type is characterized by drought tolerant trees and shrubs, with small, either deciduous or evergreen leaves. These vegetation types form a complete set of stratum and has unique species with the ability to tolerate limited soil moisture. The understory mainly consists of shrubs and bushes.

The vegetation type is characterized by plants that include drought-tolerant tree and shrub plant species. The plant species are with either small deciduous leaves or leathery persistent ones dominated by thorny *Acacia* sp. interspersed with less frequent evergreen trees, shrubs and succulents. The most characteristic species of *Acacia-Commiphora* vegetation are *Acacia* and *Commiphora* genera.

#### 4.3.1.5 Vegetation Species of the TL Route Corridor

The major vegetation species identified along the TL route corridor as described in Ethiopian Flora and Global IUCN Red List Category are presented in Table 4.5.

A wide range of species occurs and the shrubs, bushes and the common tree species include *Acacia seyal*, *Acacia bussei*, *Acacia mellifera* and *Acacia tortilis*, *Commiphora*, *Euphorbia* and *Aloe* species.

In addition to the native vegetation, expansive stands of the introduced invasive *Prosopis juliflora* have been observed in the project area.

The typical vegetation cover of the TL route Corridor is depicted in Photos 6.



Photo 6: Partial View of typical vegetation covers of the project area

#### 4.3.1.6 Forest and Vegetation of Birkot Substation (SS)

In contrast to the TL route corridors, the natural vegetation in the Birkot SS area is considerably modified by human activity. There are no significant areas of forest cover and vegetation species within and around the proposed SS project area is shown in Photo 7.



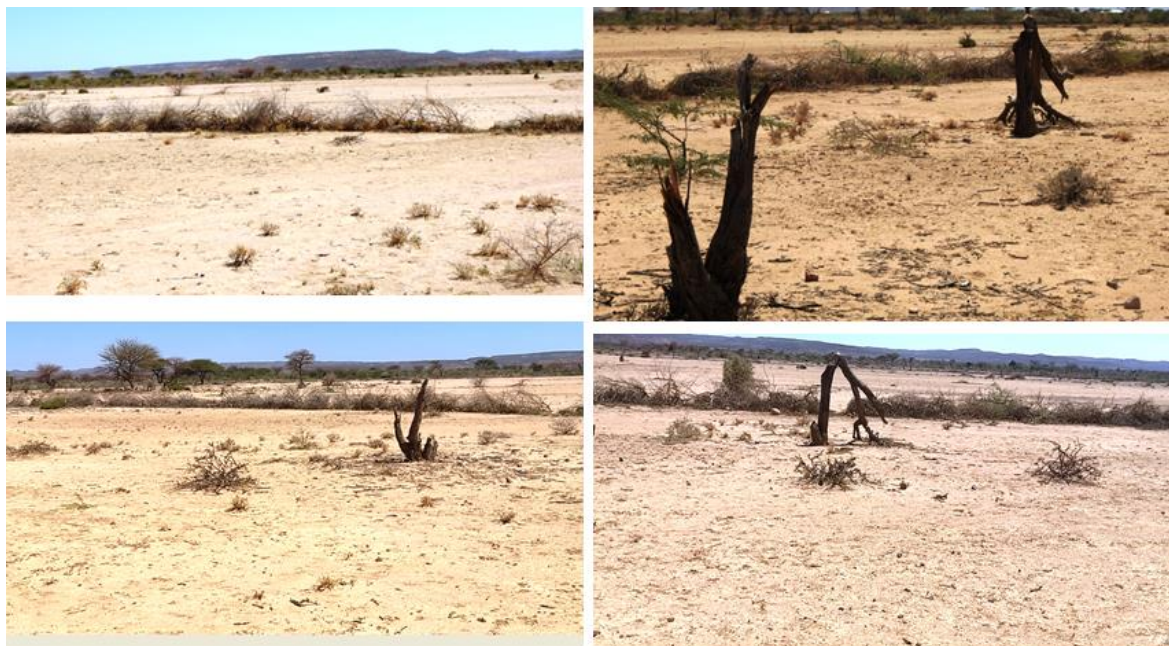


Photo 7: Partial View of Birkot SS area

#### 4.3.1.7 Biodiversity Value and Ecosystem Services

The plants in the project area are mainly used for fuel wood collection, charcoal production, grazing and browsing leading to very high livestock pressure. Trees like *Acacia tortilis* are used for charcoal production.

Wild edible trees and shrub species in the project area include eatable gum, seeds and pods of *Acacia bussei*, *Acacia mellifera*, *Acacia Senegal*, *Acacia tortilis* and *Balanites aegyptiaca* etc.

In addition, some of the plant species in the project area used as traditional plant medicine for both human and livestock include: *Acacia bussei*, *Acacia mellifera*, *Acacia reficiens*, *Acacia Senegal*, *Acacia seyal*, *Acacia tortilis*. The stem, branch, roots, gum, bark and roots of trees and shrubs these vegetation species are used as traditional medicine.

#### 4.3.1.8 National or International Designated/Protected Biodiversity Areas

The project site and the ecosystem type it belongs is not part of nationally or internationally Designated/Protected Biodiversity Area.

#### 4.3.1.9 Assessment of Critical Habitat and IUCN Red List

The level of threat on the plants recorded in the project site was assessed using IUCN Red list categories (IUCN 2001). As indicated in the table below in the list of common vegetation species, only few species were evaluated as Least Concern (LC) while most of the identified species were not evaluated by IUCN.

There is no species with restrict range of distribution and there is no critical habit that will be affected by the project. There are no floral species identified during this study that are endangered or critical.

Table 4.5: List of Common Vegetation Species and their Global IUCN Red List Category along the TL Route Corridor

Sr. No.	Botanical Name	Local Name /Somali	Global IUCN Red List Category
1	<i>Acacia seyal</i>	Jiikh; Fullay; Waajool	LC
2	<i>Acacia benaderensis</i>	Sarmaan	NE
3	<i>Acacia bussei</i>	Galool	LC
4	<i>Acacia edgeworthii</i>	Jeerin	NE
5	<i>Acacia hamulosa</i>	Masaarjebis	NE
6	<i>Acacia mellifera</i>	Bilcil	NE
7	<i>Acacia nubica</i>	Gumar	NE
8	<i>Acacia recifiens</i>	Qansax	NE
9	<i>Acacia Senegal</i>	Cadaad	LC
10	<i>Acacia stuhlmanii</i>	Qaydar	NE
11	<i>Acacia tortilis</i>	Qudhac	LC
12	<i>Adenium obesum</i>	Oboo; Obow	NE
13	<i>Albizia anthelmintica</i>	Reydab	NE
14	<i>Aloe sp.</i>	Waraabe	NE
15	<i>Anisotes trisulcus</i>	Mirdhis	NE
16	<i>Balanites Aegyptiaca</i>	Qulan	LC
17	<i>Boscia minimifolia</i>	Meygaag	NE
18	<i>Coleus barbatus</i>	Dhalool	NE
19	<i>Commiphora myrrha</i>	Dhidin(geed) malmal (xabag)	NE
20	<i>Commiphora allophylla</i>	Xagarmadow	NE
21	<i>Dichrostachys cinerea</i>	Dhiigtaar	NE
22	<i>Dobera glabra</i>	Garas	NE
23	<i>Euphorbia cuneata</i>	Dhirindhir	NE
24	<i>Euphorbia robecchii</i>	Dharkayn	NE
25	<i>Grewia bicolour</i>	Dhebi	NE
26	<i>Grewia penicillata</i>	Hohob	NE
27	<i>Salvadora persica</i>	Caday; Rumay	LC
28	<i>Prosopis juliflora</i>	Wangey/ Cali-garoob	NE

Note: LC: Least Concern NE: Not Evaluated

### 4.3.2 Biodiversity and Wildlife Resources and their Habitat

The biodiversity and wildlife resources and their habitat that occur in and around the future Degehabur – Kebridehar 132kV Transmission Line corridor/ROW and Birkot Substation areas has been assessed.

The outcome of the different observation made in the field, the discussions with the concerned stakeholders, interviews and literature reviews made in the study area are discussed in the following sections.

#### 4.3.2.1 Methodology for Assessment

The wildlife and habitat assessment has been conducted using the following methods:



### **(i) Literature Review**

This section provides a description of the existing wildlife resources and associated key features which include typical fauna and their habitat, protected areas and non-protected sensitive resources that are found inside and within the vicinity of the project influence area. This desk review include the previous studies, data, surveys, and records available in published scientific papers, books, journals and reports on fauna species recorded within the project influence area (TL corridor) in general.

It is important to note that since the available literature on the project influence area and its surrounding is relatively limited, the literature reviewed included a wide spectrum of references including international references that have a wider focus than the region of the Project.

### **(ii) Field Survey**

Field surveys were undertaken at the along the project corridor (ROW) on January, 2023. The field survey mainly included the following methods:

- *Field observations:* the study of fauna in the project site was based on both direct and indirect observation method. The direct method involved the actual sighting of the animal during the reconnaissance survey and field visits. On the other hand, the indirect method involved sighting of animal signs and footprints, calls, active burrows, remains or any other vital signs that indicate the activity of animals.
- *Interviews* was also made to include the information received from local people living within the sampling area, institutions experts and government bodies: the experts were interviewed and asked about wildlife species and the future influence of the project on their protected area. An inventory of wildlife species thus recorded is provided.

### **(iii) In-flight monitoring for large birds**

Avifaunal surveys were conducted by a combination of walk transects; drive transects and point count method. A 10-minute point count method on a 25 m radius was recorded all bird contacts by observation and hearing. For drive transects, observers used existing asphalt and gravel roads where possible. For walk transects, observers walked along selected sections depending on the availability of resources within the study site. No formal consultation process was conducted as part of this avifaunal study as it was not deemed necessary at the time of the study.

### **(iv) Fauna Species status**

All species recorded as part of the literature review or on-site during the field survey had their conservation status identified according to International Union for Conservation of Nature (IUCN) Red List of Threatened Species (IUCN, 2022-2), which provides the global conservation status of evaluated species.

The results discuss the findings and outcomes for fauna and wildlife habitat based on the literature review and field survey.

#### **4.3.2.2 Wildlife Resources in the Project Area**

Due to warm arid low land agro climatic conditions in the project area, the native vegetation are characterized by dominantly dwarf drought tolerant shrubs, with small, either deciduous or evergreen leaves and too sparse to sustainably harbour or shelter fauna/wild life species. A vast region of the project-traversed area is under high environmental degradation and the habitat condition is not suitable for many wild animals.

However, literature review, field assessment and consultation with the local people confirmed the presence of 38 species of wild animals in and around the project impacted

Woredas and their immediate adjacent areas (Wilhelmi, and Kaariye, 2006).

Some of the wild animals which have been observed during the field study were Mongooses, Ground Squirrel, Spotted Hyena, Golden Jackal, Baboon, Guenther's Dikdiks. The highest number of 10 Salt's Dikdik species were observed and recorded during the field work at the project site and close to the asphalt road. These are least concern species according to the 2017 IUCN Red list.

Generally, of all the 38 species of wild mammals recorded for the greater area, 28 species are recorded as Least Concern and 1 species as Data Deficient according to the IUCN's Red List of Threatened Species (IUCN, 2022-2). However, 6 species are evaluated as Threatened (5 species are listed as Vulnerable and 1 species as Endangered) and 3 species as Near Threatened. The wildlife species that have been recorded for the greater area mainly from literature review and consultation with the local people are listed in Annex 1 (See Annex 2 for detail).

Although literature review, field assessment and consultation with the local people confirmed the presence of some wildlife species around the project area, based on the assessment, wildlife species number and population in the project area are very low. The fact during the field survey the Study Team encountered only a few animals shows that the area supports only limited number of wildlife species. However, the local residents and people in the administrations of the respective Wereda offices interviewed during the field studies reported the presence of more wildlife within the project area. However, it is most unlikely that the wild animals which have been obtained from secondary data do exist in the project corridor traversed areas.



Photo 8: Salt's Dikdik at the Sesebene river, Ground squirrel throughout the project site

#### 4.3.2.3 Avian Resource of the project area

##### (i) IUCN species status and Important bird areas

Birds are regarded as one of the most useful bio indicators, and they have been used extensively as models to determine ecosystem function. According to the previous assessment of Wilhelmi and Kaariye (2006) data indicates that more than 300 species of birds exist in the region. Based on the current assessment and review about 258 bird species could potentially occur within the broader range in the project site (See Annex 2 for a full list of species-both observed and expected from literature review). The list of the birds which includes the Somali regional state more or less focused on the zones of Jarar, and Korahe

There are no Important Bird Areas (IBA) and protected area within the confines of the project site. Generally, the areas along the proposed transmission line have Low to Medium

Sensitivity. Furthermore, there are few species of conservation concern in the study area. These are based on the global conservation status of the IUCN Redlist species (2022-2), of the species about 13 species of birds were found to be threatened, four species are Critically endangered such as *Hooded Vulture*, *African white-backed Vulture*, *White-headed Vulture* and *African orange-bellied Parrot* and five species are endangered such as *Egyptian Vulture*, *Bateleur*, *Lappet-faced Vulture*, *Martial Eagle* and *Secretary Bird* and the four species are vulnerable which includes *Scissor-tailed Kite*, *Tawny Eagle*, *Western Turtle Dove* and *Abyssinian Ground-Hornbill*. The rest five species are Near Threatened, one species Data Deficient and the large amount about 239 species are in the category of Least Concern.

### (ii) Seasonality

Based on the literature review of avifauna, the seasonality of species on the table indicate that the appearance or the observation frequency of bird species show a significant or at least recognizable seasonal dependency. This of course applies for all true migratory species. According to the assessment of Wilhelmi and Kaariye (2006) suggested that palaeartic migrants are thus mainly seen in the months of November to March. Movements of inner-African migrants may be influenced by shifting conditions in parts of their distribution range and they appear in larger numbers during a particular time of the year. Other species may aggregate at certain places in times of suitable conditions or specific habitat offers. Storks, water dependent birds in general may flock at flood-plains or temporary large water ponds during the two rainy seasons from April to June (*Gu* Season) and October to November (*Deyr* Season). Others may appear in larger numbers if particular food sources are accidentally abundant.

As presented in Annex 3, the listing and entries try to reflect this seasonality in different terms. If “all seasons” is given, the species can be seen definitely throughout the year. If a cell remains blank no specific statements are appropriate; the species may or may not be found throughout the year.



Photo 9: White-bellied go away bird (left) and bird nests on site (right)

#### 4.3.2.4 Migratory Birds in the Project Area

The project area is not part of the Great Rift Valley system which is a major flyway for migratory birds that enter Ethiopia via the Mediterranean Bab al Mandab of the Red Sea and travel later into East Africa of Kenya, Uganda and Tanzania.

The project area does not have any major wetland habitats that can be used as a congregation of huge flocks of birds in which passage migrants can take the advantage as stop over to refill energy and continue their journey. This study has not also seen any



significant number of wetland birds either resident or migratory origin. Similarly, previous studies of the area did not show any concentration of migratory birds.

A total of 28 raptor species have so far been reviewed in a broad spectrum and recorded during the surveys in the project area (See Annex 3).

The species in the area are dictated by the nature of habitat and landscapes with passerines being the most abundant. The passerine species present in the area could be broadly categorized into shrub land and grassland species. The vast area of the Ogaden hosts also numerous palaeartic migratory species, some of them in large numbers like the European White Stork.

#### 4.3.2.5 Wildlife Resources and their Habitat

The proposed power transmission line project, which traverses a hilly, bushy and a little bit undulated land and covers in most of its route settlements, cultivated lands and in some areas modified habitats which are over-grazed by livestock's, shoats and camels and affected by anthropogenic influences.

In the hilly limestone–rock area with graveled soil is often bare with scattered dwarf shrubs and *Commiphora*, *Boswellia* and *Euphorbia* species are more dominant. This area stretches North and West of Kebridehar and southwards to the Shebele valley. The prevailing vegetation a typical plant association of semi-arid to arid conditions of the horn of Africa. All of the area belongs to an arid climate where evaporation exceeds precipitation.

Mean annual rainfall is about 470mm; mean average temperature is 27°C with a mean maximum of about 35°C. The area knows two rains seasons, *GU* season with heavy rain in late April to June and *DEYR* season with more scattered rain in October to November.

The vegetation of the project site along the road side highly degraded by the anthropogenic influence and invasion of mainly *Prosopis juliflora* species and on occasions there is some dense cover of shrubs at the hilly side and at the river edges. Most of the road sides and close to the towns regularly invaded by *Prosopis juliflora*. This habitat commonly help for the support of some wildlife species such as dikdik species, spotted hyena, common jackal, Baboon species, Ground Squirrel and ostriches.

#### 4.3.2.6 Critical Habitat and Wildlife Corridor in the Project Area

According to AfDB's OS 3 (Biodiversity and Ecosystem Services) Critical habitats: natural or modified habitats that have a high biodiversity value include the following:

- Habitats important to critically endangered and footprint- impacted species (As per the IUCN classification.)
- Habitats of significant importance to endemic and/ or restricted-range species and subspecies;
- Habitats of significant importance to globally significant concentrations of migratory species and/or congregatory species (Congregatory species are those that gather in globally significant numbers or concentrations at a particular site at a particular time of their lifecycle for feeding, resting, roosting or breeding (IFC 2008, Langhammer et al. 2007).
- Regionally significant and/or highly threatened or unique ecosystems; Areas that are associated with key evolutionary processes;
- Areas that are important to species that are vital to ecosystems, such as keystone species (A keystone species is a species that has a disproportionately large effect on its environment relative to its abundance. Paine, R.T. (1995), "A Conversation on Refining the Concept of Keystone Species," Conservation Biology 9(4): 962–964)

- Areas that supply ecological networks.

Concerning wildlife corridor, which is a link of wildlife habitat, generally comprising of native vegetation, which joins two or more larger areas of similar wildlife habitat. Basically, corridors are critical for the maintenance of ecological processes including allowing for the movement of animals and the continuation of viable populations. The presence of wildlife corridor is of paramount importance where there are wildlife resources in areas of legally protected status or good population status of different wildlife species irrespective of the presence of any protected area. Critical habitats can also include areas that are not being protected or managed, and they may be outside legally protected and designated areas. Habitats may be considered critical if their ecosystem functions or species rely on or provide connectivity with other critical habitats, including legally protected critical habitat areas. However, the proposed TL project corridor does not occupy any wildlife habitat which is critical for watering, breeding or feeding which is far from the protected area under question.

There is considerable deficiency of data on reptiles and amphibians inhabiting in the area and thus their status is not yet known. In the specific project site and in broader range, six threatened species of wild animals were found as one endangered species (*Beisa Oryx*) and five are vulnerable species such as Cheetah, Lion, Leopard, Dibatag and Soemmering's Gazelle (see Annex 2). In addition, among the avian species observed at the proposed transmission line about 13 species of birds are threatened and five species are near threatened (see Annex 3). The information obtained from the secondary data are not utilizing the actual project area as breeding or feeding sites and generally, the birds mentioned above as threatened species have no concern of threat in Ethiopia. Concerning endemic birds, there is no any endemic bird recorded for the country in the area.

#### 4.3.2.7 Wetlands

Wetland or water bodies play an important role in attracting various bird species in Ethiopian rift valley landscapes. There are some wetlands that include seasonal rivers like Fafem, Erer, Hoodale, Sesebene and drainage lines and other namely unknown rivers within the study area which are of great importance to avifauna. Although majority of the rivers were dry, they do get water during rainy seasons and as a result, they will attract water birds. Therefore, the transmission line crosses most of the rivers and drainage lines and move parallel along the Fafem river from the town Birkot to Kebridehar.



Photo 10: Riparian shrubs and dried seasonal rivers that are crossed by the transmission line



### 4.3.3 National Park and Protected Areas

Ethiopia is making efforts to protect biodiversity and conserve resources through the creation of protected parks, wildlife resources, and controlled hunting areas. The establishment of these Conservation and Protection Areas has been one of the more farsighted and ecologically beneficial occurrences in the country.

The construction of the Transmission line along the proposed corridor will have no impact on the Controlled Hunting Areas, the National Forest Priority Area and Controlled Hunting Areas. The Eastern Hararghe (Harar-Wabi Shebele) Controlled Hunting Area and Babile Elephant Sanctuary are located away from the proposed project corridor. Within the project influence area, there are also no Important Bird Areas supporting soaring birds and IBA for other birds (see Figure 4.7).

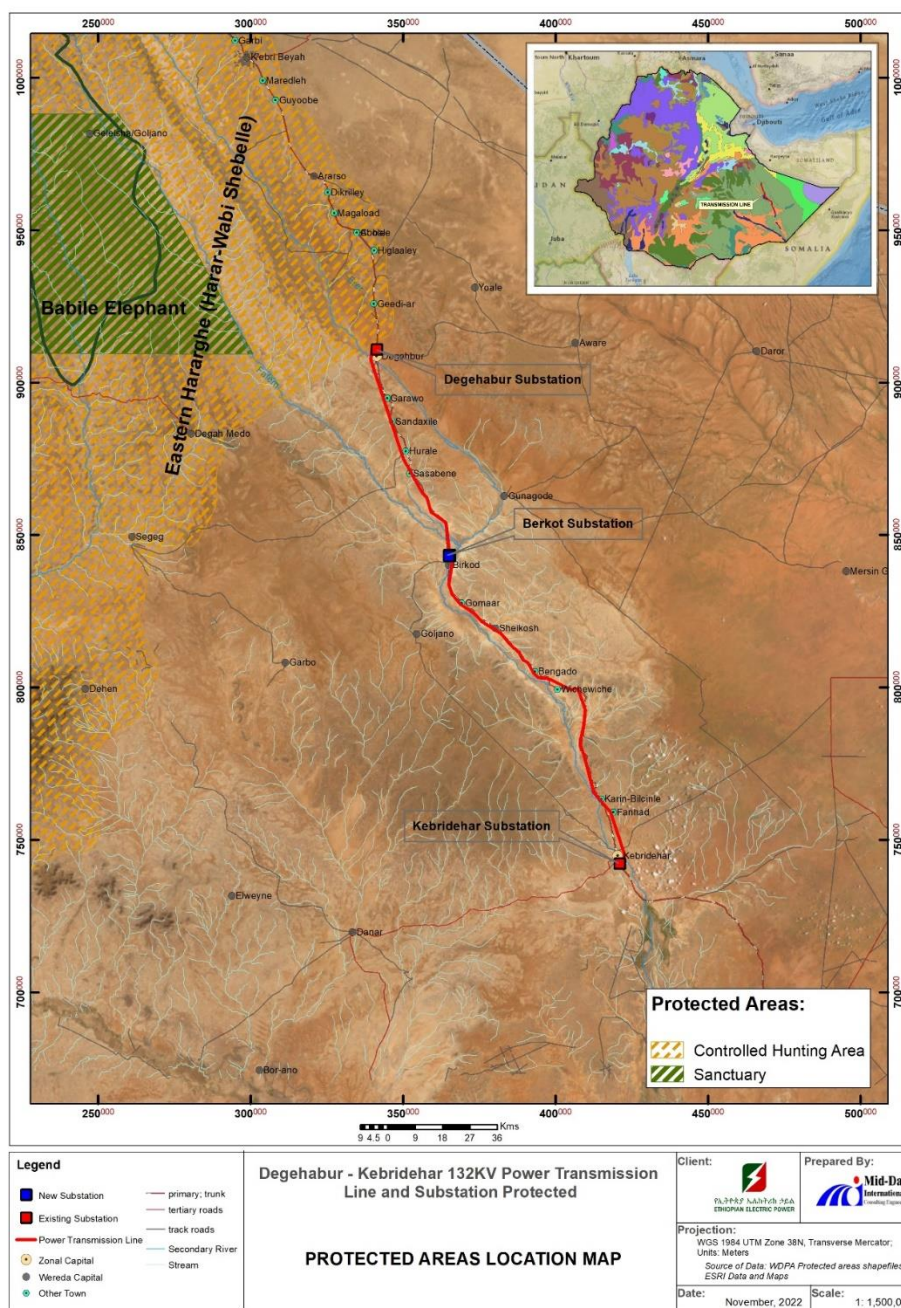


Figure 4.10: Location Map of Protected Areas

## 4.4 Socio-Economic Environment of the Project Woredas

### 4.4.1 Objectives of Social Impact Assessment

The present assessment discusses the existing environment within the project's area of influence, identify potential environment and social impacts of the project and formulate recommendations to ensure that the proposed projects takes into consideration appropriate measures to avoid/minimize/Compensate/mitigate/ any potential adverse impacts through all phases of its implementation. It is also to adopt measures to enhance beneficial impacts and to avoid, minimize, or offset adverse impacts.

Therefore, the key objectives of the Social Impact Assessment in the construction of the proposed transmission line and substation projects related to:

- Examine the socio-economic conditions of the project influence areas;
- Identify important socio-economic characteristics of the people living in and around the proposed project influence area;
- Establish baseline data on the existing key economic activities (e.g. farming, livestock rearing, etc.), social facilities and infrastructures, etc.;
- Disseminate project related information to affected communities as well as local officials and other stakeholders about the likely positive and negative impacts;
- Ensure the project affected communities values and concerns are receiving proper attention and consideration during the design, construction and implementation of the proposed transmission line and substation projects; and
- Identify key issues, sensitive areas and local resources that the project would consider during construction of the proposed TL and substation.

### 4.4.2 Scope and Methodology of the Assessment

The scope of the present study is limited to the project impacted Woredas and cities with more emphasis on communities along the transmission corridor in which implementation of the proposed projects will certainly bring about some direct changes to the physical and ecological environment, as well as the social and economic conditions. Therefore, this assessment is concerned to providing general description of the socio-economic characteristics of populations in the project influence areas and highlights of key issues and concerns related to the project impact on lives and livelihoods of the people residing within the project influence area.

#### 4.4.2.1 Collection of Secondary Data

In order to build the socio-economic profile of the project affected Woredas and cities, secondary data were collected mainly from various reports compiled by the pertinent project Woredas/cities sector offices. Secondary information were sought on population and demographic characteristics, socio-economic situation, social services and infrastructures, etc. In addition to that various socio-economic documents published by the regional government, and other institutions, statistical & DHS reports published by CSA, were referred to determine the socio-economic baseline of project influence Woredas and city administration.

#### 4.4.2.2 Collection of Primary Data

Primary data was gathered through sample household survey, interviewed experts and officials from relevant sector offices. Moreover, consultation meetings, FGDs and key informant interview were also conducted to assess knowledge, perception and attitude of the communities and local authorities about the proposed transmission line and substation

projects and its potential impacts.

Additional primary information on the physical environment, social infrastructures and settlement patterns of the communities within and around the project influence area was also captured through transect walking/field observation within the direct project influence Kebeles and through formal and informal interviews with the local people. Taking notes and photos was also another supplementary sources of primary data collection in this assessment.

#### 4.4.2.3 Limitation of the Assessment

The limitation of this assessment is related to lack of comprehensive socio-economic data on project impacted Woredas and city administrations. Compiled and updated socio-economic data such as demography, provision and coverage of social service and infrastructure, land use, and other important socio-economic data are limited at Woreda levels. Furthermore, some of the data specifically available in the project impacted Woredas and cities are not coherent and sometimes difficult to accept/use. In order to fill some of the existing data gap in describing the socioeconomic condition of the project impacted Woredas, the study team used relevant regional/zonal data whenever appropriate. This is because there are strong similarities between project impacted Woredas and regional/zonal socio-economic condition in terms of for example, livelihood activities, access to social service, religion, ethnic and linguistic composition and other aspects.

#### 4.4.3 Socio-Economic Characteristics of the Project Areas

This chapter focus on the socio economic profile of Woredas and cities who are potentially influenced/impacted by the construction of the proposed transmission line and substation projects. This chapter gives a brief introduction to the project location, general environment and settlement patterns of the communities within the project impacted Woredas. The chapter also looks into the demography, ethnics, language and religion composition of people living within project impacted Woredas and cities, their livelihood activities with emphasis on livestock and crop production. It also describes access to social services, available infrastructure, and further discuss existing gender issue within the project influence area.

##### 4.4.3.1 Location and Description of the Project Influence Area

The proposed projects consists of 132kV transmission lines as well as the construction of one new and extension of two existing substations. These project components are exclusively located in Somali Regional State (SRS). The Somali Regional State (SRS) is one of the administrative regions of Ethiopia located in eastern and south eastern part of the country and it is the second largest region of the country following Oromiya region. At present, the Somali regional state comprises 11 administrative zones, 93 Woreda (districts), and 6 town administrations. The topography of the region is predominantly lowland plain and occupied by large pastoralists and agro-pastoralist communities.

The proposed transmission line project which stretches about 206 km traverses two administrative zones (Jarar & Korahe), five Woredas (Degahabur Kebridehar, Birkot, Sheygoosh & Bodalay) and two City/town administrations namely Degahabur and Kebridehar, of Somali Regional State (SRS). The proposed transmission line and substation project will affect a total of 14 Kebeles found within the five project affected Woredas and two city administrations. The following table presents the administrative location of project Woredas and city administration traverses by the proposed transmission line project.

Table 4.6: Woredas & City Administration Traverse by the Degahabur Kebridehar 132 KV Transmission Line Project

Region	Zone	Woreda	No. of Kebeles	PTL Length (km)	No. of Towers
Somali	Jarar	Degahabur City	1	10.7	34
		Degahabur Woreda	3	42.6	123
		Birkot	2	45.3	133
	Korahe	Sheygoosh	3	52.2	155
		Bodalay	1	18.2	53
		Kebridehar Woreda	2	28.7	83
		Kebridehar City	2	8.2	25
	<b>Total</b>		<b>14</b>	<b>205.9</b>	<b>606</b>

Source: Project Woredas & City Administration and Sector Offices (2022)

#### 4.4.3.2 Population Distribution in Project Impact Woredas

Based on demographic data collected from project Woredas and city administrations sector offices, nearly a total of one million (989,843) people are currently residing in five Woredas and two city administrations traverse by the proposed transmission line project. Excluding Kebridehar Woreda, there are about 436,447 male and 415,511 female population reside in four project Woredas and two city administrations. In terms of distribution of the population across the project impacted Woredas, the proportion of Sheygoosh Woreda population accounted for 27.5% of all project impacted Woredas population, followed by Degahabur Woreda (16.8%). In contrast, the percentage of population in Bodalay Woreda and Degahabur city administration are relatively small 8.6% and 9.8% share of the total project Woredas population respectively.

Demographic information obtained from project impacted Woredas and city administrations also revealed the Woredas within the project influence areas are sparsely populated and large proportion of the population are residing in rural areas. The proposed transmission line routes mainly traverses through this sparsely populated rural village with very limited service and infrastructure condition except the first section that falls in Degahabur city.

Table 4.7 depicts the latest information available on population size of project Woredas and city administration collected from respective project impact Woredas and city administrations.

Table 4.7: Total population in the project area by Woreda/City and Sex

Region	Woreda/CA	Total Population			Percent
		Male	Female	Total	
Somali	Degahabur	90,027	76,564	166,591	16.8
	Degahabur CA.	48,100	49,100	97,200	9.8
	Birkot	52,776	52,776	105,552	10.7
	Sheygoosh	142,115	130,000	272,115	27.5
	Bodalay	39,679	45,321	85,000	8.6
	Kebridahar	-	-	137,885	13.9
	Kebridahar CA	63,750	61,750	125,500	12.7
<b>Total</b>		<b>436,447</b>	<b>415,511</b>	<b>989,843</b>	
<b>Percent</b>		<b>44.1</b>	<b>42.0</b>		<b>100.0</b>

Source: Project Woredas & City Administration and Sector Offices (2022)



#### 4.4.3.3 Ethnic, Language and Religious Composition

The ethnic composition of the project affected communities are largely dominated by the Somali ethnic group. Other ethnic groups like the Amhara, Oromo, and Gurages are also reside in small numbers especially in urban areas and small towns found within the project influence area.

In terms of language, the Somali language is widely spoken language and the official working language of all the project impacted Woredas as well as the region. The national census of CSA 2007 also estimated more than 99% of the population in the two project impacted zones speak the Somali language. Other languages like Amharic and Afan Oromo are also spoken by few people residing in urban areas.

The overwhelming majority of the population in the project influence area follow Muslim religion. According to CSA 2007 census, for example, more than 98% of the population in project Zones were follower of Muslim religion.

As presented above, the ethnic composition and demographics of the project affected Woredas and cities exhibit high degree of homogeneity in terms of ethnicity, language and religion.

#### 4.4.3.4 Settlement Pattern and Housing Features

Based on information collected from local officials, community members and field observation, the area of influence is mainly characterized by rural features with scattered settlement pattern and most of the rural Kebeles are sparsely populated. On the other hand, the proposed project will affect some urban areas like Degahabur and Kebridehar cites where clustered type of settlement pattern is observed.

As far as housing structures in project influence area are concerned, while traditional Somali housing structures are the dominant housing type in most rural areas, in contrast, stone and brick made houses with corrugated iron sheet are mainly seen in urban areas.

#### 4.4.4 Livelihoods and Economic Activities

Like many other Woredas of the region, pastoralism and agro-pastoralism are the two important livelihood activities of majority of the households who are living in the project influence area. Like many other drought prone and arid lowland Woredas of the region, it's not surprising to find pastoralism and agro-pastoralism economic activities in most project influence areas.

It's obvious that these livelihood activities are mainly dependent on the natural resource base in the area, and therefore, most of the project influence Woredas are vulnerable to recurrent shocks such as a drought, shortage of rainfall, livestock and crop diseases which undermines both livestock and crop production. As a result, most of the project impacted Woredas are among food insecure Woredas found in the region and majority of the population are still dependent on food hand-outs provided by humanitarian organizations.

##### 4.4.4.1 Livestock Production

Similar to other Somali communities found in most parts of the region, livestock production is the main livelihood activity of the households in project influence area. The local people keep various types of livestock and it makes significant contribution to the pastoral livelihoods, consumption commodity, household income and food security improvement.

According to information collected from respective Woredas pertinent sector offices, there are about 2,305,583 livestock population found in all five project impacted Woredas and one city administration. Of these, 66,269 cattle, 819,984 sheep, 876,849 goats, 24,438 donkey, 264,743 camel and 153,300 poultry are reported to be found in the project impact Woredas. The livestock population by types and project Woredas are presented in



Table 4.8 below.

**Table 4.8: Population of livestock by types in project impact Woredas**

Woreda /CA	Cattle	Sheep	Goat	Donkey	Camel	Poultry	Total	Percent
Degahabur	67,334	297,143	313,094	6,655	-	-	684,226	29.7
Degahabur CA	700	7,900	12,000	350	700	-	21,650	0.9
Birkot	55,250	168,670	212,750	-	-	-	436,670	18.9
Sheygoosh	15,385	271,503	252,493	5,433	200,143	14,300	759,257	32.9
Bodalay	15,000	10,000	15,000	-	25,000	-	65,000	2.8
Kebridehar CA	-	-	-	-	-	-	-	0.0
Kebridehar	12,600	64,768	71,512	12,000	38,900	139,000	338,780	14.7
Total	166,269	819,984	876,849	24,438	264,743	153,300	2,305,583	100.0
<b>Percent</b>	<b>7.2</b>	<b>35.6</b>	<b>38.0</b>	<b>1.1</b>	<b>11.5</b>	<b>6.6</b>	<b>100.0</b>	

Source: Woreda & City Administration Agriculture Offices, 2020

Note: No available data on the livestock population of Kebridehar town.

Regarding livestock population, goat and sheep are the two dominant livestock types that comprises 38% and 35.6% of all livestock population found in the project Woredas respectively. On the other hand, the proportion of donkey accounted the lowest in terms number (1.1%).

Livestock production by the local households are mainly for subsistence. Sheep, goats and camels are the main sources of food (meat and milk) and ghee from camels and goats are for domestic use and sale. Returns from livestock sales also constitute the primary source of household cash income for households in project influence area. Like other pastoralist areas, households in the project influence Woredas kept livestock mainly camel as a great asset and wealth status.

### Constraints to Livestock Production

Despite high potential for livestock production, productivity of livestock remained quite low. According to sector office experts in the project Woredas, poor genetic potential of the indigenous animals, shortage of feeds and water, livestock disease, inadequate veterinary service and lack of infrastructure are major challenges related to livestock production and productivity in the project influence area.

#### 4.4.4.2 Crop Production

Crop production is another important livelihood activity of some households. However, project influence Woredas are increasingly susceptible to climate change and irregularity in rainfall patterns and these have affected agricultural production and led to extensive food insecurity. Based on information collected from Woreda agriculture sector offices, maize, sorghum, barley, wheat and teff are major cereal crops grown in the project influence area. Farming households also grow pulses including faba beans and haricot bean. In addition to that, perennial crops such as khat, sugar cane, avocado, orange and mango are also important crops that farming households in the project influence Woredas grow both for household consumption and market purpose.

Table 4.9: Crop Production Area by Types in project impacted Woredas (in ha)

Woreda/City	Sorghum	Maize	Other crops	Total Cultivated Land
Degahabur	669.5	325.0	36.0	1,030.5
Degahabur city	130.0	56.0	14.0	200.0
Bodalay	586.2	258.6	17.2	862.0
Birqod	1,252.5	384.0	41.5	1,419.5
Kebridahar CA	165.1	82.6	12.0	259.7
Kebridahar	1,175.2	248.8	43.6	1,467.6
Sheygoosh	1,775.0	658.4	65.9	2,499.3

Sorghum and maize are the major staple crops and the most adaptive crop varieties in arid and semi-arid climate. The crop coverage of project impact Woredas also confirmed this fact. Despite the validity of the data is in question and not update, however, based on data obtained from respective project impact Woredas agriculture offices sorghum and maize accounted for the majority 69% and 27% of crop coverage in project impact Woredas respectively. The coverage of other crops constitute less than five percent of cultivated land in most project impact Woredas. According to officials from agriculture offices of study Woredas due to poor rainfall for past three consecutive years, agricultural yields and the condition of pastures had adversely affected in most project influence areas

### Constraints to Crop Production

Based on information obtained from project Woredas and city administrations agriculture offices, reliance on rainfed agriculture, traditional farming practice/hoe cultivation system, lack of modern farm inputs, recurrent drought and crop diseases are among major constraints to crop production in most of project impacted Woredas.

#### 4.4.4.3 Other Economic Activities

Apart from livestock and crop production, small percentage of the population are also engaged in non-farming economic activities. There are a number of private small-scale business and enterprises including shops, restaurant, café, barbershop and other business services in major towns. Surprisingly, charcoal, khat and water sale are very popular business activities in both rural and urban areas.

#### 4.4.5 Social and Economic Services and Infrastructures

In the subsequent sub-sections, availability and quality of socio-economic services and infrastructures including education, health, potable water, access to electricity, road and communication within the project Woreda and towns are presented.

##### 4.4.5.1 Health Services and Facilities

Access to health care services and facilities is important for promoting and maintaining health and wellbeing of the society, through timely management of various health problem and illnesses and prevention of disease outbreak and ultimately achieving health for all.

Information related to health status, healthcare and health services and infrastructure were collected to establish baseline health indicators including knowledge and understanding of the current health situation for project impacted Woredas and towns. Generally, the overall health service of the project Woredas and cities are characterized as poor health service facilities and coverage.

Based on official data collected from health bureaus of respective project impacted Woredas and towns, a total of 206 health institutions of which 2 Hospitals, 15 Health centres, one higher Clinic, 12 medium Clinics, 48 pharmacy, 12 Laboratories, 95 Health posts and 21 drug stores are found in five project Woredas and two city administrations. The distribution of health facilities, by types and project Woreda is presented in table below.

**Table 4.10: Distribution of Health Institutions in Project Woredas & Cities in 2022**

Woreda & City	Hospital	Health centre	Higher Clinic	Medium Clinic	Pharmacy	Laboratory	Health post	Drug Store	Total	%
Degahabur	0	2	0	8	3	8	24	16	61	29.6
Degahabur City	1	3	-	-	-	-	18	1	22	10.7
Birkot	-	2	-	-	-	-	13	1	16	7.8
Sheygoosh	-	2	-	-	10	-	11	-	23	11.2
Bodalay	-	2	-	-	-	-	8	-	10	4.9
Kebridehar City	1	1	1	4	35	4	5	2	54	26.2
Kebridehar	-	3	-	-	-	-	16	1	20	9.7
<b>Total</b>	<b>2</b>	<b>15</b>	<b>1</b>	<b>12</b>	<b>48</b>	<b>12</b>	<b>95</b>	<b>21</b>	<b>206</b>	
Percentage (%)	1.0	7.3	0.5	5.8	23.3	5.8	46.1	10.2	100.0	100.0

Source: Project affected Woreda and City Administration health offices, 2022

As presented in above table, nearly half (46.1%) of the health institutions found in the project influence Woredas are health post. The two hospitals found in the project impacted Woredas are located in Kebridehar city and none of the other Woredas have hospital which is considered as a better or advanced health facilities than other health institution.

Regarding distribution of health facilities, across the project Woredas, Degahabur Woreda and Kebridehar city have relatively better health facilities. In contrast, Bodalay is among project impact Woredas with least number of health facilities.

### Number of Health Personnel in the Project Woredas

Currently, there are 406 health personnel's stationed in the health institutions and facilities found in all project Woredas and towns, and vast majority of them are health extension workers (125) and nurses (118). On the other hand, there are only two medical doctors currently providing medical services to nearly a million population found in all project influence area.

The number of health personnel and professionals across the project Woredas and towns are presented in 4.11 table below.

**Table 4.11: Number of Health Personnel found in Woredas & Cities**

Woreda/ Town	Doctor	Health Officer	Nurse	Midwifery	Pharmacist	Lab technician	Sanitarian	Health Extension	Total	%
Degahabur CA	2	4	31	15	6	6	-	14	78	19.2
Degahabur	-	7	12	11	4	2	-	32	68	16.7
Birkot	-	3	6	9	13	3	-	17	51	12.6
Sheygoosh	-	6	11	15	3	4	3	24	66	16.3
Bodalay	-	1	6	5	1	1	-	8	22	5.4
Kebridehar CA	-	-	27	17	3	4	-	7	58	14.3
Kebridehar	-	7	25	6	1	-	1	23	63	15.5
<b>Total</b>	<b>2</b>	<b>28</b>	<b>118</b>	<b>78</b>	<b>31</b>	<b>20</b>	<b>4</b>	<b>125</b>	<b>406</b>	
%	0.5	6.9	29.1	19.2	7.6	4.9	1.0	30.8	100.0	100.0

Source: Project affected Woreda and City Administration health offices, 2022.

### Top Ten Diseases

The data collected from health offices in project Woredas and towns also revealed, the prevalence of Upper Respiratory Infection (URI), Pneumonia, Urinary Infection (UI), Tonsillitis and different forms of fever in most project influence area. Among the top ten registered diseases, URI ranked first in Birkot town administration and three project impacted Woredas.

In terms of diseases cases a total of 22,138 cases of various diseases were reported in all project impacted Woredas and towns. Of which, high proportion of cases (29.1%) are recorded in Sheygoosh Woreda and small number of cases 1,299 (5.9%) were reported in Degahabur Woreda. On the other hand, out of a total cases of disease reported in all project Woredas, Pneumonia constituted about 16.4% of all the reported case, followed by Typhoid 8.6% and URI with 7.4% of all disease cases.

The list of top ten diseases in the project Woredas and towns for the year 2022 is presented in Table 4.12 below.

### Major Constraints to Health Sector in Project Woredas

Despite progress made over the past 10 years in terms of health service coverage in most project impacted Woredas and towns, there are still many constraints to health sector. As disclosed by health sector officials, lack of health professionals, shortage of health facilities and basic infrastructures such as electricity, potable water and sanitation & hygiene services are among the main constraints that directly influence the quality of health service to the population in most project influence Woredas and towns.

Table 4.12: Top Ten Diseases & No. of Cases in the Project Woredas & Cities in 2022

Rank	Degehabur City		Degehabur Woreda		Birkot		Shaygoosh Woreda		Bodalay		Kebridehar Woreda		Kebridehar City	
	Types of disease	Cases	Types of disease	Cases	Types of disease	Cases	Types of disease	Cases	Types of disease	Cases	Types of disease	Cases	Types of disease	Cases
1	URI	583	URI	382	URI	375	URI	-	Typhoid fever	812	Pneumonia	977	UTI	324
2	Pneumonia	297	UTI	254	UTI	260	UTI	1240	UTI	771	Peptic ulcer disease	485	Pneumonia	969
3	Common cold	334	Pneumonia	199	Anemia	160	Anemia	586	Malaria	480	Typhoid fever	580	URTI	72
4	Accident	261	Dehydration	179	Despesia	290	Despesia	606	dyspepsia	337	Malaria	280	Acute Fever	182
5	Typhoid	360	Gasstrites	125	Skin infection	135	Skin infection	568	Trauma	82	Hyper tension	195	Anemia	145
6	Diaspesia	165	Malaria	59	unspecified illness	143	Malaria	823	CAP	260	DM	124	STD	239
7	Malaria	145	AFI	29	Pneumonia	310	Pneumonia	915	URI	251	Cellutis	107	Tuberculosis (TB)	775
8	Tonsilites	122	Diarhea	28	Typhoid	179	Malnutrition	1047	Arithrithies	182	Skin rush	220	Arthritis	41
9	AFI	163	Cough	24	STI	134	Internal Parasite	409	Intestinal Parasites	116	Infection uterus transfusion disease	110	Dermatitis	54
10	Intestinal Infection	136	Tonsilites	20	Trauma	155	Otitis media	242	Soft tissue infection	106	Snake bite	235	Chronic Fever	185

Source: Project affected Woreda and City Administration health offices, 2022



#### 4.4.5.2 Educational Coverage, Service and Facilities

Education is one of the basic social service that influences overall social development of any community by contributing for improvement of its human capital as it lead path towards health, empowerment and employment.

Based on information collected from education offices of respective Woredas, excluding Birkot Woreda, the average educational coverage of project impacted Woredas and towns is about 64.8%. Kebridehar city administration has the highest educational coverage with 76%.

Coverage of educational services of the project Woredas and cities are presented in the Pie chart (Figure 4.11) (Source: Project Affected Woreda & City administration Educational office, 2022).

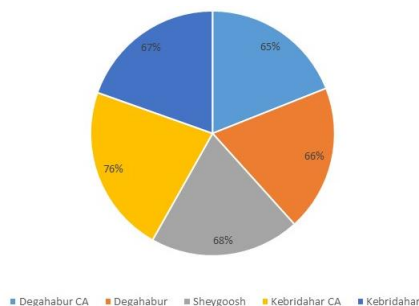


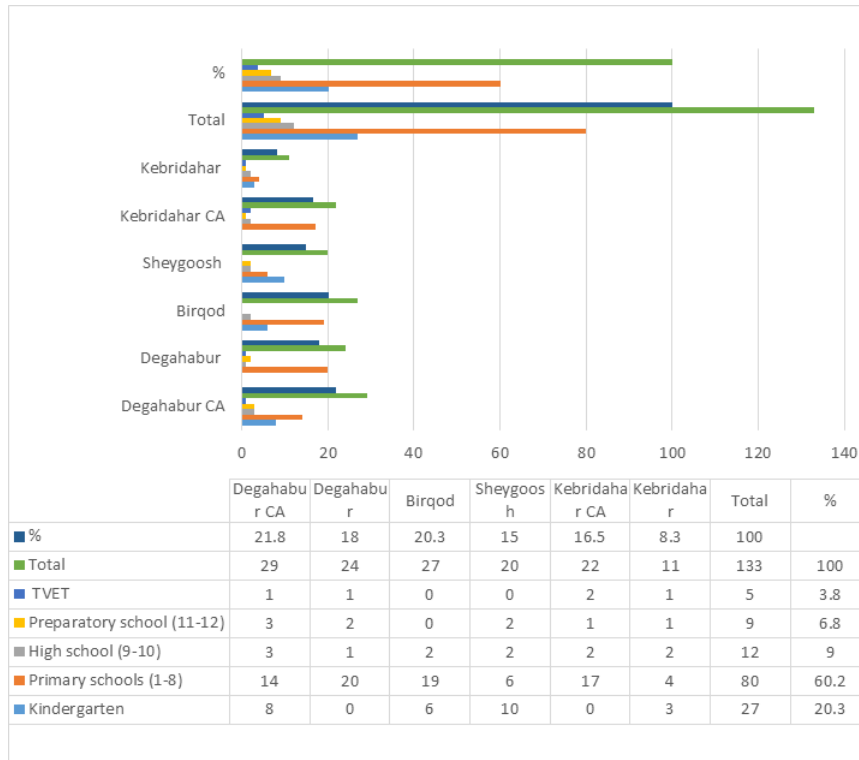
Figure 4.11: Educational Coverage of Project Woredas & Cities

#### School Facilities in the Project Areas

In the project area, a total of 133 educational facilities ranging from kindergarten up to Technical and Vocational Education and Training (TVET) institute are established and deliver services. The vast majority of the educational facilities are providing primary (grade 1 to 8) which constituted 60.2% of all educational facilities in project influence area. In contrast, only 5 Technical and Vocational Education and Training (TVET) schools are found in the project Woredas and Birkot and Sheygoosh are the two Woredas without TVET School. In terms of school distribution across the project Woredas, 21.8% of the schools are found in Degahabur city, followed by Birkot Woreda (20.3%). On the other hand, Kebridehar is the project impacted Woreda with the lowest number of schools (i.e. only 11 schools or (8.3%)).

#### Student Enrolment in the Project Area

According to information collected from project Woredas and city administrations education offices, currently, a total of 81,352 (i.e. 45,376 males, 35,976 females) students are enrolled and studying at various level of education in all schools except TVETs. Of this figure, majority (66,644 or (81.9%)) of the students are enrolled in primary schools (grade 1-8). On the other hand, 8.1% of students are enrolled in kindergarten schools, whereas 5.3% and 4.5% of the students are enrolled in preparatory (grade 11-12) and secondary schools (grade 9-10) respectively.



Source Project Affected Woreda & City administration Educational office, 2022

Note: No available data obtained on TVET student enrolment rate from project Woreda and city education office

Figure 4.12: Distribution & Number of Schools by Types in Project Woredas

Girl students enrolled in all grade levels is a lower than boy students with enrolment rate of 44.2% and 55.8% respectively. However, surprisingly the proportion of girl students have not shown reduction with increased level of education like commonly witnessed in many parts of the country. For example, the proportion of girl’s students enrolled in kindergarten & primary schools (grade 1 -8) are 44% while 56% for boys. Interestingly, at secondary schools (grade 9 -10) level the proportion of girl students accounted for 46.5% and at preparatory (grade 11-12) level 47.5% which is rarely observed in other places.

Table 4.13: Number of Students in project Impact Woredas

Woredas/Town	Kindergarten			Primary(1-8)			Secondary(9-10)			Preparatory (11-12)			Total		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Degehabur City	62	50	112	5,275	4,416	9,691	535	403	938	757	608	1365	6,629	5,477	12,106
Degehabur	-	-	-	6,846	4,566	11,412	275	157	432	209	173	382	7,330	4,896	12,226
Birkot Woreda	463	201	664	3,233	2,394	5,627	291	103	394	236	176	412	4,223	2,874	7,097
Shaygoosh	1,140	860	2,000	7,551	5,250	12,801	165	172	337	218	270	488	9,074	6,552	15,626
Kebridehar City	412	357	769	6,395	5,871	12,266	590	789	1379	697	695	1,392	8,094	7,712	15,806
Kebridehar Woreda	1,634	1,451	3,085	8,087	6,760	14,847	126	100	226	179	154	333	10,026	8,465	18,491
<b>Total</b>	<b>3,711</b>	<b>2,919</b>	<b>6,630</b>	<b>37,387</b>	<b>29,257</b>	<b>66,644</b>	<b>1,982</b>	<b>1,724</b>	<b>3706</b>	<b>2,296</b>	<b>2,076</b>	<b>4,372</b>	<b>45,376</b>	<b>35,976</b>	<b>81,352</b>

Source Project Affected Woreda & City administration Educational office, 2022

## Number of Teachers and Educational Qualification

At present, a total of 2,156 teachers (i.e. 1,536 male and 620 female) with various educational qualifications are serving in all schools found in the project influence area. It's clearly seen that the proportion of female teachers teaching in these schools are disproportionately lower than male teachers. Regarding educational qualifications of the teachers, the proportion of teachers with certificate and diploma educational level are relatively higher with 50.6% and 31.0% respectively. In contrast, the proportion of teachers with educational qualification of BA/BSc and MA/MSc degree constituted 17% and 0.7% of all teachers respectively.

Table 4.14: Distribution of teachers in the project Woredas & cities

Woreda/Town	Sex	Certificate/TTI	Diploma	Degree	Masters	Total
Degahabur CA	M	47	98	86	2	233
	F	60	61	28	0	149
	T	107	159	114	2	382
Degahabur r	M	156	55	30	-	241
	F	29	14	1	-	44
	T	185	69	31	-	285
Birkot	M	88	46	17	-	151
	F	34	0	6	-	40
	T	122	46	23	-	191
Sheygoosh	M	154	54	34	4	246
	F	48	13	2	-	63
	T	202	67	36	4	309
Bodalay	M	165	44	28	5	242
	F	53	22	3	1	79
	T	218	66	31	6	321
Kebridehar CA	M	60	122	97	4	283
	F	67	56	26	-	149
	T	127	178	123	4	432
Kebridehar	M	66	58	16	-	140
	F	64	26	6	-	96
	T	130	84	22	-	236

Source: Project affected Woreda & CA Education Offices, 2022

## Constraints to Educational Sector in Project Woredas

A combination of factors poses challenge to the education sector in the project Woredas. According to experts contacted from Woreda education offices, despite positive efforts by government and non-governmental actors to extend access to education services, still a lot of problem exist with educational service both in terms of quality and quantity. Lifestyle and socio-culture of the people in the area, shortage of resources (classrooms, desks, and text books), lack of technologies (equipment, computers, plasma, etc.) and shortage of water and sanitation facilities (toilets) are among the major constraints identified by officers from Woredas and city offices.

### 4.4.5.3 Potable Water Coverage in Project Woredas

Data on drinking water availability, accessibility and coverage at Woreda and city level are not available. However, several documents and studies revealed that overall, access to drinking water in the region is low. For example, recent studies shows, despite the region

is among the top region to improve access to potable water, still the percentage of households using safe drinking water sources in the region is low at 42% which is well below the national average of 65%. Likewise, the existing potable water coverage of the project Woredas could not be much different from the regional figure.

Like many other parts of the country and region, safe drinking water coverage in rural areas of the project impact Woredas believed to be much lower than the urban coverage. During the field visit, the study team managed to notice the existence of piped water supply system in major towns and cities, whereas traditional wells and hand pump in most rural Kebeles.

#### 4.4.5.4 Electricity and Source of Household Energy

Apart from observing the presence of electricity service in major towns and cities found in project influence area, there is no available information on access to electricity service and its coverage in project impact Woredas. Nevertheless, it was clearly reflected during consultation meetings held with local authorities and community members as access to electricity is the major problem in most project impact areas and among the priority needs of the local people.

Regarding household source of energy for cooking purpose, despite no official data obtained, several studies conducted in the region with few sample from project impact Woredas showed that firewood and charcoal are the two important sources of household fuel for cooking purpose. In fact these two cooking fuels are not only popular in the region or project influence area but also the most widely used household sources of energy for cooking in many parts of the country particularly in rural areas. The sample survey also confirmed the importance of firewood and charcoal in household energy source for cooking purpose.

#### 4.4.5.5 Road Network and Transportation

Similar to potable water and household energy sources, no quantitative data obtained on road coverage, road network and transportation services in project influence Woredas and cities. However, Route N10 is a Federal road and connects the country's capital Addis Ababa to regional capital Jigjig via Harar with 620 km asphalt road. The National N10 road stretch further to 548 km toward eastern and south-western direction up to Gode town crossing almost all the project impact Woredas and cities. Therefore, at least all project impact Woredas administrative towns, Kebridehar and Degahabur cities are accessible with asphalt road.

#### 4.4.5.6 Telecommunication Service

Mobile network connection is available in almost all project influence Woredas and cities. According to information collected from local authorities and residents, most of rural Kebeles especially those close to telecommunication towers have better access to mobile telecommunication service. With some limitation such as poor network and frequent network interruption, the overall telecommunication service in most project influence area is good.

#### 4.4.6 Gender Issues in Project Influence Area

As in other parts of the country women in project influence Woredas and cities also occupy low status in the society. In spite of their contributions to the wellbeing of their family and community affairs, women in project influence area experience lower socio-economic status and they are marginalized from making decisions both at household and community level.

According to information obtained from project Woredas Women & Children office experts, women in the project influence area are facing multiple forms gender based discrimination which limits to have equal access to resources, opportunities and public services necessary for self-growth, and improvement of their family's living standard. Women and girls have



traditionally performed their roles in the domestic sphere.

Within the project influence Woredas women are responsible for cooking, taking care of children, the sick and elderly household members, fetching water and collecting firewood for household use.

In the project impact areas, rural women have to travel 1-3 hours to collect firewood and water. In spite of the importance of most of these domestic activities that women do at daily basis for their household, they are often considered as inferior and not get recognition even by their family members, friends, neighbours, or by the general community.

In relation to decision making, the status of women in project influence area are very minimal according to project impact Woredas Women and Children Affairs Offices. Although in recent times some improvements have been observed, still women have low self-confidence and limited capacity to influence decision-making at household, community, and institutional levels. In most areas men are still seen as heads of the household, public figures, principal income earners, and ultimate authorities in the home and community and always have the final say in different matters in all sphere of life.

#### 4.4.6.1 Gender Based Violence

Gender Based Violence (GBV) is serious problem that affect many women in project influence Woredas. GBV is any act of violence that can result in sexual, psychological, or physical harm and suffering of women. According to information obtained from project Woredas and City Administration Women & Children Affairs Offices domestic violence, female genital mutilation/cutting (FGM/C) sexual assault, rape, early marriage are among the common forms of GBV that have been reported in project impact Woredas . The officials also believed that, the magnitude of the problem in the project area is vast and even difficult to keep exact figure because the number of unreported cases would be very high. Surprisingly, figures obtained from various studies revealed that, the project region is experienced low rate of violence against women compared to national rates. For example, the Ethiopian Demographic and Health Survey reported lower rates of physical violence, spousal violence, and sexual violence among women aged 15 to 49 years in the Somali regional state as compared to national rates (CSA and ICF, 2017). The Somali region has the lowest levels of physical violence (5.9%) and sexual violence (0.3%). On the other hand, this report also showed the highest prevalence of female genital mutilation/cutting (FGM/C) practices in the region. According to this report 99% of women aged 15 to 49 in the project region having been circumcised (CSA and ICF, 2017) which put the Somali Region with the highest reports of female genital mutilation/cutting (FGM/C) in the country. Studies have also reported as FGM/C in project region has slightly decreasing at perhaps 0.4% per year.

In addition to cultural norms, practices and traditions that influence gender stereotypes in project influence area, consulted officials from project Woredas Women & Children Affairs Offices described lack of employment, shortage of income, food scarcity and conflict as a contributing factors for presence of gender based violence in project Woredas.

In order to prevent and increase community's awareness on the different types of GBV in project Woredas various governmental, non-governmental, community based organization (CBO) are working in collaboration. For example, in project impact Woredas and cities government organs like Women & Children Affairs Offices, relevant legal offices including polices and Sharia court work in collaboration to fight gender based violence and provide assistance to the victims. Legal advice, psychological and medical treatment as well as compensation to the victims are also among important services that governmental and non-governmental organs in the project Woredas are currently providing to victims. Moreover, awareness raising, gender equality and educating girls and women are also another important initiative that women and children offices in partnership with Governmental, NGOs and CBOs to prevent gender based violence and other harmful cultural practices against

women in the project influence area.

## 4.5 Sample Household Socio-economic Survey Findings

Sample socio-economic survey was conducted in 5 Sample Kebeles from 3 project impact Woredas and 2 city administration to gather first hand socio-economic data on households residing in direct project impact corridor and villages. Given the limited time frame and coverage of the exercise as well as strong similarities and homogeneities of the communities found in the project impact Woredas and villages in terms of demographic composition, livelihood activities and other socio-economic aspects, the survey was conducted on limited number of sample households.

### 4.5.1 Sample Selection

In order to meet the objectives of the study and to focus on project direct impact areas and target population, a combination of purposive and random sampling techniques were used for socio-economic sample household survey. The proposed project will directly affect a total of five Woredas and two cities and about 14 Kebeles, however, almost all project woredas and kebeles exhibits similar landscapes and socio-economic features. Hence, based on the understanding the project Impact Woredas are homogenous particularly in terms of socio-economic features as well as due to time and resource constraints, three project impact Woredas and two cities which categorically represent the remaining two project impact Woredas were purposively selected for sampling purpose. After selection of the sample Woredas/cities, Kebeles located within project impact corridors were again selected purposively based on physical accessibility/proximity of the Kebeles and potential impact of the project RoW and towers in the Kebele

Accordingly, five kebeles from three project impact Woredas and two cities were selected (one from each impacted woredas/cities). Once sample Kebeles were carefully chosen sample households for the survey were further identified using a combination of purposive and random sampling techniques. It's purposive, because households residing in project impact kebeles particularly those households residing in direct project impact corridor/ area and whom will the project likely to affect when it implement is purposively selected. A lot of efforts were made to include as many households from within the project ROW as possible in the household survey.

Thus, the sampling units consist of two groups, these are households located in the project direct impact corridor and households that reside just outside the direct impact area but within the same project impact Kebele. After the two groups of households were identified from each sample Kebele, a total of 150 sample households of which 90 households from project direct impact corridor & 60 households from outside the direct impact area were finally selected randomly for interview. However, after data was collected from 150 sampled households 6 of the data collected from non-impacted households were invalid due to inaccurate answers and inconsistency of information given by the respondents. Therefore, a total of 144 households (90 from project affected HH, and 54 from non-impacted HH) are used as sample population and socio-economic analysis.

### 4.5.2 Demographic Characteristics of the Households

In this subsection, the demographic characteristics such sex, age structure, family size marital status, ethnic composition religious affiliation, primary and secondary occupation, education and health status of sample household heads and surveyed household members are discussed.

## Household size and composition

Based on survey result, the overwhelming majority (81.2%) are male household heads and the remaining (18.2%) of the households are headed by females, categorized as single, widowed or divorced. However, proportion of female household heads is remarkably higher in Kebridehar City and Degahabur City relative to the other three project impact Woredas (Table 4.15).

Table 4.15: Distribution of Heads of Households by Sex and Kebele

Woreda/city	Kebele	Households Heads		
		Male Headed HHS (number)	Female Headed HHS (Number)	Total (Number)
Kebridehar City	Kebridehar 07	22	8	30
Bodalay	Yo'qlyooca	26	4	30
Birkot	Gomar	26	4	30
Kebridehar	Daruselam	25	4	29
Degahabur City	Degahabur 07	18	7	25
Total		117	27	144
Percent		81.2	18.7	100

In terms of household population, a total of 989 people are living in all 144 households that were covered in this sample survey. Average family size is 6.8 persons per household but the average figures for family size vary from as low as 5.5 in Degahabur city to as high as 7.4 in Kebridehar Woreda. Overall, the average family size of sample households in project influence area is slightly higher than the regional average 6.4.

## Gender

Gender and age of household heads and household members are important variables in that they inform on the general social set-up of that given society. The gender profile of the surveyed household members demonstrates that there are slightly more males than females population and it is about 52.5% and 47.5% respectively.

## Age Structure

Regarding age structure of household population, like we commonly seen in many parts of the country, the age structure of the surveyed household members is dominated by youthful population. According to the survey result, about 72.4% of the household population are below 25 years old and senior household population 60 years and older constituted only 2.5% of the surveyed household population. The average age of household heads of the surveyed households is 40 which is relatively good working age.

