FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

ETHIOPIAN ELECTRIC POWER

UPDATED ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)
GURARA 230 KV POWER TRANSMISSION LINE AND SUBSTATION PROJECT

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Addis Ababa

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Acronyms

AADMP	Addis Ababa Distribution Master Plan
AfDB	African Development Bank
RAP	Resettlement Action Plan
ARCCH	Authority For Research and Conservation of Cultural Heritage
CESMP	Contractor Environmental and Social Management Plan
CRGE	Climate Resilient Green Economy
CSA	Central Statistical Agency
dB	Decibels
EAPP	Eastern Africa Power Pool
EEA	Ethiopian Electric Agency
EEP	Ethiopian Electric Power
EEU	Ethiopian Electric Utility
EPA	Environmental Protection Authority
EHS	Environment, Health and Safety
EI	Environmental Inspector
EIA	Environmental Impact Assessment
EMF	Electro Magnetic Field
EPA	Environmental Protection Authority
EPE	Environmental Policy of Ethiopia
ESA	Environmental and Social Assessment
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
GHG	Green House Gas
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
Ha	Hectare
HH	Household
HIV/AIDS	Human Immunodeficiency Virus/Acquired ImmunodeficiencySyndrome
ISS	Integrated Safeguards System

Km	Kilometer
KV	Kilo Volt
m	Meter
m.a.s.l	Meter Above Sea Level
mm	Millimeter
MoA	Ministry of Agriculture
MoFEC	Ministry of Finance and Economic Cooperation
MoLSA	Ministry of Labour and Social Affairs
MoWIE	Ministry of Water, Irrigation and Energy
MSIPs	Management Strategy and Implementation Plans
NFPA	National Forest Priority Area
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
SESA	Strategic Environmental and Social Studies
STD	Sexually Transmitted Disease
TL	Transmission Line
UNESCO	United Nations Education, Science and Culture Organization
USD	United States Dollar

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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 4,418.8 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).

Addis Ababa Distribution Master Plan (AADMP) was conducted in year 2015 and has recommended upgrading and rehabilitation on Addis transmission lines, substations and distribution lines. Therefore, for reliable supply of power to the City and surrounding AADMP has recommended, medium voltage network configuration, transformer upgrading on some substations and additions of new substation in some areas. To solve the over-loading of transmission lines and transformers some projects were planned. Among the planned projects, construction of Gurara 230 kV power transmission line and new constructed substation around Gurara is the main one.

Therefore, the Ethiopia Electric Power (EEP) committed to update the Environmental and Social Impact Assessment (ESIA) for Gurara 230 kV transmission line and new constructed substation around Gurara as per the Africa Development Bank Comment.

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.

Purpose of the ESIA Study

The major purpose of this Updated ESIA was to identify ways to improve the project's overall environmental performance by identifying potential positive and negative impacts connected with the project's implementation and subsequent operation. It also adopts taking steps to improve positive impacts while avoiding, minimizing, or offsetting negative ones.

The main objective of carrying out the Environmental and Social Impact Assessment (ESIA) study is to ensure informed decision-making and environmental accountability and to assist in achieving environmentally sound and sustainable development. This would be achieved through identification and evaluation of the potential environmental and social impacts of the proposed project at the early stage of planning to allow for avoidance, minimization, and mitigation strategies to be developed and integrated

into the design, construction, and operational plans. In summary, it is aimed to assist the project to be implemented without causing significant and unacceptable adverse environmental or social impacts, and any residual impacts reduced to an acceptable level.

0.2 Project Description

The proposed transmission line project is located in the Addis Ababa Gulele sub city Wereda 1, and Yeka sub city Wereda 1 and Oromiya Reginal state Shuger sub City Akakao Mana Abichu Wereda and the substation is located in Yeka Sub-city wereda 1 of Addis Ababa, Capital City of Ethiopia.
The Gurara 230 kV power transmission line commences from LILO point (Tower No 16 of the existing Sululta-Legetafo 230 kV line at Sheger city Mena Abichu Sub city of Akako Menna Abichu Wereda and ends at planned Gurara substation in Yeka sub city around Gurara.

0.3 Policy and Legal Framework

The Environmental Assessment guideline prepared by the Environmental Protection Authority (EPA) (EPA, 2003) requires development projects to reduce adverse impacts on the physical, biological and socio-economic environments.
Various national policies proclamations, regulations, strategies, guidelines and directives as well as African Development Bank Integrated Safeguards Systems and Environmental & Social Assessment Procedures have been reviewed with respect to the proposed project activities. Some of these documents deal with issues related to environmental proclamation on EIA and land ownership expropriation, compensation proclamation and regulation.
Therefore, in response to the requirements of the Environment Protection Authority (EPA), EEP has commissioned this Updated ESIA as an integral part of the project design and construction and the finding of this assessment is presented in this report.

0.4 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, Landform: The proposed transmission line route and substation are located in a high-altitude area with undulating terrain. The altitude at the tap off point on the existing Sululta- Legetafo transmission line approximately 3058m above sea level this gradually reduces as one moves South East towards the terminal tower in Yeka Sub City (approximately 2698m above sea level). Several rises and falls are observed along the transmission line corridor. Yeka sub-city is located in the North east Part of Addis Ababa city. The altitude range extends 2546 - 2704 m above sea level.

Mena Abichu Subcity is found between 9.07°-9.52° N and 38.53° -38.98° E. Mena Abichu subcity exhibits three major agro ecological conditions. These are Kola (Low altitude), which accounts 3.6%, Dega (high altitude) that covers 71% of the study area and Woina Dega (mid altitude) climate comprises 25.4% of the area.

Climate: The total annual rainfall of the study area is about 1722.6 mm with an average of 1143.5mm. Addis Ababa where the nearest climate monitoring station is located has one main wet season between June and September and a minor wet season betweenFebruary and April. The mean annual temperature is 15.36℃ with the mean minimum of 6.2℃ in Decemberand maximum 22.9℃ in February and May.

Geology: The Geology map for Addis Ababa indicates that the project area lithology is comprisedof both basaltic volcanic rock and ignimbrite on the northern and trachyte as one moves south wards along the line route. Akakao Mena Abichu Cambisols, Nitosols and Vertisols are typical of the soil composition in the Woreda which accounts for 49%, 24.5% and 0.5% respectively.

These are predominantly red-brown in colour.Around Bend 2, soils are red-brown though rock outcrops are observed as well as easily erodible sandy-clays. Further along the soils are similar in colour however more organic matter is present in the topsoil layer within the forested section.

Biological Environment

Flora: The natural vegetation in the project corridor and the substation area include : Olea Africana (Woyra),Cordia africana (Wanza), Acacia Species (Girar), Croton Macrostachys (Bisana), Azedarachindica (kinin/nim), Eucalyptus spp (BahrZaf), Sesbania sespan (Sesbania), Cupresess lustanica (Tsid), Gravilia robusta, Ficus vasta (Warka), Ficussur (Shola) found in the project area .

Fauna: Wild Animal: The extent of vegetation cover in the project area is high and dense forest covers that suit for the wildlife habitat due to this, there are some wild animals found in the project-affected area and among others, which are common in the Addis Abeba City, and Akako Mena AbichuWoredas include:
Hyena (*Crocutacrocuta*), Rabbit (Oryctolagus cuniculus), fox serval cat, and duiker (*Sylvicapra grimmia)*.
Domestic Animal: During the study, the team observed domesticated animals mostly cattle, sheep, donkeys and poultry.

Risk of Electrocution and Collisions of Birds

Based on the information obtained from Regional Environmental Protection and Culture and Tourism Offices, bird's collusion has not been reported and recorded because there are no any protected areas and migratory bird in the project area. However, transmission lines are recognized as posing risks to bird species.

Install objects such as marker balls along the transmission line and use raptor silhouettes place on pylons as deterrents to reduce bird traffic over lines and thereby reduce collisions;

- Undertake regular (at least annual) monitoring of the transmission line for evidenceof birds nesting on the pylons.

Socio-Economic Environment

Demographic characteristics: Addis Ababa is the capital city of Ethiopia, with a total projected population of 3,433,999 people (1,624,999 male and 1,809,000 female) in 2017(Federal Democratic Republic of Ethiopia Central Statistical Agency 2013). Within Yeka subcity, 434,599 people were reported including 201,156 male and 233,443 female.

In Akako Mena Abichu Woreda, a total of 169,257 people (84,733 male and 85,024 female) projected in 2017 (Federal Democratic Republic of Ethiopia Central Statistical Agency 2013).

Ethnic, Religious and Language Composition: During the ESIA studies, we encountered predominantly Oromo (95%) and a minority Amhara (5%) ethnic groups in Dhamota I and Dhamota II *Gottes* (village or a sub-section of a kebele) of Akako Mena Abichu Woreda. The demographic composition slightly changes on moving to the fringe of Addis Ababa where the proposed sub-station will be established. In the Gurara, Yeka subcity 01, near the future sub-station ethnic composition is dominated by Gamo migrants who settled there but also Amhara, Gurage and Oromos were observed. Majority of the persons encountered communicate in the Oromo language which is the preferred local language.

According to the data obtained from Akakao Mena Abichu *Woreda* administration. The population of the study area follows various religions; such as, Orthodox Christian 97 %), Protestant (2%) and Waqefeta (1%).

Settlement Pattern, Housing and Household Economy: In Akako Mena Abichu, the settlement pattern of the population in and around the area is considered as scattered settlement. Most of the people around the project area have corrugated iron sheet and Tukuls as dwelling units. The Project affected community is mainly dependent on traditional rain fed subsistence farming system. Crop production is carried out parallel with livestock production. The major crops cultivated include Barley, wheat; Beans. Households residing on the main transmission line route are engaged and earn their livelihood from daily labour, Besides, they rely on the sale of the above mentioned produced crops and dairy farm products, such as, milk, egg and butter to the nearby community. Annual income sources are mainly from sales of agricultural products (Sales of crops, livestock and their products).

Livestock and Agricultural Product: Livestock is one of the dominant economic activities practiced integrated with crop production and farming activities by the community residing around the project area in Akako Mena Abichu Wereda where as in Addis Abeba some of the community members are doing such type of activity and they are dependent on livestock production activities. Overall, the project affected communities (PACs) involve in different activities such as beekeeping (apiculture), livestock production such as Cattle, goat, sheep and ; Cattle fattening and Poultry production contribute for economic development of the community in particular and for the country in general.

Health Service**:** During ESIA study period, it was observed that the communities within the area for the transmission line route (Akaako Mena Abichu Woreda) are located more than 5km from the nearest health facility (in Ferensay Legasiyon). Most of the respondents indicated that they have to travel to Addis Ababa for such services. However, people living in Gurara village have relatively better access to health facilities in terms of distance due to their proximity to the city.

Educational Service: Distribution of schools is uneven among the communities we surveyed during scoping study. In Akako Mena Abichu there was 1 kindergarten (KG) and 2 Elementary schools for a total rural population of 5000 (student population not known). The situation is much worse in the Gurara village where communities reported that there were no schools in their area and children have to travel to

long distances to get educationaround French embassy.

Access to Electric Power: Observations during the ESIA studies reveal that there is access to electricity from thenational grid around Gurar village in Yeka sub-city, Low lying power lines were however observed and unsafe/rudimentary connections in some of the areas.

The majority of the people in Akako Mena Abichu Woreda and Gurara village in Yeka sub-city use wood fuel as the main source of energy for cooking. This is mainly observed in form of firewood.

0.5 Project Alternatives

Alternatives to the proposed transmission line were evaluated. On the basis of technological, economic, environmental, and social factors, two possible alternatives were evaluated. The length of the transmission line impacts on other power projects and the alternative with the lowest distance were all considered technical factors. The interaction of environmental and social components provided the basis for the environmental and social study.

0.6 Project Impact and Mitigation Measure

Based on the impact assessment, the respective mitigation measures are specified with the goal to avoid the impact, about the impact at the source, minimize the impact at receptor and, if necessary to offset the impact through compensation or other means. Regarding the physical resources or receptors, the impacts are assessed in various areas, including land, soils, aesthetic, waste, site rehabilitation, air quality, noise and vibration, etc.

POTENTIAL IMPACTS	PROPOSED MITIGATION/ENHANCEMENT MEASUREs
Potential Positive Impacts	
Improved and Reliable Power Supply	• Strengthen the central part of the country; improve the electrical capacity and supply of Addis Ababa and Sheger city.
Lay strong basis for continuous electrification program	• The government has set a rural-focused development strategy aimed at improving people's living standards. This energy supply will enable expanding number households to connect to the network in the future and contributing to an improvement of the standard of living.
Improve Ethiopia's Revenue	• Increase the power connection and enhance

POTENTIAL IMPACTS	PROPOSED MITIGATION/ENHANCEMENT MEASUREs
	capacity to deliver power to the local area. This will increases selling electricity and adds revenue for Ethiopia which ultimately contributes for the growth of national economy.
Employment Opportunities	• The project will creat short term employment opportunities for about 80 workers (20 skilled and 60 unskilled). These could include, site clearance, excavation, loading and offloading of materials, driving, and provision of security services where temporary camps or stores are established etc.; and, from opportunities to provide goods and services to construction workers.
Reduce Green House Gas Emission	• 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 emissions, particularly CO2, for the atmosphere. Therefore, when the demand for energy is supplied by the proposed project, it will lead to a reduction of CO2 emission.
Potential Adverse Impacts	
Land acquisition Gurara 230 kV Power Transmission Line Project will have an impact on the existing land use both temporarily and permanently. An estimated 30.45 ha of land (for free corridor (RoW), tower foundation and substation construction will be required and 23 PAPs will be affected in the transmission line. It will cause 6.2712 ha permanent (0.0612 ha for towers and 6.21 ha for substation) and 24.24 ha temporary loss of land.	• Compensation will be undertaken as per the Ethiopian proclamation No. 1161/2019 and regulation No 472/2020 for expropriation of land • Awareness creations will be undertaken for the community to inform them the possibility of usingthe ROW for grazing but not for tree planting andputting structures after the establishment of the transmission line. • Proper inventory of affected property and census enumeration of PAPs for entitlements. • Compensation will be undertaken to the PAPs for the affected houses with regard to loss of house. •
Impacts on housing and structures	• Proper inventory of affected property and census

POTENTIAL IMPACTS	PROPOSED MITIGATION/ENHANCEMENT MEASUREs
Only 1 CIS (Corrugated Iron Sheet), house will be affected by transmission line.	enumeration of PAPs for entitlements. • 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.
Loss of Trees, Annual and Perennial Crops An estimated 7.48 ha of crop land covered by barley, wheat will be affected. The construction of the proposed new substations at Akako Mena Abichu Wereda. Totally, 97,771 (1784 Pole, 27730 Mager, 4444 Werage, 63733 chefeka), 72 Podocurpous trees, 8 Acacia trees will be affected by the project.	• Proper inventory of affected privately owned trees and government; • Compensation will be undertaken to the PAPs as per the Ethiopian proclamation and regulation for the affected trees with regard to loss of trees and crops ; • Avoid unnecessary vegetation clearing; • No construction should commence until all land and property expropriation requirements are fulfilled, cash compensation paid.
Impacts on Vulnerable Group The proposed project has identified a total of 7 HH considered to be vulnerable, 4 of them are above the age of 64; 3 are female-headed households.	• For the groups who may require special or supplementary resettlement assistance special or supplementary resettlement assistance will be implemented.
Archaeological, Cultural, Religious and Historical Sites 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.	• During construction if there is any accidental "*chance findings*" of any archaeological artifacts, the contractor shall report to the Each regional and local culture and tourism offices, following the chance findings procedures shown in Annex – II.

POTENTIAL IMPACTS	PROPOSED MITIGATION/ENHANCEMENT MEASUREs
Public Health and Safety Traffic accidents, falls from above, being hit by objects, electrocution generated effects from electromagnetic fields, and the transmission of communicable diseases (STIs, HIV/AIDS) to local people are all potential risks	• Develop and implement labor influx management and traffic management plans. • Place appropriate signs with the local language at appropriate locations. • 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. • Raise awareness among commercial sex workers by providing free female condoms and instruction on how to use them properly. • Condom distribution and control of informal sector activity near the project site. • Ensure that local communities receive adequate safety training. • Ensure that the work process does not endanger the public. • Conduct Monitoring on a regular basis.
Occupational Health and Safety Activities related project construction works Activities related project construction works could expose construction workers to the risks of accidents and injuries and also exposure to physical hazards from 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. Workers may also face other health risks and concerns in the camps e.g., communicable diseases.	• Post appropriate signs at appropriate locations including in local language to prevent or minimize accident risks.. • Develop and implement Traffic Management Plan • Provide appropriate personal protective (safety) equipment (PPE) for site workers. • Create awareness and continuously remind the labour force about use of safety equipment in the workplace. • Conduct regular monitoring of the workforce on proper use and implementation of the safety rules, and on use of the safety devices and

POTENTIAL IMPACTS	PROPOSED MITIGATION/ENHANCEMENT MEASUREs
	facilities provided to them. • Avail health services at all times when there is work activity on the site. • Maintain records of all accidents arising from the construction activities. • Adapt campsites especially to female workers through proper toilet facilities and security. • Provide first aid station with first aid kits which will be accessible to the workers. • Post with emergency numbers in case of accidents and visible to workers at the site. • Assign a safety officer on the site. • Provide clean (safe) water for drinking, washing, and house use for the worker.
Traffic Load and Safety Vehicular traffic is expected to increase to a certain degree 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	• Develop and implement traffic management plan for the project. • Post adequate road signs to avoid any accidents that may occur due to construction traffic in the project area; • Limit construction hours to reasonable daylight hours where the project construction site is located near villages. • Sensitive areas susceptible to cause accidents to public traffic during night time will be demarcated and fenced by warning tapes. Measures including speed humps for reducing traffic speed will also be applied in the vicinity of the sensitive areas.
Noise 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	➢ 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.

POTENTIAL IMPACTS	PROPOSED MITIGATION/ENHANCEMENT MEASUREs
pits, where permissible/acceptable human noise levels can be temporarily exceeded due to the operation of Lorries and equipment in the working zone.	➢ Regular vehicle maintenance to reduce noise emissions. ➢ To reduce noise pollution, all vehicles and equipment must be turned off when not in use. ➢ Noise-producing project activities and material transportation must only take place during the day or during normal working hours. • Workers in the vicinity of strong noise emissions should use ear plugs.
Land Contamination Land/soil contamination during the construction phase is expected due to spills of fuel from equipment and vehicles, and from inadequate handling of hazardous substances used on site, as well as inappropriate management of liquid wastes. However, such potential impacts can be minimized through employment of appropriate measures/best practice methods so that no or minor change to the surrounding environment.	➢ Provide initial and continuous trainings for construction workforce in handling of hazardous substances and wastes, waste segregation and appropriate waste disposal; ➢ Instruct the construction workforce to dispose wastes at approved fill /waste disposal locations and strictly supervise the correct placement of fill; ➢ Where possible, construction materials to be reused or recycled; ➢ Develop and implement a waste management plan; ➢ Develop and implement proper spill response procedures and establish temporary and/or permanent spill containment equipment, as applicable; ➢ Collect wastes and segregate at generation site in accordance with their types (hazardous, organic and inorganic waste), safely transport and dispose of at the final dumping or disposal site specified and approved by the local authority to avoid any adverse impact on health and well-being of people ,and • Locate disposal sites in areas of land, which, prior to the commencement of the construction works, were not used or designated for productive land uses such asgrazing.

POTENTIAL IMPACTS	PROPOSED MITIGATION/ENHANCEMENT MEASUREs
Soil erosion 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 resulting in soil erosion.	• Handle and store hazardous substances and waste in a safe manner. • No vegetation clearance is permitted outside of designated locations, and • Create and implement appropriate spill response procedures, as well as temporary and/or permanent spill containment equipment, as needed. • To prevent erosion, keep topsoil or vegetation removal to a minimum. • Ascertain that the building staff is aware of any surviving vegetation that should not be damaged.
Air Quality 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. Due to dust and exhaust gas emissions, these are likely to have an influence on air quality. Some dust will be generated by construction works, which will affect the worker as well as the nearby area resident.	• Develop traffic management plan. • Establish and enforce project vehicle speed restrictions, use bumps and/or properly marked road signs, 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. • Use dust management measures such as water spraying on unpaved access roads, exposed earth, and any on-site stockpiles to reduce dust emissions. • Provide workers with proper personal protective equipment (PPE), such as dust masks and protective glasses, in dusty areas. • Avoid burning materials that produce a lot of smoke or stink, such as tires, plastic, rubber products, or other materials. ✓Regular maintenance and inspection of construction equipment and vehicles to avoid excessive gaseous emissions.

POTENTIAL IMPACTS	PROPOSED MITIGATION/ENHANCEMENT MEASUREs
	▪ Spraying of water to control dust emission. • Applying speed limits for project vehicles, and employing adequate traffic management, including code of conduct to truck drivers to avoid impacts on the community residing within and nearby the project area.
Health Effects of Electro Magnetic Fields (EMF) Electric overhead lines are considered as a source of power frequency, electric and magnetic fields, which may have a perceived health effect.	• Both electric fields and magnetic fields decrease as the distance from the source increases. As a precautionary measure, EEP have adopted standard RoW width of 40m for 230 kV along the high voltage transmission lines. All habitation and structures will exclude from the ROW to ensure safety of people from EMF as well as from direct electric shocks.
Risks of Electrocution and Accidents during Maintenance 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. Locals can also be at risk especially as they are unaware of the risks and potential hazards which make them vulnerable to the danger of electrocution.	• 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
Waste Generation and Visual Amenity 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. Such wastes can be adverse to the environment. Some of these waste materials especially the plastic are not biodegradable hence may cause long- term adverse effects to the environment.	• No debris or waste materials will be left at the work sites, good housekeeping onsite to avoid litter and minimize waste; • Rehabilitation of cleared areas to minimize visual scarring and maintenance clearingwill be kept to the absolute minimum and should not extend beyond the corridor.

POTENTIAL IMPACTS	PROPOSED MITIGATION/ENHANCEMENT MEASUREs
Cumulative Impact Most cumulative impacts to land uses are not expected to be significant with the addition of this project. The only project found was construction of shegr City road, The current construction of new road project at Sheger City and our project will occur together, there will be a potential for cumulative impacts related to the project, in relation to existing sheger city road and planned power project within the project area. The potential cumulative impacts are land use, noise and traffic transportation and air quality.	• Most cumulative impacts to land use are not expected to be significant with the addition of this project. Small area of agricultural land and eucalyptus plantation would be permanently removed from production by tower foundation. • Cumulative impacts from traffic and transportation are not anticipated to be permanent, but rather temporary, occurring during construction. • Cumulative impact for air quality will be minimized accepting by taking proper dust abatement measures.
Uncertainties in Impact Assessment The principal uncertainties in this impact assessment are related to land and property expropriation. 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. It is therefore reasonable to expect that the uncertainties regarding land and property can be satisfactorily resolved prior to project implementation.	• 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. And reinforcing the existing electrification.

0.7. Public Consultation

Various consultations in all project affected woredas with all members of the community and stakeholders have been conducted from July 10 to July 14, 2023. In the consultation, Woreda level officials, elders, women, youth, and religious leader were active participants and were expressed their threat, fears and thoughts on the project, previous energy projects experience; support and good attitudes for the project. And, they were also raised very much constructive ideas to be considered in project planning and implementation which will have significant positive and negative impact for the community as well to the environment. 50 participants in 4 different public and stakeholder consultation meetings with minutes of meeting have been conducted

ESIA Report and Disclosure

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.

0.8. 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.

0.9. Grievance Redress Mechanism

In the case of projects involving land acquisition, the grievance procedure and appeal mechanism are an important aspect. Therefore, to provide the opportunity for community members and to settle their complaints and grievances amicably as administrative measures are in line with the law, a complaint hearing body andappeal hearing council will be established according to proclamation No. 1161/2019.

0.10. 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.

0.11. Institutional Capacities, Strengthening, Training and Reporting

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. Monthly reports prepared by the EEP' EMU personnel should contain a brief section referring to environmental and social matters, which summarizes the results of site monitoring and remedial actions which have been initiated.

0.12. Environmental Mitigation and Management Costs

The total environmental and social mitigation, management, monitoring and training costs are summarized and amounts to some 35,419,780.00 Birr (643,177.41USD). This amount will be allocated to cover implementation of the environmental and social mitigation, management, monitoring programs.

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.

0.13. Conclusions and Recommendations

This ESIA accepts that implementation of the Gurara 230 kV Power Transmission Line and substation Project will bring a number of positive socio-economic impacts as well as adverse environmental and social impacts.

Therefore, there is a pressing and implementation of this project in the planned areas are expected to alleviate the scarcity electricity supply problems in the planned areas, enhance investment and economic development, create employment, reduce poverty and ultimately improve the quality of life of the people. The project also laid the groundwork for the continuation of the Addis Abeba and Sheger City Electricity Program. On the contrary, implementation of the project will bring a number of adverse environmental and social impacts during the pre-construction, construction, operation phases. The important impacts during the pre-construction, construction and decommissioning phase include increased loss of farmlands, impacts of residential lands, soil erosion, loss of trees, air and noise pollution, disruption of existing environment, damages of physical infrastructures, obstruction of traffic mobility and safety hazards, increased risks of HIV/AIDS and other STDs.

Therefore, it can be concluded that there are no severe environmental or social impacts, or other grounds that will prevent the planned multi-purpose energy infrastructure project from not proceeding

to its implementation provided that the mitigation measures proposed in this ESIA report are strictly implemented and monitored.
For the resetllers and affected people and the level of impact by the project, further detailed resettlement Action Plan/RAP/ should be mandatory.
Thus, in order to have minimal and acceptable residual environmental and social impacts, and enhance the potential benefits, it is recommended that the proposed mitigation measures should be properly implemented at the right time, and necessarily follow up of their effectiveness is made through well-planned monitoring program.

However, in addition to the above actions, it is better to forward the following recommendations.

- Compensation payment should be addressed properly for those their asset affected by the project to minimize ambiguity and the strict monitoring on the overall implementation and work progress of woreda asset evaluation committee should be seriously conducted.
- Issues such as land taking, relocation, cost recovery, and resettlement, if any, need at most attention and thorough monitoring and evaluation as well frequent discussion with the user community is mandatory.
- The project should strive to use existing local community structures in the management and administration in order to promote ownership and sustainability of the environmental management plans.

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 4,418.8 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 40,337.4 km of 33 kV lines and 26,073 km of 15 kV lines serving 4,129,503 customers.

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).

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. Access to electricity is important for development due to its linkages to agriculture, education, and health and other development projects. Limited access and use of energy significantly slow down the economic and social transformation.

Transmission lines provide the infrastructure that is used to evacuate high voltage power from generation plants to the national grid for eventual use by consumers. The Government of Ethiopia was established to manage the high voltage transmission grid infrastructure to cope with growth in energy demand.

Addis Ababa city is the largest consumer of electric power in Ethiopia. It does not have any generation plants for its power consumption. All the power consumed is transmitted from generations far away from the city mostly hydro power plants. The city is undergoing a massive construction of high rising buildings, real estates and commercial complexes. Development in the city has raised electric power demand from year to year with high growth rate. To meet with this high growth demand Ethiopian Electric Power (EEP) has implemented upgrading of some substations to a higher voltage and increasing transformer capacity on some substations.

Even though EEP has done upgrading and rehabilitation on some substations in Addis Ababa there is still high demand which cannot be met with the current substations in the city. Due to ageing of equipment, increasing demand on substations and lack of transmission capacity it is required to replace or strengthen or upgrading of High voltage transmission lines, power transformers, outgoing and incoming bays, control, metering, protection, voltage compensation equipment and cables etc.

Addis Ababa Distribution Master Plan (AADMP) was conducted in year 2015 and has recommended upgrading and rehabilitation on Addis transmission lines, substations and distribution lines. Therefore, for reliable supply of power to the city and surrounding AADMP has recommended, medium voltage network configuration, transformer upgrading on some substations and additions of new substation in some areas. To solve the over-loading of transmission lines and transformers some projects were planned.

Amongst the planned projects, Construction of the Gurara 230 kV power transmission line and new constructed substation around Gurara.

