



Climate-resilient community access to safe water powered by renewable energy in drought-vulnerable regions of Ethiopia

Environmental and Social Assessment and Management Plan

August 2024

Prepared by: Robi Redda (Mr.), ESIA Expert

Table of Contents

1. Introduction.....	9
1.1. Description of the project	9
<i>Objectives</i>	10
<i>Expected Results</i>	10
<i>Outputs of the Project</i>	11
1.2. Approach and Methodology for the ESMP	12
2. Governing Legislation and Standards	13
2.1. The Constitution	13
2.2. Environment and climate change related policy, strategies and proclamations	14
<i>Environment Policy of Ethiopia</i>	14
<i>Proclamation 299/2002, Environmental Impact Assessment</i>	15
<i>Proclamation 300/2002, Environmental Pollution Control</i>	15
<i>Proclamation 513/2007, Solid Waste Management</i>	15
<i>Proclamation 159/2008, Prevention of Industrial Pollution - Council of Ministers Regulation</i>	15
<i>EIA Guideline, July 2000</i>	15
<i>EIA Procedural Guideline, November 2003</i>	16
<i>Guideline for Environmental Management Plan (draft), May 2004</i>	16
<i>Climate-Resilient Green Economy (CRGE) Strategy, 2011</i>	16
2.3. Water Resource Management related policies, strategies and proclamations	16
<i>Ethiopian Water Sector Policy, 1999</i>	16
<i>Ethiopian Water Sector Strategy, 2001</i>	16
<i>Ethiopian Water Resources Management Regulation (No. 115/2005)</i>	17
<i>One WASH National Programme (OWNP)</i>	17
2.4. Health and sanitation related policies, strategies and proclamations	17
<i>Proclamation 661/2009, Food, Medicine and Health Care Administration and Control</i>	17
<i>Proclamation 200/2000, Public Health Proclamation</i>	17
<i>National Hygiene and “On-Site” Sanitation Protocol</i>	17
2.5. The Accredited Entity’s Environmental and Social Safeguards Framework	17
3. Alignment of National Policies and Laws with GCF Safeguard Standards	18
3.1. Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts	18
3.2. Performance Standard 2: Labour and Working Conditions	18
3.3. Performance Standard 3: Resource Efficiency and Pollution Prevention	18
3.4. Performance Standard 4: Community Health, Safety, and Security	19
3.5. Performance Standard 5: Land Acquisition and Involuntary Resettlement	19
3.6. Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	19

3.7.	Performance Standard 7 on Indigenous Peoples	20
3.8.	Performance Standard 8 on Cultural Heritage	20
4.	Description of Baseline Environment	21
4.1.	<i>Kobo Girana Valley</i>	21
	<i>Biophysical Environment</i>	21
	<i>Socioeconomic environment</i>	28
4.2.	Borena: Gelchet Sarite Water Supply Project	31
	<i>Biophysical Environment</i>	34
	<i>Socioeconomic Environment</i>	38
5.	Environmental and social impact identification and impact mitigation measures	40
5.1.	General description of the Project and ESMP	40
5.2.	Potential positive environmental and social implications	41
	<i>Kobo-Girana Valley</i>	41
	<i>Borena: Gelchet Sarite Water Supply</i>	42
5.3.	Potential negative impacts of the project	43
	<i>Kobo-Girana Valley</i>	43
	<i>Borena: Gelchet Sarite Water Supply</i>	46
5.4.	Analysis of the identified negative environmental and social impacts	49
	<i>Impact Criteria</i>	49
	<i>Impact analysis</i>	51
5.5.	MITIGATION MEASURES	57
	<i>Kobo-Girana Valley</i>	57
	<i>Borena: Gelchet-Sarite Water Supply Project</i>	60
6.	Environmental and Social Management Plan	64
6.1.	Objectives of the Environmental and Social Management Plan	64
6.2.	Implementation arrangement for the ESMP	64
6.3.	Information Disclosure	65
6.4.	Complaints Register and Grievance Redress	66
6.5.	Mechanisms for Implementing the ESMP	69
	<i>Environmental Procedures and Site and Activity-Specific Work Plans/Instructions</i>	69
	<i>Environmental Incident Reporting</i>	69
	<i>Daily and Weekly Environmental Inspection Checklists</i>	69
	<i>Corrective Actions</i>	69
	<i>Review and Auditing</i>	69
	<i>Training of Contractors</i>	69
6.6.	Environmental and Social Mitigation and Monitoring Plan and Matrix	71
7.	ESMP Implementation Cost.....	94
7.1.	Kobo Girana Valley	94

7.2.	Gelchet-Sarite water supply site	101
8.	Public Consultation and Recurrent Stakeholder Engagement	108
8.1.	Public Consultation	108
8.2.	Recurrent stakeholder engagement	108
	<i>Context and Rationale</i>	108
	<i>Proposed stakeholder engagements</i>	109
9.	Resettlement, Livelihood Restoration and Compensation Framework.....	112
9.1.	Context	112
9.2.	Resettlement, Livelihood Restoration and Compensation Framework	112
9.3.	Land Acquisition and Resettlement Action Plan	113
10.	Native Communities Engagement Framework	116
10.1.	Context	116
10.2.	Definitions and approach	116
10.3.	Main considerations	116
10.4.	Engagement Framework	116
11.	Conflict Sensitivity Analysis and Security Risk Assessment.....	118
11.1.	Conflict Sensitivity Analysis	118
	<i>Amhara Region</i>	118
	<i>Oromia Region</i>	119
11.2.	Government Action towards conflict resolution	120
11.3.	Security Risk Assessment	120
	<i>Political and Governance Risks</i>	120
	<i>Technical and Operational Risks</i>	121
	<i>Environmental and Social Risks</i>	121
	<i>Financial Risks</i>	121
12.	Due Diligence and Environmental Audit.....	122
13.	Sexual Exploitation, Abuse and Harassment (SEAH)	123
14.	References.....	125
	Appendix 1: List of Interviewees.....	127
	Appendix 2: Summary of stakeholders; consultation.....	129
	Appendix 3: Due Diligence Checklist and Report.....	148

Acronyms

ATA	Agriculture Transformation Agency (Ethiopia)
AWC	Available Water Capacity
CAPEX	Capital Expense
CEC	Cation Exchange Capacity
CRGE	Climate Resilient Green Economy (Strategy of Ethiopia)
CSB	Corn Soya and Sugar Blend
EIA	Environmental Impact Assessment
EPA	Environmental Protection Authority
EPE	Environmental Policy of Ethiopia (2002)
ESMP	Environmental and Social Management Plan
ESSF	Environmental and Social Safeguard Framework
GCF	Green Climate Fund
GOE	Government of Ethiopia
GRM	Grievance Redress Mechanism
IRR	Internal Rate of Return
KGVDP	Kobo Girana Valley Development Programme
LUT	Land Use Type
MCM	Million Cubic Meters
MOF	Ministry of Finance
MOIL	Ministry of Irrigation and Lowlands
MOWE	Ministry of Water and Energy
MPD	Ministry of Planning and Development
OPEX	Operating Expense
OWNP	One Wash National Programme
PGHO	Public Grievance Hearing Office
PMO	Project Management Office
PV	Photovoltaic
RAP	Resettlement Action Plan
REDD+	Reduce Emissions from Deforestation and Forest Degradation (in Developing Countries)
STDs	Sexually Transmitted Diseases
SWP	Solar Water Pumps
TA	Technical Assistance
TLU	Tropical Livestock Unit
WUA	Water User Associations (in Ethiopia)

Glossary of Terms

As stipulated in the Environmental and Social Safeguards Framework of the Ethiopian GCF Accredited Entity (the Ministry of Finance) and for the purposes of this project, this is how the following common environment and social safeguard terminologies are understood:

- **Affected Parties:** Individuals, group of individuals or communities who may be directly impacted by the CRGE Facility financed operation. The impacts may be positive or negative.
- **Audit:** the process through which how well compliance with policy objectives and regulatory requirements is met and the trustworthiness of the implementation of conditions attached to an approved environmental impact study report is examined.
- **Categorization:** The process of screening projects in terms of their potential environmental and social adverse and beneficial impacts during the project identification phase, using the “Checklist for the Environmental and Social Screening at Project Idea Note (PIN) Stage” presented in Annex 1 of the ESSF, to classify projects in Schedule I, II or III.
- **Complainant:** A potentially project-affected or interested party that brings a complaint about a CRGE-financed project either to a kebele, woreda, regional or CRGE Secretariat-level grievance redress system. Complainant: Person, group or organization or its representative, making a complaint.
- **Complaint /Grievance:** Expression of dissatisfaction made to an organization related to its services and /or processes where a response or resolution is explicitly or implicitly expected.
- **Consultation:** the process of engaging affected people and other interested parties in open dialogue through which a range of views and concerns can be expressed to inform decision-making and help build consensus. To be meaningful, consultation should be carried out in a culturally appropriate manner, with information in local languages distributed in advance.
- **Coordinating (enabling) entities:** The coordinating entities for the CRGE initiative are the EPA, MOF and MPD. EPA is the overall lead on climate change in the Ethiopian Government and retains ultimate responsibility for delivering on the ambitions of the Climate Resilient Green Economy initiative. MOF is responsible to lead on fiscal management and economic cooperation for Ethiopia. Also, MOF leads on the CRGE Facility and hosts the CRGE Facility Secretariat. CRGE Facility (The Facility): The Facility was established by the GOE and is housed at the MOF to help mobilize, blend, combine and sequence domestic and international, public and private finance to support the institutional building and implementation of Ethiopia’s CRGE Initiative.
- **CRGE Secretariat (The Secretariat):** The Secretariat is a unit seated in MOF that, in close coordination with MEFCC, supports the Facility’s Management Committee and Task Force on the Facility-related matters. The Facility Secretariat is under the direct supervision and control of the State Minister of External Economic Cooperation, which chairs the Management Committee, and is responsible for the overall coordination of The Facility’s portfolio.
- **Eligibility:** The criteria for qualification to receive benefits under a resettlement program.
- **Eminent Domain:** The right of the state (GOE) to acquire land, using its sovereign power, for public purpose. National laws such as, the Constitution, proclamation 455/2007, 456/2007 establish which public agencies have the prerogative to exercise eminent domain.
- **Environmental Impact Assessment (EIA):** A tool used to identify and assess the potential impacts (be it positive or negative) of a proposed project (or activity), evaluate alternatives, and formulate appropriate mitigation, management and monitoring measures (generally in the form of an environmental management plan).
- **Environmental Impact Study (EIS) report:** A document prepared and submitted by a Proponent that serves as an application for an Environmental Clearance Letter. It is a

comprehensive study containing sufficient information to enable the Competent Agency to determine whether and under what conditions a proposed project should proceed.