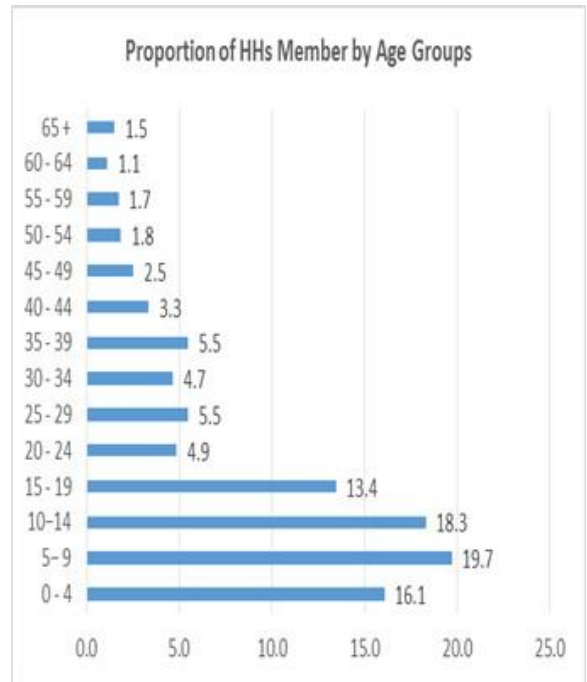
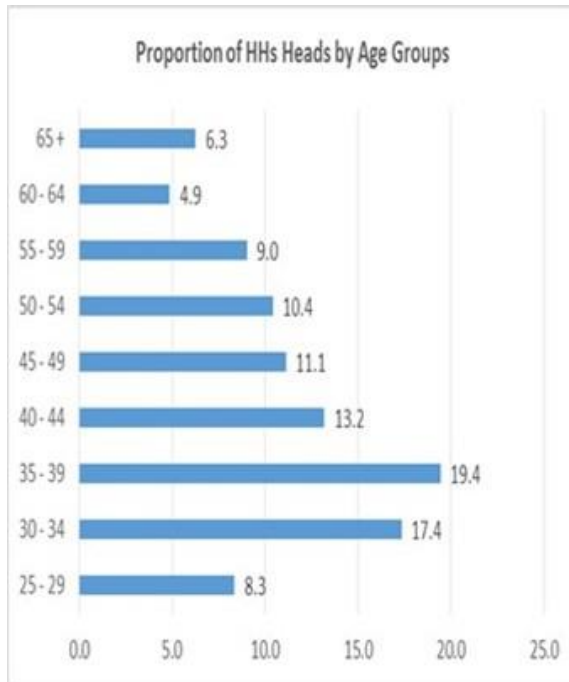


Figure 4.13: Proportion of HHs Heads by age groups

Figure 4.14: Proportion of HHs Member by age groups

Furthermore, the survey showed that 69.4% of households are headed by people aged less than 50 years of old. In contrast, only 6.3% of the households are headed by older age people (i.e. 65 years old and above).

**Marital Status**

As far marital status is concerned, the overwhelming majority (81.3%) of the household heads are married and the remaining are widows (13.2%), divorced (4.2%) and never married (1.4%). One important point to note is that widowers and divorced household heads are disproportionately higher in Kebridehar city than others (Figure 4.15).

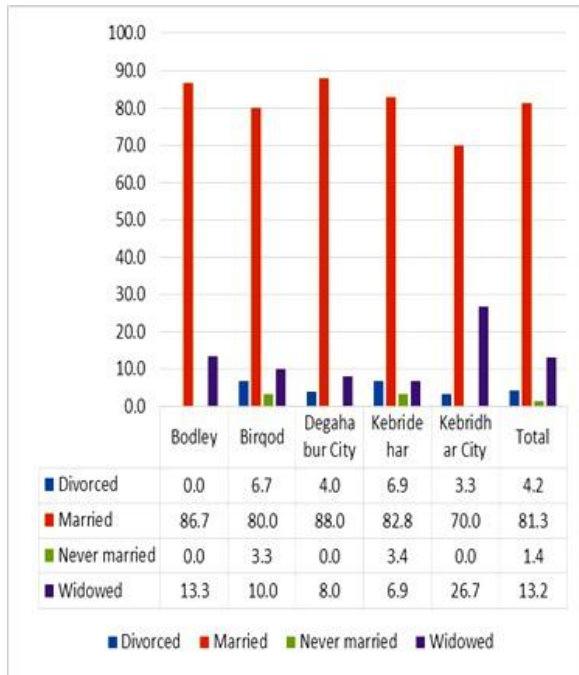


Figure 4.15: Proportion of HH Heads Marital Status by Woreda

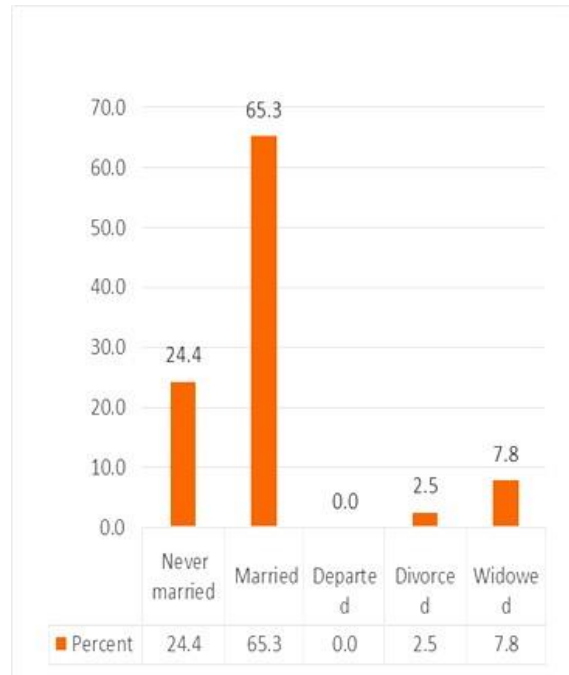


Figure 4.16: Proportion of HH Members age 18 and above by Marital Status

Regarding surveyed household population marital status by age, the survey result revealed that, out of a total 357 household members aged 18 and above, majority (65.3%) of them are married, followed by never married (24.4%), widowed (7.5%) and divorced (2.5%).

### Ethnicity

As discussed above, in project influence Woredas and cities profile, the project influence area communities are similar in ethnic makeup and the sample survey also confirmed that. All (100%) surveyed household heads belong to Somali ethnic group. Similarly, overwhelming majority (99.8%) of the surveyed household members identified themselves as ethnic Somali. The ethnic composition of surveyed household indicate that inter-ethnic marriage is rarely practiced by the communities found in project impact areas.

### Religion

In terms of religion, all the surveyed household heads as well as household members are followers of Muslim religion, surprisingly no other religion followers are reported in the sample household survey.

The survey result strongly confirmed the homogeneous nature of the population residing in project impact areas in terms of religion and ethnic composition.

#### 4.5.2.1 Education level of Household Heads & Population

With respect to level of education attainment, the proportion of illiterate household heads is significantly high (69.4%) and that means majority of the household heads have not attended any kind of education, formal or informal. On the other hand, the remaining 30.6% of the household heads are at least able to read & write and out of this, 4.9% of the household heads reported to have some kind of religious education, whereas almost similar proportion (4.2%) are only able to read and write. Therefore, the proportion of household heads having some kind of formal education is 21.5%. From the sample survey findings we can see that rate of illiteracy is slightly higher in female household heads (89.2%) compared to male household heads (65.5%).



From the surveyed household heads who attained formal education, while 5.6% of them have had preparatory (Grade 11-12) level of education, followed by elementary (4.9%) (Grade 5-8) and high school (3.5%) (Grade 9-10). The educational level of the surveyed household heads further revealed, only about 4.8% of the household heads have had some kind of college and university levels education and of which 1.4% Technical & vocational, 0.7% Diploma and 2.8% Degree.

**Table 4.16: Proportions of Household Heads & Household Members by Educational status**

Level Education	HH Head (percent)	HH Population (percent)
Unable to read and write / Illiterate	69.4	51.3
Read and Write	4.2	1.6
Grade 1-4	2.8	20
Grade 5-8	4.9	12.3
Grade 9-10	3.5	5.8
Grade 11-12 (preparatory)	5.6	4.8
Technical & vocational	1.4	0.5
Diploma	0.7	0.5
University degree	2.8	0.8
Religious Education	4.9	2.3
Total	100	100

Out of the total household population of 989 persons, 75.3% of the population reported to be seven years and older and to which educational status questions were applied. Accordingly, out of a total population of 745 persons aged seven years and older, while more than 51.3% of the household population are illiterate 1.6% are able to read and write and 2.3% have had some kind of religious education. On the other hand, about 44.7% of the household population reported to have some kind of formal education ranging from elementary to university levels of education.

Based on the survey data, while 20% of the household population have had First Cycle Primary (Grade 1 to 4) level of education, 12.3% have had Second Cycle Primary (Grade 5 to 8) level of education. The proportion of household members having high school educational level accounted for 5.8% for Grade 9-10 and 4.8% for preparatory or (Grade 11-12) and only 1.8% had tertiary education ranging from technical school to university degree.

#### 4.5.2.2 Occupational Status of household heads & Population

The primary occupation of the surveyed households and population is pastoralism (34.7%) among of the 32.6% of the population aged 15 and older. While farming particularly crop production is the primary occupation of 6.9% of the household heads, and only 2.5% of the household population reporting farming as their primary occupation. Daily labour, handicraft and cross border trade are also another reported primary occupation by 16.0%, 7.6% and 1.4% of the household heads respectively. Surprisingly, significant proportion (24.3%) of the household heads reported unemployed. The proportion of household members aged 15 and older reporting “unemployed” is very significant (37.4%). This implies that large number of households in project influence area are still dependent on food aid for survival.

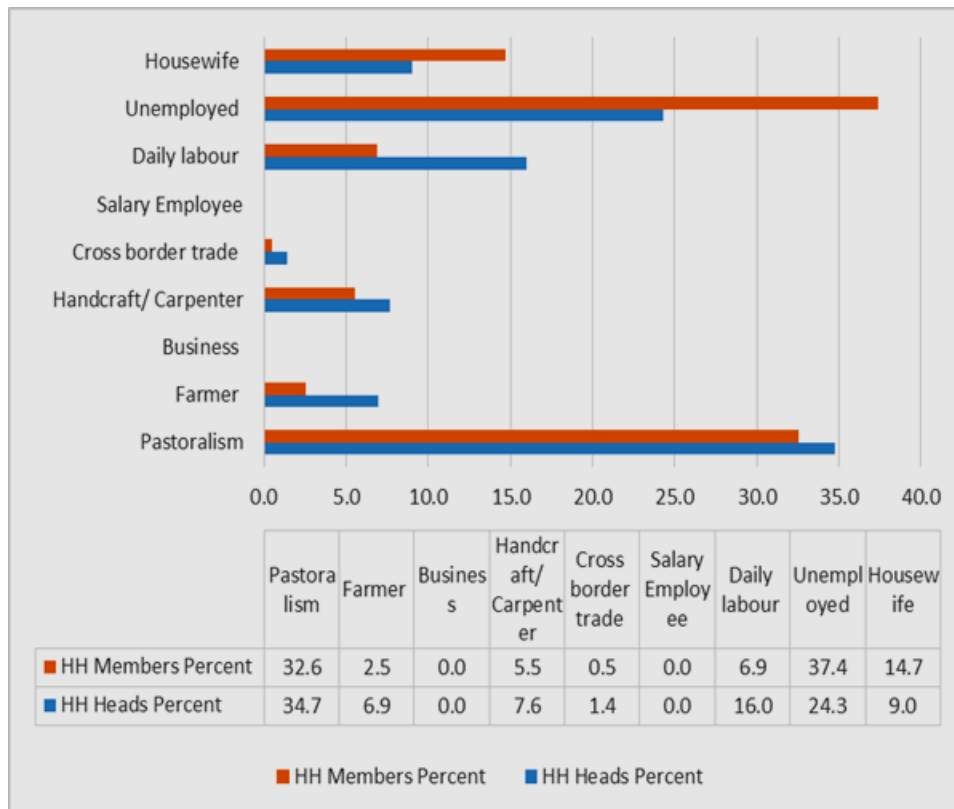


Figure 4.17: Primary Occupational Status of Household Heads & Population

The percentage of household members engaged in daily labour and handcraft as primary occupation constituted 6.9% and 5.5% of the surveyed household population respectively. Regarding secondary occupation, only 29.1% of the household heads reported to have secondary occupation of which pastoralism and farming constituted 40.9% and 36.3% respectively. About 23.6% of the surveyed household members have secondary occupation and pastoralism, farming and handcraft are the three important secondary occupation reported by 63.1%, 23.3% and 9.7% respectively.

#### 4.5.2.3 Health Status & Access to Health Facilities

As regards to current health status, overwhelming majority (93 %) of the household heads reported that they have no any issues related to health. However, 6.3% of the household heads are elderly people aged 65 and older and 0.7% are physically disabled. Similarly large proportion (97.2%) of household members are in a good health status, while small proportion of them are reported to be disabled (0.5%) and mentally ill (0.8%) (See Figure 4.18).



Figure 4.18: Health Status of HH Heads (left) and Members (right) by Woreda

Despite, high proportion of household heads and household population reported that they were in good health condition, surprisingly great proportion (70.8%) of the households reported that at least one or more members of their family members had suffered from certain disease during 12 months preceding the survey. The proportion of households that reported illness during the reference period is highest among sample households in Kebridehar city (83.2%) and Kebridehar Woreda (82%). In terms of health seeking behaviour, 100% of the surveyed households reported to have sought healthcare services.

An inquiry was also made to assess the current health conditions of the households and their family members. Overwhelming majority of the surveyed households are happy with the current health status of their family. About 47.9% and 41.7% of the surveyed households rated their household health status as “excellent” and “Good” respectively. On the contrary, about (10.4%) of the respondents are not happy with the current health condition of their households and rated the overall health status of their household as “Not good or bad”

In terms of proportions of households that received healthcare service, Hospitals (59.8%) Private Clinics (18.6%), Health Centres (15.7%), Health Posts (3.9%) and rural drug store (2%) are the five most important healthcare service delivery facilities for the study population.

#### 4.5.2.4 Settlement and Migration Status

When we see the settlement pattern of the surveyed households, while 89.5% of the households reported that, they have a sedentary lifestyle in their current location, 7.6% of are transhumant life style. On the other hand, three of the surveyed households claimed that they have settled in their current location due to displacement from other place and one household from Bodalay Woreda reported to be a returnee.

As presented in table below 36.1% of the surveyed households have lived between 6 to 10 years in their current location, while 18.1% of them reported to live in their current location for more than 21 years (See table below). The proportion of households living less than 5 years in their current location accounted for 23.6%. Interestingly, about 6.9% of the

households established or formed their households in their present location.

**Table 4.17: Number of years, Surveyed HHS Lived in their Current Location by Woreda**

Sample Woreda	Since HHS Establishment	< 5 Yrs.	6-10 Yrs.	11 - 20 Yrs.	> 21 Yrs.	Total
Kebridehar City	1	9	7	4	9	30
Bodalay	2	7	13	5	3	30
Birkot	5	4	7	7	7	30
Kebridehar Woreda	0	2	21	4	2	29
Degahabur City	2	12	4	2	5	25
Total	10	34	52	22	26	144
Percent	6.9	23.6	36.1	15.3	18.1	100

Regarding households migration, nearly one-fourth (24.5%) of the surveyed households at least migrated once in their lifetime from their residential area to other place for various reasons. Among reported reasons for migration, overwhelming majority (81.5%) of the households reported that, they migrated to other places in search of water, grazing and farm land. On the other hand, 8.1% and 10.4% of the households reported due to security issue and marriage respectively.

#### 4.5.2.5 Farmland Ownership: Access Mechanism and Size of Landholding

Regarding farmland ownership, out of total surveyed households, only one quarter (25%) of the households reported to have farmland. These households own 79.5 ha of farmland and the average farmland holding size per HH is 2.2ha. Across the project impact Woredas, the average farmland holding is 1.25ha in Kebridehar City and 2.5ha Birkot Woreda.

In relation to their farmland size, majority (88.6%) of households reported that their land holding is not sufficient enough to feed their family. In contrast, only 2.9% of them described their land holding as “more than enough” and 8.6% to have sufficient farmland size. From the sample survey very small households have farmland (only 36 HH out of a total 144HHS have reported to have farmland) that is why the proportion of farmland owing HHS is small compared to other highland Woredas. It is just in terms of number of household (proportion) not in terms of land size.

This indirectly may indicate the livelihood of majority of the households in the project impact areas are not strongly connected to crop production or farming. Therefore, the impact of the proposed project on the livelihood base of the local people may not be very significant.

Not surprisingly though, none of the surveyed households reported to use irrigation for agricultural activities or farming purpose. However, it’s very unusual that, all the surveyed households having farmland are not using farm inputs for crop production. This could be the main reason for most of the farming households not able to produce enough crop to feed their family. However, many of surveyed households reported insufficient farmland size for their food insecurity.

Across the study Woredas, 48.6% of the surveyed households having farmland belong to Birkot Woreda, followed by Kebridehar Woreda (37.1%). Only 8.6% and 5.7% of the households in Bodalay and Kebridehar city reported to own farmland respectively.

When asked about how the households owned the farmland, vast majority (88.9%) reported inheritance from their parents or family members, while 8.3% reported through clan system and small proportion (2.8%) were allocated to them by Kebele administration.

Contrasting to information obtained from Agriculture Offices in the project impact Woredas,

households owing farmland grow very limited types of crops. Based on the household survey result, sorghum, maize & wheat are the three major crops that are grown in the area. Surprisingly, majority (97%) of the households grow sorghum as main crop. 11.4% of the households reported to cultivate only one crop type while 45.5% and 43.2% of the households informed to produce two and three types of crops respectively. The sample survey also revealed that 57.9% of the households are engaged in crop production mainly for household consumption and the remaining 42.1% cultivate crops for both household consumption and market propose.

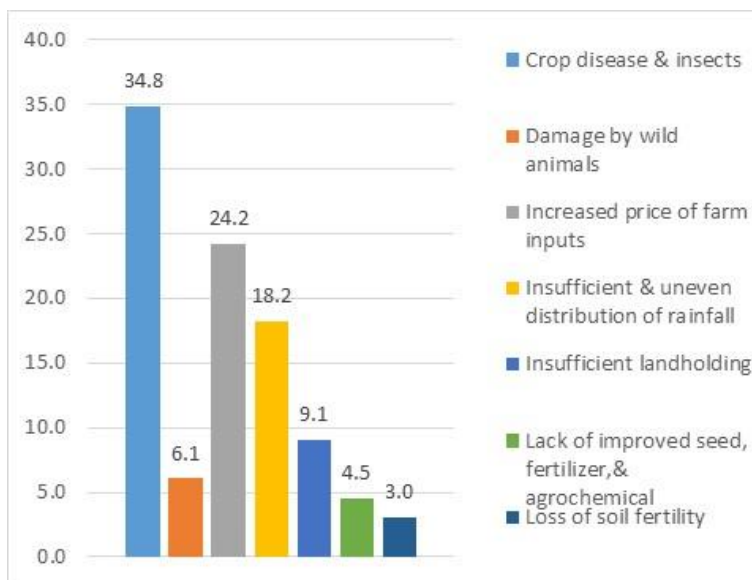


Figure 4.19: Constraints Reported to Crop Production

Households engaged on crop production also reported to have been facing some challenges and constraints with crop production. These include crop disease (34.8%), increased price of farm inputs (24.2%), insufficient and uneven rainfall (18.2%), insufficient landholding (9.1%), damage by wild animals (6.1%), lack of improved seed, fertilizer and agrochemicals (4.5%) and loss of soil fertility (3.0%).

Regarding external support related to crop production, about 40% of the surveyed households owing farmlands confirmed that they received professional support or advice/consult from their respective Woreda Agriculture Office Experts and Development Agent (DA) on issues related to farming and crop production. In contrast, majority (60%) of farmland owner’s reported that, they have never got any assistance from any governmental and non-governmental institution in relation to farming or crop production

#### 4.5.2.6 Livestock Ownership

Data on livestock production in the surveyed areas reveal that 54.2% of the households have at least one livestock, while 45.8% of the households did not have any kind of livestock. However, the proportions of households owing livestock across sample Woreda is widely varied (please Figure 4.20 below). Very high proportion (96.6%) of households in Kebridehar Woreda, Birkot (83.3%) and Bodalay (66.7%) Woredas have owned livestock. Conversely, vast majority from surveyed households did not have livestock in Degahabur (96%) and Kebridehar (86.7%) city. This is mainly due to the fact that the sample households from Degahabur and Kebridehar city live in urban life style.



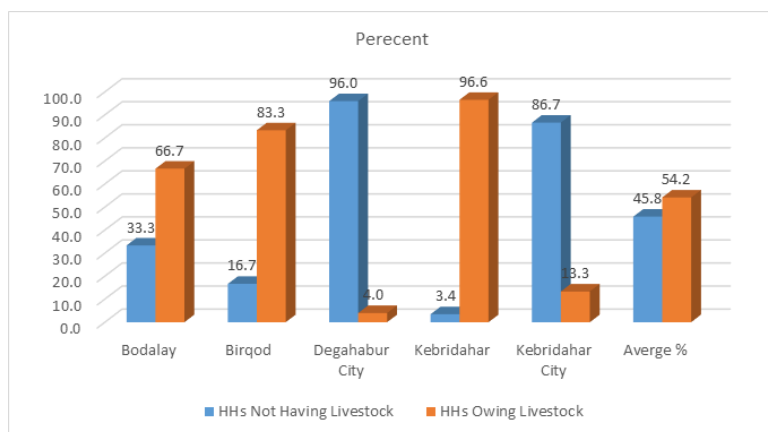


Figure 4.20: Proportions of Livestock Owning Households by Woreda

In terms of livestock population, a total of 2,736 livestock population are owned by surveyed households and out of the total livestock population, nearly half (45%) are owned by households from Kebridehar Woreda, followed by Bodalay (27%) and Birkot (25.2%). On the other hand, the proportion of livestock owned by sample households from the two cities namely Kebridehar and Degahabur is 1.9% and 0.5% respectively.

Regarding livestock types owned by the surveyed household's, large proportion (85%) of the livestock are goat and sheep and these two livestock types constituted 54.2% and 31.0% of all livestock population respectively. On the other hand, livestock including camel (7.1%), cattle (2.2%) oxen (1.6%), poultry (1.5%), donkey (1.5%) and calf (0.9%) of the livestock population is owned by 72 households (See Table 4.18).

Table 4.18: Number of Livestock Owned by Household by Livestock Type and Woreda

Type of Livestock	Kebridehar city	Bodalay	Birkot	Kebridehar Woreda	Degahabur City	Total	Percent
Camel	5	39	34	115	0	193	7.1
Oxen	0	22	22	0	0	44	1.6
Cattle	7	14	38	0	0	59	2.2
Calf	3	1	14	6	0	24	0.9
Sheep	0	211	170	467	0	848	31.0
Goat	36	426	387	620	14	1,483	54.2
Poultry	0	17	17	8	0	42	1.5
Donkey	0	8	18	16	0	42	1.5
beehives	0	1	0	0	0	1	0.0
Total	51	739	700	1,232	14	2,736	100.0
Percent	1.9	27.0	25.6	45.0	0.5	100.0	

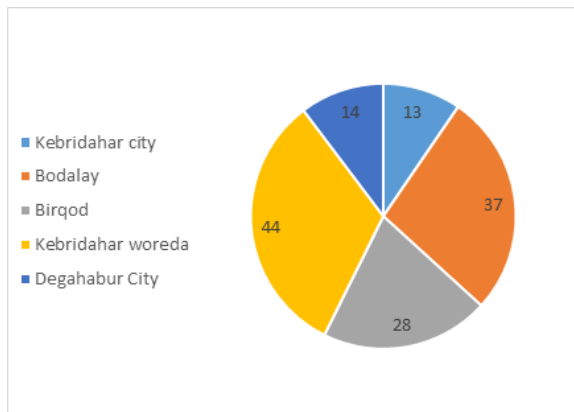


Figure 4.21: Average number of livestock holding per HH and by Woreda

Overall, average livestock ownership per HH is 27 which is significant number. However, average number of livestock ownership varies widely across study Woredas. The highest livestock number is registered from Kebridehar Woreda (44), followed by Bodalay with 37 livestock. In contrast, lowest average number of livestock is reported from Kebridehar city with 14.

With regards to types of livestock owned by surveyed households, the proportions of households owning goat and sheep is high with 87.2% and 62.8% respectively.

The other interesting aspect of livestock ownership in the project area is that, they are rearing livestock mainly for household cash income and milk and meat consumption. Livestock is also used for traction power for farming activities.

Regarding livestock feed, vast majority (93.6%) of the households use communal grazing fields as a primary source for livestock grazing, followed by crop residue and private grazing land.

The survey result also showed that traditional well or Ella is the primary source of water for (45%) of livestock owing households, followed by River/stream (40%). Other water sources such as pond, spring and ground water are also among reported sources of water for livestock.

Despite its relatively better performance and its crucial role in the local household economy, livestock rearing reported to have been facing some challenges and constraints. Accordingly, more than half (54%) of the households informed that, shortage of livestock feed and water are the main constraints for livestock production. Other constraints affecting livestock resource and reported by the surveyed households include livestock diseases (16.2%), lack of market (13.5%), attack by wild animals (11.3%) and shortage of veterinary services (5%).

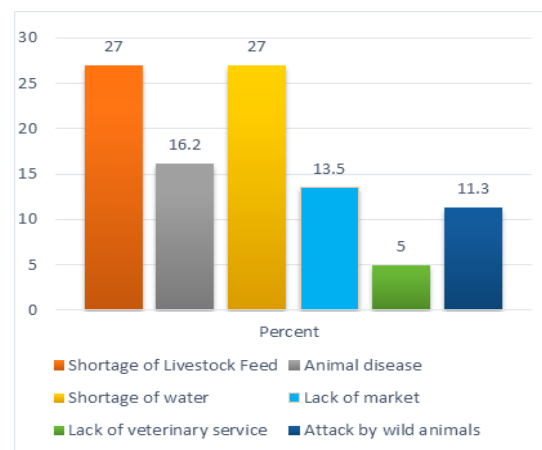


Figure 4.22: Proportions of HH Response Affecting Livestock Production

The surveyed households were also asked whether they have ever received assistance from external organs including governmental and non-governmental organizations in relation to livestock production. In response, out of total households owing livestock 24% reported to have received some kind of assistance related to livestock production. Unfortunately, all households who have reported to receiving assistance they received the support 63.2% received livestock vaccination service, whereas the remaining 36.8% received expert advice on livestock production.

### 4.5.3 Household Cash Income and Expenditure

#### 4.5.3.1 Sources of Household's Cash Income

One of the key objective of the survey included baseline for measurements of future income impacts due to project activities. As such, emphasis was given on this topic to capture the true characteristics of a household's sources of income. The sample survey revealed that at least one family members from 51.7% of the survey household reported to have been engaged in some kind of income generating activities. Moreover, 37.2% of households reported at least two members and 6.3% at least three or more of their family have been involving in some kind of income generating activities. In contrast, in 4.9% of the households no member of their households is currently engaging in any kind of income generating activities.

One of the key objective of the survey included baseline for measurements of future income impacts due to project activities. As such, emphasis was given on this topic to capture the true characteristics of a household's sources of income. The sample survey revealed that, households in project impact woredas have been engaged in various income generating activities and at least one family members from 51.7% of the survey household reported to engage in some kind of income generating activities. Furthermore, 37.2% of households reported that, at least two members of their family have been involving in some kind of income generating activities, while in 6.3% of the survey households, at least three or more family members have been taking part in various income generating activities. In contrast, in 4.9% of the households no member of their households is currently engaging in any kind of income generating activities.

Regarding households' cash income sources, as expected livestock and livestock product sale is the main source of cash income for 50.9% of the surveyed households, followed by casual work and employment with 3.5% each. Other source of income reported by households include remittance from family members (10.4%), petty trade (5.8%), firewood and charcoal sale (3.3%) and farming or crop production (1.4%).

However, the proportion of households' source of cash income varied across the project impact Woredas. For example, overwhelming majority (93.1%) of households in Kebridehar Woreda reported livestock and livestock product sale as their primary source of cash income. In contrast, only small proportion (8.0%) of households surveyed from Degahabur city reported livestock and livestock product sale. While casual labor is common among households in Degahabur and Kebridehar cities, whereas sale from charcoal and firewood is a vital cash source of households in Bodalay Woreda than other sample Woredas (Figure 4.23).

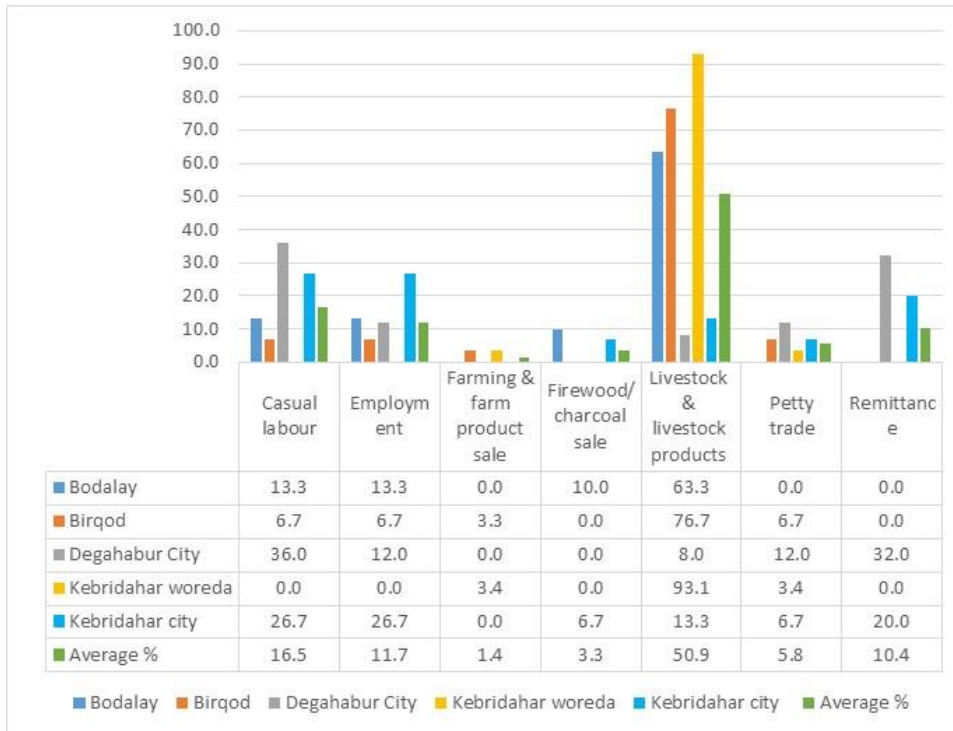


Figure 4.23: Proportions of sources of Household Cash Income by Woreda

Similar to other Woredas in Somali region, remittance play important economic role in household cash income of project influence area. As indicated in the Figure 4.23, remittance is main cash source in significant proportion of households in Degahabur (32%) and Kebridehar cities (20%).

#### 4.5.3.2 Household Annual Cash Income

One of the challenging but most important part of a baseline survey in Ethiopia especially in rural areas is to capture reliable monthly or annual household income from all income sources. This is mainly due to the fact that, most of households in rural areas get income from diverse sources in different seasons, and unlike salaried employee or educated persons they normally don't keep records of their monthly or annual sale as result its always tough and time consuming to collect some consistent data on household annual cash income & expenditure from survey population.

In terms of sources of household cash income, the survey result shows that, livestock sale accounted for 29.3%, trade and service 14.5% and daily labor 14%. The role of remittance as a source of household cash income is also significant (13.3%). Other reported household source of cash income include salaried employment (12.9%), Aid/Cash for work program (5.9%), firewood and charcoal sale (2.2%), dairy products (2.1%), handicrafts (1.8%), sale of annual crops (1.2%), cross border trade (1.1%), sale of grass (0.2%) and other sources (1.5%).

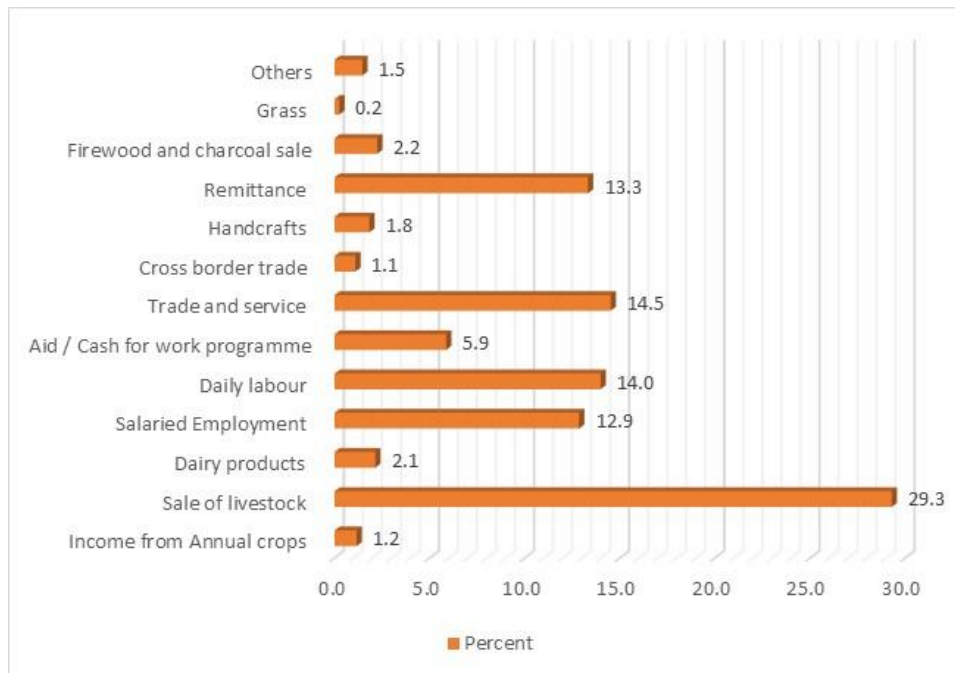


Figure 4.24: Proportions of Annual Cash Income from All Sources

Our inquiry into annual cash income further revealed that all surveyed households collectively earned a total of Ethiopian ETB 17,057,825 during the year preceding the survey. This puts the average annual household income of the surveyed households at about ETB 118,457. However, the average annual household's income varies slightly across project Woredas, while the highest average annual income is reported in Degahabur city with ETB 131,940 and the lowest average ETB 116,774.6 is Kebridehar Woreda.

The survey also showed, livestock sale as the major source of household income in all Woredas except in Kebridehar city where cash income from employment took the highest share (24.2%). On the other hand, livestock sale is the primary source of cash income in four study Woredas with some variation. Annual cash income from livestock sale took the lion share (60%) of household's in Kebridehar Woreda, followed by Birkot (45.8%). Although the proportion of household income from livestock sale in Bodalay and Degahabur City is 39.1% and 32.6% respectively, it is still the highest contributor for the households' annual income in both Bodalay and Degahabur City.



Table 4.19: Average Annual Income by All Source of Income and Woreda

Sources of income	Kebridehar Woreda	Degahabur City	Birkot	Bodalay	Kebridehar City	Total
Income from Annual crops	112,400.0	-	66,500.0	-	19,500.0	198,400.0
Sale of livestock	2,032,615.0	30,000.0	1,472,400.0	1,386,900.0	73,450.0	4,995,365.0
Dairy products	169,900.0	-	105,000.0	80,000.0	10,000.0	364,900.0
Salaried Employment	207,000.0	284,200.0	218,400.0	605,040.0	877,600.0	2,192,240.0
Daily labour	260,350.0	632,200.0	120,000.0	612,000.0	761,040.0	2,385,590.0
Aid / Cash for work programme	197,700.0	258,100.0	273,130.0	216,400.0	55,400.0	1,000,730.0
Trade and service	216,000.0	871,500.0	687,300.0	137,200.0	564,200.0	2,476,200.0
Cross border trade	-	96,000.0	-	-	90,000.0	186,000.0
Handcrafts	-	-	-	60,000.0	252,000.0	312,000.0
Remittance	60,000.0	1,076,500.0	234,800.0	170,000.0	731,200.0	2,272,500.0
Firewood and charcoal sale	103,500.0	-	-	181,000.0	97,500.0	382,000.0
Grass	11,000.0	-	31,500.0	-	-	42,500.0
Others	16,000.0	50,000.0	-	97,000.0	86,400.0	249,400.0
Total	3,386,465.0	3,298,500.0	3,209,030.0	3,545,540.0	3,618,290.0	17,057,825.0
HH Number	29.0	25.0	30.0	30.0	30.0	144.0
Average	116,774.7	131,940.0	106,967.7	118,184.7	120,609.7	118,457.1

Households were also asked about the trend of their household’s annual income over the past five years. Accordingly, more than half (52.1%) of respondents stated that their annual income has declined over the past five years. In contrast, about 11.7% of households reported that their annual income has increased. Apart from that, significant proportion (36.1%) of the surveyed households indicated no change in their annual income over the past five years.

#### 4.5.3.3 Household Annual Expenditure

Household annual expenditure survey findings revealed that a total of 144 surveyed households spent ETB 16,407,784 annually in all household expenditure items. Therefore, the annual average cash expenditure is ETB 113, 942.9 per household. However, higher average annual expenditure of ETB 124,808 recorded in Degahabur city and the lowest ETB 97,303 reported in Birkot Woreda. Based on the survey results, households spent 67.1% of their yearly expenditure on food items, followed by clothing (8.2%) and water (4.2%). Other major expenditures of the households include festivities (3.7%), healthcare and medicine (3.4%), children’s education (6.2%), and entertainment (5.3%).

Table 4.20: Household Annual Expenditure by Expenditure Type and Woreda

Expenditures Types	Kebridehar Woreda	Degahabur City	Birkot	Bodalay	Kebridehar City	Total	Percent
Food	2,231,700	2,076,900	2,028,854	2,477,450	2,189,980	11,004,884	67.1
Clothing	316,600	212,000	224,250	257,800	328,800	1,339,450	8.2
Cooking / lighting fuel	42,320	110,390	67,420	61,300	137,250	418,680	2.6
Education and school fees	27,780	34,340	48,090	12,100	55,180	177,490	1.1
Fees for transport	66,520	54,880	49,540	42,600	84,900	298,440	1.8
Home maintenance/ construction	30,000	56,300	9,500	20,600	157,000	273,400	1.7
Healthcare and medicine	98,550	137,100	111,200	121,250	92,240	560,340	3.4
Housing / rent	1,000	39,200	37,200	4,800	42,000	124,200	0.8
Water	192,360	178,200	18,700	127,290	174,960	691,510	4.2
Electricity	16,200	32,680	-	25,450	15,900	90,230	0.5
Communication and telephone	29,740	62,320	38,550	58,660	47,790	237,060	1.4
Entrainment expenditure	-	-	-	-	5,000	5,000	0.0
Purchase of farm equipment	2,150	-	3,000	-	5,400	10,550	0.1
Purchase of farm inputs	6,000	-	19,350	180	-	25,530	0.2
Agricultural labour	15,100	-	18,700	-	1,500	35,300	0.2
Purchase of livestock	3,500	-	8,000	-	8,000	19,500	0.1
Purchase of animal fodder	93,100	-	62,030	24,200	2,700	182,030	1.1
Veterinary service and drug	21,900	-	15,710	18,610	2,700	58,920	0.4
Festivities (holidays)	119,700	110,400	129,100	113,400	141,450	614,050	3.7
Religious contribution	18,900	4,200	20,220	9,650	26,400	79,370	0.5
Weeding parties	2,500	4,000	4,000	28,700	10,000	49,200	0.3
Funeral expenditure	-	-	700	1,000	10,000	11,700	0.1
Land Tax and related contribution	-	7,300	-	-	3,000	10,300	0.1
Remittance sent out	-	-	2,000	-	5,800	7,800	0.0
Zakat (Religious commitments)	-	-	3,000	-	2,850	5,850	0.0
Others	-	-	-	77,000	-	77,000	0.5
<b>Total</b>	<b>3,335,620</b>	<b>3,120,210</b>	<b>2,919,114</b>	<b>3,482,040</b>	<b>3,550,800</b>	<b>16,407,784</b>	<b>100.0</b>

From the sample survey conducted, it was observed that majority (76.4%) of the surveyed households indicated that their household annual expenditure has increased over the past five years. However, small proportion (6.9%) of them responded as their annual expenditure has decreased and 16.7% have seen no change in their annual household expenditure over the past five years.

#### 4.5.4 Access to Social Service

##### 4.5.4.1 Access to Potable water sources

Improved access to potable water sources is very vital for the wellbeing of the communities. However, as shown in Figure 4.25, 72.3% of the surveyed households reported to have access to clean and safe drinking water. The remaining 27.7% use potable water from different sources and most of them are believed to be unsafe either from river/stream and *Ella*.

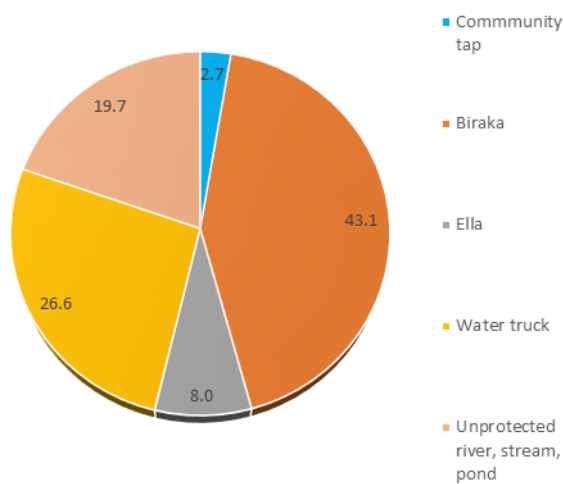


Figure 4.25: Proportions of HH by Sources of Potable Water

In terms of these potable water sources significant proportion (43.1%) of the households reported that they have accessed potable water from Birka/traditional water storage mainly found in Somali region. The second, important source of water for (26.6%) of the households are water truck.

According to the community members, there are water trucks in Woreda towns that bring water from protected water sources/reservoir and sale to local people residing in rural Kebeles and villages. Unprotected water sources like river, stream and ponds is another source of drinking water for about 19.7% of the survey households, while 8% use *Ella* as primary source for their potable water.

Potable water source across study Woredas are slightly varied. Surprisingly, all the households reported to access safe drinking water from protected communal tap are from Kebridehar city and a great majority (70%) of households in Kebridehar city use water truck as main source of drinking water. Water truck is also important source of potable water for significant (44.8%) of survey households in Kebridehar Woreda. Only 10% of households in Bodalay and (8%) of households in Degahabur also reported to get access to potable water from water truck. In contrast, no households reported to have access to potable water from water truck in Birkot Woreda. On the other hand, *Birka* is primary water source for 84% and 56.7% of households in Degahabur city and Bodalay Woreda respectively. In Kebridehar Woreda, 41.4% of the households are also reliant on *Birka* as their primary drinking water source. The great majority (80%) of the households in Birkot Woreda rely on unprotected water source such as river and streams.

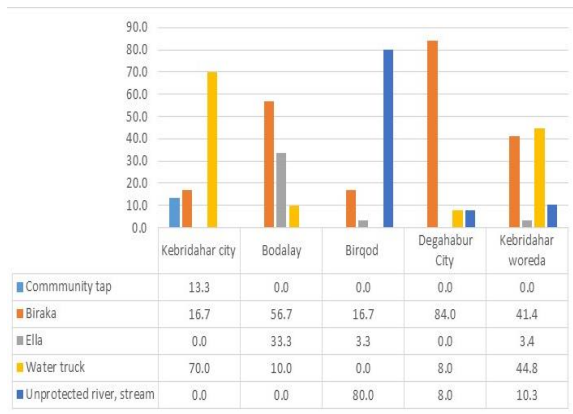


Figure 4.26: Proportions of HH Potable Water Source by Woreda

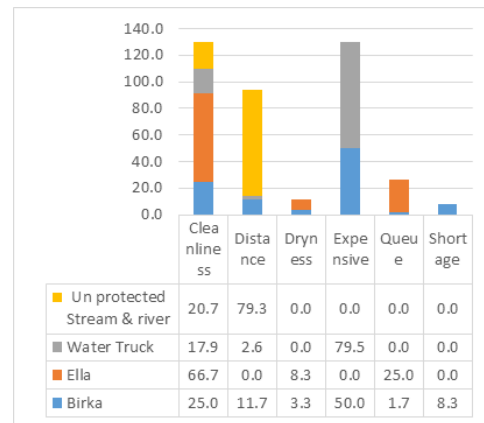


Figure 4.27: Proportions of Problems with Water Source Reported By Households

As shown in Figure 4.27, the survey households reported various problems about their primary water sources. For instance, 79.3% and half 50% of households who use water truck and Birka respectively complained about the cost of getting potable water from these sources. It is reported that households have to pay up to ETB 15 to 20 to buy 25 liter of water from the water truck and Birka. The other problem reported by the same group is about the quality of the water. Accordingly, about 25% of the households are not happy with quality of water from Birka, while 17.9% of the households complained about quality of water they bought from water trucks. Water quality is also a major problem reported by households who use Ella (66.7%), and unprotected stream and river (20.7%). Distance to the water source is also another stated problem among 79.3% of households who fetch water from unprotected stream and river. 11.7% of the households who use Birka also complained about the distances and the time it takes to access water from these water sources.

Regarding, time devote by household members to fetch water, the survey households spent from few minutes to couple of hours to fetch water depending on the water source for the household. Based on the survey finding, households who use water from protected communal tap spend less than five minutes to fetch water. In contrast, households spent an average of 65 minutes to access water from unprotected stream and river. On the other hand, majority of the survey households who access water from Ella, Birka and water truck spent 10 to 15 minutes to fetch water. Almost all the surveyed households have reported to make one round trip per day to fetch water that is sufficient for their drinking and cleaning tasks for a day.

Fetching water is a physically demanding task as water has to be transported by humans on a backload or head-load and this responsibility usually rest on the shoulder of some household members than others. In the case of our sample survey, fetching water is the primary responsibility of women and girls in vast majority (93.9%) of the households, while men and boys are the main responsible bodies for water collection in the remaining 6.1% of the survey households only.

#### 4.5.4.2 Access to Financial Services/Credit

In terms of access to financial services, unexpectedly the overwhelming majority (90.2%) of households have had access (borrowed cash) for different purposes from diverse sources.

Among households who had had access to financial services, 52% reported to take loan from local traders. Family members and friends/neighbour also providing loans to 24% and 22% of the households respectively. Money lender is also additional source of loan for 2% of the surveyed households. This clearly indicates how social ties play important economic role in the life of households residing in the project influence area.

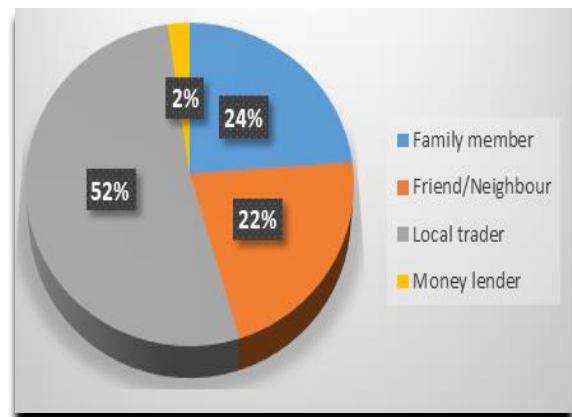


Figure 4.28: Proportions of HH that received Loans by Source of Loan

None of the households reported to take loan from Micro credit /finance, NGOs Commercial Banks, CBO and other potential financial source. This may be due to limited access to formal financial institution or the households have easy option from their social network to get loan whenever they need it.

Regarding purposes of the loans, it's very sadden that large proportion (90.2%) of households used it to feed their family members. This clearly indicates how difficult it is for many households residing in project influence area to put adequate food on the table for their family members. This is why majority of the households within all project impact Woredas depend on food aid for survival all year round. The other reason for taking loans were to use it for medical treatment, purchase of farm inputs, buy livestock, children education and start business.

#### 4.5.4.3 Housing Conditions & Household Service and Facilities

Concerning ownership of housing, like all rural farm families in many parts of the country the vast majority (88.2%) of the surveyed households are living in privately owned houses. The remaining 6.9% and 4.8% of the households are living in rented houses and rent free houses (given) respectively. Majority (63.9%) of the households are living in fixed or non-mobile housing structures and the remaining (36.1%) of the households replied that, they are living in mobile housing structures which is common in Somali pastoralist area.

Like in many parts of the country, households in the project influence area use different materials to construct their houses. Construction material used by the community include corrugated iron sheet for roofing by 61.8 % of the survey households, followed by thatched roof houses (19.4%) and plastic roofing (11.3%). Tent and different textile materials are also used for roofing among 5.1% and 2.3% of the households respectively.



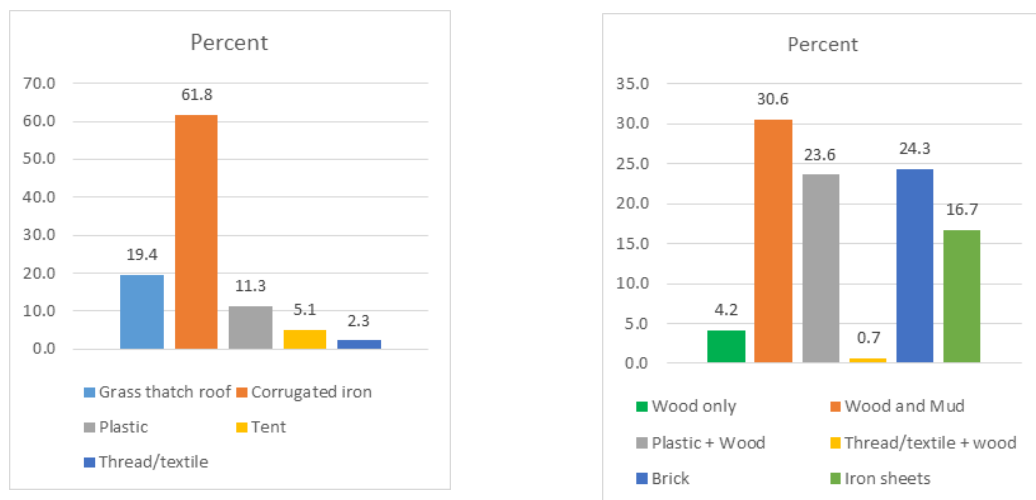


Figure 4.29: Proportions of HH by Construction Materials for Roofing (left) and Wall (right)

Based on the survey result, about 30.6% of the houses used wood plastered with mud for walls, while 24.3% bricks and stones (See Figure 4.29). Financial capacity of the household, weather condition and other factors may have influenced the construction materials used to build residential houses within the project influence area.

The baseline survey further indicated availability and utilization of a range of household amenities including cooking space and toilets used by households. Accordingly, majority of the households (86.1%) use a separate kitchen for cooking meals, followed by open space (11.1%) and the remaining (2.8%) cook inside a living room. Regarding toilet, more than 56.3% of the households use a private toilet (pit latrine), while two (2.1%) use a communal pit latrine. On the other hand, substantial number of the households (41.7%) stated they simply defecate on the open fields.

#### 4.5.5 Household Domestic Energy Sources

During the socio-economic baseline survey, additional effort was made to understand the existing household domestic energy sources for the community living along the transmission corridor. To better understand the domestic energy situation of the households in the project influence area, additional questions focusing on household energy source for lighting and cooking purposes and related cross cutting energy issues are designed and included in the socioeconomic sample survey questionnaire. However, due to similarities of the households in the project influence area in terms of numerous socioeconomic indicators, the additional questions focusing on household energy source are administered only to 50 randomly selected households from the 144 surveyed sample household population in the wider socioeconomic baseline survey.

##### 4.5.5.1 Source of Energy for Lighting

The source of energy for lighting used by households partly indicate the quality of life the household members are currently living. In the project influence area due to low coverage of electricity services, households use various forms of energy for lighting purpose. Analysis of energy sources for lighting purpose revealed that majority (67 %) of the households reported to use hand torch batteries for lighting purpose, followed by solar lantern (11%), electricity (8%) and firewood (2%).

All the households using electricity for lighting purpose have gained the access through illegal connection or hook-up, meaning the households do not have legal meter connection however, they hooked up from neighbours having direct meter connection and pay monthly rent for the service they enjoy from electricity to the person that allowed them connection.

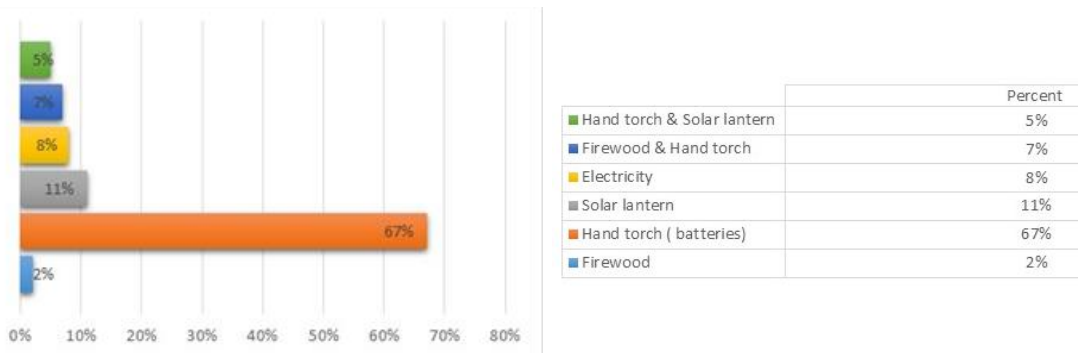


Figure 4.30: Proportions of HHS by energy source used for household lighting purpose

As presented in Figure 4.30, some of the surveyed households use more than one type of energy sources for domestic lighting. A closer examination of the survey data reveals that, while 7% of the sampled households are presently using a combination of firewood and hand torch for lighting purpose, 5% use a combination of hand torch and solar lantern and 11% household solar lantern only. Generally, the sample survey as well as consultation meetings conducted with community members residing in the project influence area confirmed the lighting source of many households in the project influence area are currently derived from non-electricity sources. That is why provision of electricity service become the priority need of the communities residing in rural and urban Kebeles located within the project direct influence area.

The households’ energy source choice is determined by many factors including affordability accessibility, educational & economic status and many other factors. However, for nearly 49.1% of the households, the choice of household energy source for lighting is mainly determined by accessibility, followed by lack of other energy source (36.8%), affordability (7.0 %), safety (5.3%) and efficiency (1.8%). Therefore, the accessibility and lack of other energy source for lighting could be the most obvious determinants of household energy choice as far as household lighting is concerned in the study Woredas.

The surveyed households accessed household energy source for lighting purposes through three mechanisms (i.e. freely, purchased or rented). The overwhelming majority (90%) of the households purchased their energy source for lighting and these include hand torch and solar lantern. While about 8% of the households obtained through renting from neighbours who are currently using electricity for lighting and pay monthly for the service. On the other hand, small proportion (2%) accessed freely or without payment. It is not surprising, the surveyed households who freely gained access to household energy source for lighting purpose mostly depend on firewood.

According to results of the survey, while households using electricity for lighting spend on average ETB 242 per month for electricity service, whereas those who use hand torch batteries spend on average ETB 290 per month to buy dry cell batteries to run the appliance. On the other hand, those who are using solar lantern spend ETB, 324 to buy the solar lantern appliance.

The sample households were also requested to indicate the advantages associated with the current lighting source for their households. Accordingly, accessibility of current energy source for lighting is the main advantages reported by 63.1% of the surveyed households, followed by affordability (20%) and safety (10.8%). Efficiency and durability are also another advantages associated with the current household energy source for lighting as reported by the sample households.

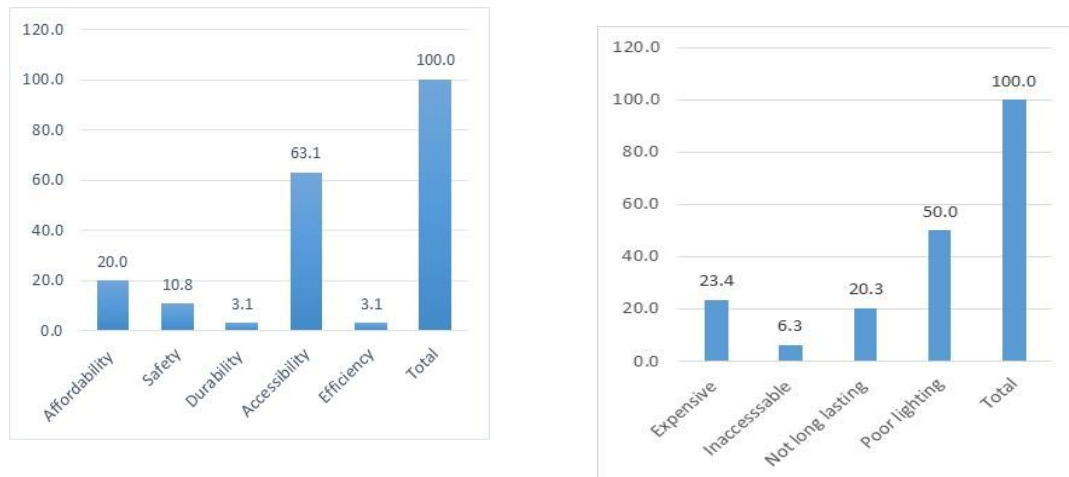


Figure 4.31: Proportion of HH by reported advantages (left) & drawbacks (right) associated with lighting sources

Among the drawbacks, 50% of households reported poor lighting or poor quality of lighting as a major disadvantage associated with current energy source of lighting for their households. The second important drawbacks is associated with cost or expense (23.4%) followed by lighting hours they are getting from their household energy source (20.3%) and lack of access reported by 6.3% of the surveyed households.

In relation to satisfaction with their present household energy source for lighting purpose, it is not surprising that, the overwhelming majority (96%) of the households are not happy with their current lighting sources, and only 4% of households are happy with their current household lighting source.

The surveyed households were also asked what type of energy sources they prefer for lighting purpose and reasons for their preference. Accordingly, all the surveyed households preferred access to electricity as their primary energy source for lighting. The households have various rationales and justification for their preference. Based on the survey result, about 30.2% preferred access to electricity due to efficiency in terms of illumination or lighting, 29.5% due to its ability for multipurpose use. Electricity is also chosen by 18.9% of the surveyed households it is a modern clean energy source. On the other hand, 16.8% of the households favoured electricity due to durability and 4.2% for household for lighting.

Although there is a very high demand and preference for access to electricity service , very limited number of households are currently using electricity for lighting purpose and all of them accessed electricity through hook-up. This sample survey clearly indicates how low is the electricity coverage and a very high demand for the service particularly among the local people along the project corridor.

#### 4.5.5.2 Sources of energy for cooking purpose

The cooking fuel portfolio of sample households is dominated by two types of traditional solid biomass fuels namely, firewood and charcoal. The findings showed that majority (70%) of the households depend on firewood as a sole household cooking fuel (energy sources of surveyed HHs are shown in Figure 4.32)

On the other hand, while charcoal is the primary source of household cooking fuel for (14%) of sample households, whereas (16%) of the sample households use a combination of firewood and charcoal for cooking fuel. This means large proportion (84%) of the sample households solely depend on one type of energy sources for cooking. In contrast, only (16%) of households use two types of energy sources for household cooking energy. This indicate like all other Woredas and rural Kebeles found in Ethiopia, the household energy

scene of the project influence area is dominated by the use of traditional fuels mainly firewood and charcoal. Surprisingly despite, the project influence area is resourceful in livestock, however, unlike in most rural part of the country, animal dung is not among household cooking fuel list.

The survey also revealed factors that affecting the cooking fuel choice of households in project influence area and based on the survey result, affordability and accessibility of the energy sources influenced about (51.4%) and (39.4%) of the sample households cooking fuel choice respectively. In addition to that, the household cooking energy choice is also determined by efficiency (6.4%) and safety (2.8%) of the cooking fuel.

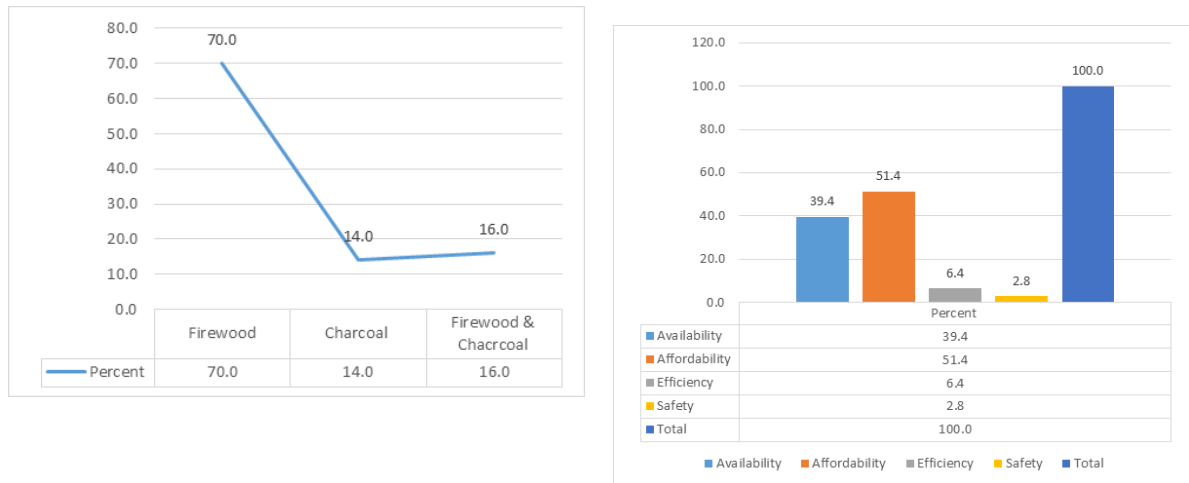


Figure 4.32: Proportion of HH by Cooking Fuel Used (left) & Factors Influencing Choice (right)

A variety of factors influence a choice of a particular energy source for household cooking fuel as it has been observed in survey result. The cooking fuel choice for the surveyed households is strongly determined by affordability and accessibility of the energy source. These are mainly due to the fact that traditional fuel particularly, firewood which is the dominant cooking fuel within project influence area are still freely collected by the local people. From the sample households, while, all the households using firewood reported to collect it freely from the surrounding woodland and forest areas, whereas, most of the households using charcoal as their main household cooking fuel in contrast, pay or purchase to access the fuel. Accessibility is also another important determinant of surveyed household’s choice of energy source for cooking purpose, within the project influence area where the land use is dominated by shrubs and scattered bush as well as where access to natural resources is governed by traditional or clan lines, accessibility is free and not an issue for the households. The presence of better woody biomass endowment within the project influence area also made charcoal availability easy to the local people despite, charcoal making is illegal activity and it is prohibited by the Federal and Regional governments. Charcoal is increasingly commercialized in urban areas and can be purchased and used for cooking purpose without any difficulties. Based on the sample survey result, households using charcoal for cooking fuel reported to spend on average ETB 540 per month to purchase charcoal.

Despite localized variations, household members spent on average 2 hours per day to collect firewood from the nearest woodlands.

As indicated in the Figure 4.33, the responsibility for firewood collection varies among the surveyed households. In fact, women are responsible for firewood collection in 50% of the sample households, followed by all family members (23.5%).

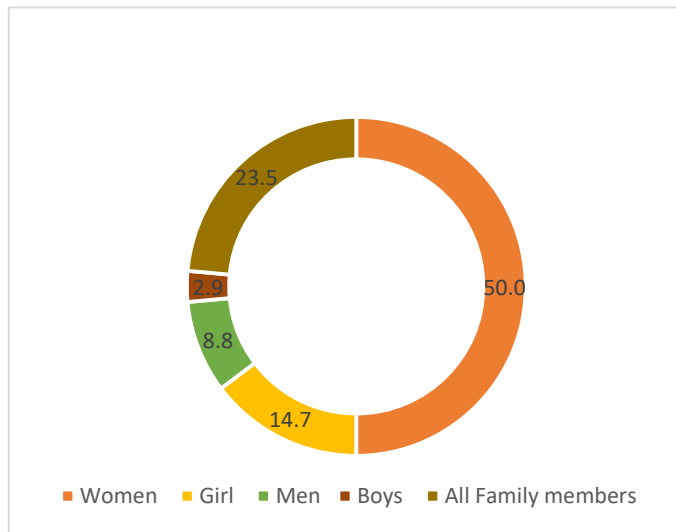


Figure 4.33: Responsibility of HH members for firewood collection

While girls are reported to be responsible for firewood collection among 14.7% of the sample households, followed by boys (8.8%) and all other family members (2.9%). Fire wood collected is usually transported to residential area by human load and only 12.5% of the surveyed households reported to use pack animals for transporting firewood. Besides transporting heavy load of firewood for longer distance in such harsh weather condition, household members' responsible for firewood collection are also reported to have been exposed to various risks during firewood collection. The survey

result shows that about 42.5% of sample households faced one or more types of abuse or assault during firewood collection (See Table 4.21).

Table 4.21: Risk associated with firewood collection

Type of Threat Faced	Number	Percent
Physical injury during firewood collection	17	54.8
Attack from wild animals (sneak, insect etc.)	3	9.7
Physical attack from other people	4	12.9
Injury from loading/carrying/transporting firewood	7	22.6
Total	31	100.0

As shown in the above table, while 54.8% of the sample household members responsible for firewood collection faced physical injuries during firewood collection, 22.6% reported to sustain some kind of injuries while loading, carrying or transporting firewood. Physical attack from other people and attack from wild animals such as snake, insect and others are also reported incidents associated with firewood collection.

The surveyed households were also asked what advantages they are getting from using the current fuel for cooking. In response to this question, availability of fuel from the nearby area, free collection and efficiency of the cooking fuel are the three important advantages reported by 57.8%, 39.0% and 3.2% of the respondents respectively. In contrast, difficulty of using the fuel, not being clean energy source, risk associated with fuel collection and transportation, affordability as well as the seasonality of the energy sources are the major drawbacks associated with current household cooking fuel as reported by the surveyed households. One thing to be noted is that affordability is exclusively for surveyed households reported to use charcoal as their main household fuel source for cooking.