Therefore, the Ethiopia Electric Power (EEP) committed to update the Environmental and Social Impact Assessment (ESIA) for Gurara 230kV transmission line and substation project.

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.

1.2 Purpose of the ESIA Study

The fundamental objective of this Updated ESIA was to provide a means whereby the overall environmental performance of the project can be enhanced through the 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 Report has been prepared following a request by African Development Bank (AfDB), to update an ESIA report for the Gurara 230 kV Power Transmission Project to meet the requirements and standards of the AfDB's Environmental and Social Assessment Procedures and National requirements. The study includes identification of all environmental and social impacts associated with the proposed project transmission line and associated facilities (substations) and ancillary activities such as access roads, campsites, borrow pits, and spoil dumping sites. It also comprises a development of appropriate mitigation measures for each identified negative impact to ensure that the construction and operation activities under this proposed project are implemented in an environmentally sound and socially acceptable manner with no or minimal impact to the nearby biophysical and social environment.

1.3 Objectives of the Study

The main objective of carrying out the updated Environmental and Social Impact Assessment (ESIA) study is to ensure informed decision-making and environmental accountability and to assist in achieving environmentally sound and sustainable development. This would be achieved through identification and evaluation of the potential environmental and social impacts of the proposed project at the early stage of planning to allow for avoidance, minimization, and mitigation strategies to be developed and integrated into the design, construction, and operational plans. In summary, it is aimed to assist the project to be implemented without causing significant and unacceptable adverse environmental or social impacts, and any residual impacts reduced to an acceptable level.

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) and its relationship with the socio- 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.
- 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;
- Identification and recommendation of various mitigation measures into the project design,construction and operation phases to enhance the sustainability of the project and,
- Develop environmental and social management and monitoring plans.

1.4 Approach and Methodology

The approach and methodology adopted for this ESIA follows and meets the requirements of EPA's guideline (EPA, 2000). The following section provides the details of the approach and methodology adopted for the ESIA of the proposed Gurara 230 kV power transmission line and new constructed substation around Gurara.

1.4.1. Definition of the Study Area

In consideration of the nature and the location of the potential future conditions and consequences, the study area with its related substation and the land around the tower foundation and ROW are included in the Impact Zone. This is the area in which implementation will bring about measurable and sometimes significant direct changes to the physical environment and ecology, social and economic conditions.

1.4.2. Characteristics of the project

The project design report was reviewed with particular reference to establishing the form and scope of the works, construction methods and materials, and operational characteristics. This has been carried out to identify potential sources of the impact of the project on the environment.

1.4.3. Collection and review of Available Information

The Team 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.

Relevant Environmental and Social Impact Assessment (ESIA) documents were reviewed to facilitate a better understanding of the work. All other necessary documents, such Gurara 230 kV transmission line and new constructed substation around Gurara Power Transmission Project previously ESIA, feasibility study, Ethiopia national environmental and social policies and strategies, national proclamations, and policies applicable to the proposed project were collected and reviewed, African

Development Bank Operational Safeguard, Integrated Safeguards System (ISS), Environmental, and Social Assessment Procedures (ESAP) and other guidelines, related project documents, and other different regional, zonal and city level magazines, newsletters and brochures were reviewed to analyses the overall biophysical environment and socio-economic status of the entire project affected areas.

1.4.3.1. Field Investigation

Members of the ESIA Team carried out site investigations in 1-25 July, 2023. During the field survey,the general baseline condition of the TL corridor was scrutinized. Notes on the observations and photographs of the valued projects and environmental components were taken.

The primary and secondary qualitative and quantitative data gathered from the aforementioned sources or activities, combined with the information extracted from previous studies and published literature, have been utilized to:

- Describe the baseline environmental and social settings of the project influence area, including the physical, biological, and socio-economic components of the environment; and
- Identify and characterize potential environmental and social impacts of the planned TL and substation project.
- Identify mitigation and management measures commensurate to the identified gaps.

1.4.3.2. Designed Questionnaire

To gather baseline information for the assessment, structured questionnaire, interview and consultation in Woreda's sector offices.

1.4.3.3. Stakeholder Engagement

The field investigation included public engagement/consultations with local community members, different stakeholders, and local authorities in the project-affected areas. Formal and informal consultations were made during the site visit to establish harmony with the local community and key stakeholders in the project area of influence. Informal discussions and interviews were made with key officials and experts of relevant local elected government offices.

Information related to existing environmental features and socio-economic characteristics, including constraints of the study area of influence, and attitudes of stakeholders towards the planned project were obtained during the consultations and interviews. This information and opinions have been considered in this ESIA study.

1.4.3.4. Description of the Baseline Environment

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

1.5. Environmental Mitigation and Benefit Enhancement Measures

Feasible and cost-effective mitigation and benefit enhancement measures that may reduce potentially significant adverse environmental impacts to acceptable levels are identified and recommended.

1.6. 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 or not the project as conceived is environmentally viable, or should be modified during design, construction, and/or operation phases to become acceptable.

1.7. Structure of the Report

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 as follows:

Table 1- 1. The structure of the report

Chapter	Description of content
Chapter 1	Presents an overview of the proposed project and its benefits. It gives information on the objectives, scope, and methodology of this ESIA.
Chapter 2	Provides a detailed description of the planned projects and components.
Chapter 3	Summarizes relevant national policy and sector strategy regarding environmental protection in Ethiopia 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;
Chapter 4	Gives an account of the physical, biological, and socio-economic environments within the Transmission Line Corridor and its influence area;
Chapter 5	Describes the project alternatives and analysis of the same concerning biophysical environmental, social, and economic features (including the "Without Project" option) which could be implemented to address the development needs of the country;
Chapter 6	Presents a detailed analysis of the impacts of the project on the physical, biological and socio-economic environment.

Chapter	Description of content
Chapter 7	Appropriate mitigation measures have been identified and recommended to avoid, minimize, compensate or mitigate the adverse environmental and/or social impacts;
Chapter 8	Presents results of public consultation with a project-affected community (including women, youth, elders, etc.) as well as other concerned key stakeholders at woreda levels. Perceptions and attitudes of project-affected communities and their leaders have also been presented
Chapter 9	Presents indicative environmental and social management plan. It also provides the management responsibilities relating to the mitigation measures associated with specific impacts;
Chapter 10	Discuss the institutional capacities and techniques in the area of environmental and social risk management and monitoring pieces of training
Chapter 11	Discuss the Grievance Redress mechanism concept, Submission Method, and Management.
Chapter 12	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
Chapter 13	Discusses environmental mitigation, management & monitoring costs
Chapter 14	Contains the conclusions and recommendations.

2. Project Description

2.1. Project Background

The project involves a transmission line (6.06 km) is to be constructed tapping off from an existing 230 kV line (Sululta-Legetafo) located within Akako Mena Abichu Woreda. The project shall also involve the construction of a 230/132/15kV Gurara substation 6.02ha in Yeka Sub-city Wereda 1.

Table 2- 1: Project Information

Project Name	Gurara 230 Power Transmission Project
Executive Agency	Ethiopian Electric Power (EEP)
Financer	Africa Development Bank (AfDB)

2.2. Project Justification

The prime purpose of this power transmission and substation project is that strengthen electricity in the Addis Abeba and surrounding areas. The various efforts exerted by the government in the Agricultural, Industrial and construction fields of the economy and most importantly the priority that the government has given to the expansion of the basic infrastructures to the city and rural population are believed to finally come up with a good country wise economic performance in the near future. For the high and reference scenarios for the period (2015-2019) growth assumptions are directly taken from the GTP-2 plan.

The supply of electricity will enable the city poor to use different purpose and there by producing higher output and increase their income which is highly crucial to poverty reduction. The supply of electricity will enable an increasing number of households to become connected to the network in the future, contributing to an improvement of the standard of living.

2.3. Project Location

Gurara 230 kV Substation is located in Yeka Sub-city wereda 1 of Addis Ababa, Capital City of Ethiopia, and the proposed Gurara 230 Kv power transmission line commences from LILO point (Tower No 16 of the existing Sululta- Legetafo 230 kV line at Sheger City Akako mena Abichu Woreda and ends at planned Gurara substation in Yeka sub city around Gurara.

Figure 2- 1: Location Map of the Project Area

2.4. Salient Features of the Project

The proposed 230 kV Power transmission project is around 6.06 km double circuit 230 kV transmission line from LILO point (Tower No 16) of the existing Sululta - Legetafo 230 kV line is to be extended to the planned Gurara substation in Yeka sub city.

The proposed 230kV substation project is around 62159.97M^2 and found in Yeka sub city wereda 1 arund gurara.

2.4.1 Transmission Tower

The towers shall be double circuit transmission line tower. The average spans between the two towers will be 350 meters. Approximately, about 17 transmission towers will be erected and for it, an estimated 0.0612 ha of land (17 towers x 6 m x 6 m ÷ 10,000) permanently occupied by tower pads/ foundation.

2.4.2 Right of Way /RoW/

According to the Ethiopian Electricity Agency directives of overhead electric line clearance 30m wide ROW is required for 230 kV. Therefore, 24.24 ha (6.06 km * 40 m=242400m^2) including 0.0612 ha for tower foundation place will be required.

The RoW is required to ensure the safe construction, maintenance and operation of the power line.

2.4.3 Substation

The scope of the substation is to build 230/15 kV around Gurara. A total of 6.21 ha of land required for the new substation construction at Gurara, and the land is already taken from the Addis Abeba City and Ethiopian Electricity Power paid for the substation land 2,000,000.00 ETB for the City administration.
The new Gurara substation work involves the following works

- Bus Bar Configuration
  - ✓ 230 kV double bas bar system
- Transformer Configuration
  - ✓ 2 x 230/132 kV, 125MVA
- Line bays
  - ✓ For 230 kV
  - ✓ Sululta line
  - ✓ Legetafo line
- Number of feeders
  - ✓ 8 X 15 kV feeders with sectionalizer
- Coupler bay
  - ✓ 1x 230 kV coupler bay

Figure 2- 2: Photo during assessment in the transmission line

2.5. Ancillary Activities

Camp sites, quarry sites, borrow pits, spoil disposal sites, and access roads are expected to be involved in the planned PTL's implementation. The locations of auxiliary activities have yet to be chosen. Local government officials and community representatives will help to choose the locations.
If the contractor is required to designate land for those activities, Operational Safeguard (OS2) and compensation payment should be considered, and the contractor ensure the preparation of Site Specific Environmental and Social Management Plan (SS-ESMP) for these ancillary facilities including proper mechanisms for monitoring the consequences of ancillary activities

Construction Phase Activities

In order to safely construct and install the overhead transmission lines, the contractor must prepare and submit detailed Method Statements to the Project Engineer.

Some of the most important substation and transmission line construction activities are as follows:

- 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;
- Energizing, and
- Site rehabilitation.

Site Clearing: Vegetation clearance will be minimal in the ROW other than the access track, although vegetation clearance will be required in the immediate area of the tower foundations. Only trees that pose a threat to the transmission line will be removed.

All vegetation clearance will be done by hand rather than using heavy machinery.

Excavations: The size of the foundation is determined by the soil conditions, tower type, and height. Self-supported steel lattice type single-circuit towers will be examined in this project.

Excavators are required to open the earth in order to prepare the foundation solution. Typical lattice tower, excavation depths will depend on soil conditions. To ensure its suitability, each excavation will be inspected and tested.

Concrete is used to fill the foundations. Contractors must protect excavations, which may include installing a temporary fence or warning solution around the excavation to protect people and animals.

Access Roads: To get access along the whole length of the transmission line, access roads will require. They are necessary during the transmission line life cycle's building, operation, and maintenance phases.

In the area where access is currently unavailable, access roads will be built in consultation with local residents and will take into account existing land usage to transport construction equipment, line inspections, maintenance activities, and employees to and from the tower foundations. As deemed necessary, the contractor would need to prepare and implement an environmental and social management plan to manage and monitor impacts generated due to access road construction and operation activities.

Contractor's facilities and worker camps: The contractors will require space to set up their temporary labor camps, as well as stores, warehouses, machine/equipment parking yards, and material stockpiling yards, among other things, which will be determined by the contractor in cooperation with local authorities and community leaders. The exact location of the construction camp (s) must be negotiated with the relevant land administrators, and the site selection must take into account any sensitive areas identified by this assessment in order to avoid any negative impact resulting from the location and construction of the camps. The contractor would need to prepare and implement a Campsite Management Plan to manage and monitor impacts generated due to campsite construction and operation activities.

Spoil Disposal Site: Excavation activities, such as the removal of earth or rock from the tower foundation,

are expected, as are other activities. All of the removed dirt or rock from the project will be stored in a designated area by the contractor. The excavated material would be managed by the contractor through minimizing the amount of spoil generated as much as possible. The contractor would need to prepare and implement a Spoil Management Plan to manage and monitor spoil generation, management, categorization, storage, and disposal. The spoil disposal location will be chosen for its low environmental impact, particularly on the protected region.

Quarries and borrow pits: Construction materials will be extracted from quarries and borrow pits as part of the proposed project. The borrow pits that will be used are still unknown. Existing quarry sites would be used whenever possible, where accessible and sufficient to reduce the potential consequences of quarries and borrow pits. Furthermore, it is vital to avoid or mitigate negative environmental impacts. The contractor would need to prepare and implement quarry and borrow pits management plan to manage and monitor impacts generated due to the construction and operation activities of quarry and borrow pits.

***Water Supply Requirements*:** During the project phases, water is a valuable resource that is used for a variety of functions, including concrete work, drinking, and domestic consumption by project personnel. For the construction and camping requirements, the Contractor will need to build its own water supply sources (i.e., buy water from approved suppliers or wells).

Land required for the Project: The total land take is estimated being 30.45 ha for the 24.24 km TL and the 40m ROW. The permanent footprint of the 17 tower foundation is 0.0612 hectares and 6.21 ha for the substation and the substation area is already paid 2,000,000.00ETB for the Addis Abeba city Administration.

Requirements for Raw Materials/Construction Materials: The proposed transmission line project will demand a large amount of materials. These materials include cement, coarse aggregates, sand, and steel. All concrete and backfill materials, such as gravel and sand, will be acquired from nearby aggregate production facilities.

Labour Requirements: Local inhabitants will be employed on a temporary basis while the proposed project is being constructing. The transmission line's construction will require the hiring of skilled, semi-skilled, and unskilled workers (recruited locally). The teams will be different depending on the job, such as foundations, tower installation, cable stringing, and substation building. As much as possible, residents from the areas served by the project will be hired as unskilled laborers. These individuals will receive sufficient training prior to the start of construction.

Energizing, Testing and Commissioning: Tests will be conducted to ensure that the line meets the requirements. Once the work is completed, a physical inspection and check of the foundation construction, tower erection, and stringing will be performed to verify the implementation to the technical standards.

The provider of each component must design and build the component in conformity with the standard, as well as subject it to any testing required by the applicable standard for that component. If the particular component fits the standard's requirements and related testing criteria, it will be considered in compliance with the standard.

Line ground clearance will be properly examined during testing. Before final commissioning, the

transmission line will be insulated and continuity tested, as well as the earth resistance of each tower.

Operation and Maintenance*:*

After the construction is completed, EEP will be in charge of the operation and maintenance of the 230 kV transmission line. The key operations to be carried out during the transmission line's operation life are observation of the transmission line's condition, emergency maintenance and repairs, and vegetation control. The EEP is in charge of controlling future land uses along the RoW and ensuring that no new structures are constructed. Buildings must be kept at a safe distance from line wires in particular.

To ensure the line's safety and reliability, vegetation on the right-of-way will be monitored. Therefore, vegetation cover will need to be cleared occasionally to ensure that vegetation does not interfere with the operation of the lines. Vehicle access to the ROW will be required for line maintenance, as well as any localized erosion or terrain instability issues that may develop.

2.6. Decommissioning

Because of its long life cycle, the circumstances under which the line might be decommissioned and abandoned are difficult to anticipate. Towers may be renovated or refurbished based on a cost-benefit analysis and new technologies.

The proposed power transmission line will be maintained and repaired on a regular basis and will be active for numerous decades. However, if decommissioning is required, EEP must create a thorough Decommissioning Management Plan at the time. Therefore, the decommissioning approach will incorporate site-specific rehabilitation plans for the project's area.

All regulatory requirements will be met during the decommissioning phase.

3. Environmental 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 Gurara 230 kV Transmission Line and Substation Project has been updated to comply with the Ethiopian (EPA's). In addition, this ESIA has been updated in compliance with Environmental and Social Assessment Procedures of AfDB Public Sector Operations, June 2001 African Development Bank (AfDB) Environmental & Social Assessment Procedures(ESAP) AfDB Operational Safeguard Policy.

In the following section relevant national policies, strategies, legal and institutional frameworks, guidelines, national and international agreements are critically reviewed and summarized to make sure that the proposed Gurara 230 kV 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 related sectoral policies and environmental proclamations, and supporting regulations and guidelines.

3.1.1 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- 1: Summary of Institutional for environmental and related responsibilities of relevant institutions

No	Institutional Arrangement	Relevance
1	Institutional Arrangement for ESIA (Federal and Regional)	***Regional Environmental Agencies/Bureau:*** 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. ▪ 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. ▪ 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. ▪ provide environmental clearance certificate through reviewing ESIA reports with their respective region ***Addis Ababa Environmental Protection Authority (AA EPA)*** The Addis Ababa Environmental Protection Authority has the following duties and responsibilities within the Addis Ababa City boundary: • Follow up the implementation of the national policy and laws; • Prepare regional environmental protection and directives and upon approval follow up and supervise their implementation; • Regulate and follow up that any development shall conduct ESIA prior to the project implementation and undertake review of the project ESIA; • Undertake environmental. auditing of industries for the safe disposal and management of liquid and

No	Institutional Arrangement	Relevance
		toxic wastes; • Prepare appropriate standards to protect the environment that include soil, water and air as well as the biological system in the City
		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. The proposed project will need to engage with the EPA to obtain the required environmental clearance and permits. In 2013, Ethiopian Electric Power Corporation has been restructured into two institutions. Namely, the Ethiopian Electric Power (EEP) and Ethiopian Electric Utility (EEU) aim at the facilitation of the sector`s efficiency and effectiveness. Based on public enterprises Proclamation and Regulations (Proclamation No. 25/1992 and the Regulation Nos. 302/2013 and 303/2013) issued by the council of minister. 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: ▪ Undertake feasibility studies, design, and survey of electricity generation, transmission, and substation; to contract out such activities to consultants as required; ▪ Undertake electricity generation, transmission, and substation construction, and upgrading. EEP shall contract out such activities to contractors as required;

No	Institutional Arrangement	Relevance
		▪ Lease electricity transmission lines as required; ▪ Sell bulk electric power; and ▪ 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. 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. ▪ Facilitating the integration of environmental concerns into electric power projects; ▪ Conduct or supervise environmental assessment for EEP; ▪ Ensure that mitigation measures, conditions and specifications are fully implemented during construction and resolving problems as encountered; ▪ Supervise restoration of the construction area to its natural state that was affected during the construction period of a project; ▪ Facilitate and ensure compensation payment for material damage in the implementation of power projects; ▪ Monitoring proper implementation during resettlement and post resettlement of communities; ▪ Submit ESIA and other environmental review documents to EPA for review and approval and

No	Institutional Arrangement	Relevance
		clarify request; ▪ Conduct and supervise community safety program around electric power lines, plants, etc., and monitor its implementation; ▪ Conducting periodic environmental monitoring during construction activities (dumping areas, health, and safety, discharge of untreated water, dust pollution, etc.); and ▪ Advise on environmental and social issues for EEP investments
		The Ethiopian Energy Authority (EEA): 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) The proposed Gurara 230 kV Power Transmission Project will need to engage with the appropriate authorities/ministries to implement.
2	Institutional Arrangement for Environment, Protection Authority (EPA)	EPA: EPA is an autonomous government body established by proclamation No.1097/2018. EPA is the key institution at the federal level which has responsibilities on environmental protection and engages in environmental issues and 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 the federal level including coordinating activities to ensure that the environmental objectives provided under the Constitution and the basic principles set out in the Environmental Policy of the Country are realized. It is also responsible to establish a system for evaluating and deciding on the impacts of implementing investment programs and projects on the environment, under the Environmental Impact Assessment Proclamation.

3.1.2 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.

3.1.3 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 3.2 below summarizes policies and strategies relevant to the proposed project.

Table 3- 2: Summary of relevant policies and strategies

Policies/Strategies	Relevance
Environmental Policy,1997	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:- **1.** To conserve, develop, sustainably manage and support Ethiopia's rich and diverse cultural heritage; **2.** Prevent the pollution of land, air, and water most cost-effectively; **3.** To ensure policies and instruments support conservation of biological diversity; **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 **5.** To give priority to waste collection and its safe disposal. 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.

Policies/Strategies	Relevance
Health policy	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. 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.
Water Resources Policies	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. 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. 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, adequate measures should be implemented to avoid negative impacts.
National Biodiversity Policy 1998	Objective: The key objective of this policy is to conserve, develop and utilize the country's biodiversity resources. Relevance to the Project: Integration of biodiversity conservation and development into federal and

Policies/Strategies	Relevance
	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.
Revised National Biodiversity Strategy and Action Plan (2015-2020	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. 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.
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

Policies/Strategies	Relevance
	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).

Policies/Strategies	Relevance
Cultural Policy of Ethiopia	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. 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. It also devised implementation strategies, which includes: ▪ The country's heritages shall be protected and maintained following their cultural and historical values by devising and applying a heritage management system ▪ 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" under article 2.3 Relevance to the Project: In planning and implementation of the Gurara 230kV 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.
The National Conservation Strategy-1994	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

Policies/Strategies	Relevance
	resource in the project area at different stages of the project.

3.1.4 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- 3: Summary of relevant Proclamations and Regulations

Proclamations/ Regulations/Directives	Relevance
Environmental Impact Assessment Proclamation No. 299-2002	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: **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); **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; **3.** The EPA or the relevant REA (depending on the degree of expected impacts) may waive the requirement for an EIA; **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; **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;

Proclamations/ Regulations/Directives	Relevance
Environmental Pollution Control Proclamation No. 300-2002	Objective: This proclamation is promulgated to eliminating or, when not possible mitigate pollution as an undesirable consequence of social and economic development activities. 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. 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.
Establishment of Environmental Protection Organs (Proclamation No. 295/2002)	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 required to get an environmental clearance certificate from the relevant environmental protection agency before project implementation.
Solid Waste Management Proclamation No. 513/2007	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. 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.

Proclamations/ Regulations/Directives	Relevance
Directive on Overhead Electric Lines and Quality of supply (no. EEA/1/2005	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. 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.
Labour Proclamation 377/2003 and156/2019	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. 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. The proclamation also states that no one may employ persons under 15 years of age. 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

Proclamations/ Regulations/Directives	Relevance
	same article the employer is obliged to take particular measures to safeguard the health and safety of the workers, as follows: ▪ To comply with the occupational safety and health requirements; ▪ Take appropriate steps to ensure that workers are properly instructed; ▪ Establish an occupational, safety, and health committee; ▪ Provide workers with protective equipment, clothing, and other materials and instruct them of its use; ▪ 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. 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. 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. 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.

3.2. 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 3.4 below summarizes of details of major environmental guidelines relevant to the Gurara 230KV transimission line and Substation Project.

Table 3- 4: Summary of environmental guidelines relevant to the proposed project

No	Name of guideline	Summary
1	EIA Guideline,2000	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. The guideline recommends implementing a cleaner production strategy- alternative product, production processes, raw materials, energy sources, preventing or reducing waste, waste recycling, re-use, and introducing water and energy-saving measures.
2	EIA Procedural Guideline, 2003	This guideline aims to assist proponents and consultants in carrying out their environmental assessment-related tasks and also other parties who engage in EA processes to realize their rights, roles, and responsibilities. The guideline outlines the screening, review, and approval process for development projects in Ethiopia and defines the criteria for undertaking an EIA. The procedural guideline requires a proponent to submit an Initial Environmental Examination report to enable the relevant environmental agency to decide the application of a further level of assessment depending on the outcome of a screening report. At this level of examination, the decision may be either of the following: no EA required, a preliminary assessment is applied to or full-scale EA applies where the project is found to be one that may have significant impacts. This guideline encourages the development and sustainable use of efficient alternative energy sources to enhance the protection of the forest.

		This guideline categorizes energy projects including high voltage TL projects as a Schedule-I list of projects that require full environmental impact assessment.
3	Guideline for Environmental Management Plan, 2004	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.
4	Environmental Impact Assessment Process	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:- Pre-screening Consultation: 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. Screening: 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. Scoping: 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. Environmental Impact Study: 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. Reviewing: 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 Decision Making: 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. Systematic follow-ups (monitoring and auditing of impacts): Systematic follow-ups are undertaken to ensure that the anticipated impacts are maintained within the levels predicted, to see that the 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. 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. 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.

3.3. Energy Policy, Regulation, and Proclamation with Emphasis for Energy Transmission and Distribution

3.3.1 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.

3.3.2 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.

3.3.3 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 Route) 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).

3.4. 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.

3.4.1. 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.

3.5. 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).

3.5.1 The Constitution of Ethiopia

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.

3.5.2 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
Institutional responsibility	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. 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

Theme	Relevant Sections
	pastoralists and maintain records and evidence relating to the displaced.
Land Requiring Body	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
Landholder notifications for expropriation, compensation, and land handover	Article 8 sub-articles 1-9 require the city Administration or Woreda: ▪ 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 ▪ 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 ▪ 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 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. 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. Where the land expropriated is under illegal occupation, the occupant shall evacuate without claim for compensation within 30 (thirty) days of notice.
Removal of Utility Lines	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. 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. The utility line-owner shall remove utility lines and clear the land within 60 (sixty) days after the payment has been made. The utility line-owner shall remove complex utility lines and clear the

Theme	Relevant Sections
	land within 120 (one hundred and twenty) days after the payment has been made.
Compensation	Article12 (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. 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. 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.
Valuation of Property	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. Where there is no private certified property valuation organization or individual Consultant, the valuation shall be an Autonomous Government Organization established for this purpose. 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.
Grievance resolution	Article18 (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 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)

Theme	Relevant Sections
	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

3.5.3 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
Compensation Assessments	Compensation for Building (Article16): 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. Compensation for fences: 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). 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. Compensation for Crops (Article 19): 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. Compensation for perennial crops (Article 20): 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. Compensation for fruitless trees (Article 21): 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. Compensation for protected grass (Article 22): 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 Compensation for a licensed miner (Article 23): 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.
Theme	Relevant Sections
	Compensation for Burial-ground (Article 24): 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. Compensation for rural land (Article 25): The amount of annual production of the three years of production shall be calculated at the present rate before the rural owner is removed. Compensation for permanently displace rural landholder (Article 26): 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. Compensation for permanently displaced urban landholder (Article 28): 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. Compensation for severed social relationship and moral damage(Article 30): the amount of compensation for severed social relationship and moral damage shall be 25,000- 60,000
Valuation formula (Article 13 (1-6))	Compensation for building = Current building cost + permanent improvement cost 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 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 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 Compensation for unripe perennial crops = number of plant legs X cost incurred to grow 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 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
Theme	Relevant Sections
	Burial Ground compensation =cost of corpse pickup burial ground preparation cost +cost of corpse transport and relocation +cost of religious and cultural ceremonies For rural landholder who does not receive replacement farmland displacement compensation = annual income x15 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
Support for displaced people	Support for displaced rural landholders shall be determined by the directive that shall be issued by regional slates. 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
Providing substitute land or housing	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
Resettlemen t package	Resettlement package: This package shall contain residential housing, livelihood option, social services like roads, health clinics, schools religious site, training counseling, credit access, etc.

3.5.4 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
Holding right	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)).
Communal holding	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)).
State holding	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)).
Acquisition of land	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)).
Women rights	Women who want to engage in agriculture shall have the right to get and use rural land (Article 5(1c))
Security of Tenure	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)).

Compensation	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)).
Transfer of rural land use rights	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))
Dispute Resolution	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)

3.6. 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.

3.8. Environmental and Social Safeguard Policies and Procedures of African Development Bank

3.8.1. 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 if the project is 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 Gurara 230kV 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.