- **Environmental Management Plan (EMP):** An Instrument that outlines the mitigation/enhancement, monitoring, consultative and institutional strengthening measures to prevent, minimize, mitigate or compensate for adverse environmental and social impacts and to enhance beneficial impacts. An EMP shall specify how, when and by whom these measures shall be implemented.
- **ESSF (the Framework)** is a tool used to manage potential adverse impacts in a unified process through a guide consisting of a set of methodologies, procedures and measures to facilitate adequate environmental and social management (risk and impact management) related to CRGE initiatives financed by the Facility. Effective implementation of the ESSF will therefore ensure environmental and social sustainability of the CRGE initiative.
- **Feedback:** Opinions, comments, suggestions, and expressions of satisfaction or dissatisfaction. **Grievance redress procedures:** The processes established under law, local regulations, or administrative decision to enable property owners and other displaced persons to redress issues related to acquisition, compensation, or other aspects of resettlement and overall CRGE project issues
- **Grievance redress procedures:** The processes established under law, local regulations, or administrative decision to enable property owners and other displaced persons to redress issues related to acquisition, compensation, or other aspects of resettlement and overall CRGE project issues **Impact:**
- **Impact** means any change to the environment or to its component that may affect human health or safety, flora, fauna, soil, air, water, climate, natural or cultural heritage, other physical structure, or in general, subsequently alters environmental, social, economic or cultural conditions. **Implementing entities:**
- **An implementing entity (IE)** is a sectoral Ministry or a regional government. A reduction action falls within the mandate of an implementing entity. This makes IEs indispensable to the successful implementation of reduction interventions. Implementing entities will coordinate their SRM activities through their CRGE units
- **Initial Environmental Examination Report:** Document similar to an EIS, but with reduced details and depth of assessment and discussion.
- **Interested parties:** Individuals or groups who have expressed support or concern regarding a proposed or existing CRGE Facility financed operation.
- **Land Acquisition:** The process of acquiring land under the legally mandated procedures of eminent domain for CRGE related projects. **Participation:** a key process of the CRGE planning and implementation tool through which stakeholders' influence and share control over development initiatives and the decisions and resources which affect them. It is a process which can improve the quality, effectiveness and sustainability of projects and strengthen ownership and commitment of government and stakeholders.
- **Person:** Person means any natural or juridical person
- **Precautionary approach:** Precautionary approach means that where there are threats of serious or irreversible environmental and social damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
- **Proponent:** Proponent means any organ of government if in the public sector or any person if in the private sector that initiates a project.
- **Public Disclosure:** The process of making information available to affected people and other interested parties, particularly regarding the environmental and social aspects of projects.

Disclosure of information should be done in a timely manner, in publicly accessible locations and in a language and format readily understood by affected groups.

- **Resettlement Action Plan:** A resettlement action plan [RAP] is the planning document that describes what will be done to address the direct social and economic impacts associated with involuntary taking of land.
- **Resettlement Entitlements:** Resettlement entitlements with respect to a particular eligibility category are the total of compensation and other forms of assistance provided to displaced persons in the respective eligibility category.
- **Reviewing:** The determination of whether the environmental impact study report meets the approved Terms of Reference and provides satisfactory information and analysis that is required for decision-making.
- **Safeguards:** Safeguards are sets of principles, rules and procedures put in place to achieve social and environmental goals by avoiding negative impacts and promoting co-benefits.
- **Scoping:** The stage in the EIA System where the project impact assessment requirements are more definitely established and focused to provide the Proponent and the stakeholders the final scope of work and terms of reference for the EIS.
- **Screening:** The process that decides whether a project requires assessment, and the level of assessment that may be required.
- **Stakeholders:** Stakeholders are persons or groups who are affected by or can affect the outcome of a project. These can include affected communities, local organizations, NGOs and government authorities. Stakeholders can also include politicians, commercial and industrial enterprises, civil society organization, academics, religious groups, national social and environmental public-sector agencies and the media.

1. Introduction

This is the Environmental and Social Assessment and Management Plan (ESMP) for the project proposal “Climate-resilient community access to safe water powered by renewable energy in drought-vulnerable regions of Ethiopia”. The project has been screened against the GCF’s and IFC/WB’s Social and Environmental Standards Procedure and is deemed a Medium Risk (International Finance Corporation/World Bank Category B) project. This categorization is in due recognition that the project will be conducted in food-insecure and drought-affected areas and not in sensitive ecosystems (i.e. in wetlands, forests or others). Moreover, it will have minimal adverse social impacts and impact on cultural heritage. Furthermore, the anticipated impacts will be restricted to the project site and will not affect a broader area beyond the immediate project implementation sites. There is also no displacement and resettlement of the community during the development or implementation of the project. Finally, all impacts identified will be addressed through implementation of mitigation measures and there will be minimal residual impact after the implementation of the proposed mitigation measures.

1.1. Description of the project

Due to their predominant dependence on rain-fed subsistence agriculture, Ethiopia’s rural communities are highly vulnerable to biophysical climate impacts. Regional climate change has begun to accelerate drought cycles and generally climate impact models show the increased occurrence of extreme weather events and rainfall variability, ranging from -25% to +30% by 2050. Droughts alone can reduce total GDP by 1% to 4%, while soil erosion will reduce agricultural GDP further (2-3%) without adaptation by 2045 (GoE, 2021). Just 5% of land is irrigated and crop yields from small farms are below regional averages. Moreover, pastoralists’ livelihoods centre on livestock, which is highly vulnerable to drought, leading to existential risks, but also with transformative economic potential through climate-resilient water access. Furthermore, climate stresses and consequent water shortages have already resulted in a critical decline in quantity and quality of feed, leading to decreased productivity and increased mortality of animals.

While irrigation contributes to the adaptation of these highly vulnerable rural communities to the impacts of drought, the energy source used tends to be emissions-intensive diesel generators (Toga, 2020), as a large segment of the rural population does not have access to the electricity grid. Solar water pumping (SWP) has not been widely used thus far, due to access to finance and lack of experience (Toga, 2020).

A majority of the rural population in Ethiopia also continues to rely heavily on surface water sources, which are significantly affected by climatic impacts, as source water for drinking and sanitation (FDRE, 2018). Climate impacts on source surface water supplies, therefore, negatively affect agricultural productivity and food security, drinking water, nutrition and health, with women and children being disproportionately affected.

To this end, this project seeks to strengthen rural climate resilience in Ethiopia through sustainable extraction of water from deep aquifers with solar PV for productive and potable use in semi/arid South Western Oromia and North Eastern Amhara regions. MOF, MOIL, MOWE and regional authorities will finance and provide technical assistance (TA) for scale-up of solar water pumping, sustainable agriculture and enabling environment support. The funding proposal presents a \$50m project, seeking \$45m from the GCF.

The project focuses in **two intervention areas** that are particularly climate-vulnerable:

- The southern rangelands in Oromia region’s **Borena zone** where livestock is the predominant source of food and income for the agro-pastoral population (Fenetahun and Fentahun, 2020). In this target zone, the project area comprises four arid to semi-arid, drought prone and food insecure districts (or “woredas”), namely Yabello, Dire, Dilo, and Teltele (MOWE, 2017). In total, the area spans 19,285 km² and hosts an estimated 503,373 inhabitants as well as a population

of approximately 1,469,900 livestock. On average, the modelling results for the hydrogeological system, consisting of the four sub-basins Laga Balal, Ririba, Magado and Taltale, estimate the total available water recharge at about 187,5 mcm/year. Due to highly fractured form of sub-surface water basins in Borena, no robust estimates or data exist on static groundwater supply. However, sensitivity analyses in the feasibility study estimate that, given the depth of balsaltic aquifers in this hydrogeological zone, ground water extracted through this project will not tap into reserve of the ground water aquifer system but only extract water from surface water recharge. With solar radiation of >7,39 Kw/day in December, the target area is estimated to have a particularly high potential to use Solar water Pumps (SWP) (Tekle, 2014). Existing deep wellfields include the Galchet-Sarite water supply project and the Borena Network Water Supply Project.

- the Amhara region's **Kobo Girana Valley** in northern Ethiopia, a mountainous and traditionally fertile area with abundant (but largely untapped) groundwater resources potential. Population is estimated at about 1.6 million, on approximately 3,500 km² and hence much more densely inhabited. Given previous (diesel-pump centered) irrigation development in the area as part of the Kobo-Girana Valley Development Programme (KGVDP)¹, geohydrological data is available and groundwater reserves are estimated at about 2,548.74 mcm (Million Cubic Meters), static estimate (Tripleline, 2022). Similar to the Borena zone, total abstraction through project-induced well rehabilitation will not tap into reserve of the ground water aquifer system but only extract water from surface water recharge. Especially given shifting precipitation patterns and higher evaporation gradients the recharge rate of sub-basins will however need continuous monitoring to ensure the sustainable recharge of the groundwater supply.

The project develops a new partnership between federal, regional and community stakeholders by pioneering Solar Water Pump (SWP) provision through the engagement of Water User Associations (WUAs), cooperatives and small businesses in establishing and utilizing solar water pumping for drinking water and irrigation. Agricultural cooperatives and water user associations offer existing social organization established at the local level (kebele/woreda²), but typically without existing renewable energy/irrigation expertise. The project pioneers financing and implementation arrangements that are self-sustainable and replicable, thereby accelerating the GoE's objective for universal access to safe water as well as increasing agricultural productivity.

Objectives

The project strengthens rural climate resilience by enabling the sustainable extraction of ground water in deep aquifers with solar water pumping (SWP) for agricultural production and drinking. The specific project objectives are to enable the sustainable use of deep boreholes for irrigation and drinking water to increase the adaptive capacity of local communities. The boreholes that are to be used for the project have already been drilled but were originally designed for use with diesel generators, which failed due to a lack of finance.

Expected Results

This project contributes to a multi-sector paradigm shift as it enhances the resilience of agricultural productivity in drought-prone areas of rural Ethiopia through promoting SWP, thereby addressing

¹ For a historical overview and critical account see Gebreyes, Million; Müller-Mahn, Detlef (2019): Cultural Political Economy of Irrigation Management in Northeastern Ethiopia: The Case of the Kobo-Girana Valley Development Programme, in: *Water Alternatives*, 12, p. 836-852

² A woreda is a local administrative level, which is the equivalent of a local district; a kebele is the lowest administrative unit (sub-district). Each woreda has an average population of 100,000. A kebele has an average population of 5,000.

existential needs of the most vulnerable segments of the population. The proposed measures ensure reliable access to safe water for drinking and irrigation. Pioneering SWP for sustainable ground water extraction leads to awareness-raising through the demonstration effect in Ethiopia, which currently relies on rainfall and diesel generators. An integrated approach that utilizes only the most efficient and sustainable technology, while introducing policy and regulatory measures (tariffs, taxation) that incentivise efficient water use, will enable transformational agricultural practices that are financially self-sustainable.

The project will achieve the following **adaptation impacts**:

- Number of beneficiaries, disaggregated by gender
- Increasing access to safe water in rural areas, with a particular focus on women and children (incl. through gender action plan).
- Diversifying agricultural production reduces vulnerability to climate impacts
- Eliminated costs for fuel and increased revenues from agricultural production, and asset generation through envisioned community ownership of SWP enhance economic resilience

In terms of mitigation of GHG emissions, benefits will accrue mainly from using SWP instead of diesel generators. The MRV framework will use UNFCCC-approved monitoring and baseline methodologies for calculating emission reductions. The “Ethiopia Off-grid Electrification CDM Programme of Activities (PoA)”, operated by the Development Bank of Ethiopia (DBE), includes a sub-component type 5 “Solar Pumps for Irrigation”. This sub-component uses CDM methodology AMS-I.B Version 12 “Mechanical energy for the user with or without electrical energy”. The direct overall GHG emission reduction potential of the project is at least 240,000 tCO_{2e} over the project lifetime. The additional indirect mitigation impact will be assessed as part of the feasibility study (additional technology lifetime and replication).

The project will also contribute to **Sustainable Development Goals (SDG)**, namely SDG1: no poverty, SDG2: zero hunger, SDG6: clean water and sanitation, SDG7: affordable and clean energy, SDG8: decent work and economic growth, SDG10: reduced inequalities, and SDG13: climate action.

Outputs of the Project

The project has two main components, comprising several outputs and activities that will complement each other to achieve transformational impact: 1 - Increased community resilience through sustainable access to clean water, and 2 - Enabling environment.