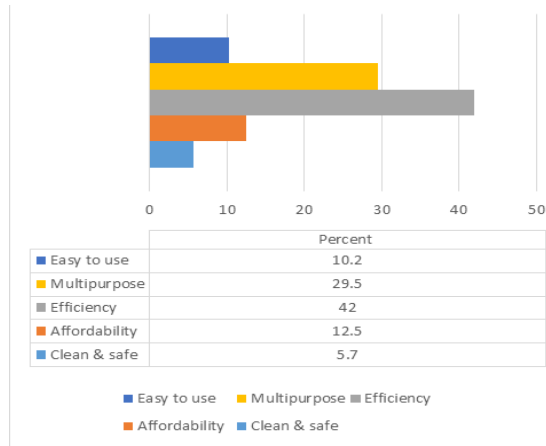


Figure 4.34: Proportions HH by Reported reasons for preferred cooking energy source

With regard to household preference of energy source for cooking purpose, 96% of the sample households preferred electricity and the remaining 4% favoured kerosene to be their chief household cooking fuel.

Most surveyed households preferred electricity for their household cooking energy source for various reasons. As indicated in Figure 4.34, efficiency (42%) and multiuse (29.5%), affordability (12.5%) and easy to use (10.2%) are the main reasons. About 5.7% of the sample households also choose electricity because it is clean energy source.

In general, firewood is the dominant household fuel source for cooking and the bulk of the fuel wood consumed by the households is collected freely from de facto “open access” communal wood and forest land. In addition, some households mainly in urban areas use charcoal for domestic cooking. However, the sample survey clearly indicated the discontent of the households with their current household energy source both for cooking as well as lighting purpose. They really wanted to replace their current household energy sources for lighting and cooking with more efficient and clean energy sources especially electricity if they get the opportunity.

#### 4.5.6 Shocks, trends and coping strategies

Broadly speaking, households in the project area can be characterized as highly vulnerable and strong.

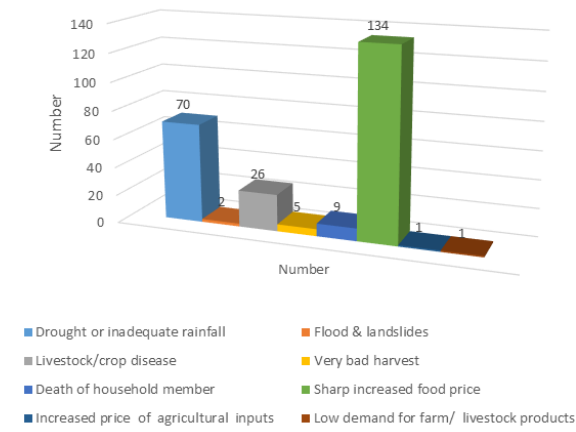


Figure 4.35: Number of HH by Types of Shocks They Had Experienced/Faced

According to the survey result vast majority (95.1%) of the households reported that, their household members have experienced one or multiple types of shocks in the past two years. Among the reported shocks, increased food price is the most stated type of shock that vast majority (97.8%) of the survey households had experienced in the past two years. The other shocks identified by the surveyed population include drought or inadequate rainfall, livestock/crop disease, death of family members, bad harvest, flood & landslides, increased price of agricultural inputs and low demand for farm or livestock products.

It's not surprising that, shocks from sharp increase in food price affected nearly all the households across the study Woredas. On the other hand, shock due to drought or inadequate rain and livestock/crop disease is mainly reported by households in Bodalay, Birkot and Kebridehar Woredas, while nine households reported to experience shock due to death of their household members.

In fact the households, did not simply sit and accept when shocks comes to them rather

they usually use different strategies to manage and overcome the shocks they encountered by themselves or/and support from external. The surveyed household who had faced shocks in the past two years also reported the various coping mechanisms their household used to recover from the shocks.

Accordingly, taking loan is the most popular coping strategy that reported by majority of the surveyed households. Another important coping strategies include reduced food consumption, livestock sale, slaughtered livestock and others. The table below presents list of coping mechanisms that households used to manage and recover from it.

**Table 4.22: Number of Survey Households by coping mechanism**

Coping Mechanism	Number HH
Leased out land	3
Sold livestock	41
Slaughtered livestock	12
Sent livestock in search of pasture	16
Migrate (only some family members)	1
Employed on new wage labour	13
Reduced food consumption	54
Received remittances	21
Took loan	130
Received support from governmental & NGOs	23
Sent children to work for money	1
Used money from savings	1
Participated in food-for-work or cash-for-work	3
Other	1

As you can see from the long list, households residing in the project influence area use different kinds of coping mechanisms depending on the type of shocks their household experience at the time. For instance, as mentioned above majority of the survey households in all study Woredas reported to have faced serious problem or shock as result of unexpected or sharp increase in food price. Unquestionably, sharp increase in food price, could force the households to spend additional money than usual on food item just to feed their family members. In fact, better off households always able to cop such kind of shock without affecting or changing their normal way of life. However, vulnerable households like majority of the surveyed population faces different challenges to manage the stress they face.

About 130 out of 144 surveyed households reported that, they took loan to cope the shocks that their household encountered in the past two years while, 54 respondents replied that they reduced household food consumption, and 41 sold their livestock. Some households also reported of receiving external support or assistance to cop the shocks they had confronted. Accordingly, while 23 of the households received different kinds of support from governmental and non-governmental organizations, 16 households replied that, they received remittances to manage their stress. In order to manage even a single shock households can use multiple coping strategies at a time to recover or use several coping strategies at different time to recuperate from a single shock.

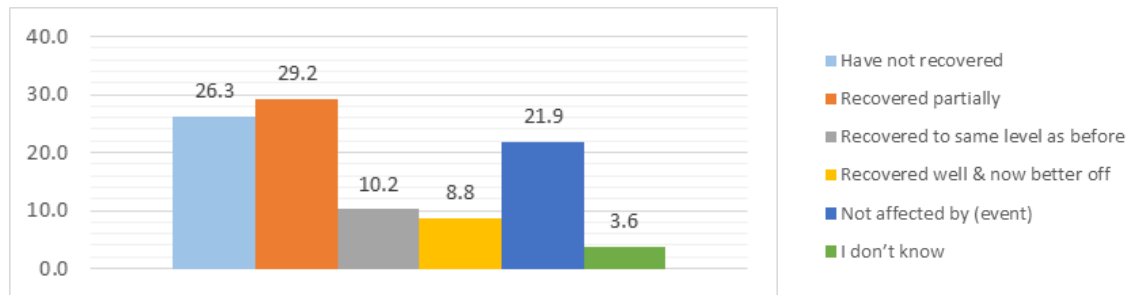


Figure 4.36: Proportions of HH Response of Shock Recovery

The survey finding further explored which households to what extent had encountered some kind of shock in the past two years and bounced back or recovered from it. Accordingly, about 21.9% of households were not been affected by the event, however, 29.2% of the households reported that they partially recovered, while 10.2% of them recovered to the same level as before. Interestingly, 8.8% of the households stated that, they well recovered from the shock and now they are in a better position than before. On the other hand, significant proportion (26.3%) of the households reported that, they have not yet recovered from the shocks, and the remaining 3.6% replied “do not know” the effect.

As discussed earlier, some of the households who had encountered shocks in the past two years also received some kind external support to cope and recover from the shocks they had faced. Among 23 households reported to have received some kind of support from external organ including governmental and non-governmental organization stated that, they had received food aid, cash transfer and opportunity to take part in food-for-work/cash-for-work programs.

#### 4.5.7 Vulnerable Households

Security or vulnerability of households’ livelihoods vary between households depending on their relative endowment with and/ or access to a range of assets (natural, physical, human, social and financial). The more a household owns or have access to different assets, the less vulnerable it is likely to be. Ownership of or access to assets is dictated by an interplay of historical, social, economic, cultural, political and environmental processes that work favourably for some groups of households and unfavourably for others. In effect, social groups with less asset-endowments become more vulnerable to shocks (adverse impacts of the proposed project on farmland) than those with relatively generous asset-endowments.

Households headed by the elderly, females, the chronically ill, persons with physical disabilities and mental illness are generally more vulnerable than others. Vulnerable households find it difficult to withstand shocks (e.g. land take by the proposed project), bounce back quickly and re-establish their livelihoods unless their livelihoods are cushioned with some sort of targeted special assistance. Certain members of the project-affected communities are identified as vulnerable people. These are:

- Male headed households (MHH) (elderly people aged 65 and above)
- FHH (labour-short, i.e. no husband/partner to support with farming tasks)
- PAHs with physical disabilities, mental illnesses or chronically ill persons

In the assessment of vulnerable PAPs, we have identified 43 PAHs that are found to be more vulnerable than other PAPs and therefore require special assistance from the project (See Table 6.23).

Livelihood security or vulnerability is a dynamic concept and the trajectories may change

over time. Therefore, it is recommended that further identification and screening of actual vulnerable groups should be conducted regularly during the RAP and LRP implementation.

**Table 4.23: Number of Vulnerable Households by Types of Vulnerability**

Types of Vulnerability	MHH Elderly age above 65	Female HH Head	Physical disabilities or chronically ill	Total	Percentage
Birqod	12	6	0	18	41.9
Bodalay	1	1	0	2	4.6
Degahabur	4	4	0	8	18.6
Degahabur CA	1	3	0	4	9.3
Kebridahar CA	1	0	0	1	2.3
Sheygoosh	7	2	1	10	23.3
<b>Total</b>	26	16	1	43	
<b>Percentage</b>	60.5	37.2	2.3		

Source: RAP Census Survey (January - February 2023)

## 4.5.8 Sites of Cultural, Historical and Archaeological Importance

### 4.5.8.1 Background and Objectives

Archaeological/cultural heritage survey has been conducted along the proposed Degehabur - Kebridehar Transmission Line project area, in Southern Ethiopia. The proposed project area is located at in Somali Regional State.

This survey was conducted to determine the nature and significance of the different cultural sensitive sites, such as, archaeological, historical, and paleontological as well as living cultural heritage, such as, graves and ritual sites, which might be impacted by the proposed project and influence the project design, construction and implementation.

It focused on identifying both tangible and intangible cultural heritage sites that are found along the proposed transmission line and within 26 meters corridor (ROW) assessing the potential impacts of the project on the heritage sites.

The specific objectives of the cultural, historical and archaeological baseline study were:

- Examine cultural Heritage conditions of the project influence area;
- Identify important cultural and heritage resources in and around the proposed project area;
- identifying sensitive cultural issues that can influence project design and alternative; and
- Assess the presence of any sites or properties of archaeological, cultural or historical value within the impact zones of the proposed Project through site investigations, review of previous assessments and consultation with the local people, local authorities and relevant agencies or institutions.

### 4.5.8.2 Methodology

*Literature Review:* Written primary and secondary sources and maps have been consulted during the pre-field preparations to identify the known historical and archaeological sites that are located in and around the project area, prior to the commencement of the fieldwork.

These documents help to understand the socio-political history, social structure, settlement pattern, culture and archaeology of the study Region.

*Pedestrian Survey:* Ground survey was conducted by making car transect and foot surveys. GPS (Global Positioning System) was used to locate and map major locations of finds, such as, burial and ritual sites.

*Oral Traditions and Consultations:* Consultations were carried out in parallel with the archaeological survey by conducting discussions with local leaders and informants, who gave oral accounts and information of the people of the Study Area, to identify and locate visible tangible cultural remains as well intangible/living heritage of the area.

#### 4.5.8.3 Administration Setting

The Degehabur – Kebridehar Transmission Line Project is located in South-Eastern Ethiopia, within the Somali National Regional State. It stretches over five Woredas and two administration towns in two zones. These are Kebridehar and Degahabur towns and Degehabur woredas of Jara Zone and Bodaley, Kebridehar and Shaygosh woredas and Kebridehar town of Koraha Zone.

#### 4.5.8.4 Socio-Cultural Settings of the Project Area

##### *Population*

The predominant ethnic group in and around the project area is the Somalis. Linguistically, the Somalis are usually categorized as a "Hamitic" or "Cushitic" people like their immediate neighboring ethnic groups: the Oromo and the Afar<sup>1</sup>. The Somalis are one of the largest peoples inhabiting the Horn of Africa, across four recognized states: Republic of Somalia, south-east Ethiopia, Djibouti and north-east Kenya. The Somali also inhabits self-declared states of "Somaliland" and "Puntland". They have a clan-based social organization that goes from family to sub-clan, to clan, to clan confederacy and finally to Somali ethnic group.

In terms of linguistic and cultural affiliation, Somali belong to ethnically to the Cushitic speaking family they speak Somali and many people also speak Arabic. Somali is a member of group of language called lowland Eastern Cushitic spoken by people living in Ethiopia, Eritrea, Somalia, Djibouti, Kenya and Sudan a language family which in turn as part of the Afro-Asiatic stock. (Lewis Page 1).

The Somalis are one of the largest peoples inhabiting the Horn of Africa, across four recognized states: Republic of Somalia, southeast Ethiopia, Djibouti and northeast Kenya. The latest population figures for the Somali region are 3,439,860 of whom 1,875,996 are males and 1,563,864 females.

The ethnic composition includes Somali 95.6percentage, Oromo 2.25%, Amhara 0.69%, and Somali 0.63%, and Guragie 0.14%. The Somali language is predominantly spoken and is the working language of the region.

##### *Somali oral tradition account of their History*

Somali tradition dealing with their early history and relation to Islam, Arabia, and serve as mythical characteristics for modern religious and political life. The Muslim Somali place high value on descent from Arabian families who settled from the Somali coast 1000 years ago. Although there undoubtedly is an infusion of Arab blood among Somalis. Historians and linguist however, trace the origin of the Somali people to a much earlier time in the region. Many Somali clan family and clans therefore claims descent from immigrant Arab Sheiks or saints who married Indigenous Somali women. (Briton & Putman, 1993)

##### *Traditional Social System of the Somali Population of the Study Area*

The political constitution of the Somali society lies in kinship and its specific kind of social

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<sup>1</sup> The Oromo is the largest ethnic group of the Horn, inhabiting central, southern and western Ethiopia; the Afar, who live in Djibouti, Ethiopia and Eritrea (see Lewis, 1961)



contract<sup>2</sup>. The Somalis are dependent on their kinship lineage for security and protection, responsibilities, duties, rights and liabilities is still continue to be perceived along collective rather than individual terms. Hence, the clan is remain collectively responsible for actions of its individual members, and rights of women and children will continuously be seen in the context of the interests of maintaining the strength of the male-based clans.

The clan-system is the most important constituent social factor among the “nomadic-pastoralist Somalis” and this segment lineage system can be differentiated into categories of clan-hereby, descent is based on the father’s lineage. The Clan-Family, clan, sub-clan, primary lineage and mag-paying group as divisions of varying size (Lewis 1961; Gundel, 2006).

The clan unit is divided in to sub clans and sometimes with many sub divisions. The lineage unit system is counted vertically on segmentary lineage system in which individuals find their origin based on their perineal descent traced in the male line. The clan family is the upper limit of the clanship in which the genealogical length stretched as far as thirty generation to a common ancestral line. This segmentary clan system is categorized by four clan families they descend; Darood, Hawwiya, Dir and Issaq. The most distinct descent group with in the clan is ‘primary lineage’ this lineage is explained as in which a person describes himself as a member (Gundel, 2006).

For Somalis, the family is the ultimate source of personal security and identity. The importance of family is reflected in the common Somali question, what is your lineage? Somalis typically live in nuclear families although older parents may move in one of their children. Households are usually monogamous; in polygamous households wives usually have their residences and responsible for different economic activities.

The clan families are so huge and dispersed in vast areas and it is rarely effective in relative peacetime. However, in case of conflict between two clan families a clan identity come in to effect for protection. Hence, clan family and allegiance play a major role in the modern political history of Somali. The society of the pastoral Somalis is democratic traditional decisions are made by councils of men. These councils are egalitarian, sometimes to the point of anarchy. Although age lineage seniority and wealth can have influence. Lewis says, all men are councilors and all men politicians (Lewis, 1993).

### **Somalis Customary law of xeer**

The Somali community uses traditional customary law as means of resolving dispute over natural resources grazing lands and homicide. This customary law is known as Xeer (pronounced Herr). It is the indigenous conflict resolution tradition of the Somali people, with this tradition elders play preponderant roles as judges and assist arbitrated cases employing precedents. Based on the tradition when a conflict arises between two clans, mediators nominated from a third clan and the case presented to them. The elders thoroughly investigate the case and passes decision and the guilty pay compensation depending on the crime he committed. Homicides are usually solved through the penalty of blood compensation in terms of Camel. Normally the courts simply formalize the decision reached by the traditional elders.

Based on the Xeer tradition if a clan member proved guilty and obliged to pay compensation in the form of Camel or in money, it is the duty of all the clan members to share equally and pay the compensation. This helping each other tradition considered as a guarantee for clan members to share their happiness and sorrow together. Once the conflict between two clan

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<sup>2</sup> The Somali kinship structure is based on an agnatic (patrilineal) lineage type – known as clan. Genealogies define the belonging of kinsmen to certain clans, according to the ancestor from whom they stem. The social contract defines the terms of the collective unity within and between the agnatic clans. A general description of the Somali traditional structures can analytically be divided into three core elements: 1) Their traditional social structure: The segmentary lineage system or clan structure; 2) Their customary laws – the xeer; 3) Their traditional authorities or juridico-political structure (Lewis, 1961; 1980).

members solved in such manner, the hostility will no more continue or no vengeance passes to next family members. However if the case presented only to the court and no compensation paid the victim hostility will continue to next family members. If the conflict is with other neighboring ethnic group the conflict, should go to the court and the dispute settled under the Sharia law based on the Quran as in most cases the conflict resolved with the court compensation may not be paid and there is a possibility that the dispute may arise again. However if both agree to solve the conflict under customary law the conflict will be solved with similar compensation process and peace will be sustained.

#### 4.5.8.5 Survey Results

Cultural heritage survey has been conducted along the proposed Degehabur to Kebridehar Transmission Line project area.

The analysis of cultural, historical and archaeological survey, written and oral information demonstrate that:

- During survey, however, no visible archaeological evidences and cultural heritage have been unearthed along the proposed 206 km long- 132 kV overhead transmission line and its environs. This is mainly because the direct impact zone of the proposed project will be very limited. The footprint of the proposed towers will be approximately 64m<sup>2</sup> (i.e. 8m by 8m) and the right-of-way, to be kept clear of both vegetation and structures will be only 26m corridor and approximately. Thus, the discovery of archaeological remains and sites in the proposed Transmission Line corridor and its environs is unlikely.
- Consultations with local communities and officials also demonstrate that there are no known archaeological and tangible cultural heritage sites along the proposed transmission line corridor.
- During survey, no palaeoanthropological evidences, such as, artifacts, ecofacts, fossils and features have been observed. The scarcity of archaeological sites in and around the project area might be also the product of the way of life, settlement patterns, and the use of perishable materials for construction and daily use purposes, which is unfavorable for the formation of archaeological sites. Nevertheless, there could be unobserved or buried archaeological materials and sites in the project area, which may unearth during the construction and implementation phase of the project.
- There are also no observable historical and cultural significance sites and structures within the proposed project site.
- No ancient mosques, ruined buildings, grave or ancient architectural burial structure cemeteries observed except for recent cairns and flat cemeteries in the study area.
- Nevertheless, six modern burial sites have been identified within the project site during survey and have documented.

#### 4.5.9 Burial Sites within the Transmission Line Corridor

Ground survey was conducted by making car transect and foot surveys. Six Burial Sites have been identified and documented during the archaeological/cultural heritage survey along the line Degahabur - Kebridehar 132 kV project. Almost all of them except the one at - Sassebene are relatively modern and have similarities. In all the cemetery sites visited there are no unique burial marks from Social, cultural or religious context, most of them are without any stone architectural structures or identifiable burial marks.

In Sassebene exist one unique doomed tomb cemeteries surrounded by ordinary cemeteries, which the local people explained belongs to a respected elder in the

community, known by name Ugur who is considered to be the father of the clan. Annually during Ramadan the people go to celebrate his life around the cemetery.

During consultations with local communities and their elected officials, potential impacts on burial and sites was raised as a major concern. According to the community members some of the local people bury family members in different places not only in designated burial sites. Some of the burial site may be located along the project corridor and they voiced their concern that some of these burial sites might be impacted by the proposed project activities.

#### 4.5.10 Awareness, Information about the Project

Regarding, information and knowledge of the proposed transmission line and substation projects, the surveyed respondents were asked if they have heard about the proposed project or not. Analysis of the survey results revealed that knowledge and information among the surveyed households is good and out of the total surveyed households 41% of the households claimed to have some previous information about the proposed projects. In contrast, majority (59%) of the surveyed households didn't have any prior information related to the proposed projects. Across the project Woredas, the proportion of surveyed households who have heard about the project is higher in Bodalay Woreda (63.3%) and lower (13.3%) in Birkot Woreda.

Those households who claimed to have some prior knowledge about the proposed project heard the information from different source. For example, the majority (over 75%) of the households reported that they have heard about the project from family members, relatives or neighbours, followed by Kebele officials (14%). Very few households came to know about the project from previous studies and from sub clan leaders. This shows that people residing within the project influence Kebeles have a number of sources to get information and identifying this different channel of communication will be valuable for the future implementation of the proposed project as it provides different options to reach to the local communities as and when required.

##### 4.5.10.1 Anticipated Positive Impacts by Survey Households

Survey households were asked to identify four potential benefits from the proposed project that they believe. Accordingly, about 91.7% of the households identified access to electricity as one of the most important beneficial impact they expect from the project to their communities.

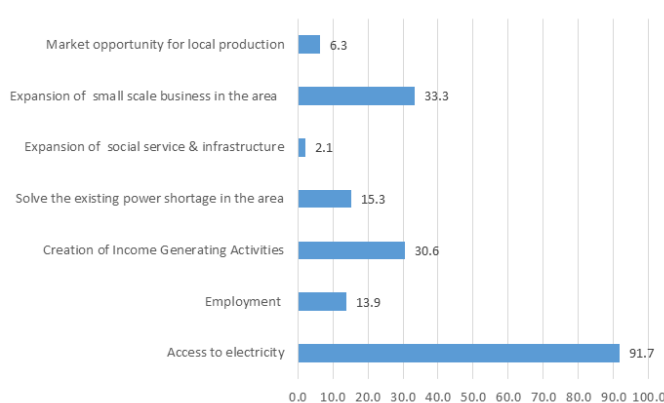


Figure 4.37: Proportions of HH that Anticipated Beneficial Impact by Types of Impacts

Expansion of small scale business in the area (33.3%) and creation of income generating activities (30.6%) in their communities were identified in second and their place as beneficial impact of the project. Other expected benefits include resolve the existing power shortage in the area (15.3%), employment opportunity (13.9%), market opportunity for local production (6.3%) and expansion of social service and infrastructure (2.1%).

##### 4.5.10.2 Anticipated Negative Impacts by Survey Households

95.8% of the surveyed households anticipated a number of adverse impacts from implementation of the proposed transmission line and substation project, while the

remaining 4.2% of the households do not expect any negative impact t.

Accordingly, Impact on residential house is the most frequently mentioned risks or potential adverse impacts of the project that reported by 110 households, followed by accident, noise & dust during construction work (82 HHs), loss of farm and grazing land (30 HHs), impact on communal land (19 HHs), impact on social services schools, water point etc. (6 HHs), impact on burial place, cultural, historical & other significant sites (3 HHs).

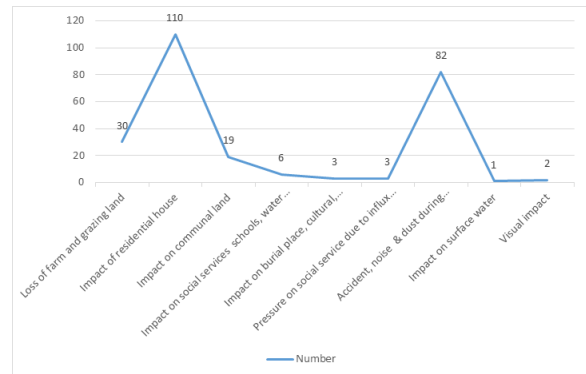


Figure 4.38: Number of HH that Anticipated Negative Impact by Types of Impacts

#### 4.5.10.3 Mitigation Measures Proposed by Survey Households

During the household interviews, respondents were also asked what mitigation measure they propose to avoid or reduce the potential impact of the proposed projects. Accordingly, a number of mitigation measures are proposed by the survey households and adequate compensation for loss of properties is the most mentioned mitigation measure proposed by 94 households. Strict safety measures to avoid potential negative impacts such as accident, noise & dust during construction work is reported by 79 respondents. 36 of the surveyed households recommended land replacement for loss of farmland as compensation.

Mitigation measures identified and proposed by households is presented in Table 4.24 below.

Table 4.24: Mitigation Measures Proposed by Survey Households

Mitigation measures	Number
Adequate compensation for loss of properties	94
Land replacement for loss of farmland	36
Strict Safety measures	79
Respect local culture	7
Avoid impact on burial, cultural & religious site	11
Minimize visual impact	2
Educate and create awareness about the local	29
Protect sensitive habitats	6
Avoiding impacts on biodiversity	4
Restoration of affected areas by the construction as soon as possible	3
Implementing appropriate working practices	7
Additional effort to support FHH & other vulnerable households	31

#### 4.5.11 Civil Societies/ Local NGOs Working in Project Influence area

There are NGOs active in the project-affected area. These NGOs, can act as a social watchdog in matters relating to securing the livelihoods of project-affected communities along with their related socio-cultural facets. They can also play a major role in building trust and even participate in implementing LRP initiatives.

The key concerns of these stakeholder group centres around justice and equal opportunities in matters of economic and social development being provided to PAHs. Therefore, they can also play a critical role in bringing to the limelight the issues of vulnerable members from the project-affected households.

**Table 4.25: List of NGOs Working in the project area**

No.	Name of NGO	Major Area of Intervention
1	World vision Ethiopia	Works on women economic empowerment
2	Care Ethiopia	Working on gender issues. Specifically they support women to be organized in group by establishing women self-help group so as to save money and enhance their livelihood. Works on eradication of harmful traditional practice/HTPs, empowering women economically/financially through saving and income generating activities, and eradication of gender based violence/GBV.
3	IMC	Works on eradicating of harmful traditional practice/HTPs, empowering women economically/financially through saving and income generating activities, and eradication of gender based violence/GBV.
4	Catholic Relieve Service	Works on ‘bulti Gari’ /Good family life that target to enhance women’s decision making power and gender equality.
5	ZOWA	Has been working in empowering women with disability.
6	Beza	Works in provision of loan for women without interest, in the form of revolving fund. What they provide for women groups is not cash rather they provide equipment/goods/machineries on credit used to produce and generate income.
7	Feed the future	Works on food security, and rehabilitation of water schemes
8	Save the children	Works in the area of health, food security, drinking water and child protection Working for drought affected area improving by accessing health service and providing support to malnourished children & Women
9	USAID	Rehabilitating of water supply system, installation of big water pipes, construction and maintenance of water points and generator/power house
10	OXFAM	Rehabilitating of water supply system, installation of big water pipes, construction and maintenance of water points and generator/power house Working on drought affected area by improving access to water to the community and also to their livestock by constructing and maintain water well in their vicinity. Improving access to sanitation facilities.
11	UNFPA	Works on eradicating of harmful traditional practice/HTPs/
12	Goal	Working in the agriculture, energy and water, sanitation and hygiene sectors
13	Ogaden welfare and development association (OWDA)	Livestock and Veterinary service Improving access to veterinary service to pastoralist community. Facilitate access to improved drinking water services and sanitary facilities by enhancing local capacities to ensure the functionality of water systems
14	MSF	Improving quality and accessibility of health service.



## 5. Analysis of Project Alternatives

### 5.1 General

A comprehensive environmental impact assessment requires not only the evaluation of the impacts resulting from the proposed project at a specific location resulting from construction process, but also a complete environmental impact assessment cycle requires as well detail assessment of possible alternatives.

Therefore, alternative analysis is carried out with the objective to address the optimal match between the required technical specifications and site conditions, as well as addressing any concerns for environmental, social, and economic features in each location.

Therefore, for the current project, two alternatives were considered namely:

- iii) *“No-Project” or “do-nothing” Alternative*
- iv) *Two Project Supply Alternatives*

The above alternatives were evaluated considering the following criteria:

- Biophysical conditions
- Socio-economic benefits
- Economic

The following sections provide a description of the project alternatives and analysis of the same with respect to environmental, social and economic features.

### 5.2 “No-Project” Expansion Alternative

The no-project alternative is a “do-nothing” approach, which allows only the existing transmission system to be functional. This alternative is the least biophysically damaging alternative due to the fact that no works will be done at the site and thus there will not be any interference with the biophysical environment. Nevertheless, this alternative will result in no value addition or socio-economic benefits, apart from that is obtained from the existing establishment.

### 5.3 The Proposed TL Corridor Alternatives

The proposed Degehabur – Kebridehar is an expanding 132 kV network from Degehabur to Kebridehar through the new Birkot substation. The project area starts from existing Degehabur Substation extends in south eastern direction by:

- Constructing 77.16 km single circuit 132 kV transmission line from existing Degehabur substation to Birkot substation,
- Constructing 129.02 km single circuit 132 kV transmission line from existing Kebridehar to Birkot new substation
- Construction of new 132/33 kV substations at Birkot
- Extension of existing 132 kV substations at Degehabur and Kebridehar.

### 5.4 Analysis/Evaluation of Alternatives

#### 5.4.1 Project Alternative to “No-project” Alternative

Ethiopia is the second most populous country in Sub-Saharan Africa. Despite its enormous potential, electricity is still a luxury for the majority of rural Ethiopians. Much

of this population survives in conditions of relative poverty and energy insecurity. Therefore, if the quality of life of this population is to be improved and environmental degradation halted then a considerable amount of new electricity generation and transmission capacity must be constructed.

Under EEP's grid expansion plan, the electricity coverage will increase from the existing 32% to 61% and the number of customers from 2.5 million to 7.0 million.

Results of the survey for this assessment showed that majority of families in the project affected area still rely on dirty and expensive kerosene wick lamps for lighting their homes at night. Therefore, improved power generation and transmission, will boost electricity supply capacities of the national grid making it not only accessible physically, but also affordable financially for the rural poor including those in the proposed project areas.

In the medium to long term, improved electricity transmission, by enhancing supply and curbing transmission losses, will facilitate rural electrification and make it possible for rural communities in Ethiopia as a whole and communities in the project areas to gain access to electricity – modern and affordable energy – an important milestone to achieving the UN Sustainable Development Goals (SDG).

Reliable power supply and improved service associated with it are fundamental to meeting the country's development goals and achieving the full benefits of other development initiatives.

Therefore, although the no-project expansion alternative has no additional environmental impacts it offers the least socio-economic benefits.

#### 5.4.2 Transmission Line Alternative Alignments

The new transmission line from Degehabur to Kebridehar comprises construction of 206 km long 132 kV Transmission Line from the extension of Degehabur substation. Although it is the only option presented in the Feasibility Report, the proposed route alignment is evaluated in terms of its environmental and social performances. The findings are presented below:

- There are no significant areas of natural or semi-natural forest all along the Project corridor, and no designated or protected areas of terrestrial ecological interest that will be affected by the proposed construction activities.
- A terrestrial vegetation survey - done in the course of the field investigations - confirms that no locally or regionally endangered species will be affected as a result of land clearing along the TL corridor.
- The presence of wildlife within the project area is reported and confirmed by the field investigation and also the local communities. However, there are no endangered or rare species entirely dependent on the project corridor.
- There are no species with restrictive habitat preferences that suffer the consequence of land clearing for the implementation of the project.
- The project corridor is neither contiguous with, nor in close proximity with any of the nationally protected areas.
- There are many birds in the project area. The Ethiopian Wildlife and Natural History Society (EWNHS, 1996) nationally designated 76 sites as Important Bird Areas (IBA). However, the project corridor is not contiguous with, nor in close proximity with any of the nationally designated Important Bird Areas (IBA).

- Cultural Sites: Checks have been made regarding sites of archaeological, cultural or tourism interest along the transmission line route. It has been confirmed that the proposed ROW has no archaeological, cultural or tourism importance.
- Livelihoods of local people: considering the whole route, implementation of the scheme will not significantly affect the livelihoods of local people, nor cause significant disruption.
- There are no tribal people or ethnic minorities within the project corridor whose traditional lifestyles could become compromised through the implementation of the proposed TL project. Therefore, no indigenous people development plan will be required.

Construction of the planned Degehabur – Kebridehar 132 kV TL Project and the installation of a new substation at Birkot and expansion of the existing Degehabur and Kebridehar substation is feasible, indeed attractive, from the technical, economic and environmental viewpoints.

There are no mitigation measures required which will significantly increase project construction costs. Most measures are considered to be subject to good engineering practice by the contractor.

The environmental impacts presented in Chapter 6 are all capable of control within acceptable limits. It is therefore concluded that, provided the benefit enhancement and mitigation measures as recommended in this ESIA report are adopted, there are no environmental and social grounds for not proceeding with implementation of the Degehabur – Kebridehar 132 kV TL Project along the proposed alignment and in the form presently envisaged.

With the “no-project” alternative, the development objectives for the country and expectations of the community around the project-impacted area will be compromised and slowed down.

Therefore, implementation of the proposed Degehabur – Kebridehar 132 kV Transmission Line project as presented in Chapter 2: Project Description Chapter is preferable to “No-project” alternative.

## 6. Environmental Impacts and Mitigation Measures

### 6.1 General

The planning, design and construction of an infrastructure project should consider the potential environmental and social issues/impacts in order to maximise the beneficial impacts and avoid or minimize the damages likely to be caused due to the project implementation and operation.

Therefore, it is important to identify and evaluate the potential impacts of the project construction and operation on the biophysical and socio-economic environment. This would assist to propose appropriate avoidance or remedial measures in advance so that they would be considered in the project planning and design phases and would be executed during the construction or operational phases.

With this principle in mind, the potential positive and negative impacts with their corresponding mitigation measures have been identified and described in the following sections.

### 6.2 Risk Rating of Environmental Impacts

An environmental impact is any change to the environment (physical, biological and socio-economical environment), whether adverse and beneficial, wholly or partially resulting from changes to an environmental aspect.

Evaluation of environmental impacts involves rating of the risks resulting from the particular impact. An environmental risk is defined as a risk that arises from the relationship of human interventions and the environment. For the current TL project, four risk classes were considered as indicated in Table 6.1.

The risk class of an impact is determined considering the consequence of the impact and its likelihood to occur. The following tables provide the levels and descriptions of impact consequences (Table 6.2) and likelihood (Table 6.3) considered in the evaluation.

Table 6.1: Environmental risk classes

Risk Class	Description
Low	Environmental impact with no or limited consequence and less likely to occur
Moderate	Environmental impacts with some consequences and likely to occur
Significant	Environmental impacts with significant consequence and likely to occur
High	Environmental impact with extremely high consequences & most likely to occur

Table 6.2: Consequence-levels of impacts

Level	Consequence	Description
1	Insignificant	Negligible environmental impact
2	Minor	Environmental damage requiring few mitigation measures
3	Moderate	Short-term environmental damage requiring some mitigation measures
4	Major	Medium-term environmental damage requiring considerable mitigation measures
5	Catastrophic	Long-term environmental damage requiring large scale mitigation measures

Table 6.3: Likelihood-occurrence probability of impacts

Level	Likelihood	Description
1	Rare	May occur only in exceptional circumstances
2	Unlikely	Not likely to occur in normal circumstances
3	Possible	Could occur at some time
4	Likely	Will probably occur in most circumstances
5	Almost Certain	Expected to occur in most circumstances and has a history of occurrence

After the consequence and likelihood of an impact is determined, its risk level is determined based on the risk matrix shown in (Table 6.4)

Table 6.4: Environmental impact risk matrix

	Likelihood	Consequence				
		Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
Likelihood	Almost Certain (5)	5	10	15	20	25
	Likely (4)	4	8	12	16	20
	Possible (3)	3	6	9	12	15
	Unlikely (2)	2	4	6	8	10
	Rare (1)	1	2	3	4	5

### 6.3 Beneficial Impacts

The key potentially beneficial impacts associated with implementation of the Degehabur – Kebridehar 132kV Transmission Line and Birkot substation projects are summarised below:

#### *Improved Access to clean and Reliable Electricity*

Under GTP II, EEP plans to increase electricity coverage from the existing 32% to 61% and the number of customers from 2.5 million to 7 million. All of these mean that Ethiopia needs to expand its electricity production, transmission and distribution capacity several fold to fuel its growing economy as well as expand rural population’s



access to electricity.

Therefore, the Degehabur – Kebridehar 132kV TL Project will be an important electricity transmission facility for achieving Ethiopia's GTP II energy goals.

#### *Improved and Reliable Power Supply*

The prime purpose of this project is to strengthen the eastern part of the country, improve the electrical capacity and supply of Degehabur, Kebridehar and Birkot, avail power for interconnection of Somaliland Besides, it will mitigate the current and future load growth in Degehabur town.

#### *Advance Ethio- Somaliland Economic and political Cooperation*

Ethiopia is partially started undertaking its import-export activities via the port of Berbera. Both Ethiopia and Somaliland have strong economic, social and political cooperation and ties. The two countries have a bilateral agreement involving the open boarder road which includes free movements of citizens in each country. The proposed project will raise trust between these countries and reduce the likelihood of conflict.

#### *Support East Africa Power Pool Goal*

East Africa Power Pool (EAPP) is a collaborative effort by eleven countries in East Africa and primary objective is to interconnect the electricity grids between these countries and take advantage of excess capacity within the network and facilitate trade of electric power at the lowest possible cost between the members.

This project will improve power trade and energy integration between Ethiopia and Somali Land. Therefore, implementation of the proposed project fits well into East Africa Power pool goal.

#### *Attracting and Expanding Investments in to the rural and urban economy*

According to the local officials, there are potential investment areas, which require adequate and reliable power supply. They claimed that their respective Woredas have promising potential for investment in areas such as livestock resources (for meat and milk process and canning), rock and sand (for construction), etc. It was learnt from the consultation that shortage of power supply is the main constraint to expanding the existing investments and attracting new ones. Therefore, enhanced capacity provided by the proposed TL project would help curb the existing shortage of electricity thereby contributing to the local as well as the regional industrial and economic development.

#### *Enhance application of new technologies in social facilities and infrastructures*

There is a rapid expansion of social facilities and infrastructures in the project affected Woredas and towns. These developments include health posts/centres, hospitals, pharmacies, rural drug stores, schools, universities, computer and electronic centres, telephone infrastructures, etc. However, the existing social facilities and infrastructures suffer either from serious shortage power supply, frequent power interruption or lack of connection at all. As a result, such social facilities and infrastructures are not in a position to provide reliable, adequate and efficient services and unable to use new technologies to deliver efficient services. The main benefit that the local people and authorities would like to get from the planned project is reliable electric power supply thereby ensuring the improved social facilities and infrastructures and application of new technologies for enhancing the quality of services being rendered to the local residents.

### *Expansion of small-scale business in services and commerce/trade*

During construction new small businesses such as catering services (bars and restaurants) will be initiated along the TL construction sites. These types of businesses could earn additional income to households due to the presence of large numbers construction workers in the project area. More traffic movement could also contribute to an increase in income-generating activities in the town sections located along the project transmission line corridor and surrounding areas.

In addition to improving access to domestic consumers, small local businesses including restaurants, small services, agro-processing industries and manufacturing workshops would benefit greatly from expanded distribution due to the project.

Power requiring micro and small-scale enterprises are rapidly growing in the project Woredas, particularly in major urban centres/towns. Moreover, the on-going rural electrification programmes requires expansion of grid network. Therefore, the project will spur the growth of small-scale business enterprises in the project Woredas. Currently, the existing small towns are growing faster and new settlements/rural centres are emerging across the project affected Woredas. These towns and centres are now attracting new investment and expansion in services and commerce. However, one of the bottlenecks for expansion of these sectors is lack of access to electricity and shortage of power supply. Therefore, the local people expect that the project would play a major role in boosting the existing services sectors (hotels, restaurants, bars, barbershops, salons, mills, photocopying shops, etc.) and other commercial activities/trades in small towns and rural centre/settlements.

### *Creating job opportunities*

Moderate number of people will receive new employment opportunity at the peak of construction activities. The creation of regular wage employment in the rural parts of project area is important, even though it will be on a relatively small scale, at relatively good rates of pay and for a limited period, since there are currently few other opportunities available.

Currently, there are very few gainful employment opportunities in the project area. Results of the households' baseline survey also revealed that they anticipate that the proposed project would create direct employment and market opportunities for their community members.

Although labour recruitment is a matter for the contractor, who has the right to determine whom they shall and shall not employ, he should be formally encouraged to hire locally wherever possible, in order to maximize the benefit distribution and social acceptability of the project. Therefore, the contractor will be required to use his best endeavour to maximize local hire of labour, as far as this is compatible with his skill requirements, and to maximize local procurement of supplies.

Based on similar scale projects in Ethiopia, the required number of skilled and semi-skilled workers is estimated at 320. During the peak construction periods, the job opportunities for unskilled (labourer) including the workers for supporting services will be about 2,250. The opportunity for female ranges between 5% & 10%. This will mainly be in the site project coordination offices. In addition, the workforce required during operation at the Birkot substation will be 13 professional and 15 semi-professional. The job opportunities for operators and workers for supporting services will be about 28.

### *Improve Community's Quality of Life*

In the proposed project area, livelihoods are extremely vulnerable and livelihood opportunities are few and far in between. Communities along 75% of the project corridor are predominantly pastoralists and they have repeatedly lost the pillars of their

livelihood – livestock – due to severe and frequent droughts.

Much of the population in the project area survive in conditions of relative poverty and energy insecurity. They use firewood for cooking and heating thereby exploiting an ever diminishing resource and contributing to soil erosion, soil degradation and habitat destruction. If the quality of life of this population is to be improved and environmental degradation halted then a considerable new rural electricity projects must be implemented.

#### *Gender Issues*

Women will benefit from the employment opportunities that will be created and from convenient and safe access to electricity service. The improvements in power supply will promote the use of household electric equipment like oven, cooking materials, washing machine, etc. These equipment will reduce the work burden of women, improve living standards and their health conditions.

The temporary and secondary beneficial impacts on local businesses mentioned above are also likely to benefit local women working at local markets, within hotels providing lodgings and retail opportunities to construction site workers.

#### *Deforestation and Climate Change*

The enhancements of power transmission and distribution network will reduce the dependence on more carbon intensive localized energy sources such as biomass fuelled stoves and diesel generators. A reduction in the use of biomass will also help reduce the rate of deforestation, which is a significant issue in the region and the wider study area.

Implementation of the proposed TL project permits to satisfy the energy requirement. Hence, the project will further reduce the use of fossil combustibles diesel generators and reduce dependence on fuel-wood when burned, would have produced pollutant emissions, particularly CO<sub>2</sub>, for the atmosphere. Therefore, when the demand for energy is supplied by the proposed project, it will lead to a reduction of CO<sub>2</sub> emission.

## **6.4 Adverse Impacts on Physical Environment**

### **6.4.1 Erosion of Earthworks**

The installation of the TL and Substation project requires about 12.88ha (i.e. 3.88ha for tower foundation and 9.0ha for substation at Birkot). It also needs additional land for the construction of the access road. Hence, preparation and construction of the TL along the proposed corridor and access road will involve major clearing and earthworks for construction of the tower foundation and drainage facilities, as well as for extraction of materials from borrow sites. These earthwork activities will remove/disturb the topsoil and expose it to runoff water erosion and wind erosion.

The soils of the project area are highly erodible and coupled with rainstorms earthworks are likely to be susceptible to erosion.

#### **Recommended Mitigation Measures**

Installation of appropriate drainage systems to minimize the flow of water and establishment of vegetative cover, are all proven means of reducing erosion problems. However, to ensure continued minimization of the problem it is recommended to implement the following mitigation measures:

- Within the project boundary and along the project access road alignment, restrict land clearing to what is absolutely necessary;
- Design and construct suitable permanent drainage structures including:

- Paved side drains for sections vulnerable to serious erosion and gully formation (mainly around tower foundation areas and within the SS); and
- Diverting drains (where these are necessary), which avoid excessive concentration of flows.
- Minimize side-casting of excavation materials at construction site and along the access road corridor by depositing it only on approved disposal sites;
- Along the access road corridor, replanting cleared areas on slopes vulnerable to erosion such as cut-and-fill slopes with plant species (grasses) which have the abilities to:
  - armour the surface against erosion and abrasion by intercepting raindrops;
  - support the slope by propping from the base; and
  - reinforce the soil profile by increasing its shear resistance (roots); etc.,
- Preserving topsoil from the project boundary and road cuts for re-use during site restoration on laydown and other areas used for temporary purposes.

The risk rating of impacts from soil erosion is classified as moderate, which is environmental impact with some consequences and likely to occur. Implementation of the above mitigation measures is expected to reduce the risk rating to Low, which is environmental impacts with no or limited consequence and less likely to occur.

#### 6.4.2 Competition for Water Resources

Water is one of the main resource to be used for different purposes during construction phase such as drinking and domestic consumption and for concrete and access road works, etc.

As discussed above, water is highly valued in pastoralist communities of the project influence areas where the inhabitants experience frequent hardship of fetching water from long distance. There is no perennial river flowing along the TL corridor except the Fafen River.

#### Recommended Mitigation Measures

In general, water is a scarce resource in the project area. Therefore, for efficient use of water the Contractor shall consider the following mitigation measures:

- The Contractor will not use the existing community wells;
- In consultation and without affecting the availability of water resources for existing users, the Contractor is responsible to make arrangements to supply the water demand for construction and other purposes;
- The Contractor will need to develop its own water supply sources (i.e. to buy water from licensed suppliers or wells) for the construction and the campsites requirements; and
- In the event of there being any valid dispute regarding the effect the contractor's arrangements may have on the water supply of others, the contractor shall be responsible for providing an alternative supply to those affected, which is not inferior in quantity or quality to that previously enjoyed.

The risk rating of impacts from competition for water resources is classified as moderate, which is environmental impact with some consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Low, which is environmental impact with no or limited consequence and less likely to occur.

### 6.4.3 Noise and Vibration Impact

In and around the project area and along the access road corridor the noise sources include vehicular traffic and the hooting of the vehicles along the existing access road, and human activity including religious institutions and livestock noise at villages. Close to the project area and along the access road there are few rural settlements.

Sustained noise levels during construction are expected to be much higher than the ambient noise level in the project site and along the access road. Noise and vibration result from construction activities in general but particularly from operation of heavy machinery. Other operations generating significant noise include concrete mixing plants and if required excavation and stone crushing.

The summary table below provides the list of the primary sources of noise and vibration associated with the Construction Phase.

Source	Emissions of Primary Concern	Comments
On site vehicle movements	Noise	Movement of vehicles throughout the Project work areas, including access road construction areas.
Construction plant	Noise & Vibration	Compressors, concrete mixers, impact equipment etc. used during construction
Earth works	Noise	Loading and movement of heavy machinery throughout the Project area, access roads.
Power generation	Noise	Noise from temporary generators.
Offsite vehicle movements	Noise & vibration	Movement of vehicles, particularly haulage or heavy equipment vehicles in proximity to residential and commercial properties

These sensitive receptors were identified through visual potential impact assessment to the project area and through the analysis of maps. Sensitive receptors include:

- There are rural settlements and population potentially exposed to noise and vibration from the project and upgrading of the access road;
- There are vulnerable targets (school, clinic, worship place, local administration offices, etc.) exposed to noise and vibration from the project and construction of new or upgrading of existing access road;
- There are no areas designated for protection from noise and vibrations in areas affected by the project; and
- There are no sensitive ecological receptors like protected or classified areas, protected or endangered habitats and species within the project influence area.

Ambient noise levels within project influence area is not measured. However, in the absence major noise sources in the area, the ambient noise level is well below existing national standards for low density residential areas.

There is no any historic monument in the immediate vicinity of the project area that will be affected by activities producing high vibration levels. Therefore, no mitigation measure to protect historic monument is recommended.

#### Recommended Mitigation Measures

Therefore, to cause the least inconvenience due to excessive noise to construction workers and the population around the sites, the Contractor shall:

- Coordinate and implement all noise and vibration control measures to ensure National and AfDB standards are met;



- Noise hazard depends on noise intensity, duration of exposure during a typical working day and overall exposure during working life. Therefore, Contractor shall carry out noise surveys to determine the degree of hazardous noise exposure specially around the Birkot Substation by surveying any area in which workers are likely to be exposed to hazardous noise (>80 dBA) level;
- Controls shall be undertaken to reduce exposures to >80 dBA, including layout of equipment, selection of quieter machines, isolation of workers from noise source etc.
- Minimize worker exposure to noise and vibration by providing appropriate PPE, hearing protection and noise control device as required;
- A proper routine and preventive maintenance procedure for project vehicles and equipment should be set for their best operating conditions and lowest noise levels possible so that extraneous noises from mechanical vibration, creaking and squeaking are reduced to a minimum;
- Construction equipment generating high noise shall be designed to have an adequate noise control (such as mufflers, silenced exhaust acoustic);
- Driver to avoid reviving the vehicle while the vehicle is idle; and
- Conduct job-specific training for machinery and heavy vehicle operators to cover the importance of noise control and available noise reduction measures.

The risk rating of impacts on noise environment is classified as moderate, which is environmental impact with some consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Low, which is environmental impact with no or limited consequence and less likely to occur

The Contractor shall develop job specific noise and vibration management plans at the commencement of works (C-ESMP) where noise and/or vibration issues can be expected.

#### 6.4.4 Air Pollution

The main processes of construction of the TL project is to emit particulate matter into the ambient air (i.e. Construction dust and debris). During construction there will be deterioration in air quality due to the generation of suspended particles/fugitive dust from concrete batching plants, construction works, construction equipment and emissions from vehicles have the potential to negatively affect air quality in the vicinity of the construction sites and access roads.

However, many of these operations will take place in locations away from populated settlement areas. Therefore, the likelihood and consequences of these impacts result in a moderate risk rating. However, where the road passes through village, raised dust can cause considerable nuisance, and can result in increased health issues including respiratory disease, eye, nose and throat irritation, etc. This health risk may arise particularly in situations where animal droppings, refuse and other wastes lie on access road, and transmission of bacterial infections can take place through inhalation or ingestion of raised dust.

Although temporarily excessive dust will impact construction workers and community living close to the project influence area. Thus, it is important to limit dust in the work environment and to the nearby communities.

At the present time, traffic emissions and other air pollution hazards are not viewed as a major problem by local populations because traffic volumes are low and tolerance levels are high.

## Recommended Mitigation Measures

Recognised good site practice must be followed to minimise dust production and vehicle emissions, this will protect the construction workers and those community that cross the project area.

The potential environmental impacts related to air quality will be avoided or reduced by implementing the following mitigation and management measures:

- To prevent high dust near settlements, traffic speed should be reduced to 30km/hr;
- Reduce the duration of construction activities resulting in more dust generation;
- Vehicle speed at village crossing will be limited by instructions to drivers. This will be enhanced by the installation of speed limit signals as appropriate;
- Concrete mixing plants and associated machinery installed for project activities will be equipped with suitable pollution control (dust suppression equipment) arrangements;
- Construction machinery should be well maintained to minimize excessive gaseous emissions;
- Prevent the occurrence of smoke emissions or fumes from fuel oils;
- Avoid exposing any volatile chemical to the atmosphere;
- Burn waste and/or garbage in designated areas and at a distance of at least 1 km from nearby villages and in accordance with Applicable Law; and
- Do not burn material which produces toxic gases. No burning is allowed to materials such as tires, plastic, rubber products or other materials that create heavy smoke or nuisance odour.

The Contractor is responsible to develop an ambient air quality monitoring and management plan (C-ESMP), with particular focus on dust monitoring. The Contractor is also responsible to monitor the air pollution risk at all construction sites, campsite, access roads and near settlements/villages.

Considering the level of emissions arising from vehicles and equipment's associated with construction activities and the limited scale, duration of the construction works and the distance of project site/activities from sensitive receptors, the significance of air quality impact is considered to be Moderate. Effective implementation of the above mitigation measures is expected to reduce the risk rating of impact due to emission of particulate matter to a Low rating, which is environmental impacts with no or limited consequence and less likely to occur

### 6.4.5 Water Pollution

Rivers, groundwater and harvested water stored in open and unprotected ponds are used for water supply purposes throughout the project area for drinking, washing purposes and cattle watering.

Pollution of these resources may arise at or close to the base camps or work sites as a result of inadequate provision of sanitary and waste facilities, and accidental or deliberate spillage or leakage of polluting materials. Inappropriate disposal of refuse and some materials used in construction can also lead to public and animal health hazards. Such pollution adversely affects those who depend on local water resources, can have serious long-term effects on water quality.

### Recommended Mitigation Measures

- The Contractor is required to prevent entrance or accidental spillage of pollutants and wastes into flowing and/or dry water courses and groundwater resources.
- The contractor is required to prohibit washing of project vehicles and plant in or adjacent to any water sources. All washing to be carried out at designated areas away from water sources; and
- The contractor is required to make specific and adequate provision for the disposal of sanitary and other liquid and solid wastes in such a way as will not result in any form of pollution or hazard to human or animal health;
- The contractor is required to collect and treat storm water runoff from open workshop servicing and repairs and other areas in bonded storage areas before discharging into receiving drainage and waterways;
- Ensure all hazardous materials are stored in designated areas (i.e. on flat or gently sloping ground) to prevent spillage;
- Ensure appropriate hazardous materials containers are used with seals that are in good condition (i.e. glass containers for corrosive chemicals);
- Ensure employees have appropriate training in safe hazardous materials handling;
- Remove and dispose wastes from septic tanks installed for construction crew camps at appropriate interval & at designated sites to avoid overflow and prevent contamination of the ground or surface drainage; and
- The contractor is responsible, at his own cost, for cleaning up any pollution caused by his activities and the payment of full compensation to those affected.

The risk rating of impacts on water pollution is classified as moderate, which is environmental impact with some consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Low, which is environmental impact with no or limited consequence and less likely to occur

#### 6.4.6 Impacts from Solid Wastes

Large scale construction work like Degehabur – Kebridehar TL Project will produce considerable amount of construction waste. These wastes unless properly managed, would cause pollution of the environment and that is air, land, and surface and ground water resources.

The major waste materials (and their sources) that can be generated during construction of the Project include:

- Waste generated by construction works, construction campsite and other facilities;
- containers for various construction materials and plastics;
- used lumber for scaffolding material, packing material;
- metal scraps from different construction sites;
- hazardous solid wastes such as discharged fuel filters, batteries, etc. of vehicles and machinery; and
- Hazardous solid wastes such as paints and solvents and clinical or medical wastes.

### Recommended Mitigation Measures

The Contractor shall apply the duty of care principles to waste management activities to ensure that waste is managed in accordance with the requirements of this plan and that waste does not pose a threat to human health or the environment.

As a general practice at the construction site, the Contractor shall adopt the following waste minimization hierarchy that prioritises waste management solutions and these include reduce the overall amount of waste, reuse and recycling of any wastes that are unavoidably created and disposal as a last resort. Any waste material which is unable to be reused, reprocessed or recycled shall be disposed at a landfill.

The potential environmental impacts related to solid wastes generated by construction activities will be avoided or reduced by implementing the following mitigation and management measures:

- Construction wastes will not be allowed to accumulate on the construction site but will be promptly collected and removed regularly from the site by the Contractor;
- Indiscriminate disposal of solid waste shall be strictly prohibited;
- Sufficient number of labelled and colour coded garbage bins and container will be made available at all construction offices, stores, camps, canteens, etc. to ensure wastes are strictly segregated at generation sites (source). Waste bins shall be labelled in Amharic, Somali and English and according to standards;
- Wastes will be appropriately segregated such that hazardous and non-hazardous wastes are not mixed and to allow for recycling and reuse where appropriate;
- Waste materials will be placed and stored in suitable containers. Storage areas and containers will be maintained in a sanitary condition and shall be covered to prevent spreading of wastes by wind or animals;
- All wastes generated shall be correctly identified and stored pending collection/transfer for reuse, recovery, recycling or disposal in an environmentally sound manner;
- Any waste material that is inadvertently disposed in or adjacent to any watercourses will be removed immediately in a manner that minimizes adverse impacts, and the original drainage pattern will be restored;
- All wastes, which are not designated as combustible waste to be burned on-site, will be recycled, disposed of in an approved landfill, or shipped to an approved disposal facility; and
- Solids, sludge and other pollutants generated as a result of construction or removed during the course of treatment or control of wastewaters will be disposed of in a sanitary landfill and prevented their direct or indirect discharge to any watercourse or ground waters.

### **Hazardous Waste Management**

As the construction site is expected to have hazardous materials like chemicals, hydrocarbons, etc., the removal and disposal of hazardous wastes in the project site should follow nationally or internationally recognized procedures.

Therefore, the Contractor shall properly store (or stockpiled) the hazardous waste on site at designated location and warning signs shall be posted and handled.

There are no licensed hazardous waste disposal sites around the construction area. Therefore, the management measures include the following:

- Respect, as minimum requirements national and international laws, codes and guidelines and to apply the strictest standards everywhere feasible. These include Proclamation 513/2007: Solid Waste Management and Proclamation 300/2002: Environmental Pollution Control and IFC Performance Standard 3: Resource Efficiency and Pollution Prevention;

- All hazardous waste shall be disposed of in accordance with the national legislative requirements;
- Immediate remedial action will be taken following any spill or incident of hazardous wastes at disposal sites. These will include:
  - Site operators must ensure that spilled products are immediately cleaned to prevent seepage of the same into the nearby river and groundwater;
  - Establish temporary and permanent spill containment structure;
  - Know the location and proper use of clean-up material;
  - Ensure appropriate PPE is provided and used; and
  - Develop and implement emergency preparedness and response plan.

### Medical Waste Management

- At the project site there will be a clinic and therefore all medical wastes shall be strictly segregated from other waste types to avoid cross contamination and temporarily stored in secured and labelled containers;
- All personnel handling infectious medical waste shall wear gloves and additional protective medical clothing and personal protective equipment ( PPE) appropriate to the level of risk they encounter and will remove any protective medical clothing used prior to leaving the work area and to place it in a designated area or container; and
- All waste from the medical centre and the first aid posts shall be packed in containers designated for that purpose and discarded according to the rules and regulations established for the disposal of medical waste.

The Contractor will prepare its own construction waste management plan (C-ESMP) taking into account of this Waste Management Plan as a framework and minimum requirement. The Waste Management Plan shall provide waste management measures, reflecting the AfDB requirements.

Therefore, as a minimum the Contractor shall make a clear coverage on the following points.

- The identification of waste streams to be produced by the project;
- The waste tracking system to be put in place; and
- The waste minimization including recycling and waste disposal options.

The risk rating of impacts from solid wastes is classified as moderate, which is environmental impact with some consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Low, which is environmental impact with no or limited consequence and less likely to occur

## 6.5 Adverse Impacts on Biological Environment

### 6.5.1 Impact on the vegetation and terrestrial ecology

One of the major unavoidable impacts of the proposed project will be land clearing for the construction of the construction of tower foundation and Birkot Substation. Therefore, the proposed TL corridor although confined to a narrow but long corridor (26m x 206km) will require 535.6ha of scattered natural vegetation, mainly shrub land of acacia domination land clearance along the ROW.

Transmission line construction and maintenance can lead to the permanent removal of woody vegetation and in some cases to the complete conversion of the strips of vegetation cover into bare land or land covered by completely different vegetation communities.



However, there are no significant areas of natural or semi-natural forest in and around the project area, and no designated or protected areas of terrestrial ecological interest will be affected by the proposed construction activities.

A terrestrial vegetation survey – done in the course of the field investigation confirms that no locally or regionally endangered species will be affected as a result of the proposed Project and the access road construction. There is no critical habitat that will be impacted by the project.

Potential construction and operational period terrestrial vegetation impacts are described as follows:

- The direct impacts which results from implementation of this project is clearing of natural vegetation for the construction of towers of the transmission line, construction of new substation at Birkot and access roads and construction of temporary campsites etc.;
- This clearing can lead to the permanent removal of woody vegetation and in some cases to the complete conversion of the remaining strips of vegetation cover into bare land or land covered by completely different short growing vegetation communities; and
- The vegetation that will potentially be affected include remnant of patchy and strip of vegetation within the proposed TL route corridor.

### Recommended Mitigation Measures

Although the TL and the new substation projects and the associated access road are located in an ecologically less important area, as much as possible excessive destruction of the limited shrubs and small trees will be avoided or compensated.

It is recommended to adhere to principles of environmental conservation during the construction in order to avoid excessive destruction of vegetation and disturbance of land in the construction area.

Therefore, the Contractor shall implement the following mitigation measures to minimise the destruction of natural vegetation:

- Avoid unnecessary destruction of trees and other vegetation by restricting land clearing to what is absolutely necessary within the project boundary and along the access road alignment;
- Consider the location of mature trees during route selection for the access road construction and land clearing for quarry/borrow sites if required;
- Rehabilitation of temporary construction sites and camps should be done with suitable native grasses and other plants;
- All damaged areas shall be reinstated and rehabilitated upon completion of the construction; and
- The contractor is responsible for the conduct of his workforce in relation to environmental protection matters and to prohibit unnecessary felling of trees.
- Compensate in cash for the loss of privately-owned mature trees;
- The contractor will be responsible for any fire accident caused by his activities within the project area;
- The contractor is responsible for the conduct of his workforce in relation to environmental protection matters and to specifically prohibit unnecessary felling of trees;

- There should be care to avoid introduction of invasive alien species. Early detection and eradication is recommended.

It is, recommended that the project area should not be the source of invasion of the surrounding area. Therefore, as required EEP should start regular monitoring of the corridor and initiate with selective removal of the invasive alien species - *Prosopis juliflora* from the project site.

As it stands now, land that the TL project seeks to acquire neither occupied by human settlement nor is it put to any significant economic use yet. However, this should not diminish the value of that piece of land to the collective needs of local communities who own it collectively.

Land and land-based natural resources are communally owned and therefore compensation payment should target communities affected by land acquisition. Therefore, as environmental mitigation and management measures, it is recommended for EEP to finance the establishment of nurseries within all affected Woredas.

The risk rating of impacts on natural vegetation is classified as moderate, which is environmental impact with some consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Low, which is environmental impact with no or limited consequence and less likely to occur.

## 6.5.2 Impacts on Wildlife and their Habitat

### 6.5.2.1 Impacts on Wildlife Habitat

It is inevitable that construction of the Degehabur – Kebridehar TL project and its associated and the new Birkot substation will involve clearance of scattered natural shrub-land vegetation.

There will be no major habitat fragmentation, since the towers and associated facilities will be constructed in a habitat that is already degraded by human settlement and cultivation activities. This loss is not expected to bring about marked differences in the available habitat for the wildlife, since there is sufficient similar habitat in the area.

There are no ecological sites or wildlife habitats considered to be either critical, fragile or high value within the corridor of the proposed power line and no significant impact is expected on such habitats.

There will be no destruction of valuable wildlife habitats and impediments to wildlife movements during construction or operation of the Project.

### Recommended Mitigation Measures

It may be possible to avoid or minimize direct and temporary impacts on the sites by the carefully planning the location and erection of structures. Therefore, to mitigate habitat disturbance and alteration the following measures may be implemented:

- As much as possible the size of the area to be cleared and used for the project should be minimized;
- Vehicles and trucks as much as possible should use the existing roads to minimize foot and vehicle traffic through undisturbed areas and loss of habitat by wildlife;
- Habitat restoration activities should be initiated after construction activities are completed; and
- Secure the safe movement of animals displaced and an attempt to protect in their new habitat must be carried out.

### 6.5.2.2 Impacts on Wildlife Resource

As with the vegetation, the original wildlife habitat along the project area has been modified by man. Particular pressures include hunting, charcoaling, and grazing competition by livestock. There are no significant wildlife habitats reported to exist in the Project Area.

The Proposed Project would not result in a long-term decrease in economically or ecologically important wildlife populations. Overall, impacts to wildlife from the project would be relatively minor and short-term ceasing once construction is completed.

No wildlife sanctuaries or protected habitat sites have been identified in and around the project area. There are no ecological sites of high value within the ROW/corridor for Degehabur to Kebridehar TL project and no significant impact is expected on such habitats. However, endangered animal species have been identified.

The wildlife wonder around the area in search of water and grazing resources. Therefore, relatively minor localized impediments to wildlife movements is expected during construction. However, the project development will not disrupt an established migration route for the wildlife resources that graze and shelter in and around the project area.