3.8.2. Environmental and Social Assessment Procedures of AfDB Public Sector Operations, June 2001

The main purpose of the Environmental and Social Assessment Procedures (ESAP) is to improve decision-making and project results to ensure that Bank-financed projects, plans, and programs are environmentally and socially sustainable as well as in line with the Bank's policies and guidelines. The ESAP intends to replace the actual procedures and integrate all crosscutting considerations into the new assessment process. The ESAP describes the various steps that shall be followed to mainstream cross-cutting issues along the project cycle, from country programming to post-evaluation. The first step consists in developing and updating baseline data on Regional Member Country's environmental and social components, policies, programs, and capacities to better integrate environmental and social dimensions into lending priorities during country programming. At the project identification phase, the screening exercise focuses on the environmental and social dimensions of a project to categorize it in one out of the four following categories:

Category 1: projects are likely to induce significant and/or irreversible adverse environmental and/or social impacts, or to significantly affect environmental or social components that the Bank or the borrowing country considers sensitive. Some program-based operations or other regional and sector program loans have significant adverse environmental or social risks and are deemed to be Category 1. In some cases, projects are included in Category 1 because of their potential cumulative impacts or the potential impacts of associated facilities. Any project requiring a Full Resettlement Action Plan (FRAP) under the provisions of the Bank's policy on involuntary Resettlement is also deemed to be a Category 1.

Category 1 program-based operations or regional and sector loans require a SESA, and Category 1 investment projects require an ESIA, both leading to the preparation of an ESMP. For a project requiring a FRAP, the ESIA includes, and-if there are no other issues requiring assessment may be limited to, the social assessment needed to prepare the FRAP. Given the nature and scope of the proposed Gurara 230/kV transimission line and Substation Project, the proposed project is assigned under this Category 1 and subject to the preparation of full Environmental and Social Impact Assessment (ESIA).

Category 2: Bank operations are likely to cause less adverse environmental and social impacts than Category 1. Category 2 projects are likely to have detrimental site-specific environmental and/or social impacts that are less adverse than those of Category 1 projects. Likely impacts are few in number, site-specific, largely reversible, and readily minimized by applying appropriate management and mitigation measures or incorporating internationally recognized design

criteria and standards. An operation that involves resettlement activity for which Resettlement Action Plan (RAP) is required under the ESAPs is classified as Category 2. Most programmed based operations and regional or sector program loans designed to finance a set of subprojects approved and implemented by the borrower or client are included in this category unless the nature, scale, or sensitivity of the intended pipeline of subprojects involves either a high level of environmental and social risk or no such risk.

Category 2 projects require an appropriate level of environmental and social assessment (ESA for program operations, investment plans, and some corporate loans, or ESIA for investment projects) tailored to the expected environmental and social risk so that the borrower can prepare and implement an adequate ESMP (for an investment project) or ESMF (for a program operation), to manage the environmental and social risks of subprojects in compliance with the Bank's operational safeguards.

Category 3: Bank operations with negligible adverse environmental and social risks

Category 3 projects do not directly or indirectly affect the environment adversely and are unlikely to induce adverse social impacts. They do not require an environmental and social assessment. Beyond categorization, no action is required. Nonetheless, to design a Category 3 project properly, it may be necessary to carry out gender analyses, institutional analyses, or other studies on specific, critical social considerations to anticipate and manage unintended impacts on the affected communities.

Category 4: Bank operations involving lending to financial intermediaries

Category 4 projects involve Bank lending to financial intermediaries that on-lend or invest in Subprojects that may produce adverse environmental and social impacts. Financial intermediaries include banks, insurance, reinsurance, and leasing companies, microfinance providers, private equity funds, and investment funds that use the Bank's funds to lend or provide equity finance to their clients.

Financial intermediaries also include private or public sector companies that receive corporate loans or loans for investment plans from the Bank that are used to finance a set of subprojects. Financial intermediary subprojects equivalent to Category 1 and Category 2 are subject to the relevant OS requirements as if they were directly financed Category 1 or Category 2 projects. However, if a client will use a Bank corporate loan to finance high-risk investment projects known at the time of loan approval, the loan can be considered Category 1.

Because of the above categorization, high voltage power transmission lines would fall into Category I or II depending on the anticipated severity of impacts.

Transmission line projects categorized in 1 usually require a full ESIA study. But those in category II pose medium impacts and require moderate environmental analysis. However, if a category II project is located in or close to environmentally sensitive areas, it should be treated as equivalent to a Category I project.

However, according to the AfDB's project category, Gurara 230kV Power Transmission Project falls under Category- I and Schedule 1, as per the national Environmental Impact Assessment (EIA) Procedural Guidelines (November 2003).

In General, the triggered OS for the Gurara 230kV Power Transmission Project are listed in Table 3.8 below

Table 3- 8: AfDB Operational Safeguard Policy (OS) triggered by the project

AfDB Operational Safeguard Policy	Summary of Core Requirements
OS1–Environmental and Social Assessment	Borrowers or clients are responsible for conducting the environmental and social assessment (Strategic Environmental and Social Assessment, or SESA, or Environmental and Social Impact Assessment or ESIA) and for developing, as an integral part of project documentation, an appropriate plan for managing possible impacts. It categorizes proposed projects into categories 1, 2, 3, 4, and 5 based on the extent of adverse impacts anticipated from the Project. The overall objectives of this OS are The specific objectives are to: • Mainstream environmental, climate change, and social considerations into Country Strategy Papers (CSPs) and Regional Integration Strategy Papers (RISPs); • 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; • Avoid or, if avoidance is not possible, minimize, mitigate and compensate for adverse impacts on the environment and on affected communities; • Provide for stakeholders' participation during the consultation process so that affected communities and stakeholders have timely access to information in suitable forms about Bank operations, and are consulted meaningfully about issues that may affect them; • Ensure the effective management of environmental and social risks in projects during and after implementation; and

AfDB Operational Safeguard Policy	Summary of Core Requirements
	• Contribute to strengthening regional member country (RMC) systems for environmental and social risk management by assessing and building their capacity to meet AfDB requirements set out in the Integrated Safeguards System (ISS).
OS2-InvoluntaryResettlement: Land Acquisition, Population Displacement and Compensation	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, and stakes in the project outcome, do not disenfranchise particular project-affected people.
OS3-Biodiversity, renewable resources, and ecosystem services	This Operational Safeguard (OS) outlines the requirements for borrower s or clients to (i)identify and implement opportunities to conserve and Sustainably use, biodiversity and natural habitats, and (ii) observe, implement, and respond to requirements for the conservation and sustainable Management of priority ecosystem services.
OS 4–Pollution prevention and control, hazardous materials and resource efficiency	This OS outlines the main pollution prevention and control requirements for borrowers or clients achieve high quality environmental performance, and efficient and sustainable use of natural resources, over the life of a project. It draws on and aligns Bank operations with existing international conventions and standards related to pollution, hazardous materials and Waste And related issues.

AfDB Operational Safeguard Policy	Summary of Core Requirements
OS5–labour conditions, health and safety	This OS outlines the main requirements for borrowers or clients to protect the rights of workers and provide for their basic needs. When the borrower or client intends to employ a workforce for a project, it develops and implements a human resources policy and procedures appropriate to the nature and size of the project, with the scale of the workforce in alignment with this OS and with applicable national laws. The OS requires the protection of the workforce through the institution of appropriate health and safety measures considering risks in the particular sector and specific classes of hazards in the borrower's work and does not support the use of child labour and forced labour

3.8.3. 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 pahse1): 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 pahse1): 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 poste valuations 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.

Environmental and Social Assessment (OS 1)

Objectives of this operational Safeguard are:

- To identify and assess the environmental and social impacts (including gender) and climate change vulnerability issues of Bank lending and grant financed operations in their area of influence
- To avoid or if not possible minimize, mitigate and compensate for adverse impacts on the environment and on affected communities;
- To ensure that affected communities have timely access to information in suitable forms about Bank operations and are consulted meaningfully about issues that may affect them

Under the Bank's OS 1 following four Categories are defied and included:-

Category 1: Bank operations likely to cause significant environmental and social impacts. Category 1 projects are likely to induce significant, irreversible adverse environmental and / or social impacts, or significantly affect environmental or social components that the Bank or the borrowing country considers sensitive.

Category 2: Bank operations likely to cause less adverse environmental and social impacts than Category 1. Category 2 projects are likely to have detrimental site-specific environmental and / or social impacts that are less adverse than those of Category 1 projects can be minimized by applying appropriate management and mitigation measures or incorporating internationally recognized design criteria and standards.

Category 3: Bank operations with negligible adverse environmental and social risks. Category 3 projects do not directly impact the environment adversely and are unlikely to induce adverse social impacts. They do not require an environmental and social assessment.

Category 4: Bank operations involving lending to Financial Intermediaries. Category 4 projects involve Bank lending to Financial Intermediaries (FIs) who on-lend or invest in subprojects that may produce adverse environmental and social impacts.

Relevance: This OS is applicable as the Gurara 230 kV Power Transmission Project is categorized as category 1 project where ESIA is mandatory and potential risks and impacts including physical, biological, socio-economic, health, safety and cultural property are likely to occur associated with the proposed project activities.

Involuntary Resettlement: Land Acquisition, Population Displacement and Compensation (OS 2)

Objectives of OS 2 include:

- Avoid involuntary resettlement where feasible, or minimize resettlement impacts where involuntary resettlement is unavoidable, exploring all viable project designs;
- Ensure that displaced people 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;
- To set up a mechanism 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

Relevance: This OS will be applied as there will be Involuntary Resettlement due to the implementation of the proposed Gurara 230 kV Power Transmission Project.

Biodiversity and Ecosystem Services (OS 3)

Objectives of OS 3 include:

- Preserve biological diversity by avoiding, or if not possible, reducing and minimizing impacts on biodiversity;
- In cases where some impacts are unavoidable, to endeavor to reinstate or restore biodiversity including, where required, the implementation of biodiversity offsets to achieve "not net loss but net gain" of biodiversity;
- Protect natural, modified and critical habitats; and
- Sustain the availability and productivity of priority ecosystem services to maintain benefits to the affected communities and to sustain project performance.

Relevance: This OS is applicable and considered since the Gurara 230 kV Power Transmission Project would be located in areas providing ecosystem services upon which potentially affected communities are dependent for survival, sustenance, and livelihood.

Pollution Prevention and Control, Greenhouse Gases, Hazardous Materials and Resource Efficiency (OS4)

Objectives of OS 4 include:

- Manage and reduce pollutants likely to be caused by a project so that they shall not pose harmful risks to human health and the environment, including hazardous, non-hazardous waste and GHG emissions and,
- Set a framework for efficiently utilizing all a project's raw materials and natural resources especially focusing on energy and water.

Relevance: The project will contribute in reduction of GHG emissions .However, this OS will be considered since the Gurara 230 kV Power Transmission Project will likely to cause significant adverse environmental or social impacts owing to waste generation during different phase of the project and the need to avoid, prevention and control such wastes and the need to properly utilize

locally available limited resource including water, land, construction material and other resources.

Labour Conditions, Health and Safety (OS 5)

Objectives of OS 5 include:

- Protect the workers' rights and to establish, maintain, and improve the employee – employer relationship;
- Promote compliance with national legal requirements and provide due diligence in case national laws are silent or inconsistent with the OS;
- Provide broad consistency with the relevant International Labour Organization (ILO) Conventions, ILO Core Labour Standards and the UNICEF Convention on the Rights of the Child in cases where national laws do not provide equivalent protection;
- Protect the workforce from inequality, social exclusion, child labour and forced labour; and
- Establish requirements to provide safe and healthy working conditions
- Relevance: The project will involve the establishment of a temporary or permanent workforce during construction and implementation phase of the project.

4 Baseline Environment

4.1. General

The Gurara 230 kV Power Transmission Line and substation Project is situated in the North East of Addis Ababa City and Akako mena Abichu district and covers approximately 6.02 km long and 40 m wide route corridor and 6.02 ha substation area.

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 and the substation area. Physical observation, Key Informant Interview (KII), stakeholder consultation, transect walk and analysis of satellite image 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 were used to comprehend precisely of the study area.

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. Topography and Climate

Topography: The proposed transmission line route and substation are located in a high-altitude area with undulating terrain. The altitude at the tap off point on the existing Sululta- Legetafo 230 kV transmission line approximately 3058m above sea level this gradually reduces as one moves South East towards the terminal tower in Yeka Sub City (approximately 2698m above sea level). Several rises and falls are observed along the transmission line corridor.

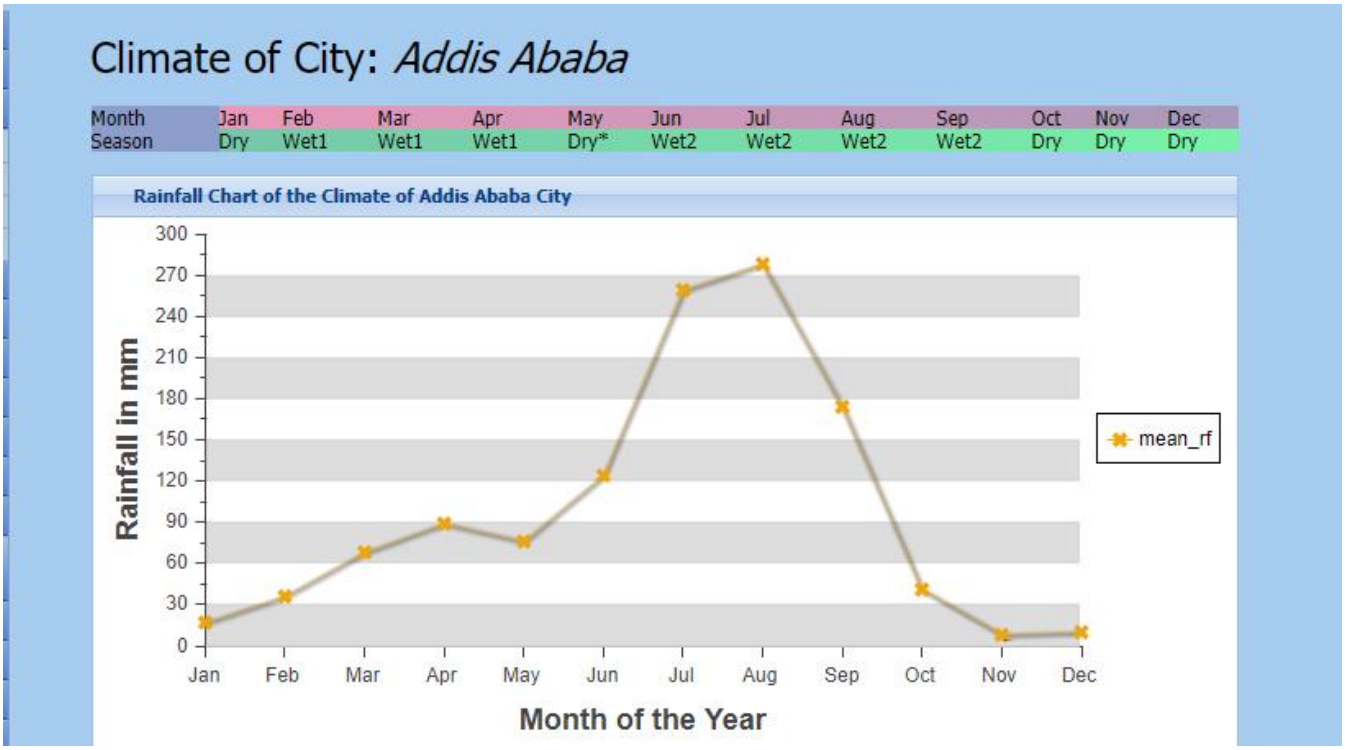
The substation area is found Yeka sub-city is located in the North east Part of Addis Ababa city. The altitude range extends 2546 – 2704 m above sea level.

Mena Abichu subcity exhibits three major agro ecological conditions. These are Kola (Low altitude), which accounts 3.6%, Dega (high altitude) that covers 71% of the study area and Woina Dega (mid altitude) climate comprises 25.4% of the area.

Climate: The total annual rainfall of the study area is about 1722.6 mm with an average of 1143.5mm. Addis Ababa where the nearest climate monitoring station is located has one main wet season between June and September and a minor wet season betweenFebruary and April.

The mean annual temperature is 15.36℃ with the mean minimum of 6.2℃ in Decemberand maximum 22.9℃ in February and May.

Figure 4- 2: Rain fall chart for Addis Abeba



Source: Previous Environmental and social impact Assessment, 2021

4.2.2. Land cover and land use

Land cover within the project area is varied between cultivated land and forest plantation. However, an estimated 55% of the line corridor is through planted forest area with Eucalyptus as the predominant tree species.

Around 4.09 km of the transmission line traverse an Eucalyptus forest plantation (government owned) and the remaining is agricultural land.

4.2.3. Geology and Soils

Soils identified along the TL route length generally vary with the geology, landscape and topography of the area. Generally, the Geology map for Addis Ababa indicates that the project area lithology is comprised of both basaltic volcanic rock and ignimbrite on the northern and trachyte as one moves south wards along the line route. And the soil type of Akako Mena Abichu: Cambisols, Nitosols and Vertisols are typical of the soil composition

Observations during Site visit indicate that soils around substation area to the first 3km of the power line are used for forest plantation. These are predominantly red-brown in color. soils are red-brown though rock outcrops are observed as well as easily erodible sandy-clays (see figure 4.2). Further along the soils are similar in colourhowever more organic matter is present in the topsoil layer within the forested section.

Figure 4- 3: Rock with little or no overburden observed within the site for the Gurara Substation

Detailed soil investigation will be conducted by EEP prior to construction of the proposed line as knowledge of soil profile is required for design decisions for foundation types and size.

4.2.4. Drainage and Water Resources

Natural drainage of storm water is southwards as one move along the proposed transmission line route corridor. Surface water was observed about 200m to the left of the proposed transmission line corridor. This is a domestic supply of water in addition to being used for watering animals.

Figure 4- 4: Resident fetching water from surface water source.

Water quality investigations were conducted during the previous ESIA baseline studies. Analysis of samples indicates that the surface water sources have detectable coliforms.

Table 4- 1: Water characteristics

Parameter	Surface water@ 047889E 1005911N	Surface water@ 0479277E 1006277N	WHO Guideline value
pH (Units)	7.2	6.5	6.5 to 8.5
Electrical Conductivity (µS/cm)	31.6	155.7	<400

Total Suspended Solids (mg/l)	46.5	115.5	<100
Total Dissolved Solids (mg/l)	119	229	300-600
Total Alkalinity (millmole/L)	14.85	24.75	20-200
Chemical Oxygen Demand (mg O2/L)	32	19.2	<20
Biological Oxygen Demand (mg O2/L)	25.6	15.2	30-100
Chloride (mg/L)	0.29	31.47	<200
Coliforms (CFU/100ml)	63	7000	<1000

4.2.5. Air quality

The World Health Organization (WHO) has defined guideline values for key pollutants.

Table 4- 2: WHO Guideline values for Outdoor Air Quality

Pollutant	Averaging Period	Guideline value
PM 10	Annual	20 µg/m^3
	24 hr	50 µg/m^3
Pm 2.5	Annual	10 µg/m^3
	24 hour	25 µg/m^3

Air quality samples taken within the project area indicate that the air quality in the project area was good however deteriorates as one moves closer to the City. Results recorded at Gurara substation were higher than the WHO guideline value respirable fine particulate matter (PM2.5).

Table 4- 3: Baseline Air quality recorded within May 2021

	GPS Location	PM 2.5 (µg/m^3)	PM 10 (µg/m^3)	TP(p/L)	CO (ppm)	Noise Leq (dB(A))	Temp (°C)
Point 1	0480133 1006840	9.2	12.2	13705	00	55.1	19.8
Point 2	0478116 1005202	15	20	14205	00	43.2	17.4
Point 3	0477888 1004604	12.3	16.3	17185	00	49.4	20.5
Point 4	04776967 1003592	12.5	16.9	17996	00	45.5	24.1
Point 5	0476653 1003334	20.1	27.6	29576	00	51.7	21.5
Point 6 (Gurara SS)	0475246 1002530	36.6	48.3	54900	00	59.1	19.9

4.3. Biological Environment

4.3.1. Flora

The natural vegetation in the project corridor area include : Olea Africana (Woyra),Cordia africana (Wanza), Acacia Species (Girar), Croton Macrostachys (Bisana), Azedarachindica (kinin/nim), Eucalyptus spp (BahrZaf), Sesbania sespan (Sesbania), Cupresess lustanica (Tsid), Gravilia robusta, Ficus vasta (Warka), Ficussur (Shola) found in the project area .

During the site visits , the existing flora species in and around the project area are characterized by natural and plantation vegetation species like *Eucalyptus* spp (Bahir-zaf), *Juniperus procera* (Tid) plantation tree species grown in some parts of the study areas. There are also other kinds of sparsely grown indigenous tree species. Some of such types of vegetation species listed in table 4.4:

Species identified	Family	Life form
Acacia abyssinica Hochst. ex Benth	Fabaceae	Tree
Acacia mearnsii De Wild.	Fabaceae	Tree
Asparagus africanus Lam.	Asparagaceae	Shrub
Carissa spinarum L.	Apocynaceae	Shrub
Centella asiatica (L.) Urban	Apiaceae	Herb
Cheilanthes farinosa (Forssk.) Kaulf.	Sinopteridaceae	Herb(fer)
Conyza sp.	Asteraceae	Herb
Cupressus lusitanica Mill.	Cupressaceae	Tree
Echinops sp.	Asteraceae	Herb
Erythrina brucei Schwein.	Fabaceae	Tree
Eucalyptus globules	Myrtaceae	Tree
Helichrysum sp.	Asteraceae	Herb
Juniperus procera Hochst. ex Endl.	Cupressaceae	Tree
Laggera crispata (Vahl) Hepper & Wood	Asteraceae	Herb
Laggera tomentosa (Sch. Bip. ex A. Rich.) Olivo &Hiern	Asteraceae	Herb
Lippia adoensis Hochst. ex Walp.	Verbenaceae	Herb
Maytenus sp.	Celasteraceae	Shrub
Pennisetum sp.	Poaceae	Herb
Plantago lanceolata L.	Plantaginaceae	Herb
Plectranthus sp.	Lamiaceae	Herb
Rosa abyssinica Lindley	Rosaceae	Shrub
Satureja punctata (Benth.) Briq.	Lamiaceae	Herb
Sida schimperiana Hochst. ex A. Rich.	Malvaceae	Herb
Stephania abyssinica (Dillon & A. Rich.) Walp.	Menispermaceae	Herb

4.3.2. Fauna

Wild Animal: The extent of vegetation cover in the project area is high and dense forest covers that suit for the wildlife habitat due to this, there are some wild animals found in the project-affected area and

among others, which are common in the Addis Abeba City, and Akako Mena AbichuWoredas include: Hyena (*Crocutacrocuta*), Rabbit (Oryctolagus cuniculus), fox serval cat, and duiker (*Sylvicapra grimmia)*.
Domestic Animal: During the study, the team observed domesticated animals mostly cattle, sheep, donkeys and poultry.

Figure 4- 7: Cattle around the project area.

4.3.3. Avifauna

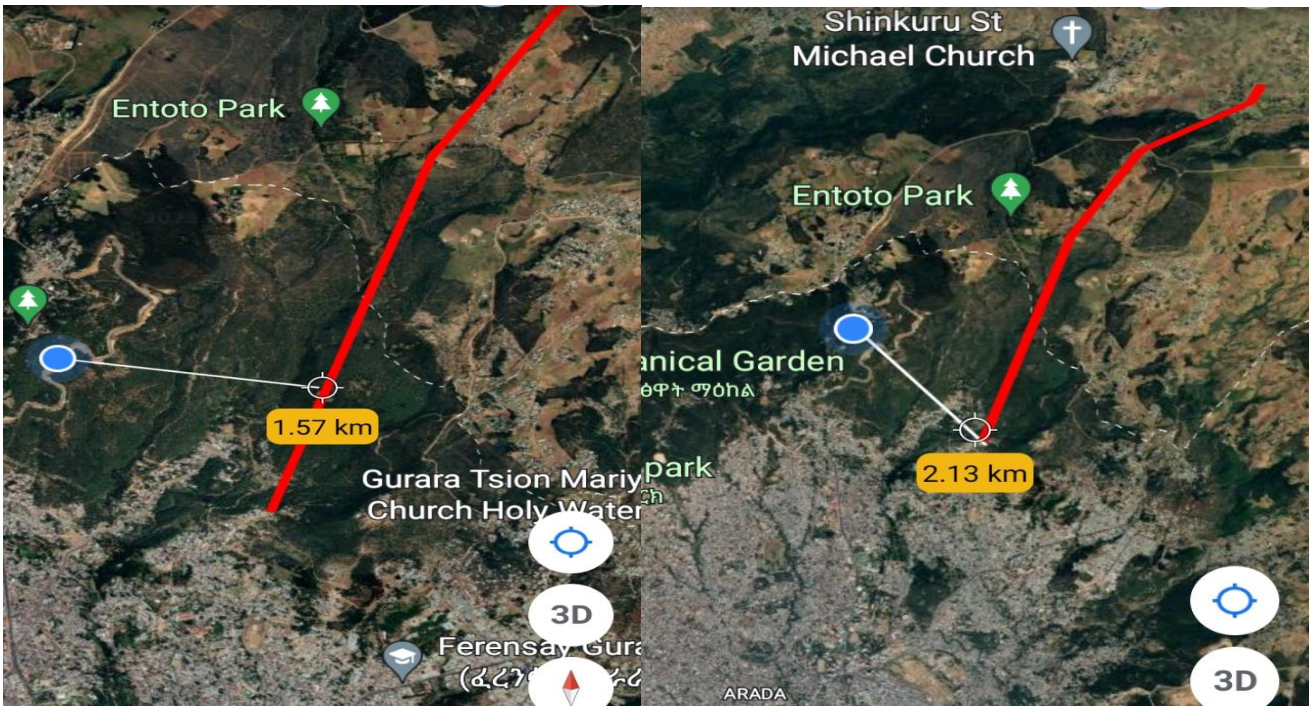
Avian Diversity

The project area is contiguous with the Entoto Natural Park and associated peri urban forest. The peri-urban forest is reported to host several bird species. Birds are of importance to transmission line development.

No fauna studies were conducted during the course of the ESIA however information obtained from the Ethiopia heritage trust and the Wildlife and Natural history society was analysed. As the project area is contiguous with the Eastern portion of the Entoto naturalpark, birds from the park will most likely range within the project area.

124 avian species belonging to 14 orders and 44 families were identified within the Entoto Natural Park in a 2010 study. Within this study two avian species were observed to be common within Eucalyptus forest.

The Entoto National Park is far from the transmission line and the substation area and below graph show the distance between the transmission line, substation and the Park.



Protected Areas in the region

There is no protected area in the project; however Entoto Natural Park was assessed as an Important Bird Area (IBA) in 1996. A list of birdswhich range in the park which triggered the IBA status is presented in table 4.5.

The Park is managed by the Ethiopian Heritage Trust who leased the area from Addis Ababa Region (in 1995) on the understanding that the Trust will develop the area as a natural park to be used by the people of Addis Ababa as well as visitors.

The park is not part of the government's official protected-area system, hence the trust uses its own funds/ raises own funds to run it.

An account from Bird Life notes that the presence of Eucalyptus trees suppresses the growth of nearly all the indigenous woody and herbaceous plants and severely reducethe biodiversity of any area where they are planted in dense stands. Removal of timber, twigs and leaves (for fuel and to sell-this is the main source of fuel for Addis Ababa) has left the soil in many areas of the park greatly impoverished and vulnerable to erosion. It is reported that streams which used to be perennial, are now seasonal and only flow for a short period after the rains stop.

The Ethiopian Heritage Trust reported during our engagement that they aim to restore an enriched natural forest in the park area, and are undertaking extensive plantings with indigenous tree seedlings over all areas where Eucalyptus forest has been harvested.