- 1. Component 1: Increased community resilience through sustainable access to clean water:** The key outputs are climate-resilient water and energy infrastructure that enables the use of previously drilled deep wells that will be powered with SWPs. Climate-vulnerable areas strategic for food security in Ethiopia have been studied for their potential to enhance climate resilience through accessing ground water wells. WRDFO will extend loans to regional water bureaus/cooperatives to build and operate solar water pumping infrastructure. The financing mechanisms will overcome crucial barriers of mobilizing upfront investment costs, which have high CAPEX compared to BAU diesel generators but have lower OPEX in the long-term while being emissions-free. This cost structure allows the development of self-sustainable business models with low maintenance costs. However, successful implementation requires substantial training and awareness-raising activities, as SWP is a complex technology that has not been widely used in Ethiopia. A financial model will capture the CAPEX of deploying submersible pumps and solar PV water and irrigation infrastructure, and OPEX including maintenance costs, logistics, fee collection methods, crop-type and crop water requirements to determine the IRR.
- 2. Component 2: Enabling Environment:** Technical assistance, policy and legal reforms, and further supporting measures ensure the effectiveness of the interventions, but also work towards a broader sectoral impact and paradigm shift, as they enable replication and upscaling the use

of SWP for climate-resilient access to safe drinking water and agricultural productivity. In addition, linkages to other activities of the Government of Ethiopia (GoE), development partners and non-state actors will enhance the effectiveness of GCF-supported measures.

1.2. Approach and Methodology for the ESMP

This ESMP has been developed based on a review and updates of existing Environmental Impact Assessment reports that were prepared as part of the initial design work for the Kobo-Girana and Galchet-Sarite water development projects, which are situated in the Amhara and Oromia National Regional States, respectively.

The ESMP team also reviewed recent environmental, social-economic and health surveys that have been conducted in the project locality. Moreover, a series of interviews of project managers and other relevant actors, in the context of the two water development projects, were conducted - a list of interviews conducted is included in Annex 1 of this report. A stakeholder consultation on the ESMP was conducted in April 2022, with representatives of the Kobo-Girana and Borena communities, non-governmental and governmental organisations, and other relevant development partners and projects. Details of this consultation is presented in Annex 2 of this report.

To assess the significance of the identified impacts, qualitative criteria were adopted to analyze them, based on the work of Wood (2003). These qualitative criteria assess the significance of an impact as a function of its probability of occurrence and its severity.

Finally the ESMP report will be posted on the Accredited Entity's (Ministry of Finance's) website, <https://www.MOFed.gov.et/programmes-projects/crge-facility/>, in line with the Government's and the GCF's public disclosure policy and to ensure that members of the public have access to this ESMP.

2. Governing Legislation and Standards

The project will fully comply with relevant Ethiopian national laws. In this section, the legislative and policy basis for the provision of environmental protection, climate change, water resource management, and health, hygiene and occupational safety in Ethiopia, which are also relevant to this project, are discussed. These relevant policies, laws and standards include:

- **The Constitution**
- **Environment and climate change related policies, strategies and proclamations**, which include:
 - The Environment Policy.
 - Proclamation 299/2002, Environmental Impact Assessment (EIA) ;
 - Proclamation 300/2002, Environmental Pollution Control.
 - Proclamation 513/2007, Solid Waste Management.
 - Proclamation 159/2008, Prevention of Industrial Pollution – Council of Ministers Regulation.
 - EIA Guideline, July 2000.
 - EIA Procedural Guideline, November 2003.
 - Guideline for Environmental Management Plan (draft), May 2004.
 - The Climate Resilient Green Growth (CRGE) Strategy.
- **Water resource management related policies, strategies and proclamations**, including:
 - Water Resource Management Policy, 1999
 - Water Resource Management Strategy, 2001
 - Proclamation No. 197/2000, Ethiopian Water Resources Management Proclamation
 - Proclamation No. 115/2005, Ethiopian Water Resources Management – Council of Ministers Regulation
- **Health and sanitation related policies, strategies and proclamations**, namely:
 - Proclamation 661/2009, Food, Medicine and Health Care Administration and Control
 - Proclamation 200/2000, Public Health Proclamation
 - National Hygiene and “On-Site” Sanitation Protocol
 - One WASH National Programme

2.1. The Constitution

The constitution adopted by Ethiopia in 1995 provides the guiding principles for environmental protection and management in Ethiopia. The concept of sustainable development and environmental rights are enshrined in Article 43, 44, 90 and 92 of the Constitution of GOE.

Article 43, The Right to Development, identifies peoples’ right to:

- Improved living standards and to sustainable development; and
- Participate in national development and to be consulted with respect to policies and projects affecting their community.

Similarly, in Article 44, Environmental Rights, all persons:

- Have the right to a clean and healthy environment; and
- Who have been displaced or whose livelihoods have been adversely affected because of state programmes, have the right to commensurate monetary or alternative means of compensation, including relocation with adequate state assistance.

Furthermore, Article 90, Social Objectives, highlights that, to the extent the country's resources permit, policies shall aim to provide all Ethiopians access to public health and education, clean water, housing, food and social security.

Moreover, in Article 92, environmental objectives are identified as:

- Government shall endeavor to ensure that all Ethiopians live in a clean and healthy environment.
- The design and implementation of programmes shall not damage or destroy the environment.
- 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.
- Government and citizens shall have the duty to protect the environment.

2.2. Environment and climate change related policy, strategies and proclamations

Environment Policy of Ethiopia

The Environmental Policy of Ethiopia (EPE) was approved on April 2, 1997 by the Council of Ministers and consists of ten sectoral and ten cross-sectoral policies. The EPE has embraced the concept of sustainable development. As its goal, the EPE declares its intention:

“to improve and enhance the health and quality of life of all Ethiopians and to promote sustainable social and economic development through the sound management and use of natural, human-made and cultural resources and the environment as a whole so as to meet the needs of the present generation without compromising the ability of future generations to meet their own needs.”

Some of the policy provisions relevant to the project at hand include the following:

- To promote in drought-prone and low-rainfall areas water conservation - which is as important as physical soil conservation for more secure and increased biomass production, including crop production;
- To develop forestry on the farm, around the homestead and on eroding and/or eroded hillsides in order to increase the stock of trees for fuel wood, construction material, implements and crafts, for forage and for other tree products;
- To undertake full environmental, social and economic impact assessments of all existing irrigation schemes in the rangelands and, wherever needed, establish programmes to correct their negative environmental, social and economic impacts.
- To recognize that public consultation is an integral part of EIA and ensure that EIA procedures make provision for both an independent review and public comment before consideration by decision makers;
- To ensure that forestry development strategies integrate the development, management and conservation of forest resources with those of land and water resources, energy resources, ecosystems and genetic resources, as well as with crop and livestock production; and
- To ensure that all phases of environmental and resource development and management, from project conception to planning and implementation to monitoring and evaluation are undertaken based on the decisions of the resource users and managers.

The Environment Protection Authority (EPA), newly-termed the Environment, Forest and Climate Change Commission (EPA), has issued several guidelines including the:

- (i) EIA Guideline Document of the EPA (2000),
- (ii) Procedural EIA Guideline of EPA (2003), and
- (iii) 2004 EPA's EIA Guidelines for sectors, including the road and railway; fisheries; forestry; hydropower production, transportation and distribution; irrigation; livestock and rangelands; mineral and petroleum operation; water supply; and Industrial Zone/Estate Development.

Proclamation 299/2002, Environmental Impact Assessment

The EIA Proclamation makes EIA a mandatory requirement for the implementation of major development projects, programmes and plans. The Proclamation is a tool for harmonizing and integrating environmental, economic, cultural, and social considerations into decision-making processes in a manner that promotes sustainable development. The Proclamation clearly defines:

- Why there is a need to prepare EIAs,
- What procedure is to be followed by the MSE to implement EIA of the project,
- The depth of environmental impact studies,
- Which projects require full EIA reports,
- Which projects need partial or no EIA report; and
- To whom the report is submitted.

Directive No.1/2008 A Directive Issued to Determine Projects Subject to the Environmental Impact Assessment Proclamation No.299/2002 lists the projects that require EIAs. None of the activities proposed under the proposed project are listed, therefore EIAs are not expected to be required. Should this change or the need for an EIA be identified, then a full assessment would be undertaken as part of the implementation.

Proclamation 300/2002, Environmental Pollution Control

Complementary to the EIA legislation, which requires developmental activities to consider environmental impacts before their establishment, the Pollution Control Proclamation requires ongoing activities to implement measures that would reduce their degree of pollution to a set limit or quality standard. Thus, one of the dictates of the legislation is to ensure through inspection the compliance of ongoing activities with the standards and regulations of the country: i.e. environmental audits.

Proclamation 513/2007, Solid Waste Management

Proclamation 513/2007 aims to promote community participation to prevent adverse effects and enhance benefits resulting from solid waste. It provides for preparation of solid waste management action plans by urban local governments.

Proclamation 159/2008, Prevention of Industrial Pollution - Council of Ministers Regulation

As a follow-up to Proclamation 300/2002, a regulation to prevent industrial pollution was developed by the Federal Environmental Protection Authority to ensure the compatibility of industrial development with environmental conservation. This regulation (Proclamation no. 159/2008) also includes comprehensive industrial pollution standards for a range of industrial and mining activities.

EIA Guideline, July 2000

The EIA Guideline Document provides essential information covering:

- Environmental Assessment and Management in Ethiopia,
- Environmental Impact Assessment Process,
- Standards and Guidelines, and
- Issues for sectoral environmental impact assessment in Ethiopia covering agriculture, industry, transport, mining, dams and reservoirs, tanneries, textiles, hydropower generation, irrigation projects and resettlement projects.

The guideline also contains annexes that:

- identify activities requiring a full EIA, partial measure or no action,

- Contain sample forms for application, and
- Provide standards and guidelines for water and air.

EIA Procedural Guideline, November 2003

The guideline outlines the screening, review and approval process for development projects in Ethiopia and defines the criteria for undertaking an EIA. Relevant to the project are the activities listed in Annex II, Schedules 1 and 2, which require either full or preliminary EIS. However, Directive No.1/2008 (refer above) modifies this list and consequently none of the proposed activities requires an EIA.

Guideline for Environmental Management Plan (draft), May 2004

The Guideline outlines the necessary measures for preparation of an Environmental Management Plan (EMP) for proposed developments in Ethiopia and the institutional arrangements for implementation of EMPs.

Climate-Resilient Green Economy (CRGE) Strategy, 2011

The CRGE strategy focuses on four pillars that will support Ethiopia's developing green economy:

- Adoption of agricultural and land use efficiency measures,
- Increased GHG sequestration in forestry, i.e., protecting and re-establishing forests for their economic and ecosystem services including as carbon stocks,
- Deployment of renewable and clean power generation, and
- Use of appropriate advanced technologies in industry, transport, and buildings.

In general, four initiatives for fast-track implementation have been selected under the CRGE: (i) exploiting Ethiopia's hydropower potential; (ii) large-scale promotion of advanced rural cooking technologies; (iii) efficiency improvements to the livestock value chain; and (iv) reducing Emissions from Deforestation and forest Degradation (REDD).

2.3. Water Resource Management related policies, strategies and proclamations

Ethiopian Water Sector Policy, 1999

The water sector policy aims enhance the development of the country's water resources to make optimum contribution to accelerated socio-economic growth. The water resources management policy is based on the constitution of the FDRE Government Macro Economic and Social policies and development strategies, as well as objectives accepted by the Federal Democratic Republic of Ethiopia and the principles of water resources development objectives that would enhance the socio-economic development of the peoples of Ethiopia.