The response of wildlife to such disturbance is highly variable and depends on species. Some species may become readily familiarized to daily site activities; others temporarily move from the area. Foraging, nesting and mating behavioral activities of the little existing wildlife in the project area may be affected as a result of construction of towers, support facilities, access roads, and transmission lines. Wildlife may avoid foraging, nesting or remove active nest sites in areas where construction is taking place. Overall, this impact to wildlife from the project would be relatively minor and short-term ceasing once construction is complete.

### Recommended Mitigation Measures

In addition to the above, the following mitigation measures are recommended to offset the adverse impacts posed by the construction of the project:-

- The contractor will be on the lookout for the conduct of their own workforce in relation to environmental protection matters and to specifically prohibit unnecessary felling of trees, killing of any wildlife, etc.;
- The contractor should organise on-job “awareness creation” training so that the construction workers refrain as much as possible from adversely affecting wild animals by avoiding illegal hunting, unnecessary deforestation, creation of noise etc.;
- Implement special and strong regulation and enforcement measures against hunting wildlife that move in search of alternative shelters; and
- EEP to carryout periodic monitoring of habitat integrity of the area to check that these threatened wildlife and birds are safe and secure;

### 6.5.2.3 Impacts on Wildlife due to Construction Accidents

Construction activity and clearing activities may result in the direct injury or death to wildlife in some construction sites. Especially, wild animals which are not mobile enough to avoid construction operations for example; reptiles, small mammals and young, wild animals that utilize burrows; such as ground squirrels and burrowing Owls, or birds that are ground-nesting will suffer most. Although, larger mammals and birds avoid the habitat in the initial clearing activity by moving into the adjacent areas, as the project area is surrounded by humans the displaced animals face a threat by both human and other wild animals. They are poached by human on their way to other habitat, face difficulties from other wild animals due to competition for shelter and feed.

Accident is a major impact posed by various machineries such as excavation equipment for the preparation of foundation and vehicles may cause disturbance to wildlife; and eventually, the situation may force the wildlife to leave part of their habitats. Furthermore, wildlife can be killed or disturbed by vehicles unless speed limits are obeyed on the construction access roads.

Tree cutting may be required every few years. Although, this impact has only minor significance on local wildlife, these activities would result in minor impacts to wildlife. Mobile animals would be displaced to adjacent undisturbed habitats.

Movements of human and traffic in the project area may also pose injury to wildlife, in case such conditions occur the following measure should be applied.

### **Recommended Mitigation Measures**

The following activities can reduce injury to wildlife;

- The project work force should be instructed to avoid harassment and disruption of wildlife, especially during reproductive seasons;
- If site monitoring or inspection shows that, proposed facilities pose impacts to habitats of concern to wildlife and birds, an alternative method should be considered;
- If the use of explosive is necessary, it should be used only within specified time and distances from the wildlife sensitive area.
- The local residents should be made aware by EEP's EMU about the importance of the risk to wildlife, so that they contribute to the effort of protection of wildlife.

#### **6.5.2.4 Impact on Wildlife due to Construction Noises**

Disturbance to wildlife may also be caused by noise pollution to the wildlife in the area. Main sources of noise during construction activities include; truck traffic, operation of heavy machinery and tower foundation excavation/blasting, stringing, etc.

The most adverse impacts of construction noise to wildlife are the disruption of such as mating and nesting of birds and other animals. If birds are sufficiently disrupted during nesting season, this may cause the displacement of birds from their nest. The eggs and young of the displaced birds would be exposed to predators.

These may temporarily cause disturbance to wildlife. However, this situation will not force the wildlife to leave part of their habitats.

### **Recommended Mitigation Measures**

- To help avoid the adverse impacts of noise generated by the Project, the practice of limiting construction within the 26 meter clearance right-of-way area of the corridor should be enforced in regards to the location of sensitive noise receptors;
- Equipment normally producing high levels of noise should be avoided and screened when working within a known wildlife habitat or other sensitive noise receptors; and
- Project vehicles and construction equipment should be in good working order and have noise reduction devices to reduce accidents.

#### **6.5.2.5 Impact from Contamination/wastes**

The local authorities consulted during the environmental field surveys have confirmed that recurrent droughts, war, extensive use/over-exploitation of habitats for livestock grazing and hunting pressure have had and still having detrimental impacts on the wildlife resources of the project area.

The little wildlife that exist sometime wonder around the area in search of water and grazing resources. Therefore, although minor they may be impacted by construction spoil, toxic wastes such as oil spills, fuel leaks, greases, used motor oils, construction paints, cement, plastics unless prevented and managed properly can poison or harm the animals as a result of polluting water.

Litter from poorly handled waste bins, and organic pollution from human waste which can be resulted from ineffective sanitation arrangements may directly or indirectly cause diseases to wildlife.

Although, such exposures are not expected under normal construction and operation phases of the TL, these materials could affect reproduction, growth, development, or survival of the exposed species. However, only small amounts of these materials may be accidentally spilled.

### Recommended Mitigation Measures

To avoid potential impacts of accidental spill, the following measures should be realized:

- Make provisions of waste disposal facilities (for both human and construction wastes) to prevent transmission of disease to wildlife.
- Fueling should be done in a designated area and as much as possible limit the spread of any spill beyond that area;
- Drip pans should be used during refueling to take care of accidental releases; and
- Ensure petroleum products and hazardous substances are being transported, handled and stored properly to and at all construction sites.

The risk rating of impacts on wildlife due to construction noises and their habitat is Moderate, which is environmental impacts with some consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Low, which is environmental impact with no or limited consequence and less likely to occur

### 6.5.3 Birds and Bats Collisions

The construction of Transmission Line and the facility required may impact birds and bats by creating barrier effects. Birds may be restricted from the use of habitats adjacent to these developments. In addition, active construction may affect movements or can displace some birds and bats; for example, they may avoid a localized migratory route. It has been found out that slight change in flight direction, height or speed may result in fitness problem to the bird.

The Degehabur – Kebridehar Transmission project influence area contains a variety of bird species. However, the project corridor is not contiguous with, nor in close proximity with any of the nationally designated Important Bird Areas (IBA).

Power transmission lines pose a number of threats to a variety of birds including migratory birds. Mortalities from collisions with power lines and electrocutions on poles are documented (Jalkotzy *et al.* 1997). Those bird species most vulnerable to collision are generally “poor” fliers such as the ducks and geese, while electrocution victims are usually birds of prey.

The three major impacts of TL on bird species include:

- Mortality through collision with power lines
- Mortality through electrocution
- Habitat disturbance (Displacement)



The main types of risk to birds that would result from the development of the proposed power line are discussed below.

The Degehabur – Kebridehar Transmission Line route is far away from migratory birds' flyway. Therefore, there is no risk of collision to migratory birds.

### **Mortality through collision and electrocution**

Electrocution and collision are probably the biggest single threat posed among the medium-sized and large birds observed such as Storks, Eagles, Vultures, other Raptors, Owls, Ravens and Bustards. Most heavily impacted upon are bustards, storks, herons and various species of water birds. These species are mostly heavy-bodied birds with limited maneuverability, which makes it difficult for them to take the necessary evasive action to avoid colliding with power lines (van Rooyen 2004; Anderson 2001; Shaw 2013).

The risk of avian collisions with Degehabur – Kebridehar Transmission project and structures would be long-term, but also relatively minor based on existing conditions. Although minor, the risk of avian collisions with the power lines might be slightly higher around the water bodies (i.e. especially around river crossings during rainy seasons).

### **Habitat disturbance (Displacement)**

During the construction phase and maintenance of power lines and substations, some habitat destruction and transformation inevitably takes place. This happens with the construction of access roads, the clearing of servitudes and the levelling of substation yards. Servitudes have to be cleared of excess vegetation at regular intervals in order to allow access to the line for maintenance, to prevent vegetation from intruding into the legally prescribed clearance gap between the ground and the conductors and to minimize the risk of fire under the line, which can result in electrical flashovers. These activities have an impact on birds breeding, foraging and roosting in or in close proximity of the servitude through transformation of habitat, which could result in temporary or permanent displacement.

In the present instance and given the nature of the habitat, the risk of displacement of Red Data species due to habitat destruction is likely to be fairly low. Apart from direct habitat destruction, the above mentioned construction and maintenance activities also impact on birds through disturbance, particularly during breeding activities. This could lead to breeding failure if the disturbance happens during a critical part of the breeding cycle.

As far as disturbance is concerned, a potential situation may arise if the line is constructed near an existing transmission line. As mentioned earlier in this report, transmission lines are highly sought after by large raptors, particularly *Vultures*, *Steppe Eagles*, *Tawny Eagles* and other large water birds for roosting and breeding purposes. The species that will be most directly affected by the loss of habitat are the smaller, non-threatened passerines that are currently potentially resident in the development area.

### **Recommended Mitigation Measures**

It has been already identified that, birds and bat collision with transmission lines is the main adverse impacts associated with construction of such projects. In general, collision usually happens at night or at dawn and dusk when visibility is low. Therefore, the mitigation measures include:

#### **a) Mitigation Measure for Electrocution**

Electrocution mitigation can be far more controlled than collision mitigation, which requires ensuring that a bird cannot touch the relevant components.

The mitigation measures include:

- To design an avian-safe power pole to minimize bird electrocution risk by providing sufficient separation between energized phase conductors and between phases and grounded hardware to accommodate at least the wrist-to-wrist or head-to-foot distance of a bird;
- The use of a steel or concrete monopole structure with sufficient clearance would minimize electrocution risks to avifauna; and
- Cross-arms, insulators and other parts of the power lines can be constructed so that there is no space for birds to perch where they can be proximate to energized wires.

#### **b) Mitigation Measure for Collision**

One way of mitigation measures is when planning for high voltage transmission projects, areas identified as protected area and locations of known concentrations of vulnerable bird species and flight paths should be avoided wherever feasible. If it is in the construction phase where potential for interactions between vulnerable bird species and high voltage overhead lines are identified through ecological impact assessment, mitigation measures can be employed to significantly reduce or remove the risk of collision. Where this is not a feasible solution, various types of bird diverters shall be developed to increase the visibility of overhead wires (conductors and/or earth wires) to birds. These structures are attached directly onto the lines.

Few comprehensive experimental studies on ways to reduce avian collisions with power lines have been carried out. Mitigation options considered include: reviewing the placement of proposed new lines; removing the earth-wire which is usually the highest, thinnest and most problematic component in an overhead power line configuration; or fitting this wire with markers - brightly colored 'aviation' balls, thickened wire coils, luminescent, shiny or hinged flashing or flapping devices. All of these options reduce bird collision frequency overall by at least 50–60%, although the efficacy of line marking may vary between species.

Once the infrastructure exists, line modification in various forms is a known approach and is the most widely used for mitigating collision risks. The mitigation measures may include:

- Although different bird species fly at different heights above the ground, there is consensus that the lower power line cables are to the ground, the better for preventing bird collision. There is also consensus that less vertical separation of cables is preferred as it poses less of an 'obstacle' for birds to collide with. It is recommended to make power lines present less of an obstacle for birds to collide with. Therefore, horizontal separation of conductor is recommended; and
- Making power line more visible to birds (line marking). The assumption is that birds collide with overhead cables because they cannot see them. Hence, high-visibility markers should be installed to make the lines more visible to birds.

#### **c) Mitigation Measure for Habitat Disturbance**

Habitat destruction is expected during the construction phase and maintenance of power lines and substations. Some habitat destruction and alteration inevitably takes place. Hence, the mitigation measures may include:

- Habitat management at site level should be considered, such as, to avoid establishing ponds or waste disposal storage sites within development area;
- As much as possible vegetation cover that may support small mammals, rodents, reptiles, amphibians and other birds, which attract raptors, must be removed; and
- Retain existing low-lying vegetation ground cover along the transmission line ROW thereby minimizing vegetation clearing.

It is also recommended to undertake regular monitoring of the transmission line for evidence of birds nesting on the pylons collision and death. In addition, inspect along the TL corridor for bird carcass and record the species, rate of encounter to compare with pre-construction species record. The recommended monitoring is to start as soon as the power-lines are erected and monthly for the first year. Quarterly for the second and third year of operation and once a year during the whole project operation phase.

The risk rating from birds and bats collisions and their habitat is Moderate, which is environmental impacts with some consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Low, which is environmental impact with no or limited consequence and less likely to occur

#### **6.5.4 Impact on National Parks and Protected Areas**

The Degehabur – Kebridehar TL Corridor is neither contiguous with, nor in close proximity with any of the nationally protected areas.

#### **Recommended Mitigation Measures**

Therefore, no mitigation measure is recommended.

### **6.6 Adverse Impacts on Socio-economic Environment**

#### **6.6.1 General**

Results of the social and economic baseline study revealed that development of the high voltage power transmission line project can ensue social impacts (beneficial as well as adverse) during construction phase. On the bases of existing routing and engineering design (206 km length and 26m width/ROW), the proposed TL project would affect an estimated 535.6 ha corridor as well as property, lives and livelihoods of smallholder farmers and public institutions (2 school buildings) currently situated within the TL corridor.

Needless to mention that development is all about people, and as such, any development endeavour should avoid the risk of impoverishing people. Therefore, it's a civic virtue of all citizens and the responsibility of all stakeholders and proponents of infrastructure development projects such as EEP and the Degehabur – Kebridehar Transmission Line project to avoid, or at least, mitigate possible adverse impacts of their development initiatives on the rural poor by shielding them away from such undesirable consequences; and preventing poverty from setting on again so that citizens continue rejoicing the fruits of hard-won war against poverty.

Therefore, mitigation measures are proposed to inform planner and decision makers within EEP in their effort to mitigate adverse impacts and protect lives and livelihoods of PAPs located within the TL corridor.

Based on data and analysis presented in previous Chapters, this section presents an analysis of predicted or anticipated impacts and recommended mitigation actions related to various social impacts of the proposed TL project. It provides specific examples and clarity on impact receptors and also ensure that mitigation actions recommended meet needs and preferences of a given locality or affected communities.

#### **6.6.2 Expropriation of Privately Owned Farmland**

As it was briefly mentioned in the introductory paragraph of this Chapter overall, the TL project will require 535.6 ha corridor (206 km length x 26m width) currently under use for various purposes.

Impact of linear projects such as Transmission Lines is largely confined to a corridor through which the line traverses. Similarly, as a linear project, impact of the Degehabur – Kebridehar

TL project is confined to a relatively narrow corridor of the transmission line which cuts across 34 Kebeles in five woredas and two city administrations.

Excluding impact of ROW on agricultural land, which is expected to be both limited and temporary, the construction of the proposed Degehabur - Kebridehar transmission line project will require an estimated 3.88ha of land will be expropriated for the construction of tower foundations. This will impact a total of 0.82 ha farmland owned by the 84 smallholder farm households. Land required for the project tower construction is not significant, as a single tower requires 64m<sup>2</sup> of land. These farm plots are used to grow annual crops and sorghum, maize & wheat are the three major crops that are grown in the area.

**Table 6.5: Number of HHs who's Farmland will be affected by Woreda & Size**

Woreda	No. of PAHs	Size of farmland affected (ha)
Birkot	67	0.46
Degahabur Woreda	18	0.12
Degahabur City	8	0.05
Sheygoosh	29	0.18
Kebridehar City	2	0.01
<b>Total</b>	<b>124</b>	<b>0.81</b>

Source: RAP Census Survey (January & February 2023)

The level of impact on individual landholding families will obviously vary considerably, depending on the proportion of the total holding lost, the productivity of the land in question.

#### **Impact due to Construction of the new Birkot Substation**

Although 9.0ha of will be permanently acquired for the installation of the substation project, there will be no impact on privately owned land and therefore, no compensation or mitigation measure for individual landowners is necessary.

#### **Recommended Mitigation Measures**

Unlike residential houses and related structures, impact of ROW on agricultural land is not considered for compensation payment under the project in consideration. The underpinning assumption is that such impact is temporary (construction phase only) and farmers will continue to use agricultural land that falls under the ROW corridor as they used to with very little constraints.

Therefore, it is recommended to pay full and fair cash compensation, which leaves those, affected by relocation at least no worse off than they were previously.

The following set of criteria is recommended to be adopted for adequately compensating and properly rehabilitating the would be affected people:-

- The final tower spotting design should avoid as much as possible farmlands and homestead permanent plantings;
- The process of compensation should be preceded by a detailed inventory of individual and communal land;
- The inventory should include size of individual holdings of agricultural land, homestead and gardens including immovable property;
- Compensate farmers for loss of farmland and other land uses as per the new Federal legislation (Proclamation No.1161/2019);
- Consult and involve project-affected people (PAPs) in the estimation of costs for lost assets;

- Assessment of cash compensation for the forgone benefit from agricultural land should be carried out in a wholly transparent manner, resulting in payments which truly reflect current rebuilding costs;
- No construction should commence until land expropriation procedures have been completed and cash compensation paid as appropriate;
- Allow enough time for PAPs to remove their crops (perennial or annual) and trees; and
- Give priority in the employment of casual workers for household members of PAPs that have lost their land for the road construction works.

The risk rating from expropriation of privately owned farmland is Moderate, which is social impact with some consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Low, which is social impact with no or limited consequence and less likely to occur.

### 6.6.3 Impact on Shelter (Housing) and Settlement

Over much of the length of the TL route, the towers can be accommodated without the need for expropriation of privately owned property. However, results of the property surveys along the route revealed that residential houses and related structures currently located along the TL corridor will be affected by the Tower Pad or ROW or both components of the TL project. Next to farmland, residential houses and other related structures are the main assets of households affected by the project.

Residential land and property expropriation associated with the TL Project is estimated to affect a total of 42 privately owned residential housing structures and 24 other structures (i.e. 20 kitchen, 3 toilets and 1 barn) belonging to 41 households. Most housing structures are small and of simple construction, comprising wooden frameworks with mud plaster (See sample photos below).

Out of a total 42 housing structures a great majority (85%) of the houses will be affected by the project RoW whereas, the remaining 15% of the housing structures on the other hand will be impacted by tower foundations.

Table 6.6: Number of Housing and Related Structures by Type, HHs and Woreda

Region	Zone	Woreda/City	No of HHs	Main house	Kitchen/toilet/barn	
Somali	Jarar	Degahabur City	20	21	11	
		Degahabur Woreda	4	4	3	
		Birkot	11	11	10	
	Korahe	Sheygoosh	1	1	0	
		Bodalay	5	5	0	
		Kebridehar Woreda	0	0	0	
		Kebridehar City	0	0	0	
			<b>Total</b>	<b>41</b>	<b>42</b>	<b>20</b>

Source: Census Enumeration & Registration of Properties, January - February 2023

Although installation of the proposed substation at Birkot would require about 9.0ha of land, no privately owned housing units and other structures would be affected by the land take requirement for the construction of the new sub-station.

It is important to point out that this field survey result is only indicative and will be revised in the final report once the RAP is completed. The actual number by type and size will be determined during the census survey for the RAP.





Photo 11: View of Typical Houses Affected by the TL

### Impact due to Construction of the new Birkot Substation

Although 9.0ha of will be permanently acquired for the installation of the substation project. However, there will be no impact on privately owned houses and other structures. Therefore, no compensation or mitigation measure is necessary.

### Recommended Mitigation Measures

There is no doubt that PAPs need to be compensated for the losses they would suffer. However, there are a number of important issues that need to be kept in mind when proposing compensation as a means of easing asset losses and inconveniences such losses create to PAPs. First and foremost, there are inherent limitations to the “compensation principle”. That is, compensation deals with only quantifiable property losses when the losses suffered by PAPs are both quantifiable assets and unquantifiable inconveniences (e.g., hardship, trauma). Secondly and, almost always, compensation is likely to be inadequate and this is particularly true in cases where markets are volatile. Therefore, it is important to bear in mind that the compensation principle is adopted as a last resort for lack of a better alternative.

Therefore, in order to reduce the impacts associated with land and property expropriation, it is recommended that a threefold approach should be adopted involving:

- preparation of engineering designs with due consideration to reduce the need for land and property expropriation without significantly compromising the design standards which minimise land acquisition, and in particular acquisition of land occupied by housing premises;
- EEP in collaboration with local authorities, to stop all future construction works within the ROW and the proposed Birkot substation; and
- Payment of full and fair cash compensation, which leaves those affected by relocation at least no worse off than they were previously.

The total number of households that will be affected by involuntary resettlement will be determined once the final pegging of the route and tower spotting is complete. However,

the total number of people who will be affected by involuntary resettlement are likely to be of the order of 200 in relation to property and farmland expropriation and in consequence it will be necessary for a Resettlement Action Plan (RAP) to be prepared. Therefore, EEP who is the implementing Authority has commissioned the preparation of a RAP and the result will soon be ready.

Therefore, the following set of criteria is recommended to be adopted for adequately compensating and properly rehabilitating the would be affected people:

- As a linear project, impact of the TL project on privately owned houses and land would be confined to the TL corridor and hence it is hoped that the majority of PAPs whose shelter is affected would be left with residential land that is adequate to relocate their houses. Therefore, in the interest of maintaining the existing kinships, social networks and traditional social support structures, it is strongly recommended that relocation of residential houses should be within existing communities as much as feasible.
- In case of any businesses, the compensation payments should be adjusted to take into account any anticipated loss of income which may arise as a result of the need for relocation to a less suitable location away from the main centre of business activities;
- Assessment of cash compensation for property should be carried out in a wholly transparent manner by involving representatives of PAPs in Committees resulting in payments which truly reflect current rebuilding costs;
- All affected persons should be freely allowed to salvage building materials, trees and other assets on affected land as additional compensation for displacement;
- Provide technical skills and financial management training to PAPs to enhance the effectiveness of compensation money in re-establishing PAPs' livelihoods;
- All of these activities will have to be carefully planned and completed well in advance of actual construction to allow enough time for appropriate resettlement and relocation of project affected persons. So as to allow time for PAPs to orderly relocate and construct their new shelter; and
- No construction should commence until all land and property expropriation procedures have been completed, replacement land allocated, and cash compensation paid.

The risk rating from expropriation of privately owned houses and other structures is Significant, which is - social impacts with significant consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Moderate, which is social impact with some consequences and likely to occur.

#### **6.6.4 Loss of Communally Owned Ancestral Land**

It is crucial to make absolutely clear from the outset that the Degehabur – Kebridehar TL and the Birkot substation Project will have to acquire 544.6ha of land (i.e. 535.6 ha for the ROW and 9.0ha for the substation).

While the total land take requirements of the project is about 544.6ha, actual size of land that will be required for actual Project installations (Project footprint) will be much less – only about 12.88ha (i.e. 3.88 ha for erection of the towers and 9.0 ha for the new substation at Birkot). Therefore, the Project affects a sizeable piece of collectively owned land and other land-based resources, which are currently in use for grazing and transhumant migration.

According to Somali clan customary laws, all land and land-based natural resources that fall within the territories claimed by the clan and sub clans is a communal property of all members of the clan and it is governed through customary laws, and administered by representatives of the clan. Therefore, the clan, as a collective union, will permanently lose a plot of ancestral land that the project seeks to acquire for construction, installation and related purposes.

Although access will be restricted mainly during construction works, the bulk of the project corridor and the remaining Project land (outside permanent installations) will generally remain available for local community use. By providing support to the implementation of social development schemes at the community level, it would contribute towards mitigating the Project's impact on collectively owned grazing land and other land-based resources in the Project affected Kebeles and Woredas.

### **Recommended Mitigation Measures**

Since all grazing land and other land-based resources affected by the Project are collective property of communities around the project. There is no other sensible mechanism, other than initiating a collectively owned and used Social Development Plan, to earmark compensation payment to communities affected by land acquisition.

However, Proclamation 1161/19 Article 13(3) requires to compensate for loss of communal landholding belonging to pastoralist and agro pastoralist. Therefore, in the interest of making the project more attractive to EEP and more importantly, to secure community buy-in, hence "social license to operate", it is crucial to travel extra miles and mitigate adverse impacts related to Communally Owned Ancestral Land as well as provide support to community development initiatives. Such measures, in addition to mitigating undesirable impacts of the project and addressing local communities' development needs, have strategic significance in creating good rapport and understanding between the EEP on the one hand and local communities and their representatives (local authorities) on the other.

Therefore, mitigation measures and support to community development are recommended.

The risk rating from impact on loss of communally owned ancestral land is Moderate, which is - social impacts with some consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Low, which is environmental impact with no or limited consequence and less likely to occur.

### **6.6.5 Impacts on Vulnerable Groups**

Security or vulnerability of households' livelihoods vary between households depending on their relative endowment with and/ or access to a range of assets (natural, physical, human, social and financial). The more a household owns or have access to different assets, the less vulnerable it is likely to be. Ownership of or access to assets is dictated by an interplay of historical, social, economic, cultural, political and environmental processes that work favourably for some groups of households and unfavourably for others. In effect, social groups with less asset-endowments become more vulnerable to shocks (adverse impacts of the proposed project on farmland) than those with relatively generous asset-endowments.

Households headed by the elderly, females, the chronically ill, persons with physical disabilities and mental illness are generally more vulnerable than others. Vulnerable households find it difficult to withstand shocks (e.g. land take by the proposed project), bounce back quickly and re-establish their livelihoods unless their livelihoods are cushioned with some sort of targeted special assistance.

In the assessment of vulnerable PAPs, we have identified 43 PAPs are found to be more vulnerable than others. These are:

- 26 Elderly Male headed households (MHH) (elderly people aged 65 and above)
- 16 Female Headed household (FHH) (labour-short, i.e. no husband/partner to support with farming tasks)
- 1 PAHs with physical disabilities, mental illnesses or chronically ill persons

### Recommended Mitigation Measures

While types of vulnerabilities presented above show higher or aggregate vulnerabilities, there are also conditions that aggravate the vulnerability of a group. For example, some PAPs may have more than one type of vulnerability or more than one vulnerable household member.

When respondents were solicited to indicate how vulnerable groups in their households and wider communities could or should be supported, they responded as below:

- Cash support;
- Medical support (for those who are sick and or physically impaired);
- Cash and medical support; and
- Project-related employment opportunities.

The risk rating of social impacts on vulnerable groups is Significant, which is environmental impacts with some consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Moderate, which is - social impacts with some consequences and likely to occur.

### 6.6.6 Impacts on Sites of Cultural, Historical and Archaeological Importance

Cultural heritage, archaeological, written and oral information survey has been conducted along the project corridor and the new substation at Birkot. The analysis demonstrate that:

- The footprint of the proposed project area will be approximately 544.6ha of land including the Birkot Substation. However, during survey, no visible archaeological evidences and cultural heritage have been unearthed in and around the proposed TL corridor. Therefore, the project will have no impact on archaeological and cultural heritage sites;
- Consultations with local communities and officials also demonstrate that there are no known archaeological and tangible cultural heritage sites within the proposed project TL corridor (ROW); and

### Recommended Mitigation Measures

Although no direct and specific mitigation is necessary, the following protective measures are recommended:

- *Although* no know protected cultural, historical or archaeological sites were identified in and around the project corridor, it is recommended for the construction contract to make provision for work to be halted and the relevant authorities to be notified, in the event of accidental discovery of archaeological remains;
- *Induction Training* to Construction Workers: In addition, the Contractor is responsible to provide Cultural Heritage Training programme on intangible Cultural Heritage for all its staffs that join the Project. It helps to create awareness among the project management and staffs about the culture and intangible heritage of the people (including graveyards).



Although no physical cultural site is identified at this stage of the proposed project, a chance find procedure has been considered and presented in this report (See Section 6.5.8).

### 6.6.7 Impacts on Burial Sites within the Transmission Line Corridor

During consultations with local communities and their elected officials, potential impacts on burial sites was raised as a major concern. According to the community members some of the local people buried their beloveds in different places not only in designated burial sites. Therefore, several burial sites may be located along the project corridor and this burial sites might be impacted during construction by the proposed project components.

Ground survey was conducted by making car transect and foot surveys and six Burial Sites were identified and documented during the archaeological/cultural heritage survey along the line Degahabur - Kebridehar 132 kV project (See Table 6.7 and Photos 12 & 13)).

Table 6.7: Burial Sites Identified During survey

Name	Latitude (N)	Longitude (E)	Type
Cemetery at Degehabur	8°14'5160"N	43°34'003 "E	Modern Islamic Burial
Cemetery Hodale	8°8'4630 N	43°34'3040 "E	Modern Islamic Burial
Gerebo Cemetery	8°51'0916 N	43°36'0310 "E	Modern Islamic Burial
Sendehille Cemetery	8°5'8910 N	43°36'2470 "E	Modern Islamic Burial
Sassabane (Ugur cemetery)	7°52'1430 N	43°40' 4060 "E	Islamic Burial
Hodale Cemetery	7°56'61300 N	43°38'8490 "E	Modern Islamic Burial



Photo 12: Burial Site at Degahabur near Birkot substation



Photo 13: Burial of local elder Sasabane Kebele (Ugur cemetery)

### Recommended Mitigation Measures

During the survey the elders and religious leaders have informed the Study Team community's concern about burial sites located along the TL corridor. According to them, these sites have local social and cultural significance. Therefore, culturally reburial or relocation of burial grounds is totally unacceptable and during the final design the TL corridor must be realigned away from existing burial sites.

Transferring and relocating the corpse is culturally unacceptable. Therefore, the project should avoid locating any project activities, such as, the erection of towers, construction of access roads and buildings as well as any activities requiring soil clearing, levelling and excavation in and around any burial sites.



The project should also avoid transportation of construction equipment and vehicles, construction of access roads, and dumping of construction disposal on and near burial sites in order to avoid their destruction and damage.

As ancestral genealogy and family attachment is very strong in the community. Therefore, the project must should maintain an active consultation line with local communities, families, religious and clan leaders, government representatives, local culture and tourism office.

The risk rating of social impacts on burial sites is Significant, which is social impacts with some consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Moderate, which is - social impacts with some consequences and likely to occur.

### 6.6.8 Accidental Discovery of Physical Cultural Resources

The project will have no impact on known archaeological sites and artefacts as well as on cultural heritage. Nevertheless, the possibility exists for discovery of unexplored sites of cultural/historical and archaeological importance sites during excavation and site clearance.

#### Recommended Mitigation Measures

The purpose of this recommendation is to assist in the event that an unexpected deposit or remains are encountered. The construction workforce will appropriately be informed to be vigilant in the detection and reporting of, and the prevention of disturbance and damage to objects and sites of physical cultural resource. Through the orientation program the contractor will ensure that all workers are aware of the criteria for identification of possible sites.

Upon identification of suspected archaeological or cultural remains, the following steps will be taken:

- Chance Find Procedure disseminated among workers during induction trainings;
- Upon identification of suspected archaeological or cultural remains, the location must not be disturbed, operations will immediately cease in the affected area and activities that create ground disturbance will be minimised in and adjacent to the affected area;
- The discovered site will be delineated as "no work zone";
- Unauthorized entry will be prohibited and the site secured to prevent any damage or loss of removable objects;
- Discoveries will be reported to the EEP who will contact the regional Bureau of Culture and Information and/or ARCCH;
- No work will resume within a radius of 26m from the discovery site until an appropriate directive has been received from ARCCH or Regional Bureau of Culture and Information;
- Under no circumstances, any artefacts will be removed, destroyed or interfered with by anyone on the site; and Contractors and workers shall be informed of the penalties associated with the unlawful removal of cultural, historical, archaeological or paleontological artefacts;
- The responsible Regional authorities shall assess the significance and importance of the findings according to the various criteria relevant to cultural heritage;
- Decision on how to handle the finding shall be taken by the responsible Regional Authority and ARCCH. This include conservation, preservation, restoration or salvage;

- recommendations of the Authority concerning the management of the finding shall be communicated in writing by the Responsible Regional Authority to EEP;
- Restoration measures will be employed to protect discoveries and flagging the area boundaries; and
- An archaeologist will be retained to conduct a data recovery prior to the continuation of construction activities within the 26 m “no work zone”.

### 6.6.9 Impacts associated with construction traffic

In and around the project area and over the existing road, traffic levels are relatively very low. However, the proposed project during the construction phase, will involve increased traffic of earth-moving machinery and trucks hauling construction materials, goods and passengers. Construction traffic will increase total traffic flow and is likely to be greater in volume than normal flow, especially near to the main construction fronts.

While laden haulage vehicles move relatively slowly, unladen vehicles tend to move relatively quickly, and there is a danger of increased hazards to pedestrians, other road users and livestock.

#### Recommended Mitigation Measures

Therefore, it is recommended to:

- Include a clause in the construction contracts to the effect that the contractor must make every reasonable effort to minimize road safety hazards and inconvenience to other road users, resulting from the passage of his, or his subcontractors' haulage vehicles, and should impose and enforce compliance with speed limits;
- The Contractor to prepare a traffic management plan detailing traffic control procedures, train its personnel traffic management procedures, travel speed limits and related control measures;
- In cases where haul routes pass through rural town or settlements, the construction traffic management plans shall set out clearly steps which will be taken to minimize the impacts of his haulage traffic, including but not limited to the regular watering of unsurfaced sections to suppress dust & the speed limits which will be imposed;
- The contractor should put speed limits for cars and appropriate traffic signs in and around construction areas;
- Assign a well-trained & adequate number of traffic marshals mainly around a place where sensitive receptors (settlements, schools, health posts, worship areas,) exist;
- Mount GPS tracker for each vehicle;
- Develop and implement driver Code of Conduct (COC);
- Speed governor for each truck;
- Work closely with the local administration office;
- Drivers shall be given induction training at the start of the project, company policy, about road safety and due diligence to ensure safety of other road users; and
- Create awareness for the local people on how to use roads and keep themselves away from the traffic accident.

The risk rating of social impacts due to construction traffic is Moderate, which is social impact with some consequence and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Low, which is social impact with no or limited consequence and less likely to occur.

## 6.7 Impacts on Construction Workers

### 6.7.1 Occupational Health and Safety Risks

Construction of the proposed power transmission lines will involve occupational health and safety risks to construction workers.

From the nature of construction works, impacts on the health and safety to workers are anticipated through the following major causes and effects:

- Workers on construction sites are highly exposed to injuries unless precautionary measures are taken;
- Major causes of fatalities and noticeable injuries include electrocution effect during energizing and maintenance of the live line;
- Major causes of fatalities include: falls, fatalities caused by machinery and/or transport, struck by falling object etc.;
- Major causes of noticeable injuries include: falls, lifting objects, machinery, stepping on or striking against objects, transport, etc.;
- Death and injuries have adverse economic and social implications to families in particular and the country in general; and
- Risks from manual handling of heavy loads.

### Recommended Mitigation Measures

To avoid occupational risks to the construction workers, the following mitigation measures shall be considered by the Contractor:

- A construction safety management system shall be employed during project implementation;
- Ensure that necessary protective devices and clothing are provided to the workers and that they are used for the safety and health of his or her workers;
- Provide personal protective equipment (PPE) and clothing (gloves, fall arrester, goggles, steel-toed boots, respirators, dust masks, hard hats, etc.) materials and tools and it shall be distributed to the workers for its day-to-day use shall be monitored;
  - A safety harness is required as a fall arrester, each workman working there shall be provided with one. Every safety harness shall be provided with a suitable anchorage and fittings to prevent serious injury in the event of fall;
  - Whenever the use of a safety harness is necessary, a workman has a duty to wear the safety harness provided and keep it attached to a secure anchorage for his own or any other person's safety;
- To the extent possible, reduce or minimize noise at work sites and if cannot be avoided, provide workers with PPEs such as hearing protection;
- Apply measures such as suppressing dust and other particulate matters like those from cement storage sites;
- In the case of manual handling of loads, advise/train workers to assess the associated risks carefully and provide information about the size and distribution of loads;
- During induction training, awareness shall be created among the workers on safe working practices and precautionary measures to be adopted;

- Maintain adequate traffic control measures throughout the construction phase;
- Adopt regular systematic safety recording and reporting system (incidents, near misses);
- Place signs around the construction areas to provide safety advice and warning, facilitate traffic to provide direction to various components of the works etc. All signs shall be in Somali, Amharic and English and according to standards;
- Ensure that safety procedures are followed at all workplaces. Supervisor are responsible to check whether appropriate safety measures are taken/implemented before any construction activities commence; and
- Respect working zone to protect passersby from encroaching the active working area;
- Trenches excavated for tower pads are potential risks to humans and animals falling in the open excavation. Therefore, the Contractor is strongly advised to comply the safety requirement by providing barricades and adequate warning notices around open pad holes.
- The Contractor is required to immediately notify EEP and AfDB within 24-48 hours in case of occurrence of fatality and serious injuries.

Project Specific Occupational Health and Safety Management Plan shall be prepared and implemented by the Contractor.

The risk rating of occupational hazard is Significant, which is - social impacts with significant consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Moderate, which is - social impacts with some consequences and likely to occur.

### 6.7.2 Working Conditions for the Construction Workers

Given the extremely hot and arid environment where construction and installation works of the Degehabur – Kebridehar TL Project and substation project is taking place, the contractor shall provide suitable, safe and comfortable accommodation facilities for the workforce. These include: temporary camp for the contractor's expatriate and local staffs and EEP staffs and its representative. These camps will allow construction workers to settle within the camps and will ensure that services are provided within these camps.

In order to achieve the desired goal in construction works, proper working conditions should be maintained as per the provisions stipulated in the Proclamation No.1263/2021 Ministry of Labour and Skill (formerly MoLSA) and also according to AfDB requirements. Specifically, working conditions aim to:

- Promote compliance with national employment and labour laws;
- protect workers such as migrant workers, workers engaged by third parties, and workers in the client's supply chain;
- Promote safe and healthy working conditions, and the health of workers;
- Promote the fair treatment, non-discrimination, and equal opportunity of workers;
- Establish, maintain, and improve the worker-management relationship; and
- Avoid the use of forced labour.

## Recommended Mitigation Measures

Therefore, the following mitigation measures are recommended and shall be considered by the Contractor:

- The Contractor should embrace favourable working conditions and terms of employment and provide reasonable working conditions and terms of employment to all construction workers;
- Select construction camp sites in collaboration with the Local Administration;
- Although major conflicts are not expected, the decisions of the camp locations should take this possibility into consideration;
- Provide suitable, safe and comfortable facilities for the labour-force. The facilities shall include dormitories, rest areas, lavatory facilities, canteens, adequate for the numbers of workers in the camps;
- Ensure adequate power, ventilation system, etc. are provided;
- Provide potable water for food preparation, drinking and bathing in all labour camps, administrative offices, medical facilities, canteens, etc. Potable water shall comply with the national and WHO standards for human consumption;
- Provide recreational facilities to the workforce. Such facilities will help mitigate against potential conflict and impact on the local population as the incentive to go outside the camp will be reduced;
- EEP in association with the local Woreda Authorities will monitor to ensure all persons under the age stipulated in the country's Labour Law and also according to AfDB's requirements are not employed;
- The Contractor shall development and implementation labor management procedure; Code of Conduct;
- The Contractor shall establish and function of workers GRM under the contractor framework; and
- As the National Law recognizes workers' rights to form and to join workers' organizations of their choosing without interference and to bargain collectively (including express their grievances and protect their rights regarding working conditions and terms of employment), the Contractor should comply with the Law.

### 6.7.3 Health Risk to Construction Workforce

Implementation of Projects such as the Degehabur – Kebridehar TL is characterized by mobilization of workforce to the Project Area and presence of the imported workers, and their interaction with the host communities, may trigger spread of communicable diseases in the area. The prominent types of such communicable diseases during the construction phase due to labour mobility are generally STIs and particularly HIV/AIDS.

In addition, there will be exposure of construction workers and their families to locally endemic diseases through contact with insect vectors. The principal vector-borne disease expected to prevail in the Project Area is malaria and the main breeding season for the malaria vector (mosquito) is right after the rainy season. The suitable habitats for the mosquitoes are stagnant or slow moving water bodies.

## Recommended Mitigation Measures

The potential public health risks will have to be minimized through the employment of preventive and curative measures to reduce transmission of communicable diseases to the workforce and the local population.



Therefore, the Contractor is responsible to provide adequate health services to the construction employees by establishing appropriate health facilities including first aid posts at the construction and campsites.

Therefore, the following measures are recommended at project level:

- The contractor should use his best to maximize hire of local labour as far as this is compatible with relevant skills requirements, as a first measure to reduce the risk of HIV/AIDS infections from spreading;
- Provide specific sexual health training including HIV/AIDS awareness and prevention program to construction workers;
- Promote collaboration between the Project and the Regional Government and NGOs to share experience on issues related to HIV/AIDS awareness and prevention;
- Avoid the presence of pools of standing water and any containers full of water and remove discarded items that could contain water in and around the Project office, store and camp facilities;
- Construct buildings as mosquito proof by installing a mesh- wire around the window;
- Provide workers with chemoprophylaxis and parathyroid-treated mosquito nets; and
- Provide construction camps with good drainage, water supply, and sewage disposal systems.

### Covid-19 Management Measures

The Project will comply with all mandatory COVID-19 restrictions and social distancing in place at the national and regional levels, in the Context of COVID-19. In the organisation and implementation of the construction works and stakeholder engagement and consultation activities, the following principles will be taken into account:

- The contractor will be required to implement national and regional COVID-19 prevention protocol,
- Awareness Training on Covid-19 shall be provided to all construction workers;
- Health PPEs (hand sanitizers, nose mask and hand gloves) shall be provided and construction workers are required to use them while working;
- Adequate washing facility shall be provided at work sites and construction camps;
- Cocal construction workers shall not be transported using crowded vehicle;
- CLO and employees participating in participation activities will maintain physical distance and use the correct PPE during interviews.
- No one showing COVID-19 symptoms will be engaged in construction activities or attend the stakeholder meetings;
- During consultations, CLO and related staff will maintain physical distance, frequently disinfect equipment and supplies, comply with respiratory rules and cover coughs and sneezes, avoid touching their own faces;
- Contact will be minimized during any exchange of physical copies of documents;
- All meetings will be held in well-ventilated open areas with sufficient space for all participants to maintain a minimum physical distance of 1.5 - 2m. Participants will be asked to wear a face mask during the meeting;
- The CLO will take the opportunity at each event to remind participants about the basic COVID-19 prevention measures.

The Contractor will develop updated COVID-19 management measures to reflect changing requirements as applicable.

The risk rating of Social Impacts due to exposure to HIV/AIDS and COVID-19 is Significant, which is environmental impacts with some consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Low, which is environmental impact with no or limited consequence and less likely to occur

#### **6.7.4 Security Risk to the Local Community and Construction Workers**

With regard to potential safety risks to affected communities deriving from abuse of the security forces tasked to ensure the Project security to:

- Establish a well-structured security service to assure security of the workers and the Project;
- Train the security personnel adequately in the use of force and appropriate conduct toward workers and the local communities;
- Assure that the security staff shall comply with human rights and avoid abuse on community members;
- Apply due diligence during selection of security providers, devise rules of engagement and provide training to all personnel;
- Making clear that any community member can appeal if any project security breach happened to any of the community and /or its member;
- Carryout comprehensive community risk assessment and implement adequate provisions to minimize risks to communities, with particular attention to traffic risks on public roads and security risks assessment and responsibilities;
- Changes to community safety profile related to traffic, emergency responses, unplanned events, crime and conflict;
- Conflict of local community with the construction workers and security due to people restriction to site access;
- Ground excavations, including foundations and trenching have the potential for injuries or fatalities arising from falling and excavation collapse;
- Impacts to community security, particularly covering interaction between security forces and the local community.
- Record and document any security incidents in and around the project site.

#### **Management Measures to Reduce Security Risk to the Local Community**

Measures to reduce security risk to the local community shall include the following:

- Place appropriate signage on the boundary or at the entrance to all construction sites, warning against entering the site and highlighting the health and safety risks;
- Trespassing by workers on neighbouring properties must be prohibited and the appropriate disciplinary action must be taken in the event of transgression;
- Develop public awareness programme (including in schools along the TL corridor) to identify areas of particular risk and approaches to reduce risk.
- Apply due diligence during selection of security providers, devise rules of engagement and provide training to all personnel.

- Ensure that the safeguarding security to personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the nearby communities.

The risk rating of security risk to the local community is Moderate, which is - social impacts with some consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Low, which is social impact with no or limited consequence and less likely to occur.

### 6.7.5 Risk of Exposure to Electro-Magnetic Fields

Findings of research on the effect of exposure to Electro-Magnetic Fields (EMF) on human health remain largely inconclusive to date. However, this should not be an excuse for complacency; and all the necessary care and caution needs to be taken to avoid any possible public health risks associated with exposure to EMF over and above certain levels recommended by global health institutions such as the WHO. Moreover, high voltage transmission lines also entail risks of electrocution during maintenance. For example, if proper safety procedures are neglected, maintenance of high voltage power lines has potential to cause fatal risk of electrocution to line maintenance crew.

#### Potential Adverse Impacts of Electromagnetic Fields (EMF) Associated with EHV Overhead Lines on People and Animals in the ROW

1. **Electric fields:** Live conductors of Overhead lines produce electric fields on the ground surface and on the conductor surface. The electric field is highest on the surface of the conductor and decreases to acceptable levels (below 10kv/m) at the ground if the line is properly designed. High ground level field intensity may induce current in conducting objects and apply electrostatic voltage which may result in unpleasant shocks and other effects. World Health Organization (WHO) in its Environmental Health Criteria (1987) and the International Radiation Protection Association's guideline state that induced current densities up to 10mA/m<sup>2</sup> result in minor biological effects. Electric field up to 10kv/m may be sustained by pedestrians or farmers underneath the line for few hours per day (5kv/m (rms) for 24hours). Of course, the effect depends on the duration of exposure.

Conductor surface electric field causes corona loss, TV and Radio interference and audible noise. These effects could be mitigated by providing bundled conductors to reduce surface gradient and maintaining safe height of the conductors above ground.

2. **Magnetic field:** Overhead line conductors produce magnetic field in their surrounding due to current flow in the phase conductors, shield wire and metallic structures that may run parallel to the line. The ground level density depends on the distance from the line and the current magnitude in addition to the conductor heights above ground and conductor arrangements. The magnetic field induces currents in conducting bodies including people. According to the above mentioned guidelines, general public should not be subjected to magnetic flux density exceeding 0.1mT (milli tesla) for 24 hours and 1mT for short duration. Mitigation measures are proper designs (such as conductor heights) to ensure current densities on the head and trunk to below 10mA/m<sup>2</sup>.

### Recommended Mitigation Measures

- **Exposure to Electro-Magnetic Field and Related Accidents:** The proposed transmission line presents a risk of electrocution to the public, by direct contact with high voltage equipment and lines, and also by induced voltages, especially in the case of vehicles and heavy machinery that transit beneath transmission lines. Humans and animals can also risk electrocution or nuisance shock. Electrocution and potential public health concerns are all related largely to post-construction or operation phase. Such threats to public health and safety arise when inadequate

grounding at substations energizes metal objects. Other safety threats include the collapse of transmission towers during storms. Still other public nuisances from EMF include television and radio interference.

- Measures proposed to mitigate EMF and related public health concerns have largely to do with the design and engineering of the TL.
  - As per article 6 (Directive (No. EEA/1/2005)) for 132kV line design the overhead high voltage TL to maintain distance from the ground level so as to reduce the effect of excessive exposure of humans and animals to EMF;
  - ensure adequate grounding of towers;
  - install anti-climbing devices on the towers to prevent access to the conductors;
  - install danger plates on the towers in Somali, Amharic and English language;
  - ensure proper and timely maintenance of the transmission line to reduce potential nuisance to the public as well as electric shocks to maintenance personnel;
  - to reduce occupational hazards and accidents, ensure that maintenance staff strictly follow and comply with safety procedures including use of protective garment and equipment at all times during line maintenance; and
  - Maintaining lateral distance between the transmission line and the ROW on the one hand and human settlements and activities on the other, is an important step in mitigating the effects of EMF and other health and safety threats related to the TL.

The risk rating of Social Impacts due to exposure to Electro-Magnetic Fields is Significant, which is social impacts with some consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Low, which is social impact with no or limited consequence and less likely to occur.

#### 6.7.6 Impact on Social Services, Institutions and Infrastructure

Based on inventory taken during the fieldwork for this study, the proposed power TL project will affect two public social service facilities, institutions and infrastructure facilities like community water tanker, local government office buildings, police station, etc.

However, the proposed power TL project will affect two public school buildings (one block each).

- 1) Raho Primary School is located within the ROW between TT 205 & TT206.
- 2) Dikse Sere Secondary is affected by construction of tower foundation for TT247



Photo 14: View of School Buildings Affected by the TL: Raho Primary (right) & Dikse Sere Secondary School (left)

## Recommended Mitigation Measures

The following set of criteria is recommended to be adopted for adequately compensating and properly rehabilitating the would be affected people:-

- It is recommended to pay full and fair cash compensation;
- Assessment of cash compensation based on market value resulting in payments which truly reflect current rebuilding costs;
- The process of compensation should be preceded by a detailed inventory of the affected property; and
- No construction should commence until land expropriation procedures have been completed and cash compensation paid as appropriate.

### 6.7.7 Pressure on Local Medical Services

Engineers, technicians and an influx of construction workers (skilled, semiskilled and unskilled/labourers) that would be attracted to the area are likely to cause additional strains on the existing fragile service delivery facilities particularly health facilities and services.

Obviously, quality and accessibility of existing health facilities are very poor and these services were meant only for people residing within the project influence Woredas and Kebeles. At least the construction phase of the project is likely to attract a large workforce, which is likely to exert pressure on the already weak and inadequate health services. Therefore, although not very significant it will reduce their effectiveness as far as the local population is concerned.

## Recommended Mitigation Measures

It is unreasonable to expect the contractor to provide full emergency medical facilities for the workforce, but provision of adequate first aid facilities should be required. Therefore, the contractor should exercise a duty of care towards his workforce in relation to injuries sustained at work.

Therefore, it is recommended to:

- take into account its own healthcare needs (project staff and construction workforce), the construction contractor must provide a first-aid post at the base-camp;
- The First-aid post/clinic must be staffed by a qualified paramedical attendant on a full-time basis;
- Simple first aid materials, suitable for dealing with minor injuries, should be available at all times, at all worksites;
- Given the remoteness of the project area, it is also recommended the Contractor to provide an ambulance service at the construction site to transport seriously injured persons. The ambulance must be made available on-site for 24 hours at the camp or first aid post for emergency situations;
- Contractor to liaison, and sign an agreement with the nearby hospital or higher clinic for the case of emergency,
- The Contractor is required to immediately notify EEP and AfDB within 24-48 hours in case of occurrence of fatality and serious injuries; and
- The Contractor must prepare emergency communication procedure and implemented at all construction sites.



The risk rating of pressure on local medical services is Moderate, which is - social impacts with some consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Low, which is social impact with no or limited consequence and less likely to occur

### 6.7.8 Violence against Children (VAC) and Gender Based Violence (GBV)

The Contractor is required to be non-discriminatory regarding race, religion, gender, age, disability. However, child labour is illegal and considered harmful and creates psychological and social problems in the community. Therefore, if children below the age of 18 are employed in the construction works it may lead to exploitation of children and at the same time it is violation of FDRE Law.

#### Recommended Mitigation Measures

Therefore, the Contractor is required to implement the following measures at the project level:

- Offer equal employment opportunities to all collaborators based upon their specific professional qualifications and performance without any discrimination;
- Select, hire and manage collaborators according to competence and merit;
- Take strict measures against employment of children below the age of 18;
- The Contractor will not employ children in any manner that is economically exploitative, or is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development;
- Put in place administrative measures to prevent and minimize Gender Based Violence (GBV) and Violence Against Children (VAC) with proposed preventive and mitigation strategies;
- Prepare an administrative measures (for example through Code of Conduct) to prevent Sexual Harassment in the workplace and GBV and VAC;
- Strengthen grievance redress and other monitoring mechanisms to ensure safe and ethical reporting systems to alert cases of GBV and VAC and assure them to access adequate response; and
- Work closely with local authorities to stop recommending under age children for the project construction works.

The risk rating of VAC and GBV is Significant, which is environmental impacts with some consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Low, which is social impact with no or limited consequence and less likely to occur.

### 6.7.9 Spread of Culturally Unacceptable Behaviour

The community along the project route belongs to Somali ethnic group and they are one-hundred percent followers of Muslim religion. With an influx of workers arriving in to the community in large numbers throughout the construction phase, it is likely that these workers may spread certain culturally unacceptable behaviour including drinking alcohol, prostitution, substance abuse and criminal activities that are either rare or non-existent before the project. Therefore, misunderstanding could arise and things could easily go wrong if and when outsiders, knowingly or otherwise, break their traditional norms, values and customs.

## Recommended Mitigation Measures

Therefore, the Contractor is required to implement the following measures:

- Maximise local hire of labour, in so far as this is compatible with the contractor's skill requirements;
- Employees shall receive compulsory induction training at the time of employment. The training includes company policies and code of conducts to make the employees aware;
- Train all construction team about the local culture with the objective to protect the authentic culture and heritage of the people of the project area; and
- Assign the responsibility to liaison with local communities and local authorities to a named individual from the contractor's organization and to require effective liaison to promote social integration.

The risk rating of spread of culturally unacceptable behaviour is Moderate, which is - social impacts with some consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Low, which is social impact with no or limited consequence and less likely to occur

### 6.7.10 Conflicts between Local and Migrant Workers

Employment opportunities, for skilled and unskilled labourers will be created during construction. Development of major conflicts between local communities and contractor's migrant workers are not to be expected in this area. However, a grievance mechanism will need to be put in place well before the start of the Project.

During the community consultation sessions, participants strongly argued that the project should set priority and strictly adhere to employing local (skilled or unskilled and temporary or permanent) as long as they qualify for such jobs. Similarly, it was strongly suggested that employment priority be given to locals during operation phase of the substation where the project would need technical as well as support staff including clerks, janitors and security guards.

Therefore, minor contractor/local community disputes concerning real or perceived issues may arise during the construction period, particularly if labour is predominantly from communities not in the immediate vicinity of the project area.

The local residents due to the increased trading possibilities might easily accept the construction camps. The suddenly created demands on the items such as food, drinks etc. and different services may raise the prices of local products/services. Although minor, the more cash may also temporarily inflate local prices and cause bad feelings in the local population. The people selling their products or services will benefit, while those local people who are dependent on the same purchases may suffer in the form of increased prices. Therefore, occasional and personal conflicts will be expected due to this and many other reasons.

## Recommended Mitigation Measures

Although labour recruitment is a matter for the contractor, they must be formally encouraged to hire locally wherever possible, in order to maximise the benefit distribution and social acceptability of the project.

- Maximise local hire of labour, in so far as this is compatible with the contractor's skill requirements;
- Train all construction workers the local culture with the objective to protect the authentic culture and heritage of the people of the project area; and

- Assign the responsibility to liaison with local communities and local authorities to a named individual from the contractor's organization and to require effective liaison to promote social integration, and the development of mutually satisfactory solutions to problems affecting local communities.

The risk associated with such a workforce is cultural shock. However, ethnic Somalis are largely peaceful people who can fairly easily mix and match with outsiders (i.e. people outside their own clan or ethnic group).

The risk rating of conflicts between local and migrant workers is Moderate, which is - social impacts with some consequences and likely to occur. However, implementation of the proposed mitigation measure will reduce the risk rating to Low, which is social impact with no or limited consequence and less likely to occur

## 6.8 Ancillary Facilities

### 6.8.1 Base Camp and other Worksite Areas

It is clear that the success of a project, in addition to other factors, depends on the health status of its workers without whom it is hardly possible to achieve the desired goal of successful (efficient and effective) project completion. Thus, the Contractor shall provide suitable, safe and comfortable accommodation facilities for the workforce. These include: temporary camp for the contractor expatriate and local staff, the employer and its representative. These camps will allow construction workers to settle within the camps and will ensure that services are provided within these camps and prevent the development of spontaneous and illegal settlements in the proximity of the camps and other site installations.

It is evident that camps and other site installations are the major (and integral) components of projects and the management of these infrastructures greatly affects the wellbeing of the Project. That is, as they provide shelter and accommodation for the workforce, they also are sources of impacts.

Impacts that are expected due to existence and operation of camps and other site installations in the Project Area include the following:

- Land clearing or removal of vegetation for camps and other installations may take place;
- Significant amount of waste will be generated during the construction activities from the construction camps that comprise at least, residential and office buildings, canteens, clinic, laboratories, warehouses and workshops, and other temporary structures where the people will be engaged in different construction related activities. Wastes to be generated may include: household wastes, other solid wastes, medical and liquid wastes-some hazardous and some non-hazardous. Therefore, such wastes, if not managed properly, will have impact on the natural as well as the human environment;
- Existence of camps and site installations may pose detrimental impacts including: pollution of water, soil and air;
- Epidemics such as malaria and waterborne diseases may spread as a result of camps and associated installations;
- Construction camps will also bring about the possible spread of sexually transmitted diseases (STDs), especially HIV/AIDS as a result of interaction between the work force and the host communities and among the Project staffs as well; and

- Conflict between workers and local community may increase due to emergence of camps and other site installations.

### Recommended Mitigation Measures

When the construction works have been completed, base camps, stores, offices and other areas used temporarily by the contractor shall not be left in a deplorable condition. Scrap metal, other wastes and large masses of concrete, can pose problems for the nearby communities who have the task of removing and disposing of them, and may be left with contaminated land.

Therefore, the contractor is required, on completion of construction to reinstate base camp and other areas used by the contractor, leaving them as far as possible in a clean and tidy condition, and suitable for the purposes for which they were used prior to occupation by the contractor. On occasion, the land holder (community) or EEP may wish to retain some or all of the facilities which have been established by the contractor e.g. buildings, base slabs etc. Otherwise, the sites should be fully reinstated before abandonment, and all wastes etc. removed.

- Select construction camp sites in collaboration with the Local Administration;
- Select a site which avoids land acquisition, and in particular acquisition of farmland and land occupied by housing or business/commercial premises;
- The contractor should advise EEP/ESAO/Resident Engineer of the location of the proposed base camp site, and any other temporary construction areas, prior to commencement of any use of such sites;
- Although major ethnic conflicts are not expected, the decisions of the camp locations should take this possibility into consideration;
- Provide suitable, safe and comfortable facilities for the labour-force. The facilities shall include dormitories, rest areas, lavatory facilities, canteens, adequate for the numbers of workers in the camps; Provide adequate and suitable facilities for washing clothes, etc. for the use of contract labour employed therein; ensure adequate power supply and ventilation system;
- Provide potable water for food preparation, drinking and bathing in all labour camps, administrative offices, medical facilities, canteens, etc. Potable water shall comply with the national and WHO standards for human consumption;
- Separate and adequate toilet and bathing facilities (for the use of male and female workers) shall be provided with adequate supplies of running water. Notices shall be displayed outside each block of latrines and urinals, in the language understood by the majority of the workers. Such facilities shall be conveniently accessible and shall be kept in clean and hygienic conditions on a regular basis;
- Prevention and Control of STIs and HIV/AIDS: Awareness creation on the causes, effects, and prevention methods of HIV/AIDS and COVID 19 and hence reduce misconception among workers and the surrounding (host) communities. By so doing, the awareness creation will also promote/enhance safe sexual practice among the target population;
- Prevention of Vector-borne Diseases: Don't allow stagnation of water bodies in the Project Area. That is, avoid the presence of pools of standing water and any containers full of water and remove discarded items that could contain water;
- Construct buildings as mosquito proof and provide workers with chemoprophylaxis and parathyroid-treated mosquito nets;

- Provide recreational facilities to the workforce. Such facilities will help mitigate against potential conflict and impact on the local population as the incentive to go outside the camp will be reduced;
- EEP/ESAO/Resident Engineer and the contractor should take photographs (with date and time stamps) of each site so as to show the initial condition of each site, should any disputes arise regarding this matter. One copy should be given to the contractor, and one retained for the project records;
- The restoration shall include removal and disposal of all wastes, demolition and removal of unwanted structures, removal and disposal of any earth which has been contaminated by the spillage of diesel, or any other polluting material, and any others necessary to restore the site, as far as possible, to its initial state;
- The Contractor is required to prepare a plan for the approval of the Engineer, prior to abandonment of base camps, which indicates what activities are to be carried out to clean up the site. These activities should include removal and disposal of all wastes, demolition and removal of unwanted structures, removal and disposal of any earth which has been contaminated by the spillage of diesel or any other polluting material, and any others necessary to restore the site, as far as possible, to its initial state; and
- The Contractor is required to adopt progressive site restoration and therefore ensure sufficient resources are allocated in an on-going basis to achieve effective implementation of the restoration plan.

It should be noted that this is requiring the Contractor to behave in a responsible manner in relation to the environment and to comply with International Best construction practice.

If the Contractor refuses to reinstate base camps and other temporary construction sites, it is strongly recommended to retain separate nominated lump sum amount (i.e. from the final acceptance payment certificate) for the reinstatement of base camps and other temporary construction sites.

However, the Contractor shall prepare a Site Environmental Management Plans (SEMP) will be prepared for Base Camp and other Worksite Areas and submitted for the approval of the Resident Engineer. As appropriate, the SEMP report will be submitted to EPA and AfDB for clearance.

### 6.8.2 Impacts from Access Road Construction

Site access roads will be required to provide access to channel all the traffic generated by the construction activities for the safe transport of personnel, equipment and materials.

Access to the transmission line tower location will be using as much as possible existing public highways and access roads. Access to the tower locations will be gained via a short 'spur' from this track. Where an existing access track is not present, new access tracks will be constructed as much as possible within the transmission line ROW.

Moreover, these roads will be used for inspection and maintenance purpose during the operation of the transmission line. In addition to providing access to the construction activities, the road will greatly benefit the local communities after the construction is over by making the transport of people and goods safer, easier and quicker.

The principal impacts include:

*Private Land and property expropriation:* the single most important potential direct impact of the project will be the access roads may probably have to traverse cultivated land, with adverse effects on landholders.



*Impacts on Terrestrial Vegetation:* Loss of some terrestrial vegetation will be unavoidable from construction of the Project access road improvements. These losses of vegetation will occur under project road widening options, minor realignments and construction of culverts, etc.

*Impacts on Wildlife:* The project road construction will be a temporary impediment to existing wildlife movements if such movements go through construction areas.

*Impacts on Air Quality:* The major effects on air quality during the road construction would be an increase in suspended particles from excavation as well as movement of heavy machinery and trucks over gravel roads and the dust caused when all traffic is directed to unpaved detours.

*Noise and Vibration Impacts:* Noise and vibration result from construction activities in general but particularly from operation of heavy machinery. Sustained noise levels during construction are expected to be much higher than the ambient noise level in the project area.

*Erosion and Earthworks:* Access roads may be developed in materials which are highly erodible, and may contribute to enhanced erosion of a sensitive landscape

### **Recommended Mitigation Measures**

Therefore, in order to reduce the impacts associated with land and property expropriation, it is recommended that a threefold approach should be adopted involving:

- Give due consideration during route selection and preparation of engineering designs to avoid or minimise land acquisition, and in particular acquisition of land occupied by housing or business/commercial premises;
- preparation of engineering designs which minimise land acquisition, and in particular acquisition of land occupied by housing premises;
- Adhere to principles of environmental conservation during the construction period in order to avoid excessive destruction of vegetation and disturbance of land;
- Consider the location of mature trees during route selection for access road construction and land clearing for construction material sites;
- The contractor is responsible for the conduct of his workforce in relation to environmental protection matters and to specifically prohibit unnecessary felling of trees;
- Payment of full and fair cash compensation, which leaves those affected by relocation at least no worse off than they were previously; and
- Compensate in cash for the loss of privately-owned mature trees;
- To prevent high dust near settlements traffic speed should be reduced to 30km/hr
- Vehicle speed at village crossing will be limited by instructions to drivers and enhanced by the installation of speed limit signals as appropriate.
- There are noise sensitive areas that will be affected along the towns and villages. Therefore, to cause the least disruption to the population around the identified sensitive noise receptor sites, it is recommended not to undertake activities producing nuisance noise level at night around residential areas at towns and villages.
- The design consultants should ensure that provision is made for suitable and adequate drainage works to reduce flow down cut and fill faces;

However, a Site Environmental Management Plans (SEMP) will be prepared and submitted by the Contractor for the approval of the Resident Engineer. As appropriate, the SEMP report will be submitted to EPA and AfDB for clearance.

### 6.8.3 Borrow and Quarry Areas

The principal environmental concerns relate to the visual effects of quarrying and the effects of access road construction. There is less concern regarding impacts on locations with sensitive habitat and wildlife, and the effects of development in agricultural lands or close to settlements, since there does not seem to be a high probability of such sites being developed. Nevertheless, these aspects need to be considered and the Contractor shall not use any quarry site closer to settlement.

It is considered very unlikely that quarries would be developed in agricultural land, since most suitable sites will tend to be in areas where there are rock outcrops, and these are generally unsuitable for agriculture.

Similarly, it is unlikely that quarries would be developed in close proximity to settlements.