Table 4- 6: Bird Species within the Entoto Natural Park that trigger IBA status

Species	Current IUCN Red List Category	Season
Erckel's Francolin Pternistis erckelii	LC	resident
Moorland Francolin Scleroptila psilolaema	NT	resident
White-collared Pigeon Columba albitorques	LC	resident
Dusky Turtle-dove Streptopelia lugens	LC	resident
Montane Nightjar Caprimulgus poliocephalus	LC	resident

Nyanza Swift Apus niansae	LC	breeding
White-cheeked Turaco Tauraco leucotis	LC	resident
Wattled Ibis Bostrychia carunculata	LC	resident
Banded Barbet Lybius undatus	LC	resident
Abyssinian Woodpecker Dendropicos abyssinicus	LC	resident
Black-winged Lovebird Agapornis taranta	LC	resident
Ethiopian Black-headed Oriole Oriolus monacha	LC	resident
Thick-billed Raven Corvus crassirostris	LC	resident
White-backed Black Tit Melaniparus leuconotus	LC	resident
Brown Woodland-warbler Phylloscopus umbrovirens	LC	resident
Brown Warbler Sylvia lugens	LC	resident
Abyssinian Catbird Parophasma galinieri	LC	resident
Ethiopian White-eye Zosterops poliogastrus	LC	resident
Slender-billed Starling Onychognathus tenuirostris	LC	resident
White-billed Starling Onychognathus albirostris	LC	resident
Sharpe's Starling Pholia sharpii	LC	resident
Abyssinian Ground-thrush Geokichla piaggiae	LC	resident
Abyssinian Slaty-flycatcher Melaenornis chocolatinus	LC	resident
Rüppell's Robin-Chat Cossypha semirufa	LC	resident
White-winged Cliff-chat Monticola semirufus	LC	resident
Moorland Chat Pinarochroa sordida	LC	resident
Tacazze Sunbird Nectarinia tacazze	LC	resident
Baglafecht Weaver Ploceus baglafecht	LC	resident
Abyssinian Crimsonwing Cryptospiza salvadorii	LC	resident
Swainson's Sparrow Passer swainsonii	LC	resident
Abyssinian Citril Crithagra citrinelloides	LC	resident
Brown-rumped Seedeater Crithagra tristriata	LC	resident
Streaky Seedeater Crithagra striolata	LC	resident

4.4. Socio Economic Environment

4.4.1. Demographic Characteristics

Addis Ababa is the capital city of Ethiopia, with a total projected population of 3,433,999 people (1,624,999 male and 1,809,000 female) in 2017(Federal Democratic Republic of Ethiopia Central Statistical Agency 2013). Within Yeka subcity, 434,599 people were reported including 201,156 male and 233,443 female.

In Akako Mena Abichu Woreda, a total of 169,257 people (84,733 male and 85,024 female) projected in 2017 (Federal Democratic Republic of Ethiopia Central Statistical Agency 2013).

4.4.2. Ethnic, Religious and Language Composition

During the ESIA studies, we encountered predominantly Oromo (95%) and a minority Amhara (5%) ethnic groups in Akako Mena Abichu woreda. The demographic composition slightly changes on moving

to the fringe of Addis Ababa where the proposed sub-station will be established. In the Gurara, Yeka subcity 01, near the future sub-station ethnic composition is dominated by Gamo migrants who settled there but also Amhara, Gurage and Oromos were observed. Majority of the persons encountered communicate in the Oromo language which is the preferred local language.

According to the data obtained from Akakao Mena Abichu *Woreda* administration. The population of the study area follows various religions; such as, Orthodox Christian 97 %), Protestant (2%) and Waqefeta (1%).

4.4.3. Settlement Pattern, Housing and Household Economy

In Akako Mena Abichu, the settlement pattern of the population in and around the area is considered as scattered settlement. Most of the people around the project area have corrugated iron sheet and Tukuls as dwelling units. The Project affected community is mainly dependent on traditional rain fed subsistence farming system. Crop production is carried out parallel with livestock production. The major crops cultivated include Barley, wheat. Households residing on the main transmission line route are engaged and earn their livelihood from daily labour, Besides, they rely on the sale of the above mentioned produced crops and dairy farm products, such as, milk, egg and butter to the nearby community. Annual income sources are mainly from sales of agricultural products (Sales of crops, livestock and their products).

4.4.4. Livestock and Agricultural Product

Livestock is one of the dominant economic activities practiced integrated with crop production and farming activities by the community residing around the project area in Akako Mena Abichu Wereda where as in Addis Abeab some of the community members are doing such type of activity and they are dependent on livestock production activities. Overall, the project affected communities (PACs) involve in different activities such as beekeeping (apiculture), livestock production such as Cattle, goat, sheep and ; Cattle fattening and Poultry production contribute for economic development of the community in particular and for the country in general.

4.4.5. Health Service

During ESIA study period, it was observed that the community within the area for the transmission line route (Akaako Mena Abichu woreda) are located more than 5km from the nearest health facility (in Ferensay Legasiyon). Most of the respondents indicated that they have to travel to Addis Ababa for such services. However, people living in Gurara village have relatively better access to health facilities in terms of distance due to their proximity to the city.

4.4.6. Educational Service

Distribution of schools is uneven among the communities we surveyed during scoping study. In Akako Mena Abichu there was 1 kindergarten (KG) and 2 Elementary schools for a total rural population of 5000 (student population not known). The situation is much worse in the Gurara village where communities reported that there were no schools in their area and children have to travel to long distances to get educationaround French embassy.

4.4.7. Access to Electric Power

Observations during the ESIA studies reveal that there is access to electricity from thenational grid around Gurar village in Yeka sub-city and Akako Mena Abichu Woreda. Low lying power lines were however observed and unsafe/rudimentary connections in some of the areas.

The majority of the people in Akako Mena Abichu Woreda and Gurara village in Yeka sub-city use wood fuel as the main source of energy for cooking. This is mainly observed in form of firewood.

Figure 4.10 Dung briquettes (left) observed in Akakao Mena Abichu area and firewood clusters near substation site in Yeka (right)

4.4.8. Economic Activity

Agriculture is the main source of livelihood for the majority of the population in terms of basic nutritional needs, income generating activities and social organization in the rural villages of Akako Mena Abichu Woreda. The food crops grown include; Barley and Wheat. A fewpeople are observed to be engaged in cloth weaving and firewood sales around the proposed substation sites in Yeka sub-city.

4.4.9. Physical Cultural Resource

There were different churches, mosques and a few areas of Waqfatta ritual sites observed during the time for ESIA studies.

Table 4- 7: List of Natural, Cultural and Historical Heritage around the project area

Bure City		
Name of Natural, Historicaland Cultural Heritage	Locatio n	Status
Derba Natural Fall	Derba 01	Registered
Natural Cave	BukuBulba	Not Registered
Natural Forest	Seyegarialge	Registered
Shinkuru Michael Church	Akako Mena Abichu Kebele	Registered
Abune Agnatiwos Church	ChanchoBuba/KoreRoba	Registered
AredaJila	ChanchoBuba/KoreRoba	Registered
Tutue Mariam Church	MoyeGajo/AlemTena	Registered
Ginbichu Michael Church	ChanchoBuba/ArbiAkako	Registered
Legetama Medhanialem Church	MoyeGajo/MoyeLegetama	Registered
Natural Forest Park	LiloChonka	Not Registered
Natural Forest Park	MuloAdadi	Not Registered
Chinti Mountain	Bata Awabi	Not registered
Epiphany holiday	All kebele	Registered
Meskel Holiday	**All Kebele**	Registered

(Source: Woreda Cultural and Tourism office)

5 Analysis of Project Alternatives

5.1 General

Comprehensive environmental and social impact assessment requires not only the evaluation of the impacts resulting from the proposed project at a specific location and those impacts resulting from project construction and operation process but also it requires a complete environmental and social impact assessment cycle with a detailed assessment of possible alternatives as well.

In terms of ESIA regulations, it is required to demonstrate that feasible alternatives for the project have been considered and evaluated in terms of environmental, social, economic, and technical factors.

During the planning stage, EEP preselects the various options of route based on the technical, economic, environmental, and socioeconomic impact optimization (minimum negative impacts, maximum positive impacts), accessibility, engineering requirement, etc. The feasibility stage of the proposed project goes through with deep analysis and evaluation as well as prioritization. Assessments of route options have been undertaken following the requirements that achieve optimization goals.

As stated above, the route selection is based on feasibility study analysis and impact optimization (minimum negative impacts, maximum positive impacts). Assessments of route options have been undertaken following the requirements that achieve optimization goals, the following criteria were taken into account for line route proposal:

Technical: Being close to the existing roads to have good access for construction and maintenance. (The existing national road), crossing with power lines and roads, limit the total length of the line route.

Environmental: Limit the crossing of green areas, vegetation, water tanks, main watercourses, natural parks and habitats.

Socio-economic: Avoid as much as possible inhabited areas (towns, villages, Social institutions, tourism infrastructure (lodges, etc.),

The following sections provide descriptions of the project alternatives and analysis of the same concerning environmental, social, and economic features.

5.2 Project Alternatives

The main purpose of this title is to select the proper installation proposals to sustainably and reliably provide power to Addis Abeba and surrounding areas in a cost effective and environmentally and socially sustainable approach.

5.2.1 Do nothing: Option 1"No-Project/do nothing"

The no-project alternative is a "No-Project" or "do-nothing" alternative is the option of not undertaking any proposed project. There would not be both positive and negative impacts associated with the no-go /do-nothing alternative. However, the least preferred option is the do-nothing option because it stops the economic and social development of the countries, but from the environmental and social views, this option although preferable, because it avoids the creation of adverse impacts associated with the projects. The no-go or do-nothing alternative is the option of not undertaking any proposed project.

This option also attributed by the potential social and socioeconomic benefits to the nation would be foregone,

and quality of life would remain at a low level for many of those who live in the country. Long-term development plans for the country would be compromised and slowed down since this option will affect the initiatives of the country to add revenue through power trade, which ultimately contribute to improved economy of Ethiopia, and service associated with are fundamental to achieving the full benefits of other development initiatives and meeting the Millennium Development Goal (MDG). Therefore, from an environmental viewpoint, the "do-nothing" alternative is not preferable to project implementation.

5.2.2 Option 2: Route selection case 1

The scope of this option is to Construct one new 230 kV substation at Yeka Sub City Woreda 1 around Gurara and around 6.02 km 230 kV Transmission line to tap off from tower 16 on the existing Sululta - Legetafo 230 KV line and following through to new proposed Gurara substation. Only change observed with the current route is that the new route was via (OB1), and there was less distance.

5.2.3. Option 3: Route selection Case 2

Option 3: The scope of this option is to Construct one new 230 kV substation at Yeka Sub City Woreda 1 around Gurara Medhaiyalem and around 8 km 230 kV Transmission line to tap off from tower 21 on the existing Sululta - Legetafo 230 KV line and following through to Gurara substation. Only change observed with the current route is that the old route was via (OB1), and there was more distance and the transmission line passes Chaka project and air force line base.

5.2.4. Options Comparison

Based on technical analysis and cost comparison results, the selected option is option 2. Option 2 has the shortest transmission line distance and less number of towers than option 3. Therefore, option 2 creates less significant impact on environment and social than option 3. Options 3 have additional distance of transmission line and additional number of towers and land requirement for clearance for the right of way than option 2. Therefore, the other options will take more land, and create additional environmental impact.

Option 2, which requires the Construct one new 230 kV substation at Yeka Sub City Woreda 1 around Gurara and around 6.02 km 230 kV Transmission line to tap off from tower 16 on the existing Sululta - Legetafo 230 kV line and following through to new proposed Gurara substation.

6. Environmental and Social Impacts

6.1. Background

In this section the assessment of potential biophysical and social impacts associated with the construction and operation of the proposed Gurara 230 kV TL and substation Project has been presented. The section is organized by type of impacts (Physical, Biological, and Socioeconomic) and then by the project phases (preconstruction, construction, operation, and decommissioning phases). Implementation of the proposed project will have potentially positive and negative impacts on the people and surrounding environment in the respective project locations during pre-construction, construction, operation, and decommissioning phases.
Based on the impact assessment, the respective mitigation measures are specified with the goal to avoid the impact, about the impact at the source, minimize the impact at receptor and, if necessary to offset the impact through compensation or other means. Regarding the physical resources or receptors, the impacts are assessed in various areas, including land, soils, aesthetic, waste, site rehabilitation, air quality, noise and vibration, etc. For biological resources and receptors, impacts are assessed for: flora, fauna, birds, natural habitat, etc. The social impacts are assessed for land and livelihoods, community health and safety, worker health and safety, EMF effect, electrocution, public access to services; traffic, cultural resources, etc. In terms of community health and safety, the impact assessment was focused on community safety and environmental health (which indirectly affects community health).

6.2. Positive Impacts/Beneficial Impacts

The key potential Positive/beneficial impacts associated with implementation of the Gurara 230 kV Power Transmission Line and substation Project mainly relate to the post-construction phase and these are summarized below:

Improved and Reliable Power Supply

It's important to note that currently installed line network Gurara 230 kV transmission line and substation project improved reliable power supply for Addis Abeba and Sheger city. The prime purpose of this project is to strengthen the centeral part of the country, improve the electrical capacity and supply of Addis Abeba and Sheger City; it will mitigate the current and future load growth in Addis Abeba and Sheger City.

Improve Ethiopia's Revenue

Selling electricity, for Ethiopia is surely becoming a profitable business. There will be positive gain from the revenue obtained through sale of electricity. The implementation of the proposed project will increase the power connection and enhance capacity to deliver power to the local area. This will increases selling and exporting electricity and adds revenue for Ethiopia which ultimately contributes for the growth of national economy.

Increased economic activity

Construction workers will require things that are supplied by the sales shop openings. These will be

opportunities for the local community members. Also, it will be short term, indirect economic gains will likely to result from the purchase of construction materials for the construction of the transmission line, where these are locally or regionally available.

Employment Opportunities

The project will create short term employment opportunities for about 80 workers (20 skilled and 60 unskilled). These could include, site clearance, excavation, loading and offloading of materials, driving, and provision of security services where temporary camps or stores are established etc.; and, from opportunities to provide goods and services to construction workers.

Reduce Green House Gas Emission

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 that contribute to reduce cutting of trees and decrease pollutant emissions, particularly CO2, for the atmosphere. Therefore, when the demand for energy is supplied by the proposed project, it will lead to a reduction of CO2 emission.

6.3. Impact Identification and assessment matrix

The potential project environmental and social impacts are depending on the location of the project and type and volume of interventions of the proposed Gurara 230kV TL and substation project. The project activities such as clearing of vegetation, soil cutting, leveling, felling the trees within the right of way, stringing, Tower installation, energizing, placing of labour camps, access roads or other related construction and operation activities are bound to cause environmental and social impacts, either positive or negative. As stated above the proposed Gurara 230kV project has limited adverse environmental and social risk and its impact magnitude and significance were assessed based on the following factors:

Location or Extent	**The area/Volume**
Timing	Weather immediate or delayed
Duration	Short term, long term, Intermittent
Reversibility or Irreversibility	Probability or reversibility
Likelihood	Probability of the impact taking place
Significant	Weather it local ,regional or global

In order to make analysis on the impacts based on the above impact observation, magnitude and significance on sensitive receptors, the below charts are used as a guidance to demonstrate the significance of each identified impacts based on the intensity of impacts and sensitivity of receptors.

Table 6- 1: Impact Severity analysis

	Sensitivity of Receptor			
	Very Low	**Low**	**Medium**	**High**
	1	**2**	**3**	**4**

Very low - 1	1 Negligible	2 Minor	3 Minor	4 Minor
Low- 2	2 Minor	4 Minor	6 Moderate	8 Moderate
Medium- 3	3 Minor	6 Moderate	9 Moderate	12 Major
High- 4	4 Minor	8 Moderate	12 Major	16 Major

The characteristics of the foreseeable impacts generated from the construction and operation of the Gurara 230 KV TL and substation project have been identified considering:

- The actions that may produce impact, evaluated in the description of proposed TL and substation Project;
- Basic environmental data obtained from direct field observations; and
- Information gathered from the available scientific publications and information derived by the study of similar projects.

A below matrix (Table 6.2) depicted the links between the project activities to the anticipated environmental and social impacts (both positive and negative) generated due to the implementation of the project activities during all the phases of the project. In particular, a matrix (Table 6.3) is demonstrated Environmental and Social safeguards aspects which will be treated in this report, and the respective different weight of each aspect in terms of impact. Weights for each aspect in the different phases are the results of comparisons between the specialists that have taken part to the ESIA study. For each phase (design, construction activities, and operation stage), as made in studies on other related project cases, ESIA study team experts judgment, observation at filed, and thus the anticipated impacts are defined considering the following main activities of the project which may have some effect on the biophysical and socio economic environment:

- The design activities
- The Transmission Line
- The access road
- The camps site and related facilities
- The Vehicles & Machines O&M
- The Quarries, borrow, dumping
- Traffic Construction Machinery
- The operation activities. Each cell of the matrix will contain the anticipated relevant impact significance value, according to the legend as determined during the study (Table 9.2).

Table 6- 2: Synthesis of Environment Impact Matrix

Component affected	Project Activity							
	Planning phase	Construction Phase						Operation Phase
		230 KV Transmission line	Substation construction	Camp site	Vehicles & Machines O&M	Quarries, borrow, dumping	Traffic Construction Machinery	
Physical Environment								
Soil	5	4	4	4	3	4	1	1
Land use	5	4	4	4	3	5	1	1
Surface water	0	4	4	3	4	3	3	3
Dust/Air quality	0	4	4	5	5	4	4	4
Noise quality	0	4	4	4	4	4	4	3
Biological Environment								
Flora	0	5	4	4	3	4	4	3
Fauna	0	4	4	4	2	4	3	2
Birds	0	4	4	4	2	4	0	4
National Parks and Forest Reserve /Protected Areas	0	4	4	4	4	4	4	4
Socioeconomic Environment								
Residential Houses and Community Services	4	4	4	4	0	4	0	0
Farmland	4	4	4	4	0	4	0	0
Vegetation/valued Trees	5	4	4	3	0	3	0	0
Historical, Cultural, Archaeological and Religious sites	0	4	4	1	3	1	3	2
Vulnerable groups	0	4	0	0	0	0	0	0

Public Health and Safety	0	4	4	4	4	4	4	2
Occupational Health and Safety	0	5	5	5	5	5	5	2
Polychlorinated Biphenyl /PCB/	0	5	0	0	0	0	0	3
Hazards /Risks	0	4	2	2	2	2	2	2
Sexually Transmitted Infections/STIs, HIV/AIDS,Malaria, etc.	0	4	4	4	2	4	2	1
Employment opportunity	A	A	A	B	C	B	B	B
Positive impact	**A=Very Important**		**B=More Important**		**C=Important**	**D=Fair Important**		**E=Less Important**
No Impact	**0**		**0**		**0**	**0**		**0**
Negative Impact	**5=Very Important**		**4=More Important**		**3=Important**	**2=Fair Important**		**1=Less Important**

Table 6- 3: Evaluation of significance of impact

Environmental Aspect/Issue	Potential Impact	Positive/ Negative	Duration	Frequency	Sensitivity	Special Extent	Significance
Physical Impacts							
Land	Minimal impact on land scape defining the topography from excavation and construction.	Negative	Long term	Medium	Medium	Project area	**Medium**

Environmental Aspect/Issue	Potential Impact	Positive/ Negative	Duration	Frequency	Sensitivity	Special Extent	Significance
Soils	Project construction will involve activities such as vegetation clearance even if its coverage is low, excavation and backfilling, constructing project structures, constructing ancillary facilities and erecting towers for transmission lines as well as vehicle movements. Such activities are likely expose the soil to wind and water erosions. In addition, improper management of non-hazardous and hazardous waste generated during construction may lead to soil contamination.	Negative	Short term	Medium	Medium	Project area	**Low**
Air Quality	During the line stringing, tower erection and construction of substation, access road, workers camp, the activities such as excavation, site clearance and movement of construction vehicles and using of construction materials would cause air quality impact by emitting pollutants through exhaust emissions and dust.	Negative	Short term	Low	Medium	Project area	**low**
Visual Aesthetics	Site construction wastes and domestic wastes such as foodstuffs packed in plastic or other types of containers, excavated soils and vegetation; construction equipment maintenance wastes; scrap metals; packaging materials, etc. will be expected. Dumping around the site will interfere with the aesthetic status of the area.	Negative	Short term	Low	Low	Project area	**low**
	Presence of transmission line and towers during the operation phase is expected. Along the proposed alignment, only the few people in close	Negative	Long term	Low	Low	Transmission line route	Low

Environmental Aspect/Issue	Potential Impact	Positive/ Negative	Duration	Frequency	Sensitivity	Special Extent	Significance
Biological Impacts							
Risks of electrocution and Collisions of Birds	Transmission lines are recognized as posing significant risks to many bird species, with collisions often cause death or serious injury. However, based on the information obtained from Wereda Offices risks on birds collusion has not been reported and recorded because of the existing Sululuta-Legetafo 230 kV PTP transmission line and the proposed project will not pass Entoto Natinal park.	Negative	Long term	Low	Medium	Transmissio n line route	**low**
Vegetation	Most of the time surveying roots for transmission line projects conducted effectively to reduce impacts when they are constructed. Most of project route is located in an areas where agricultural land, and oromiya forest, which will not entail substantive clearing of natural vegetation. The existing vegetation cover mainly comprises Eculaptus, Tid and acacia trees .	**Negative**	**Long term**	**Low**	**Low**	**Project area**	**Low**
Socio-Economic Environment							
Population andsettlements	It is expected that an influx of people in the project area in search of employment, most of whom shall be unskilled and semi-skilled. The contractor is also expected to come with a team of skilled personnel to carry out various specialized tasks during the entire construction phase. However, this influx shall be restricted to the construction phase. Once construction is completed, workers are expected to go back to their respective places of origin. During implementation of the project, the contractor will build temporary camps in different places along the proposed route. This could add pressure on the existing social amenities and may also exacerbate social conflicts. However, the camps will not alter the settlement patterns in the areas because they will be demolished upon completion of the project construction.	Negative	Short term	Low	Medium	Project area	**Low**

Environmental Aspect/Issue	Potential Impact	Positive/ Negative	Duration	Frequency	Sensitivity	Special Extent	Significance
Electromagnetic fields	Electric overhead lines are considered a source ofpower frequency, electric and magnetic fields, which may have a perceived health effect.	Negative	Long term	Low	Low	Project area	Low
Occupational health and safety	Impacts will include, exposure to physical hazardsfrom use of heavy equipment and cranes; trip and fall hazards; exposure to dust and noise; falling objects; work in confined spaces; exposure to hazardous materials; and exposure to electrical hazards from the use of tools and machinery.	Negative	Short term	Medium	Medium	Project area	Moderate
Community health and safety	During construction phase, impacts will include dust, noise, and vibration from construction vehicle transit, and communicable diseases such as HIV/AIDS and STIs associated with the influx of temporary construction labor force.	Negative	Short term	Medium	Medium	Project area	Moderate
Noise	Noise pollution will arise from heavy duty construction equipment that shall be used in the stringing of conductors and tower erection, as wellas other associated construction activities. In addition, increased traffic flows during this phase may also contribute to noise generation. Noise pollution shall however, be limited to the construction period	Negative	Short term	High	Medium	Project area	Low
	During operations transmission conductors will produce noise under certain conditions because of corona discharge. Corona discharge is the ionization of the air next to the conductor by the electric field which is related to the voltage on theconductors. The loudness of the noise depends on conductor conditions, voltage level, and weather conditions under these conditions the power lines will make a hissing, popping or cracking sound.	Negative	Long term	High	Medium	Transmissionline route	Low
	Employment opportunities during construction and decommissioning leading to increased disposable income and improved standard of living. Additionally, procurement of construction materials such as sand, crushed stones and Cement shall be done locally.	Positive	Short term	Medium	High	Local	**Moderate**

Environmental Aspect/Issue	Potential Impact	Positive/ Negative	Duration	Frequency	Sensitivity	Special Extent	Significance
Economy	Exporting electricity, for Ethiopia is surly becoming a profitable business. There will be positive gain from the revenue obtained through sale of electricity. This is a positive, direct, long term impact	Positive	Long term	High	High	Ethiopia	**High**
Electrical capacity	Improve the electrical capacity and supply of Addis Abeba and surrounding areas.	Positive	Long term	High	High	Both Ethiopia andSomali land	High

6.4. Impacts during Pre- Construction Phase

Initially before the contractor mobilization and commencement of construction, environmental and social management will be considered with the following principal activities:

- Ensure that all government and funding agencies requirements and procedures relating to ESIA are complied with.
- Ensure environmental and social considerations and the major clauses are incorporated in the contract document.
- Implementation of compensation payments for land or property acquisitions for 23 Project affected HHs.

6.4.1. Compensation

EEP is fully committed to prepare Resettlement Action Plan /RAP/ where required and pay full compensation for each lost item as per Proclamation No. 1161/2019 and Council of Minister's Regulation No. 472/2020. The preparation of RAP and compensation shall be completed before the commencement of the construction activities. For the successful implementation of compensation, establishment of property valuation committee designated by respective city and district /Woreda/ Administrations for this specific project area is mandatory. The committee would consist of different experts with relevant qualifications to value the properties there on. The affected households and their family members would be adequately compensated considering the assets and opportunities they leave behind and expenses that are required for the support of their livelihood.

6.4.2.Land Acquisition for Transmission Line and substation

Gurara 230 kV Power Transmission Line Project will have an impact on the existing land use both temporarily and permanently. An estimated 24.24 ha of land (6.06 km * 40 m width) for 230 kV transmission line free corridor (RoW), tower foundation and 6.21 ha for substation construction a total of 30.45 ha will be required.

For the erectionof transmission line approximately 17 towers with an average span of 350 meters will be needed. Out of 24.24 ha of land affected by RoW, an estimated 0.0612 ha of land size for 17 tower pads/foundation and 6.21ha for new substation construction will be required permanently and 24.1788 ha of land for RoW free corridor temporarily.

The tower pads/foundation will take the land permanently. However, this land taking is not expected to have significant impact on land use and it is very small in size.

6.5. Impacts during Construction

The environmental management activities would be carried out during the construction phase. Most of the impacts are expected to occur at this stage and the impacts can be reduced or avoided through the application of sound construction guidelines.

Management is much concerned with controlling impacts that may result from the action of the contractor, through enforcement of the construction contract clauses related to protection of the environment as a whole and of the components within it.

It is important to recognize that successful mitigations can only be achieved if the environmental protection measures, as set out in the construction contract document are properly enforced.

6.5.1 Impacts on Socioeconomic Environment

Electric power transmission lines are linear facilities in nature that might have some effect on bio-physical and socio-economic environment including cultural resources. As a linear facility, the impacts of transmission lines are mostly localized to the area where the towers will be constructed and the Right-of-Way (RoW) established along the route with 40m for 230 kV wide for a TL project. The impact can be minimized through careful route selection. The major permanent impact will be acquisition of land for construction area of substations and foundation for tower pads. In addition to this, construction and rehabilitation of temporary access road will also have minor impact during construction period, where for affected footpath required to be constructed as a substitute for avoiding any restriction of community mobility in the area.

However, even if all possible measures /efforts have been undertaken during the final route alignment for the proposed transmission line, due to ragged and undulated nature of terrain and demography of the specific area, the construction of line causes environmental and social impacts, which the details are discussed in the below section and summary of management plan is presented under Table 9.1 Chapter 9.the transmission

6.5.1.1. Impacts on farm lands

Due to the proposed project of TL an estimated 7.48 ha of crop land covered by barley and wheat will be affected. The construction of the proposed new substations at Gurara would require about 6.21 ha and already paid the compensation for the Addis Abeba Administration.

Figure 6- 1: Impact of Farm land

6.5.1.2. Housing and other Structures

There are 1 CIS (Corrugated Iron Sheet), house will be affected by transmission line construction.

Figure 6- 2: Affected house

6.5.1.3. Impacts on Vulnerable Groups

It has been identified different groups of vulnerable people, which includes Female headed households, Elderly persons above the age of 64. There are a total of 7 vulnerable people from the total affected 23 households.
Out of the total 7 considered to be vulnerable, 4 of them are above the age of 64; 3 are female-headed household.