Ethiopian Water Sector Strategy, 2001

The principal objective of the water resources strategy is to translate the national water resources management policy into action. More specifically, this strategy sets the roadmap as how to make meaningful contributions towards:

- Improving the living standard and general socio-economic well-being of the Ethiopian people.
- Realising food self-sufficiency and food security in the country,
- Extending water supply and sanitation coverage to large segments of the society, thus achieving improved environmental health conditions,
- Generating additional hydropower,
- Enhancing the contribution of water resources in attaining national development priorities,

- Promoting the principles of integrated water resources management.

In doing so, the strategy seeks to make meaningful contributions towards achieving broader national development objectives of poverty alleviation and sustainable human resources development. More specifically, the objective of the water supply and sanitation sub-sector strategy is to develop viable and implementable guidelines that promote the sustainable, efficient, effective, reliable, affordable and user-acceptable development of water supply and sanitation services, including livestock watering, in Ethiopia.

Ethiopian Water Resources Management Regulation (No. 115/2005)

Ethiopian Water Resources Management Regulation Part two, Article 3, Water Resources Utilization provides a list of information required for an application to be submitted to the Supervising Body for a water use permit, pursuant to Article 13 of the Proclamation (Proclamation No. 197/2000) and Article 4 states the duties of the supervising body with regard to provision of license for water works.

One WASH National Programme (OWNP)

ONE WASH programme: brings together four ministries - Water, Health, Education and Finance - to modernise the way water and sanitation services are delivered to the people of Ethiopia; improving the health situation, decreasing the drop-out rates of children in schools, and making financing for Water Sanitation and Hygiene (WASH) more effective. OWNP contributes to achieving the government's social and economic priorities in an equitable and sustainable manner by increasing water supply and sanitation coverage and the adoption of good hygiene practices. It consolidates planning, budgeting and reporting activities of WASH in a broad sector-wide approach.

2.4. Health and sanitation related policies, strategies and proclamations

Proclamation 661/2009, Food, Medicine and Health Care Administration and Control

The proclamation provides provisions towards:

- Ensuring that handling and disposal of trans-regional solid and liquid wastes are not harmful to public health.
- Ensuring that the quality of trans-regional water supply for the public is up to standard.
- Ensuring the availability of necessary hygienic requirements in controllable health-related institutions under the federal government.

Proclamation 200/2000, Public Health Proclamation

This proclamation prohibits the discharge of untreated liquid waste generated from septic tanks, seepage pits and industries into water bodies, or water convergences; and the disposal of solid or liquid or any other waste in a way which contaminates the environment or affects public health.

National Hygiene and “On-Site” Sanitation Protocol

The National Sanitation Protocol (2006), which is designed to follow the national strategy for hygiene and sanitation improvement with focus on universal access in rural or peri-urban areas.

2.5. The Accredited Entity's Environmental and Social Safeguards Framework

In order to facilitate climate action on the ground, GoE (and particularly the CRGE Coordinating Entities) developed the '*Environmental and Social Safeguards Framework (ESSF) for the CRGE Initiative*'. This ESSF guides the formulations and implementations of the CRGE initiatives and provides an enabling mechanism to GoE to meet environmental and social safeguard requirements

associated with investments that it finances through the CRGE Facility and international climate change funds. It further defines roles, responsibilities/institutional framework, and provides procedures to avoid, minimize and mitigate any direct, indirect and potential environmental and social risks and impacts which may arise from the among others implementation of CRGE investments. It also addresses mechanisms for public consultation and disclosure of project documents as well as redress of possible grievances in case this is needed during project implementation.

3. Alignment of National Policies and Laws with GCF Safeguard Standards

3.1. Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts

Ethiopia's Environmental Policy defines the environmental and social objectives and principles that guide the project to achieve sound environmental and social performance, while the EIA Proclamation (Proclamation no. 299/2002) sets a process for identifying the environmental and social risks and impacts of the project. The ESMP incorporates, as appropriate, what is required by the GCF's ESMS, which includes: (i) policy; (ii) identification of risks and impacts; (iii) management programmes; (iv) organizational capacity and competency; (v) emergency preparedness and response; (vi) stakeholder engagement; and (vii) monitoring and review.

This is a relevant standard in the context of this project and the project will ensure that environmental and social risks associated with this project are assessed and managed.

3.2. Performance Standard 2: Labour and Working Conditions

This performance standard is relevant in the context of this project.

In the context of Ethiopia, the Labour Proclamation (Proclamation No. 377/2003) protects the rights of contract employees and contains similar provisions as this GCF performance standard. The Proclamation's provisions include the obligations of employers to respect human dignity of employees, to take measures for occupational health and safety and to stipulate the obligations of the employee and the employer. It is also unlawful to discriminate against female workers in matters of remuneration on the grounds of their sex; to discriminate between workers based on nationality, sex, religion, political outlook or any other condition.

Project implementers need to ensure that these national laws and GCF performance standard are implemented at all project sites. While the PS2 recommends not to employ children under 18 years, the Proclamation "prohibits employing persons under 14 years of age." In cases of difference between the national and international requirements, the more stringent standard will be adopted and adhered to.

3.3. Performance Standard 3: Resource Efficiency and Pollution Prevention

Ethiopia's Pollution Control Proclamation and Standards (Proclamation no. 300/2002). The Proclamation starts out by stating that "*some social and economic development endeavours may inflict environmental harm that could make the endeavours counterproductive*" and further states "*it is appropriate to eliminate, or where not possible, to mitigate pollution as undesirable consequence of social and economic development activities.*"

The Proclamation has standards and penalties for waste management and disposal, and it can be concluded that the provisions of the Proclamation align well with the GCF performance standard.

This performance standard is relevant in the context of this project.

3.4. Performance Standard 4: Community Health, Safety, and Security

The Food, Medicine and Health Care Administration and Control Proclamation (Proclamation No. 661/2009) replaces the earlier Public Health Proclamation (Proclamation No. 200/2000).

Proclamation No. 661/2009 contains important provisions that are relevant to the project, and these include:

- It is prohibited to give water supply service from springs, wells or through pipes unless its quality is verified by the Health Authority,
- Any employer shall ensure the availability of occupational health services to its employees,
- The use of any machinery or instrument that generates excessive noise is prohibited. Any person who uses such machinery or instrument shall install noise-reducing apparatus; and
- No person shall dispose of solid, liquid or any other waste in a manner which contaminates the environment or affects the health of the society.

This performance standard is relevant in the context of this project.

3.5. Performance Standard 5: Land Acquisition and Involuntary Resettlement

Ethiopia's Proclamation to provide for the expropriation of land holdings for the public purposes and payment of compensation (Proclamation No. 455/2005), and the Rural Land Administration and Use Proclamation (Proclamation 456/2005) cover provisions contained in GCF PS5.

Proclamation 456/2005 includes provisions that are in line with GCF performance standard 5: *"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; and rural lands that have gullies shall be rehabilitated by private and neighbouring holders and, as appropriate, by the local community, using biological and physical works."*

The Expropriation of Land Holdings for Public Purposes and Payment of Compensation Proclamation No.455/2005" states that: *"A woreda or an urban administration shall, upon payment in advance of compensation in accordance with this Proclamation, have the power to expropriate rural or urban landholdings for public purpose where it believes that it should be used for a better development project to be carried out by public entities, private investors, cooperative societies or other organs, or where' such expropriation has been decided by the appropriate higher regional or federal government organ for the same purpose."* The law specifies procedures of expropriation, compensation payment, displacement of land holders and grievance and appeal.

No resettlement is proposed as part of this project. However, as per the requirement of the GCF a Resettlement Action Plan or Livelihood Restoration and Compensation Plan has been developed and is incorporated (refer to section 9).

3.6. Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

Proclamation No. 381/2004, Institute of Biodiversity Conservation and Research Establishment Proclamation delegates the Institute of Biodiversity Conservation: *"to ensure the conservation of the country's biodiversity using ex-situ and in-situ conservation methods"*.

Proclamation No. 482/2006, Access to Genetic Resources and Community Knowledge, and Community Rights Proclamation, objective is: *"to ensure that the country and its communities obtain*

fair and equitable share from the benefits arising out of the use of genetic resources so as to promote the conservation and sustainable utilization of the country's biodiversity resources;" Subsequent provisions focus on access rights to genetic resources.

There are no protected areas in the project site. Moreover, the project will not trigger this performance standard (biodiversity conservation and sustainable management of living natural resources), considering that there has been high human settlement in the localities in the past two decades and there is very little natural vegetation cover in the localities at present.

3.7. Performance Standard 7 on Indigenous Peoples

There is no specific national legislation on this aspect, as the entire Ethiopian population is indigenous. With regards to this project, the focus is to enhance the livelihoods of native communities, including pastoral and smallholder farmers in a culturally appropriate manner, e.g. the project will supply water to the pastoral Borena people at the Gelchet Sarite Water Supply Project site, which will be for drinking and cattle upkeep.

Moreover, to comply with GCF's requirements the Ministry of Finance has developed a guiding principle entitled Native Communities Engagement Framework which is developed to ensure the project will adhere to Free, Prior, and Informed Consent (FPIC) principles (**Refer to Section 10**).

3.8. Performance Standard 8 on Cultural Heritage

Ethiopia's Research and Conservation of Cultural Heritage Proclamation (Proclamation No. 209/2000) established the Authority for Research and Conservation of Cultural Heritage and is mandated: *to protect and supervise Cultural Heritage; collect information on Cultural Heritage and define the nature and classify the standards of same; give the necessary education and advice on the content, benefit and preservation of Cultural Heritage.* The Proclamation stipulates: *"no person may, without a permit issued by the Authority, carry out building or road construction, excavations of any type or any operation that may cause ground disturbance in an area declared reserved."*

This performance standard will not be triggered, since the project does not propose to undertake any of the above activities in areas declared as reserved.

4. Description of Baseline Environment

4.1. Kobo Girana Valley

Biophysical Environment

Location

The project area covers part of the wider valley known as Kobo-Girana Valley, located in Northern Wollo Administrative Zone of the Amhara National Regional Government. It lies along the main highway linking the central part of the country with northern Ethiopia, particularly along the Dessie-Mekele highway.

The Kobo-Girana Valley Development Programme Office is in the lower flat plain of Kobo Woreda in Kobo town about 575 km to the north of Addis Ababa. Figure 1 below shows the general location of the Kobo-Girana Valley and the location of the potential well sites to be incorporated in this project.