#### Recommended Mitigation Measures

Therefore, in order to reduce the impacts associated with farmland and property expropriation, it is recommended that the Contractor adopt the following:

- Materials should be extracted from existing quarries or borrow sites where at all possible;
- Gravels and sands should not be extracted from minor river beds to avoid scouring and water pollution; and
- The construction contracts contains a clause to the effect that quarry sites are deemed to be part of the site, so that the powers and authority of the Engineer extend to them in the same way as to other areas where works are being undertaken

However, for all new quarry sites, the Contractor shall prepare a Site Environmental Management Plans (SEMP) and submit it for the approval of the Resident Engineer. As appropriate, the SEMP report will be submitted to EPA and AfDB for clearance.

## 6.9 Cumulative Impact Assessment

The AfDB OSs requires that incremental impacts not only from existing projects, but also from planned or reasonably defined developments in the Project area of influence be identified and evaluated during the ESIA process.

Therefore, cumulative impacts that result from the incremental impact on areas or resources used or directly impacted by the Degehabur – Kebridehar 132kV Transmission Line Project are assessed.

However, according to the Woreda administration offices traversed by the TL route, there are no ongoing or known planned infrastructure development projects like roads, other high voltage TL, etc. within the project influence area.

Therefore, no cumulative impact from the construction of Degehabur – Kebridehar 132kV Transmission Line and Birkot Substation Project.

## 7. Public and Stakeholders' Consultation and Disclosure

### 7.1 Background

Public consultations were carried out with the objective of informing the stakeholders on the potential impacts and seek the participation and contribution of the public and other stakeholders during the construction of the proposed transmission line and substation projects. Identifying the potential social impacts (positive and negative), and seeking of mitigation measures for the negative impacts and measures of reinforcement for the positive impacts was the fundamental reason for conducting public consultation.

Public consultation gives opportunity to protect the interest of affected persons/communities, especially the poor and vulnerable groups. Moreover, it provides a chance for the affected people and local authority to influence the project to reduce adverse impacts, maximize additional benefits, and ensure that they receive appropriate compensation.

The FDRE's Constitution also reaffirms the participation of the public, in policies and projects that affect their livelihood. Article 43 No.2 states that: *"Nationals have the right to participate in national development and, in particular, to be consulted with respect to policies and projects affecting their community."*

Article 92 sub-article (3) indicated that: *"People have the right to full consultation and to the expression of views in the planning and implementation of environmental policies and projects that affect them directly"*.

The Ethiopian EIA Guidance identifies that all interested and affected parties have the opportunity to participate meaningfully in the ESIA processes. Similarly, AfDB also requires clients to "undertake a process of consultation in a manner that provides the affected communities with opportunities to express their views on project risks, impacts and mitigation measures".

Therefore, in response to the requirements of the national laws and regulations and AfDB's guidelines a series of consultation meetings were conducted with various stakeholders for the proposed Hurso – Harar – Jigjig 230 kV and Degehabur – Kebridehar 132kV transmission line and associated substations projects.

Accordingly, public consultation and field level investigation was carried out along the project influence Woredas and Kebeles and surrounding villages to ensure that people who reside in the project influence area and the local Authorities have their "say" on issues that could potentially affect their socio-economic environment as well as to build and maintain a constructive relationship with relevant stakeholders.

Therefore, identifying key stakeholders and project impacted people and holding consultations with them is one of the main components of this ESIA. Therefore, this Chapter presents the objectives, process, and outcome of the consultations carried out with the key stakeholders for the two transmission line and four new substation projects.

### 7.2 Objective of the Public and Stakeholders' Consultation

The primary objective of the public consultations and disclosure is to inform the project-affected communities and their representatives about the proposed project, its potential (positive and negative) impacts and engage and maintain their active participation and support throughout the various stages of the project (planning, design, construction, operation and maintenance phases of the project).

In line with the above general objectives, the public consultations were carried out with the following specific objectives:

- Sharing Information with project impacted community members and key stakeholders on proposed transmission line and substation project activities and, to solicit their views on the project and its potential or perceived impacts;
- Collect baseline social and environmental data held by the community members and local officials;
- Assess the perception, concerns and attitude of individual households, local communities and authorities about the proposed project;
- Learn about the views of local communities and authorities towards the acceptance of the proposed project;
- Identify the potential environmental and social impacts (i.e., beneficial and negative) of the proposed projects from the view of local residents and local authorities;
- Identify possible mitigation measures for offsetting/avoiding negative impacts and enhancing positive impacts;
- Establish and maintain a constructive relationship with relevant stakeholders; and
- Collect information on any additional requirements or issues of concern to be taken into account during the project design and construction phase in this ESIA.

### 7.3 Consultation Methodology

In high voltage, transmission and substation projects that affect relatively large numbers of local populations and that involve a number of stakeholders at various administrative levels; consultation cannot and should not be a one-time activity conducted with a limited number of stakeholders.

Therefore, recognizing the importance of establishing and maintaining close and durable working relationships with key stakeholders at all levels, the study team conducted a series of public consultation meetings with various key stakeholders including PAPs, project-affected communities, representatives of women and vulnerable groups, representatives of local (Kebele) administrations, Woreda and Regional and Federal government officials. As a matter of fact, the public consultation and disclosure was designed and conducted in such a way that covers representative Kebele and community that would be affected by the project.

Attempts were made to ensure inclusiveness of the consultation processes by involving cross-sections of communities. Separate consultations were conducted with women groups in two communities. As far consultations with Federal, Regional and local government officials is concerned, several consultation meetings were held with key officials.

In order to meet the main and specific objectives of the public consultation and discussion, a wide-ranging issues related to the proposed project were raised and covered during consultation meetings.

Key agenda points that were tabled for consultation and information exchange included the following:

- A. Disclosure of all project related information and awareness creation;
- B. Expectations and benefits of the proposed projects;
- C. Perception of risks anxieties, fears, concerns and uncertainties associated with the project;

- D. Possible measures (social, cultural, economic, and environmental) that could help mitigate adverse impacts of the projects on local community and enhance the positive one.

Several consultations meetings were held from February 28 to March 30, 2022 in all project woredas and Kebeles with members of the community and stakeholders. In these consultation meetings, Woreda level officials, elders, women, youth, and religious leader were active participants and expressed their threat, fears and thoughts on the project. Previous energy projects experience, support and good attitudes for the project was also raised. They also recommended constructive ideas to consider during project planning and implementation which will have significant positive and negative impact for the community as well to the environment.

A total of 20 different public and stakeholder consultation meetings were held in the project influence area of which 8 of the meetings were conducted with the local authorities, and 12 of the consultation meetings were held with various members of the community (9 consultation meetings were with community representatives (clan leaders, religion leader’s elders and other segment of the community members) and 3 exclusively with Women groups). Concerning participants number more than 239 people were consulted of which 58 of them were local officials at Woreda and Kebele Administration level. About 139 of the people and 42 were women were consulted at community level. The numbers of participants are summarized in Table 7.1 below.

**Table 7.1: Types of consultation meetings and Number of Participants**

Types of consultation	Number of Consultation	Number of Participants
Regional, Woreda and Cities Administrations	8	58
PAPs & Community Members	9	139
Women	3	42
<b>Total</b>	<b>20</b>	<b>239</b>

The study team briefed the consultation participants about the nature, components, and influence areas of the proposed project, as well as the purpose of these discussions at beginning of each consultation session conducted with various stakeholders. Having some knowledge and initiative of the proposed project and this particular meeting, the consultation participants at various level managed to express their views and attitude toward the proposed projects.

Since, the details of the consultations are too wide-ranging and too broad to be presented in this section, only main findings and feedback from these events is summarized and presented in the following sub-sections while sample municipalities of the consultation meetings and lists of the participants are provided in the Annex sections. Obviously, findings of discussion with each group of stakeholders and various administrative echelons are equally important and deserve a separate section in their own right. However, due to similarities of concerns discussed and issues raised during the consultations, we preferred to organize the groups and present the findings for both projects into two groups namely i) Consultations with community members and Community Groups, and ii) Consultations with Local Government Officials. Figure 7.1 below shows geographic coverage, distribution and locations where the consultations were carried out.



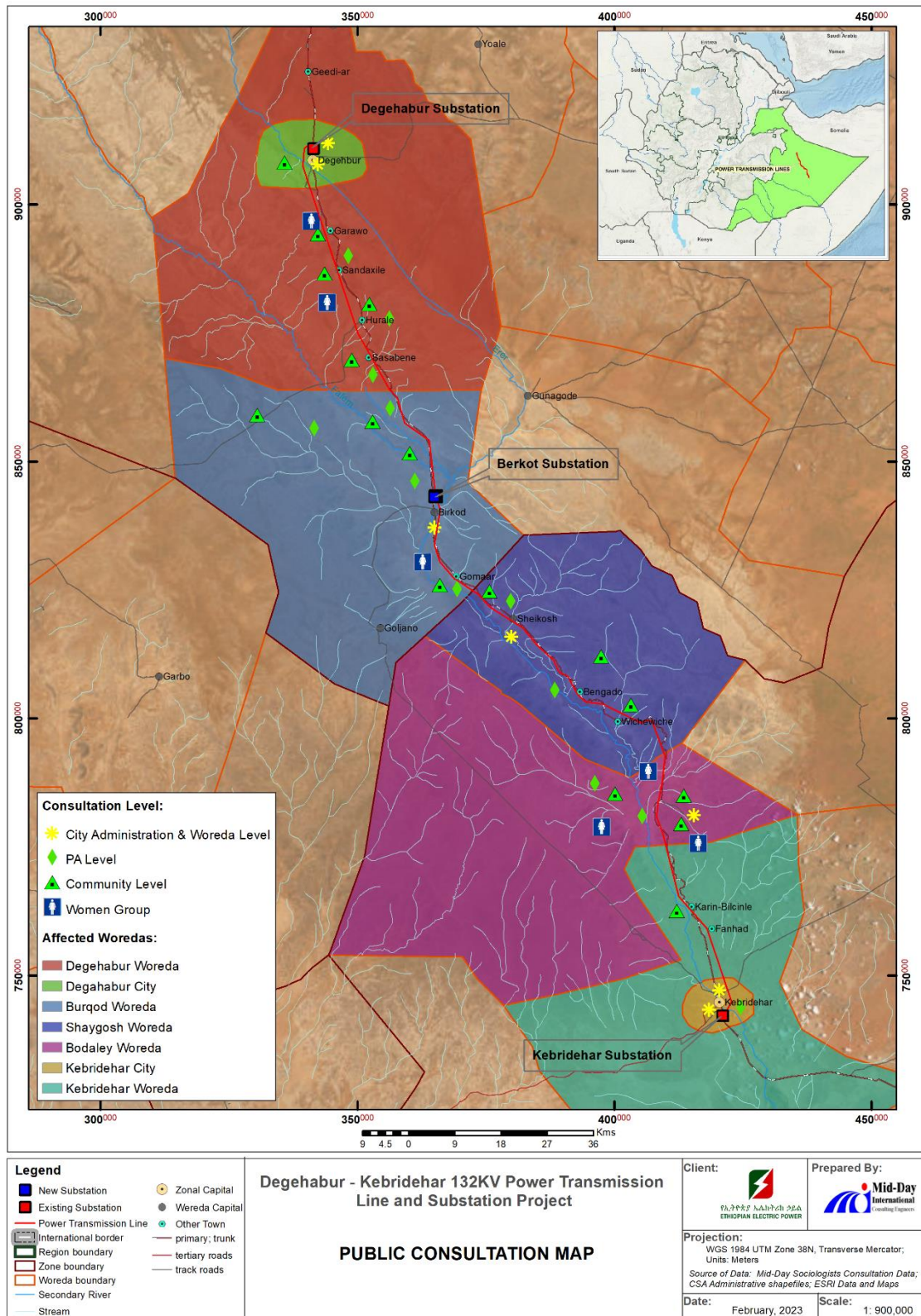


Figure 7.1: Location of Public Consultations along the Proposed TL Routes

## 7.4 Project Information Provided by the Assessment Team

The assessment team has discussed the project's purpose, its positive and negative effects, as well as the mitigation measure.

About the purpose and objectives of the project, the team presented the following:

- Provide reliable electricity to rural towns in the Somali region;
- Lay the groundwork for the proposed Ethiopian Somali Electric Power Network;
- Access to Wabi Shebele Water Development Electric Power Station; and
- Lay the groundwork for the continuation of the Rural Electricity Program.

The team raised the following project importance and the negative impact with mitigation in relation to the project. The project's importance's include:

- Solves the existing power outages problem;
- Promotes local development opportunities and activities;
- The project will play an important role in creating access to electricity supply for the surrounding villages and towns;
- Provides job opportunities;
- Increased energy supply improves citizens' daily lives; and
- Contributes to the reliable supply of electricity to residents and industries in the project area.

In terms of the projects negative impact, it is detailed how the project will have an environmental and socio-economic impact, such as the loss of homes, farmland, fruit trees and other privately owned trees, as well as economic and physical relocation.

Participants were informed that compensation for project-related damages will be paid in accordance with Federal and Regional laws and regulations. In addition, participants were informed appropriate mitigation measures will be identified and implemented during project construction and operation.

## 7.5 Key Findings of the Consultations with Regional, Woreda and Kebele Administration Officials

Local authorities are another important stakeholder identified by the study team who are able to influence the implementation of the proposed projects in many ways. Therefore, a number of consultation meetings were conducted with the local authorities at Woreda and Kebele level to learn and incorporate their views and attitudes with regard to the proposed transmission line and substation projects.

During the fieldwork, a total of 17 consultations with local authorities were undertaken at Regional, Woreda and Kebele levels, with 58 officials consulted in 1 at Regional, 2 city councils and 5 Woreda administrations. The number of consultation meetings and participants' numbers with date of consultation meetings are summarized in Table 7.2.

The summary of issues presented and discussed during the consultation meetings with the local authorities are presented in the section below.

Table 7.2: Dates, Number and Composition of Various Rounds of Regional and Woreda Level Consultative Meetings

Region/Woreda/CA	No. officials Participated	Date
Regional level	6	21/3/2022
Degahabur CA	6	25/3/2022
Birqod	6	23/3/2022
Degahabur	5	18/3/2022
Bodalay	8	12/3/2022
Kebridehar	5	11/3/2022
Sheygoosh	13	19/7/2022
Kebridehar CA	9	9/2/2022
Total	58	

### 7.5.1 Awareness and Understanding of the proposed project

In all the consultation meetings, the first topic of the discussions was to understand the awareness of the participants about the proposed projects and its components. The local authorities both at Regional and Woreda level had no prior information about the proposed transmission line and substation projects planned to be constructed in their administrative jurisdiction.

Therefore, the study team provided adequate information to the participants about the nature, components, and the transmission routes at the beginning of each consultation sessions. Once the local authorities were informed about the proposed project and the objective of this particular consultation meetings, it was not difficult to conduct fruitful consultation meetings with the local officials.

### 7.5.2 Expectations and benefits of the proposed project

The following potential benefits were identified by the local officials participated in the consultation meetings:

- **Provide reliable electricity service in the region:** Owing to the nature and objective of the proposed projects, the local authorities expected provision of reliable electricity service to the project impact woredas. According to the officials, access to electricity service is one of the major challenge of the region as whole and project impact woredas and cities in particular. Therefore, with the realization of the proposed project this challenge will be alleviated at least in some of the woredas and Kebeles found in project influence area.
- **Increase access to electricity service and coverage:** The implementation of the proposed project in the area will increase household access to electricity service and the overall electricity coverage of the project woredas as well as the region. Particularly, non-electrified rural households will get an opportunity to access electricity in the near future.
- **Enhance business activities in the area:** According to the local officials, lack of reliable and adequate power supply in most project woredas and cities are one of the bottle neck for limited business activities in the area. Therefore, with the construction of the proposed project existing power supply will be enhanced in the

area and business activities that require power supply for operation will flourish which in turn play a positive role in the local economy.

- **Enhance service delivery:** According to the local officials, implementation of the proposed project which will enhance the existing power supply in the area will contribute positively for the delivery of some social services in the area. For example, the presence of reliable power supply will improve various health delivery services as most of the equipment's and tools used by health institutions requires reliable power supply for better use.
- **Employment opportunity:** The local authorities also anticipated the potential employment opportunities to the local people especially during the construction phase. The participants believed the local people will have new opportunity to increase their income by getting some kind of casual job opportunities during project construction.
- **Improves quality of life:** Another interesting benefit identified by the officials and local authorities participated in the consultation meetings relate to improvement of quality of life for the residents living in and around project influence area. They explained how challenging life is for most of the residents in project influence area due hot weather condition and lack of reliable power supply that limited households from using different domestic electrical appliance that are required due to the climatic condition of the area. Therefore, the participants expect the quality of life of the local people will improve after project implementation. Improved access to electricity service will enable residents to use home appliance like refrigerator, ventilator and other appliance that promote quality of life in such hot environment.

### 7.5.3 Perception, Risks, Concerns & Adverse Impacts Associated with the Project

The local officials also voiced their fears, concerns and uncertainties associated with the implementation of the proposed transmission line and substation projects in the area. Accordingly, the following fears and concerns were raised by the local authorities during the consultation meetings:

- **Impact on land allocated for different purpose:** One of the main concerns of the local authorities is the potential negative impact of the project component on land used and allocated for various purpose. The tower foundation and substation components will likely affect farmland, grazing land and land allocated for housing, industries, market and other infrastructures purposes.
- **Impact on houses and housing structure:** Another concerns raised by the local authorities was the potential impact of the project especially transmission line Right of Way (RoW) on residential houses and public institutions like mosque, schools, etc. The participants further explained this may require some households to relocate from their current residential area.
- **Fear of not benefiting from implementation of the proposed project:** The other interesting concerns and anxieties of the local authorities include some of the anticipated potential benefits may not be realised as promised. Based on their previous experience from similar infrastructure projects implemented in their respective woredas and cities, some participants were very suspicious of the proposed project in delivering the expected benefits such as, employment opportunity to the local residents, provision of electricity service, etc.
- **Being suspicious of the compensation process:** The participants also shared their serious concerns the issues related with compensation and its process. Their concerns are related to execution of proper and timely compensation payment for



properties affected by the proposed project. They expect to know who would be responsible to pay compensation for the project affected properties. They also would like to know and understand in advance the exact and detailed process of the compensation payment and its modalities.

#### 7.5.4 Proposed Benefit Enhancement and Mitigation Measures

The participants were also given the opportunity to propose some measures to avoid or mitigate negative impacts and enhance the potential beneficial impacts. Therefore, the following measures are proposed by the local officials in the consultation meetings:

- **Provision of electricity service:** Considering the high demand for access to electricity service in most project impact woredas and Kebeles, the local officials requested the project proponent to provide electricity service for non-electrified Kebeles and rural villages within the project direct impact areas. The participants also strongly pointed out that, the project would not have the expected support from the local communities unless EEP/EEU are ready to provide electricity service at least to some of the non-electrified Kebeles found within the project impact corridor.
- **Fair and timely compensation:** One of the primary mitigation measure proposed by the local officials was to pay fair and timely compensation for the properties affected by the project. Moreover, the compensation process should be clear, transparent and must be paid prior to the start of construction work.
- **Employment opportunities for the local people:** The local officials also suggested the need of providing employment priority during construction to the local people. Employment opportunity will not only benefit the local people in terms of short term monetary benefit but also strengthen the relationship between project proponents and the local people. This employment opportunity will enhance the acceptance of the projects by the wider community members residing in and around project influence area.
- **The construction of the project must be in line with woredas/cities master plan:** the local officials also explained the importance of considering the respective woredas and cities master plan, land allocation and other future plan while designing the transmission line routes. The project implementer should also be flexible and willing to reroute and shift some of the project components if it's not in line with respective woredas/cities master plan.

During the meetings, the participants asked clarifications on the following issues:

- How will the project plan to compensate for the affected property?
- Will this project alleviate the energy shortage in the area?
- Is it possible to change some of the current project component location if it is not in line with the master plan or affect more properties?
- What other direct or indirect benefits the local community can get from the construction of the proposed transmission and substation projects?

The study team responded to the questions raised by the participants. On issues related to compensation, the study team explained that EEP will pay appropriate compensation at full replacement cost as per the Ethiopian expropriation of land for project affected properties. This will be done after conducting full census and valuation of project affected properties with active participation of Woreda and city administration Compensation Committee. Regarding some project location change request, the study team explained, during the final design this concern will be addressed by the consultant.





Photo 15: Discussion with Officials from Somali Regional Administration Offices



Photo 16: Discussion with Somali Region Environmental & Rural Land Administration Offices Officials.



Photo 17: Discussion with Babile Woreda of Oromiya region in east Hararge



Photo 18: Discussion with Officials from Somali Region President Office



Photo 19: Discussion with Gursum Woreda stakeholders



Photo 20: Discussion with Jigjiga City administration Mayor Office



Photo 21: At Birkot Woreda Office



Photo 22: At Degehabur City

Additional information was requested about what other additional benefits the project will bring to the local people and its contribution in alleviating the energy shortage of the area. The study team responded that, the main objective of constructing such project is to enhance the existing power supply with the project influence area. Therefore, implementation of the proposed project will definitely reduce the existing power shortages within the project influence area. Moreover, implementation of the proposed project will create job opportunities for the local youth, improve social services provision, and play positive role in boosting the local economy.

Generally, the consultative meetings carried out with local officials in most project woredas and cities were very productive. Despite such undesirable consequences, however, officials at all levels strongly and unanimously supported implementation of the proposed projects and pledged to work with the project to identify and implement measure that could mitigate adverse impacts of the project on local populations as well as the environment at large. They expressed their willingness to provide all the necessary support in their capacity for the successful implementation of the project.

Table 7.3: Summary of the Consultation Meetings with Regional and Local Officials

Region	Dates	Location	No. of participant	Views Raised	Given Responses and Clarifications
Somali	23/3/2021	Birkot Woreda	6	<ul style="list-style-type: none"> <li>▪ The people who live on the asphalt are the ones who have electricity. Off-street Kebeles do not have electricity. How can we get electricity?</li> <li>▪ Could the construction of the substation endanger the nearby community?</li> <li>▪ Will the project create job opportunity?</li> <li>▪ Will the work begin right away or will it take some time?</li> <li>▪ Will there be compensation for lost property?</li> <li>▪ Will the tower pose a threat to the nearby residents?</li> <li>▪ Is it possible for them to continue farming near and under the tower?</li> <li>▪ Are areas without electricity get access from the project?</li> <li>▪ There are some areas where there is no access to safe drinking water and health service.</li> <li>▪ There are many community members without access to electricity. Will the project support the community to have access to electricity?</li> </ul>	<ul style="list-style-type: none"> <li>▪ One of the objectives of the project is to support the electrification project to rural towns in Somali Region. It will create the groundwork for the Rural Electrification Program to continue. As a result, local Kebeles may get access to electricity in the future.</li> <li>▪ During implementation, the project will create job opportunity for the local community.</li> <li>▪ The substation is away from residential areas and will pose no risk to the local community.</li> <li>▪ Compensation will be paid for property affected by the project.</li> <li>▪ The community can continue farming under TL corridor.</li> <li>▪ Your request for assistance will be included in the ESIA report and forwarded to the appropriate stakeholders.</li> </ul>
Somali	11/3/2021	Kebridhar Worea	5	<ul style="list-style-type: none"> <li>▪ EEP has to provide adequate compensation for public property and facilities affected during construction of the transmission line.</li> <li>▪ Not only this line will pass through the Woreda, but it has to also collaborate with the EEU and plan to implement electrification project to benefit the affected Kebeles.</li> <li>▪ We support implementation of the project since it will expand the country's and region's electricity coverage.</li> </ul>	<ul style="list-style-type: none"> <li>▪ All noted and accordingly these points will be included in the ESIA report</li> </ul>
Somali	25/3/2021	Degehabur City	6	<ul style="list-style-type: none"> <li>▪ The city is expanding in the area where your project is located.</li> <li>▪ Every day, more than 100 homes are constructed in that area.</li> <li>▪ The area your project is located is chosen by the city's</li> </ul>	<ul style="list-style-type: none"> <li>▪ Agriculture and grazing are permitted in under the transmission line corridor. However, housing is prohibited within the project line, and compensation will be paid before the project is executed.</li> </ul>

Region	Dates	Location	No. of participant	Views Raised	Given Responses and Clarifications
				<p>population for residence. Because dwellings cannot be built beneath the transmission line, it is recommended to redesign the project.</p> <ul style="list-style-type: none"> <li>▪ There is an acute water shortage in our city. It would be good if your project contribute to address this problem.</li> <li>▪ Will the project lead to the creation of jobs in the area?</li> <li>▪ If your project provides job opportunity, will it benefit our city's educated youth?</li> <li>▪ Electricity is not available in 15 of the 18 schools.</li> <li>▪ In our city, a generator for a health post costs a lot of money.</li> <li>▪ It is critical to have a reliable access to electricity. We hope your project will address this issue.</li> <li>▪ Within the project area there are many farms. How will they be considered in compensation? Will compensation be paid for affected farms and grazing lands?</li> </ul>	<ul style="list-style-type: none"> <li>▪ Our study will incorporate your questions and suggestions about the required support.</li> <li>▪ Often projects give a priority for job opportunity to the local community and contractor will be required to do the same.</li> <li>▪ The report will recommend to EEP and other relevant stakeholders to reconsider design in order to reduce the impact.</li> </ul>
Somali	18/3/2021	Degehabur Woreda office	5	<ul style="list-style-type: none"> <li>▪ The project must pay appropriate compensation for lost property.</li> <li>▪ In the project impact Kebeles there is a serious water supply shortage and there is no access to electricity. It would be good if this planned project considers to address this problem.</li> <li>▪ In our Woreda, only 5 out of 16 Kebeles and 75 district Kebeles are getting electricity. We need access to electricity.</li> <li>▪ The project must create job opportunity for members of the local community.</li> <li>▪ Most communities are pastoralists and the existing veterinary clinics are underfunded and stocked with most needed drugs. So funding to improve the situation and also access to electricity is very important.</li> </ul>	<ul style="list-style-type: none"> <li>▪ All noted and accordingly these points will be included in the ESIA report.</li> </ul>
Somali	12/3/2021	Gudaley woreda Gulidate kebele	8	<ul style="list-style-type: none"> <li>▪ Uncultivated land belongs to private and clan members in some areas. As a result, it must consider this ownership structure very carefully.</li> </ul>	<ul style="list-style-type: none"> <li>▪ All noted and accordingly these points will be included in the ESIA report</li> </ul>

Region	Dates	Location	No. of participant	Views Raised	Given Responses and Clarifications
				<ul style="list-style-type: none"> <li>Clan Leaders and local community elders administer the land. Therefore, they must be included in the consultation.</li> <li>We support the project since it is important to improve access to electricity coverage and the development of the region.</li> <li>Adequate compensation should be paid for all affected property.</li> </ul>	
Somali	19/7/2021	Shekosh woreda	13	<ul style="list-style-type: none"> <li>Appropriate compensation payments should be made in advance for those who lose their property.</li> <li>Due to a lack of electricity, the cement factory was unable to operate.</li> <li>There isn't enough access to electricity in the area. Therefore, improved coverage is advantageous to the local community in the long run.</li> </ul>	<ul style="list-style-type: none"> <li>All noted and accordingly these points will be included in the ESIA report</li> </ul>
Somali	9/2/2021	Keberidehar City	9	<ul style="list-style-type: none"> <li>There were complaints about compensation payment during implementation of the project from Gode to Kebridahare.</li> <li>This project must address issue related to compensation more carefully in order to avoid repeat of the same problem.</li> <li>In the past, Kebeles traversed by a transmission line never benefited from the development. When a project like this is being developed, it's important to have a system in place to benefit the community with these Kebeles.</li> <li>Although there is a substation, the electric utility coverage is limited. The utility must provide reliable service to the community.</li> <li>If additional social development projects are implemented, the project will be more acceptable.</li> </ul>	<ul style="list-style-type: none"> <li>All noted and accordingly these points will be included in the ESIA report</li> </ul>



## 7.6 Consultation Meetings with Community Members

As mentioned earlier, public consultations with community members residing within project influence woredas and rural Kebeles were conducted and about 139 community members were consulted in 9 meeting sessions. To ensure the inclusiveness of the consultation processes all cross-sections of communities, (elders, influential community member’s, clan leaders, farmers and other community members) were included in the public consultation meetings conducted with the community members in the project influence areas.

Table 7.4: Place, Dates and Number of Participants for Community Consultative Meetings

Woreda/CA	No. Community Members Participated	Date
Degahabur CA	29	26/3/2022
Birkot	44 (3X)	16/3/2022
Degahabur woreda	33 (2X)	28/3/2022
Bodalay	11	15/3/2022
Kebridehar	9	16/3/2022
Sheygoosh	13	19/3/2022
Total	139	

The consultation meetings were conducted on voluntary bases, and took the form of public meetings. The summary of consultation meetings held with community representatives, women and youth groups is presented in this sub sections below.

### 7.6.1 Awareness and Understanding of the proposed project

Most of the community members had no prior information about the proposed transmission line and substation projects. Therefore, the study team had to introduce and brief about the proposed project nature, components, routes/location, activities it will involve. The information also included presentation of the objective of this particular consultation meetings to the participants. The participants were also encouraged by the consultation facilitator to be free and actively engage in the discussion.



Photo 23: Interview with Religious Leader at Degehabur City, 06 Kebele.

### 7.6.2 Expected Benefits and Positive Impacts

Identification of potential positive impacts of the proposed projects was one of the objective of the public consultation meetings with the community members, therefore, the participants were given a chance to reflect on their expectation from the implementation of the proposed projects in the area. Accordingly, the participants

managed to speak out what they thought would be the potential benefits of the project to their community and in the area. Some of the expected benefits and positive impacts identified by the community members are summarized below:

- **Provision of electricity services to non-electrified villages:** As electricity service is the long-time demand of many non-electrified rural households in the project areas, it's not surprising to hear that provision of electricity services to be what first came to the mind of the participants. According to the community members, there are a number of villages within the project influence woredas and towns who have not yet connected to electricity. Therefore, this is the primary benefit the community expects from the project. The participants also expressed their frustration that they have to wait for this long to have access to electricity services for such long time while the existing transmission and distribution poles erected within their land and the gridlines passes over their settlement.
- **Alleviate power shortage and interruption in the area:** The community members also expect the implementation of the proposed project will improve the electricity capacity and therefore, it will alleviate the existing power shortage and frequent power interruption in the area.
- **Creation of temporary employment opportunities:** similar to local officials consulted, the participants expect the project to provide employment opportunities during construction phase to members of the local community. The community members also explained how such employment opportunities will benefit the local people in terms of increase income earning and above all acquiring and learning new skills and knowledge related to construction activities.
- **Improve the existing poor social services provision:** According to the consultation participants, the project woredas in general and project affected Kebeles in particular are characterized by poor social services and infrastructures. Therefore, implementation of the proposed project in the area would help to improve some of the existing provision of social services and facilities in the area. For example, reliable and sustainable power supply will improve the provision of services given by the health institutions as many of devices/instruments used in the health institutions require reliable power supply for better functioning. Availability of reliable and sustainable power supply will also improve the provision of piped water supply for the residents living in towns and cities found within the project influence area.
- The provision of other service like telecommunication, and government and private business service such as secretary, photocopy, internet, haircut, welding and other services require electricity these services will be improved.
- **Contribute to future development activities:** the participants also pointed out the potential positive impact they expect from implementation of the proposed project in the area and it will increase development project activities that will take place in project woredas and cities in future.

Apart from what they managed to identify in relation to the potential benefits of the project, the participants in some Kebeles wanted to know more from the study team about additional benefits that implementation of the proposed transmission line and substation project would bring to their community.



Photo 24: At Degehabur Woreda, Dhmot Kebele



Photo 25: At Degehabur City, 07 Kebele



### 7.6.3 Perception of risks concerns and uncertainties associated with the project

It was noted that in all the consultation meetings carried out with the community members it was not challenging for participants to identify the risks, and uncertainties associated with implementation of a transmission line and substation projects in their communities. The anticipated risks, fears and uncertainties associated with the proposed project are summarized below:

- **Loss farmland and grazing land:** the community members consulted in most of the project Kebeles were aware of the potential impact of the project components on loss of farmland and the requirement for acquisition of privately owned land. The participants explained the presence of farm and grazing land along the proposed transmission line project corridors and these farm and grazing land will be expropriated for the construction of the proposed project components and related activities. Further they explained the negative impact of farm and grazing land acquisition on the livelihoods of households affected by the project. The participants also explained as there will be no problem if the project affect bare land owned by government or public land, but if the project will take private land, the landowner should be appropriately compensated.
- **Loss of residential houses:** After the participants understood the justification and the regulation of Right of Way (RoW) from the study team briefing, they easily pointed out the potential impact of the project on residential houses and related structure located within the RoW. The members further suggested relocating rural households away from the RoW and relocating mobile housing structures will not be a big deal but relocating of households living in permanent housing structures particularly in urban settlement area will not be easy.
- **Injuries and accidents:** Another anticipated negative impact that the consulted community members identified in relation to the construction activities of the proposed project include injuries and accidents that can happen to human, livestock and properties as movement of trucks and heavy machineries will increase at the construction phase.



- **Fear of unfulfilled benefit expectation:** Based on their past experiences of similar infrastructure development projects in the area, some of the community members present in the consultation meetings bitterly debated that the implementation of the proposed project would not bring the discussed benefits to the local people and communities in and around project influence area. According to some of the participants, benefiting communities in direct project influence area with provision of electricity service is not the primary goal of the proposed transmission and substation project as a result the community members have no assurance not to face similar fortune with that of other projects implemented in the same area.
- **Fear of not to getting employment opportunities:** Another concerns raised by the consulted community members was related to employment opportunities that the project will create during the construction phase. Some of the community members witnessed how some infrastructure projects like road construction project that took place in the area gave priority of employment opportunities to people came from other places instead of the local youth who were seeking for the same opportunity. Therefore, the participants have some concerns because of similar past experience.



Photo 26: At Fafen PAPS in Gursum Woreda

#### 7.6.4 Mitigation measures proposed by community members

Along with identification of both positive and negative impacts of the proposed transmission line and substation projects, the community members were also asked to share mitigation and benefit enhancement measures. Accordingly, they proposed the following measures:

- **Provision of electricity service:** In all the consultation meetings, the community members suggested the importance of providing electricity service to non-electrified villages found within direct project impact corridor. According to the participants, provision of electricity service to non-electrified villages will not only mitigate the potential negative impact of the project but also reinforce the anticipated positive impacts of the proposed project implementation.
- **Support & engage in development of other social infrastructure and social service:** The participants call up on EEP to support and take part in alleviating some of the problems the local residents are facing at the moment which include challenges with shortage of drinking water, inadequate health facilities especially with maternity service, problem with access road and challenges with educational services.
- **Adequate and timely compensation:** The community members strongly suggested the need for timely compensation payment for project impact in private properties. According to them, households who would lose their properties to the project should be paid fair and adequate compensation on time and compensation payment must be carried out before the start of construction activities. The community members also suggested the need to provide additional support and aid

to households who would relocate from their residential place in addition to compensation payment.

- **Priority of employment opportunity:** Community members also proposed the need to give priority in employment opportunities to be created by construction work to the local youth residing within project influence area. Women participants also suggested the need to give equal employment opportunity to women community members who want to work in the construction activities of the project.
- **Grievance mechanism:** The consulted community members finally informed the need to conduct further consultation meetings prior to project implementation as well as suggested the importance of handling any project related accidents and complaint through the existing local traditional grievance solving mechanism.

The overall result from public consultation meetings is that community members' attitude towards the project is found positive and desirous of enjoying the benefits associated with electric power supply as soon as possible. The consulted community members are willing to provide assistance during the project implementation activities.



Photo 27: Consultation meeting with community members & women in project influence Kebele



Table 7.5: The summary of the PAPs' and community members' consultation meetings

Region	Dates	Location	No. of participant	Views Raised	Given Responses and Clarifications
Somali	21/3/2022	Regional president office	6	<ul style="list-style-type: none"> <li>▪ Very high positive attitude was reflected towards the proposed project.</li> <li>▪ How the project will compensate the affected property?</li> <li>▪ Will this project alleviate the energy shortage?</li> <li>▪ How will EEP will collaborate with other stakeholders on the implementation of this project?</li> <li>▪ What if the current substation location is changed because it will affect several property and does not fit in with the town master plan?</li> <li>▪ The project must set a deadline for payment of full compensation.</li> <li>▪ If the project affects property belonging to individuals or entities, compensation must be paid prior to the start of the project construction.</li> <li>▪ The construction of the project must be in line with our city master plan.</li> <li>▪ During the project construction, job opportunities should be created for the youth of our area in accordance with the law and should be regularly reported to the relevant regional office.</li> </ul>	<ul style="list-style-type: none"> <li>▪ The project was briefed by the teams and explained that compensation for the assets affected by the project will be paid in Full Corporation with the Woreda/City Administration Compensation Committees in accordance with national and regional compensation laws and regulations.</li> <li>▪ The study Team will inform EEP to collaborate with all stakeholders and work with the city Administration to change the substation location in line with the city master plan.</li> <li>▪ The Team confirmed the main purpose of the project is reinforce the line and reduce energy shortages.</li> <li>▪ The project will create job opportunity and priority will be given to members of the local community.</li> <li>▪ All other issues raised by the participants are noted.</li> </ul>
Somali	26/3/2022	Degehabur City, 07 Kebele	29	<ul style="list-style-type: none"> <li>▪ We request for the line to be rerouted and the impact reduced.</li> <li>▪ There is no electricity in our area. We live in the dark, there is no water, no health centre, and we desperately need these services and the development.</li> <li>▪ We are afraid our land will be unfairly expropriated.</li> </ul>	<ul style="list-style-type: none"> <li>▪ The Team confirmed their concern and request will be reflected in the ESIA report and EEP will be informed.</li> </ul>
Somali	27/3/2022	Degahabur Woreda, Sasabane Kebele	19	<ul style="list-style-type: none"> <li>▪ What if the power line affects existing residential houses?</li> <li>▪ We want fair compensation for our property.</li> <li>▪ It doesn't matter if the line traverses on government lands, but if it is on private land, we demand appropriate compensation.</li> <li>▪ If the electric line passes through our house, will we have electricity connection to our house?</li> <li>▪ We support the project development. However, we want to know</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compensation will be paid for the impacted property.</li> <li>▪ Your request for support will be included in the study.</li> <li>▪ You can't be connected directly to this line because it is a high voltage power line. Therefore, this expectation will be communicated to EEP/EEU.</li> </ul>

Region	Dates	Location	No. of participant	Views Raised	Given Responses and Clarifications
				<ul style="list-style-type: none"> <li>how EEP will support us.</li> <li>There is no free land here and everyone owns it.</li> <li>Project has to create jobs for us based on our ability and skill.</li> <li>There are some homes that have no access to electricity.</li> <li>There is no health service, medicine, and no midwife in our area.</li> <li>There is plenty of water in our area but it is very salty so please help us to treat the salt.</li> </ul>	<ul style="list-style-type: none"> <li>One of the benefits of this project is that it will lay the ground and create the opportunity to implement rural electrification project.</li> </ul>
Somali	16/3/2022	Birkot Woreda, Gomer Kebele	9	<ul style="list-style-type: none"> <li>We support the project.</li> <li>Access to electricity is our greatest need. We've begged for this service several times and still hoping and waiting.</li> <li>They promised us for connection to electricity in the past, but we are yet to see it. We expect you to resolve our long awaited issues as soon as possible.</li> <li>When a woman gives birth, she requires medical attention. We don't have electricity at the health care in our location.</li> <li>We use fire wood for cooking. We require the privilege like our people in the neighbouring Woredas.</li> </ul>	<ul style="list-style-type: none"> <li>EEP and EEU are two separate organizations. EEP is responsible for generating electricity and high power transmission line. Your request will be presented to EEU.</li> <li>The ESIA report will properly present your expectation and it will be communicated to the appropriate institution.</li> </ul> <p>The ESIA report will include your main problem which is access to electricity.</p>
Somali	17/3/2022	Birkot Woreda, Wab Kebele	25	<ul style="list-style-type: none"> <li>The existing transmission line passed through our Kebele, but we still have no access to this power.</li> <li>There is no health extension, no water, and no electricity. We need a school, water and health service.</li> <li>The transmission line serves others and not us who are affected by construction of this line. Therefore, there is no power to pump water. If we have electricity, we will get have a better health facility.</li> </ul>	Noted.
Somali	23/3/2022	Birkot Woreda,02 Kebele	10	<ul style="list-style-type: none"> <li>We expect the project to create job opportunities for a local youth.</li> <li>We are grateful a project of this nature is implemented in our neighbourhood.</li> <li>We are prepared to assist EEP for a successful implementation of this project.</li> <li>Some people in our Kebele do not have access to electricity.</li> <li>The project must design a development project to benefit the local women including job opportunity.</li> <li>We expect EEP to finance a water supply project for the community.</li> </ul>	<ul style="list-style-type: none"> <li>Noted.</li> </ul>
Somali	28/3/2022	Degehabur	14	<ul style="list-style-type: none"> <li>We are convinced the project is good and will benefit the regions</li> </ul>	<ul style="list-style-type: none"> <li>Property that is impacted by the project</li> </ul>

Region	Dates	Location	No. of participant	Views Raised	Given Responses and Clarifications
		Woreda, Dhmot Kebele		<p>and the country.</p> <ul style="list-style-type: none"> <li>It is good to support the community's most needs such as access to electricity, water, and school.</li> <li>It would be nice if the project would help us with farm supplies.</li> <li>Will there be compensation if the tower is erected on farmland?</li> </ul>	will be fairly compensated.
Somali	16/3/2022	Kebridehar Woreda, Banburt Kebele	9	<ul style="list-style-type: none"> <li>During implementation of the project, EEP must provide assistance to the local community.</li> <li>If houses are demolished as a result of the project, compensation should be paid in advance.</li> <li>If there is a job opportunity, it should be offered to the local unemployed youth first.</li> <li>Our Kebele does not have access to electricity.</li> <li>EEP/EEU must implement a project to provide connection to electricity.</li> <li>Our Kebele is not connected to the main road. Therefore, we expect EEP to finance road project that connects to Kebele to the Woreda.</li> </ul>	
Somali	19/3/2022	Sheygoosh Woreda	13	<ul style="list-style-type: none"> <li>The electric utility in our Kebele, as well as in the Woreda, is not reliable.</li> <li>During construction of the project we confirm our commitment to fulfil our expected responsibilities.</li> </ul>	
Somali	29/3/2022	Dire Teyara Woreda, Abubker Mete Kebele	26	<ul style="list-style-type: none"> <li>It is appropriate to conduct consultation prior to project construction.</li> <li>This project will improve the electric capacity and avoid the frequent power interruption. Therefore, it will enable EEP to provide reliable electric power supply.</li> <li>During compensation, EEP should take all appropriate care to pay fair compensation for impacted houses and other structures located under the line.</li> <li>The current market price should be taken into account when calculating compensation.</li> <li>The local youths should be given priority to participate in job opportunity.</li> <li>As long as fair and timely compensation is paid to the affected people, we confirm our commitment to support the project.</li> </ul>	

## 7.7 Consultation Meetings with Women group

Article 35 sub-article (6) of the FDRE Constitution stated that: Women have the right to full consultation in the formulation of national development policies, the designing and execution of projects, and particularly in the case of projects affecting the interests of women.

Therefore, to ensure the inclusiveness of the consultation processes women were included in a separate consultation meetings between March 14 and 28, 2021.

A total of 3 consultation meetings with 42 women group of the community residing in and around the direct project influence Woredas, Kebeles and villages were held.

**Table 7.6: Dates and Number of Women Consultative Meetings Participants**

Region/Woreda/CA	No. of women Participants	Date
Birkot Woreda, Wab Kebele	13	17/3/2022
Degahabur, Sasabane Kebele	10	27/3/2022
Degahabur Woreda, Dhmot	19	28/3/2022
<b>Total</b>	<b>42</b>	

The following issues were discussed:

- Compensation payment;
- Job opportunities;
- Social responsibility;
- Gather baseline data for the ESIA; and
- Grievance mechanism.

Women who participated in the consultation meetings expressed their request, support and good attitudes for the project.

The consultation meetings were conducted on voluntary bases and summary of consultation meetings held with women group is presented in Table 7.7 below.



Photo 28: Discussion with Somali Region Women and Children office Officials



Photo 29: At Birkot Woreda, Wab Kebele



Photo 30: Women consultation meetings at Degehabur Woreda, Sasabane Kebele (left) and at Degehabur Woreda, Dhmot Kebele (right)





Table 7.7: Summary of the Women consultation meetings

Region	Dates	Location	No. of participant	Views Raised	Given Responses and Clarifications
Somali	17/3/2022	Birkot Woreda, Wab Kebele	13	<ul style="list-style-type: none"> <li>▪ The location is arid.</li> <li>▪ The water line passes in front of our residence and we don't have any water supply.</li> <li>▪ We have a serious health service problem in this area as well as access to safe water problem.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Your request for assistance will be included in the report and EEP will be informed.</li> </ul>
Somali	27/3/2022	Degehabur, Sasabane	10	<ul style="list-style-type: none"> <li>▪ The project is good and we fully support it.</li> <li>▪ In our neighbourhood there is no health care service.</li> <li>▪ There are no midwives service to our community. In terms of health, there is no facility to provide care for children.</li> <li>▪ There no school for students aged 9 to 12.</li> <li>▪ Because we cannot teach in the city, many children drop out after 8<sup>th</sup> grade.</li> <li>▪ We rent a tractor for cultivation and we need EEP's support with farm implements and health services.</li> <li>▪ Although we have plenty of water, it is salty. Support us by implementing a water treatment plant or assist us with alternative water source.</li> <li>▪ EEP must provide land for land compensation or pay fair compensation.</li> </ul>	<ul style="list-style-type: none"> <li>▪ The project will create a conducive environment for local villages and towns to have access to electricity.</li> <li>▪ Compensation will be paid for the affected property and farmland.</li> <li>▪ EEP will include these requests in the ESIA report for the attention of decision makers.</li> </ul>

Region	Dates	Location	No. of participant	Views Raised	Given Responses and Clarifications
Somali	28/3/2022	Degehabur Woreda, Dhmot	19	<ul style="list-style-type: none"> <li>▪ We need safe water first.</li> <li>▪ We have a farm and please support us with a tractor.</li> <li>▪ We want school above 8<sup>th</sup> grade in the neighbourhood for our children.</li> <li>▪ We have no access to electricity. Light poles to other areas have been erected and passed directly above us. This project must provide us with access to electricity.</li> <li>▪ We don't have access to health care service and please help us through this project.</li> </ul>	Noted

## 7.8 ESIA Report Disclosure and Clearance

### 7.8.1 Background

From the outset it is emphasized that the Degehabur – Kebridehar 132kV TL project shall involve a multitude of stakeholders including the Regional and Federal governments, EEP the project developer through to AfDB the project would be financier, NGOs, CBOs, etc.

Projects like this usually attract the attention of various stakeholders and hence are often prone to various scrutinise, including criticisms. This is especially true in today's highly globalized world. Therefore, it is crucially important for the project to encourage views and comments from all players and address them properly and adequately regardless of their sources, types and motives.

EEP as the project developer is responsible to provide all stakeholders at all levels with accurate and up-to-date information about this ESIA.

Methods and modalities for public disclosure can take different forms depending on what is intended to be achieved. The bottom line, however, is the participation of all key players at all levels - local, regional, national as well as international ones. The following methods will be adopted for the public disclosure.

### 7.8.2 Disclosure Plan

The Degahabur – Kebridehar 132kV TL projects will use a variety of communication techniques to announce major project milestones and decisions points, information about the project, its impact, and mitigation measures, and these are discussed below.

#### **Consultative Meetings upon Completion of the ESIA**

Upon completion of preparation of the ESIA, EEP will organize a consultative workshop before the start of construction. Stakeholders identified and consulted during the initial phase of the public consultation process would be called to the next phase of consultative meetings. They will be invited to discuss on the contents of the ESIA and contribute to its finalization.

The purpose of the meetings will include:

- *present the initial findings on the consultative meetings; and*
- *Update them with new project information.*

The required information on project objectives, descriptions, and potential impacts will be shared with the Stakeholders to make them aware about the project impacts, and the likely mitigation measures to be pursued and implemented. The participants will be encouraged to forward ideas, questions and comments to facilitate the implementation.

The results of these discussions will be incorporated in the final ESIA Report for future consideration and implementation.

#### **Prepare Project Information Package**

A dedicated Project Information Package shall be prepared by EEP with tools adapted to the communities. The information packages shall include a summary of ESIA findings:

- (i) the purpose, nature, and scale of the Project;
- (ii) duration of the proposed project activities;

- (iii) any risks to and potential impacts on communities and relevant mitigation measures;
- (iv) the envisaged stakeholder engagement process; and
- (v) The grievance mechanism.

The Project Information Package will be prepared in *English, Oromiffa, Somaligna and Amharic*.

Somaligna, Amaharic

### **Project Web Site**

Project documents including the ESIA will be uploaded on EEP's and AfDB's websites as part of the public disclosure process.

This electronic medium will serve as a permanent promotion, information and public relations forum for the project making it easier to reach out to both national and international stakeholders and address their concerns, exchange views, experiences and information on matters related to the project. In addition, it will equip them with accurate and up-to-date information about the project and its progress.

### **7.8.3 Clearance and Disclosure of the ESIA**

The ESIA document will be submitted to the Federal Environment Protection Authority (EPA) for their review and approval.

The ESIA report will be submitted to AfDB for review and clearance of the ESIA.

## 8. Livelihood Restoration Strategy and Community Development Plan

### 8.1 Objective and Rationale

The over-arching objective of the livelihood restoration strategies and social development plan is to assist PAPs and project-affected communities in their effort to restore their incomes to at least pre-project levels and improve their overall well-being through a set of well-defined livelihood strategies and assistance packages provided by the project proponent, EEP, and implemented in partnership with local authorities and other stakeholders actively working in the TL Project area.

In this section, various livelihood restoration strategies and social development plan proposed respectively for PAPs and wider communities are briefly presented.

### 8.2 Livelihood Restoration Strategies

Based on core principles and underlying assumptions described above, two sets of livelihood restoration and improvement strategies are outlined in the proceeding section. The two main strategies are:

- a) Agriculture Based Strategies and
- b) Open Window Support: Facilitation, Training and Advisory

#### 8.2.1 Agriculture Based Strategies: Support to Agricultural Input Supply

Agriculture-based livelihood restoration strategy will cereal crops production improvement component.

The key project inputs are proposed to materialize cereal production improvement component.

It is proposed that EEP's project support shall cover for agricultural inputs namely, improved seed variety and fertilizer at least for one farming season. Under the Cereal Crops Production Improvement component, it is recommended that each PAP shall receive one quintal of fertilizer and one quintal of improved seeds for one agricultural season.

#### 8.2.2 Open Window Support: Facilitation, Training and Advisory

Open window support is a training and facilitation service encompassing a range of initiatives including:

- Vocational and entrepreneurial skills training;
- Organising PAPs into small business enterprises;
- Providing business planning and management training;
- Setting up small business ventures;
- Facilitation and coordination with implementation partners;
- Providing financial literacy training for livelihood restoration;
- Providing transaction advisory services to PAPs in their efforts to acquire urban land and or rural/ farm plots;
- Conducting rapid appraisals and market assessments;
- Promoting newly created PAPs' small businesses; and



- Supporting with creating market linkages for their services and products.

The responsibility for the overall execution of individual activities under this support window falls under EEP, though they will work closely with other implementation partners.

Upgrading of an existing Technical and Vocational Education and Training (TVET) under the community development component, will create a collaborative environment, for PAPs (or interested family members). Training will be particularly useful for the Project and local implementing partners including the TVET Management, local public officials and NGOs working in similar fields of engagement.

### 8.3 Community Development Support

One of the features that characterizes communities in the Project area and wider pastoralist communities is the poor quality and extremely low physical accessibility of key social services such as drinking water supply, public and animal health facilities and electricity. In some instance, these services are physically available, but poorly maintained and resourced. In others, they are totally lacking. Based on the findings of a series of consultative community and stakeholder meetings, a relatively long list of social service facilities requiring Project support are identified.

Based on the findings of the assessment, it is proposed that EEP shall support the upgrading and or provision (newly constructed) of the following social service facilities and infrastructure in the Project communities:

- 1) Electrification of project Kebeles;
- 2) Water supply and cattle watering pond;
- 3) Establishment of Nursery
- 4) Upgrading an existing TVET; and
- 5) Strengthening an existing veterinary clinic.

#### 8.3.1 Electrification of Project Impacted Kebeles

Despite their proximity to the national grid, majority of the households in the Project affected Kebeles do not yet have access to electricity.

Electricity would come from the Universal Electrification Programme (UEAP) (and not the Degehabur – Kebridehar TL Project). The electrification would support household livelihood diversification, e.g. through supporting the facilitation of small business start-ups.

Electricity distribution and sales is the mandate of the Ethiopian Electric Utility (EEU), a sister organisation to EEP. EEP and EEU therefore need to collaborate in the provision of electricity to all unelectrified households in all Project affected Kebeles.

#### 8.3.2 Improve Access to Potable Water Supply & Cattle trough

Given the scorching heat, arid and hostile climate coupled with very limited access to water supply; and in the face of large quantities of water required for human and livestock consumption, access to potable water is a top priority among communities in the Project area. Therefore, it is no accident that the majority of households interviewed for this assessment ranked potable water supply as their top priority basic need.

Lack of access to water for livestock consumption is also a serious challenge for communities around the Project area. Traditional water harvesting and storing techniques have failed due to frequent and extended periods of drought in the area. More than 54% of the survey households informed that, shortage of livestock feed and water are the main constraints for livestock production. So, improving access to water supply for human and

livestock consumption is one of the key areas where Project support is needed.

Although the Project area is known for its limited rainfall, it is also known for seasonal flooding at times. With the right water storage infrastructure, seasonal floods provide a real opportunity for rain water harvesting. Therefore, during the construction phase when the necessary construction machinery is mobilized to work on Project related construction works, the Project, by taking advantage of the available machinery and personnel, will build water storage infrastructure such as Birka and or Ella in selected locations for livestock watering.

### 8.3.3 Strengthening an Existing Veterinary Clinic

Data on livestock production in the surveyed areas reveal that 54.2% of the households have at least one livestock.

Livestock diseases are common among the project affected Kebeles. Internal and external parasites are also prevalent, causing significant livestock health hazards throughout the Project area. Most of the Project Kebeles do not have animal health facilities. However, according to sources from the Woreda traversed by the proposed project, there are veterinary clinics at some of the Woreda level providing animal health services to residents in the Project Kebeles. The animal health facilities that exist at the Woreda level are often just the infrastructure (buildings) with no or adequate supplies, poorly staffed and under-resourced. Moreover, members of the project communities, repeatedly mentioned inadequacies of the existing Veterinary Post.

The households in the Project area already own considerable numbers of livestock. Therefore, given the predominantly pastoralist livelihood of populations in the Project area, provision of good-quality livestock as proposed should be followed up by strengthening of veterinary services.

Therefore, in the interest of improving animal health conditions, it is proposed that the Degehabur – Kebridehar TL Project supports the rehabilitation and upgrading of at least three of the existing Woreda-level veterinary clinics including improving the supply of medical equipment and medical supplies for a period of two years and establish three new veterinary clinics and contribute for the improvement of animal health facilities in the project impacted Kebeles and Woredas. These veterinary centres will be capable of serving the animal health needs of Kebele communities and beyond.

### 8.3.4 Establishment of Nursery

There is not direct mitigation for the loss of natural vegetation cover due to the Degehabur - Kebridehar TL project. However, the Biodiversity resources assessment has recommended a compensation measure on resource-to-resource approach. Under this approach a nursery will be established and afforestation will be carried out within the project influence Woredas and Kebeles.

Through the implementation of reforestation practise the expected benefit include:

- Nursery site is selected and established;
- Nursery materials are provided;
- Seeds/seedlings are made available;
- Produce locally adoptable seedlings for reforestation of the project area; and
- Pastoralist community will ensure the inclusion of medicinal plants, fuel-wood, forage and construction.

### 8.3.5 Upgrading an Existing TVET

Vocational and entrepreneurial skills training is beneficial in supporting the setting up and running of small business enterprises. Technical and vocational skills, entrepreneurship, communication, marketing, customer handling, financial literacy, business planning and management are all important skills-sets. These skills-sets are lacking amongst many small business operators, especially in rural agricultural communities such as the Project affected Kebeles.

Some of the livelihood restoration and income improvement measures for LRP such as small business support and livestock production improvement require business skills, which most PAHs do not possess. Considerable training and capacity building efforts are required through technical, vocational, entrepreneurial and business management skills training.

There are two TVET institutes within the Project affected Woredas, which could provide such training. However, to make it suitable to various training sessions for the current LRP and other training needs of its own, the institute needs to be strengthened and well-equipped with additional buildings, staffing and equipment for technical and vocational training. Therefore, as part of its community development support initiative, it is recommended that the Degehabur – Kebridehar TL Project provides support by providing financial assistance for a period of two years to strengthen and build the capacity for the existing TVET Institutes.

## 8.4 Livelihood Restoration and Community Development Plan Implementation Costs

The total Livelihood Restoration and Community Development Plan Implementation Cost amount to some 39.1 million birr. This amount will be allocated to cover implementation of the plans described above and presented in Table 8.1.

Table 8.1: Place, Dates and Number of Participants for Community Consultative Meetings

Woreda/CA	No. Community Members Participated
<b>Livelihood Restoration Plan</b>	
Agricultural Intensification - Crop Production	1,085,000
Open Window Support: Facilitation, Training and Advisory	500,000
<b>Sub-Total (1)</b>	<b>1,585,000</b>
<b>Community Development Schemes</b>	
Electrification to unserved project affected Kebeles	<i>EEP &amp; EEU<sup>1</sup></i>
Improve Access to Potable Water Supply in 2 project affected Woredas (drill three boreholes and equip them with PV-powered water pumping facilities for communities) (where there is dire shortage of potable water)	25,000,000
Upgrade and Support three existing health facilities in 3 project affected Woredas by upgrade their service delivery level	4,500,000
Strengthening three Existing Veterinary Services	5,000,000
Vocational training and strengthening two TVET within the affected Woredas	3,000,000
<b>Sub-Total (2)</b>	<b>37,500,000</b>
<b>Grand Total</b>	<b>39,085,000</b>

Note 1. The rural electrification component of this project will be financed by EEU's UEAP project budget

## 9. Environmental and Social Management Plan

### 9.1 General

Environmental protection of the proposed project and its immediate surroundings is achieved through enhancement of project benefits and avoidance or mitigation of potential adverse impacts associated with the project.

Unless the mitigation and benefit enhancement measures identified in this ESIA fully implemented, the prime function of the ESIA, which is to provide a basis for shaping the project so that overall environmental performance of the proposed project is enhanced, cannot be achieved.

In order for the ESMP to be effective, it must be fully integrated with the overall project management effort at all levels, which itself should be aimed at providing a high level of quality control, leading to a project that has been properly designed and constructed and functions efficiently throughout its life.

On this basis, Table 8.1 sets out, in summary form, the management measures to be taken with regard to controlling the potential impacts which could occur during the construction and operational phases of the project. It also indicates who is responsible for taking the management actions.

Executive responsibility for project management commonly involves several organisations, each with specific responsibilities for particular aspects, and this project is no exception. Therefore, the major responsibility for environmental management will be split between several organisations, depending on their respective activities, which are being executed at various stages (Federal and Regional Environmental organs). EEP, as an implementing agency of this Degehabur – Kebridehar 132 kV TL and Birkot substation project, has the overall responsibility for the implementation of the recommended ESMP.

### 9.2 Pre-construction Phase

The pre-construction phase includes the study and design phase, tendering phase and the time before the contractors' mobilisation and commencement of the works. Therefore, prior to the Contractor mobilization and the commencement of construction, environmental and social management will be concerned with the following principal groups of activities:

- *Ensuring that all National and AfDB requirements and procedures relating to ESIA are complied with;*
- *Ensuring that environmental and social considerations are explicitly contained in the contract document;*
- *Preparation of detailed designs (i.e. during tower microsighting) which incorporate specific features aimed at minimizing adverse impacts and enhancing beneficial impacts;*
- *Preparation of tender and construction contract documents which contain appropriate clauses to allow control of impacts arising from construction activities*
- *Implementation of RAP & land acquisition procedures including the payment of full compensation.*

EEP will be responsible for ensuring that its own environmental requirements are fully met.

The Detail Design and Tender Document (DD and TD) Consultant to be appointed by EEP will have primary responsibility for the quality and content of the design and tender documents. This will include ensuring that the adverse impact minimization and benefit enhancement measures set out in the ESIA are given due consideration in the preparation of designs and tender documents.

### 9.3 Construction Phase

Most of the project environmental management activities will be carried out during the construction phase, since this is when most impacts can be expected to arise. Management will be concerned with controlling impacts that may result from actions of the contractor, through enforcement of the construction contract clauses related to protection of the environment. In this respect, it is important to recognize that successful mitigation of construction impacts can only be achieved if the environmental protection measures, as set out in the construction contract and in this ESIA document are properly enforced.

Construction and construction-related activities will cause impacts that will either be reflected directly or indirectly. Thus, during this phase there is a need to constantly identify the occurrence of such impacts and implement mitigation measures as indicated in this ESIA. The main responsibility for this task lies with the Contractor and the Supervision Consultant. The Supervision Consultant shall constantly monitor and ensure the ESMP is fully enforced. Further, the supervising consultant has the responsibility of identifying emergency environmental problems/risks and taking immediate actions, which are within the scope of its capabilities.

The Contractor is responsible for implementing all actions indicated in the ESMP and immediate measures proposed by the Supervision Consultant. In addition to the Contractor and the Supervision Consultant, EEP's Environmental and Social Affairs Office (ESAO) shall actively participate in the process and shall conduct periodic assessment of the implementation of the ESMP and of other environmental issues.

Environmental Inspector will be responsible for environmental management and monitoring at the lowest organizational level, but his role in the management chain is crucial if effective impact control is to be achieved.

Other responsible bodies include the regional environmental protection organs, local administration (respective Woreda and Kebele Administration) and the community. As most socio-environmental impacts will be reflected on the local community and administration, they shall actively participate in the management plan and contribute their share of the efforts towards protecting the environment and the local community.

### 9.4 Commissioning Phase

Major tasks to be accomplished before commissioning of the project include:

- *The contractor shall clean up the project site and its immediate environment from all construction refuse, wastes and surplus construction materials;*
- *The contractor shall properly dismantle construction plant, machinery, storage facilities, offices and other temporary structures;*
- *The contractor shall loosen all compacted earth at the temporary facilities sites and access roads. Further, such sites shall be rehabilitated to as close to their pre-construction condition as possible; and*
- *In general, all environmental requirements (to be indicated in the Contract Document) shall be satisfied.*



The contractor is responsible for conducting all the tasks listed above. However, the Supervision Consultant and the project owner have the responsibility of monitoring, evaluating and approving the actions of the Contractor, to ensure that it complies with the above requirements.

## 9.5 Post-construction/Operation & Maintenance Phase

For the successful implementation routine and periodic environmental and social management must be carried out in a timely manner and this would, in the meantime, ensure the (environmental, social and economic) sustainability of the project.

Some of the main environmental issues of concern during project operation include:

- *Occupation, Health and safety risks; alteration to the bio-physical, social and health characteristics of the recipient environment;*
- *Alterations in the interactions between project activities and environmental sensitivities, and interactions among the various sensitivities; to ensure the effectiveness of the mitigation measures;*
- *Determination of long term and residual effects; and identification of Project specific cumulative environmental effects and recommend site specific management plan as required.*

EEP's ESAO and the concerned regional authorities are key actors for ensuring the implementation of management and constant updating of the ESMP.