6.5.1.4. Impacts on Archaeological, Cultural, Religious and Historical Sites

Based on the discussions held with key local informants and information collected from local offices, there are no any known or documented sites of archaeological, cultural, religious or historical value along the proposed transmission line. However, during construction, there could be possibility of chance findings of archaeological artifacts. Therefore, during construction if there is any accidental "chance findings" of any archaeological artifacts, the contractor shall report to all concerned regional and local culture and tourism offices where the project crosses, following the chance findings procedures (see Annex - 4).

6.5.1.5. Occupational Health and Safety

Because of construction activity, movement of construction vehicles along the access roads, substation, line stringing and tower pad erection works, could expose construction workers to the risks of accidents and injuries. Most occupational health and safety issues during the construction, operation, maintenance, and inspection of the 230kV TL project will include, among others, exposure to physical hazards from

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. Workers may also face other health risks and concerns in the camps e.g., communicable diseases. These impacts are anticipated to be significant, however through implementation of proper occupational health and safety measures, it will be avoided and/or mitigated . The contractor is made to follow Occupational Health and Safety (OHS) Plan, these impacts can be minimized during the construction phase and most of them removed once the construction works are completed.

6.5.1.6.. Public Health and Safety

The in-migrant people coming to the project area for job opportunities may bring both positive and negative impacts to the local people. Though limited number of workers is believed to move to these villages, there might be possible negative impacts that could result due to labor influx in such areas. Traffic accidents, falls from above, being hit by objects, electrocution generated effects from electromagnetic fields, and the transmission of communicable diseases (STIs, HIV/AIDS) to local people are all potential risks. Health and safety risks, waste generation and sewage and increased pressure on resources are also expected.

6.5.1.7. Increased Traffic Load and Traffic Safety Risk

Vehicular traffic is expected to increase to a certain degree 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. Increased traffic load will be evident at certain times during the day, especially if there are slow moving heavy vehicles transporting materials to and from the site. In addition, accident may occur due to construction traffic in the project area. However, the above potential traffic impacts are considered to be short- term.

6.5.2. Adverse Impact on Biological Environment

6.5.2.1. Impacts on Vegetation/Flora

The overall trees cover of the transmission line route and substation is medium and the existing vegetation is mostly sparsely distributed in some parts of the project area. Implementation of the project will not entail substantive clearing of natural vegetation since most section of the project route is located in farmlands covered areas.

In some areas of the root, there are valuable trees of Eucalyptus globules around 97,771 all sized individuals and different naturally grown tree varieties at about 4 in number have been identified to be affected due to the construction of the project.

Totally, 97,771 (Eculaptus trees, 1784 Pole, 27730 Mager, 4444 Werage, 63733 chefeka), 72 Podocurpous

trees, 8 Acacia trees will be affected by the project.

Figure 6- 3: Affected trees

6.5.2.2. Impacts on Fauna including Birds

Wildlife disturbance is likely to occur during construction activities by noise and increased traffic volume caused by construction activities. The construction activities may somewhat disturb the mobility of the wildlife; this may be negatively impacted if not well addressed. Also, during construction of the proposed project, solid waste will be generated. These effects could be an impact for scavengers.
It is realized that there are no any protected areas identified for wild life and birds. So, the proposed project has no adverse impact on wildlife and birds/including Migratory/.

6.5.3. Adverse Impacts on Physical Environment

6.5.3.1. Land Contamination

Land/soil contamination during the construction phase is expected due to spills of fuel from equipment and vehicles, and from inadequate handling of hazardous substances used on site, as well as inappropriate management of liquid wastes. However, such potential impacts can be minimized through employment of appropriate measures/best practice methods so that no or minor change to the surrounding environment.

6.5.3.2. Impacts on Soil

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. In addition, improper management of non-hazardous and hazardous liquid wastes generated during construction may lead to soil contamination.

6.5.3.3. Loss of Visual Aesthetics

Site construction wastes and domestic wastes such as plastic foodstuffs package, plastic water bottles, plastic or other types of containers; excavated soils; construction equipment maintenance wastes; scrap metals; packaging materials, etc. are expected to be generated in higher volume.
Dumping the wastes around the site will interfere with the aesthetic status of the area. This has a direct effect to the surrounding community.

6.5.3.4. Air Quality

During construction there will be certain activities such as site clearance, excavation in soil or rock, movements of construction vehicles, and loading and unloading of construction materials. These are likely to cause some impacts on air quality due to emission of dust and exhaust gases. However, these activities will be carried out at small scale for a short duration at discrete locations across a wide area. It is predicted that air quality impacts will be generally minor, localized and temporary.

6.5.3.5. Noise

During the construction phase, 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. However, noise produced during such construction activities will have insignificant impact on local communities because the construction activity will be held in rural areas and partially far from human settlements and villages and it is minimal to be affected by noise. This impact will be short term and will end when construction activities are completed.

6.6. Impacts during Operation Phase

Environmental and social impact management and monitoring at this stage will be the responsibility of Environmental and Social Affairs of EEP and contractor for all activities undertaken during operation phase. Environmental and Social Affairs of EEP is expected to take a general overall advisory, monitoring and evaluation role during the operational phase.

6.6.1. Adverse Impact on Socio -Economic Environment

6.6.1.1. Health Effect of Electro Magnetic Fields (EMF)

Electric overhead lines are considered as a source of power frequency, electric and magnetic fields, which may have a perceived health effect.
Electric fields are shielded or weakened by materials that conduct electricity, even for materials that

conduct poorly including trees, buildings and human skin. Magnetic fields, however, passes through most materials and is therefore more difficult to shield. However, both electric fields and magnetic fields decrease rapidly as the distance from the source increases.

6.6.1.2. Risk of Electrocution and Accidents during Maintenance

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. Locals can also be at risk especially as they are unaware of the risks and potential hazards which make them vulnerable to the danger of electrocution.

6.6.2. Adverse Impact on Biological Environment

6.6.2.1. Risk of Electrocution and Collisions of Birds by Transmission Line

Transmission lines are recognized as posing significant risks to many bird species, with collisions and electrocution often cause death or serious injury. According to Bird Life International (2017), bird mortality by electrocution on power poles is a global problem that has become more prevalent in recent years as energy demand increases, resulting in infrastructure growth often in previously undeveloped areas. Electrocution associated with power lines occurs when a bird comes into contact with two wires, one of which is live, or when it perches on a conductive pylon (for example, a metal structure) and comes into simultaneous contact with a live wire. Large species such as vultures, eagles and storks are particularly vulnerable.

Collisions may also occur if the transmission lines are difficult to see. Any renewable energy installations (e.g. solar and geothermal generation facilities) will inevitably lead to an expansion of the power line distribution network which will likely increase the risk of collisions for vultures in certain areas. Despite their acute vision, vultures' field of view and normal head position when foraging can make them unaware of obstructions in their direction of travel, and they may be particularly vulnerable to collisions with infrastructure such as wind turbines and power lines (Martin et al. 2012).

6.6.3. Adverse Impacts on Physical Environment

6.6.3.1. Waste Generation

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. Such wastes can be adverse to the environment. Some of these waste materials especially the plastic are not biodegradable hence may cause long- term adverse effects to the environment.

6.6.3.2. Noise

Overhead transmission lines will produce noise. The electrical discharges effect around live conductors will generate some noise. Electrical discharges into the air are produced around high voltage power lines. It is sometimes visible on a humid night or during rainfall and can produce noise. However, the proposed TL impact on the health and comfort of people is not anticipated as the transmission route avoids settlement areas.

6.6.3.3. Visual Amenity

Presence of transmission line and towers during the operation phase will be expected. Along the power transmission line, only the some people in close proximity to the corridor will be able to perceive the presence of the project features, being more sensitive to the visual intrusion. Thus, the visual impact and change of landscape will be of low significance.

6.6.4. Impact during Decommissioning Phase

6.6.4.1. Negative Socioeconomic Impacts

Dust

Some dust will be generated during any demolition works, which will affect the worker as well as the nearby area resident.

Traffic Impacts

During decommissioning phase, movement of trucks carrying heavy demolition equipment, demolished materials for disposal, etc. Although, the potential traffic impacts are considered short-term and limited, it will cause adverse impacts including, road blockage and slow traffic.

6.6.4.2. Adverse Impacts on Biological Environment

Wildlife disturbance

Disturbances to wildlife may occur due to noise and increased traffic volume during decommissioning activities. The activities may have a possibility of disturbing the mobility of wildlife in the TL corridor.

6.6.4.3. Adverse Impacts on Physical Environment

Waste Generation

Demolition of the proposed project will result in generation of solid waste. The waste might contain various materials used in decommissioning. The demolition waste is generally considered as harmful to the environment since they are composed of inactive materials and the large quantities of such waste may lead to releaseof certain hazardous chemicals into the environment.

Noise

The demolition works will lead to deterioration of the sound environment within the project site and the surrounding areas. This will be as a result of the noise and vibration that will be experienced as a result of demolishing the power line.

6.7. Cumulative Impact

Cumulative impact is the incremental impact on the environment that results from the impact of the proposed

action when added to other past, present, and reasonably foreseeable future actions. The impact assessment process predicts cumulative impacts/effects to which the proposed Project may contribute. The approach for assessing cumulative impacts and effects resulting from the proposed Project and another activity affecting the same resource/receptor is based on a consideration of the approval/existence status of the 'other' activity and the nature of information available to aid in predicting the magnitude of impact from the other activity.

Most cumulative impacts to land uses are not expected to be significant with the addition of this project. The only project found was construction of shegr City road, The current construction of new road project at Sheger City and our project will occur together, there will be a potential for cumulative impacts related to the project, in relation to other existing sheger city road and planned power project within the project area. The potential cumulative impacts are discussed below.

Land Use

Most cumulative impacts to land uses are not expected to be significant with the addition of this project. Small areas of agricultural land and eucalyptus tree plantation would be permanently removed from production by tower foundations and access roads, where necessary.

Air Quality

The proposed project will have adverse impact on air quality. This occurs as a result of dust and smoke releases during construction period. The machineries involved in the construction activities especially in the construction of substation and access road are the major causative elements for the problem. However, the impacts will be minimized acceptably by taking proper dust abatement measures (e.g. watering) where necessary, and by using properly handled and maintained machineries.

Traffic and Transportation

Cumulative impacts from traffic and transportation are not anticipated to be permanent, but rather temporary, occurring during construction. If the construction of this project, the under construction and the planned projects, for example, overlap or occur in the same time frame, the potential impacts from traffic operations would increase, but not likely to be very significant.

Noise

With the addition of the TL, cumulative impacts associated with generated audible noise would be additive. The increased noise level at the area of the right-of-way may be visible or audible during wet-weather conditions, although line noise would most often be insignificant with in naturally occurring sounds at locations beyond the right-of-way.

6.8. Uncertainties in Impact Assessment

The principal uncertainties in this impact assessment are related to land and property expropriation. The actual extent to which the present project will displace 1 family from land and property is clear; however the final design and tower location is not clearly known. The other, and considerably more important, uncertainty connected with land and property expropriation is the extent to which compensation (either land-for-land or

cash compensation for property) will actually offset the effects of displacement, and ensure that those affected are no worse off after the event than they were previously. To a large extent this uncertainty arises because the system for dealing with expropriation and compensation assessment and livelihood restoration is still developing.

Matters which give rise to particular concern and which determine the magnitude of impacts associated with land and property expropriation include: it is not clear what the position is regarding agricultural land-for-land compensation in situations where there is already a shortage of agricultural land, although it is believed that cash compensation is offered in such cases.

It is therefore reasonable to expect that the uncertainties regarding land and property can be satisfactorily resolved prior to project implementation. There are also considerable uncertainties regarding the nature and extent of site-dependent potential impacts associated with ancillary works sites. However, the approach taken to impact mitigation recognises the fact that there will be uncertainties until sites have been selected and it is known precisely how the contractor proposes to develop them. 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.

7. Mitigation Measures and Complementary Initiatives

7.6. Pre – Construction Phase

Land acquisition

Awareness creations will be undertaken for the community to inform them the possibility of using the ROW for cultivation of crops but not for tree planting and putting structures after the establishment of the transmission line. EEP and the contractor shall consider supporting the affected communities in offsetting plantation, provision of social amenities like livestock and community drinking water supply and reinforcing the existing electrification as a corporate social responsibility.

The following set of criteria is recommended to be adopted for adequately compensating the affected people:-

- The process of land compensation should be preceded by a detailed inventory of individual land;
- Compensation will be undertaken as per the Ethiopian proclamation No. 1161/2019 and regulation No 472/2020 for expropriation of land;
- No construction should commence until land expropriation and compensation have been completed, replacement land allocated, and cash compensation paid as appropriate;
- Ensure the provision of replacement or relevant compensation to the rightful users.

Housing and other Structures

The following mitigation measures have been recommended to be adopted for adequately compensating and properly rehabilitating PAPs who loses their residential.

- Proper inventory of affected property and census enumeration of PAPs for entitlements.
- Compensation will be undertaken to the PAPs as per the Ethiopian proclamation No. 1161/2019 and regulation No 472/2020 for the affected houses with regard to loss of house.
- No construction should commence until all land and property expropriation requirements are fulfilled, replacement land allocated and cash compensation paid.

Loss of Trees and Perennial Crops

To minimize destruction of existing plantation and vegetation and habitats, the following measures are suggested.

- Proper inventory of affected privately owned trees and perennial crops;
- Compensation will be undertaken to the PAPs as per the Ethiopian proclamation and regulation for the affected trees and perennial crops with regard to loss of trees and crops ;
- No construction should commence until all land and property expropriation requirements are fulfilled, cash compensation paid.

Impacts on Vulnerable and Underserved Groups

For the groups who may require special or supplementary resettlement assistance special or supplementary resettlement assistance will be implemented.

7.7. Construction Phase

Archaeological, Cultural, Religious and Historical Sites

During construction, there could be possibility of chance findings of archaeological artifacts. Therefore, during construction if there is any accidental "chance findings" of any archaeological artifacts, the contractor shall report to the regional and local culture and tourism offices, following the chance findings procedures (see Annex - II).

Public Health and Safety

To avoid or minimize potential impacts on health and safety of the public in project impact areas, the following mitigation measures are recommended:

- Develop and implement labor influx management and traffic management plans.
- Place appropriate signs with the local language at appropriate locations.
- 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.
- Raise awareness among commercial sex workers by providing free female condoms and instruction on how to use them properly.
- Condom distribution and control of informal sector activity near the project site.
- Ensure that local communities receive adequate safety training.
- Ensure that the work process does not endanger the public.
- Conduct Monitoring on a regular basis.

Occupational Health and Safety

To avoid or minimize potential impacts on health and safety of project workers, the following mitigation measures are recommended:

- Develop and implement plans for occupational health and safety, traffic management plan, Code of Conduct.
- Provide site workers with proper personal protection equipment (PPE).
- Place relevant signage in appropriate locations, including in local languages.
- Display emergency numbers that is visible to site personnel.
- Provide health services whenever there is construction on the work site.
- Records of all accidents arising from the project activities and keep.
- Provide a first aid station with first aid kits that are available to the employees.
- Provide campsite, particularly for female workers, by providing sufficient restroom facilities and security.
- Raise awareness of the importance of using safety equipment in the workplace and remind employees on a regular basis.
- Raise project workers' understanding of sexually transmitted diseases (STIs) and other issues.

- Make available a site safety officer.
- Restrict Working Zone while workers are on duty
- Give the worker clean (safe) water to drink, wash with, and use around the house.
- Have enough firefighting equipment at the camp and site to respond quickly in the event of a fire.
- Ensure that the work process does not endanger the personnel.
- Provide any project-related training that is required, and keep track of who was trained in what and when.
- Monitor the workforce on a regular basis for proper application and implementation of safety standards, as well as the usage of safety devices and facilities.

Traffic Load and Safety Risks

To minimize the impacts on traffic safety during all project phases, develop and implement traffic management plan for the project.

- Post adequate road signs to avoid any accidents that may occur due to construction traffic in the project area;
- Limit construction hours to reasonable daylight hours where the project construction site is located near villages.
- Sensitive areas susceptible to cause accidents to public traffic during night time will be demarcated and fenced by warning tapes.
- Measures including speed humps for reducing traffic speed will also be applied in the vicinity of the sensitive areas.
- Installation and maintenance of speed control and traffic calming devices at pedestrian crossing areas and adhere to speed limits and provide appropriate PPE to drivers.
- Assign adequate number of traffic marshal at safety risk hot spot area

Vegetation Clearance

Impacts on natural vegetation and flora due to vegetation clearance will be minimized through the following mitigation measures:

- Avoid any unnecessary cutting of vegetation.
- Re-Vegetation.
- Ensure that all clearance is done with as little disruption to the environment as possible, and only in permitted areas.
- Inform the project crew that there is remaining vegetation that must not be touched or damaged.
- As much as possible, clearing is done manually.

Noise

To minimize noise impacts, the following mitigation measures are proposed:

- 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.
- Regular vehicle maintenance to reduce noise emissions.

- To reduce noise pollution, all vehicles and equipment must be turned off when not in use.
- Noise-producing project activities and material transportation must only take place during the day or during normal working hours.
- Workers in the vicinity of strong noise emissions should use ear plugs.

Land Contamination

Potential land contamination by hazardous or non-hazardous substances and liquid wastes shall be minimized through the following mitigation measures:

- Provide initial and continuous trainings for construction workforce in handling of hazardous substances and wastes, waste segregation and appropriate waste disposal;
- Instruct the construction workforce to dispose wastes at approved fill /waste disposal locations and strictly supervise the correct placement of fill;
- Where possible, construction materials to be reused or recycled;
- Develop and implement a waste management plan;
- Develop and implement proper spill response procedures and establish temporary and/or permanent spill containment equipment, as applicable;
- Collect wastes and segregate at generation site in accordance with their types (hazardous, organic and inorganic waste), safely transport and dispose of at the final dumping or disposal site specified and approved by the local authority to avoid any adverse impact on health and well-being of people ,and
- Locate disposal sites in areas of land, which, prior to the commencement of the construction works, were not used or designated for productive land uses such as grazing.

Soils

Measures proposed to minimize impacts on soils include:

- Handle and store hazardous substances and waste in a safe manner.
- No vegetation clearance is permitted outside of designated locations, and
- Create and implement appropriate spill response procedures, as well as temporary and/or permanent spill containment equipment, as needed.
- To prevent erosion, keep topsoil or vegetation removal to a minimum.
- Ascertain that the building staff is aware of any surviving vegetation that should not be damaged.

Air Quality

The mitigation measures proposed to control adverse impacts on air quality include:

- Establish and enforce project vehicle speed restrictions, use bumps and/or properly marked road signs, 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.
- Use dust management measures such as water spraying on unpaved access roads, exposed earth, and any on-site stockpiles to reduce dust emissions.
- Provide workers with proper personal protective equipment (PPE), such as dust masks and

protective glasses, in dusty areas.

- Avoid burning materials that produce a lot of smoke or stink, such as tires, plastic, rubber products, or other materials.
- Regular maintenance and inspection of construction equipment and vehicles to avoid excessive gaseous emissions.

7.8. Operation Phase

Health Effects of Electro Magnetic Fields (EMF)

Both electric fields and magnetic fields decrease as the distance from the source increases. As a precautionary measure, EEP have adopted standard RoW width of 40m for 230 kV along the high voltage transmission lines. All habitation and structures are excluded from the ROW to ensure safety of people from EMF as well as from direct electric shocks.

Risks of Electrocution and Accidents during Maintenance

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.

Risk of Electrocution and Collisions of Birds

Electrocution risk can be very significant at old, badly designed and insulated poles, and poorly sited power lines. Effective planning, design and mitigating measures can dramatically reduce the impact of energy infrastructure on avian populations.

To minimize the impacts of electrocution and bird collisions, the following mitigation measures are recommended:

- Undertake regular (at least annual) monitoring of the transmission line for evidence of birds nesting on the pylons.

Waste Generation and Visual Amenity

The mitigation measures during operation as best practices include:

- Develop and implement best practice waste management plan and care should be taken at every stage of waste disposal and management, such as segregate wastes at generation site, safely and properly store temporarily in the vicinity of the project office, safely transport and disposed of at final disposal area designated and authorized by the responsible institution.
- No debris or waste materials will be left at the work sites, good housekeeping on site to avoid litter and minimize waste;
- Rehabilitation of cleared areas to minimize visual scarring and maintenance clearing will be kept to the absolute minimum and should not extend beyond the corridor.

Noise

To avoid or minimize the noise impacts during the operation phase, the proposed transmission line avoided

settlement areas. Therefore, impact on the health and comfort of people from electro-magnetic fields and noise is not anticipated.

7.9. Decommissioning Phase

Dust

During decommissioning localized increase in dust levels is unavoidable. Such potential impact will be minimized through:

- Spraying of water to control dust emission.
- Applying speed limits for project vehicles, and employing adequate traffic management, including code of conduct to truck drivers to avoid impacts on the community residing within and nearby the project area.

Traffic Management

Develop and implement an effective traffic management plan for the project that will reduce traffic volume and traffic accident risks. Traffic accident risks during the decommissioning phase can be avoided or minimized by posting adequate road signs, training drivers to take maximum precautions while driving esp. in sensitive areas like settlements, schools and imposing speed limits.

Noise

To minimize potential noise impacts during the decommissioning phase, the measures below are proposed:

- Noise generating decommissioning and materials transportation activities shall be carried out during the day time or normal working hours only.
- All vehicles and equipment shall be switched off when not in use to avoid noise emission.
- Regular vehicle and equipment maintenance to reduce noise emissions.
- Workers in the vicinity of strong noise emissions should use earplugs.
- In addition, the mitigation measures recommended for construction phase might be applicable.

7.10. Cumulative impact

The only project found was construction of shegr City road, the current construction of new road project at Sheger City and our project will occur together, there will be a potential for cumulative impacts related to the project, in relation to existing sheger city road and planned power project within the project area. The potential cumulative impacts from traffic and transportation and air quality are not anticipated to be permanent, but rather temporary, occurring during construction. The contractor for this project will conduct all mitigation measures to reduce impacts to be cumulative with other projects currently active in the area like Sheger City road project.

8. Public and Stakeholders' Consultation

In the following articles, the FDRE Constitution emphasizes public awareness and engagement. Article 35 sub-article (6) 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.
Article 43 sub -article (2) stated: 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.

All interested and affected parties have the ability to engage actively in the ESIA processes, according to the Ethiopian EIA Guidance. Similarly, International Development and Finance Institutions also require 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".
As a result, a series of consultation sessions with various stakeholders were held in response to the needs of national and international laws and regulations for the proposed Gurara 230 kV power transmission line and substation project.
As a result, consultation with minutes of meeting, discussions, interviews and field investigations were conducted in project influence Woredas and community and other stakeholders.
One of the primary reasons for conducting consultation is to identify both potential positive and adverse social and environmental impacts, as well as to explore mitigation for the negative impacts.
The consultation/ discussions allow those who will be impacted and the local government to have a say in the project, allowing them to influence it to avoid negative effects, maximize positive impact.

8.6. Objectives of Discussions and Interviews

To create awareness through explaining the project objective, activities and the socio- economic and environment impact, gather information for ESIA, assess and gather the perception, questions and attitude of stakeholders about the proposed project and to learn about the views of local communities and authorities towards the acceptance of the proposed project, stakeholders' discussion and interviews were carried out from Wereda level.

Discussion with Gulele Sub city Wereda 1 officells

Discussion with Akako Mena Abichu Wereda

Discussion With Akako Mena Abichu Wereda PAPs and Community

Discussion With Yeka SubCity Wereda 1 officialls

Figure 8- 1: Stakeholder consultation

8.1. Objectives and Agenda of Consultation

The stakeholders' consultations with minutes of meeting were carried out with the following specific objectives/agenda:

- Collect appropriate data for the Assessment.
- Discuss the project's environmental and social impact with relevant stakeholders.
- Clarify the project's purpose, working conditions, and potential socioeconomic and environmental impact during implementation.
- Create awareness through explaining the project objective, activities and the socio- economic and environment impact during implementation.
- Find out if there are any cultural, religious, or historical sites in the area of the proposed substation and transmission line.

- Collect questions and a comment on the project's positive and negative aspects, concerns, and solutions also to give clarification.
- Gather information from stakeholders if there are protected forests, , endemic birds and animals.

8.2. A general Description of the Project 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 of the project

The team presented the following project objectives.

- Provide reliable electricity to Addis Abeba and Sheger City.
- Lay the groundwork for the continuation of the Electricity Program.

The Importance of the Project and Adverse impact with Mitigation

The team raised the following project importance and the negative impact with mitigation in relation to the project. The project's importance's are to:

- Solves power outages.
- Promote local development activities.
- The project will play an important role in creating adequate electricity supply for the surrounding villages and City.
- Provide job opportunities.
- Increased energy supply improves citizens' daily lives.
- Contributes to the reliable supply of electricity to residents and industries in the project area as a whole.

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, farm and trees, environment as well as economic and physical relocation.

Participants were told that compensation for project-related damages will be paid in accordance with Ethiopian law and regulation. Aside from that, participants were informed the mitigation measures will be identified.

8.3. Main Findings of Stakeholders Consultation

Various consultations in all project woredas and with all members of the community and stakeholders have been conducted from July 10 to 14, 2023. In the consultation, Woreda level officials, elders, women, youth, and religious leader were active participants and were expressed their threat, fears and thoughts on the project, previous energy projects experience; support and good attitudes for the project.

And, they were also raised very much constructive ideas to be considered in project planning and implementation which will have significant positive and negative impact for the community as well to the environment. 50 participants in 4 different public and stakeholder consultation meetings with minutes of meeting have been conducted.

The numbers of participants are summarized in Table 8.1 below. The findings and feedback of the stakeholders is summarized and presented in the following two sub sections while the detail of munities of the consultation meetings along with list of participants are attached as Annex III.

Table 8- 1: Types of consultation meetings and Number of Participants

Group of consultation	Number of Consultation	Number of Participants	Date of consultation
PAPs & Community Members	1	26	7/14/2023
Gulele Sub City Woreda 1 officials	1	8	10/07/23
Yeka Sub City Wereda 1 Officials	1	6	12/7/23
Akako Mena Abichu Wereda officials	1	10	7/14//2023
Total	4	50	

8.4. Consultation Meetings with Project Affected People and Community Members

Consultations with project participants were place between July 10 to 14, 2023. All members of the community (beneficials elders, women, youth, and religious leader) were invited to the consultation meetings to ensure that the process was inclusive.

The consultations were held on a volunteer basis and were held in the form of public gatherings.

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.

Participants in the meetings gained knowledge of the initiative and expressed support for it. The summary of the PAPs' and community members' consultation meetings is presented in the Table 8.2 below.