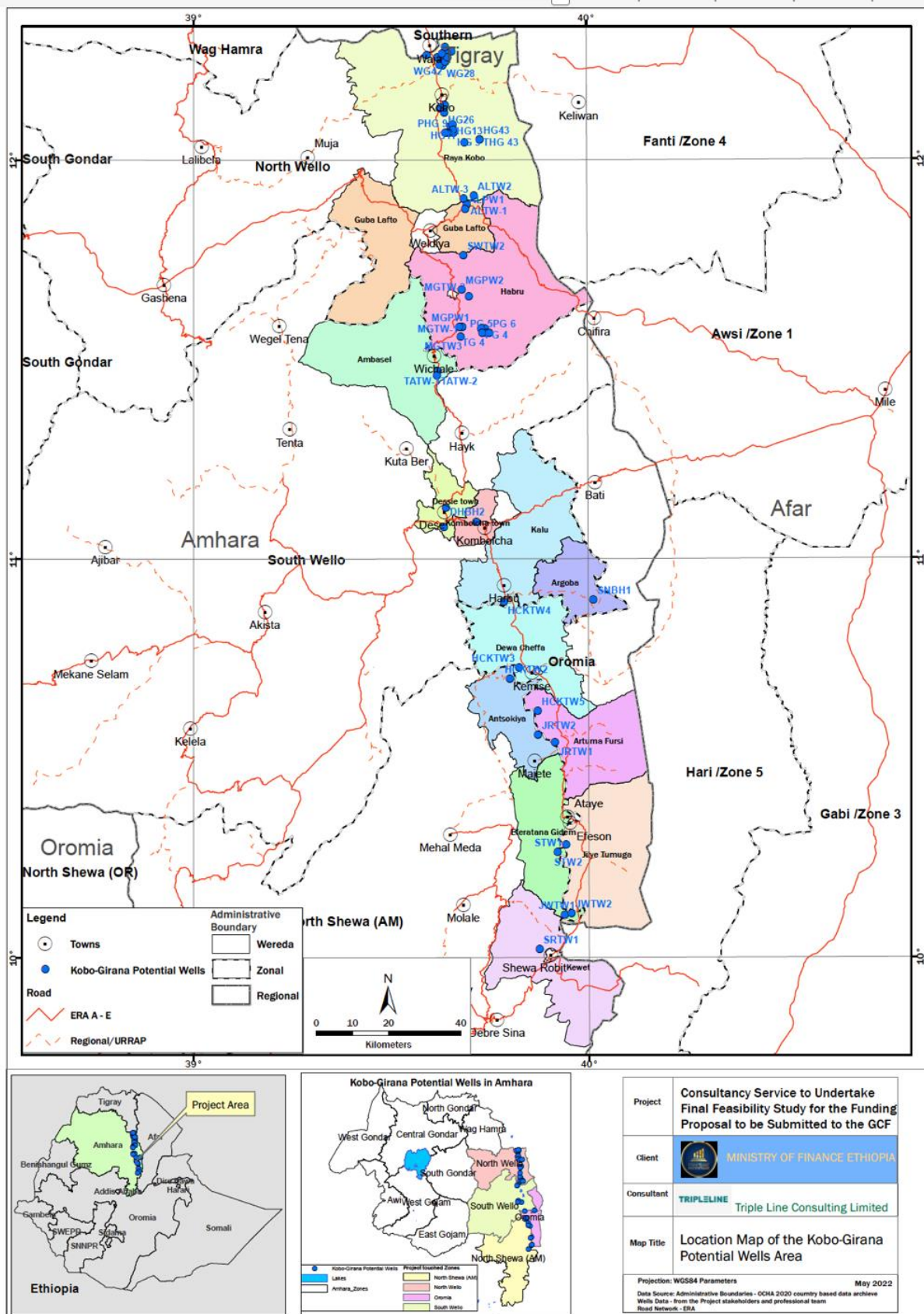


Figure 1. Map of the project site in the Kobo-Girana Valley

Source: Triple Line Consulting, 2022

Topography

The project area is characterized by pronounced variations in topography. The landscape has two main features, namely, the western and the eastern mountainous terrain and the low-lying flat plain 'sandwiched' in between the two mountain terrains. Altitude variations range from less than 1,350 metres above sea-level (masl) in the low-lying valley bottoms to about 4,000 masl in the nearby mountain ranges. However, the command area, where the proposed irrigation scheme is expected to be implemented, lies in almost flat to gently sloping terrain, with slopes ranging from 0-2%. Altitude ranges are from 1,350 to 1,500 meters both in Kobo and Girana sub-basins. Nearly one-third of the Kobo-Girana Valley can be regarded as flat plains, while the rest is either mountainous or hilly.

Most of the project area, particularly the Kobo area, is relatively plain land, accounting for about 29% of the total area. In Habru, plains account for about 41%. Mountains and hills with moderate to steep slopes, on the other hand, account for about 68% of the areas of the two woredas (71% in Kobo and 59% in Habru).

The valley opens towards the north and narrows towards the south. The width of the Kobo Valley ranges from about 12 km in the northern and central parts of the project area to about 5 km in the southern end of the valley.

Climate

Average temperature in the project area varies widely with altitude, with a distinct temperature range between maximum and the minimum. The average annual temperature in the sub-basin areas ranges from 17.5°C to 26°C. The average monthly temperatures in the Kobo area range from 18.7°C in December to about 26°C in June and 17.1°C to 23.6°C in Sirinka. Temperature generally increases from south to north corresponding, more or less, with the decrease in annual rainfall, due to the effect of more cloud cover in the southern part. The average temperatures are generally suitable for normal crop growth though germination may be slowed (for certain crops) during the cooler months (November to February). The average annual temperature in the Girana Sub-basin areas ranges from 16.3°C in January to 20.9°C in May (ADSWE, 2017).

The rainfall pattern in the project area is bi-modal. Annual rainfall at Kobo varies from 412mm to 912mm, with a 23 year mean of 705mm. The main rainy season (June to September) and the short rains (March – April) account for about 66% and 12% of the annual total, respectively. The highest rainfall occurs during July and August and the dry spell stretches from November to February. In contrast, the Sirinka data (in the Girana part of the project area) indicates a higher mean annual rainfall of 1,021mm, of which 56% occurs in the main season (June to September) and 18% during the months of March and April. Rainfall varies from 455mm to 1,281mm and the highest quantity occurs in the months of July and August. Generally, rainfall in the valley increases from north to south (ADSWE, 2017).

Agro-Ecology

The Kobo-Girana valley has diverse agro-ecological zones. Six types of agro-ecological zones have been identified in the project area. Most of the project area falls within the Dry Woina Dega (dry mid altitude) agro-ecological zone. This agro-ecology accounts for 56% of the total area. The basic characteristics of this agro-ecological zone are relatively high population density and intensively cultivated land with a variety of crops, including almost all cereals, pulses and oil crops. Teff, maize and sorghum are the major staple and cash crops in this area. Moisture stress is very common due to erratic and unreliable pattern. In Kobo, this agro-ecological zone covers almost one-third of the total area of the woreda.

Table 1: Agro-Ecological Zones of the Project Woredas

Agro-ecological zone	Woreda (%)			Area (km ²)	Elevation (m)	Rainfall (mm)
	Kobo	Habru	total			
Moist Wurch (Alpine or Afro-Alpine/Cool)	0.01	0.0	0.00	1.56	3,200-3,700	900-1,400
Dry Dega (Temperate/Cool Temperate)	9.48	0.2	5.47	1,714.24	2,300-3,200	<900
Moist Dega (Temperate/Cool Temperate)	1.20	2.2	1.63	511.79	2,300-3,200	900-1,400
Dry Woina Dega (Sub-tropical/Temperate)	61.83	47.6	55.67	17,445.66	1,500-2,300	<900
Moist Woina Dega (Sub-tropical/Temperate)	0.00	3.2	1.40	437.52	1,500-3,200	900-1,400
Dry Kola (Tropical/Warm Temperate)	27.48	46.7	35.82	11,225.37	500-1,500	<900
Total	100.00	100.0	100.00	31,336.14		

Source: Shiene, 2012

Dry Kola (dry lowland) is the second largest agro-ecological zone and accounts for 36% of the total area of the project Woredas. It covers an altitude of 500-1,500 masl and, usually, the rainfall amount is less than 900mm. Moisture stress is a major constraint to agricultural production. The main crops, therefore, are teff, sorghum, maize and millet. Population density is relatively low and livestock production plays a significant role in the life of the community.

Geology

The geology of the area is constituted predominantly of basalts and recent sediments. These are thick successions of strongly weathered basalts without clear stratification. The recent sediments are deposited in grabens formed in the escarpment zone as a result of extensive faulting and subsidence during the development of the rift system. They consist of lacustrine, alluvial and colluvial deposits. In general, erosion is quite high in the mountainous areas and large amount of material is transported and deposited in the low-lying areas (MCE, 2009).

Soils, Soil Property and Soil Erosion and Land Suitability

According to an extensive study by Metaferia Consulting Engineers (2009), five major soil types have been identified. Of the total surveyed area of about 20,800 ha (14,947 ha in Kobo, and 5,936 in

Girana), Vertisols covered 8,378 ha (48%); Fluvisols covered 7,725 ha (45%); and Cambisols covered around 776 ha (4.5%). The remaining area was covered by Leptosols and Calcisols with a combined area of about 451 ha. The Vertisols, which cover a majority of the area, are found mostly on the alluvial plains of the project area. Fluvisols, on the other hand, are found adjacent to riverine areas, along flood courses and are prone to seasonal flooding while the Cambisols, Calcisols and Leptosols are mostly located on relatively elevated plain and gently undulating terrains (MCE, n.d).

According to the aforementioned study by Metaferia Consulting Engineers (2009), the high infiltration rates of the soils in the valley may be unsuitable for flood and furrow irrigation systems but are manageable under overhead and drip systems. In addition, the available water capacity (AWC) has also been determined for all soils based on textural characteristics. Almost all soils in the project area have high AWC values, signifying suitability for irrigation (MCE, 2009).

Most soils in all parts of the project area have **high levels of pH**, indicating strongly alkaline conditions. Almost all soils of the project area are generally very **low in organic carbon**, indicating the small contribution that organic matter makes to soil fertility. As a result, there would be a need for application of organic and inorganic fertilizers. On the other hand, the **nitrogen content** of the soils is relatively high. **Salinity**, as measured by EC 1:2.5 soil-water suspensions, is low throughout, with all soils having values of less than 0.4ds/m. Salinity is, therefore, not a problem in any part of the project area. Most soils have low to medium levels of **phosphorous**. Cation Exchange Capacity (CEC) & Base Saturation Percentage (BS %) indicate the **high fertility** status of the soils ADSWE, 2017).

The rate of **soil erosion**, related to land use and cover, is very high over the deforested mountains and steep slopes of the Kobo-Girana highlands, which are susceptible to erosion hazards. The mountain areas of the Kobo-Girana Valley in general, and those of the project woredas of Kobo and Habru in particular, have been suffering from chronic soil erosion for a long time. This is attributed to the steep slope and poor vegetation condition of the areas. A significant portion of these areas is currently put under cereal production without sound conservation measures. The soils in these areas are shallow, less than 25cm, causing low infiltration capacity. Landslides are common. However, the lowland plains encounter relatively less erosion compared to the highlands. Gully erosion and stream bank erosion are the major forms of erosion occurring in the lowlands and plain areas. Wind erosion is also a problem, particularly in the lowland parts of Kobo woreda (ADSWE, 2017).

The land suitability evaluation/study of Metaferia Consulting Engineers (2009) revealed that a maximum total area of about 14,442 ha of land, rated as moderately to marginally suitable land, would be available for both surface irrigated and overhead irrigated Land Use Types. The remaining areas have been rated as currently not suitable and permanently not suitable for the proposed Land Use Types (LUTs) (MCE, 2009).

Water Resource (quantity and quality)

Surface water resource (hydrology)

In the wider context, the valley is drained by major perennial rivers, including the Golina, Alawuha and Gelana rivers. The surface waters or rivers of the project area originate from the western mountainous terrain. The chain of mountains flanking the command area on the western and eastern

sides, owing to their steep slopes covered with vegetation of low density, generate large volume of runoff. During a period of high rainfall, they carry tremendous amounts of sediments and flow to the east where they discharge most of the flow and dump their sediment to form alluvial plains and fans. The total potential surface runoff has been estimated to be about 75.54 Million Cubic Meters (MCM) and 79,373 MCM in Kobo and Girana sub-basins, respectively (KGVDP, 2019).