## 9.6 The Environmental Management Plan (EMP)

Major environmental management activities planned to be undertaken at different phases of the project are listed in Table 9.1

Table 9.1: Environmental and Social Management Plan

Environmental Issue/Impact	Main Management Measures	Time/Frequency of Implementation	Implementing Body	Monitoring Body	Cost
<b>I. Pre-construction Phase</b>					
Submission of ESIA documentation to EPA	EPA is responsible to review the document	Before Construction	EEP	EEP	No cost
Review of designs/tender documents to check that environmental considerations have been given due consideration in their preparation	Must be complete before Tendering	Before Tendering	Design and Tender Document Consultants	EEP	Covered in Design Review Consultant Contract
Preparation of environmental briefing notes for tenderers' pre-bid conference	To be complete by the time the tendering process commences	Onset of Construction	Supervision Consultant	EEP	Covered in Design Review Consultant Contract
<b>II. Construction Phase</b>					
Pre-construction contractor environmental awareness briefing	Must take place at the start of the contractor mobilisation period, prior to commencement of any construction camp establishment.	Onset of Construction	Supervision Engineer	EEP	Covered in supervision Contract
Review of contractor's plans, method statements etc.	Must be completed before main construction works commence	One month into the main construction	As above	Environmental Inspector	As above
Commencement of site monitoring	Inspections to commence when contractor starts site mobilisation and to continue throughout the construction period	As above	As above	As above	Owner Engineer Contracts
Review and updating of checklists, procedures etc.	Complete approximately 2 months after start of construction	Complete approximately two months after start of construction	As above	As above	As above
Review of environmental management and monitoring	To take place approximately 4 months into the main construction period	To take place approximately 4 months into the main construction period	As above	As above	As above
Impacts of soil erosion and sediment deposition due to clearance of vegetation and construction activities at tower	<ul style="list-style-type: none"> <li>▪ Designing and constructing drainage mitigation/ erosion prevention structures</li> <li>▪ Adjusting the construction programme for dry season to reduce soil erosion</li> </ul>	During Construction: Monthly during dry season and bi-monthly in wet	Contractor	Supervision Consultant, RE/EI	3,030,000

Environmental Issue/Impact	Main Management Measures	Time/Frequency of Implementation	Implementing Body	Monitoring Body	Cost
foundation and along access roads	<ul style="list-style-type: none"> <li>▪ Construction sites shall be stabilized and rehabilitated during and after construction</li> <li>▪ Spread mulch generated from cleared vegetation across exposed soils after construction</li> <li>▪ Restricting land acquisition, clearing and grubbing to what is absolutely necessary</li> <li>▪ Replanting cleared areas and slopes vulnerable to erosion such as cut-and-fill slopes with plant species (grasses, shrubs and/or trees)</li> <li>▪ Replanting cleared areas and slopes vulnerable to erosion and slope failures with plant species which have the abilities to:                             <ul style="list-style-type: none"> <li>- armour the surface against erosion;</li> <li>- support the slope by propping from the base (tree and shrub boles and roots);</li> <li>- reinforce the soil profile by increasing its shear resistance (roots); etc.</li> </ul> </li> </ul>	season			
Impacts on land resources (Enhancement of Soil Erosion, slope failures due to project activities such as access road construction)	<ul style="list-style-type: none"> <li>▪ Design erosion control structures for sections vulnerable to serious erosion; cut-off drains to catch water before it reaches critical areas; and diverting drains, which avoid excessive concentration of flows at each access roads sides.</li> </ul>	Onset of Construction	Supervision Consultant	Supervision Consultant, RE/EI	1,250,000
Impacts on drainage and water resources	<ul style="list-style-type: none"> <li>▪ Design sufficient culverts and pipes that can accommodate the runoff water intercepted by access roads.</li> </ul>	Onset of Construction	As above	As above	750,000
Impacts on vegetation resources	<ul style="list-style-type: none"> <li>▪ Locate access roads along the route that has been disturbed and has relatively less vegetation cover</li> <li>▪ Include a clause in the construction contract which requires the contractor to compensate by planting seedlings for every mature tree that will be removed by the project.</li> </ul>	During Construction	As above	As above	1,060,000
Competition for water Resources with local users and Impact on Existing Water Sources	<ul style="list-style-type: none"> <li>▪ The contractor may need to develop its own water supply sources for the construction and the campsites requirements.</li> <li>▪ Avoid conflicts with existing water uses by not affecting the quality or quantity of the water sources used for human, animal and/or irrigation water supplies.</li> </ul>	As above	Contractor	As above	No cost
Impacts on water resources (pollution of surface- and ground-	<ul style="list-style-type: none"> <li>▪ Implement an effective water management system</li> </ul>	As above	Contractor	As above	750,000

Environmental Issue/Impact	Main Management Measures	Time/Frequency of Implementation	Implementing Body	Monitoring Body	Cost
water)	<ul style="list-style-type: none"> <li>▪ Construct sufficient cross and longitudinal drainage structures to allow for the proper passage of runoff or flood water under or along access roads.</li> <li>▪ Avoid water pollution by spillages of oil, fuel or lubricants by proper storage and handling.</li> <li>▪ Provide satisfactory disposal of solid and liquid wastes generated by campsites and installation sites.</li> <li>▪ Ensure the proper sealing of all pipe lines, valves and vessels to avoid water loss.</li> </ul>				
Noise and Vibration	<ul style="list-style-type: none"> <li>▪ Restrict activities producing excessive noise levels to the day-time and avoid performing such works during night times, on weekends and holidays.</li> <li>▪ Locate plants, machinery and site installation considerably away from high human traffic areas</li> <li>▪ Minimize duration of conducting noise creating construction activities</li> <li>▪ Implement noise abatement measures in section of the route crossing residential areas</li> <li>▪ Provide proper hearing protective devices such as ear plugs and ear muffs for construction workers</li> <li>▪ Use machinery which has appropriate mufflers</li> <li>▪ Avoid performing such works during night times, on weekends and holidays.</li> <li>▪ Site facilities/plants should be at a minimum distance of 2km from sensitive receptors; such as health institutions</li> </ul>	As above	Contractor	As above	500,000
Air Pollution	<ul style="list-style-type: none"> <li>▪ Implement dust control and suppression measures including regular application of water on or near construction sites, settlement areas, offices, camps etc. to reduce dust generation and restrict traffic speeds</li> <li>▪ Burn waste and/or garbage in designated areas</li> <li>▪ Traffic speeds shall be restricted and water regularly sprayed on dusty roads to suppress dust levels near settlement areas.</li> <li>▪ Regular maintenance of diesel powered machinery and vehicles to reduce excessive exhaust emissions.</li> </ul>	As above	As above	As above	750,000

Environmental Issue/Impact	Main Management Measures	Time/Frequency of Implementation	Implementing Body	Monitoring Body	Cost
	<ul style="list-style-type: none"> <li>▪ The access road shall be regularly maintained to prevent formation of potholes, minimize road safety hazards and to moderate increases in noise levels if vehicles have to constantly change speed to avoid potholes.</li> <li>▪ Reduce duration of construction activities resulting in more dust generation and prefer working hours based on the mobility of people</li> </ul>				
Solid Waste Management	<ul style="list-style-type: none"> <li>▪ Adopt the following waste minimization hierarchy: reduce the overall amount of, reuse and recycling of any wastes that are unavoidably created and disposal as a last resort.</li> <li>▪ Implement proper waste segregation and disposal at the designated waste disposal site</li> <li>▪ Any waste material which is unable to be reused, reprocessed or recycled shall be disposed at a landfill.</li> <li>▪ Waste disposal and recycling facilities will be provided by licensed and commercial operators.</li> <li>▪ Construction wastes will not be allowed to accumulate on the construction site but will be collected promptly and removed regularly from the site;</li> <li>▪ Sufficient number of garbage bins and container will be made available at all construction sites;</li> <li>▪ Waste management by open burning will be conducted in accordance with acceptable standard. However, burn on site only wastes which are not designated as combustible;</li> <li>▪ All wastes which are not designated as combustible waste to be burned on-site, will be recycled, disposed of in an approved landfill, or shipped to an approved disposal facility.</li> </ul>	As above	As above	As above	500,000
Impact on Natural Vegetation	<ul style="list-style-type: none"> <li>▪ Minimize and possibly avoid access road construction and construction material within the boundaries of the Riverine and hill side forest</li> <li>▪ Avoid any fire risk caused by activities within the project area;</li> <li>▪ The contractor is responsible for the conduct of his workforce in relation to environmental protection matters and to specifically prohibit unnecessary felling of trees;</li> <li>▪ There should be care to avoid introduction of invasive alien species. Early detection and eradication is recommended</li> </ul>	As above	As above	As above	530,000



Environmental Issue/Impact	Main Management Measures	Time/Frequency of Implementation	Implementing Body	Monitoring Body	Cost
Impact on Wildlife and their Habitat	<ul style="list-style-type: none"> <li>No adverse direct impact is anticipated on wildlife. However, the contractor is responsible on the matter.</li> <li>All animal dens in close proximity to the work areas must be marked as no go areas;</li> <li>The project work force should be instructed to avoid harassment and disruption of wildlife.</li> <li>If the use of explosive is necessary, it should be used only within specified time and distances from any wildlife sensitive area.</li> <li>Awareness creation training to construction workers at toolbox meetings, so that they contribute to the effort of protection of wildlife.</li> <li>Carryout periodic monitoring of habitat integrity of the area to check if any wildlife and their habitats are identified and ensure these are safe and secure.</li> </ul>	As above	Contractor	As above	100,000
Biodiversity (wildlife and bird) - <i>Deforestation and vegetation clearing</i>	<ul style="list-style-type: none"> <li>Avoiding damage to and loss of large mature trees and minimize vegetation clearance as much as possible;</li> <li>Rehabilitating and re-vegetating the areas affected during construction process;</li> <li>Labourers will be informed during induction</li> </ul>	Once a week.	contractor		250,000
Fauna (wildlife, birds and their habitat) - <i>Damage to Habitat</i>	<ul style="list-style-type: none"> <li>Ensure that considerable awareness is created and local knowledge is used where possible to determine key habitats that require consideration;</li> <li>Minimize numbers of temporary camps and sites chosen and camps will be in permitted areas only;</li> <li>Give special consideration to key habitats and their connectivity;</li> <li>Undertake regular monitoring of the main habitats;</li> <li>Rehabilitating and re-vegetating the areas affected during construction process;</li> <li>Labourers will be informed during induction</li> </ul>	Once a week.	Contractor;		250,000
Fauna (wildlife, birds and their habitat) - <i>Storing of domestic waste may lead to occurrence of pests, such as rodents, flies, etc.</i>	<ul style="list-style-type: none"> <li>Waste to be managed. Suitable waste receptacles (e.g. bins, skips) to be provided at the construction camp.</li> <li>Avoiding feeding and any contact with wild animals.</li> </ul>	Once a month during construction	Contractor		240,000
Biodiversity (Ecosystem Maintenance) - <i>Disturbance of</i>	<ul style="list-style-type: none"> <li>Give special consideration to key habitats of threatened and wetland birds,</li> </ul>	Once a month during construction	Contacto		2,500,000

Environmental Issue/Impact	Main Management Measures	Time/Frequency of Implementation	Implementing Body	Monitoring Body	Cost
<i>threatened &amp; wetland bird species</i>	<ul style="list-style-type: none"> <li>▪ Local knowledge is used where possible to determine locally sensitive areas that require consideration;</li> <li>▪ Avoiding disturbance of nesting sites of threatened avian species;</li> <li>▪ Use of birds friendly power lines and associated infrastructures;</li> <li>▪ Develop effective management of hazardous materials;</li> </ul>				
Biodiversity (habitat) - <i>Damage to vegetated areas along the proposed Transmission line route.</i>	<ul style="list-style-type: none"> <li>▪ Removal of vegetation must be restricted to within the work footprint.</li> <li>▪ Workers and machinery to remain inside construction footprint.</li> <li>▪ All labourers to be informed of disciplinary actions for the willful damage the habitat of wild animals (plants)</li> <li>▪ No vegetation must be unnecessarily removed.</li> <li>▪ Danger of alien species invasion must be guarded and a maintenance plan must be in place.</li> <li>▪ Avoid the disturbance of rare trees species, that support wild animals and bird nests</li> <li>▪ Laborers will be informed during induction and be reminded</li> </ul>	<ul style="list-style-type: none"> <li>▪ This restriction will occur for the duration of the construction phase.</li> <li>▪ To occur for the duration of construction.</li> <li>▪ Eevery week.</li> <li>▪ All disturbed areas should be successfully rehabilitated within 3 months of completion of the contract.</li> </ul>	Contractor		212,000
Impact of Construction Traffic	<ul style="list-style-type: none"> <li>▪ Conduct awareness raising and training programmes for equipment operators, drivers and other workers to sensitise the need to employ safe operation methods or practices to prevent or minimize accidents.</li> <li>▪ Sensitise the communities residing along the project corridor about the danger to themselves and their animals posed by construction equipment and vehicles or accidental falling of materials in the construction site.</li> <li>▪ Raising the awareness of workers towards safety and health issues.</li> <li>▪ Prepare and implement a traffic management plan</li> </ul>	As above	Contractor	Supervision Consultant/ EI/ Project Affected Woreda Offices	240,000
Conflict between Local and Migrant Workers	<ul style="list-style-type: none"> <li>▪ Maximise local hire of labour, in so far as this is compatible with the contractor's skill requirements;</li> </ul>	As above	Contractor	Supervision Consultant/ Project Affected	No Cost

Environmental Issue/Impact	Main Management Measures	Time/Frequency of Implementation	Implementing Body	Monitoring Body	Cost
	<ul style="list-style-type: none"> <li>Ensure fair and transparent hiring and staff management procedures and work closely with project Woreda, Kebele administration and local community representative; and</li> <li>Assign the responsibility for liaison with local communities and local authorities to a named individual from the contractor's organization</li> </ul>			Woreda Offices	
Impact on Child Labour	<ul style="list-style-type: none"> <li>Take strict measures against employment of children,</li> <li>Work closely with local authorities to stop employment of under age children in the construction works</li> </ul>	During the whole project implementation period	Contractor	Supervision Consultant/ EI/ Project Affected Woreda Administration Office	No Cost
Occupational Health and Safety Risks	<ul style="list-style-type: none"> <li>Apply measures such as suppressing dust and other particulate matters like those from cement storage sites;</li> <li>To the extent possible, reduce or minimize noise at work sites;</li> <li>Provide personal protective equipment (PPE) including shock resistant gloves, shoes and other protective gears to workers handling electricity and related components;</li> <li>Make arrangements for the regular inspection of all temporary structures, excavations, machinery and equipment to ensure;</li> <li>In the case of manual handling of loads, advise/train workers to assess the associated risks carefully and provide information about the size and distribution of loads;</li> <li>Place warning signs around the construction areas;</li> <li>Maintain adequate traffic control measures throughout the construction phase; and</li> <li>Ensure that safety procedures are followed at all workplaces.</li> <li>Provide training regarding health and safety to the workers</li> <li>Develop and implement health, safety and environment (HSE) management system and review timely or after a major accident or incident.</li> </ul>	As above	Contractor	Supervisory Consultant, RE/EI	2,000,000
Impact on Public Health	<ul style="list-style-type: none"> <li>Provide to construction workers specific sexual health training including HIV/AIDS and other STDS awareness and prevention program;</li> </ul>	As above	Contractor	RE/EI/Woreda Health Office	250,000

Environmental Issue/Impact	Main Management Measures	Time/Frequency of Implementation	Implementing Body	Monitoring Body	Cost
	<ul style="list-style-type: none"> <li>▪ Provision of condoms in suitable locations for free;</li> <li>▪ Ensure that all workers undergo pre-employment screening and regular health screening including voluntary screening for STDs</li> <li>▪ Avoid the presence of pools of standing water and any containers full of water and remove discarded items that could contain water in and around the office/camp/site installations;</li> <li>▪ Provide construction camps with good drainage, water supply, and sewage disposal systems</li> <li>▪ Provide workers with chemoprophylaxis and parathyroid-treated mosquito nets;</li> <li>▪ Construct buildings as mosquito proof; and</li> <li>▪ Restore quarry sites and borrow pits (after use) appropriately to avoid ponding and hence mosquito breeding area as well as to avoid risk of falling.</li> </ul>				
Site clearance inspection and certification on completion of the works	Carry out on a rolling basis as each major section of works is completed	During the whole project implementation period	Contractor	RE/EI	100,000
Surface run-off	<ul style="list-style-type: none"> <li>▪ Provide substation site with good drainage systems;</li> <li>▪ Regularly maintain compound access road and drainage system.</li> </ul>	As above	As above	As above	2,200,000
<b>III. Operation Phase</b>					
Occupation, Health and safety risks	<ul style="list-style-type: none"> <li>▪ Provide personal protective equipment (PPE) including shock resistant gloves, shoes and other protective gears to workers handling electricity and related components</li> <li>▪ Provide training regarding health and safety to the workers</li> <li>▪ Develop and implement health, safety and environment (HSE) management system and review timely or after a major accident or incident</li> </ul>	Every quarter	EEP	EEP/ESAO	Covered in EEP's Operation Costs
Surface run-off	<ul style="list-style-type: none"> <li>▪ Provide substation site with good drainage systems;</li> <li>▪ Regularly maintain compound access road and drainage system.</li> </ul>	As above	As above	EEP/ESAO	As above
Domestic Waste/Sanitary within the Substation compound	<ul style="list-style-type: none"> <li>▪ Do no discharge wastewater on open lands</li> <li>▪ Provide proper drainage and sewerage system</li> </ul>	During the whole project operation	EEP	EEP/ESAO	As above

Environmental Issue/Impact	Main Management Measures	Time/Frequency of Implementation	Implementing Body	Monitoring Body	Cost
	<ul style="list-style-type: none"> <li>Equip workshops, stores, offices and other buildings with septic tank/wastewater treatment system</li> <li>Remove and dispose wastes from septic tanks at appropriate interval and at designated sites to avoid overflow and prevent contamination of the ground or surface drainage</li> <li>Collect and treat storm water runoff from open workshop servicing and repairs and other areas in bunded storage areas before discharging into receiving drainage and waterways</li> </ul>	phase			
Hazardous Waste	<ul style="list-style-type: none"> <li>All waste areas are to be clearly identified and marked as hazardous waste storage areas.</li> <li>All hazardous wastes should have adequate labelling and security at the facility;</li> </ul>	As above	As above	EEP/ESAO	As above
E-Waste	<ul style="list-style-type: none"> <li>E waste should be stored separately</li> <li>Maintain records of e-waste generated</li> </ul>	As above	As above	EEP/ESAO	As above
Biodiversity (wildlife and birds) - <i>Re-vegetation of indigenous plant</i>	<ul style="list-style-type: none"> <li>Appropriate selection of natural vegetation is rephrased as selection of vegetation species adaptable to the agroecology of the area</li> </ul>	Quarterly during the whole project operation phase	EEP	EEP/ESAO	As above
Biodiversity/Avian - <i>Disturbance and Electrocutions of avian species</i>	<ul style="list-style-type: none"> <li>Undertake monitoring of the birds &amp; their flyway on regular basis;</li> <li>Use of birds friendly power lines and associated infrastructures;</li> </ul>	As above	EEP	EEP/ESAO	As above
Biodiversity/Ecosystem Maintenance - <i>Water quality deterioration/pollution of surrounding water</i>	<ul style="list-style-type: none"> <li>Design and implement proper solid &amp; liquid waste management;</li> <li>Effective disposal of materials and garbage in designated waste disposal sites.</li> </ul>	As above	EEP	EEP/ESAO	As above
Biodiversity/Ecosystem Maintenance - <i>Attraction of wild animals by food wastes and due to increased contact with people</i>	<ul style="list-style-type: none"> <li>Launching awareness creation programs for the whole staff;</li> <li>Avoiding feeding and any contact with wild animals.</li> <li>Develop human-wildlife conflict resolution systems;</li> <li>Adoption of conventional sewage treatment facilities and solid waste management;</li> </ul>	As above	EEP	EEP/ESAO	As above
Biodiversity (wildlife, birds and their habitat) - <i>Bird deaths from collisions with power line and electrocution from the electrified cables.</i>	<ul style="list-style-type: none"> <li>The standard bird perch should be fitted to the poles in order to minimize the chance that birds, especially vultures, will attempt to perch on the insulators.</li> <li>The spans that cross drainage lines should be marked with Bird Flight Diverters on the earth wire of the line, five metres apart, and alternating black and white.</li> </ul>	As above	EEP	EEP/ESAO	As above



Environmental Issue/Impact	Main Management Measures	Time/Frequency of Implementation	Implementing Body	Monitoring Body	Cost
	<ul style="list-style-type: none"> <li>Sensitivity map for the area to be marked with Bird Flight Diverters, and the recommended type of diverter.</li> <li>No fauna is to be removed without written permission from the landowner and bearing in mind all legislation pertaining to fauna.</li> <li>Pesticides used for clearing the servitudes and maintenance of the substation must be used by registered and competent users under strictly controlled conditions. The pesticides used must be registered and only used at the recommended dosage.</li> </ul>				
Biodiversity (birds) - <i>Bird deaths from collisions with power line and electrocution from the electrified cables.</i>	<ul style="list-style-type: none"> <li>The standard bird perch should be fitted to the poles in order to minimize the chance that birds, especially vultures, will attempt to perch on the insulators.</li> <li>The spans that cross drainage lines should be marked with Bird Flight Diverters on the earth wire of the line, five metres apart, and alternating black and white. Sensitivity map for the area to be marked with Bird Flight Diverters, and the recommended type of diverter.</li> </ul>	during construction period	EEP	EEP/ESAO	As above
Biodiversity (birds) - <i>Removal of fauna.</i>	<ul style="list-style-type: none"> <li>No fauna is to be removed without written permission from the landowner and bearing in mind all legislation pertaining to fauna.</li> </ul>	As above	EEP	EEP/ESAO	As above
<b>IV. Decommissioning Phase</b>					
Noise and Vibration	<ul style="list-style-type: none"> <li>Restrict demolishing activities during the day-time and avoid performing such works during night times, on weekends and holidays.</li> <li>Implement noise abatement measures in sections where the TL crosses residential areas</li> <li>Provide proper PPEs such as ear-plugs and ear-muffs for workers involved in demolishing work</li> </ul>	During decommissioning phase	Contractor	Environmental Inspector	Covered in EEP's Operation Costs
Air Pollution	<ul style="list-style-type: none"> <li>Implement dust control and suppression measures including regular application of water on or near settlement areas to reduce dust generation;</li> <li>Traffic speeds shall be restricted and water regularly sprayed on gravel roads to suppress dust levels near settlement areas.</li> <li>Regular maintenance of diesel powered machinery and vehicles to reduce excessive exhaust emissions; and</li> </ul>	During decommissioning phase	Contractor	Environmental Inspector	As above

Environmental Issue/Impact	Main Management Measures	Time/Frequency of Implementation	Implementing Body	Monitoring Body	Cost
	<ul style="list-style-type: none"> <li>Reduce duration of demolition activities resulting in more dust generation and prefer working hours based on the mobility of people</li> </ul>				
Demolition waste	<ul style="list-style-type: none"> <li>Implement an integrated solid waste management system including reuse and recycling;</li> <li>Implement proper waste segregation and disposal at the designated waste disposal sites;</li> <li>All machinery, equipment, structures and partitions that will not be used for other purposes must be removed and recycled/reused or they shall be taken to designated waste disposal site or to licensed companies involved in collection, transport &amp; storage and management of such wastes</li> </ul>	As above	As above	As above	As above
Destruction of vegetation cover	<ul style="list-style-type: none"> <li>Implement appropriate re-vegetation and rehabilitation programme to restore the site to its original state</li> </ul>	As above	As above	As above	As above
Environmental, Health & Safety	<ul style="list-style-type: none"> <li>inform the workers and local community about the duration of work;</li> <li>Undertake dismantling activities with care;</li> <li>collected and disposed all waste generated during construction;</li> <li>Provide and use all necessary Personal protection Equipment (PPE) to workers during demolition work;</li> <li>Ensure that all health and safety measures are put in place to prevent accidents;</li> <li>Sale all recycling and other equipment and materials to appropriate recyclers and users;</li> <li>Once all the facilities have been removed, as far as possible restore the land to its original state</li> </ul>	During decommissioning phase	Contractor	Environmental Inspector	As above
<b>Total Cost for Environmental and Social Mitigation and Management Plan in Birr</b>					<b>17,462,000</b>

## 9.7 Community Grievance Redress Procedure

### 9.7.1 Purpose and Scope

Proclamation No. 1161/2019 and AfDB's OS2 require the establishment of a grievance mechanism to receive and facilitate resolution of affected communities' concerns and grievances about the Project's environmental and social performance. The grievance mechanism should seek to resolve concerns promptly, using an understandable and transparent consultative process, and at no cost. The mechanism should not impede access to judicial or administrative remedies.

The grievance mechanism should be adequately disseminated among affected communities in the course of the stakeholder engagement process and its access should be adapted to the social and cultural context.

A Public Complaint or grievance is an issue, concern, problem, or claim (perceived or actual) that an individual stakeholder or community group has related to EEP and its contractors' operations and activities that might give grounds for complaint.

Any person or group who is affected by project activities has a right to raise a grievance and EEP has the responsibility to respond within a reasonable time period. Therefore, EEP who is the project developer has developed a GRP to receive, review and address affected communities' concerns and complaints. However, as a general policy, EEP will work proactively towards preventing grievances through the implementation of impact mitigation measures (as identified and recommended in this ESIA).

This Grievance Procedure provides guidance to all Project employees, contractors and the communities on receiving, registering, assessing and resolving community complaints or grievances emanating from the Construction activities. The fundamental objective of this procedure is to:

- Provide a predictable, transparent, and credible process to all parties for resolving grievances, resulting in outcomes that are seen as fair, effective, and lasting;
- Build trust as an integral component of broader community relations activities;
- Enable more systematic identification of emerging issues and trends, facilitating corrective action and pre-emptive engagement; and
- Meet requirements of international best practice.

This GRP outlines EEP's approach to accepting, assessing, resolving and monitoring grievances from those affected by EEP and its contractor's activities in relation to the Degehabur - Kebridehar TL Project. The aim is to identify and manage grievances from individual stakeholders or stakeholder groups. Timely redress or resolution of such grievances is vital to ensure successful implementation of the project.

### 9.7.2 Sources of Public Complaints/Grievance

Grievance can emerge from project activities as discussed below. Some of the likely project activities which give rise to potential grievances directly or indirectly are attributed to:

- Mishandling of the land acquisition process (pre-construction);
- Damage to private and common assets and properties;
- Restriction of access to natural and common property resources
- Reduced availability of water for domestic use;
- Air, water and land pollution and waste and spoil disposal;

- Noise of construction works (construction);
- Community health and safety, for instance in relation to impacts of increased traffic (construction);
- Practices that endanger the health, safety and security of employees working on the project;
- Failure to give employment priority to members of the project impacted communities;
- Influx of job seekers to the project area and conflicts;
- Failure to meet the labour rights of employees working on the project;
- Local inflation; and
- Lack of meaningful consultation.

Comments and information requests will also be accepted and these may be recorded in the same way as grievances and will be answered by EEP's Project Coordination Office.

### 9.7.3 Grievance Management Processes

Anyone will be able to submit a grievance, comments or suggestions to the Project coordination office if they believe the construction activity is having a detrimental impact on the environment, community or on their quality of life. Any comments or concerns can be brought to the attention of the project verbally or in writing or by filling in a grievance form. Amharic Version of the form is presented in Table 9.2 and the *Oromiffa* and *Somaligna* versions are attached in Annex 7. The grievance form will be made available at all Woreda and Kebele Administration Offices traversed by the TL, at EEP's Head Office and Project Site Offices.

Grievance information will be recorded in a grievance log. This information will include:

- Stakeholder name and contact details;
- Details of the nature of the grievance;
- Date received, responded to and closed out; and
- How it was submitted, acknowledged, responded to and closed out.

Grievances during construction will be categorized based on validity and risk level by EEP/EMU and their Community Liaison Officer (CLO). Where investigations are required, project staff and outside authorities as appropriate, will assist with the process. The CLO will collaborate with EEP/ESAO/Contractor to review the issue raised and to decide whether it is Project related or whether it is more appropriately addressed by a relevant authority outside the Project.

Table 9.2: Public Grievance Form

Public Grievance Form የህዝብ ቅሬታ ማቅረቢያ ቅጽ				
Case No (for office use): የመዝገብ ቁጥር /በቢሮ ሰራተኛ የሚሞላ/፤				
Contact Information የአድራሻ መረጃ	Name ስም፤			
	Address አድራሻ፤			
	Telephone ስልክ፤			
	Fax ፋክስ፤			
	Email ኢሜይል፤			
Please state whether you wish for your details to remain confidential ማንነትዎ እንዳይታወቅ ከፊልጉ ይግለጹ	<input type="checkbox"/> I wish to raise my grievance anonymously ማንነቴ ሳይገለጽ ቅሬታዬን መግለጽ እፈልጋለሁ			
	<input type="checkbox"/> I request not to disclose my identity without my consent ካለእኔ ፈቃድ ማንነቴን ለሌላ እንዳይገልጹ እጠይቃለሁ			
	<input type="checkbox"/> I don't wish my details to be confidential ማንነቴ ለሌላ ቢገለጽ ችግር የለብኝም			
[Note that we may need to contact you regarding your grievance but will not share your details with a third party without your permission.] ቅሬታዎን በተመለከተ አስፈላጊ ሆኖ ሲገኝ ልናናገርዎ እንችላለን፤ ይሁን እንጂ የሰጡንን መረጃ ለሌላ ሰራተኛ ወገን ካለእርስዎ ፈቃድ አሳልፈን አንሰጥም				
How would you prefer to be contacted? Please tick a box በምን መንገድ እንድናገኝዎ ይፈልጋሉ፤ ሳጥኑ ራይት ያድርጉ	<input type="checkbox"/> By Post በፖስታ	<input type="checkbox"/> By Phone በስልክ	<input type="checkbox"/> By E-mail በኢሜይል	<input type="checkbox"/> In person በግንባር
What is your preferred Language for communication የትኛውን ቋንቋ ይመርጣሉ	<input type="checkbox"/> Amharic አማርኛ	<input type="checkbox"/> Somaligna ሶማሊኛ	<input type="checkbox"/> English እንግሊዘኛ	<input type="checkbox"/> Other, Specify ሌላ ከሆነ ይጥቀሱ
<b>Comments አስተያየቶች</b>				
Please provide your comment. አስተያየትዎን እዚህ ያስፍሩ				
If this comment needs a resolution, what is your suggested resolution? ይህ አስተያየትዎ መፍትሄ የሚሻ ጉዳይ ከሆነ መፍትሄው ምን ቢሆን ብለው ይመክራሉ?				



Public Grievance Form የህዝብ ቅሬታ ማቅረቢያ ቅጽ	
<b>Grievances ቅሬታዎች</b>	
Please provide details of your grievance, include description of the problem, who it happened to, when, where and how many times, as relevant. ቅሬታዎን በዝርዝር ያቅርቡ፤ ችግሩ ምን እንደሆነ፤ ማንን እንደጎዳ፤ መቼ፤ የት እና ስንት ጊዜ እንደተከሰተ፤ እንደየ አግባብነቱ	
What is your suggested resolution for the grievance, if you have one? ለቅሬታው የመፍትሄ ሀሳብ ካለዎት ይግለጹ	
How to submit this form to EEP ይህን ቅጽ ለኢ.ኤ.ቻ በምን መንገድ እንደሚልኩ	<input type="checkbox"/> By post / በፖስታ፤ Ethiopian Electric Power, PO Box 15881, Addis Ababa, Ethiopia. ኢትዮጵያ ኤሌክትሪክ ኃይል፤ ፖ/ሳ/ቁጥር 15881፤ አዲስ አበባ ኢትዮጵያ።  <input type="checkbox"/> By hand በእጅ፤ Ethiopian Electric Power Head Office or Project Site Office or Woreda Liaison Office ኢትዮጵያ ኤሌክትሪክ ኃይል ዋና መስሪያ ቤት ወይም ፕሮጀክት ላይት ቢሮ ወይም ወረዳ ላይዘን ቢሮ። Mexico Square, K.Kare Center Building P.O.Box 1588, Addis Ababa, Ethiopia Tel. +251 115 580 803, +251 115 580 602  Tadesse Biru Odda Environment, Health & Safety Director Phone: +251 116 676 393 Mobile: +251 911 771 230 Mailto: tadesse.odda@gmail.com
Date ቀን	
Signature ፊርማ	

### 9.7.4 Investigating a Grievance

All grievances will be acknowledged within 3 days. If immediate corrective action is available it will be taken within 3 days. If no immediate corrective action is available, a response will be provided within 7 days unless there are exceptional circumstances.

The following steps shall be performed in a timely manner to avoid delaying resolution of a grievance:

- Obtain as much information as possible from the person who received the complaint, as well as from the complainant to gain a first-hand understanding of the grievance.
- Undertake a site visit, if required, to clarify the parties and issues involved. Gather the views of other stakeholders including project employees. If necessary, identify initial options for settlement that parties have considered.
- Determine whether the grievance is eligible. Eligible grievances include all those that are directly or indirectly related to the Project.
- Ineligible Complaints may include those that are clearly not related to the Project or its contractors' activities, whose issues fall outside the scope of the GRP or where other community procedures would be more appropriate to address the grievance.
- If the grievance is deemed ineligible it can be rejected. However, a full explanation as to the reasons for this must be given to the complainant and recorded in the Grievance Database.
- If the grievance is eligible, determine its severity level. This will help to determine whether the grievance can be resolved immediately or requires further investigation and whether senior management will need to be informed of the grievance.
- If the grievance concerns physical damage, (e.g. crop, house, community asset) take a photograph of the damage and record the exact location.
- Enter the findings of the investigation in the Grievance Database.

Once the grievance has been investigated, the complainant will be contacted with the findings and EEP's proposed response. The CLO will explain in writing (or where literacy is an issue orally) the manner in which the review was carried out, results of the review, any changes to activities that will be undertaken to address the grievance and how the issue is being managed to meet appropriate environmental and social management systems and requirements.

As a last resort, aggrieved parties have a right to take legal action. This is a more formal rights based approach that shall only be taken if all other approaches have failed or when there are serious conflicts about facts and data. The final decision will be taken by the arbitrator or court based on compliance with laws, policies, standards, rules, regulations, procedures, past agreements or common practice.

#### **9.7.5 Grievance Redress Committee (GRCs)**

Grievance management and reporting is entirely the responsibility of the EEP through its Environment and Social Affairs Office (ESAO). However, Grievance Redress Committee (GRCs) will be established at the Woreda and Kebele level. The main function of the GRCs would be arbitration and negotiation based on a transparent and fair hearing of the cases of the parties in dispute. They are responsible to hear the grievances of PAPs and other stakeholders and arbitrate disputes in order to arrive at amicable solutions based on negotiation and in a transparent and fair manner.

The GRCs will be independent and careful selection of the members is crucial to ensure its autonomy. Presence of female members on the GRCs is crucial in order to ensure better consideration of gender issues for grievance resolution. With the help of their leaders, project affected community members will democratically elect and nominate their representatives. The composition of the GRCs is shown in Table 9.3.

**Table 9.3: Composition of Woreda Grievance Redress Committees**

1	Representative of Chief Woreda Administration Office	Chair-Person
2	Representative from Women, Children & Social Affairs Office	Secretary
3	Representative from Woreda Office of Agriculture	Member
4	Representative of Kebele Social Court (from appellant Kebele)	Member
5	Witness NGO/CBO (Active within the Woreda)	Member
6	Male Representatives from appellant Kebele	Members
7	Female Representatives from appellant Kebele	2 Members
	<b>Total</b>	<b>7</b>

EEP/GRC will be responsible for the implementation of external grievance management and reporting with differentiated channels for different stakeholders. The following are among key tasks and responsibilities of the Grievance Redress Mechanisms to be carried out by GRC:

- Regularly record all grievances received and how they have been addressed;
- Develop and keep updated a record of all consultations with stakeholders;
- Regularly prepare and file minutes of meetings;
- Ensure that the Project Contractor regularly register grievances and redressing actions;
- Document all actions agreed during meeting and follow up the implementation;
- Prepare an annual report on stakeholder consultation activities, grievance management, environmental and social performance and implementation of mitigation activities; and
- Regularly give feedback and updates to communities with adapted methods;

### 9.7.6 Documenting, Monitoring and Reporting

A formal and documented procedure is required that may give evidence to any interested third parties, including the communities themselves, that any complaint is taken into consideration and, where founded, promptly addressed and allowing the satisfactory resolution of grievances and the response to communities' requests, the developer (EEP) and lender (AfDB). Therefore, while the channels to receive complaints may be informal as adapted to the cultural context and to facilitate communities' access to the mechanism, the EEP should ensure to regularly record all grievances and document how they are addressed.

During construction a number of grievances are expected to be mostly related to construction activities, EEP is therefore required (i) to regularly record all grievances and how they are solved and (ii) to monitor that all grievances involving the EEP and its Contractor or its sub-contractors are duly recorded and followed up.

EEP/CLO will monitor grievances routinely as part of the broader management of the Project. This entails good record keeping of complaints raised throughout the life of the construction and operation of the Project.

Monthly internal reports will be compiled by the CLO and distributed to the management team. These grievance reports will include:

- The number of grievances logged in the proceeding period by level and type.

- The number of grievances resolved between the Project and complainant, without accessing legal or third party mediators, by level and type
- The number of grievances unresolved after 30 days by level and type.
- EEP's responses to concerns raised by the various stakeholders.
- Measures taken to incorporate these responses into project design & construction.
- An appropriate grievance report should be part of EEP's quarterly reporting. These reports and other records will be made available for external review if required and AfDB.

The GRM ensures that complaints are promptly reviewed and addressed by the responsible units in the AfDB. The objective is to make the Bank more accessible for project affected communities and to help ensure faster and better resolution of project-related complaints. The GRM is open to all those who believe they have been affected by a Bank-financed project.

EEP shall regularly prepare Project construction monitoring reports, which are internal reports. In addition, OS2 requires that the Owner/EEP regularly report to external stakeholders on the Project environmental and social performance, including consultation activities and grievance management. Therefore, it is recommended that these reports should be disclosed to EPA, Regional Environment Offices and to different stakeholders including communities with adapted methods.

#### 9.7.7 Communication of the Plan

The CLO shall proactively inform affected communities and the wider stakeholder group of the details of the GRP. This shall include information about where people can go and who they can talk to if they have any grievances. This information shall be widely and regularly publicized throughout the duration of the public consultation exercise, through meetings and the distribution of fliers.

The CLO shall provide the information in a format and languages that are readily understandable by the local population and/or orally in areas where literacy levels are low during routine stakeholder engagement.

### 9.8 Workers Grievance Management Mechanism

The objective of this Workers' Complaints Procedure (Internal Grievance Mechanism) is to establish a transparent process for workers to express concerns and file grievances, including anonymous complaints. This Procedure does not replace other channels as defined by law or collective bargaining agreements. In addition, the Contractor is required to prepare company GRM.

This Workers' Complaints Procedure (Internal Grievance Mechanism) applies to all concerns that may arise from the project's workforce. Examples of complaints to which this Procedure applies are:

- Working conditions and welfare;
- Payment of wages and other benefits;
- Harassments, discrimination, intimidation;
- Health and safety risks; and
- Environmental risks.

Conversely, this Procedure does not apply to local communities' concerns, for which the Public/community Grievances Management Mechanism (GRM) applies.

This procedure should also be used to collect suggestions, ideas, and improvements from employees, on the issues mentioned above.

This procedure ensures that employees have every opportunity to express grievances and have them resolved in a fair, equitable and prompt manner. This procedure applies to any grievance in relation to work, the work environment or working relationships.

This procedure shall apply to all workers/employees of Degehabur – Kebridehar 132 kV Power Transmission Project including:

- Full-time, part-time or casual staff; and
- Permanent or fixed term contract

### 9.8.1 Guiding Principles for Grievance Management

**Impartiality:** All parties have the right of expressing their viewpoints. Any assumptions or actions shall be taken until all relevant information has been collected and considered. All parties have access to support or representation if they want or need it.

**Confidentiality:** Only the worker directly involved in the grievance, or in sorting it out, can have access to information about the grievance. Information goes on an employee's personnel file only if he/she is disciplined as part of sorting out the grievance.

**Non-retaliation:** Management takes necessary steps to make sure that workers involved in a grievance are not victimized by anyone for coming forward with the grievance or for helping to sort it out. Any retaliations shall lead to disciplinary action. However, if the grievance procedure is used by an employee to lie about someone, the employee too can be disciplined.

**Timeliness:** All grievances shall be dealt with as quickly as possible. There are time limits for the different steps. The aim is to sort out all grievances within four weeks if at all possible.

### 9.8.2 Grievance Officer's

The Project Contractor shall nominate a Grievance Officer. He/She shall have a dedicated desk/office in order to allow workers to submit complaints in person. In front of the office, a Complaints Box shall be placed to collect written complaints, both anonyms and not.

### 9.8.3 Procedure's steps

Grievance resolution is the process by which solutions are sought in response to an employee complaining or expressing concerns about (or perceptions of) problems in the workplace.

#### a) First step – Informal grievance resolution

It is encouraged that informal grievance resolution is attempted prior to resorting to a more structured process.

- Ideally an employee raising the grievance (the complainant) should try to resolve the matter with the person against whom the grievance exists (the respondent). Where the grievance is in relation to a process, and does not involve a respondent, the complainant should involve their line supervisor.
- Either party to the grievance may choose to involve their supervisor to facilitate resolution at this informal level. Where the matter is related to conditions of work (e.g. workload), the supervisor may be the respondent, and the supervisor's line manager may be involved to facilitate the process.



- Where the supervisor is involved to facilitate resolution, the grievance can be lodged by the complainant verbally, or in writing. If in writing, it must be signed and dated. This informal process does not require documentation, though supervisors should make sufficient (minimal) notes if they participate in the process.
- Parties to the grievance should endeavour to:
  - Amicably discuss the matter;
  - Identify all perspectives of the issue at hand; and
  - Come to a mutually agreeable conclusion.

A successful outcome to an informal grievance process consists of all parties having had an opportunity to present their story, consensus by all on the decisions made and any provisions for amends, and that the parties feel capable of continuing to work together in a professional capacity.

If resolution is not achieved at the informal stage, the grievance is of a more complex nature, the parties believe this course of action is not appropriate, or if the complainant feels uncomfortable about approaching the respondent, formal grievance resolution should be undertaken.

#### **b) Second step – Formal grievance resolution (Complaint filing)**

If the worker feels that the matter has not been resolved through informal discussions or the complaint is against his/her direct supervisor, the complaint should be addressed to the Grievance Officer in person. The complaint shall be submitted in writing.

If the complaint is not related to personal concerns, but involves violations of the Company's procedures and rules, the worker can also submit a complaint by filling in a Complaint Form (See Table 8.1) and posting it in the Complaints Box, also anonymously (in this case the complainant cannot receive feedbacks on the complaint's handling).

The Grievance Officer shall track all complaints received in a Grievances' Register and shall carry out a pre-assessment aimed at understanding if the complaints are:

- *In good faith*, i.e. the complaints are filed without any prejudice, they are not aimed at obtaining any undue personal benefit, and they seem reasonably true; and
- *Circumstantial* (for those submitted through the Complaints Box), i.e. the complaints allow to identify any facts that are reasonably sufficient for starting an investigation and taking actions.

For complaints received in person and through the Complaints Box (anonymous), the Grievance Officer shall immediately contact the relevant departments/employees to seek a solution to the raised concern. The Grievance Officer shall provide a written answer to the complainant by three working days.

For anonymous complaints received through the Complaints Box, the Grievance Officer shall immediately inform the Project Manager and the other relevant departments to take appropriate actions.

#### **c) Third step – Workers' representatives**

If the worker is not satisfied of the answer received by the Grievance Officer, or in place of the Second step explained above, the worker may present his complaint in writing to the Worker Representative or the Union (if established).

Once received the complaint, the Project Manager shall immediately inform the Grievance Officer and the other relevant departments in order to determine the proper actions to be taken and respond to the Union by seven working days.

#### **d) Fourth step – Lawful proceeding**

If the response of the Contractor/Company is not satisfactory, the representative of the Union or the worker itself may pursue the matter with external authorities (e.g. labour office) as provided by Labour Law and Government Procedures.

### **9.9 Stakeholder Engagement Plan**

A standalone Stakeholder Engagement Plan report is prepared and the summary is presented in the following sections.

The report is prepared keeping in mind the project's anticipated risks, impacts, and development stages, and it is tailored to the characteristics and interests of the Affected Communities and other stakeholders.

Therefore, the report identifies ranges of stakeholders that may be interested in its actions and consider how external communications might facilitate a dialog with all stakeholders.

Who are stakeholders? Stakeholders could be individuals, groups, or group of individuals or, organizations who will be affected by or will affect the project or service. In short, a stakeholder is any entity with a stake in the project or service. In this case, the Degehabur – Kebridehar TL Project and its implementation and outcomes thereof is what affects other people and organizations or will be affected by them.

Fundamental principle in any stakeholders identification exercise is striking the right balance between identifying relevant stakeholders on the one hand and ensuring diversity and inclusivity on the other. This means that the process of identifying stakeholders should be systematic and not arbitrary, which, in turn, requires adopting certain methodology.

The key criteria adopted for selecting relevant stakeholders include: (a) The level of their interest in the project, and (b) The level of their influence on the project under consideration. Stakeholders' interest and influence can change with time and therefore, configurations within the stakeholders' platform could occur.

Therefore, stakeholders that are important to the project's current and future construction and operations are identified. Indicative stakeholder engagement plan to be implemented during the planning, construction and operation phase of the Project is presented in Table 9.4 below. The table also identifies stakeholders that are relevant to the Project, objective of consultation with each group, the communication methods and tools, timeframe and responsible entity for undertaking such consultations.

As the project developer, EEP will establish a project coordination office which will oversee the work carried out by the Contractor. EEP will also establish a Community Liaison Unit to manage the interaction between the project and the affected communities and work closely with the local community, Kebele and Woreda administration and other stakeholders.

Table 9.4: Stakeholder Engagement Plan

Stakeholder	Objectives	Communication Methods and Tools	Timeframe	Responsibility
<b>Stakeholders who may be directly or indirectly affected by the project</b>				
Project Affected Communities	Obtain Project support	- Direct bi-lateral meetings and/or focus groups as applicable	As soon as the project is committed for construction and before contractor mobilization.	EEP
	Updates on the Project including environmental and social issues (e.g. schedule for activities, duration, environmental and social risks mitigations & performance, grievance mechanism implementation, etc.)	- Direct onsite meetings and/or focus groups as applicable with local project affected communities including elders, women and youth groups along the TL ROW. - Prepare leaflet in local languages Somaligna and Amharic with key updates on the project (project status, E&S performance, grievance mechanism implementation, etc.). - Make leaflet available at key local community platforms in project affected Kebele offices, schools, etc. that includes specific platforms for youth, women as well as elder and vulnerable groups as applicable.	<ul style="list-style-type: none"> <li>▪ Once during planning phase</li> <li>▪ Quarterly during construction phase</li> <li>▪ Annually for the first three years during operation phase</li> </ul>	EEP/ESAO/ Contractor
	Grievance Mechanism: provide details on a grievance mechanism that will be implemented for the Project and check if they have any grievances related to the project proposed route, tower location, construction method, schedule, etc. proposed RAP, LRP, etc.	- Direct bi-lateral meetings and/or focus groups as applicable; - Prepare leaflet in local language (i.e. Somaligna & Amharic) with key details on a grievance mechanism.		
<b>Stakeholders who may have a possibility to influence and make decisions on implementation of the project and/or may have an interest in the Project</b>				
<b>Central and Local Government Entities</b>				
EPA	Environmental Licensing and regulation of the project's social and environmental compliance	- Correspondence and Official Letters	Once before construction	EEP
EPA/ Regional and Woreda Environment	Ensure implementation of environmental mitigation, management and monitoring		Twice a year during	EEP/Contractor

Stakeholder	Objectives	Communication Methods and Tools	Timeframe	Responsibility
Office	measures as presented in the ESIA report.	<ul style="list-style-type: none"> <li>- Environmental Inspection and monitoring and joint meetings (as and when required)</li> <li>- Correspondence and Official Letters</li> <li>- Site Visits</li> </ul>	construction phase	
	Obtain no-objection on the final layout of towers and substation to determine if any site-specific requirements need.			
Ministry of Culture and Tourism / ARCCH/ Regional & Zonal Cultural and Tourism Office	Reporting and communication in case archaeological/cultural remains accidentally discovered during construction of the project.	<ul style="list-style-type: none"> <li>- As and when required during accidental discovery</li> <li>- Site Visits</li> </ul>	Upon occurrence	Contractor/EEP
Ethiopian Electric Power (EEP) - Project owner	Financing, initiating and coordinating the planning and implementation of Community Development Plan	<ul style="list-style-type: none"> <li>- Individual/Internal Meetings (as and when required)</li> </ul>	Quarterly during planning phase Quarterly during implementation phase	EEP
	Obtain no-objection on layout of TL towers and substation to determine if any site-specific requirements with regards to the transmission lines and substation area	<ul style="list-style-type: none"> <li>- Individual/Internal Meetings (as and when required)</li> <li>- Correspondence and Official Letters</li> </ul>	Once before construction	EEP/Owner's Engineer/ Environmental Inspector/ Contractor
SRS/ Woredas/Kebeles Traversed by the TL	Undertake and complete land lease and compensation process	<ul style="list-style-type: none"> <li>- Individual/Internal Meetings (as and when required)</li> <li>- Correspondence and Official Letters</li> </ul>	Regularly as and when required	EEP/ESAO
	Coordination to secure the land requirements of the Project			
	Updates on the Project including environmental and social issues (e.g. current and schedule for activities, duration, environmental and social risks mitigations and performance, grievance mechanism implementation, etc.)	<ul style="list-style-type: none"> <li>- Direct meetings</li> <li>- Prepare leaflet in Somaligna, Amharic and other local (if required) languages with key updates on Project as explained (project status, E&amp;S performance, grievance mechanism implementation, etc.). Leaflet to be available at Woreda Offices</li> <li>- Correspondence and Official Letters</li> <li>- Site Visits</li> </ul>	<ul style="list-style-type: none"> <li>- Quarterly during planning phase</li> <li>- Quarterly during construction phase</li> <li>- During operation phase, annually for the first 3 years and as and when required then after.</li> </ul>	EEP/ Environmental Inspector
	Participatory needs assessment, planning, implementation and monitoring of community development projects	<ul style="list-style-type: none"> <li>- Direct meetings (as and when required)</li> <li>- Correspondence and Official Letters</li> </ul>		EEP/ ESAO

Stakeholder	Objectives	Communication Methods and Tools	Timeframe	Responsibility
	Preparation of local recruitment and procurement procedure for inclusion of local community members within such opportunities	<ul style="list-style-type: none"> <li>- Individual/Internal Meetings (if required) specifically with Chairperson of Kebeles traversed by the TL</li> <li>- Correspondence and Official Letters</li> <li>- Site Visits</li> </ul>	Regularly as and when required during construction	EEP/ ESAO
<b>Stakeholders who may participate in implementation of the project</b>				
Financers/ Development Partners	Technical and financial support to the Project as well as various RAP & LRP and community development sub-projects as presented in this ESIA	<ul style="list-style-type: none"> <li>- Direct meetings (as and when required)</li> <li>- Correspondence and Official Letters</li> </ul>	Quarterly monitoring mission during construction phase	EEP/ ESAO
NGOs and CSOs	<p>Ensure justice and equal opportunities in matters of economic and social development being provided to the project affected people.</p> <p>Bringing to the limelight the issues of vulnerable members from the project affected households.</p>	<ul style="list-style-type: none"> <li>- Individual Meetings</li> <li>- Correspondence and Official Letters</li> </ul>	<ul style="list-style-type: none"> <li>- Once during planning</li> <li>- Quarterly during construction phase</li> </ul>	EEP/ ESAO
Rural Financial Intermediaries/MFIs	<p>Access to innovative financial products and services to PAPs</p> <p>Financial training: Preparing compensation recipients to manage funds</p>	<ul style="list-style-type: none"> <li>- Individual Meetings</li> <li>- Correspondence and Official Letters</li> </ul>	<ul style="list-style-type: none"> <li>- Regularly as and when required during construction</li> </ul>	EEP/ ESAO



Indicative Budget: EEP will allocate the following budget to implement the SEP for the two TL and Substation projects

Activities	Total Cost	Remark
Project launch workshops	800000	First Year of Implementation
Consultation meetings	3,500,000	Within estimated two years of project construction period
Production, Translation of communication materials into local languages & dissemination of communication material	500,000	Within estimated two years of project construction period
<b>Total</b>	<b>4,800,000</b>	

## 10. Environmental and Social Monitoring Plan

### 10.1 General Considerations

Environmental monitoring is an essential tool in relation to environmental management as it provides the basis for rational management decisions regarding impact control. Monitoring should be performed during all stages of the project (namely construction, commissioning, and operation) to ensure that the impacts are no greater than predicted, and to verify the impact predictions. The monitoring program will indicate where changes to procedures or operations are required, in order to reduce impacts on the environment or local population.

The monitoring program will be primarily undertaken by EEP to meet the following objectives:

- to monitor the environmental conditions of the project influence area as impacted by the construction and operation of the TL Project;
- to check on whether mitigation and benefit enhancement measures have actually been implemented, and are proving effective in practice;
- to provide a means whereby any impacts which were subject to uncertainty at the time of preparation of this ESIA, or which were unforeseen, can be identified, and to provide a basis for formulating appropriate additional impact control measures; and
- To provide information on the actual nature and extent of key impacts and the effectiveness of mitigation and benefit enhancement measures which, through a feedback mechanism, can improve the planning and execution of future similar projects.
- There are two basic forms of monitoring:
  - *Compliance monitoring*: which checks whether prescribed actions have been carried out, usually by means of inspection or enquiries; and
  - *Effects monitoring*: which records the consequences of activities on one or more environmental components, and usually involves physical measurement of selected parameters or the execution of surveys to establish the nature and extent of induced changes

It is recommended to carry out both compliance and effects monitoring. However, during construction compliance monitoring will play a primary role in checking whether recommended impact mitigation and environmental management plans have been carried out or not. This is because most impact controls take the form of measures incorporated in project designs and contract documents, and the extent to which recommendations on these matters, as set out in the ESIA, are complied with, plays a major part in determining the overall environmental performance of the project.

### 10.2 Monitoring During Construction Phase

Environmental monitoring during the construction phase will comprise two principal groups of activities:

- review the Contractors' plans, method statements, temporary works designs, and arrangements so as to ensure that environmental protection measures specified in the contract documents are adopted and that the contractor's proposals provide an acceptable level of impact control; and

- systematic observation on a day-to-day basis of all site activities and the contractors' offsite facilities including transmission route and tower erection sites, storage areas, project offices and camp facilities, access road, quarry and spoil areas, etc. as a check that the contract requirements relating to environmental matters are in fact being complied with, and that no impacts foreseen and unforeseen are taking place.

These activities will be fully integrated with other construction supervision and monitoring activities carried out by the construction supervision consultant. The Resident Engineer (RE) (i.e. as part of his duties connected with general site supervision) is responsible to ensure adequate level of environmental monitoring is carried out. Actual monitoring on a day-to-day basis will be carried out by Environmental Inspector from the construction supervision consultant, under the direction of the RE.

The majority of monitoring will comprise visual observations, carried out at the same time as the engineering monitoring activities. Site inspections will take place with emphasis on early identification of any environmental problems and the initiation of suitable remedial action. Where remedial actions have been required on the part of the Contractor, further checks will need to be made to ensure that these are actually being implemented in the required form and to the agreed schedule. As experience of the principal problem areas is gained, attention will be concentrated on locations and activities which are known to be the most troublesome, with a lower frequency of inspections at problem-free locations. Nevertheless, each construction activity site need to be formally inspected from an environmental viewpoint at least once every week.

The RE will decide on the appropriate course of action to be taken in cases where unsatisfactory reports are received from his field staff regarding environmental matters. In the case of relatively minor matters, advice to the contractor on the need for remedial action may suffice, but in all serious cases, the RE should either recommend an appropriate course of action to the Engineer, or should issue a formal instruction to the contractor to take remedial action, depending on the extent of his delegated powers.

In addition to visual observation, it is particularly important that monitoring should also include limited informal questioning of the local community and their elected leaders who live in the project area, since they may be aware of matters which are unsatisfactory, but which may not be readily apparent or recognized during normal site inspection visits.

Environmental inspection checklists for site use will be developed by the RE and the Environmental Inspector to be assigned by the Supervision Consultant, prior to the commencement of construction, so as to facilitate systematic monitoring and recording. These may require modification in the light of site experience, and it is recommended that a review of their adequacy and ease of use should be carried out approximately 2 months after the commencement of works.

The Environmental Inspector will review the effectiveness of environmental management and monitoring approximately 3 months into the construction period, and will introduce improved procedures as required in the circumstances.

### 10.3 Monitoring During Operation Phase

EEP's environmental unit shall also monitor and prepare periodic reports on the status of the project operation. During project operation, EEP's ESAO shall undertake the monitoring activities.

The monitoring office shall regularly report the results and the report shall be made available for review by all concerned bodies. Contents of the report shall include:

- Results of key parameters monitored;
- Results or status on implementation of the environmental management plan;
- Description of any incidents which could potentially result into a non-compliance of the ESMP and actions taken to improve the situation; and
- Proposed solutions for any outstanding/unforeseen issues and impacts detected during the monitoring.

The recommended frequency of reporting is monthly. However, this frequency can change if demanded by the financier (i.e. AfDB). Monthly monitoring report will be submitted to EEP and financier (AfDB).

The Environmental Monitoring Plan is presented in Table 10.1.

Table 10.1: Environmental and Social Monitoring Plan

No	Issues to be Monitored	Location	Methods of Monitoring	Monitoring Indicators	Time and Frequency Monitoring	Purpose	Institutional Responsibility	Cost
<b>1. Environmental and Social Monitoring Plan During Construction Phase</b>								
1.1	Erosion of Earth works	All construction sites	Observation & reporting provisions in erosion Control Plan	Soil erosion status	Continuous and monthly reporting	To reduce the risk of erosion	Contractor and EI/Engineer	500,000
1.2	Competition for water Resources	At construction sites	Observation and inspection	Number of complaints by water users	Occasionally throughout construction period (alternating locations)	To ensure compliance Regulation/standard	As above	No cost
1.3	Water pollution	At construction sites and camp facilities	Observation, record keeping and reporting	pH, TSS, TDS, oil/grease,	Monthly	To ensure compliance with relevant regulations	As above	100,000
1.4	Noise and Vibration	At construction site and near settlement areas	As above	Noise level in dB (>80 dBA)	Upon complaints by residents near settlement sites	To ensure compliance with Regulation on the assessment and management of the environmental noise	As above	100,000
1.5	Air Pollution	At construction sites and access road	Observation and inspection	Particulate matter level of 65 µg/m <sup>3</sup>	Occasionally throughout construction period (alternating locations)	To ensure compliance with Air Pollution Control Regulation/standard	Contractor and as above	150,000
1.6	Waste Management	At construction sites and camp facilities	Observation, record keeping and reporting	Type and quantity of waste properly handled and disposed	Monthly	To ensure compliance with relevant regulations	As above	150,000
1.7	Impact on Natural Vegetation	Along the project corridor	Visual inspection	Disturbed vegetation by type & areas	Continuous during Construction	To ensure ecosystem stability	As above	120,000
1.8	Wildlife	TL and SS Construction sites and vicinity (including the alignment of the access roads)	Observation and reporting	Number of wild animals and birds affected	As above	To provide safe access and to protect wildlife from illegal hunting by construction workers and traffic accident	As above	120,000



No	Issues to be Monitored	Location	Methods of Monitoring	Monitoring Indicators	Time and Frequency Monitoring	Purpose	Institutional Responsibility	Cost
		Access road	Record keeping	Number of wild animals and birds affected	Upon incident	To record the traffic accidents involving wildlife and check accumulation of incidents at any location	As above	
1.9	Avifauna	TL and SS Construction sites and vicinity	Visual inspections, Observation, record keeping & analysis	Number of birds identified/ affected	Daily	Reduced injury and mortality attributable to collision impact	EPC Contractor	400,000
		Access road	Visual inspections, Observation, record keeping & analysis	Number of birds identified/ affected	Daily		EPC Contractor	
1.10	Construction Traffic Accident	In and around TL corridor	Record keeping and analysis	Number of accidents reported	As above	To enhance the safety of workers minimize accident risk on the local community	As above	240,000
1.11	Occupational Health and Safety Risks	All work places	Observation, inspection and reporting	Number, type and level of accidents/incidents and injuries occurred	Weekly, monthly	To ensure compliance with Regulation on Occupational Health and Safety with the Health and Safety Plan	As above	240,000
1.12	Extraction of construction materials	Project corridor	Visual inspection	Number of quarry sites and borrow pits opened and rehabilitated	Until the end of construction period	Natural vegetation may be removed to extract materials	Contractor and Woreda Office	240,000
1.13	Conflict between Local and Migrant Workers	At construction sites/TL Corridor	Observation and inspection	Number of complaints	Occasionally throughout construction period (alternating locations)	To ensure compliance Regulation/standard	Contractor/ EI/Engineer and Woreda Social Office	No cost
1.14	Child Labour	At construction sites	Observation, inspection and reporting	Number of child labour employed	Continuous and monthly reporting	To ensure compliance with Regulation on Child Labour	As above	No cost
1.15	Impact on Public Health	Store/site installation/Camp site and nearby villages along the TL corridor	Awareness creation and Condom distribution	Number of awareness training conducted	Monthly	To prevent the spread of HIV/AIDS	Contractor, EEP and Woreda health office	100,000

No	Issues to be Monitored	Location	Methods of Monitoring	Monitoring Indicators	Time and Frequency Monitoring	Purpose	Institutional Responsibility	Cost
<b>2. Environmental and Social Monitoring Plan During Operation and Maintenance Phase</b>								
2.1	Loss of resident avifauna (collisions, barrier effect and displacement)	Transmission line corridor and vicinity	Bird and bat carcasses Visual inspections, Number of avifaunal carcass, record keeping & analysis	Number of mortality/injured birds identified / affected & species of carcass found, <i>Condition:</i> whole carcass, decomposed, partial carcass, etc.); coordinate, photo documentation	Monthly	Reduced injury and mortality attributable to collision impact	EEP's/ ESAO	Included in EEP project management costs
2.2	Domestic/ Solid/Sanitary Waste	As above	Observation, record keeping and reporting	Type and quantity of domestic /sanitary waste properly handled and disposed	As above	To ensure compliance with relevant regulations	As above	<sup>4</sup> Covered under ESAO's Operation Budget
2.3	Hazardous Waste	As above	Observation, record keeping and reporting	Type and quantity of waste hazardous properly handled and disposed	As above	To ensure compliance with relevant regulations	As above	As above
2.4	Generation of E-Waste	As above	Observation, record keeping and reporting	type and quantity of E-waste properly handled and disposed	As above	To ensure compliance with relevant regulations	As above	As above
2.5	Occupation, Health and safety risks	Project site	As above	Number, type and level of injury/ incidents occurred	Continuous and monthly reporting	To ensure compliance with regulation on occupational health and safety with the health and safety plan	As above	As above
<b>3. Environmental and Social Monitoring Plan During Decommissioning phase</b>								
3.1	Noise and Vibration	At demolition site and near settlement areas	Observation, record keeping and reporting	Noise level in dB	Upon complaints by nearby residents	To ensure compliance with relevant regulations	HSE Officer	<sup>6</sup> Covered under HSE Officer's Salary

No	Issues to be Monitored	Location	Methods of Monitoring	Monitoring Indicators	Time and Frequency Monitoring	Purpose	Institutional Responsibility	Cost
3.2	Air Pollution	At Demolition sites and access roads	Observation, record keeping and reporting	Particulate matter level of in $\mu\text{g}/\text{m}^3$	Occasionally throughout decommissioning phase (alternating locations)	To ensure compliance with relevant regulations	As above	As above
3.3	Demolition waste	At demolition sites and access roads	Observation, record keeping and reporting	type and quantity of demolished wastes properly handled and disposed	Continuous & monthly reporting	To ensure compliance with relevant regulations	As above	As above
3.4	Vegetation disturbance	Along the Demolition corridor	Observation and inspection	Cleared vegetation by type and area	Continuous & monthly reporting	To ensure compliance with relevant regulations & ecosystem rehabilitation and restoration	As above	Decommissioning Contractor will engage Botanist/ Ecologist.
3.5	Environmental , Health and Safety risks	Project site	Observation and inspection	number, type, and level of injury/ incidents occurred	Continuous until all discarded facilities are removed and monthly reporting	To ensure compliance with regulation on occupational health and safety with the health and safety plan	Contractor /EEP	<sup>6</sup> Covered under HSE Officer's Salary
<b>Total Cost for Environmental and Social Monitoring Plan in Birr</b>								<b>2,460,000</b>

# 11. Institutional Arrangement and Capacity Building for Environmental Management and Reporting

## 11.1 Institutional Arrangement for Implementing the EMP

The key institutions to be involved in the implementation of the EMP and their main responsibilities are briefly described below.

It is realised that effective Environmental and Social Management will be achieved only if it is undertaken as a fully integrated part of the overall project management. In order to effectively implement a comprehensive Environmental & Social mitigation and management plan, the coordination of efforts of the various stakeholder Agencies is necessary.

The Contractor will be responsible for all construction and commissioning activities until official operational handover to EEP.

The responsible institutions for implementation, coordination and administration of the Environmental & Social mitigation and management plan set out in this ESIA are summarised in Table 11.1.

The proposed Degehabur – Kebridehar 132 kV Transmission Line Project is a Federal project, EEP is responsible for its implementation, and therefore the Environmental Impacts have a Federal significance.