Table 8- 2: The summary of the PAPs' and community members' consultation meetings

Region	Dates	Location	No. of participant	Views Raised	Given Responses and Clarifications
Gulele Wereda 1	10/07/23	Wereda Administration office	8	• Chiefly, positive attitude was reflected towards the proposed project. • Is your transmission line within the Chaka project? • How the project will compensate the affected property? • How is Ethiopian electric power/project/ in collaboration with other stakeholders to work this project? • The construction of the project must be in line with our city's master plan. • It is good to support the community's most needs such as electricity, water, and school issues. • During the project, job opportunities should be created for the youth of our area. • Will this project alleviate the energy shortage?	• The transmission line is out of the Chaka Project. • The project was briefed by the teams and explained that compensation for the assets affected by the project will be done in conjunction with the Woreda Administration Compensation Committees in accordance with national compensation laws and regulations. • We inform Ethiopian electric power collaborate with all stakeholders and working with the city Administration. • The project creates jobs opportunity and will give priority to local community. • We also discussed the main purpose of the project to reduce energy shortages. • The other issues was noted
Yeka Wereda 1	12/7/23	Wereda Administration officials	6	• Is your transmission line within the Chaka project? • Who pays compensation for damaged property during construction? • If you explain to us what this project has contributed to the lack of power because there is a lack of power in our area. • How the community around the project benefits from the employment opportunity comes after with the	• The transmission line is out of the Chaka Project. • For affected property Ethiopian electric power will pay appropriate compensation at full replacement cost as per the Ethiopian Expropriation of Land. • We informed the main purpose of

Region	Dates	Location	No. of participant	Views Raised	Given Responses and Clarifications
				implementation of the project?	the project to reduce energy shortages. • Regarding to the employment opportunity the project will give priority to local community.
Akako Mena Abichu Wereda	7/14//2023	Wereda Administration Office	10	• Is your transmission line within the Chaka project? • How the project will compensate the affected property? • The construction of the project must be in line with our city's master plan. • Explain to us whether the local community can benefit directly or indirectly from the project. • If the project affects the property of individuals or entities, compensation must be paid prior to the start of the project. • During the project, job opportunities should be created for the youth of our area. • The Wreda is new and we havet any office equipment, and other infrastructure so if it possible please help us.	• The transmission line is out of the Chaka Project. • For affected property Ethiopian electric power will pay appropriate compensation at full replacement cost as per the Ethiopian Expropriation of Land. • The project creates jobs opportunity and will give priority to local community. • The other issues was noted
Akako Mena Abichu Wereda	7/14/2023	Akako Mena Abchu Wereda Community, leaders, PAPs	13	• How the project will compensate the affected property? • Previous project such as the observatory station did not make any compensation for the land lost will this be like that? • Explain to us whether the local community can benefit directly or indirectly from the project. • During the project, job opportunities should be created for the youth of our area. • There is no electricity in our area. We live in the dark, there is no water, no health center, so the project help us. • Population pressure is high, land is becoming scarcer	• For affected property Ethiopian electric power will pay appropriate compensation at full replacement cost as per the Ethiopian Expropriation of Land. • The project creates jobs opportunity and will give priority to local community. • The main purpose of the project expand electrification and during the construction time create job opportunity. • The other issues was noted

Region	Dates	Location	No. of participant	Views Raised	Given Responses and Clarifications
				and and agricultural production is getting lower year to year. What would be the benefit of this project to us and our children? • How will this project help us to get clean water supply to the Dildila Burayu village?	

8.5. ESIA Report Disclosure

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 summery will be uploaded on EEP's and African Development Bank 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 national and international stakeholders and address their concerns, as well as to exchange views, experiences, and information on project-related issues. It will also provide them with reliable and up-to-date information about the project's status.

9. Environmental and Social Management Plan

General Consideration

Environmental and Social Management Plan (ESMP) is developing procedure that details measures to be taken during the implementation and operation of a project that reduce, eliminate or offset adverse environmental and social impacts and actions needed to implement these measures.

Environmental and social management plans should be seen as a tool to protect environmental degradation for long term benefit to the society by bringing continued socio-economic development and sustainability of the environment. The ESIA has identified a number of potential adverse environmental and social impacts associated with the project and has developed mitigation measures for these. It has also identified a number of measures required to ensure that the project's physical investment is converted into sustainable socio-economic improvements of the lives of the intended beneficiaries. Therefore, in order to enhance the positive impacts, the project potential adverse environmental impacts will be mitigated and its sustainability promoted by implementation of an Environmental and Social Management Plan (ESMP). Thus, for the effective implementation of the ESMP, various stakeholders should be involved. The ESMP should contain the following necessary contents.

- A description of the possible adverse impacts that the ESMP is intended to address
- A description of planned mitigation measures, and how and when they will be implemented
- A description of who will implement the ESMP and
- A cost estimate and its source

Accordingly, solutions to the key impacts identified by the study are summarized in Table 9.1 based on a standard impact assessment approach of avoid, minimize compensate, and enhance. Table 9.1 also indicates (summarizes) the main environmental and social potential impacts which could occur during the Construction phases of the Project and, the proposed mitigation measures and time of implementation, responsible institutions that implement the mitigation measures, and the estimated cost of implementation

EEP as an implementing agency of this Gurara 230 kV Transmission Line and substation Project has the overall responsibility for the implementation of the recommended Environmental and Social Management Plan.

9.1. Pre-construction Phase

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 considerations are explicitly contained in the contract document;
- Preparation of detailed designs 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 land acquisition procedures including the payment of compensation.
- Primary responsibility to include appropriate clauses to allow control of impacts arising from construction activities lies with the consultants appointed by EEP to prepare the detailed designs and tender documents for the project.
- EEP will be responsible for ensuring that its own environmental requirements are fully met.

The Detail Design and Tender Document (DD and TD) Consultant 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.

9.2. 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 very largely be concerned with controlling impacts which may result from the actions of the contractor, through enforcement of the construction contract clauses related to protection of the environment as a whole and of the components within it. 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, are properly enforced.

Overall primary responsibility for construction supervision and contract management, and therefore for environmental management during construction, will lie with the Engineer as defined in the construction contracts.

However, certain powers and authority relating to day-to-day supervision will be delegated by the Engineer to the Resident Engineer (RE). The RE will have executive responsibility for ensuring that all site environmental management and monitoring aspects are dealt with promptly and properly.

The RE will be responsible for establishing procedures and mechanisms 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.

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.
Particular attention will be paid to establishing procedures whereby emergency action can be taken by site staff in the event of the contractor acting in a manner which may cause immediate and significant environmental damage.

Other responsible bodies include the local administration (respective Woreda Administration) and residents of the nearby 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.

9.3. Post-construction /Operation Phase

For the successful implementation routine and periodic environmental and social monitoring 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 and social issues of concern during project operation include:

- Occupation, Health and safety risks;
- Alteration to the biological, chemical, 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 like cleaning product, laundry detergent, human food waste and others; to monitor the effectiveness of the mitigation measures;
- Determination of long term and residual effects; and identification of Project specific cumulative environmental effects.

The EEP's ESAO and the concerned regional authorities are key actors for ensuring the monitoring of implementation and constant updating of the ESMP.

9.4. Institutional Arrangement for Implementing the ESMP

It is realized 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 and 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 Environmental and social Protection and management activities until official operational handover to EEP.

The responsible institutions for implementation, coordination and administration of the E&S mitigation and management plan set out in this ESIA are summarized in Table 9.1.

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.

9.4.1. Environmental Protection Authority /EPA/

Environmental Protection Authority /EPA/ is the key institution at the federal level which has responsibilities on environmental protection and engages in environmental issues and 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 coordinate activities to ensure that the environmental objectives provided under the Constitution.

9.4.2. The Regional Land Administration and Environmental Protection Office

The Regional and Woreda Land Administration and Environmental Protection Office is responsible for ensuring that the ESMP is properly and effectively implemented during all phases of the project. The Regional Office will undertake the task through its branches at woreda and town level. It will work closely with EEP and conduct periodic monitoring of the implementation of the ESMP.

9.4.3. . The EEP's Environmental Social Affairs Office

As the project owner, EEP is responsible for all the aspects of project implementation and operation. This includes:

- Ensuring that all the necessary environmental protection measures and project components are incorporated during the Tender Document preparation phase of the planned project;
- Assign a qualified environmental and safety expert 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; and
- Improve the ESMP according to lessons learnt during all phases of the project.

9.4.4. The Contractor

The Contractor is responsible for incorporating and implementing appropriate environmental management measures during the construction and Environmental Protection Authoritying phases of the project.

The Contractor is responsible for designing a comprehensive environmental and safety management plan 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 the ESMP and shall be updated according to the need.

9.4.5. The Supervision Consultant

The main responsibilities of the Supervision Consultant/Owner Engineer are to review the Contractor's Site Environmental and Social 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 .In addition, the Supervision Consultant/Owner Engineer is responsible for mobilizing an Environmental 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.

9.4.6. 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.

Table 9- 1: Agencies and Organizations Responsible for Implementation of ESMP

Organization orAgency	Role in the Project	PC*	C*	O*	Responsibility in ESMP
EEP	Project Developer/Owner	X	X	X	▪ Responsible for all aspects of the project from design, mobilization, construction, operation and decommissioning, including compliance to environmental and socio-economic safeguards. Implementation of mitigation measures ▪ Coordination with other agencies ▪ Works closely with Grievance redresscommittees and local stakeholders ▪ Implementation of the Monitoring ▪ Coordination with other agencies ▪ Implementation of the Monitoring. ▪ Implementation of mitigation measuresduring operational phase.
EPA		X	X	X	▪ Enforcing implementation of the environmental policies and legislation andESIA process ▪ Monitor, audit, coordinate and ensure that recommendations of ESIA/ESMP areimplemented ▪ Monitoring & auditing for compliance with National/Regional EnvironmentalRegulations.
ARCCH	Agency responsible for preservation of cultural and historical assets		X		▪ If the possibility of chance find of physicalcultural resources, take over, protecting and preserving the area until deciding onthe proper procedures to be carried out. ▪ Coordination with other agencies like, Ethiopian Authority for Research and Conservation of Cultural Heritage organization and ministry of Culture and Tourism.
Contractor	Contractor (for construction of the transmission lineand substation)		X		▪ Implementation of mitigation measures at construction Site ▪ Assigning EI for Self-Monitoring (For the construction phase) ▪ Implementation of mitigation measures and in house monitoring of recommended measured during construction phase at construction Site. ▪ Prepare various site and issue specific Environmental Management Plans or Management Strategies andImplementation Plans (MSIPs) ▪ Prepare Monthly and quarterly Site Inspection and Progress Reports. ▪ Assigning personnel responsible for implementation and monitoring of the ESMP.

Organization orAgency	Role in theProject	PC*	C*	O*	Responsibility in ESMP
					▪ Ensure all aspects of the contract comply with both the ESMP and other relevant environmental legislation. ▪ Follow the chance finding procedures and requirements
Oromia Regional (Sheger City) and Addis Abeba City Labour and Social Affairs	Agency responsible for occupational health and safety		X	X	Monitoring/auditing
Local and SocialAffairs Office	Office responsible for occupationalhealth and safety		X	X	Monitoring the occupational health andsafety. Coordination with contractor regarding local employment opportunity.
Oromia Regional (Sheger City) and Addis Abeba City Health Office	Offices responsible for public health		X		Monitoring of health issues of the project
Oromia Regional (Sheger City) and Addis Abeba City Women, children and youth office	Offices responsible tosafeguard Women, children and youth right		X	X	Monitoring the inclusiveness of women in employment opportunity. Enforcing implementation of the ESMP.
Oromia Regional (Sheger City) and Addis Abeba City *Woredas* administrations	Responsibleforestablishing Complaint Hearing Bodiesand Appeal Hearing Councils		X	X	Establish Complaint Hearing Bodies andAppeal Hearing Councils.
Media	Agency responsible for publicizing the Project at different times for different reasons	X	X	X	Publicizing (Disclosure) the Project asrequired
Project Stakeholders andProject Affected Communities	To be consulted and participate at different stages ofthe project	X	X	X	Consent for Project sustainability (asrequired)

Note: PC= Pre-construction C= Construction O= Operation

9.2. The Environmental and Social Management Plan (ESMP)

Major environmental and social management activities planned to be undertaken at different phases of the project are listed in Table 9.2.

Table 9- 2: Environmental and Social Management Plan

Environmental Issue/Impact	Risk	Main Management Measures	Time/Frequencyof Implementation	Implementing Body	Monitorin gBody	Cost
I. Pre-construction Phase						
Submission of ESIA documentation to EPA		EPA is 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 ReviewConsultant Contract
Preparation of environmental briefing notes for tenderers' pre- bid conference		To be complete by the time that the tendering process commences	Onset of Construction	Supervision Consultant	EEP	Covered in Design ReviewConsultant Contract
II. Construction Phase						
Pre-construction contractor environmental awareness briefing		Must take place at the start of the contractor mobilization 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 intothe main construction	As above	Environmental Inspector	As above
Commencement of site monitoring		Inspections to commence when contractor starts site mobilization 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 twomonths after start of construction	As above	As above	As above

Environmental Issue/Impact	Risk	Main Management Measures	Time/Frequencyof Implementation	Implementing Body	Monitorin gBody	Cost
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 constructionperiod	As above	As above	As above
Impacts of soil erosion and sediment deposition due to clearance of vegetation and construction activities at towerfoundation and along access roads	Significant	▪ Designing and constructing drainage mitigation/ erosion prevention structures ▪ Adjusting the construction programme for dry season to reduce soil erosion ▪ Construction sites shall be stabilized and rehabilitated during and after construction ▪ Spread mulch generated from cleared vegetation across exposed soils after construction ▪ Restricting land acquisition, clearing and grubbing to what is absolutely necessary ▪ Replanting cleared areas and slopes vulnerable to erosion such as cut-and-fill slopes with plant species (grasses,shrubs and/or trees) ▪ Replanting cleared areas and slopes vulnerable to erosionand slope failures with plant species which have the abilitiesto: - armour the surface against erosion; - support the slope by propping from the base (tree andshrub boles and roots); reinforce the soil profile by increasing its shear resistance (roots); etc.	During Construction: Monthly during dry season and bi-monthly in wetseason	Contractor	Supervision Consultant, RE/EI	Covered in Construction Contracts
Impacts on land resources (Enhancement of Soil Erosion,slope failures due to project activities such as access road construction)	Significant	▪ 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 roadssides. ▪ Avoid landslide hazard areas to the extent possible.	Onset of Construction	Supervision Consultant	Supervision Consultant, RE/EI	Covered in Construction Contracts
Impacts on drainage and waterresources	Moderate	Design sufficient culverts and pipes that can accommodate the runoff water intercepted by access roads.	Onset of Construction	As above	As above	Covered in Construction Contracts

Environmental Issue/Impact	Risk	Main Management Measures	Time/Frequencyof Implementation	Implementing Body	Monitorin gBody	Cost
Impacts on biological resources	Moderate	Locate access roads along the route that has relatively less vegetation or trees 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.	During Construction	As above	As above	Covered in Construction Contracts
Competition for water Resources with local users and Impact on Existing Water Sources	Moderate	▪ The contractor may need to develop its own water supply sources for the construction and the campsites requirements. Avoid conflicts with existing water uses by not affecting thequality or quantity of the water sources used for human, animal and/or irrigation water supplies.	As above	Contractor	As above	Covered in Construction Contracts
Impacts on water resources (pollution of surface- and ground-water)	Moderate	▪ Implement an effective water management system ▪ Construct sufficient cross and longitudinal drainage structures to allow for the proper passage of runoff or floodwater under or along access roads. ▪ Avoid water pollution by spillages of oil, fuel or lubricants byproper storage and handling. ▪ Provide satisfactory disposal of solid and liquid wastes generated by campsites and installation sites. Ensure the proper sealing of all pipelines, valves and vessels to avoid water loss.	As above	Contractor	As above	Covered in Construction Contracts
Noise and Vibration	Moderate	▪ Restrict activities producing excessive noise levels to the daytime and avoid performing such works during nighttimes, on weekends and holidays. ▪ Locate plants, machinery and site installation considerably away from high human traffic areas ▪ Minimize duration of conducting noise creating constructionactivities ▪ Implement noise abatement measures in section of the route crossing residential areas ▪ Provide proper hearing protective devices such as ear plugsand ear muffs for construction workers ▪ Use machinery which has appropriate mufflers ▪ Avoid performing such works during night times, on weekends and holidays. Site facilities/plants should be at a minimum distance of 2km from sensitive receptors; such as health institutions	As above	Contractor	As above	Covered in Construction Contracts

Environmental Issue/Impact	Risk	Main Management Measures	Time/Frequencyof Implementation	Implementing Body	Monitorin gBody	Cost
Air Pollution	Moderate	▪ 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 ▪ Burn waste and/or garbage in designated areas ▪ Traffic speeds shall be restricted and water regularly sprayed on dusty roads to suppress dust levels near settlement areas. ▪ Regular maintenance of diesel powered machinery and vehicles to reduce excessive exhaust emissions. ▪ 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. Reduce duration of construction activities resulting in more dust generation and prefer working hours based on the mobility of people	As above	As above	As above	Covered in Construction Contracts
Solid Waste Management	Significant	▪ 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. ▪ Implement proper waste segregation and disposal at the designated waste disposal site ▪ Any waste material which is unable to be reused, reprocessed or recycled shall be disposed at a landfill. ▪ Waste disposal and recycling facilities will be provided by licensed and commercial operators. ▪ Construction wastes will not be allowed to accumulate on the construction site but will be collected promptly and removed regularly from the site; ▪ Sufficient number of garbage bins and container will be made available at all construction sites; 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; 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.	As above	As above	As above	Covered in Construction Contracts

Environmental Issue/Impact	Risk	Main Management Measures	Time/Frequencyof Implementation	Implementing Body	Monitorin gBody	Cost
Impact on Natural Vegetation	Minor	▪ Minimize and possibly avoid access road construction and construction material within the boundaries of the Riverine and hill side forest ▪ Avoid any fire risk caused by 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 Offset plantation.	As above	EEP/Project office	EEP/ESAO	1,500,000.00
Impact of Construction Traffic	Moderate	▪ Conduct awareness raising and training programmes for equipment operators, drivers and other workers to sensitisethe need to employ safe operation methods or practices toprevent or minimize accidents. 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. ▪ Raising the awareness of workers towards safety and healthissues. Prepare and implement a traffic management plan	As above	Contractor	Supervision Consultant/ EI/ Project Affected Woreda Offices	Covered in Construction Contracts
Conflict between Local and Migrant Workers	Moderate	▪ Maximise local hire of labour, in so far as this is compatiblewith the contractor's skill requirements; ▪ Ensure fair and transparent hiring and staff management procedures and work closely with project woreda, Kebele administration and local community representative; and ▪ Assign the responsibility for liaison with local communities and local authorities to a named individual from the contractor's organization	As above	Contractor	Supervision Consultant/ Project Affected Woreda Offices	No Cost
Impact on Child Labour	Significant	▪ Take strict measures against employment of children, ▪ Work closely with local authorities to stop employment ofunder age children in the construction works	During the wholeproject implementation period	Contractor	Supervision Consultant/ EI/ Project Affected Woreda Administration Office	No Cost

Environmental Issue/Impact	Risk	Main Management Measures	Time/Frequencyof Implementation	Implementing Body	Monitorin gBody	Cost
Occupational Health and SafetyRisks	Moderate	▪ Apply measures such as suppressing dust and other particulate matters like those from cement storage sites; ▪ To the extent possible, reduce or minimize noise at worksites; ▪ Provide workers with Personal Protective Equipment (PPE); ▪ Make arrangements for the regular inspection of all temporary structures, excavations, machinery and equipment to ensure; ▪ 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; ▪ Place warning signs around the construction areas; ▪ Maintain adequate traffic control measures throughout the construction phase; and ▪ Ensure that safety procedures are followed at all workplaces.	As above	Contractor	Supervisory Consultant, RE/EI	Covered in Construction Contracts
Impact on Public Health		▪ Provide to construction workers specific sexual health training including HIV/AIDS and other STDS awareness andprevention program; ▪ Provision of condoms in suitable locations for free; ▪ Ensure that all workers undergo pre-employment screening and regular health screening including voluntary screeningfor STDs ▪ 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/siteinstallations; ▪ Provide construction camps with good drainage, water supply, and sewage disposal systems ▪ Provide workers with chemoprophylaxis and parathyroid- treated mosquito nets; ▪ Construct buildings as mosquito proof; and ▪ 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.	As above	Contractor	RE/EI/Woreda Health Office	Covered in Construction Contracts and EEP's OperationCosts

Environmental Issue/Impact	Risk	Main Management Measures	Time/Frequencyof Implementation	Implementing Body	Monitorin gBody	Cost
Site clearance inspection and certification on completion of the works		▪ Carry out on a rolling basis as each major section of works iscompleted	During the wholeproject implementation period	Contractor	RE/EI	As above
Environmental , Health& Safety	Significant	▪ inform the workers and local community about the durationof work; ▪ Undertake activities with care; ▪ collected and disposed all waste generated during construction; ▪ Provide and use all necessary Personal protection Equipment (PPE) to workers during construction work; ▪ Ensure that all health and safety measures are put in placeto prevent accidents; ▪ Sale all recyclable and other equipment and materials toappropriate recyclers and users;	During Constructionphase	Contractor	HSE Officer	Covered in Construction Contracts
III. Operation and Maintenance Phase						
Occupation, Health and safetyrisks	Significant	• Provide personal protective equipment (PPE) including shock resistant gloves, shoes and other protective gears to workers handling electricity and related components • Provide training regarding health and safety to the construction workers ▪ Develop and implement health, safety and environment (HSE) management system and review timely or after a major accident or incident	During project operation phase	EEP	EEP/EHS office/	Covered in EEP's OperationCosts
Surface run-off	Moderate	▪ Provide substation site with good drainage systems; • Regularly maintain compound access road and drainagesystem.	As above	As above	As above	Covered in EEP's OperationCosts
Domestic Waste/Sanitary withinthe Substation compound	Moderate	▪ Do no discharge wastewater on open lands ▪ Provide proper drainage and sewerage system ▪ Equip workshops, stores, offices and other buildings with septic tank/wastewater treatment system ▪ 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	During the wholeproject operationphase	EEP	EEP and Woreda health office	Covered in EEP's OperationCosts

Environmental Issue/Impact	Risk	Main Management Measures	Time/Frequencyof Implementation	Implementing Body	Monitorin gBody	Cost
		• 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				
Hazardous Waste	Significant	▪ All waste areas are to be clearly identified and marked ashazardous waste storage areas. • All hazardous wastes should have adequate labelling andsecurity at the facility;	As above	As above	As above	Covered in EEP's OperationCosts
E-Waste	Significant	▪ E waste should be stored separately • Maintain records of e-waste generated	As above	As above	As above	Covered in EEP's OperationCosts
Environmental , Health& Safety	Significant	• Provide and use all necessary Personal Protection Equipment (PPE) to workers during operation; ▪ Ensure that all health and safety measures are put in placeto prevent accidents; • Sale all recycling and other equipment and materials toappropriate recyclers and users;	During Operationphase	Contractor	Health & Safety Team	Covered in EEP/EMU's
IV. Decommissioning Phase						
Noise and Vibration	Moderate	▪ Restrict demolishing activities during the day-time and avoid performing such works during night times, on weekends andholidays. ▪ Implement noise abatement measures in sections where the TL crosses residential areas • Provide proper PPEs such as ear-plugs and ear-muffs for workers involved in demolishing work	During decommissioning phase	Contractor	Environmental Inspector	Covered in decommissioning ContractorsCosts
Air Pollution	Moderate	▪ Implement dust control and suppression measures including regular application of water on or near settlementareas to reduce dust generation; ▪ Traffic speeds shall be restricted and water regularly sprayed on gravel roads to suppress dust levels near settlement areas. ▪ Regular maintenance of diesel powered machinery and vehicles to reduce excessive exhaust emissions; and	During decommissioning phase	Contractor	Environmental Inspector	As above

Environmental Issue/Impact	Risk	Main Management Measures	Time/Frequencyof Implementation	Implementing Body	Monitorin gBody	Cost
		• Reduce duration of demolition activities resulting in more dust generation and prefer working hours based on the mobility of people				
Demolition waste	Significant	▪ Implement an integrated solid waste management system including reuse and recycling; ▪ Implement proper waste segregation and disposal at the designated waste disposal sites; • All machinery, equipment, structures and partitions that will not be used for other purposes must be removed andrecycled/reused or they shall be taken to designated waste disposal site or to licensed companies involved in collection, transport & storage and management of such wastes	As above	As above	As above	As above
Environmental , Health& Safety	Significant	▪ inform the workers and local community about the durationof work; ▪ Undertake dismantling activities with care; ▪ collected and disposed all waste generated during construction; ▪ Provide and use all necessary Personal protection Equipment (PPE) to workers during demolition work; ▪ Ensure that all health and safety measures are put in placeto prevent accidents; ▪ Sale all recycling and other equipment and materials toappropriate recyclers and users; ▪ Once all the facilities have been removed ,as far as possible restore the land to its original state	During decommissioning phase	Contractor	Environmental Inspector	As above

10. Grievance Redress Mechanism

The Grievance Redress Mechanism (GRM) is one of the structures that promote transparency and social accountability. It was designed to attend to complaints, problems and issues that arise from project affected people during project implementation and the cost of grievance redress mechanism is 100,000.00 ETB.

GRM should be accessible and appropriate to bring about remedial measures for complaints. Appropriateness and accessibility signifies the need to have a workable GRM arrangement tailored to local context. Without these main ingredients of GRM, complaint procedures will have no expected outcome in redressing grievances. In case of complaints that arise by PAPs on project related activities, the preferred way of compensation is through amicable means so as to save time and resources as opposed to taking the matter to formal courts.

To ensure that the PAP have avenues for redressing grievances related to any aspect of compensation, construction management negligence, and any other relevant project related matter, procedures for the redress of grievances should be established for the project. The objective is to respond to the complaints of the PAP efficiently; i.e., the mechanism to be easily accessible, transparent and fair and to avoid the need to resort to complicated formal channels to redress grievances. Accessible and appropriate GRM not only help to have more effective and efficient procedure but it also has strong bearing on the project implementation progress, as PAPs grievances tends to thwart timely accomplishments of project activities.
Installation of the GRM is necessary to inform community members of the mechanism through the following:

i. GRM orientation at the community level;
ii. Dissemination of information materials;
iii. Formation and training of GRM committees; and
iv. Reporting and documentation of grievances.

In the case of Gurara 230 kV Power Transmission Project, Grievance Redress Committee (GRC) is already formed in project affected woredas to deal with project related grievances by PAPs. Most grievances in the project affected area are linked with compensation and relate project implementation activities with community and the project office also follow, recorded report and implement the grievance procedure with the grievance residence committee.

11.1. Project GRM Procedure

Complainants can log/file their complaint(s) in written form, verbally, through telephone call, text message or any means of channels convenient to them. Complain to be registered in a format prepared for the same purpose.

The complaint(s) need to be itemized, clear and concise with remedial suggestions. Present the form for the relevant designated officer (first contact point, in this case secretary of the Grievance Redress Committee/GRC). Address of the PAP (Telephone, kebele, etc. anonymous complaints are also be allowed).

A set of forms which will be used for recording grievances and the actions taken are prepared for the proposed program as listed below (shall be translated in local language).

- Grievance Statement Form
- Grievance Receipt Acknowledgement Form
- Grievance Investigation Form
- Grievance Investigation Outcome Form

11.2. Project Grievance Redress Mechanism Steps:

Step 1- Receive and Record Compliant (using the Grievance Receipt Standard Form).

Grievance Receipt standard format

1. Complaint name: _____Phone umber_____
2. Address: _____
3. Compliant information: _____
3.1. Received date of the complain _____
3.2. Please describe type of compliant in details

_____
_____
_____
_____
_____
_____
_____

4. Focal person who received the complain

- Name _____
- Title: _____
- Phone number: _____
- Address_____
- Signatory: _____

Step 2 - Review Complaint and Allocate Actions (Complaints are screened, and actions then be allocated to investigate and resolve grievance or refer matter to next level).

Step 3 - Notify Complainant of Proposed Resolution (notify the complainant that the complaint has been received, how it is being dealt with, by whom and an approximate estimate of how long

the process might take.

Step 4 -Take Action and Update Complainant (undertake the proposed actions for resolution and update complainant when it is complete).

Step 5- Close out & Lessons Learnt(occurs when both parties are happy with proposed solution).

Step 6 - Update Project Grievance Records (ongoing) (using standard forms, grievances will be maintained and stored including for information for any outstanding actions).

Step 7 - Reporting to concerned/ defined parties.

The following steps will be followed in order to achieve consensus for any grievance related to any aspect of the Gurara 230 kV transmission line project

Stage One: PAPs can complain orally or in writing to the Woreda Property Valuation Committee (cases related to asset valuation and compensation). If it is an oral complaint, the Woreda Property Valuation Committee must record the complaint in writing and must respond to the complaint within one week. If the complaint is very difficult to deal with by the Woreda Property Valuation Committee, response of the committee to the complaint must be provided within one week.

Stage Two: If the response to the complaint at Stage one cannot satisfy the complainant PAPs; PAPs can appeal to Grievance Redress Committee (GRC) within one week after the receipt of the response to the complaint, and GRC at Woreda level must respond to the appeal within two weeks.

Stage Three: If PAPs are still not satisfied with the response at the Stage Two, they can appeal to the court after receipt of the response for final decision.

11.3. Grievance channel for Gender Based Violence

Gender-based violence (GBV) is an attack on the security, voice, and well-being of individuals, and of whole communities. Preventing GBV requires collaboration and action across different groups including contractors, project staff, government partners and communities. In this regard, the project will make special focus on ensuring the safety and security of women, children and other vulnerable groups.