The **Kobo sub-basin** constitutes intermittent rivers. In average rainy years, the runoff of these rivers is lost in the plain before reaching their outlets in the foothills of the Zobel mountains. Hormat, Golina, and Kelkelti are perennial rivers in general. However, during the dry season, Hormat and Kelkelti lose their discharge before joining Golina, which ultimately discharges through the Golina gorge to the Afar depression.

The Girana sub-basin has major perennial tributaries like Golo, Megenagna and Mersa, which form the Gelana River. After being joined by its tributaries, the Gelana leaves the Girana plain through a deeply incised valley to join the Mille River, which is one of the tributaries of the Awash River (MOWR, 2009).

Groundwater Resource (Hydrogeology)

The study area covers part of the Raya Valley, which is generally believed to have a relatively high potential for groundwater resources. There is high groundwater resource potential in the valley plain, which can be developed for irrigated agriculture. It is estimated that there is about 4 Billion Cubic Meter (BCM) of groundwater reserve in the area. The total project area's annual rechargeable groundwater potential is estimated to be 170 MCM (ADSWE, 2017). In general, the physical and chemical characteristics of springs and groundwater are well within the acceptable range for drinking and irrigation uses.

According to the detailed feasibility phase report of the Ministry of Water Resources (2009), of the total annual replenishable groundwater resources of each basin, only a small fraction is currently being exploited (mainly for domestic uses). The groundwater resource can be applied in combination with spate irrigation and can supplement additional water during rainfall shortage to the traditional rain-fed agriculture. It may serve as an additional water resource during dry seasons or to produce an extra harvest per year. Groundwater development may lead to more flexible management of agriculture, during periods of water shortages (MoWR, 2009).

Flora and Fauna

Flora

In its Environmental Impact Assessment study, Metaferia Consulting Engineers (2009) observe that most of the native terrestrial vegetation in the Kobo-Girana Valley was been significantly altered (circa 2010) from what was there a decade prior, due to ever-increasing population growth and its subsequent conversion of forests to farm lands, high demand for firewood, construction materials and grazing (interview of consultant who developed the Metaferia Consulting Engineers EIA report). As a result, at present natural vegetation is localized in areas where accessibility is difficult or around churchyards such as **Jemedo Mariam** and **Rama Kidanemeheret** or in areas where relatively better preservation measures were in place in the past decades. Remnants of natural vegetation exist in

the **Abware** area and on the banks of Golina River, and on the flat plain of Kobo sub-basin (MCE, 2009).

In Girana sub-basin, which had relatively better vegetation cover compared to that of Kobo, woodland is found around **Gemeshet** area (296 ha). The vegetation in this area is also observed to offer protection against recurrent landslides during periods of flooding. There is about 6,022 ha of dense woodland coverage in areas where accessibility is difficult and 13,722 ha of open shrub land on degraded, gully erosion and land sliding area of the upper mountainous areas (MCE, 2009).

Fauna

Climate change and consequent ecosystem impacts, increased population pressure and demand for farmland and livestock grazing land, as well as poaching, have destroyed much of the wildlife habitat in the valley (interview of KGVDP representative). According to a study by Metaferia Consulting Engineers (2009), the following wildlife species are still found in the Kobo-Girana Valley:

Table 2: Most common wildlife species in the Kobo-Girana Valley

Common name	Scientific name
Hyena	<i>Crocuta crocuta</i>
Fox	<i>Vulpes Vulpes</i>
African Civet	<i>Civettictis civetta</i>
Leopard	<i>Panthera pardus</i>
Warthog	<i>Phacochoerus aethiopiens</i>
Gazelle	<i>Gazella</i>
Wildcat	<i>Felis lybica</i>
Porcupine	<i>Hystrix sp.</i>
Skunk	-
Rabbit	-
Deer	-
Sesa (A)	-
Grivet monkey	<i>Cercothecus aethiops</i>
Common Jackal	<i>Canbis aureus</i>
Aunbis baboon	<i>Papio anubis</i>
Klipspringer	<i>Oreotragus oreogratus</i>
Lion	<i>Panthera leo</i>
Rat	-
Otter	<i>Lutra sp.</i>
Dik-Dik	<i>Rhynchotragus guentheri</i>
Antelope	-

Source: MCE (2009)

Moreover, different bird species are also reported to be found in the project area.

However, there are no protected areas in the project localities. Moreover, the project will not trigger the performance standard on biodiversity conservation and sustainable management of living natural resources, considering that there has been high human settlement in the localities in the past two decades and there is very little natural vegetation cover in the localities at present.

Socioeconomic environment

Demographic feature and settlement patterns

According to the Raya Kobo Woreda Agriculture Office (RKWAO, 2019), the total population of the Raya-Kobo Valley is currently estimated to be around 226,049. Of this population, around 18,056 (8%) require emergency food assistance and about 42,354 (19%) are highly food-insecure. The rest 103,115 (46%) and 62,524 (28%) are medium food-insecure and food-secure, respectively (RKWAO, 2019). Furthermore, with climate change and high population growth (estimated at around 3% per annum), the pressure on cultivable lands is rapidly increasing and, as a result, cultivation is practised on ever steeper mountain slopes (RKWAO, 2019). High fertility and rapidly declining mortality are the main determinants of demographic growth patterns of the project areas. Over the last decades, fertility rates have increased significantly while the mortality rate is declining (Misgan, 2021).

The largest concentration of population is found in the lowland areas due to the agro-ecological nature of the locality. Most of the settlements in the lowlands are linked with the availability of water resources. Thus, residential areas are mostly located along the streams and close to artificial water wells (KGVDP, 2019).

The lowland areas have relatively abundant land resources compared with the highlands and mid-altitudes. Prior to the 1960s, most of the lowland areas of Kobo and Habru woredas had been inhabited by pastoral and agro-pastoral communities dependent on production of livestock. After the 1960s, most of the population in the highlands moved to these areas for crop cultivation, with gradual decimation of pastoralism and agro-pastoralism in the lowlands (KGVDP, 2019).

Three major livelihood strategies support the overall livelihoods of most of the population in the project areas: crop production, animal rearing and off- and non-farm activities, all of them traditional, subsistent and low yielding (RKWAO, 2019).

Economy

The main economic undertaking in the area is traditional agriculture (crop and animal rearing); this is the dominant livelihood basis of most of the population. The traditional crop production system is highly integrated with animal production. Crop production is highly dependent on rainfall, with small-scale traditional and modern irrigation practiced by very few households.

The cropping system is a cereal-pulse complex common to the northern highlands of Ethiopia, though there are significant variations between the highland and lowland agro-ecologies. Crop production engages the largest proportion of the rural labor force and supports the livelihoods of almost all the rural population.

Crop production in the project area, however, is subsistence-based and, for most of the households, inadequate to feed the family for a year. It is impacted by the low utilization of inputs, markets, poor cultural practices, low access to improved and high yielding seeds, inadequate agronomic practices and poor water management. As a result, substantial proportions of households in the project areas suffer from cyclical and chronic food insecurity. Average production per capita is less than 433 kg for all crops (including vegetables). Per capita production for target kebeles is almost twice as large as that of the non-target kebeles (521 kg and 209 kg/capita, respectively). Furthermore, due to the

relative use of irrigation, households in the mid-altitude zones produce twice as much as that of the highlands and 1.5 times as much of the lowland areas.

Livestock production is the second major source of livelihoods for households. Subsistence livestock production, mainly for draft power, is the main activity, particularly in the highland and mid-altitude zones of both woredas. In the lowlands, livestock production is mainly for production of oxen power, milk and milk products, both for household consumption and for markets.

There are 3,485 cattle population, 1,248 head of shoats (52% sheep and 48% goats), 338 equines and 188 head of camel in the project areas of Kobo and Habru. The livestock density in the plains, as well as in the mountains, is among the highest in the country. It is over 1,500 Tropical Livestock Units per km² (TLU/km²) for the plain and over 165 TLU/km² for the mountain area, while that of the country is about 25 TLU/km² only (RKWAO, 2019).

These population numbers have, in turn, created severe constraints on the available grazing and browsing lands of the project area. At present, the latter meet only 40% of the annual requirement. The balance, which is about 60%, is met from crop residues (52%) and aftermath grazing (7%), depleting nutrient return to soils in the plains and enhancing soil erosion and land degradation in the mountainous area (Misgan, 2021).

Land Use

Kobo Woreda

10% of the total of 248,788 hectares of land in the Kobo woreda is under cultivation. Although some additional hectares of land are said to exist in the woreda as potentially arable land, this does not seem to be true in the project area, where severe shortage of land is one of the main constraints on crop production.

However, a large part of the woreda is covered by shrubs/bushes and unusable land, which includes degraded, eroded, hilly and stony areas. The pattern of land use of the woreda is shown in Table 3 below.

Table 3: Kobo Land Use

No.	Category	Area (ha)
1	Cultivated land	49,126
2	Grazing (pasture) land	4,817
3	Forest/bushland	8,492
4	Towns & farmsteads	8,817
5	Unusable land	186,353
6	Total	248,788

Source: RKWAO, 2019

Habru Woreda

Almost 50% of the total of 47,210 hectares of land is under cultivation. More than 30% of the area is currently under grazing, forest and bush land. The pattern of the land use of the woreda, as well as the project area, is shown in Table 4 below.

Table 4: Habru Land Use

No.	Category	Area (ha)
1	Cultivated land	24,253
2	Grazing (pasture) land	3,388
3	Forest/bush land	12,821
4	Towns & farmsteads	3,173

5	Unusable land	4,491
6	Total	47,210

Source: RKWAO, 2019

Experiences in Utilization of Irrigation

The introduction of **small-scale irrigation** and intervention of extension services and improved agricultural markets, though relatively recent, has greatly contributed to the expansion of vegetables in the valley. Vegetables and fruits are produced in both seasons, using both rains and irrigation. Of the total area under horticultural crops (including sugar cane), 48% is under traditional and modern small-scale irrigation and the remaining 52% is produced under a rain-fed system.

Based on a survey conducted by the Amhara Design and Supervision Works Enterprise (2017), 21% of the respondents in the Kobo-Girana Valley felt that they had low to limited knowledge of, and capacity to utilize, appropriate irrigation and other associated systems, 9% did not have knowledge of, and capacity to operate and maintain, the canal and pump, and the rest, around 70%, lacked the proper experience in irrigation agronomy and a combination of two or more of these skills. In general, challenges pertaining to efficient water management are significant in areas that use gravity and flood irrigation. In area that use drip irrigation systems, the main challenges pertain to limitations in technical expertise to manage pumps and water systems, and to routinely maintain equipment and hoses (ADSWE, 2017).

Fuel Wood Utilization

In the project area, as in other parts of the country, households consume a large amount of energy derived from biomass fuels. Fuel wood constitute about 33%, crop residue (particularly sorghum stalk) 55% and dung 12% of the energy sources in the project area. Crop residue and dung collectively provide more than two-thirds of total energy use (RKWAO, 2019).

Non-farm Activities (Other Employment Opportunities)

In general, small trade generates employment opportunities and income for the majority of households. This is very common among the households in the highlands and also among those who have access to micro-finance institutions. Such small trade activities are limited by seasonality of agricultural products and seasonal fluctuation of prices, low capital, poor and costly transport, and competition from large-scale traders. In general, non-farm or other employment opportunities, such as small-scale business (petty trade of animals, crops, manufactured goods), handicrafts (pottery, blacksmithing, carpentry, embroidery, weaving etc), animal fattening, charcoal-making, salaried jobs (guarding, house servants, etc.) and other activities (traditional healing, religious services, birth attendants, etc) has been found to be poverty-driven and not a conscious move on the part of the individual. Declining land holding size, increasing land deficit and landlessness, and the resultant decline in crop and animal yields, have been the major causes (Misgan, 2021).