Table 11.1: Agencies and Organizations Responsible for Implementation of ESMP

Organization or Agency	Role in the Project	PC*	C*	O*	Responsibility in ESMP
EEP	Project Developer/Owner	X	X	X	<ul style="list-style-type: none"> <li>All aspects of the project from design, mobilization, construction, operation and decommissioning;</li> <li>Ensure compliance to environmental and socio-economic safeguards.</li> <li>Implementation of mitigation measures</li> <li>Coordination with other agencies</li> <li>Works closely with Grievance redress committees and local stakeholders</li> <li>Implementation of the Monitoring</li> <li>During operation is responsible for the transmission</li> <li>Implementation of mitigation measures during operational phase.</li> </ul>
EPA/Somali Regional Environmental Protection, Office	Agency responsible for monitoring/auditing of environmental pollution	X	X	X	<ul style="list-style-type: none"> <li>Issue Environmental Clearance</li> <li>Enforcing implementation of the environmental policies and legislation and the ESIA process</li> <li>Monitor, audit, coordinate and ensure that recommendations of ESIA/ESMP are implemented</li> <li>Monitoring and auditing for compliance with Federal/Regional Environmental Regulations.</li> </ul>
ARCCH	Agency responsible for preservation of		X		<ul style="list-style-type: none"> <li>In coordination with other agencies, responsible for the protection,</li> </ul>

Organization or Agency	Role in the Project	PC*	C*	O*	Responsibility in ESMP
	cultural and historical assets				recovery and preservation of archaeological or cultural resources discovered during construction.
Contractor	Contractor (for construction of the transmission line and substation)		X		<ul style="list-style-type: none"> <li>▪ Implementation of mitigation measures at construction Site</li> <li>▪ Assigning EI for Self-Monitoring (For the construction phase)</li> <li>▪ Implementation of recommended mitigation measures during construction.</li> <li>▪ Prepare various site specific Environmental Management Plans or Management Strategies and Implementation Plans (MSIPs)</li> <li>▪ Prepare Monthly and quarterly Site Inspection and Progress Reports.</li> <li>▪ Assigning personnel responsible for implementation and monitoring of the ESMP.</li> <li>▪ Ensure all aspects of the construction comply with both the ESMP and other relevant environmental legislation.</li> <li>▪ Follow the recommended chance find procedures as and when required</li> </ul>
EPA and			X	X	
Ministry of Labour and Social Affairs/ Somali Regional Labour and Social Affairs Bureau	Agency responsible for occupational health and safety		X	X	<ul style="list-style-type: none"> <li>▪ Monitoring/auditing</li> <li>▪ Monitoring the occupational health and safety.</li> <li>▪ Coordination with contractor regarding local employment opportunity.</li> </ul>
Somali Regional state and Cities and Woredas administrations	Responsible to actively participate in Complaint Hearing Body and Appeal Hearing Councils		X	X	In collaboration with EEP assign a representative to Complaint Hearing Body and appeal Hearing Councils.
Regional and Local Women, children and youth office	Offices responsible to safeguard the rights of Women, children and youth		X	X	<ul style="list-style-type: none"> <li>▪ Monitoring the inclusiveness of women in employment opportunity.</li> <li>▪ Enforcing implementation of the ESMP.</li> </ul>
Regional & Local Health Office	Offices responsible for public health and communicable diseases		X		Monitoring of health issues of the project
Project Stakeholders and Project Affected Communities	To be consulted and participate at different stages of the project	X	X	X	Consent for Project sustainability (as required)

Note: PC= Pre-construction C= Construction O= Operation



The institutional responsibilities for implementing the recommendations of this ESIA study are indicated in the plan along with the corresponding mitigation actions. The key institutions to be involved in the implementation of the recommendation of this ESIA and their main responsibilities are briefly described below.

### 11.1.1 Environment Protection Authority

Environmental Protection Authority (EPA) is the key institution at the federal level which has responsibilities on environmental protection and on projects that have a federal, interregional and international scope with key responsibilities related to coordination and monitoring.

It has a broad mandate covering environmental matters at federal level including to coordinate activities to ensure that the environmental objectives provided under the Constitution are implemented.

Therefore, EPA is the key institution at federal level responsible for all environmental protection and management activities. EPA in collaboration with other federal and regional environmental institutions is responsible for the following:

- Establish a system at the project level to monitor, audit, coordinate and ensure that this ESMP and related activities of the project are implemented in accordance with national policies, regulations, standards and guidelines; and
- Follow up and ensure that all environmental study and related activities at different phase of the project including environmental inspection and auditing are properly undertaken by competent consultants/firms having competence certificate from the commission or other relevant federal or regional environmental organization in the country,

### 11.1.2 Ethiopian Electric Power

Prior to contractor's mobilization and the commencement of construction, EEP's Environmental and Social Affairs Office (ESAO) will be concerned with the following principal activities:

- ensuring that all government and funding agency requirements and procedures relating to ESIA are complied with; and
- Implementation of land and property acquisition procedures including the payment of compensation.
- As the project promoter, EEP will be responsible for submitting the ESIA to EPA for evaluation according to National procedures. In addition, EEP will ensure the following are implemented:
  - Ensuring that all the necessary environmental protection measures and project components are incorporated during the Design and Tender Document preparation phase of the planned project;
  - Ensure a qualified environmental and safety expert is assigned in the supervision consultant's and contractor's team;
  - Review environmental monitoring and status reports prepared by the supervision consultant and take necessary actions;
  - Conduct periodic project site supervision to oversee environmental performance of the project or status of environmental protection measures and, if required, provide guidance for the supervision consultant's team;

- Carry out environmental monitoring during the operation of the project and ensuring failures are sufficiently repaired in time;
- Improve the ESMP according to lessons learnt during all phases of the project;
- Implement follow-up public consultations and disclosure plan;
- Liaison with other stakeholders including the local communities, government offices and NGOs; and
- Ensure ESMPs are implemented during the operation phase.

### 11.1.3 Woreda Land Administration and Environmental Protection Office

The Woreda Environmental Protection Offices will be responsible for ensuring that the ESIA is properly and effectively implemented during all phases of the project.

The Woreda Land Administration Office will take the lead role in the implementation of land acquisition and compensation activities in their respective Woredas.

The Regional Office will work closely with EEP and conduct periodic monitoring of the implementation of the ESMP.

### 11.1.4 The Supervision Consultant

The main responsibilities of the Supervision Consultant/Owner Engineer are to review the Contractor's Site Environmental Management Plan, work plans, method statements, and their approval, and making sure that these and other environmental protection requirements included in the contract are fully complied with. In addition, the Supervision Consultant/Owner Engineer is responsible for mobilizing an Environmental, Social and Safety Expert for day-to-day monitoring of the contractor's works and during major construction activities. If unforeseen issues observed, the Supervision Consultant/Owner Engineer will recommend appropriate actions to the contractor to overcome or mitigate the problem.

### 11.1.5 The Contractor

The Contractor is responsible for incorporating and implementing appropriate environmental management measures during the construction and commissioning phases of the project.

The Contractor is responsible for designing a comprehensive Contractor's Environmental and Social Management Plan (C-ESMP) and method statements for specific tasks, which will be provided for the supervision consultant's approval. The Contractor's plan shall be in-line with this ESIA and AfDB's standards.

The HSE Manager will be responsible for effective environmental and social management and monitoring and will ensure that these are fully incorporated in, and integrated with, the overall construction supervision and monitoring framework. This aspect will cover matters such as the development of checklists of key points which will be monitored on a routine basis during construction and reporting mechanisms for ensuring that appropriate remedial action is taken, should monitoring reveal that this is necessary.

- Assign a qualified HSE Officer in the supervision team; and
- Carrying out environmental inspection during the construction phase of the project and ensuring failures are sufficiently repaired in time;

### 11.1.6 Environmental Inspector

It is recommended that an Environmental Inspector (EI) be appointed by the RE as a member of the construction supervision team. The Environmental Inspector would be responsible for reviewing and commenting on environmental aspects of work plans prepared by the Contractor during the mobilization period, as well as in developing site environmental management procedures etc. in collaboration with the RE.

During the actual construction period, the EI would provide advice and assistance to the RE, as and when required, on all aspects of environmental management. He would also be responsible for periodic overviews of environmental monitoring during the construction period, and would report directly to the Engineer.

## 11.2 Institutional Capacities Building and Training

### 11.2.1 Training and Capacity Building for EEP's Environmental and Social Affairs Office

EEP Environmental and Social Affairs Office (ESAO) is one of the functional areas of EEP to address the major environmental and social issues in the power sector development. The team works to make the power generation and transmission construction environmentally and socially sound. It works in line with the local and international funding agencies' environmental proclamations, policies enforcing EEP to comply.

The major task of the Environment and Social Affairs Office is to conduct periodic monitoring in power projects and operational activities of EEP, Environmental and Social Impact Assessment (ESIA), and Resettlement Action Plan (RAP). The team ensures whether or not the EEP power projects are complying with the approved environmental and social management plan and undertaking the appropriate mitigation measures accordingly. It is currently staffed by one experienced manager and seven experienced social and environmental experts.

The training programme is to strengthen EEP ESAO's capability in the area of environmental and social impact/risk management and monitoring. This shall include short term specialized trainings and additional and specialized training related to High voltage Transmission line project.

The training program will cover measurement techniques in the field, tools for the prediction of pollutants, measurement of air, water and noise quality, habitat quality, Bird identification, identification and management of impact, conservation of natural resources, etc.

The EPA and EEP may be consulted for such training. Immediate short-term training will be required for the Project in-charge and designated Environmental and social safeguards Officers to raise the level of environmental and social risk management awareness. In addition, some institution like Addis Ababa university Center for environmental science, NGOs working on environmental training and, etc., conducts training and access to their resources may be required.

The need for additional and specialized training will be examined and appropriate training will be undertaken as required. Training of personnel to be deployed on the proposed project during construction and operation, with regard to trainings of environmental and social management and its requirements shall be set as an integral part of the planning. The EEP project implementation unit should be asked to submit a detailed program for training of personnel and implementation with regard to the environmental and social safeguards requirements.

Apart from the direct training, such program should include guidelines for methods to manage occupational health and safety during various components of construction

phases (tower erecting, stringing, energizing, etc.), electrocution and collision risks and hazard for birds and human, environmental and social risk analysis, grievance redress mechanism, GBV and Child labor risk management, traffic safety, wildlife habitat conservation and management etc. Capacity to quantitatively monitor air, water and noise quality is always advantageous, but monitoring will primarily involve ensuring that actions taken are in accordance with contract and specification clauses, and specified mitigation measures.

### 11.2.2 Training and Capacity Building to Federal and Regional Institutions

In an effort to strengthen institutional capacity and environmental awareness, training shall be organized under this project for individuals from concerned ministries and agencies such as Federal EPA, Oromiya and Somali Regional Environmental Protection, Rural land administration and Use Bureaus and Woreda line offices, etc.

### 11.2.3 Training and Capacity Building for Contractor Personnel

The Contractor is responsible for informing employees and subcontractors of their environmental and social obligations, and for ensuring that employees are adequately experienced and properly trained to conduct the works in a manner to minimize social and environment impact. Upon arrival on site, all new employees, including the project Administrators, security personnel and subcontract personnel shall be given ESMP and HSE induction training, carried out by HSE Manager or his representative. Therefore, the Contractor shall:

- Ensure employees are familiar with the HSE requirements of the project
- Develop and provide employees job safety training specific to their jobs
- Ensure continuous development of its human resource through training and awareness
- Develop and implement a mechanism for a continuous assessment of competence of the workforce.
- Maintain all training records by the HSE Office and will be produced on request.

### 11.2.4 Training and Study Tour

The training programme is to strengthen ESAO's capability in the area of environmental management and monitoring. This shall include short term specialised trainings and international study tour to major energy project sites.

In an effort to strengthen institutional capacity, seminars/workshops and study tours shall be organized under this project. This shall be open for individuals from concerned ministries and agencies such as Federal MWE, EPA, Somali and Oromiya Regions' office of Environmental protection, Woreda level office of Environment etc.

The objectives of the seminar/workshops are to ensure environmental awareness, knowledge and skill for the implementation of the recommendations of ESIA and ESMAP.

## 11.3 Reporting and Reviewing

A complete set up to handle and manage data and information generated from the management plan and other monitoring activities will be established. Therefore, ESAO shall maintain all necessary records related to environmental management and monitoring,

The expected reports to be submitted by the Contractor include: C-ESMP, Site Environmental Management Plan (SEMP), Monthly Site Inspection and Progress

Reports.

### 11.3.1 Site Environmental Management Plan Report

The construction scale of this Project demands the need for the preparation of a comprehensive SEMP by the Contractor for the major activities. The SEMP report will provide for each construction site a description of the area, how the environmental measures will be adapted to the site, and the design of typical measures. Development of these plans will form the basis of continued improvement of environmental performance.

Therefore, the following specific Site Environmental Management Plans will be prepared and submitted by the Contractor:

- 1) Environmental and Safety Training for Construction Workers Plan
- 2) On-Site Traffic and Accident Management Plan
- 3) Construction Work Camps Area Plan
- 4) Project Staff Health and Safety Programme
- 5) Dust Emission Control Plan
- 6) Water Quality Management Plan
- 7) Spoil Disposal and Waste Management Plan
- 8) Erosion and Sediment Control Plan
- 9) Landscaping and Re-vegetation Plan
- 10) Site Restoration and Camp Closure Plan
- 11) Occupational and public health and safety management plan
- 12) Emergency preparedness and response plan
- 13) Incident Notification procedure
- 14) Code of conduct;
- 15) Gender Based Violence
- 16) Sexual exploitation and abuse, Sexual Harassment and Violence against Children (GBV, SEA/SH/ VAC)
- 17) Labor Influx prevention and response action plan
- 18) Water resources protection & Storm water management plans
- 19) Biodiversity Assessment and Management Plan
- 20) Quarry site, Borrow pit, Dumping site Management and Rehabilitation plan;

### 11.3.2 Site Environment Inspection Report

Environmental monitoring of site activities is undertaken and the findings will be presented through a monthly Environment Inspection Reports (EIRs) and incident forms. The EIR will be regularly issued and is normally supported by photographic evidence and provides the following:

- A description of construction activities that may affect the environment;
- Remedial actions which have been initiated, and whether or not the resultant action is having the desired result;



- Identify any unforeseen environmental concerns and recommend suitable additional actions;
- Tracking of issues causing environmental concern; and
- Amendments to the ESMP if required

### 11.3.3 Monthly Progress Report

Monthly reports prepared by the Contractor should contain a brief section referring to ESHS. Environmental issues should be discussed at dedicated meetings with the Employer, Resident Engineer (RE), the Contractor and the Environmental Inspector.

The environmental summary should provide the following:

- Summary of environmental performance for the month;
- Summary of environmental actions taken;
- Details of any environmental incidents or accidents;
- Objectives and targets for the following month; and
- Non-Conformances, Corrective actions and Preventive actions.

### 11.4 Information and Communication Strategy

The EMU shall maintain all necessary records, concerning environmental management and monitoring, and will prepare regular progress reports. These reports should summarise principal activities and findings, problems encountered, solutions to problems, and conclusions. Monthly Progress Report and Environmental and Social Inspection Report should be prepared by Environmental Inspector and distributed to EPA, Somali Regional Council, EEP, Regional Office of Environmental Protection, EEP's Project Management Office and to AfDB.

## 12. Environmental Mitigation, Management and Monitoring Costs

### 12.1 Implementation Cost

The total environmental and social mitigation, management, monitoring and training costs are summarized in Table 12.1 and amounts to some 124.3 million Birr (2.3 million USD). This amount will be allocated to cover implementation of the environmental and social mitigation, management, monitoring and training programmes described in Chapter 6, 9, 10, and 11 respectively.

It should be noted that no significant increase in construction costs is expected in connection with requiring the Contractor for compliance with environmental protection clauses, since these merely require the contractor to behave in a responsible manner in relation to the environment and in accordance with good construction practice.

Costs associated with several environmental mitigation and management plans shall be an integral part of the construction contract (to be incorporated in unit rates and bill items), and no separate budget is necessary to cover these aspects.

The cost estimate has made adequate provisions for contingencies and it has to be considered as a component of the financial requirement of the project.

Environmental Mitigation, Management and Monitoring costs will be an integral part of specific items incorporated in the overall project budgets. Such items comprise:

- Costs which will be incurred in connection with management duties related to the expropriation process, the payment of compensation and implementation of the resettlement plan is assumed that EEP's project budgets will cover these costs.
- Marginal costs of the contractor incurred in complying with environmental protection clauses in the construction contract incorporated in unit rates and bill items and will thus be included in construction costs. It should be noted that no significant increase in construction costs is expected in connection with requiring compliance with environmental protection clauses, since these merely require the contractor to behave in a responsible manner in relation to the environment, in accordance with good construction practice.
- Environmental monitoring carried out by the construction supervision consultant's staff including inputs by the Environmental Specialist from ESAO is an integral part of general supervision duties and will be covered by normal construction supervision cost estimates and ESAO's operation cost.

### 12.2 Funding Mechanism

The total funding needed for identified activities is presented in Table 12.1. EEP is responsible to provide the resources required for all activities related to the implementation of environmental mitigation, management and monitoring programmes from the Project budget.

EEP is also responsible to set aside marginal benefits from the exploitation of the development for financing the long-term financial needs of the social and environmental needs of the area such as environmental mitigation and management, social development projects, environmental monitoring, etc.

With this, EEP would demonstrate its commitment to a sustainable development. It will also decrease its short- and long-term liabilities and improve its public image by complying with

existing national environmental regulations and ensuring that construction work does not adversely affect the environment and social community resources.

**Table 12.1: Environmental and Social Management and Monitoring and Social Development Plan Costs (in ETB)**

S/N	Compensation Item	Amount (Birr)
<b>1</b>	<b>Compensate for loss of privately-owned farmland and other properties</b>	
1.1	Compensation for permanent loss of farmland and protected grassland and Crop by-product	3,502,650
1.2	Compensation for permanent loss of Houses & Other Structures	13,370,000
1.3	Replacement Cost for affected two school Infrastructures	6,750,000
1.4	Allowances for transporting movable items	210,000
1.5	Transition Allowances	420,000
	<b>Sub-Total (1)</b>	<b>17,502,650</b>
<b>2</b>	<b>Livelihood Restoration Plan</b>	
2.1	Agricultural Intensification - Crop Production	1,085,000
2.2	Open Window Support: Facilitation, Training and Advisory	500,000
	<b>Sub-Total (2)</b>	<b>1,585,000</b>
<b>3</b>	<b>Community Development Schemes</b>	
3.1	Electrification to <i>project</i> affected Kebeles <sup>1</sup>	<i>EEP &amp; EEU<sup>1</sup></i>
3.2	Improve Access to Potable Water Supply in 2 project affected Woredas ( <i>drill three boreholes and equip them with PV-powered water pumping facilities for communities</i> )	25,000,000
3.3	Upgrade and Support three <i>existing health facilities in 3 project affected Woredas by upgrade their service delivery level</i>	4,500,000
3.4	Upgrading Veterinary Clinic	5,000,000
3.5	Strengthening Existing TVET	3,000,000
3.6	Establishment of Nursery within all 5 Project affected Woredas for Biodiversity Conservation/Compensatory Afforestation	5,000,000
	<b>Sub-Total (3)</b>	
<b>4</b>	<b>Special Assistance for 43 Vulnerable HHS</b>	450,000
<b>5</b>	<b>Environmental and Social Mitigation and Management Plan</b>	<b>17,462,000</b>
<b>6</b>	<b>Environmental and Social Monitoring Plan</b>	<b>2,460,000</b>
7	Training and Capacity Building (workshop)	1,500,000
8	Stakeholder Engagement during construction	4,800,000
9	Grievance Redress Mechanism during construction	2,500,000
10	Environmental Inspection Team including HSE officer	3,600,000
11	Environmental Inspector (Independent Consultant)	1,800,000
12	Environmental Audit	1,000,000
	<b>Sub-Total (4)</b>	<b>36,522,000</b>
	<b>Grand Total (1+2+3+4)</b>	<b>105,309,650</b>
13	Administration Cost During Implementation (3%)	<b>3,159,290</b>
14	Contingency (15%)	<b>15,796,448</b>
	<b>Grand Total</b>	<b>124,265,387</b>

Note 1. The rural electrification component of this project will be financed by EEU's UEAP project budget

## 13. Conclusion and Recommendations

### 13.1 Conclusion

In this report, the potential beneficial and adverse impacts of the construction of Degehabur – Kebridehar 132 kV TL Project on the physical, biological and socio-economic environment are identified and discussed. The report also identifies and recommends appropriate benefit enhancement and/or mitigation measures.

Improved power transmission, will boost electricity supply capacities of the national grid making it not only accessible physically, but also affordable financially. In the medium to long term, improved electricity transmission, by enhancing supply and curbing transmission losses, will facilitate rural electrification and make it possible for rural communities in Ethiopia as a whole to gain access to electricity – modern and affordable energy – an important milestone to achieving the GTP II Goals. Besides, improved generation and transmission of power (enhanced capacities of the national electricity grid), will generate foreign currency, attract Foreign Direct Investment (FDI) and will lower costs for operations in education, health, business and industry sector.

However, like all other infrastructure development projects, notwithstanding the far-reaching social and economic benefits, admittedly, the project would also have adverse impacts on the biophysical and socio-economic environment that need to be accounted for and avoided or mitigated when and wherever feasible. On the bases of the draft Feasibility routing and engineering design (206 km length and 26m width), the proposed TL project would affect an estimated area of about 535.6 ha of land found within the TL corridor.

- No new access will be created to previously undeveloped areas.
- There are no significant areas of natural or semi-natural forest all along the Project corridor, and no designated or protected areas of terrestrial ecological interest that will be affected by the proposed construction activities.
- A terrestrial vegetation survey confirms that no locally or regionally endangered species will be affected as a result of land clearing along the TL corridor. Therefore, no special mitigation measures or Biodiversity Management Plan will be required.
- The presence of wildlife within the project area is reported and confirmed by field investigation and also the local communities. However, there are no endangered or rare species entirely dependent on the project corridor.
- There are no wildlife species with restrictive habitat preferences within the project influence corridor that suffer the consequence of land clearing for the implementation of the project. Therefore, no special mitigation measures or Biodiversity Management Plan will be required.
- The project corridor is neither contiguous with, nor in close proximity with any of the nationally protected areas.
- There are many birds in the project area. However, according to EWNHS, none of the nationally designated Important Bird Areas (IBAs) are contiguous with, nor in close proximity with any of these IBAs.
- The study also shows that there are no known and observable archaeological and cultural heritage sites within the project corridor. Nevertheless, the possibility exists for the discovery of buried archaeological remains during excavation and site clearance. If that happen, as part of the mitigation program, the Authority for Research and Conservation of Cultural Heritage, ARCCH will conduct additional surveys during the construction and quarrying to determine if any potential site exist.

- No property belonging to religious institutions is located along the proposed Transmission Line route. Therefore, no mitigation or compensation measure is recommended.
- There are no disadvantaged, marginalized or ethnic minorities groups of people in and around the project area whose traditional lifestyles could become compromised by developing the proposed Degehabur – Kebridehar TL project. Therefore, no indigenous people development plan will be required.

However, significant impact is anticipated and these are briefly presented below:

- *Farmland Expropriation:* 6.63ha of privately owned farmland will be expropriated for tower foundations. A total of 0.54ha farmland owned by 84 smallholders will be permanently lost to the project.
- *Impacts by the New Substation at Birkot:* Total land required for the construction of the new substations at Birkot is 9.0ha. No privately owned farmland or property is located within the SS boundary. Therefore, no mitigation or compensation measure is recommended.
- *Property Expropriation:* Next to land, residential houses and other related structures are the main assets of households affected by the project. An estimated 42 residential houses located along the TL corridor belonging to the same number of households will be affected by the Tower Pad or ROW or both components of the TL project.
- *Impacts on Social Institutions and Infrastructures:* During the field survey along the project transmission corridor, a schools structures belonging to Raho Primary school & Dikse Sere Secondary School located within the RoW would be affected.
- *Impacts on Burial Sites:* The survey results has identified burial sites along the transmission line corridor. These sites are a living heritage, has high social, spiritual and cultural significance for the local community of the project area. Therefore, the project should avoid locating any temporary project activities requiring soil clearing, levelling and excavation in and around the identified burial sites.

Construction of the planned Degehabur – Kebridehar 132kV TL Project and the installation of a new substation at Birkot is feasible, indeed attractive, from the technical, economic and environmental viewpoints. These adverse environmental and social impacts are all such that they are capable of control within acceptable limits, provided that the recommended mitigation measures are adopted.

Construction phase impacts will also be mitigated by specific environmental protection clauses to be included in the construction contract documents, and enforcing compliance with them during construction supervision. Monitoring of the contractor's works will be carried out by the supervising consultant, who will ensure that good civil/environmental engineering practices are followed.

Therefore, it is concluded that, provided the benefit enhancement and mitigation measures as recommended in this ESIA report are adopted and a RAP is prepared and implemented, there are no environmental and social grounds for not proceeding with implementation of the project in the form presently envisaged.

## 13.2 Recommendations

The Degehabur – Kebridehar TL and Substation project is technically feasible and economically attractive. If the benefit enhancement and mitigation measures recommended in this ESIA report are adopted and a RAP and LRP is prepared and implemented, there are no environmental and social grounds for not proceeding with implementation of the



project in the form in which it is presently envisaged. Such a worthwhile scheme, which will bring net benefits to the nation in general and the local communities in particular should be implemented at the earliest possible date.

However, it is recommended for EEP to implement the following:

- 1) **Resettlement Action Plan:** Construction and installation of 206 km long Degehabur - Kebridehar 132 kV Transmission Line Project will affect 179 households (163 male and 16 female HH heads) and 1,380 persons are living in these project affected households. These include an estimated 0.82 ha farmland owned by the 124 smallholder farm households and 66 houses and related structures belonging to 43 HHs. Therefore, the total number of people who will be affected by involuntary resettlement are more than 200 in relation to property expropriation alone and in consequence, it will be necessary for a RAP to be prepared. Therefore, EEP who is the implementing Authority must prepare a RAP once the project is committed for construction.
- 2) **Livelihood Restoration Plan:** Both Operation Safeguard 2 (OS 2): Involuntary Resettlement Land Acquisition, Population Displacement, and Compensation and the recent Expropriation of Landholdings for Public Purposes and Payments of Compensation Proclamation No 1161/2019 prescribe the necessity of livelihood restoration in connection with economic displacement. Thus, based on the entitlement matrix and the project area's socioeconomic baseline, EEP will design a Livelihood Restoration Plan (LRP) that ensures that PAPs, subsequent to their economic displacement, has their livelihood restored and, to the fullest extent possible, improved.
- 3) **Community Development Plan:** All grazing land other land-based resources affected by the Project are collective property of communities around the project. In addition, during the construction phase there are several source of inconvenience for communities residing around the Project area. Adopting a wider approach, it is therefore, proposed that the Project support selected community development initiatives benefitting the entire Project communities and beyond. Therefore, EEP will design and implement a Community Development Plan (CDP).
- 4) **Project designs, specifications, and contract documents:** It is recommended to ensure project designs and specifications incorporate appropriate measures to minimise negative impacts and to enhance beneficial impacts.

It is also recommended to ensure that the appropriate environmental protection clauses have been included in the contract documents to allow control of actions by the contractor, which are potentially damaging to the environment, the community and construction workers.

- 5) **Rural Electrification:** In spite of the fact that PAPs and local authorities were aware that the planned TL project is not a rural electrification initiative, they strongly demanded for electrification of their constituencies and project affected communities in particular.

Their demands for electrifying their homes and communities are fair and legitimate. Therefore, EEP in consultation with EEU give priority to these communities during separate and on-going rural electrification programmes (e.g., UEAP) of the GoE.

- 6) **Maintain Ongoing Stakeholders Engagement:** Maintaining ongoing and transparent discussions and consultations both with members of affected communities and their administrations is in the best interest of the TL project. Such platforms could and should be used to disclose information about the project, to create shared understanding and trust between parties involved in the process.

## 14. Annexes

### Annex 1: List of Documents Collected and Reviewed

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Annex 2: List of Wild Animals of the Degehabur to Kebridehar Transmission Line Project Area

No.	Scientific name	English name	IUCN red list status	Information Source
<b>Ungulates</b>				
1	<i>Orycteropus afer</i>	Aardvark	LC	R
2	<i>Phacochoerus aethiopicus</i>	Desert warthog	LC	R
3	<i>Tragelaphus imberbis</i>	Lesser Kudu	NT	R
4	<i>Tragelaphus strepsiceros</i>	Greater Kudu	LC	R
5	<i>Madoqua saltiana phillipsi</i>	Salt's Dikdik	LC	O,R
6	<i>Madoqua guentheri</i>	Guenther's Dikdik	LC	O,R
7	<i>Madoqua piacentinii</i>	Silver Dikdik	DD	R
8	<i>Gazella soemmerringi</i>	Soemmerring's Gazelle	VU	R
9	<i>Ammodorcas clarkei</i>	Dibatag	VU	R
10	<i>Litocranius walleri</i>	Gerenuk	NT	R
11	<i>Oryx beisa</i>	Beisa Oryx	EN	R
<b>Primates</b>				
12	<i>Papio hamadryas</i>	Sacred Baboon	LC	O,R
13	<i>Papio anubis</i>	Olive Baboon	LC	O,R
14	<i>Cercopithecus pygerythrus</i>	Vervet Monkey	LC	R
15	<i>Galago gallarum</i>	Somali Galago	LC	R
<b>Insectivores</b>				
16	<i>Elephantulus rufescens</i>	Lesser Elephant Shrew	LC	R
<b>Hares and Rodents</b>				
17	<i>Lepus capensis</i>	Cape hare	LC	R
18	<i>Xerus rutilus</i>	Ground Squirrel	LC	O,R
19	<i>Pectinator spekei</i>	Pectinator	LC	R
20	<i>Hystrix cristata</i>	Crested Porcupine	LC	R
21	<i>Heterocephalus glaber</i>	Naked Mole-rat	LC	R
<b>Carnivores</b>				
22	<i>Canis aureus</i>	Golden Jackal	LC	O,R
23	<i>Canis mesomelas</i>	Black-backed Jackal	LC	R
24	<i>Otocyon megalotis</i>	Bat-eared Fox	LC	R
25	<i>Mellivora capensis</i>	Ratel	LC	R
26	<i>Herpestes sanguineus</i>	Common Slender Mongoose	LC	R
27	<i>Mungos mungo</i>	Banded Mongoose	LC	R
28	<i>Ichneumia albicauda</i>	White-tailed Mongoose	LC	R
29	<i>Helogale parvula</i>	Common Dwarf Mongoose	LC	R
30	<i>Hyena hyena</i>	Striped Hyaena	NT	R

No.	Scientific name	English name	IUCN red list status	Information Source
31	<i>Crocuta crocuta</i>	Spotted Hyaena	LC	O, R
32	<i>Proteles cristata</i>	Aardwolf	LC	R
33	<i>Genetta genetta</i>	Common Genet	LC	R
34	<i>Civettictis civetta</i>	African Civet	LC	R
35	<i>Felis caracal</i>	Caracal	LC	R
36	<i>Panthera leo</i>	Lion	VU	R
37	<i>Panthera pardus</i>	Leopard	VU	R
38	<i>Acinonyx jubatus</i>	Cheetah	VU	R

Note: VU-Vulnerable, ED-Endangered, NT-Near Threatened, LC-Least Concern and DD-Data Deficient Summary

O=Observed; R= Records from Literature



Annex 3: List of Birds of the Degehabour to Kebridehar Transmission Line Corridor

No.	Scientific name	English Name	Seasonality	IUCN red list status
1	<i>Struthio camelus molibdophanus</i>	Ostrich	all seasons	LC
2	<i>Pelecanus rufescens</i>	Pink-backed Pelican	only rainy season	Lc
3	<i>Egretta garzetta</i>	Little Egret	mainly rainy season	LC
4	<i>Bubulcus (Ardeola) ibis</i>	Cattle Egret	mainly rainy season	LC
5	<i>Butorides striata</i>	Green-backed Heron	perhaps seasonal outside permanent rivers	LC
6	<i>Ardeola ralloides</i>	Squacco Heron	mainly rainy season	LC
7	<i>Ardea melanocephala</i>	Black-headed Heron	throughout the year	LC
8	<i>Scopus umbretta</i>	Hamerkop	only rainy season	LC
9	<i>Ciconia ciconia</i>	White Stork	Palearctic migrant	LC
10	<i>Ciconia abdimii</i>	Abdim's Stork	only rainy season, intra-African migrant	LC
11	<i>Leptoptilus crumenifer</i>	Marabou	throughout the year	LC
12	<i>Mycteria ibis</i>	Yellow-billed Stork	mainly rainy season	LC
13	<i>Anastomus lamelligerus</i>	African open-billed Stork	only rainy season intra-African migrant	LC
14	<i>Bostrychia hagedash</i>	Hadada Ibis		LC
15	<i>Threskiornis aethiopicus</i>	Sacred Ibis	all seasons	LC
16	<i>Platalea alba</i>	African Spoonbill	mainly rainy season	LC
17	<i>Dendrocygna viduata</i>	White-faced whistling Duck	rainy season	LC
18	<i>Sarkidiornis melanotos</i>	African Comb Duck		LC
19	<i>Aythya fuligula</i>	Tufted Duck		LC
20	<i>Anas erythrorhyncha</i>	Red-billed Teal		LC
21	<i>Anas clypeata</i>	Northern Shoveler	Paleartic migrant	LC
22	<i>Elanus caeruleus</i>	Black-shouldered Kite	All seasons	LC
23	<i>Chelictinia riocourii</i>	Scissor-tailed Kite	mainly rain season, intra-African migrant	VU
24	<i>Milvus migrans</i>	Black Kite	all seasons	LC
25	<i>Neophron percnopterus</i>	Egyptian Vulture	all seasons	EN
26	<i>Necrosyrtes monachus</i>	Hooded Vulture	all seasons	CR
27	<i>Terathopius ecaudatus</i>	Bateleur	all seasons	EN
28	<i>Circaetus gallicus</i>	Short-toed Snake Eagle	all seasons	LC
29	<i>Gyps africanus</i>	African white-backed Vulture	all seasons	CR
30	<i>Torgos tracheliotus</i>	Lappet-faced Vulture	all seasons	EN
31	<i>Trionoceph occipitalis</i>	White-headed Vulture	all seasons	CR
32	<i>Circus macrourus</i>	Pallid Harrier	Palearctic migrant	NT
33	<i>Circus pygargus</i>	Montagu's Harrier	only rainy season	LC
34	<i>Micronisus gabar</i>	Gabar Goshawk	all seasons	LC
35	<i>Melierax metabates</i>	Dark Chanting Goshawk	all seasons	LC
36	<i>Melierax poliopterus</i>	Eastern Chanting Goshawk	all seasons	LC

No.	Scientific name	English Name	Seasonality	IUCN red list status
37	<i>Accipiter tachiro</i>	African Goshawk	all seasons	LC
38	<i>Accipiter badius</i>	Shikra	all seasons	LC
39	<i>Buteo rufipennis</i>	Grasshopper Buzzard	African migrant	LC
40	<i>Kaupifalco monogrammicus</i>	Lizard Buzzard		LC
41	<i>Buteo augur</i>	Augur Buzzard		LC
42	<i>Aquila rapax</i>	Tawny Eagle	all seasons	VU
43	<i>Hieraetus pennatus</i>	Booted Eagle	Palaeartic migrant	LC
44	<i>Aquila spilogasrer</i>	African Hawk Eagle	all seasons	LC
45	<i>Polemaetus bellicosus</i>	Martial Eagle	all seasons	EN
46	<i>Sagittarius serpentarius</i>	Secretary Bird	all seasons	EN
47	<i>Polhierax semitorquatus</i>	African Pygmy Falcon	all seasons	LC
48	<i>Falco tinnunculus</i>	Common Kestrel	Palaeartic migrant	LC
49	<i>Falco subbuteo</i>	Hobby	Palaeartic migrant	LC
50	<i>Falco peregrinus</i>	Peregrine	Palaeartic migrant	LC
51	<i>Ortyornis sephaena</i>	Crested Francolin	All seasons	LC
52	<i>Pternistis leucoscepus</i>	Yellow-necked Francolin	All seasons	LC
53	<i>Coturnix coturnix</i>	Common Quail	All seasons (African migrant)	LC
54	<i>Coturnix delegorguei</i>	Harlequin Quail	All seasons (African migrant)	LC
55	<i>Acryllium vulturinum</i>	Vulturine Guineafowl	All seasons	LC
56	<i>Numida meleagris</i>	Helmeted Guinea Fowl	All seasons	LC
57	<i>Grus grus</i>	Common Crane	Palaeartic migrant	LC
58	<i>Zapornia flavirostra</i>	Black Crake	rainy season	LC
59	<i>Eupodotis hartlaubii</i>	Hartlaub's Bustard	all seasons	LC
60	<i>Neotis heuglini</i>	Heuglin's Bustard	all seasons	LC
61	<i>Lophotis gindiana</i>	Buff-crested Bustard	all seasons	LC
62	<i>Eupodotis senegalensis</i>	White-bellied Bustard	all seasons	LC
63	<i>Eupodotis humilis</i>	Little brown Bustard	all seasons	NT
64	<i>Ardeotis kori</i>	Kori Bustard	all seasons	NT
65	<i>Himantopus himantopus</i>	Common Stilt	Palaeartic migrant	LC
66	<i>Burhinus senegalensis</i>	Senegal Thicknee	all seasons	LC
67	<i>Burhinus capensis</i>	Spotted Thicknee	Palaeartic migrant	LC
68	<i>Cursorius rufus</i>	Burchell's Courser or Somali Courser	all seasons	LC
69	<i>Cursorius cursor</i>	Cream-coloured Courser	African migrant	LC
70	<i>Cursorius temminckii</i>	Temminck's Courser	all seasons	LC
71	<i>Smutsornis africanus</i>	Double banded Courser	all seasons	LC
72	<i>Rhinoptilus cinctus</i>	Three-banded (Heuglin's) Courser	all seasons	LC
73	<i>Glareola pratincola</i>	Common Pratincole	Palaeartic migrant	LC
74	<i>Vanellus tectus</i>	Black-headed Lapwing		LC

No.	Scientific name	English Name	Seasonality	IUCN red list status
75	<i>Vanellus spinosus</i>	Spur-winged Lapwing	all seasons	LC
76	<i>Vanellus coronatus</i>	Crowned Lapwing	all seasons	LC
77	<i>Numenius arquata</i>	Eurasian Curlew	Palaeartic migrant	NT
78	<i>Tringa totanus</i>	Redshank		LC
79	<i>Pterocles exustus</i>	Chestnut-bellied Sandgrouse		LC
80	<i>Pterocles decoratus</i>	Black-faced Sandgrouse		LC
81	<i>Pterocles lichtensteinii</i>	Lichtenstein's Sandgrouse		LC
82	<i>Columba guinea</i>	Speckled pigeon	all seasons	LC
83	<i>Treron waalia</i>	Bruce's Green Dove		LC
84	<i>Oena capensis</i>	Namaqua Dove	all seasons	LC
85	<i>Turtur chalcospilos</i>	Emerald-spotted Wood Dove	all seasons	LC
86	<i>Streptopelia semitorquata</i>	Red-eyed Dove		LC
87	<i>Streptopelia decipiens</i>	African Mourning Dove		LC
88	<i>Streptopelia roseogrisea</i>	African Collared Dove	November to March	LC
89	<i>Streptopelia capicola</i>	Ring-necked Dove		LC
90	<i>Streptopelia turtur</i>	Western Turtle Dove	DEYR season	VU
91	<i>Streptopelia senegalensis</i>	Laughing Dove		LC
92	<i>Neophema chrysogaster</i>	African orange-bellied Parrot		CR
93	<i>Corythaixoides leucogaster</i>	White-bellied Go-away-bird		LC
94	<i>Clamator jacobinus</i>	Pied Cuckoo	African migrant	LC
95	<i>Clamator glandarius</i>	Great Spotted Cuckoo	African migrant	LC
96	<i>Centropus superciliosus</i>	White-browed Coucal		LC
97	<i>Cuculus canorus</i>	Common Cuckoo	Palaeartic migrant	LC
98	<i>Cuculus gularis</i>	African Cuckoo	African migrant	LC
99	<i>Chrysococcyx caprius</i>	Dideric Cuckoo	African migrant	LC
100	<i>Otus scops</i>	Eurasian Scops-Owl		LC
101	<i>Glaucidium perlatum</i>	Pearl-spotted Owlet		LC
102	<i>Athene noctua</i>	Little Owl		LC
103	<i>Bubo lacteus</i>	Verreaux's Eagle-Owl		LC
104	<i>Bubo africanus</i>	Spotted Eagle-Owl		LC
105	<i>Apus affinis</i>	Little Swift		LC
106	<i>Urocolius macrourus</i>	Blue-naped Mousebird		LC
107	<i>Colius striatus</i>	Speckled Mousebird		LC
108	<i>Halcyon chelicuti</i>	Striped Kingfisher		LC
109	<i>Halcyon leucocephala</i>	Gray-headed Kingfisher	African migrant	LC
110	<i>Halcyon senegalensis</i>	Woodland Kingfisher		LC
111	<i>Ceyx picta</i>	African Pygmy Kingfisher		LC
112	<i>Corythornis (Alcedo) cristata</i>	Malachite Kingfisher		LC
113	<i>Ceryle rudis</i>	Pied Kingfisher	in rainy seasons	LC
114	<i>Merops pusillus</i>	Little Bee-eater		LC
115	<i>Merops revoilii</i>	Somali Bee-eater		LC

No.	Scientific name	English Name	Seasonality	IUCN red list status
116	<i>Merops albicollis</i>	White-throated Bee-eater		LC
117	<i>Merops orientalis</i>	Asian green Bee-eater	African migrant	LC
118	<i>Coracias naevius</i>	Purple Roller		LC
119	<i>Coracias garrulus</i>	Eurasian Roller	Palaeartic migrant / DER season	LC
120	<i>Coracias caudatus</i>	Lilac-breasted Roller	African migrant	LC
121	<i>Coracias abyssinicus</i>	Abyssinian Roller	African migrant	LC
122	<i>Phoeniculus somaliensis</i>	Black-billed Woodhoopoe		LC
123	<i>Phoeniculus minor</i>	Abyssinian Scimitar-bill		LC
124	<i>Rhinopomastus aterrimus</i>	Black Scimitarbill		LC
125	<i>Rhinopomastus cyanomelas</i>	Common Scimitar-bill		LC
126	<i>Upupa epos</i>	Common Hoopoe	all seasons	LC
127	<i>Tockus nasatus</i>	African Grey Hornbill		LC
128	<i>Tockus flavirostris</i>	Eastern Yellow-billed Hornbill		LC
129	<i>Tockus deckeni</i>	Von der Decken's hornbill		LC
130	<i>Tockus erythrorhynchus</i>	Red-billed hornbill		LC
131	<i>Tockus hemprichii</i>	Hemprich's hornbill		LC
132	<i>Bucorvus abyssinicus</i>	Abyssinian Ground-Hornbill		VU
133	<i>Pogoniulus pusillus</i>	Red-fronted Tinkerbird		LC
134	<i>Trachyphonus margaritatus</i>	Yellow-breasted Barbet		LC
135	<i>Trachyphonus darnaudii</i>	D'Arnaud's Barbet		LC
136	<i>Trachyphonus erythrocephalus</i>	Red-and-yellow Barbet		LC
137	<i>Tricholaema diademata</i>	Red-fronted Barbet		LC
138	<i>Tricholaema melanocephala</i>	Black-throated Barbet		LC
139	<i>Indicator indicator</i>	Greater Honeyguide		LC
140	<i>Indicator minor</i>	Lesser Honeyguide		LC
141	<i>Campethera nubica</i>	Nubian Woodpecker		LC
142	<i>Dendropicos fuscescens</i>	Cardinal Woodpecker		LC
143	<i>Dendropicos goertae</i>	Gray Woodpecker		LC
144	<i>Galerida cristata</i>	Crested Lark		LC
145	<i>Galerida theklae</i>	Thekla Lark		LC
146	<i>Eremopterix signata</i>	Chestnut-headed Sparrow-Lark		LC
147	<i>Hirundo aethiopica</i>	Ethiopian Swallow		LC
148	<i>Hirundo rustica</i>	Barn Swallow	Palaeartic migrant	LC
149	<i>Hirundo abyssinica</i>	Lesser Striped-Swallow		LC
150	<i>Delichon urbica</i>	Northern House-Martin		LC
151	<i>Tmetothylacus tenellus</i>	Golden Pipit		LC
152	<i>Motacilla alba</i>	Pied Wagtail	Palaeartic migrant	LC
153	<i>Motacilla flava</i>	Yellow Wagtail	Palaeartic migrant	LC
154	<i>Pycnonotus barbatus</i>	Common Bulbul		LC

No.	Scientific name	English Name	Seasonality	IUCN red list status
155	<i>Turdus olivaceus</i>	Olive Thrush		LC
156	<i>Oenanthe isabellina</i>	Isabelline Wheatear		LC
157	<i>Oenanthe oenanthe</i>	Northern Wheatear	Palearctic migrant	LC
158	<i>Oenanthe pleschanka</i>	Pied Wheatear	Palearctic migrant	LC
159	<i>Oenanthe phillipsi</i>	Somali Wheatear		LC
160	<i>Saxicola torquatus</i>	Common	Palearctic migrant	LC
161	<i>Cichladusa guttata</i>	Spotted Morning-Thrush		LC
162	<i>Cercotrichas leucophrys</i>	White-browed Scrub-Robin		LC
163	<i>Muscicapa striata</i>	Spotted Flycatcher	Palearctic migrant	LC
164	<i>Ficedula hypoleuca</i>	Pied Flycatcher		LC
165	<i>Bradornis pallidus</i>	Pale Flycatcher		LC
166	<i>Bradornis microrhynchus</i>	African Grey Flycatcher		LC
167	<i>Batis orientalis</i>	Grey-headed Batis		LC
168	<i>Batis perkeo</i>	Pygmy Batis		LC
169	<i>Terpsiphone viridis</i>	African Paradise-Flycatcher	African migrant	LC
170	<i>Iduna pallida</i>	Olivaceous Warbler	Palearctic migrant	LC
171	<i>Sylvietta whytii</i>	Red-faced Crombec		LC
172	<i>Sylvietta philippae</i>	Philippa's Crombec		DD
173	<i>Sylvietta isabellina</i>	Somali Crombec		LC
174	<i>Eremomela icteropygialis</i>	Yellow-bellied Eremomela		LC
175	<i>Prinia somalica</i>	Pale Prinia		LC
176	<i>Prinia rufifrons</i>	Red-fronted Prinia		LC
177	<i>Apalis flavida</i>	Yellow-breasted Apalis		LC
178	<i>Argya rubiginosa</i>	Rufous Chatterer		LC
179	<i>Turdoides leucopygia</i>	White-rumped Babbler		LC
180	<i>Melaniparus thruppi</i>	Somali Tit		LC
181	<i>Anthoscopus musculus</i>	Mouse-coloured Penduline Tit		LC
182	<i>Zosterops abyssinicus</i>	Abyssinian White-eye		LC
183	<i>Cinnyris venustus</i>	Variable Sunbird		LC
184	<i>Hedydipna collaris</i>	Collared Sunbird		LC
185	<i>Hedydipna metallica</i>	Nile Valley Sunbird		LC
186	<i>Anthreptes orientalis</i>	Eastern Violet-backed Sunbird		LC
187	<i>Cinnyris mariquensis</i>	Mariqua Sunbird		LC
188	<i>Chalcomitra senegalensis</i>	Scarlet-chested Sunbird		LC
189	<i>Chalcomitra hunteri</i>	Hunter's Sunbird		LC
190	<i>Oriolus larvatus</i>	Eastern Black-headed Oriole		LC
191	<i>Oriolus oriolus</i>	Eurasian Golden Oriole	Palearctic migrant	LC
192	<i>Rhodophoneus cruentus</i>	Rosy-patched Bushshrike		LC
193	<i>Nilaus afer</i>	Brubru		LC
194	<i>Dryoscopus pringlii</i>	Pringle's Puffback		LC
195	<i>Tchagra senegala</i>	Black-crowned Tchagra		LC



No.	Scientific name	English Name	Seasonality	IUCN red list status
196	<i>Laniarius ruficeps</i>	Red-naped Bushshrike		LC
197	<i>Laniarius aethiopicus</i>	Tropical Boubou		LC
198	<i>Laniarius funebris</i>	Slate-coloured Boubou		LC
199	<i>Lanius collurio</i>	Red-backed Shrike	Palaeartic migrant	LC
200	<i>Lanius isabellinus</i>	Isabelline Shrike	Palaeartic migrant	LC
201	<i>Lanius nubicus</i>	Masked Shrike	Palaeartic migrant	LC
202	<i>Lanius senator</i>	Woodchat Shrike	Palaeartic migrant	NT
203	<i>Lanius excubitor</i>	Great Grey Shrike	Palaeartic migrant	LC
204	<i>Lanius somalicus</i>	Somali Fiscal		LC
205	<i>Lanius dorsalis</i>	Taita Fiscal		LC
206	<i>Lanius minor</i>	Lesser Grey Shrike		LC
207	<i>Lanius collaris</i>	Common Fiscal		LC
208	<i>Prionops plumatus</i>	White-crested Helmetshrike		LC
209	<i>Eurocephalus rueppelli</i>	Northern White-crowned Shrike		LC
210	<i>Corvus ruficollis</i>	Brown-necked Raven		LC
211	<i>Corvus albus</i>	Pied Crow		LC
212	<i>Corvus rhipidurus</i>	Fan-tailed Raven		LC
213	<i>Corvus capensis</i>	Cape Crow		LC
214	<i>Dicrurus adsimilis</i>	Fork-tailed drongo		LC
215	<i>Dicrurus ludwigii</i>	Square-tailed drongo		LC
216	<i>Onychognathus salvadori</i>	Bristle-crowned Starling		LC
217	<i>Onychognathus blythii</i>	Somali Chestnut-winged Starling		LC
218	<i>Lamprotornis chalybaeus</i>	Greater Blue-eared Starling		LC
219	<i>Lamprotornis purpuropterus</i>	Rueppell's Starling		LC
220	<i>Buphagus erythrorhynchus</i>	Red-billed Oxpecker		LC
221	<i>Lamprotornis shelleyi</i>	Shelley's Starling		LC
222	<i>Lamprotornis superbus</i>	Superb Starling		LC
223	<i>Lamprotornis albicapillus</i>	White-crowned Starling		LC
224	<i>Speculipastor bicolor</i>	Magpie Starling		LC
225	<i>Cinnyricinclus leucogaster</i>	Violet-backed Starling	African migrant	LC
226	<i>Cosmopsarus regius</i>	Golden-breasted Starling		LC
227	<i>Creatophora cinerea</i>	Wattled Starling	African migrant	LC
228	<i>Passer griseus</i>	Northern Grey-headed Sparrow		LC
229	<i>Passer motitensis</i>	Great Sparrow		LC
230	<i>Passer castanopterus</i>	Somali Sparrow		LC
231	<i>Plocepasser donaldsoni</i>	Donaldson-Smith's Sparrow weaver		LC
232	<i>Plocepasser mahali</i>	White-browed Sparrow-Weaver		LC
233	<i>Bubalornis niger</i>	Red-billed Buffalo-Weaver		LC

No.	Scientific name	English Name	Seasonality	IUCN red list status
234	<i>Dinemellia dinemelli</i>	White-headed Buffalo-Weaver		LC
235	<i>Ploceus cucullatus</i>	Village weaver		LC
236	<i>Ploceus spekei</i>	Speke's Weaver		LC
237	<i>Ploceus galbula</i>	Ruppell's Weaver		LC
238	<i>Euplectes franciscanus</i>	Northern Red Bishop		LC
239	<i>Quelea quelea</i>	Red-billed Quelea		LC
240	<i>Vidua macroura</i>	Pin-tailed Whydah		LC
241	<i>Vidua hypocherina</i>	Steel-blue Whydah		LC
242	<i>Vidua fischeri</i>	Straw-tailed Whydah		LC
243	<i>Vidua paradisaea</i>	Long-tailed Paradise-Whydah		LC
244	<i>Pytilia melba</i>	Green-winged Pytilia		LC
245	<i>Pytilia afra</i>	Orange winged Pytilia		LC
246	<i>Lagonosticta senegala</i>	Red-billed Firefinch		LC
247	<i>Uraeginthus bengalus</i>	Red-cheeked Cordon-bleu		LC
248	<i>Estrilda chamosyna</i>	Black-cheeked Waxbill		LC
249	<i>Estrilda rhodopyga</i>	Crimson-rumped Waxbill		LC
250	<i>Uraeginthus ianthinogaster</i>	Purple Grenadier		LC
251	<i>Euodice cantans</i>	African Silverbill		LC
252	<i>Amadina fasciata</i>	Cut-throat Finch		LC
253	<i>Emberiza poliopleura</i>	Somali Bunting		LC
254	<i>Crithagra citrinelloides</i>	Abyssinian Citril		LC
255	<i>Serinus canicollis</i>	Yellow-crowned Canary		LC
256	<i>Crithagra dorsostriata</i>	White-bellied Canary		LC
257	<i>Crithagra donaldsoni</i>	Northern Grosbeak-canary		LC
258	<i>Crithagra striolata</i>	Streaky seedeater		LC

Where, CR- Critically endangered VU-Vulnerable, ED-Endangered, NT-Near Threatened, LC-Least Concern and DD-Data Deficient

## Annex 4: Baseline Socio-Economic HH Survey Questionnaire

### Informed Consent

Thank you for the opportunity to speak with you. We are from MDI Consulting Engineers working with Ethiopian Electric Power. We are conducting a household survey to learn about socio-economic characteristics of the households in this area. Your household has been selected to participate in an interview that includes questions on topics such as your family background, livelihood strategies dwelling characteristics, household income & expenditures and access to social services.

The survey also includes questions about the household vulnerability to shocks, trends and coping strategies, existing formal and informal social support mechanisms, knowledge, information and attitude towards the proposed wind farm project.

These questions in total will take approximately 45 minutes to complete and your participation is entirely based on your free will. Your answers will be completely confidential, we will not share information that identifies you with anyone. If you have any questions about the survey or what I have said you have the right to ask clarification and also you have full right not to participate in the survey.

Date of interview \_\_\_\_\_

Print name of interviewer	
Name of Supervisor	

### 1. Address of the household

1.1	Zone	
1.2	Woreda	
1.3	Kebele	
1.4	Village	
1.5	Name of Household head	

### 2. Respondent information

2.1	Name of respondent	
2.2	Responsibility of respondents	

### 2.3. Household family Size

2.3.1	Total household member	
2.3.2	Number of Male household member	
2.3.3	Number of Female household member	

### 3. Family Demographics

Note. This table should be completed for all members of the household (whether related or not). Include all immediate family members (head, spouse, parents and children)

No	3.1 Name and Surname'	3.2 Relation to Household Head	3.3 Sex 1 Male 2 Female	3.4 Age	3.5 marital status (only for members age 18 and above)	3.6 Ethnic Group	3.7 Clan name	3.8 Religion	3.9 Highest Level of Education received (only for members age 7 and above)	3.10. Still going school 1. yes 2. No	Occupation/ Economic Activities (only for members age 15 and above)		3.13 Health status 1. Healthy 2. Disabled 3. mentally ill 4. Elderly
											3.11 Principal	3.12 Secondary	
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													

**Answer code for (question 3.2), (3.5), (3.6), (3.8), (3.9) and (3.11 &12)**

<b>3.2 Relation to Household head</b>	<b>3.5. Marital status</b>	<b>3.6 Ethnic</b>	<b>3.8 Religion</b>	<b>3.9 Level of education</b>	<b>3.11 &amp; 12 Occupation</b>
1. Head of household	1. Never married	1. Somali	1. Muslim	1. Illiterate	1. Pastoralism
2. Spouse	2. Married	2. Oromo	2. Christian	2. Reading & writing	2. Farming
3. Children	3. Departed	3. Amhara	3. Traditional/Waqfeta	3. 1st cycle Primary School (1-4th Grade)	3. Animal fattening
4. Relatives	4. Divorced	4. Tigre	4. Other	4. 2nd cycle Primary School (5-8th Grade)	4. Trading/business
5. None relatives but live with the household	5. Widowed	5. Hareri		5. High School (9-10th Grade)	5. Handcraft
6. Other		6. Afar		6. Preparatory (11-12th Grade)	6. Cross border trade
		7. Gurage		7. Technical College	7. Employee
		8. Other		8. University Diploma	8. Daily labour
				9. University Degree	9. Unemployed
				10. Religious education	10. Others



#### 4. Settlement & Migration pattern

4.1 Settlement pattern	1	Sedentary/domiciled here	4	Returnee
	2	Transhumant	5	Other (Specify)
	3	Temporarily displaced from permanent area		

4.2 How long has your household been living in this location?	1	Since its establishment	4	11 to 20 years
	2	Less than 5 years	5	More than 21 years
	3	6 to 10 years	6	Other (Specify)

4.3 Have you ever migrated to other place	1	Yes	2	No
4.4 Main reason for migration?	1	Search for Water/graze land/farm land	4	Marriage
	2	Security reasons	5	Death of a family member
	3	Government resettlement	6	Other (specify)

#### 5. Access to Farmland

5.1 Do you have farmland	1	Yes	2	No
5.2 If yes, how did you get your farmland?	1	Allocated by Kebele administration		
	2	Inherited from family		
	3	Given by clan		
	4	Other (specify)		
5.3 If yes, size of farmland you owned (in ha)				
5.4 What type of farming system do you apply on your holding?	1	Mixed farming	3	Livestock only
	2	Crop only	4	Other (specify)
5.5 If you own farmland, what type of crops do you cultivate? (one or more answers is possible)	1	Sorghum	7	Vegetables
	2	Wheat	8	Fruits
	3	Maize	9	Coffee
	4	Barley	10	Chat
	5	Beans	11	Other (specify)
	6	Teff	12	Other (specify)
5.6 Main purpose of farming/ crop production	1	Household consumption		
	2	Market/sale		
	3	Both		
5.7 How do you rate your holding to feeding your family	1	Sufficient	3	More than enough
	2	Insufficient	4	Other (specify)

5.8 Does your family make use of irrigation to produce crops/vegetables/fruits?	1	Yes	2	No
5.9 Do you use farm inputs for crop production	1	Yes	2	No

5.10 What is/are the major constraints for crop production in your area <i>(one or more answers is possible)</i>	1	Insufficient landholding	7	Lack of market
	2	Increased price of farm inputs	8	Weed infestation
	3	Lack of improved seed, fertilizer, & agrochemical	9	Damage by wild animals
	4	Loss of soil fertility	10	Insufficient & uneven distribution of rainfall
	5	Crop disease & insects	11	Other (specify)
	6	Weak agricultural extension service	12	Other (specify)

5.11 Do you get some kind of assistance from GO/NGO or other institutions in relation to crop production				1	Yes	2	No
5.12 If yes, which institution is assisting you in your farming activities <i>(one or more answers is possible)</i>	1	Woreda Agriculture office (DA)	3	NGOs			
	2	Farmer Cooperatives	4	Other (specify)			
5.13 If yes, what Kind of assistance you are getting in relation to crop production <i>(one or more answers is possible)</i>	1	Expert advise	5	Information service			
	2	Provision of farm inputs	6	Labour service			
	3	Provision farm tools	7	Only disaster intervention			
	4	Credit service	8	Other (specify)			

## 6. Ownership of Livestock

6.1 Does your household own any livestock (if no skip to question 6)		1	Yes	2	No
If yes		How many (number)			
Camel					
Oxen					
Cattle					
Calf					
Sheep					
Goat					
Poultry					
Donkey					
Beehives					
Other					

6.2 Major reasons for keeping livestock <i>one or more answers is possible</i>	1	Cash in come	5	Prestige/ social or economic status	
	2	Milk	6	Manure	
	3	Meat	7	Hides & skin	
	4	Draft power	8	Transport	

6.3 Main feed source for livestock? <i>(one or more answers is possible)</i>	1	Communal grazing land	6	Hilly & sloppy area
	2	Private grazing land	7	Aftermath grazing
	3	Wet land & swamp area	8	Fallow land
	4	Crop residue	9	Shrubs/ bushland
	5	Prepared animal feed	10	Other (specify)

6.4 Where do you get water for your livestock? <i>(one or more answers is possible)</i>	1	River/stream	5	Communal bono
	2	Spring	6	well
	3	Pond	7	Swamp
	4	Ella/ Birka	8	Other (specify)

6.5 What is/are the major constraints for livestock production in your area <i>(one or more answers is possible)</i>	1	Shortage of grazing land	4	Lack of veterinary service
	2	Animal disease	5	Attack by wild animals
	3	Shortage of water	6	Drought
	4	Lack of market	6	Other (specify)

6.6 Have you ever got assistance from GO/NGO or other institutions in relation to livestock production?	1	Yes	2	No
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6.7 If yes how often	1	Regularly	4	Whenever I want
	2	Sometimes	5	Only during some incidence/drought
	3	Rarely	6	Not at all

6.8 If yes which institutions? <i>(one or more answers is possible)</i>	1	Woreda Agriculture office (DA)	3	NGOs
	2	Farmer Cooperatives	4	Other (specify)

6.9 If yes what kind of help you received in relation to livestock production? <i>(one or more answers is possible)</i>	1	Expert advise	6	Information service
	2	Provision of hybrid	7	Provision of animal feed
	3	Provision vaccination	8	Provision of water
	4	Veterinary service	9	Only disaster intervention
	5	Credit service	10	Other (specify)

## 7. Household source of Income and Expenditure

7.1 What are the most important sources of HH income? <i>(one or more answers is possible)</i>	1	Livestock & livestock products sales	7	Natural resources (gum, incense, salt)
	2	Farming & farm product sale	8	Petty trade
	3	Firewood/charcoal sale	9	Cross border trade
	4	Remittance	10	Aid / Cash for work programme
	5	Casual labour	11	Other (specify)
	6	Employment	12	Other (specify)

7.2 How many member of your household are engaged in income generating activities	
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### 7.4 Income sources of household

Please indicate the amount of Household earns per year from the following sources

Source of income		Average income per year
<b>1</b>	<b>Income from crop production</b>	
1.1	Income from Annual crops	
1.2	Income from Perennial crops	
1.3	Income from Vegetables and fruits	
<b>2</b>	<b>Income from Livestock and Livestock production</b>	
2.1	Sale of livestock	
2.2	Dairy products	
2.3	Skin and hides	
2.4	Livestock rent	
<b>3</b>	<b>Trade, service and manufacturing</b>	
3.1	Salaried Employment	
3.2	Daily labour	
3.3	Aid / Cash for work programme	
3.4	Trade and service	
3.5	cross border trade	
3.6	Handcrafts (tanning, blacksmith pottery, weaving etc )	
<b>4</b>	<b>Cash and other transfers</b>	
4.1	Pension	
4.2	Remittance	
<b>5</b>	<b>Other (non-agricultural )sources of income</b>	
5.1	Firewood and charcoal sale	
5.2	Non timber forest product (incense, gum medicinal , edible plants and fruits)	
5.3	Grass	
5.4	Sand	
5.5	Other (specify)	
5.6	Other (specify)	
7.5 What is the total household yearly income (all activities)?		_____ ETB
7.6 Has this annual income increased, decreased or stayed the same in the last 5 years? (circle)		1. Increased 2. Decreased 3. No change

## 7.7 Household Expenditure

What do you estimate that your *household* spends on the following per year?

	<b>Expenditures</b>	<b>Amount per year /ETB</b>
<b>1</b>	<b>Household consumption expenditure</b>	
1.1	Food	
1.2	Clothing	
1.3	Cooking / lighting fuel	
1.4	Education and school fees	
1.5	Fees for transport	
1.7	Home maintenance/ construction	
1.8	Healthcare and medicine	
1.9	Housing / rent	
1.10	Water	
1.11	Electricity	
1.12	Communication and telephone	
1.13	Entertainment expenditure	
<b>2</b>	<b>Agriculture and livestock expenditure</b>	
2.1	Purchase of farm equipment	
2.2	Purchase of farm inputs (pesticide, seeds)	
2.3	Expenditure of agricultural labour	
2.4	Expenditure for rent-in farmland	
2.5	Purchase of livestock	
2.6	Purchase of animal fodder	
2.7	For veterinary service and drug	
<b>3</b>	<b>Social and cultural expenditure</b>	
3.1	Festivities (holidays)	
3.2	Religious contribution	
3.3	Weeding parties	
3.4	Funeral expenditure	
<b>4.</b>	<b>Financial expenditure</b>	
4.1	Land Tax and related contribution	
4.2	Interest on Loan received	
4.3	Ikub	
4.4	Remittance sent out	
4.5	Zakat (Religious commitments)	
4.6	Other (specify)	
4.7	Other (specify)	



7.8 What is the total household yearly expenditure (all activities)?	
7.9 Has this annual expenditure, increased, decreased or stayed the same in the last 5 years	1. Increased 2. Decreased 3. No change

### 8. Family Health and Access to health services

8.1 Has anyone in your household suffered from any diseases in the last 12 months?	1	Yes	2	No
8.2 What type of disease did they suffer from?				