It also involves monitoring of regular and dynamic engagement with community leaders and stakeholders at Woreda level. Specific actions may include the following:

- Undertake periodic awareness around GBV issues among staff, contractors and other stakeholders;
- Develop a methodology for assessment of risk of GBV in the project;
- Build and improve project staff and client capacity to address risks of GBV through the development of guidance, training, and continuous learning activities and materials
- Develop a clear internal Reporting and Response Protocol to guide project staff and supervisors in case of incidents
- Develop Codes of Conduct for contractors and Supervisors with prohibitions against GBV,
- Strengthening consultation considerations and recommendations for grievance redress

mechanisms and,

- Ensuring that the project provides help to survivors of GBV.

11.4. Stakeholder Engagement Plan

EEP will develop and implement a Stakeholder Engagement Plan that is scalable to the project risks, impacts, and development stages, and tailored to the characteristics and interests of the Affected Communities and other stakeholders.

Therefore, EEP shall identify range 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 a policy, a project, or service. In short, a stakeholder is any entity with a stake in a policy, a project or service. In this case, the proposed project and its implementation and outcomes thereof are 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 this 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 the 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 one of the significant stakeholder 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, Woreda administration and other stakeholders.

Table 11- 1: Stakeholder Engagement Plan

Stakeholder	Objectives	Communication Methods andTools	Timeframe	Responsibility
Stakeholders who may be directly or indirectly affected by the project				
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 (once) and beforecontractor mobilization.	EEP
		Direct onsite meetings and/or focus groups as applicable with local project affected communities including elders, women and youth groups alongthe TL ROW.		
	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.)	Prepare leaflet in local language with key updates on the project (project status, E&S performance, grievance mechanism implementation,etc.).	Once during planningphase Quarterly duringconstruction phase	EEP/EMU/ Contractor
		Leaflet to be 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.	Annually for the first three years during operationphase	
	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 asapplicable; Prepare leaflet in Oromigna and Amharic with key details on a grievance mechanism.		

Stakeholder	Objectives	Communication Methods andTools	Timeframe	Responsibility
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				
Central and Local Government Entities				
EPA	Environmental Licensing and regulation of the project's social and environmental compliance and responsibility and mandate to Ensure implementation of environmental mitigation, management and monitoring measures as presented in the ESIA report	- Correspondence and OfficialLetters	Once before construction	EEP
EPA/ Regional and Woreda Environment Office	Ensure implementation of environmental mitigation, management and monitoring measures as presented in the ESIA report.	Environmental Inspection andmonitoring and joint meetings(as and when required) Correspondence and OfficialLetters Site Visits	Twice a year during construction phase	EEP/Contractor
	Obtain no-objection on the finallayout of turbines and various project components to determine if any site-specific requirements need.			
Ministry of Culture and Tourism / ARCCH/ Regional & Sheger and Addis Abeba Culturaland Tourism Office	Reporting and communication in case archaeological/cultural remains accidentally discoveredm during construction of the project.	As and when required duringaccidental discovery Site Visits	Upon occurrence	Contractor/EEP
Ethiopian Electric Power (EEP) -Project owner	Financing, initiating and coordinating the planning and implementation of Community Development Plan	Individual/Internal Meetings (asand when required)	Quarterly during planningphase Quarterly during implementation phase	EEP
	Obtain no-objection on layout of TL towers and various project components to determine if any site-specific requirements with regards to the transmission lines and substation area	Individual/Internal Meetings (asand when required) Correspondence and Official Letters	Once before construction	EEP/Owner's Engineer/ Environmental Inspector/ Contractor

Stakeholder	Objectives	Communication Methods andTools	Timeframe	Responsibility
Oromiya Regional State/ Woredas Traversed by the TL	Undertake and complete land lease and compensationprocess Coordination to secure the landrequirements of the Project	Individual/Internal Meetings (asand when required) Correspondence and Official Letters	Regularly as and whenrequired	EEP/EMU
	Updates on the Project including environmental and social issues(e.g. current and schedule foractivities, duration, environmental and social risks mitigations and performance,grievance mechanism implementation, etc.)	Direct meetings Prepare leaflet in Amharic and local languages with key updates on Project as explained (project status, E&S performance,grievancemechanism implementation, etc.).Leaflet to be available at WoredaOffices	Quarterly duringplanning phase Quarterly during construction phase During operation phase, annually for the first 3 years and as and when required then after.	EEP/ Environmental Inspector
		Correspondence and Official Letters		
		Site Visits		
	Participatory needs assessment, planning, implementation and monitoring of community development projects	Direct meetings (as and whenrequired) Correspondence and OfficialLetters		EEP/EMU
Financers/ Development Partners	Technical and financial support to the Project as well as various livelihood restoration and community development sub-projects as presented in this ESIA	Direct meetings (as and when required)Correspondence and Official Letters	Quarterly monitoring Mission during construction phase	EEP/EMU
NGOs	Ensure justice and equal opportunities in matters ofeconomic and social	Individual Meetings	Once during planning	EEP/EMU
Development being provided to the project affected people.	Correspondence and OfficialLetters	Quarterly duringconstruction phase		Development being provided tothe project affected people.
Development being provided to the project affected people.	Correspondence and OfficialLetters	Quarterly duringconstruction phase		Development being provided tothe project affected people.

11. Environmental Monitoring Plan

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. The monitoring programme for the present project will be undertaken to meet the following objectives:

- To check on whether mitigation and benefit enhancement measures have actually been adopted, and are proving effective in practice;
- To provide a means whereby any impacts which were subject to uncertainty at the time of preparation of the 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.
- To assess the changes in environmental conditions,
- To monitor the effective implementation of mitigation measures,
- To warn about significant deteriorations in environmental quality so that further prevention action can be undertaken.

❖ 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 of one or more environmental components, usually involves physical measurement of selected parameters or execution of surveys to establish the nature and extent of induced changes.

Compliance monitoring is usually given more emphasis in the case of a TL project and the substations than is effects monitoring. 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 ofthe project.

11.4.1. Pre-construction Phase

Monitoring during the pre-construction phase of the project will be concerned with two aspects:

- Checking that the project designs and specifications incorporate appropriate measures to minimize negative impacts and to enhance beneficial impacts; and
- Checking that the appropriate environmental protection clauses have been included in the construction contract documents to allow control of actions by the contractor, which are potentially damaging to the environment.

These activities shall be carried out as part of the preparation of designs and tender documents for the project and will be the responsibility of the supervision consultant.

11.4.2. Construction Phase

Environmental monitoring during the construction phase will comprise two principal groups of activities:

- Review of the Contractor's plans, method statements, temporary works designs, and arrangements relating to obtaining necessary approvals from the Engineer, 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 Contractor's offsite facilities including quarry and borrow areas, if there are any, 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 occurring.

These activities will be fully integrated with other construction supervision and monitoring activities carried out by the construction supervision consultant. Primary responsibility for ensuring that an adequate level of environmental monitoring is carried out will lie with the resident engineer (RE), as part of his duties connected with general site supervision. Actual monitoring on a day-to-day basis will be carried out by the site staff 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 to the agreed schedule and in the required form. 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 part of the site needs 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 near to and use the project road and any diversions, 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.

11.5. Reporting

11.5.1. Monthly Progress Report

Monthly reports prepared by the RE should contain a brief section referring to environmental matters, which summarizes the results of site monitoring, remedial actions, which have been initiated, and whether or not the resultant action is having the desired result. The monthly progress report will also identify any unforeseen environmental problems and will recommend suitable additional actions.

Monthly progress meetings between AfDB, EEP, Owner's Engineer and the Contractor shall include a review of environmental aspects.

11.5.2. Site Environmental Management Plan Report

The construction scale of the proposed project demands the need for the preparation of a comprehensive SEMP for the major activities. The SEMP report will provide 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.

The Contractor will prepare and submit a Construction Environmental and Social Management Plan.

These plans shall include the following specific Site Environmental Management Plans:

1. Occupational Health and Safety Management Plan
2. Air Quality Management Plan
3. Community Health and Safety Management Plan
4. Traffic Management Plans
5. Construction Camp Management Plan
6. Waste Management Plan
7. Human Resources Management Plan
8. A Chance Find Procedure
9. Landscaping and Site Restoration Plan
10. Demobilization Plan
11. Labour influx Management
12. Gender Based Violence management plan

11.5.3. Environmental Inspection Report

Environmental monitoring of site activities will be undertaken and the findings will be

presented through a set of inspection reports and incidents forms. Environmental Inspections Report (EIR) will be issued monthly. The EIR shall normally be supported by photographic evidence and provides the following:

- A description of construction activities that may affect the environment;
- Progress in implementing environmental and social management plans;
- Summary of environmental performances for the month;
- Summary of Environment, Health and Safety (EHS) actions taken;
- Details of any EHS incidents or accidents;
- Findings of the monitoring programmes, with emphasis on any breaches of the control standards, action levels or standards of general site management;
- Identify any unforeseen environmental concerns and recommend suitable additional actions;
- Tracking of issues causing environmental concern;
- Summary of any complaints by external bodies and actions taken/to be taken;
- Suggested amendments to the Environmental Management Plan or any other required plans; and
- Objectives and targets for the following month.

Any unresolved concern will be carried over to the next reporting period until the issue has been resolved. This will allow for the tracking of issues until it is confirmed that the issue/concern has been resolved.

Any breaches of the acceptable standards specified by law/construction permits and/or the ESMS should also be reported.

The monthly site Inspection Report will be distributed to EEP's ESAO and Sheger and Addis Abeba Environmental Protection Offices, AfDB.

11.6. Monitoring Framework

Effective monitoring at all stages of this Project could be managed by the project supervisory consultant, which is managed under the EEP's coordination and responsibility.

Therefore, the primary responsibility of this monitoring plan is levied on EEP's staff to promote environmental awareness and protection within the project corridor.

A monitoring plan is provided in Table 10.1 below.

Table 11- 1: Environmental and Social Monitoring Plan

No	Issues to be Monitored	Monitoring Site/Location	Methods of Monitoring	Monitoring indicators	Time & Frequency Monitoring	Purpose	Institutional Responsibility	Cost
1. Environmental and Social Monitoring Plan During Construction Phase								
1.1	Erosion of Earth works	All constructionsites	Observation and reporting regarding the provisions in erosion Control Plan	Soil erosionstatus	Continuous and monthly reporting	To reduce the risk oferosion	Contractor'sHSE Officer/ EEP's ESAO	118,000 birr for EEP's ESAO
1.2	Competitionfor water Resources	At constructionsites	Observation and inspection	Number of complaints by water users	Upon complaints by local residents	To ensure compliance Regulation/standard	As above	100,000.00
1.3	Water pollution	At construction sites and camp facilities	Observation, record keepingand reporting	Pollution level in receiving water bodies	Monthly	To ensure compliance with relevant regulations	As above	100,000.00
1.4	Noise and Vibration	At construction site and near settlement areas	Noise Level	Noise Level	Upon complaints by residents near settlement sites	To ensure compliance with Regulation on the assessment and management of the environmental noise	As above	100,000.00
1.5	Air Pollution	At construction sites and accessroad	Observation and inspection	Dust and exhaust emissions level	Occasionally throughout construction period (alternating locations)	To ensure compliance withAir Pollution Control Regulation/standard	As above	100,000.00
1.6	Waste Management	At construction sites and camp facilities	Observation, record keepingand reporting	Type and quantity ofwastes generated, waste handling& disposal site	Monthly	To ensure compliance with relevant regulations	As above	100,000.00
1.7	Construction Traffic Accident	In and around TL corridor	Observation, record keeping &analysis	Number of accidents reported	Monthly & upon incidents	To enhance the safety of workers minimize accidentrisk on the local community	As above	50,000.00

No	Issues to be Monitored	Monitoring Site/Location	Methods of Monitoring	Monitoring indicators	Time & Frequency Monitoring	Purpose	Institutional Responsibility	Cost
1.8	Occupational Health and Safety Risks	All work places	Inspection, record keeping &analysis	Number & type ofPPE distributed &trainings provided	Continuous during Construction	Ensure compliance with Regulation on Occupational Health andSafety	Contractor'sHSE Officer/ EEP's H&S	50,000.00
1.9	Extraction of construction materials	Project corridor	Visual inspection	Quarry sites operation & rehabilitation	Until the end of construction period	Natural vegetation may be removed to extract materials	HSE Officer &Woreda Office	50,000.00
1.10	Conflict between Localand Migrant Workers	At construction sites/TL Corridor	Observation and inspection	Number of complaints	Occasionally throughout construction period &upon incidents	To ensure compliance Regulation/standard	EEP/Contractor's PR & Woreda SocialOffice	50,000.00
1.11	Child Labour	At constructionsites	Observation, inspection and reporting	Contractor's manpower record	Continuous and monthly reporting	To ensure compliance with Regulation on Child Labour	As above	50,000.00
1.12	Impact on Public Health	Store/site installation/Campsite and nearby villages along theTL corridor	Awareness creation andCondom distribution	Number of awarenesstraining conducted	Monthly	Prevent the spread ofHIV/AIDS	Contractor'sHSE Officer, EEP/EMU & Woreda healthoffice	100,000.00
2. Environmental and Social Monitoring Plan During Operation and Maintenance Phase								
2.1	Solid/Domestic Waste	At substation sites and office facilities	Observation, record keepingand reporting	Type and quantity ofwastes generated, waste handling& disposal	Continuous and monthly reporting	To ensure compliance with relevant regulations	EEP's ESAO and EMU Team	50,000.00

No	Issues to be Monitored	Monitoring Site/Location	Methods of Monitoring	Monitoring indicators	Time & Frequency Monitoring	Purpose	Institutional Responsibility	Cost
2.2	HazardousWaste	At substation sites and office facilities	Observation, record keepingand reporting	Type and quantity of wastes generated, waste handling & disposal	Continuous andmonthly reporting	To ensure compliance with relevant regulations	As above	50,000.00
2.3	Generation ofE-Waste	At substation sites and office facilities	Observation, record keepingand reporting	Type and quantity ofwastes generated, waste handling& disposal	Continuous andmonthly reporting	To ensure compliance with relevant regulations	As above	50,000.00
2.4	Occupation,Health and safety risks	At substation sites and office facilities	Observation, record keepingand reporting	Number & type ofPPE distributed Type and number of trainings provided	Continuous and monthly reporting	To ensure compliance with regulation on occupationalhealth and safety with the health and safety plan	As above	100,000.00
3. Environmental and Social Monitoring During Decommissioning phase								
3.1	Noise and Vibration	At demolition siteand near settlement areas	Noise Level	Observation, record keeping and reporting	Upon complaints by nearby residents	To ensure compliance with relevant regulations	EEP's ESAO and EMU Team	50,000.00
3.2	Air Pollution	At Demolitionsites and access roads	Dust and exhaust emissions level	Observation, record keeping and reporting	Occasionally throughout decommissioning phase (alternatinglocations)	To ensure compliance with relevant regulations	As above	50,000.00
3.3	Demolitionwaste	At demolition sites and access roads	Type & quantity of wastes generated, stored & disposal sites	Observation, record keeping & reporting	Continuous & monthly reporting	To ensure compliance with relevant regulations	As above	50,000.00

No	Issues to be Monitored	Monitoring Site/Location	Methods of Monitoring	Monitoring indicators	Time & Frequency Monitoring	Purpose	Institutional Responsibility	Cost
3.4	Vegetation disturbance	Along the Demolition corridor	Observation and inspection	Visual inspection	Continuous & monthly reporting	To ensure compliance with relevant regulations &ecosystem rehabilitationand restoration	As above	50,000.00
3.5	Environmental, Health and Safety risks	Project site	Observation and inspection	Number & type ofPPE distributed & No. of trained workforces	Continuous until all discarded facilities are removed and monthly reporting	To ensure compliance with regulation on occupationalhealth and safety with the health and safety plan	Contractor /EEP	50,000.00

12. INSTITUTIONAL CAPACITIES, STREGTHENING, TRAINING AND REPORTING

11.7. Institutional Capacities and Training

EEP Environmental and Social Affairs Office is one of the functional areas of EEP to follow-up and 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.

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 kV 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 activities (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 actions taken are in accordance with contract specification clauses, and

specified mitigation measures.

13.2. 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 ESMP and 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.

13.3. Reporting and Disclosure

Monthly reports prepared by the EEP'ESAO personnel should contain a brief section referring to environmental and social matters, which summarizes the results of site monitoring, remedial actions which have been initiated, and whether or not the resultant action is having the desired result. The report will also identify any unforeseen environmental and social impact/risk and problems and will recommend suitable additional corrective actions.

Progress meetings with the Contractor will also include a review of environmental aspects. Progress reports should be prepared which summarize the results of all monitoring. The reports will give monitoring data in a standard format. Reports should emphasize any significant violations of contract provisions by the contractor or any failure to implement requirements of the ESMP. Progress Reports should be submitted to AfDB, EPA, EEP's project office and ESAO and other relevant institutions, on request.

Any significant safety incidents and other environmental contamination should be summarized, along with actions taken to mitigate these and to prevent reoccurrence and reported immediately to the EEP with a minimum of 24 hours. EEP upon receiving incident notification report shall also report to financer (AfDB) within 24 hours, accordingly.

The EEP will disclose this ESIA report after the AfDB reviewed by making copies available at its head office and in regional, Woreda, community levels where the project situated. The copies shall also be made available to the relevant Government's agencies, and other interested Groups. The Government of Ethiopia will also authorize the financer (AfDB) to disclose this ESIA electronically through its external Website.

13. Environmental Mitigation, Management, Monitoring and Training Costs

13.1. E&S Risk Management Implementation Cost

The total environmental and social mitigation, management, monitoring and training costs are summarized in Table 11.5 and amounts to some 35,419,800.00Birr (643,177.41USD). This amount will be allocated to cover implementation of the environmental and social mitigation, management, monitoring programs described in Chapter 6, 9 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 environmental and social risk management 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.

13.2. Capacity Building and Training

Cost of training to strengthen environmental and social affairs office of EEP (ESAO-EEP)' capability in the area of environmental management and monitoring and short-term international study has been included.

In an effort to strengthen institutional capacity and environmental awareness, seminars, workshops and study tours to be organized under this project shall also be open for individuals from concerned ministries and agencies such as Federal MoWIE and EPA. The objectives of the seminar-workshops are to ensure environmental awareness, knowledge and skill for the implementation of the recommended environmental mitigation management and monitoring plans.

13.3. Environmental Monitoring

To ensure that monitoring is adequately funded, costs to carry out a comprehensive environmental monitoring plan has been included. This will provide the basis for rational management decisions regarding impact control.

Monitoring during construction: Most of the monitoring activities comprise visual observation during site inspection and will be carried out at the same time as the engineering monitoring activities. However, factors to be monitored include air quality, noise, water quality, soil erosion, waste management, natural vegetation, equipment, fueling and maintenance, health and safety, social status, wildlife, etc.

Monitoring during operation: The principal fields of interest requiring monitoring during operation include: risk of collusion to birds, health and safety risks, noise, solid/domestic waste, land use and vegetation clearance, community impacts and complaints.

The cost for systematic evaluation of the environmental and social performance of the TL project will be covered by the project.

Summary of Environmental, Mitigation, management, and Monitoring discussed in the below tables.

Table 14- 1: Estimated cost Summary for corrugated and Tukul residential houses

S/No	Type of houses	No. of houses affected	Total size of affected houses in m^2	Average pricein Birr/m2	Total cost (Birr)
1	Corrugated iron sheet	1	36	10,000	360,000.00
Sub total		1	36		**360,000.00**

Table 14- 2: Compensation cost for valuable trees

No.	Type of projectaffected tree	Quantity in No.	Unit cost in birr	Total cost in birr
1	**Eucalyptus tree**			
1.1	*Eucalyptus* spp (Bahir-zaf) *fully matured with estimated 12 year (Pole/Quami)*	1784	1000	1,784,000.00
1.2	*Eucalyptus* spp (Bahir-zaf) *Matured with estimated 5 year (Mager)*	27730	300	8,319,000.00
1.3	*Eucalyptus* spp (Bahir-zaf) *Semi Matured with estimated 7 year (Werage)*	4444	350	1,555,400.00
1.4	*Eucalyptus* spp (Bahir-zaf) *Young tree with estimated 1 year (Chefeka)*	63733	200	12,746,600.00
2	*Juniperus (Thid)*	72	5000	360,000.00
3	Accacia	8	400	3200
	Sub Total	**97,771**		**24,768,200.00**

Table 14- 3: Expected compensation cost for crops

No.	Farm land	Hectare of land	Productivityy/ha	Price/quntal	Temporary dislocation /1year
1	barley	7.48	40	8,000.00	2,393,600.00
Sub Total		7.48	40	8,000.0	**2,393,600.00**

Table 14- 4: Cost summary for environmental mitigation and monitoring

No	Items	Cost in Birr	Cost in USD
1	Compensation cost for residential houses	360,000.00	6537.13
2	Removal cost	10,000.00	181.58
3	Compensation cost for economically valuable trees	24,768,200.00	449,758.48
4	Permanent and temporary affected farm land	2,393,600.00	43,464.68
6	Support for vulnerable group	400,000.00	72,634.82
Sub total		**27,931,800.00**	**489,430.52**
1	Environmental and social management plan	1,500,000.00	27,238.06
2	Compensation valuation committee	200,000.00	3,631.74
3	Grievance redress committee	100,000.00	1,815.87
4	Capacity building	800,000.00	14,526.96
5	Monitoring and Evaluation	1,668,000.00	25,722.79
Sub Total		**4,268,000.00**	**77,501.36**
Total		32,199,800.00	584,706.73
Contingency 10%		3,219,980.00	58470.67
Grand Total		**35,419,780.00**	**643,177.41**

Exchange rate 1 dollar = 55.07 birr date 7/20/2023

13.4. Funding Mechanism

The total funding needed for identified activities is presented in Table 11.5. The EEP is responsible for providing these resources from the Project budget for all activities related to the implementation of

environmental mitigation, management and monitoring programs.

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.

14. Conclusion and Recommendations

13.5. Conclusion

This updated ESIA accepts that implementation of the Gurara 230 kV Power Transmission Line Project will bring a number of positive socio-economic impacts as well as adverse environmental and social impacts.
Therefore there is a pressing and implementation of this project in the planned areas are expected to alleviate the scarcity electricity supply problems in the planned areas, enhance investment and economic development, create employment, reduce poverty and ultimately improve the quality of life of the people. The project also lay on the groundwork for the continuation of the Electricity Program. On the contrary, implementation of the project will bring a number of adverse environmental and social impacts during the pre-construction, construction, operation phases. The important impacts during the pre-construction, construction and decommissioning phase include increased loss of farm lands, impacts of residential lands, soil erosion, loss of trees, air and noise pollution, disruption of existing environment, damages of physical infrastructures, obstruction of traffic mobility and safety hazards, increased risks of HIV/AIDS and other STDs.

Therefore, it can be concluded that there are no severe environmental or social impacts, or other grounds that will prevent the planned multi-purpose energy infrastructure project from not proceeding to its implementation provided that the mitigation measures proposed in this ESIA report are strictly implemented and monitored.
For appropriate compensation resettles and affected people and management of the impacts associated with resettlement at the level of impact significance, the project will develop and implement detailed Resettlement Action Plan/RAP/ should be mandatory.
Thus, in order to have minimal and acceptable residual environmental and social impacts, and enhance the potential benefits, it is recommended that the proposed mitigation measures should be properly implemented at the right time, and necessarily follow up of their effectiveness is made through well-planned monitoring program.

14.2. Recommendations

However, in addition to the above actions, it is better to forward the following recommendations.

- Compensation payment should be addressed properly for those their asset affected by the project to minimize ambiguity and the strict monitoring on the overall implementation and work progress of woreda asset evaluation committee should be seriously conducted.
- Gradual response for those direct and indirect questions raised from community during consultation period should be given to ease the planned new project implementation.
- Frequent Public awareness campaigns should be carried out for the for the project affected communities to sensitize them on general environmental and social management practices;

- As much as possible the proposed project should encourage the use of environmentally friendly technologies.
- Effective monitoring of environmental and social management plans has to be put in place;
- Deliberate efforts should be made to encourage maximum participation of the community in all stages of project implementation and operation;
- Training and capacity building must be objective, need based and practical. Empowerment of the project PIU staffs and EHS team is therefore the prime element to ensure sustainably implementation of the proposed mitigation measures.
- Issues such as land taking, relocation, cost recovery, and resettlement, if any, need at most attention and thorough monitoring and evaluation as well frequent discussion with the user community is mandatory.
- The proposed mitigation measures are properly implemented at the right time, and necessarily follow up of their effectiveness is made through well-planned monitoring program.
- Durin construction period it is recommended that not to cut all trees and agricultural products growing less than 8 meter length.

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Hurso Harer Jigija 230 kV and Degahabur-Fafem-Kebridehar 132 kV power transmition project Environmental and social Impact Assesment.

Annexes

Annex 1: Base Line Data:

List of Natural, Cultural and Historical Heritage

Bure City		
Name of Natural, Historicaland Cultural Heritage	Location	Status
Natural Cave	BukuBulba	Not Registered
Natural Forest	Seyegarialge	Registered
Shinkuru Michael Church	Akako Mena Abichu Kebele	Registered
Abune Agnatiwos Church	ChanchoBuba/KoreRoba	Registered
AredaJila	ChanchoBuba/KoreRoba	Registered
Tutue Mariam Church	MoyeGajo/AlemTena	Registered
Ginbichu Michael Church	ChanchoBuba/ArbiAkako	Registered
Legetama Medhanialem Church	MoyeGajo/MoyeLegetama	Registered
Chinti Mountain	Bata Awabi	Not registered
Epiphany holiday	All kebele	Registered
Meskel Holiday	All Kebele	Registered

Top Ten Disease in Project Affected Woredas

S/NO	Type of deases		
1	Diarrhoea (Non - Bloody)	6	Typhoid Fever
2	Acute upper Respiratory Infection	7	Helementhiasis
3	Pneumonia	8	Urinary Tract Infection
4	Trauma	9	Dyspepsia
5	Acute Febrile Illness	10	Infection of Skin and subcutaneousTissues

Annex 2: Chance Finding Procedure

AfDB OS1 states that the borrower or client shall be responsible for ensuring that the siting, design, construction and operation of projects should avoid significant damage to cultural heritage (both physical and intangible).

Physical cultural heritage is considered a unique and often non-renewable resource that possesses cultural, scientific, spiritual, and/or religious value and includes moveable or immovable objects, sites, structures, groups of structures, natural features, or landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural value. Examples of different physical cultural heritage examples are:

- Archaeological sites.
- Historic structures.
- Historic districts.
- Historic or cultural landscapes.
- Archaeological artefacts

Procedures for Chance Find of Physical Cultural Heritage given the proposed project activities will be implemented. AfDB OS 1 is triggered, expecting that limited unforeseen (accidental "chance findings" of some archaeological artifacts) impacts might occur during the construction activities of the project. In many cases, it is not possible to identify physical cultural heritage, such as archaeological artifacts, until the construction of a project begins. In case of any possibility of chance find of physical cultural heritage, most notably during excavation as part of construction activity, the chance find resource is one of the instruments to be used during the project implementation period. All chance finds of such physical cultural heritage will lead to temporary suspension of all activity that will adversely impact the cultural resource. Contracts will include detailed procedures for ensuring the protection of the cultural heritage, including cessation of activities until the significance of the find has been determined and until appropriate mitigating measures has been implemented.

Annex 2 contains standard provisions to be annexed to contracts that potentially will lead to chance finds of physical cultural heritage, as required. The attachments outlined below will be annexed to the contract in case there is the possibility of chance find of physical cultural heritage. Attachment to contracts in case of potential chance find of physical cultural heritage.

If the Contractor discovers archaeological sites, historical sites, remains and objects, including graveyards and/or individual graves during excavation or construction, the Contractor shall:

1: Excavation in sites of known archaeological interest should be avoided and as stated in annex 1, such projects are not eligible for funding. Where historical remains, antiquity or any other object of cultural, historical or archaeological importance (including graveyards) are unexpectedly discovered during construction in an area not previously known for its archaeological interest, the following procedures should be applied:

- Stop the construction activities in the area of the chance find.
- Delineate the discovered area.