In the target kebeles, about 61% of the households have one or two members engaged in various non-farm activities. Whereas in the highlands almost all households have two or more family members engaged in non-farm activities, the proportion of households who have same number of members engaged in mid-altitude and lowland areas is 25% and 85%, respectively (RKWAO, 2019).

Health

Disease Prevalence

Malaria is the most important ailment in the project area. Although there is a current trend of decrease in the spread of malaria due to distribution of malaria nets, chemicals spraying and awareness creation programmes, it is still the major epidemic disease in Kobo where many of the target kebeles are located. The Kobo Girana Valley Development Programme annual report (2019) clearly states malaria to be the leading health problem in the project area and it is highly aggravated

during peak agricultural periods (weeding, harvesting and threshing). Thus, considerable attention will be required to control and prevent the spread of malaria (KGVDP, 2019).

Diarrhoea is also a major cause of morbidity and mortality in the project area; it is caused by unsafe drinking water and poor sanitation and hygiene conditions. Though access to safe and adequate water has increased, there is still inadequate access to safe and clean water in the project area. As a result, over 50% of morbidity in these communities is due to water-borne diseases. In the different project localities, communities utilising unprotected water sources for drinking and domestic purposes range from 23 to 35%. Diarrhoea and water-borne diseases have severe health consequences, including a cause for mortality, in children under five years of age (KGVDP, 2019).

Malnutrition is the third prominent health issue and a cause of high incidence of diseases in the project area. Poor nutrition undermines child development and the cognitive abilities of school children. Nutritional deficiency has greatly interacted with diseases such as measles, diarrhoea, acute respiratory infection and blindness. Likewise, malnutrition also affects the adult working population and has an adverse impact on agricultural productivity (KGVDP, 2019).

Health Services

The distribution of health facilities varies by kebele and it is better in urban area. Woreda-level trained health personnel comprise 2 health officers, 6 clinical nurses, 3 pharmacy technicians, 3 laboratory technicians, 2 malaria technicians, 11 front line health workers and 52 extension agents. On the other hand, kebele-level data shows that 80% of nurses and 24% of health assistants are found in the town. Thus, the majority of the project kebeles are represented by health assistance and/or by health extension workers (RKWAO, 2019). Habru has lesser health infrastructure than Kobo.

Water Supply and Sanitation

Access to Potable Water Supply

A piped water supply is available in the main urban centres of Kobo, Woldia and Mersa towns, but for about 89% of the project population (excluding urban centres) water is obtained from unprotected sources such as rivers, streams, springs, wells and ponds. During the dry season, even some of the unprotected surface sources dry up and ground water sources decrease their yield, forcing rural people (particularly women) to travel long distances – usually more than 1 hour, carrying about 75% of their body weight - to fetch water. The condition of livestock watering is even worse. Cattle are watered every other day, with an average of 3.5-5 hours' distance between grazing area and water point in the project area (ADSWE, 2017).

Providing access to safe and adequate water is one of the key factors for socio-economic transformation since, among other things, water has an interactive linkage with health and education. Good health is crucial to enhance the productive capacity of the community and improve attendance and performance of students, especially for girls, by reducing water-fetching burdens. Thus, availability of clean and sufficient water plays a vital role for sustainability of any development project. Considering this, a socio-economic study conducted by the Amhara Design and Supervision Works Enterprise (ADSWE) in 2017 has thoroughly assessed and identified outstanding issues related to water supply condition of the project area in general and the target kebeles in particular. Secondary data gathered from the Regional Water Bureau indicates that the water supply coverage of urban and rural areas is about 97% and 41%, respectively. For the project area, water supply coverage in Kobo and Habru is about 44% and 49%, respectively. In the project area, there is also limited access to sanitation services (ADSWE, 2017).

4.2. Borena: Gelchet Sarite Water Supply Project

Borena zone is located 4° 3' to 5° N latitude and 37° 4' E to 38° 2' E longitudes and the landscape is characterized by slightly undulating peaks up to 2,000 meters above sea level (masl) in some areas. It is located in the southern part of Oromia regional state. Borena zone shares common boundaries

with Guji zone in the east, Somali regional state in the south east, Southern Nations' Nationalities and Peoples of Southern Ethiopia in the west and one international boundary with Kenya (Figure 2). Figure 2 below shows the general location of the Borena Zone and the location of the potential well sites to be incorporated in the Gelchet Sarite Water Supply project.

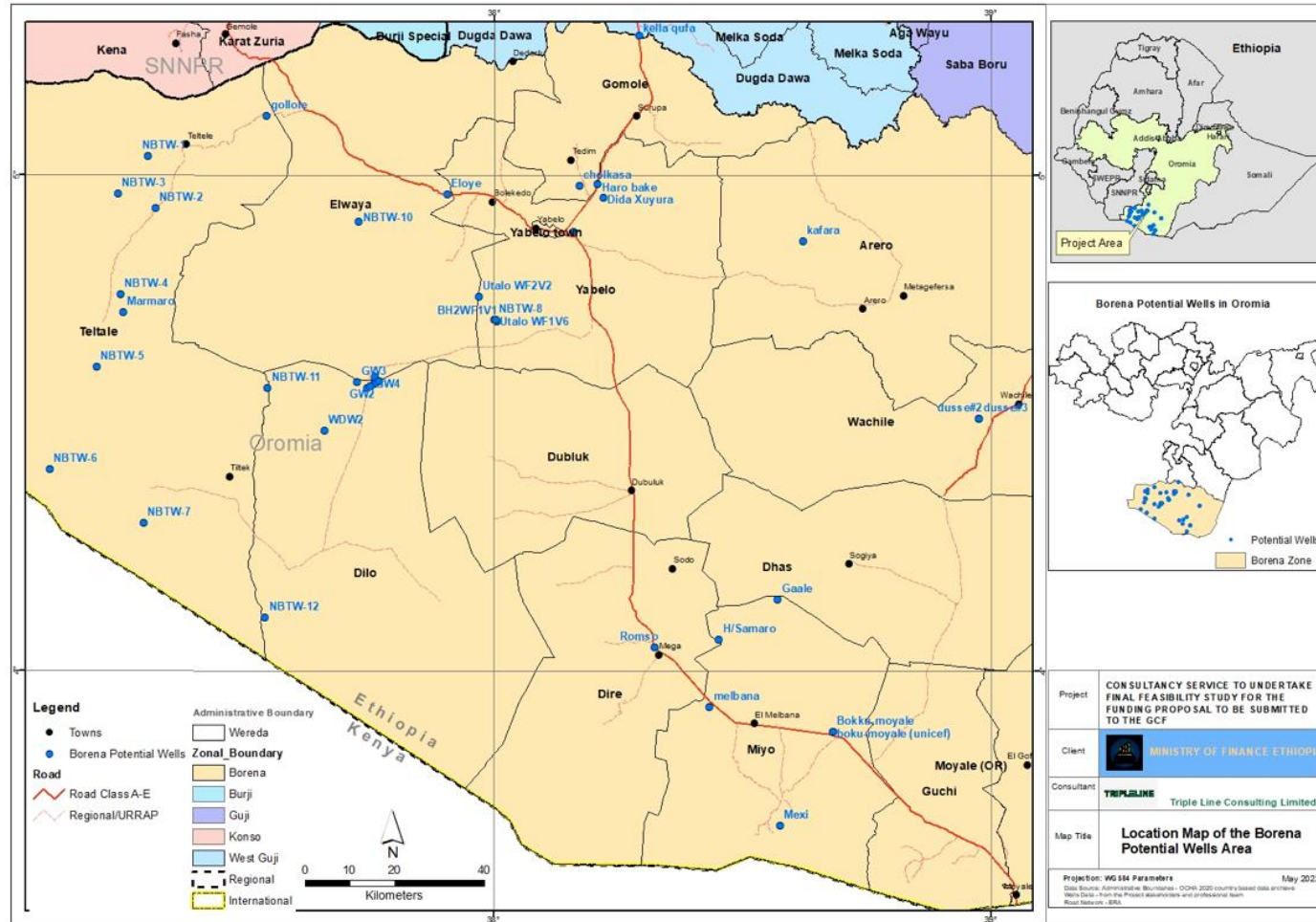


Figure 2: Map of the Gelchet Sarite Water Supply project site in the Borena Zone

Source: Triple Line Consulting, 2022

Biophysical Environment

Relief, drainage and climate

Relief: Borena zone is not a region of great physiographic diversity. It has no very low and very high areas; very large areas of the zone, at lowland altitudes below 1,500m above sea level, can be categorized as “Gamojji”, with a semi-arid climate. These large areas are found in the south west and eastern parts of the zone, including Moyale, Dire, Arero and Yabelo. The highlands (over 1,500m above sea level) are found in north central and southern parts, and include Yabello and central parts of Dire.

Drainage: There are no rivers and streams that drain widely across Borena zone, only the rivers of Segen which rises somewhere around the Burji-Teltele boundary and flows north-westwards, ending up in Chew Bahir swamp. Apart from this, there are various small traditional ponds/hand dug ponds that are used as drinkable water reservoirs for cattle and communities during the dry season.

Season: The zone rain pattern is bimodal: the ‘ganna’ or rainy season is from February 15 up to May 15; and the ‘Hagaya’ or short rain season is from September 1 up to the end of the month of November.

Climatic classification: The climatic classification of Borena zone ranges from hot lowland (Gamojji) to cool highland (Badda) and also from semi-arid to humid. This classification is based on annual and monthly mean of temperature and rainfall, seasonal changes of rainfall and the types of native vegetation associated with them. There are four climatic types represented in Borena zone:

- **Hot-arid climate:** characterized by poor sparse vegetation with mean annual temperature ranging from 27°C to 29°C and mean annual rainfall less than 450mm. Evaporation is 20 or more times in excess of precipitation in the same area. It is characterized by strong winds, high temperature, low rainfall and low relative humidity with little cloud cover. This area is barren with little vegetation cover and it includes areas of eastern Moyale district.
- **Hot semi-arid climate:** forms an intermediate climatic region between arid and humid climatic regions. It prevails over areas of steppe-type vegetation cover. Grasses are short and coarse but edible; during the dry season it is highly palatable. Because of this, during the dry season wild animals and cattle rely largely on the tender fresh grasses found along water courses. This climatic region has mean annual temperature that varies between 18°C to 27°C, with annual mean rainfall of 410-820mm and noticeable variability from year to year. Since evaporation exceeds precipitation, there are no permanent streams. Areas with such kind of climate include western and southern Borena, part of Taltale, Yabello, Moyale, Arero and Dirre district.
- **Tropical rainy climate:** a region with a distinct dry winter season. The mean temperature of the cold month is about 18°C and mean annual rainfall is generally between 680-2,000mm. Such climate prevails up to an elevation of 1,750m amsl. This climate is characterized by tall grasses, but grasses and trees are intermingled. Areas dominated by this climatic condition are district of Dirre, southwestern Moyale and limited area of Arero.
- **Warm temperature climate:** Such climate is found in areas extending in elevation from 1,750-3,200 masl. In the warm temperate areas with heavy rainfall, forests are predominant; in areas of moderate rainfall, grass coverage dominates the land cover type. This region includes Yabello and smaller portions of Dirre and Arero districts.

In Figure 3, the drainage map of the project site is provided.