8.3 If yes, did the person suffered from the disease receive medical treatment?	1	Yes	2	No
8.4 If yes, where did he/she receive medical treatment?	1	Health post	5	Private clinic
	2	Health Centre	6	Rural drug store
	3	Traditional healer	7	Hospital
	4	Mobile health worker	8	Other (specify)
8.5 If he/she didn't receive medical care why?	1	Lack of health institution	3	Lack of money
	2	Distance to health institution	4	Other (specify)
8.6 How do you assess your family's health situation?	1	Very good	3	Not good/bad
	2	Good		

### 9. Access to Potable Water

	Source of potable water	Time to fetch	How many times/ day	Problem (Code↓)	Who is responsible most for fetching water			
					Wife	Husband	Girls	boys
1	Public pipe/ tape							
2	Hand pump public							
3	Birka							
4	Ella							
5	Water truck							
6	Protected spring							
7	Un protected spring, river pond							
8	Other (specify)							

**Code for problem** 1. Distance      2. Cleanliness      3. Dryness      4. Queue  
 5. Other (specify)

### 10. Access to Financial Services/Credit

10.1	Have any household members taken loan in the last two years (cash or in-kind)?		1	Yes	2	No
10.2	If yes, source of the loan?	1	Money lender	6	Micro credit /finance	
		2	Friend/Neighbour	7	Commercial Bank	
		3	Family member	8	NGO	
		4	Religious institution	9	Community Based Organization (CBO)	
		5	Local trader	10	Other (specify)	

10.3	Purpose of the loan? <i>(one or more answers is possible)</i>	1	Feed family	5	Buy agricultural inputs	
		2	Pay school fees	6	Pay for veterinary fees	
		3	Pay medical fees	7	Business capital	
		4	Buy livestock	8	Other (specify)	
10.4	If didn't take loan, why not?	1	Didn't need it	4	No loan providers in my area	
		2	Afraid and may not be able to pay	5	Other (specify)	
		3	Couldn't find a loan that met my needs	6	Other (specify)	

### 11. Housing Situation & Household Service and Facilities

11.1	How many houses do you have?					
11.2	Tenure of housing (ownership of house)?	1	Owned	3	Occupied rent free (given)	
		2	Rented	4	Other (specify)	
11.3	Types of housing structures	1	Fixed non mobile housing structures			
		2	Mobile housing structures			
		3	Other specify			
11.4	Construction material of roof for the main house?	1	Grass/ thatch	4	Tent	
		2	Corrugated iron sheets	5	Thread/textile	
		3	Plastic house	6	Other (specify)	
11.5	Construction material of wall for the main house?	1	Wood	5	Brick /stone	
		2	Wood+ mud	6	iron sheets	
		3	Plastic + Wood	7	Tent	
		4	Thread/textile + wood	8	Other (specify)	
11.6	Type of kitchen	1	Separate kitchen	3	Open space	
		2	Within the main house	4	Other (specify)	
11.7	Type of toilet	1	Private Pit latrine	3	Open field	
		2	Public pit latrine	4	Other (specify)	

11.8 What type of lighting does the household use? <i>(one or more answers is possible)</i>	1	Wood (fire)	5	Electricity – grid
	2	Kerosene lamp	6	Electricity – generator (petrol)
	3	Torch and batteries	7	Candles
	4	Solar lantern	8	Other (specify)
11.9 What type of cooking fuel does the household use? <i>(one or more answers is possible)</i>	1	Wood (fire)	5	Animal dung
	2	Charcoal	6	Crop residue
	3	Kerosene	7	Biogas
	4	Electricity – grid	8	Other (specify)

11.10 What is main Information sources of the household <i>(one or more answers is possible)</i>	1	Radio	6	Clan/traditional leaders
	2	Television	7	Community Meetings
	3	Newspaper	8	Development agents/teachers
	4	Local Authorities	9	Family members Neighbours or friends
	5	Mobile/ Internet	10	Other (specify)
11.11 What mode of transportation does your household commonly use? <i>(one or more answers is possible)</i>	1	Foot	5	Truck / lorry /car
	2	Pack animal	6	Public Bus
	3	Motorcycle/bajaji	7	Other (specify)
	4	Bicycle	8	Other (specify)

## 12. Shocks, trends and coping strategies

12.1 Did the household face some kind of shock in the past 2 years?	1	Yes	2	No
---	---	-----	---	----

12.2 If yes, what type of shocks? <i>(one or more answers is possible)</i>	1	Drought/ Too little rain/	8	Sharp food price increase
	2	Flood/ Landslides	9	Unavailability of agricultural or livestock inputs
	3	Livestock/crop disease	10	Increase in agricultural or livestock inputs price
	4	Very bad harvest	11	Drop price for agricultural or livestock products
	5	Loss or destruction of assets by conflict/other accident	12	No demand for agricultural or livestock products
	6	Loss of land or other asset by project	13	Other (specify)
	7	Death of household member	14	Other (specify)

12.3 How severe was the impact of the shock on your household income & food consumption	1	None	4	Strong impact	
	2	Slight impact	5	Worst ever happened	
	3	Moderate impact	6	I Don't know	
12.4 How did the household cope the shocks? <i>(one or more answers is possible)</i>	1	Leased out land	10	Took loan	
	2	Sold livestock	11	Received support from GO, NGO, relatives etc.	
	3	Slaughtered livestock	12	Sent children to work for money	
	4	Sent livestock in search of pasture somewhere	13	Sold household items (e.g., radio, bed)	
	5	Migrate (only some family members)	14	Sold productive assets (e.g., plough, water pump)	
	6	Migrate (the whole family)	15	Used money from savings	
	7	Employed on new wage labour	16	Participated in food-for-work or cash-for-work	
	8	Reduced food consumption	17	Other specify	
	9	Received remittances	18	Other specify	
12.5 To what extent were you and your household able to recover?	1	Did not recover	4	Recovered and we are now better off	
	2	Recovered partially	5	Not affected by (event)	
	3	Recovered to same level as before	6	I don't know	
12.6 Did your household receive any kind of support from any institution to recover from the shock?		1	Yes	2	No
12.7 If yes, which institution?	1	Government	3	Religious organization	
	2	NGO	4	Other (specify)	
12.8 If yes, what type of support you received? <i>(one or more answers is possible)</i>	1	Food ration	6	School fee for children	
	2	Cloth/blanket/mattress	7	Cash transfer	
	3	Shelter/Housing materials	8	Food-for-work/Cash-for-work	
	4	Installed water points/tanker	9	Other (specify)	
	5	Installed latrine	10	Other (specify)	

12.9 Did your household receive any kind of support to recover from the shock from other people?	1	Yes	2	No
12.10 If yes, from whom?	1	Relatives	3	Volunteer
	2	Neighbours/ friends	4	Other (specify)
12.11 What types of support you received? <i>(one or more answers is possible)</i>	1	Zakat	4	Sadaqa
	2	Gifts/Quaadhan (donation of cash/animals to disaster stricken people)	5	Remittances
	3	Loans (cash, labour, seeds, animals)	6	Other (specify)

### 13. Awareness, information about the Project and their expectation and concerns

13.1 Do you have any information about the proposed transmission & substation projects?	1	yes	2	No
13.2 If yes, from where did you get the information?	1	From previous study	4	From clan leaders
	2	Relatives/family/neighbour	5	Mass media (Radio TV)
	3	Woreda/kebele administration	6	Other (specify)

13.3 What kind of benefits or positive impact will you expect from the implementation of the proposed TL project? <i>(more than one answer is possible)</i> <u>Read all possible answers</u>	1	Access to electricity	5	Expansion of social service & infrastructure
	2	Employment	6	Expansion of small scale business in the area
	3	Creation of Income Generating Activities	7	Market opportunity for local production
	4	Solve the existing power shortage in the area	8	Other (specify)
13.4 What kind of negative impact will the project bring to your family and your community? <i>(more than one answer is possible)</i> <u>Read all possible answers</u>	1	Loss of farm and grazing land	7	Pressure on social service due to influx of large work force from other place
	2	Impact of residential house	8	Accident, noise & dust during construction work
	3	Impact on communal land	9	Impact on birds & wildlife
	4	Impact on social services schools, water point etc.	10	Impact on surface water
	5	Impact on burial place, cultural, historical & other significant sites	11	Visual impact
	6	Impacts on community's culture or norms due to influx of work force	12	Other (specify)



13.6 What mitigation measures do you propose for the potential negative impacts <i>(more than one answer is possible)</i> <u>Read all possible answers</u>	1	Adequate compensation for loss of properties	8	Educate and create awareness about the local culture for the work force
	2	Land replacement for loss of farmland	9	Protect sensitive habitats
	3	Reinstate public institution	10	Avoiding impacts on biodiversity
	4	Strict Safety measures	11	Restoration of affected areas by the construction as soon as possible
	5	Respect local culture	12	Implementing appropriate working practices
	6	Avoid impact on burial, cultural & religious site	13	Additional effort to support FHH & other vulnerable households
	7	Minimize visual impact	14	Other (specify)

**14. What are the three Major need of your household?**

1	
2	
3	

### Household Energy Source for Lighting

1. What type of lighting does the household use? <i>(multiple answers is possible)</i>	1	Wood (fire)	5	Electricity – grid
	2	Kerosene lamp	6	Electricity – generator (petrol)
	3	Torch and batteries	7	Candles
	4	Solar lantern	8	Other (specify)
2. What makes you decide to use the above lighting sources for your HH? <i>(multiple answers is possible)</i>	1	Easily available / accessible	4	Efficiency
	2	Cheap	5	No other choices
	3	Safe and clean	6	Other (specify)
3. Who mainly make decision on type lighting source to be used by HH?	1	Husband	3	All family members
	2	Wife	4	Other (specify)
4. How do you get this lighting sources <i>(multiple answers is possible)</i>	1	Freely	3	Rented
	2	Purchased	4	Other (specify)
5. If purchased, how much do you pay monthly for this lighting source _____ ETB				
6. If purchased, who mainly make decision on HH expenditure for lighting sources	1	Husband/men	3	Both
	2	Wife/women	4	Other (specify)
7. Has any household members faced accidents or injuries from lighting sources your HH used?	1	Yes	2	No
8. If yes? Who _____ what type of accident or injury? _____.				
9. What are the advantages of lighting sources used by your household? <i>(multiple answers is possible)</i>	1	Cheap/free	4	available/accessible
	2	Safe & clean	5	Efficient lighting power
	3	Durable	6	Other (specify)
10. What are the disadvantages of lighting energy source used by your HH? <i>(multiple answers is possible)</i>	1	Expensive	4	Not safe & clean
	2	Hard to find	5	Poor lighting power
	3	Not long lasting	6	Other (specify)
11. Are you happy with your household current lighting source?	1	Yes	2	No
12. If not, what type of household lighting source do you want to have or prefer? <i>(one answer)</i>	1	Electricity/ grid	4	Solar lantern
	2	Generator/	5	Candle
	3	Torch	6	Other (specify)
13. Why you preferred the above lighting source? <i>(multiple answers is possible)</i>	1	Safe & clean	4	Multipurpose
	2	Cheap	5	Durable/sustainable
	3	Efficient lighting power	6	Other (specify)

### Household Energy Sources for Cooking

1. What type of cooking fuel does the household use? <i>(multiple answers is possible)</i>	1	Firewood	5	Crop Residue
	2	Charcoal	6	Electricity /grid
	3	Kerosene	7	Solar energy
	4	Dung	8	Other (specify)
2. What makes you decide to use the above cooking fuel <i>(multiple answers is possible)</i>	1	Easily available / accessible	4	Efficient
	2	Cheap/free to use	5	Smokeless
	3	Safe and clean	6	Other (specify)
3. Who primary decide what type lighting source to be used?	1	Husband	3	All household members
	2	Wife	4	Other (specify)
4. How do you get this energy source for cooking?	1	Freely collected	3	Homemade
	2	Purchased	4	Other (specify)
5. If purchased, how much do you pay monthly for this cooking fuel? _____ ETB				
6. If purchased, what is the unit of purchase?	1	Kilogram	4	Donkey load
	2	Human head load	5	Cart load
	3	Human Backload	6	Other (specify)
If purchased, who primarily give decision on household expenditure for cooking fuel	1	Husband	3	Both
	2	Wife	4	Other (specify)
If freely collected, where do you collect and how long it takes to collect?	1	Private land	3	Forest area
	2	Communal wood land	4	Other (specify)
7. If collected, time spent for cooking fuel collection? _____ Hours/Minutes				
If collected who is responsible for household cooking fuel collection	1	Women	4	Boys
	2	Girl	5	All
	3	Men	6	Other (specify)
If collected, what are the means of transporting cooking fuel to home?	1	Human	3	cart
	2	Pak animals	4	Other (specify)
Is there any risk associated with collecting cooking fuels	1	Yes	2	No
	8. If yes, Q12 what are they	1	Physical injury during collection	4
2		Attack from wild animals sneak /insect etc.	5	Injury from loading / carrying / transporting
3		Sexual harassment	6	Other (specify)
9. What are the advantages of cooking fuel used by your household? <i>(multiple answers is possible)</i>	1	Cheap /free	4	Efficiency
	2	Clean & safe	5	Convenience
	3	Availability	6	Other (specify)

10. What are the disadvantages of cooking fuel used by your household? <i>multiple answers is possible</i>	1	Expensive	4	Difficult to use
	2	Not clean & safe	5	Seasonal
	3	Difficult to access	6	Other (specify)
11. Are you happy with your household current cooking fuel source?	1	Yes	2	No
12. If not, what type of household cooking fuel do you want to have or prefer? ( <i>only one answer</i> )	1	Electricity	4	LPG, light petroleum gas
	2	Kerosene	5	Solar energy
	3	Biogas	6	Other (specify)
13. Why you preferred the above cooking fuel source? ( <i>one or more answers is possible</i> )	1	Clean & safe	4	Multipurpose
	2	Affordable	5	Easy to use
	3	Efficient cooking power	6	Other (specify)

Annex 5: Person Contacted and Institution Visited

Annex 5.1: List of Contacted Persons at Regional Level

Sr. No	Name	Position	Phone
<b>Harari Region Women &amp; Child Affairs Bureau</b>			
1	Romiya Ahmed	Women organizers and capacity building expert	0915092284
2	Beza Meshesha	Awareness creation & mobilization team leader	0913743087
<b>Harari Region Environmental Protection Authority</b>			
3	Samir Bekri	Head	0920913974
<b>Harari Region Tourism and Culture Bureau</b>			
4	Nebil Bekri	Deputy, Culture ,heritage tourism Bureau	0915746041
5	Mohammed Mahadi	Cultural Heritage Inventory expert	0915136009
<b>Somali Region Women &amp; Child Affairs Bureau</b>			
6	Ebah Abdurahman	Vice head	0911272483
7	Halimo Hasen	Head	
<b>Somali Region Culture and Tourism Bureau</b>			
8	Amel Ahmed Fereh	Deputy Head, Culture & Tourism.	0915052233
9	Ahmed Abdulahi.	Tourism Destination Expert	0910998403
10	Hashim Abdullahi	Culture Development Expert	0929252537
11	Ahmed Abdi	Archaeologist.	0915053368
12	Nur Areb	Culture & Tourism Expert	0912825098
13	Kedir Alye	Tourism Destination Expert	0937914985

Annex 5.2: List of Contacted Persons and Sector office at Woreda Level

Name	Position	Phone	
<b>Babile woreda women and child affairs office</b>			
1	Meskerem Shega	Women organizers expert	0910789569
2	Melaka Amin	Gender Expert	0947171978
3	Sea'ada Ahmed	Child affairs expert	0911950862
4	Ferda Amhed	Gender Expert	0905018324
<b>Babile woreda Culture and Tourism office</b>			
5	Ahmed Abdulahi	Culture Tourism expert	0923953677
6	Arebu Aman.	Culture development Expert	0913996257
7	Mawerdi Abdi	Heritage Inventory expert	0974824402
<b>Babile Elephant Sanctuary</b>			
8	Kebede Zewdie	Research team Leader	0926425810
9	Gezahegn Fikadu	Tourism Expert	0926674603
10	Adem Mohamed	Chief Warden	0912152171



	Name	Position	Phone
<b>Dege Habour Woreda Women &amp;Child Affairs Office</b>			
11	Honey Hasen Esmeal	Women and Child Affairs Expert	0919331721
12	Ayan Fara Mel	Women and Child Affairs Head	0915766966
<b>Dege Habour Woreda Administration office</b>			
13	Ahmed Ibrahim Ali	Woreda Administrator	0915775009
14	Ayanle	Expert	
<b>Dege Habour Woreda Education Office</b>			
15	Mohamud Ali Hasesen	Office Head	
DegehabourWorreda Agriculture			
16	Nassir Hussien Hashi	Office Head	0915064144
<b>Birqot woreda education office</b>			
17	Ahmednur Mohamed	Expert	0915113768
<b>Birqot Woreda women and child affairs office</b>			
18	Halimo Shiek Siad	Head	
<b>Birqot Woreda Administration office</b>			
19	Abdi Wahib Adem	Management / Administration expert	
20	Frah Arab	Cooperation Expert	
21	Hiere Ahmed	Woreda Administration office	0915407544
22	Nuur Omar	Head of Security	091505 6901
23	Ahmed Nur Mohamed	Woreda Education officer	0915113768
24	Abdulwahab Adeneh	Woreda Administration office	0926284266
<b>Keabri Dehar woreda women and child affairs office</b>			
25	Rahma Mahamed	Head of Office	0915106767
<b>Keabri Dehar woreda Agriculture Office</b>			
26	Abdu Rashid Hussien Abdi	Head Of Office	0915769244

Annex 5.3: List of Contacted Persons at Kebele Level

	Name	Position	Phone
<b>Sendi Hile kebele, Dege Habour Woreda</b>			
1	Ayisha Bedel	Local Community member	
2	Kemer Alaki Umer	“	
3	Wers Abede	“	
4	Sihara Abdulahi Abede	“	
5	Nime’a Mehamod	“	
<b>Gerewa Kebele, Dege Habour Woreda</b>			
6	Beshik Shek Abdi	Kebele chairman	0915192993
<b>Karan Bile kebele, Kebri Dehar woreda</b>			
7	Sahara Akil	Local Community member	
8	Halimo Mohamed	“	
9	Ardo Hasen Bahiru	“	
10	Yosef Hukan	Keble vice chairman	0915469050
11	Areb	Keble chairman	
<b>Dawa’a kebele, Kebri Dehar woreda</b>			
12	Sikri Weyira	Local Community member	0915533035
13	Mohamed Almi	“	0923689058
<b>Wahil kebele, Dire Dawa administration)</b>			
14	Nesira Jemal	Local Community member	
15	Ragiya Hasen	“	
16	Liya Abdukeriya	“	
17	Ebsa Musa	“	0915176284
<b>Ujuba kebele, Dire Dawa administration</b>			
18	Ayantuu Jemal	Local Community member	0922184385
<b>Wahil cluster, Dawa City Administration</b>			
19	Abdella Mussa	Local Elder	
20	Adem Muhamed	Local elder	
<b>Awsherif Kebele, Babile Woreda</b>			
21	Wole Metten Abdi	Local Elder	
<b>Jelani kebele, Harari Region</b>			
22	Ahemed Shieh Abdulwahad	Local Community member	

#### Annex 5.4 List of Contacted Persons at Regional Level

Sr. No	Name	Position	Phone
<b>Somali Region Women &amp; Child Affairs Bureau</b>			
6	Ebah Abdurahman	Vice head	0911272483
7	Halimo Hasen	Head	
<b>Somali Region Culture and Tourism Bureau</b>			
8	Amel Ahmed Fereh	Deputy Head, Culture & Tourism	0915052233
9	Ahmed Abdulahi.	Tourism Destination Expert	0910998403
10	Hashim Abdullahi	Culture Development Expert	0929252537
11	Ahmed Abdi	Archaeologist.	0915053368
12	Nur Areb	Culture & Tourism Expert	0912825098
13	Kedir Alye	Tourism Destination Expert	0937914985

#### Annex 5.5 List of Contacted Persons and Sector office at Woreda Level

Name	Position	Phone	
<b>Dege Habour Woreda Women &amp; Child Affairs Office</b>			
11	Honey Hasen Esmeal	Women and Child Affairs Expert	0919331721
12	Ayan Fara Mel	Women and Child Affairs Head	0915766966
<b>Dege Habour Woreda Administration office</b>			
13	Ahmed Ibrahim Ali	Woreda Administrator	0915775009
14	Ayanle	Expert	
<b>Dege Habour Woreda Education Office</b>			
15	Mohamud Ali Hasesen	Office Head	
DegehabourWorreda Agriculture			
16	Nassir Hussien Hashi	Office Head	0915064144
<b>Birqot woreda education office</b>			
17	Ahmednur Mohamed	Expert	0915113768
<b>Birqot Woreda women and child affairs office</b>			
18	Halimo Shiek Siad	Head	
<b>Birqot Woreda Administration office</b>			
19	Abdi Wahib Adem	Management / Administration expert	
20	Frah Arab	Cooperation Expert	
21	Hiere Ahmed	Woreda Administration office	0915407544
22	Nuur Omar	Head of Security	091505 6901
23	Ahmed Nur Mohamed	Woreda Education officer	0915113768
24	Abdulwahab Adeneh	Woreda Administration office	0926284266
<b>Kebri Dehar woreda women and child affairs office</b>			
25	Rahma Mahamed	Head of Office	0915106767
<b>Kebri Dehar woreda Agriculture Office</b>			
26	Abdu Rashid Hussien Abdi	Head Of Office	0915769244

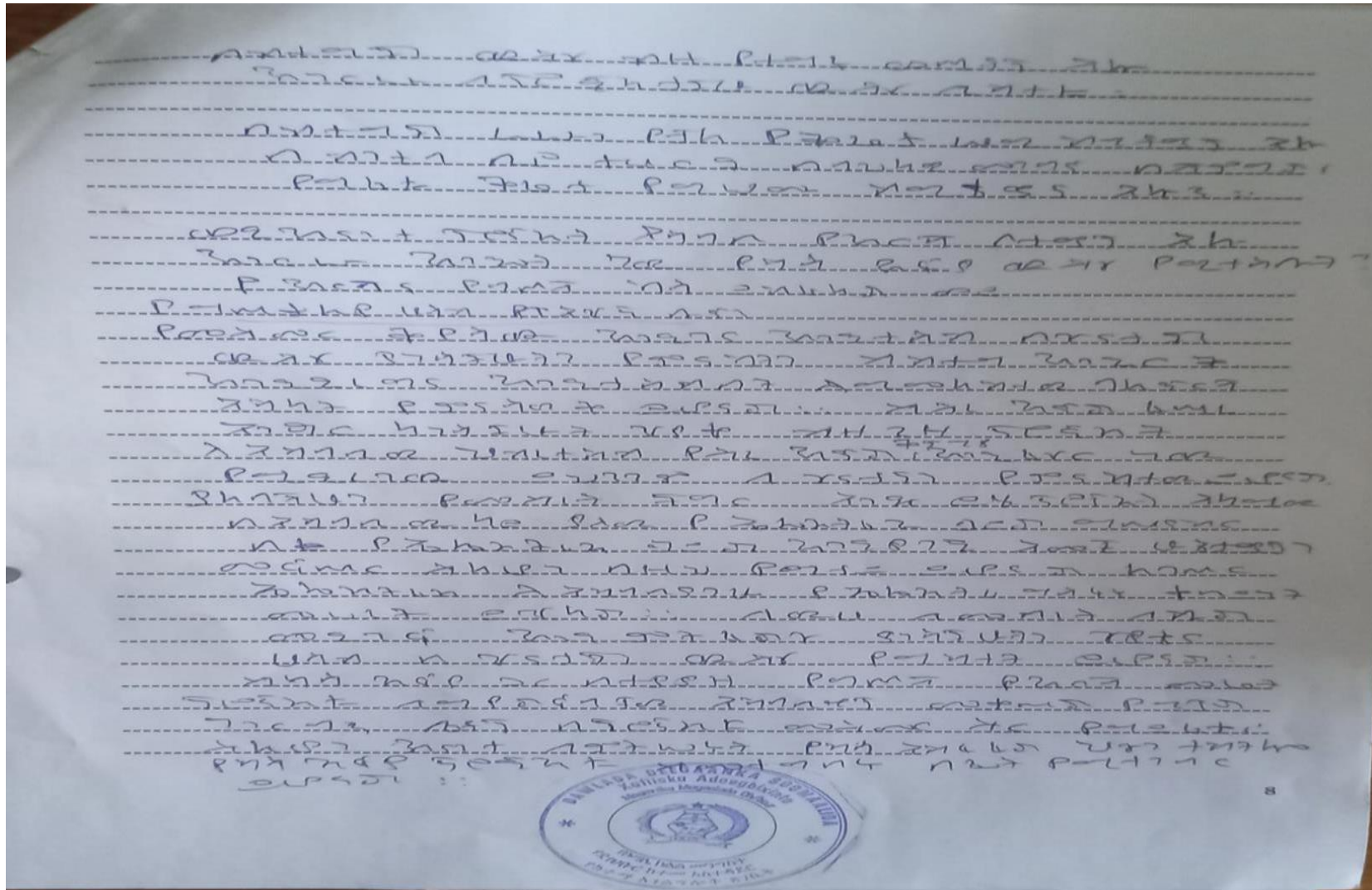
Annex 5.6 List of Contacted Persons at Kebele Level

	Name	Position	Phone
<b>Sendi Hile kebele, Dege Habour Woreda</b>			
1	Ayisha Bedel	Local Community member	
2	Kemer Alaki Umer	“	
3	Wers Abede	“	
4	Sihara Abdulahi Abede	“	
5	Nime’a Mehamod	“	
<b>Gerewa Kebele, Dege Habour Woreda</b>			
6	Beshik Shek Abdi	Kebele chairman	0915192993
<b>Karan Bile kebele, Kebri Dehar woreda</b>			
7	Sahara Akil	Local Community member	
8	Halimo Mohamed	“	
9	Ardo Hasen Bahiru	“	
10	Yosef Hukan	Keble vice chairman	0915469050
11	Areb	Keble chairman	
<b>Dawa’a kebele, Kebri Dehar woreda</b>			
12	Sikri Weyira	Local Community member	0915533035
13	Mohamed Almi	“	0923689058





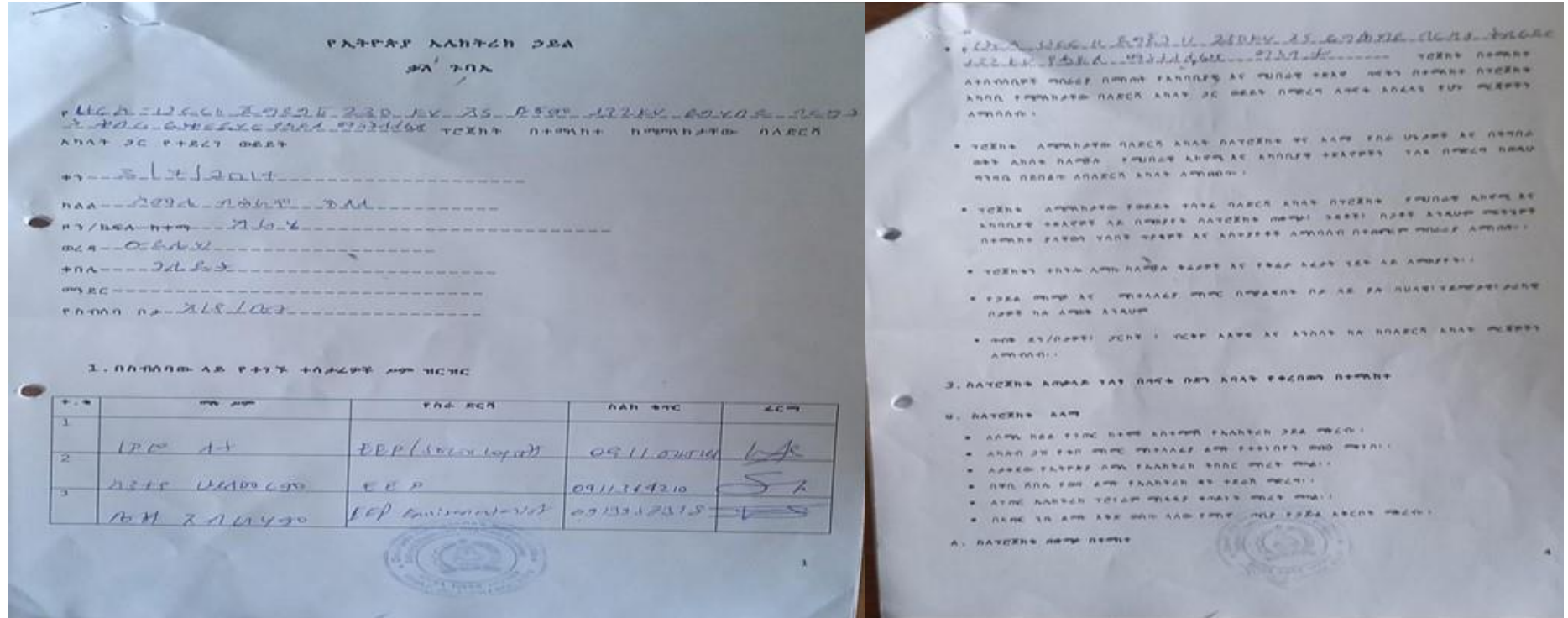




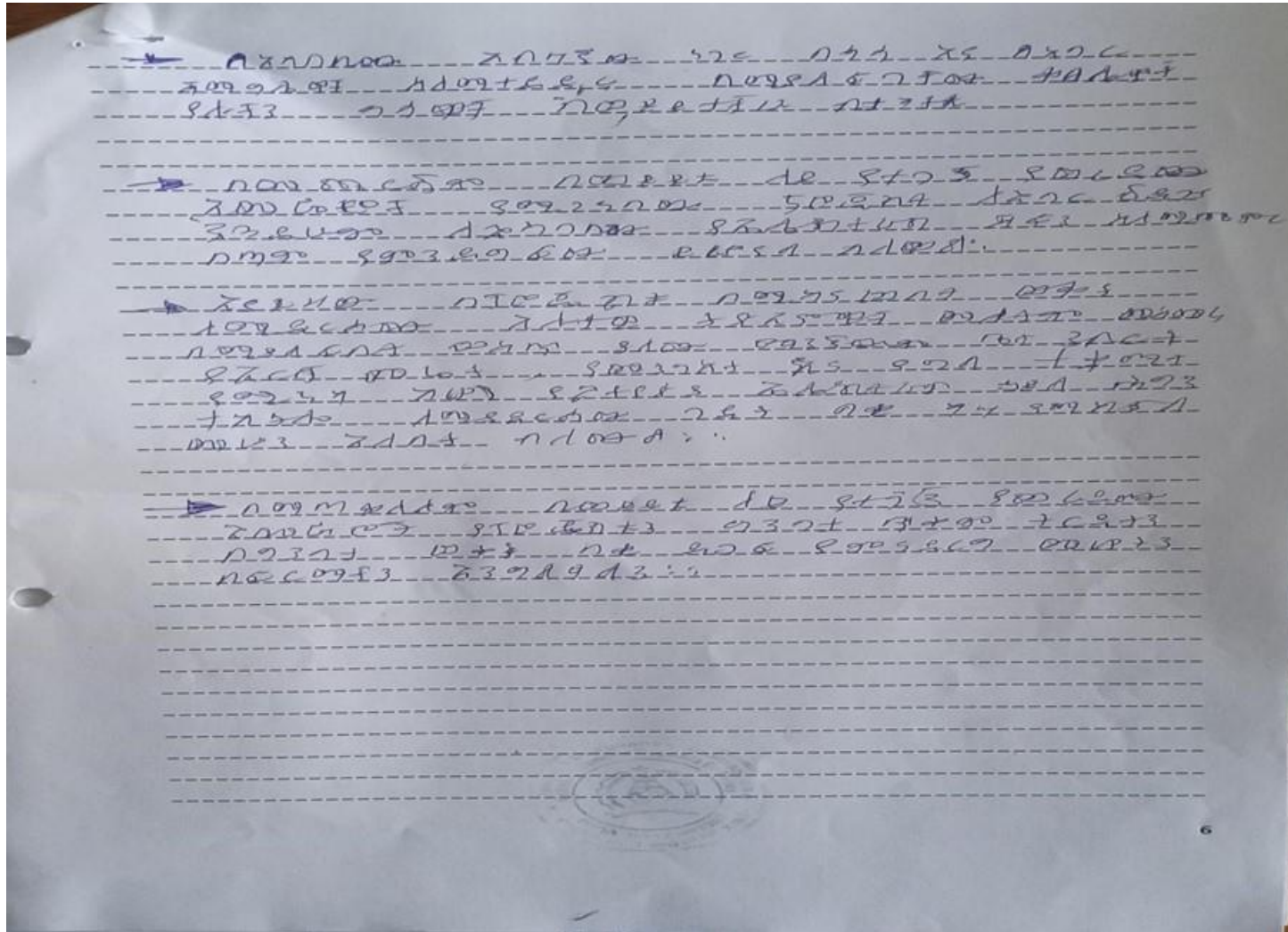




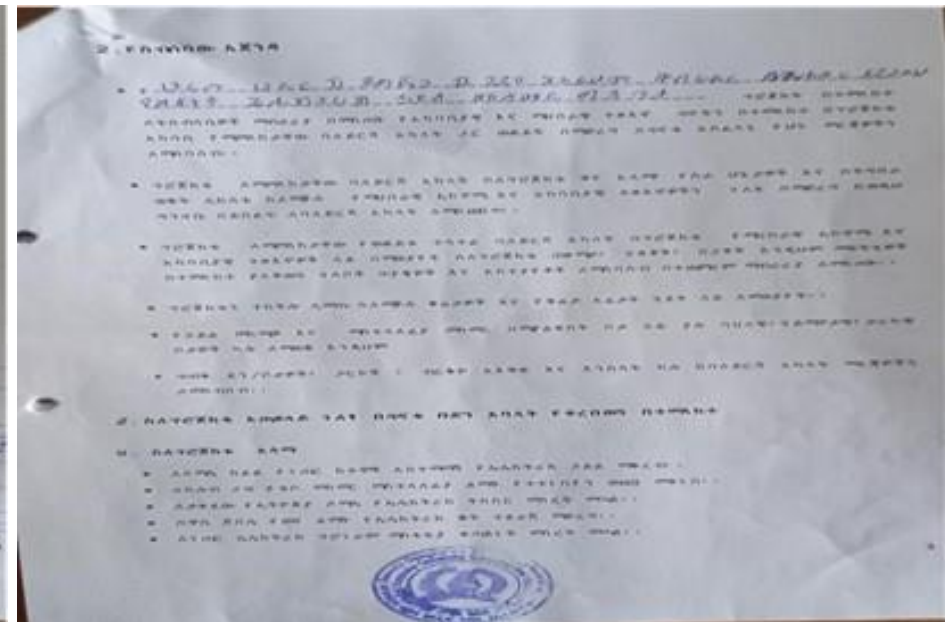
Annex 5.2: Sample Minutes of Consultation Meetings with Kebele Administration Officials

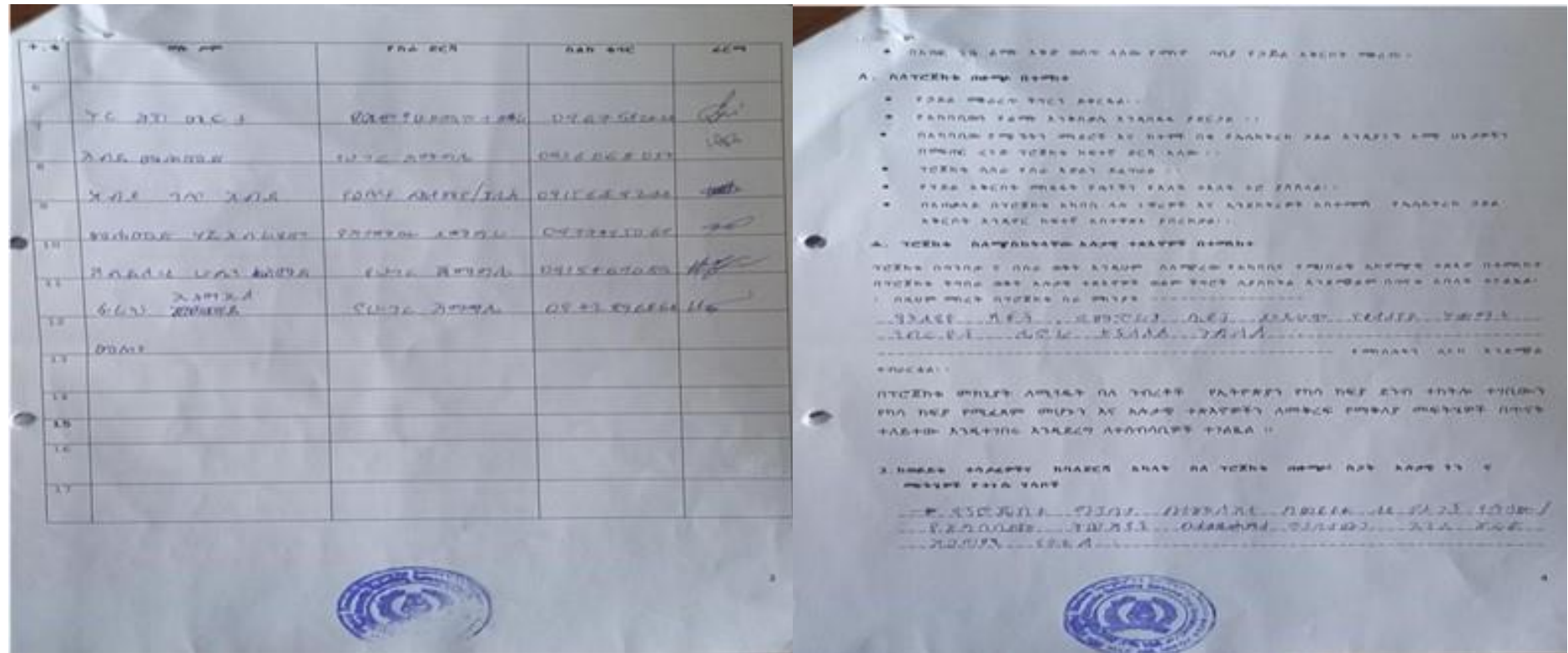


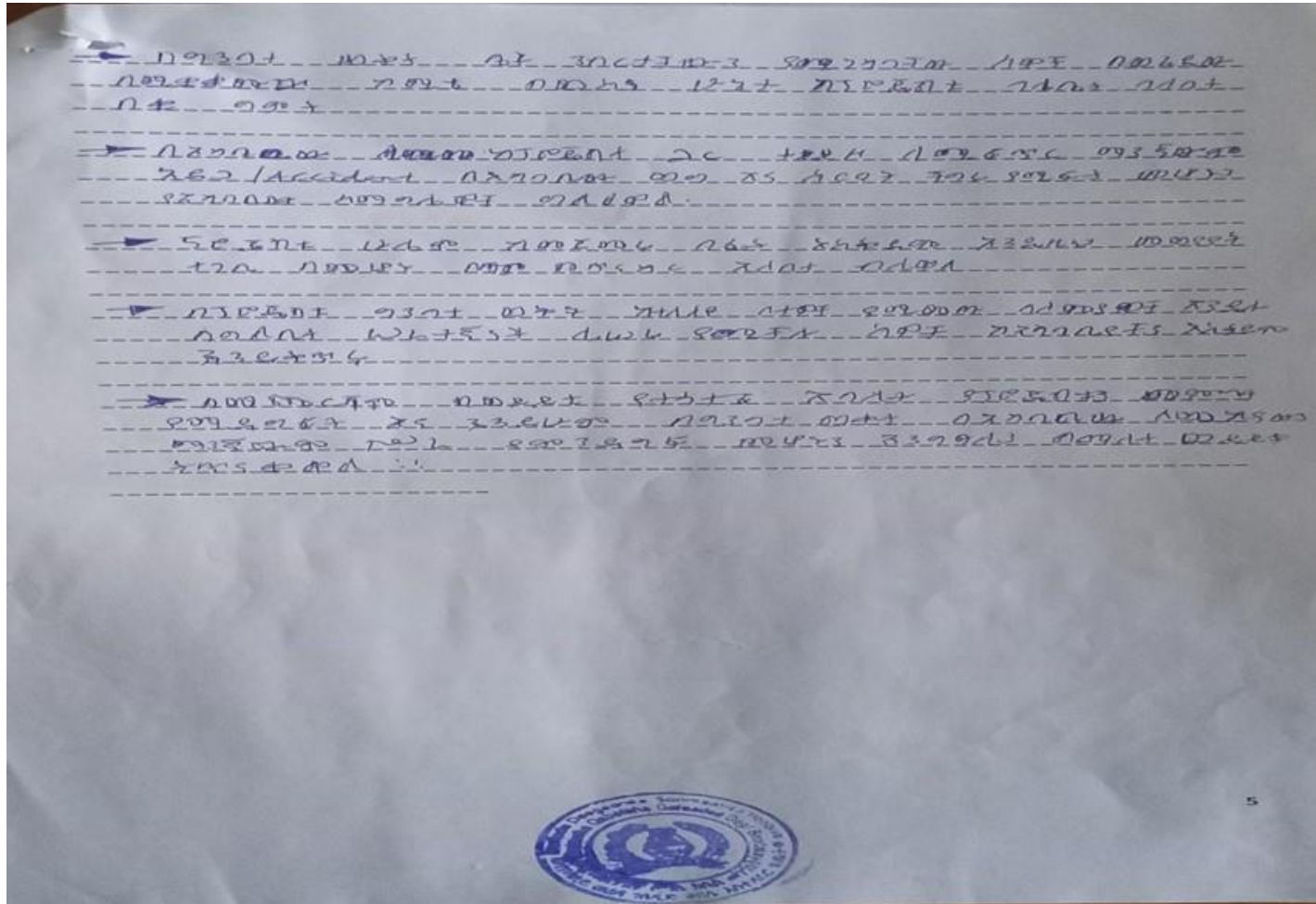




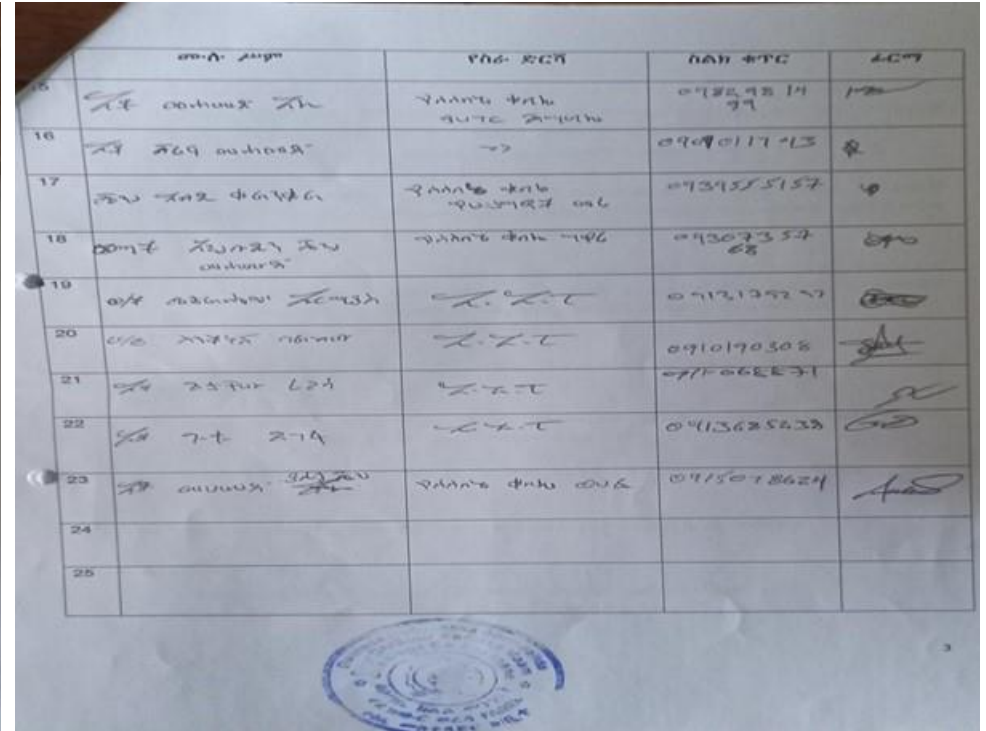
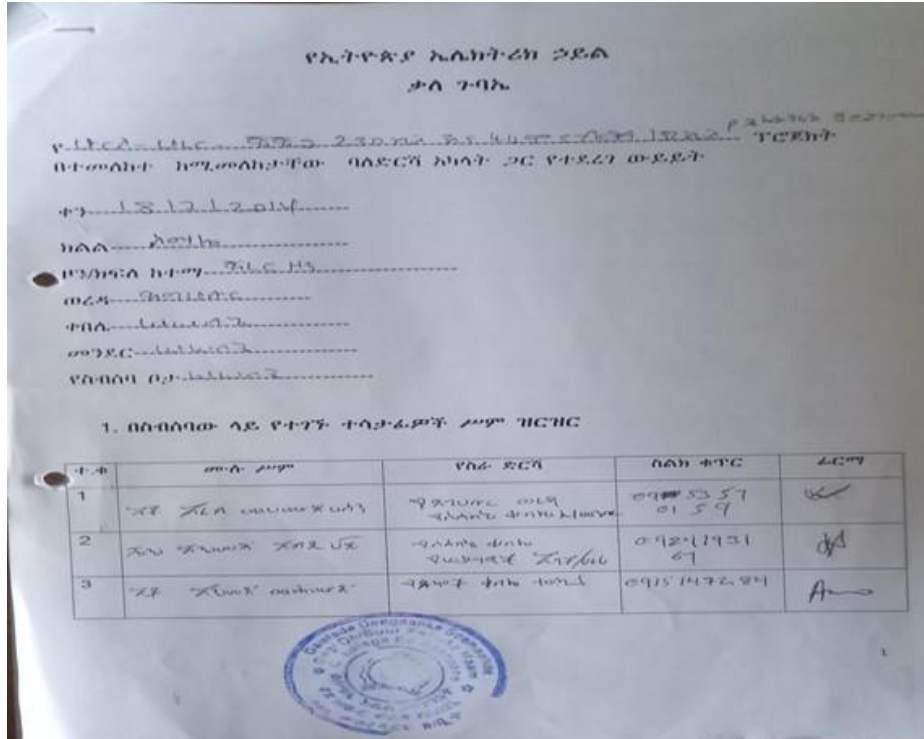






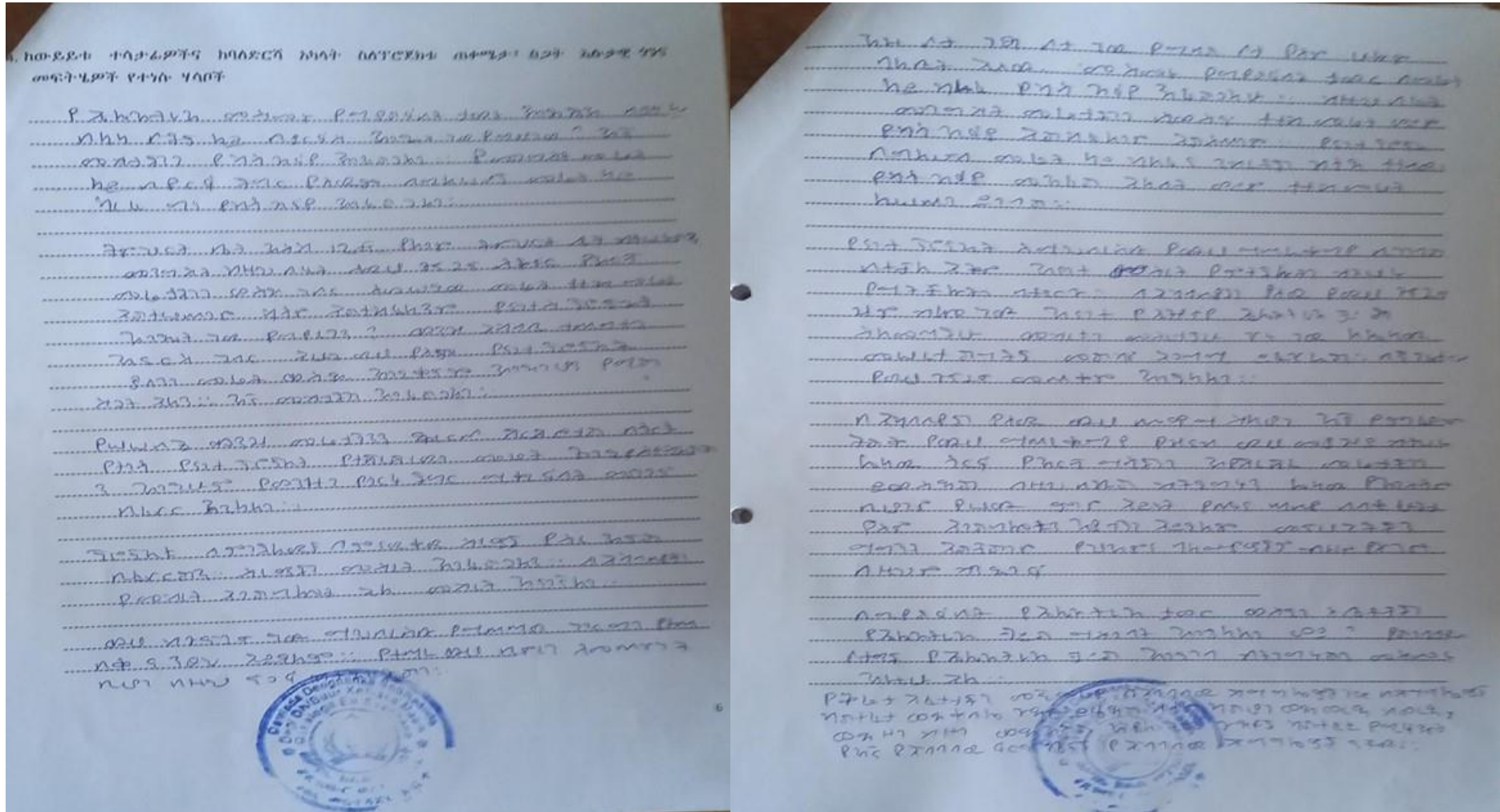


Annex 6.3: Sample Minutes of Consultation Meetings with Community Members











Annex 7: Public Grievance Form: *Somaligna & Oromiffa* Versions

Annex 7.1: Public Grievance Form: *Somaligna*

የህዝብ ቅሬታ ማቅረቢያ ቅጽ/ Foomka Cabashada Dadweynaha				
የመዝገብ ቁጥር (በቤር ሰራተኛ የሚሞላ)/Lambarka diwaangalinta (isticmaalka xafiiska)				
አድራሻ መረጃ Goobta Macluumaadka lagala xidhiidho	ስም/Magaca			
	አድራሻ/Ciwaanka			
	ስልክ/Telefoonka			
	ፋክስ/Faksiga			
				ኢሜይል/Emailka
ማንነትዎ እንዳይታወቅ ከፈለጉ ይግለጹ?  Fadlan sheeg haddii aad rabto in faahfaahintaadu ay ahaato mid sir ah	<input type="checkbox"/> ማንነቴ ሳይገለጽ ቅሬታዬን መግለጽ እፈልጋለሁ			
	<input type="checkbox"/> Waxaan rabaa inaan cabashadayda u soo gudbiyo si qarsoodi ah			
	<input type="checkbox"/> ካለ እኔ ፈቃድ ማንነቴን ለሌላ እንዳይገለጹ እጠይቃለሁ			
				<input type="checkbox"/> Waxaan codsanayaa inaan shaacin aqoonsigayga ogolaansho la'aanteed
				<input type="checkbox"/> ማንነቴ ለሌላ ቢገለጽ ችግር የለብኝም
				<input type="checkbox"/> Ma jecli in faahfaahintaydu ay noqoto mid sir ah
ማሳሰቢያ ቅሬታዎን በተመለከተ አስፈላጊ ሆኖ ሲገኝ ልናናግርዎ እንችላለን፤ ይሁን እንጂ የሰጡንን መረጃ ለሌላ ሰነተኛ ወገን ካለገርስዎ ፈቃድ አሳልፈን አንሰጥም Ogsoonow in laga yaabo inaan u baahanahay inaan kula soo xidhiidhno cabashadaada laakiin lama wadaagi doono faahfaahintaada cid saddexaad fasax la'aanteed.				
በምን አይነት መንገድ እንደናገኝዎ እንደሚፈልጉ፤ ሳጥኑ ውስጥ ምልክት በማድረግ ይግለጹ?  Sideed u door bidaysaa in lagula soo xidhiidho? Fadlan sax sanduuq?	<input type="checkbox"/> በፖስታ	<input type="checkbox"/> በስልክ	<input type="checkbox"/> በኢሜይል	<input type="checkbox"/> በግንባር
	<input type="checkbox"/> Ma boosto	<input type="checkbox"/> Ma telefoon	<input type="checkbox"/> Ma E-mail	<input type="checkbox"/> Ama qof ahaan
የትኛውን ቋንቋ ይመርጣሉ? Waa maxay luqadda aad doorbidaysa isgaarsiinta eed ku fahmaysiid ?	<input type="checkbox"/> አማርኛ	<input type="checkbox"/> ኦሮሚኛ	<input type="checkbox"/> ሶማሊኛ	<input type="checkbox"/> ሌላ ከሆነ ይጥቀሱ
	<input type="checkbox"/> Axmaarig	<input type="checkbox"/> Oroomo	<input type="checkbox"/> Soomaali	<input type="checkbox"/> Midkale sheeg
አስተያየቶች/Faallo				
አስተያየትዎን እዚህ ያስፍሩ/Fadlan faallo ka bixi				
ይህ አስተያየትዎ መፍትሄ የሚሻ ጉዳይ ከሆነ መፍትሄው ምን ቢሆን ብለው ይመክራሉ?/ Haddii faalladani u baahan tahay xal,waa maxay qaraarka aad soo jeedisay?				

የህዝብ ቅሬታ ማቅረቢያ ቅጽ/ Foomka Cabashada Dadweynaha	
<b>ቅሬታዎች/Cabashada</b>	
<p>ቅሬታዎን በዝርዝር ያቅርቡ፤ ችግሩ ምን እንደሆነ፤ ማንን እንደጎዳ፤ መቼ፤ የት እና ስንት ጊዜ እንደተከሰተ፤ እንደ አግባብነቱ/Fadlan bixi faahfaahinta cabashadaada, oo ay ku jirto sharaxaadda dhibaataada, cidna ay ku dhacday, goorta, meesha iyo inta jeer, sida ay u khasaysa</p>	
<p>ለቅሬታው የመፍትሄ ሀሳብ ካለዎት ይግለጹ/Waa maxay xallinta aad soo jeedisay ee cabashada, haddii aad mid leedahay sheeg?</p>	
<p>ይህን ቅጽ ለኢ.ኤ.ኃ በምን መንገድ እንደሚልኩ ይግለጹ?</p>	
<p>Sida loo gudbiyo foomka EEP</p>	<p><input type="checkbox"/> በፖስታ/ boostada</p> <p>ኢትዮጵያ ኤሌክትሪክ ኃይል፤ ፖ/ሳ/ቁጥር 1588፤ አዲስ አበባ ኢትዮጵያ፡ Awooda Korontada Itoobiya, PO Box 15881, Addis Ababa, itoobiya</p>
	<p><input type="checkbox"/> በእጅ/Gacanta</p> <p>ኢትዮጵያ ኤሌክትሪክ ኃይል ዋና መስሪያ ቤት ወይም ፕሮጀክት ሳይት ቢሮ ወይም ወረዳ ላይዘን ቢሮ ሜክሲኮ ስኬር ኤክስ ህንጻ ፓስታ ቁጥር1588, አዲስ አበባ ኢትዮጵያ፡፡ ስልክ ቁጥር. +251 115 580 803, +251 115 580 602</p> <p>Awoodda Korontada Itoobiya, Xafiiska Madaxa ama Xafiiska Mashruuca ama Xafiiska Xiriirka Degmooyinka Meksiko Square, Dhismaha Xarunta K.Kare P.O.Box 1588, Addis Ababa, itoobyia Tel. +251 115 580 803, +251 115 580 602</p>
	<p>Tadesse Biru Odda Environment, Health &amp; Safety Director Phone: +251 116 676 393 Mobile: +251 911 771 230 Mailto: <a href="mailto:tadesse.odda@gmail.com">tadesse.odda@gmail.com</a></p> <p>Tadesse Biru Odda Agaasimaha Daryeelka Deegaanka &amp; Badbaadada Taleefanka: +251 116 676 393 Mobile: +251 911 771 230 E-mailka: <a href="mailto:tadesse.odda@gmail">tadesse.odda@gmail</a></p>
<b>ቀን/Tariikhda</b>	
<b>ፊርማ/Saxeexa</b>	



Annex 7.2: Public Grievance Form: *Oromiffa*

የህዝብ ቅሬታ ማቅረቢያ ቅጽ Unkaa Komiin Uummata Itti Dhiye'atu				
የመዝገብ ቁጥር (በቢሮ ሰራተኛ የሚሞላ)/Hojjetaa Waajjiraan kan Guutamu				
የአድራሻ መረጃ Odeeffannoo Qaama Komii Dhiyeessuu	ስም/Maqa			
	አድራሻ/Teesso			
	ስልክ/Bilbila			
	ፋክስ/Faaksii			
	ኢሜይል/Email			
ማንነትዎ እንዳይታወቅ ከፈለጉ ይግለጹ Eenyummaan Keesani Iccitiin Akka Qabamuu Yoo Feetan fedhii kessani Ibsa	<input type="checkbox"/> ማንነቴ ሳይገለጽ ቅሬታዬን መግለጽ እፈልጋለሁ <input type="checkbox"/> Eenyummaan Ko utu Hin beekamiin komii/Yaada ko Dhiyeesuu ni Barbaada			
	<input type="checkbox"/> ካለእኔ ፈቃድ ማንነቴን ለሌላ እንዳይገለጹ እጠይቃለሁ <input type="checkbox"/> Hayyamaa ko Malee Eenyummaan ko akka ifa Hin bane ni Gaafadha			
	<input type="checkbox"/> ማንነቴ ለሌላ ቢገለጽ ችግር የለብኝም <input type="checkbox"/> Eenyummaan ko Iccitiin Egamuu Baannaanis Rakkoo Hin Qabuu			
<p>ቅሬታዎን በተመለከተ አስፈላጊ ሆኖ ሲገኝ ልናናግርዎ እንችላለን፤ ይሁን እንጂ የሰጡንን መረጃ ለሌላ ሰነድ ወገን ካለእርስዎ ፈቃድ አሳልፈን አንሰጥም</p> <p>Komii/Yaada dhiyeesitanif Gaafa Barbaachisa Ta'utilssin Qunnamina, Odeeffannoof Eenyummaan Keesan Garu Fedhii Keesani Ala Nama Kabiroof Dabarsiine hin Kenniinu</p>				
በምን አይነት መንገድ እንደናገኝዎ እንደሚፈልጉ፤ ሳጥኑ ውስጥ ምልክት በማድረግ ይግለጹ? Haala Akammiin Isin Walqu nnaminu (Saanduqa Fedhii Keesan Mulisuuti MallattooGodha)	<input type="checkbox"/> በፖስታ <input type="checkbox"/> Poostaadhan	<input type="checkbox"/> በስልክ <input type="checkbox"/> Bilbilaa	<input type="checkbox"/> በኢሜይል <input type="checkbox"/> E-mailiin	<input type="checkbox"/> በግንባር <input type="checkbox"/> Fulaan
የትኛውን ቋንቋ ይመርጣሉ? Walqunnametiif Afaan/ Qooqa kami filatu	<input type="checkbox"/> አማርኛ <input type="checkbox"/> Afaan Amara	<input type="checkbox"/> ኦሮሚኛ <input type="checkbox"/> Afaan Oromo	<input type="checkbox"/> ሶማሊኛ <input type="checkbox"/> Afaan Soomaali	<input type="checkbox"/> ሌላ ከሆነ ይጥቀሱ <input type="checkbox"/> Kan Biro
አስተያየቶች/Komee/Yaada/				
አስተያየትዎን እዚህ ያስፍሩ/Komee /Yaada keessan Asiti Bareessa				
<p>ይህ አስተያየትዎ መፍትሄ የሚሻ ጉዳይ ከሆነ መፍትሄው ምን ቢሆን ብለው ይመክራሉ?          Komiin dhiyeesiitan kun Furmaata ni Barbaada Yoo Ta'e Maaltu Furmaata Ta'uu ni Danda'a jettuu If this comment needs a resolution, what is your suggested resolution?</p>				



የህዝብ ቅሬታ ማቅረቢያ ቅጽ Unkaa Komiin Uummata Itti Dhiye'atu	
<b>ቅሬታዎች/Komi</b>	
<p><b>ቅሬታዎን በዝርዝር ያቅርቡ፤ ችግሩ ምን እንደሆነ፤ ማንን እንደጎዳ፤ መቼ፤ የት እና ስንት ጊዜ እንደተከሰተ፤ እንደየ አግባብነቱ</b></p> <p>Maalo Komii Issin Qabdan Maal Akka Ta'ef Eenyuu Irrati Rakko Akkanii Fideef, Rakkooleen KuniisYoomif Eessatii Akka Raawatamef Yeeroo Meqaaf Akkani Uumame nu lbsa</p>	
<b>ለቅሬታው የመፍትሄ ሀሳብ ካለዎት ይግለጹ</b>	
Rakko Kanaaf Furmaata Ta'u ni Dandaa Wan Jeettan Yoo jiraate nu lbsa	
<p><b>ይህን ቅጽ ለኢ.ኤ.ኃ በምን መንገድ እንደሚልኩ</b></p> <p>Unkaa kana haala Kammiin EEPTi Erguu barbaadu</p>	<p><input type="checkbox"/> በፖስታ/Poostaadhan ኢትዮጵያ ኤሌክትሪክ ኃይል፤ ፖ/ሳ/ቁጥር 15881፤ አዲስ አበባ ኢትዮጵያ Humna lbsa Itoophiyaa L/S/P 15881 Finfinnee, Itoophiyaa</p> <p><input type="checkbox"/> በእጅ/ Harkaan/ Fulaan ኢትዮጵያ ኤሌክትሪክ ኃይል ዋና መስሪያ ቤት ወይም ፕሮጀክት ሳይት ቢሮ ወይም ወረዳ ላይዘን ቢሮ፡ ፖስታ፤ 1588, አዲስ አበባ, ኢትዮጵያ Tel. +251 115 580 803, +251 115 580 602 Waajjiira Humna lbsa Itoophiyaa Ykn. Waajjiira Piroojeekta Aanaa Meksiiko, Gamo K.Kare L/S/P 15881 Finfinnee, Itoophiyaa Tel. +251 115 580 803, +251 115 580 602</p> <p>Tadesse Biru Odda Environment, Health &amp; Safety Director Phone: +251 116 676 393 Mobile: +251 911 771 230 Mailto: <a href="mailto:tadesse.odda@gmail.com">tadesse.odda@gmail.com</a></p>
<b>ቀን/Guyyaa</b>	
<b>ፊርማ/Mallattoo</b>	

## Annex 8: ESIA Team

### Annex 8.1: ESIA Consultant Team

Team Member	Position/Profession	Qualification
Dejene Woldemariam	Team Leader/ESIA Expert	BE, M. Tech
Mequanint Tenaw	Senior Environmentalist/Land Use	BA, MA
Wondifraw Nega	Biodiversity Expert/ Zoologist	BSc, MSc
Lelisa Temesgen	Stakeholder Engagement Expert	BA
Ephrem Amare	Archaeologist/SocialAnthropologist	BA, MA
Bizuayehu Ayele	Gender Expert	BA, MA
Abel Mekonnen	GIS Expert	BA
Abel Tesfaye	Data Analyst	BA, MA

### Annex 8.2: EEP's ESIA Team

Team Member	Position/Profession
Ms. Betelhem Ermyas	Sociologist
Mr. Horo Leta	Sociologist
Mr. Wakessa Tessema	Sociologist
Mr. Ezedin Shemsu	Sociologist
Mrs. Sintayehu Moges	Sociologist
Mr. Yohannes Alemaw	Environmentalist
Mr. Abebe Abate	Environmentalist
Mr. Beza Abreham	Environmentalist
Mr. Gutu Degefa	Environmentalist
Mrs. Tirusew Kassahun	Environmentalist
Mr. Eyasu Bahiru	Surveyor
Mr. Sintayehu H/Mariam	Surveyor
Mrs. Sinknesh Balekew	Surveyor
Mr. Ziyad Abedela	Surveyor

Annex 9: MDI's Certificate of Competence Issued by EPA