- Secure the area to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be present until the responsible national and regional authorities and the Ministry of Culture and truism totake over.

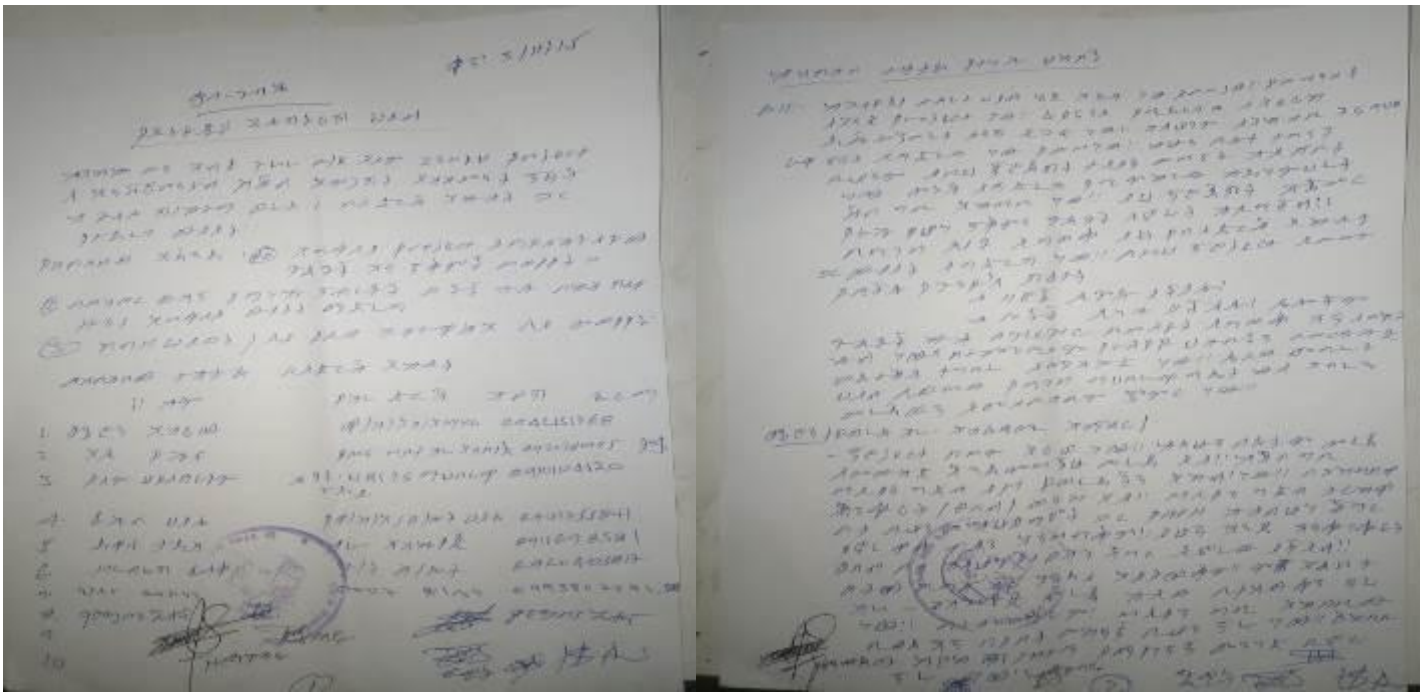
Notify EEP environmental and social safeguards specialist who in turn will notify the MoWIE and EEP respective relevant institutions.

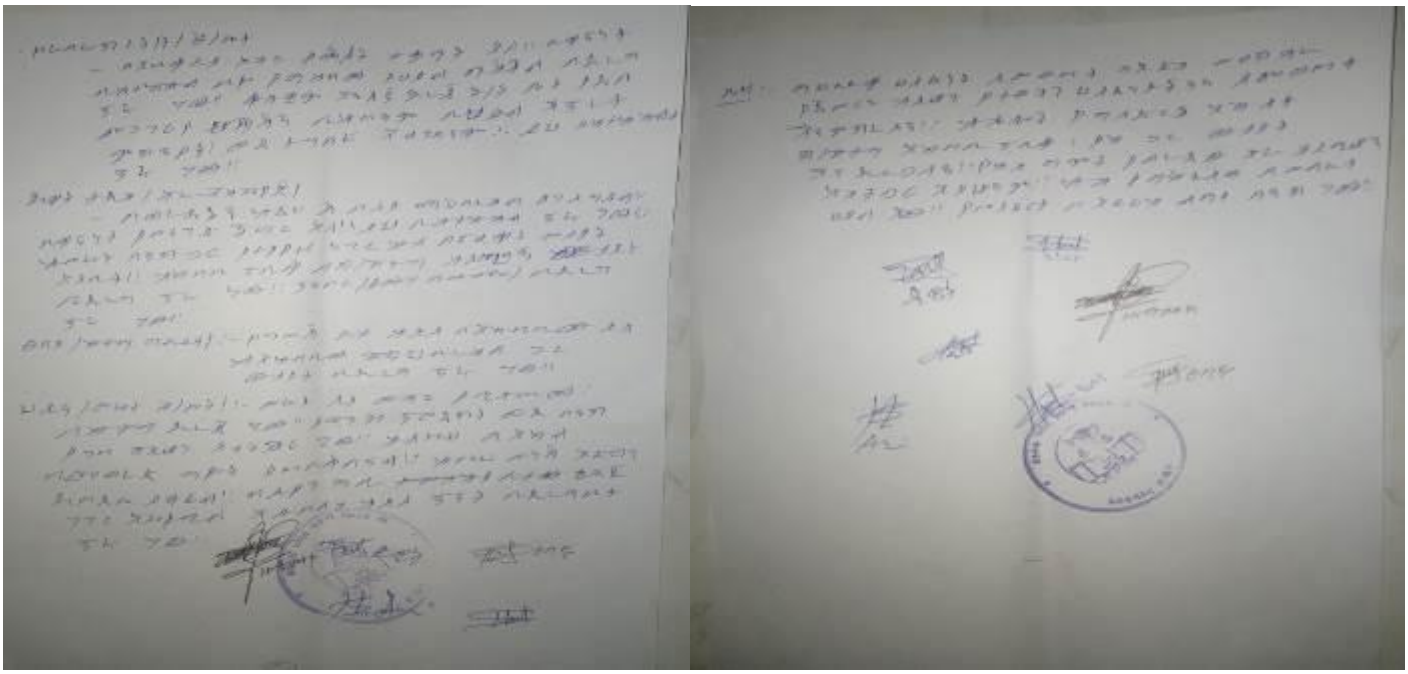
Annex 3: Persons Contacted and Institutions Visited

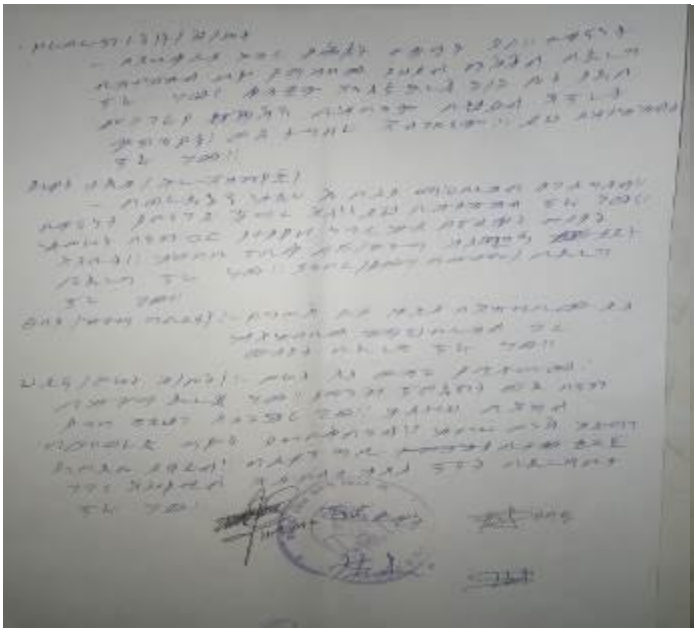
No	Full name	Poisson	Woreda	Mobile
1	Mr. Girma Weyesa	Akako Mena Abichu Administrator head	Akako Mena Abichu Wereda	0913143567
2	Mr. Abate Adugna	Water and Energy office head	»	0920954893
3	Mr. Bekan Bekele	Party head	»	0913167894
4	Mr. Yomif Getachew	Party office head	»	
5	Mr. Mosisa Kuru	Administration office head	»	0904173577
6	Mr. Mesay Yadete	Party Administration	»	0922846743
7	Mr. Adane Ewunetu	Woreda tewekay	»	0912688615
8	Mr Tesfaye Aboye	Women head	»	0913488533
9	Mr. Boja Mekonen	Enterprize head	»	0912331352
11	Mr. Fasil Hayle	Gulele wereda 1 office head	Guelele Wereda 1	0941755841
12	Mrs. Meron Asfaw	Administratin Head Advisor	»	0942131768
13	Mr. Ali Yesuf	Health office head	»	0920780995
14	Mr. Alem Hayle Maryam	Woumen and Child office	»	0910104120
15	Mr. Dawit Tadese	Development office manager	»	0911698381
16	Mr. Zerabiruk Zeleke	Education office head	»	0920403817
17	Miss Hilina Mekoneon	Land Administration Head	»	0993807592
18	Mr. Tamirat Aleto	Administration Head	Yeka Wereda 1	0920854561
19	Mr. Minyahil Girma	Administration V/head	»	0964508238
20	Mr. Mesifin Mekurya	Health office	»	0913384760
21	Mrs. Medihanit Shibiru	Urban agricultral office head	»	0966408233
22	Mr Getachew Gezu	Land administration head	»	0910302585
23	Miss Betelihem Mulugeta	Wumen and child office head	»	0973409381

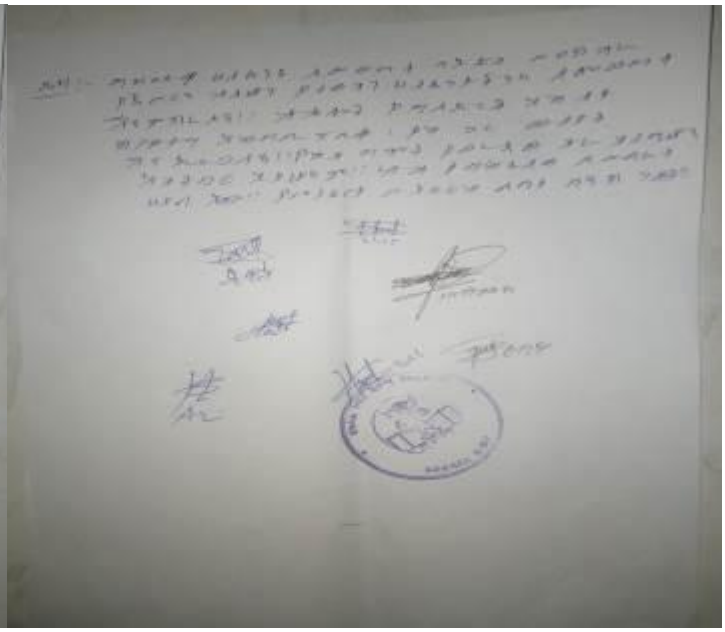
Annex 4:Minutes of Public Consultation Meetings

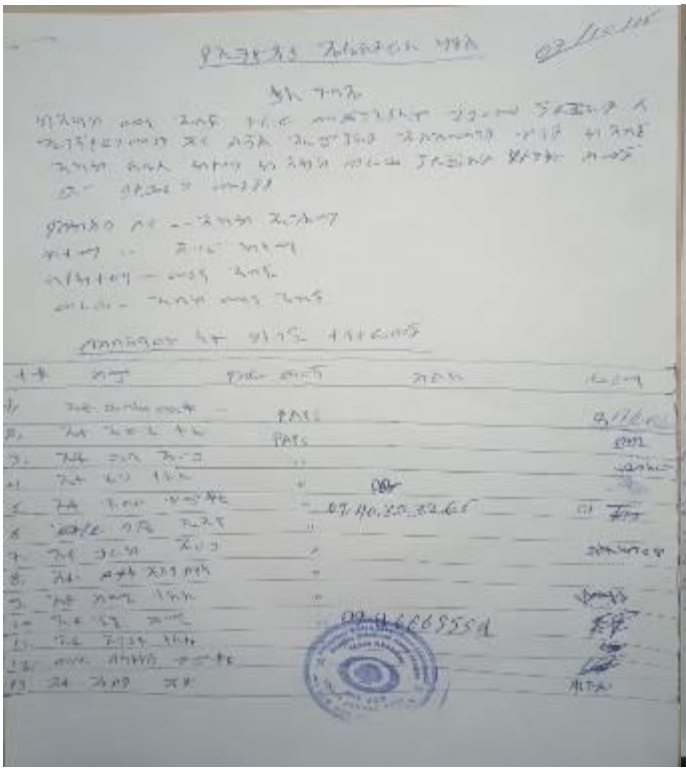
See the PDF documents of Scanned Public consultations With Yeka Sub city Wereda 1, Gulele Sub City Wereda 1 and Akako Mena Abichu Project Affected People and Community.

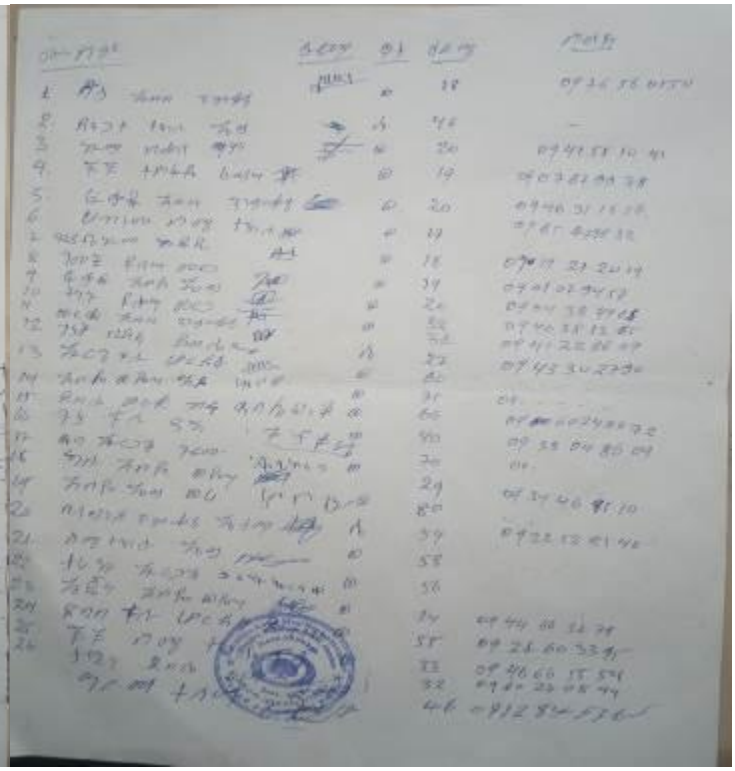


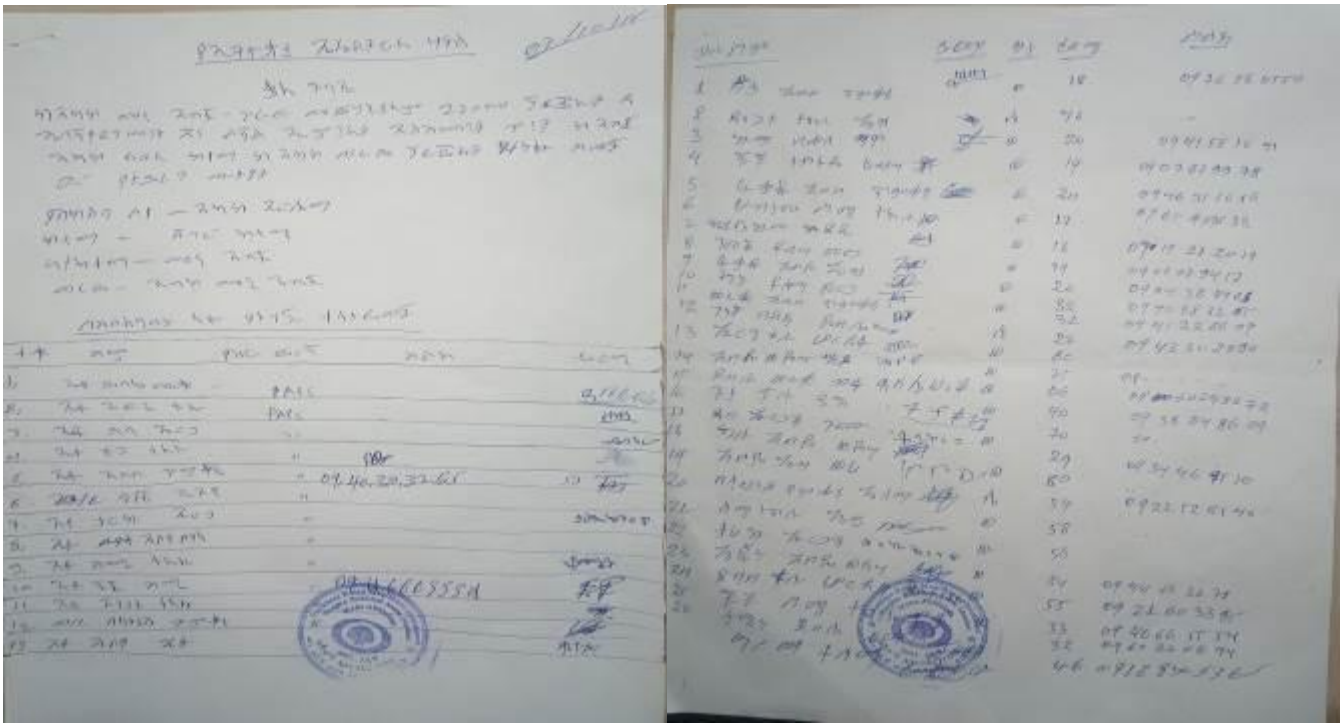


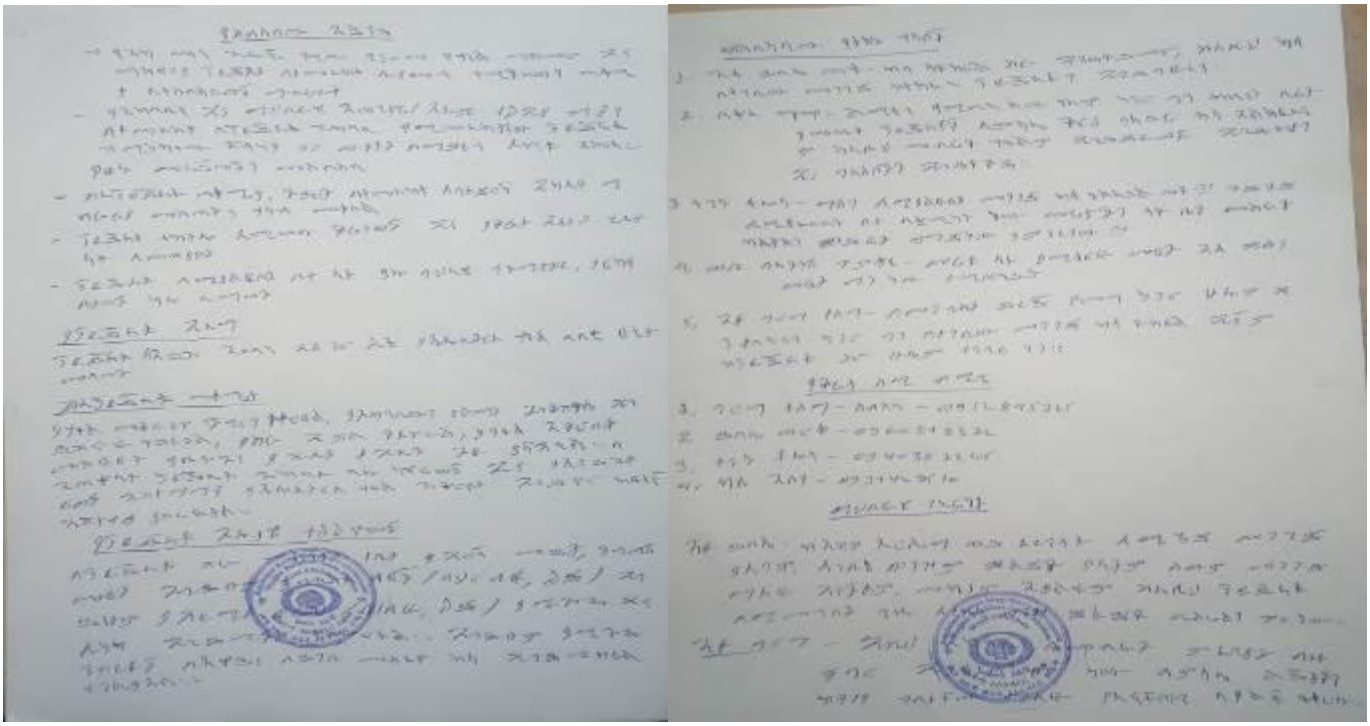


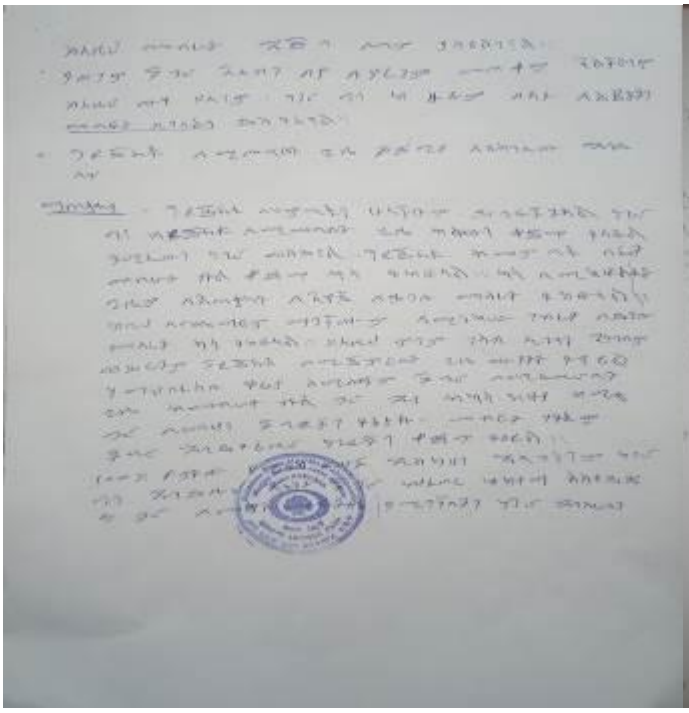


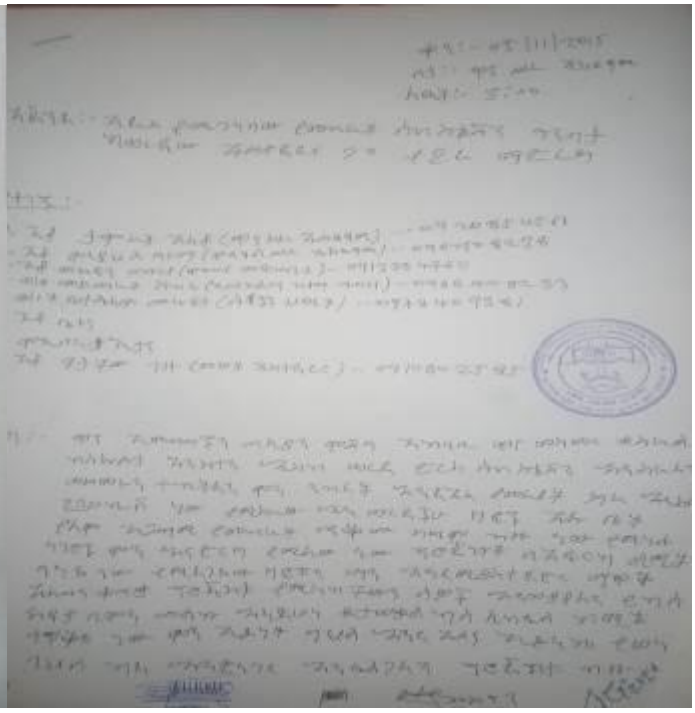


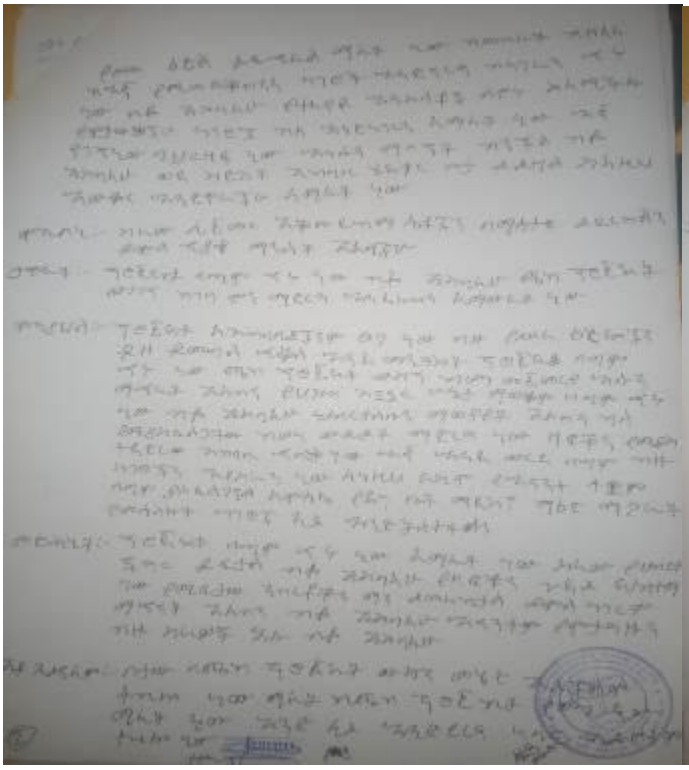


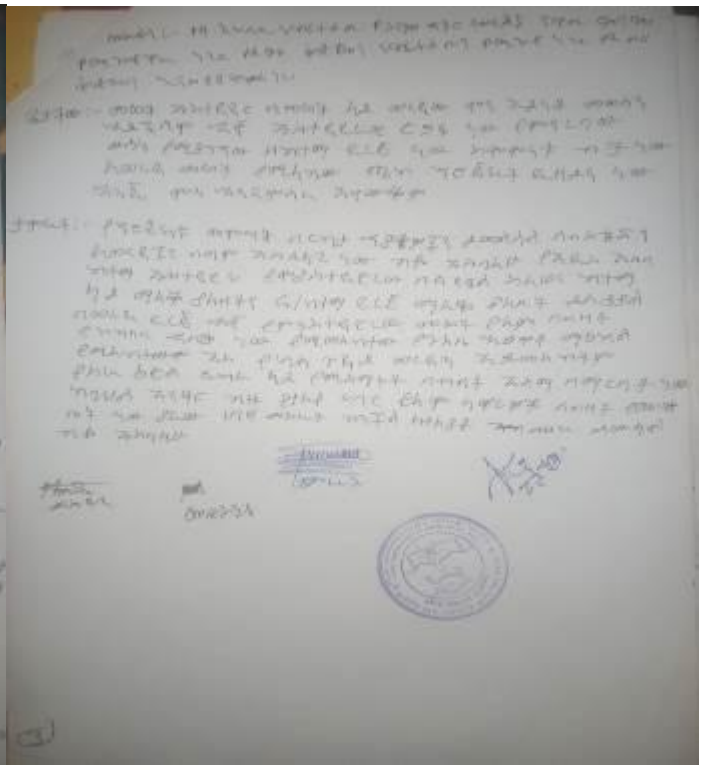












Annex 5:ESIA Study Team

EEP's Environmental and Social Affairs Office		
Team Member	**Position/Profession**	**Profession**
Mr. Beza Abrham	Environmentalist	MSc, Environmental Engineering BSc, Plant Science
Mr. Moibon Itana	Sociologist	MA, Sociologist BA, Sociologist
Mr. Aynalem Bekele	Serveyer	Diploma, Survey Engineer