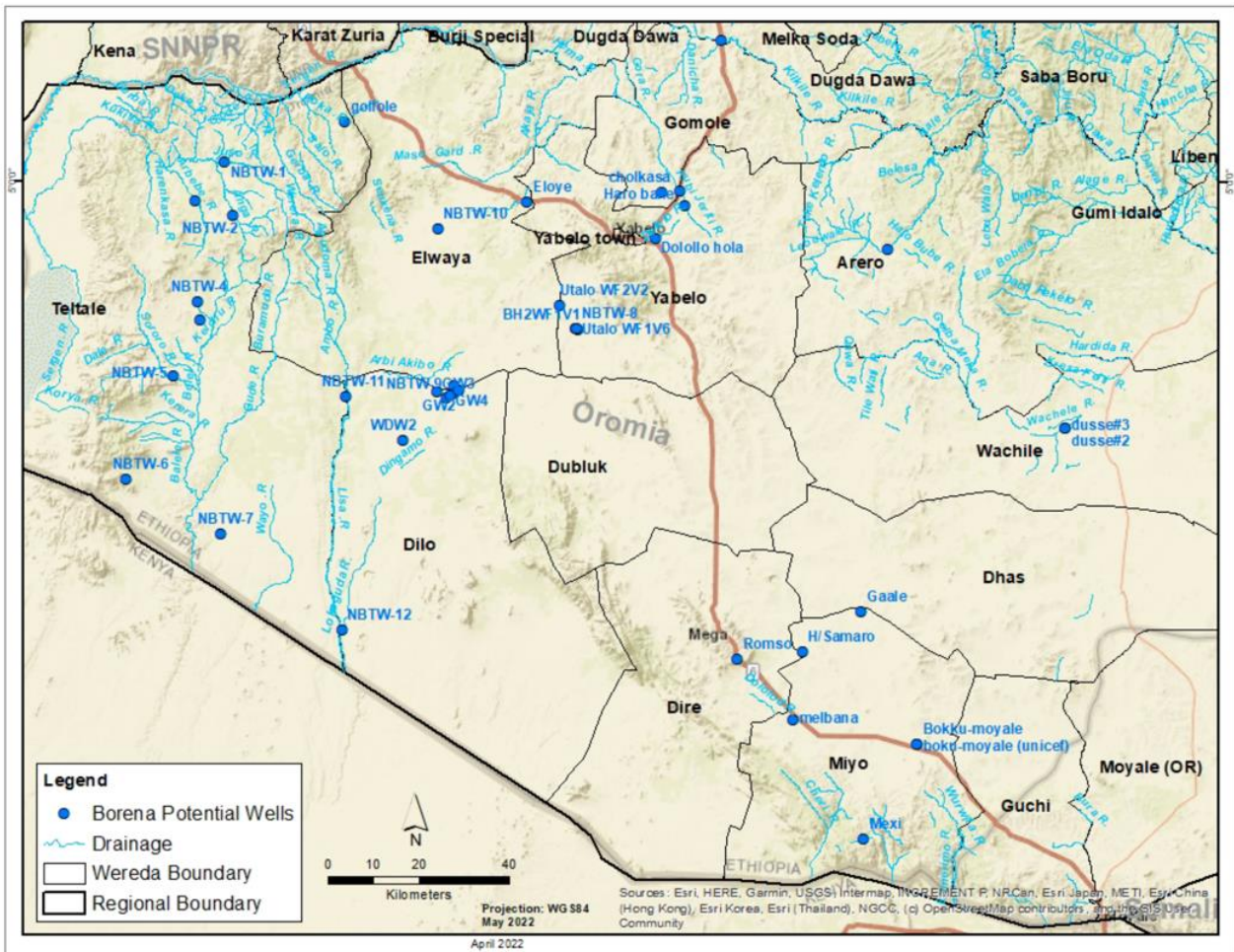


Figure 3: Drainage map of the Gelchet Sarite Water Supply project site in the Borena Zone
Source: Triple Line Consulting, 2022

Soil types and distribution

Borena zone is endowed with a vast but fragile soil resource, where mixed crop-livestock sedentary agriculture is practiced in mid-highlands and where pastoralism is the way of life in lowlands. The sub-region has a mosaic of soils due to the weather and leaching pattern of the varied parent materials under complex environments. The agro-ecology of the area is intimately related to the geology of the area. According to FAO/UNESCO classification, the soil resources of Borena zone are classified into Vertisols, Cambisols, Luvisols, Nitisols, Calcisol, Gypsisol, Paeozems, Ferralsols, Solonetz and Fluvisoil. There are 10 major soil types in the zone. However, some of these are localized and of limited spatial extent.

Geology

Geology of the Borena zone has its oldest rocks of pre-Cambrian origin syntectonic granitoids upper and lower middle protozid (metamorphic) and lower complex (archalan metamorphic). Precambrian basement complex rocks have been found in several parts of the zone, particularly in the Yabello and Mega areas. Similarly, Mesozoic and Cenozoic depositions have been exposed in Yabello, Dire, Arero and Teltele.

Land Use

Vegetation cover

High forest, broad-leaved forests, woodland, bush and shrubland, grassland and plantation trees are found in the zone. Based on data from the Borena Agriculture and Rural Development office, the major types of vegetation found in the area are the following.:

- **Woodland and savannah region** This region extends from lower to higher elevations ranging from 400 to 2,000m, with mean annual rainfall varying from as low as 250mm to over 1,300mm. It consists of three types of woodland and savanna. These are mixed deciduous woodland and savanna, juniperus woodland and savanna, and various type of acacia woodland and savanna.
- **Juniperus woodland and savanna:** This type of forest is found at higher altitudes, which range from 1,400-2,100 masl and with mean annual rainfall of 550 to 875mm. It is confined to Yabello, and Arero district of the zone.
- **Acacia woodland and savanna:** This region occupies varied environments. It is found at elevations ranging from as low as 250 to as high as 2,200 masl and mean annual precipitation of 300 to 875mm. Acacia woodland and savanna is found in the larger areas of the zone, including in districts of Moyale, Taltal, Arero, Dire, Dillo, Dhas, Miyo and Yabello.
- **The grassland region:** This climatic climax region is found within the woodlands and savanna lands at lower elevations with generally drier conditions. It occupies extensive areas of the zone, including Moyale, Taltal, Arero, Dire, Dillo, Dhas, Miyo and Yabello.
- **The steppe region:** This region occupies altitudes of up to 1,400m, with mean annual rainfall of up to 500mm. It is characterized by scattered thorny deciduous shrubs and short acacia, with small leaves, less than 4m high and usually resin or gum bearing and aromatic. It includes areas of Dhas, Yabello, Arero, Moyale and Dire districts.
- **Natural and man-made forests:** A large portion of Borena zone is believed to have been covered by forest in the past. Some pocket areas of forest cover are still found in different parts of the low-lands, notably in Arero and Yabello. These forests are constantly under destruction illegally. Illegal deforestation activities include forest clearing for expansion of farmland, local lumber production, firewood and charcoal production.

Crop production

In addition to the rearing of animals, the pastoralist community of Borena zone is also involved in a small amount of crop production. In relation to this, in 2019 during “Belg” season 193,118 hectares of land was cultivated and the production obtained was 2.2 million quintals. In addition, in the same year during ‘summer’ season, 144,083 ha was cultivated and the production obtained was 818,355 quintals (OWMEB, 2019a).

In Figure 4 a land use map of the project site is provided.

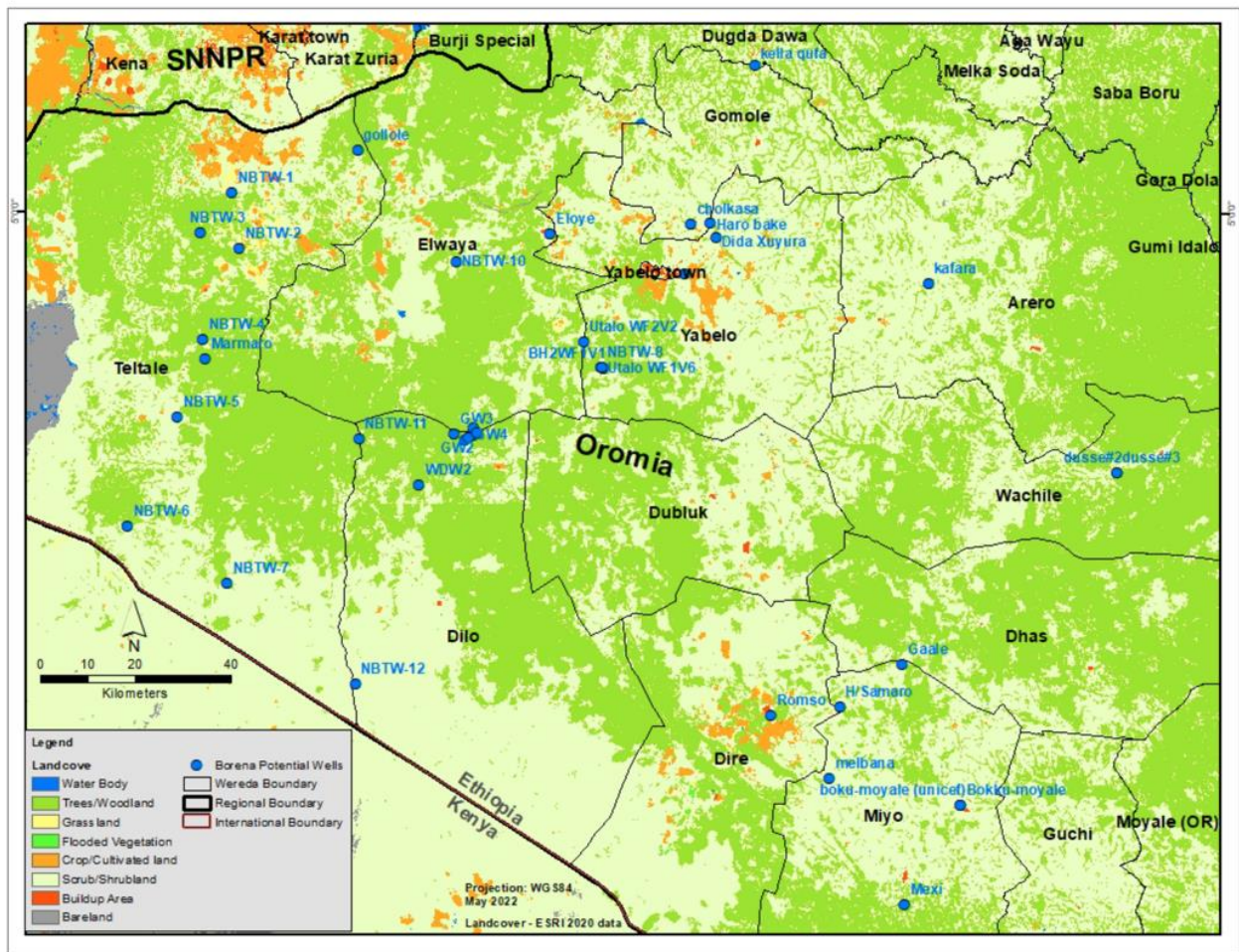


Figure 4: Land Use map of the Gelchet Sarite Water Supply project site in the Borena Zone
Source: Triple Line Consulting, 2022

Livestock population

Borena zone is a pastoralist zone dependent on livestock rearing, consisting of livestock cattle (1.5 million) goats (1.2 million), sheep (638,000), horses (~2,200), mules (~5,500), donkeys (~69,000) and camels (~185,300) (OWMEB, 2019a).

In Figure 5, a map of cattle numbers at the project site is provided.

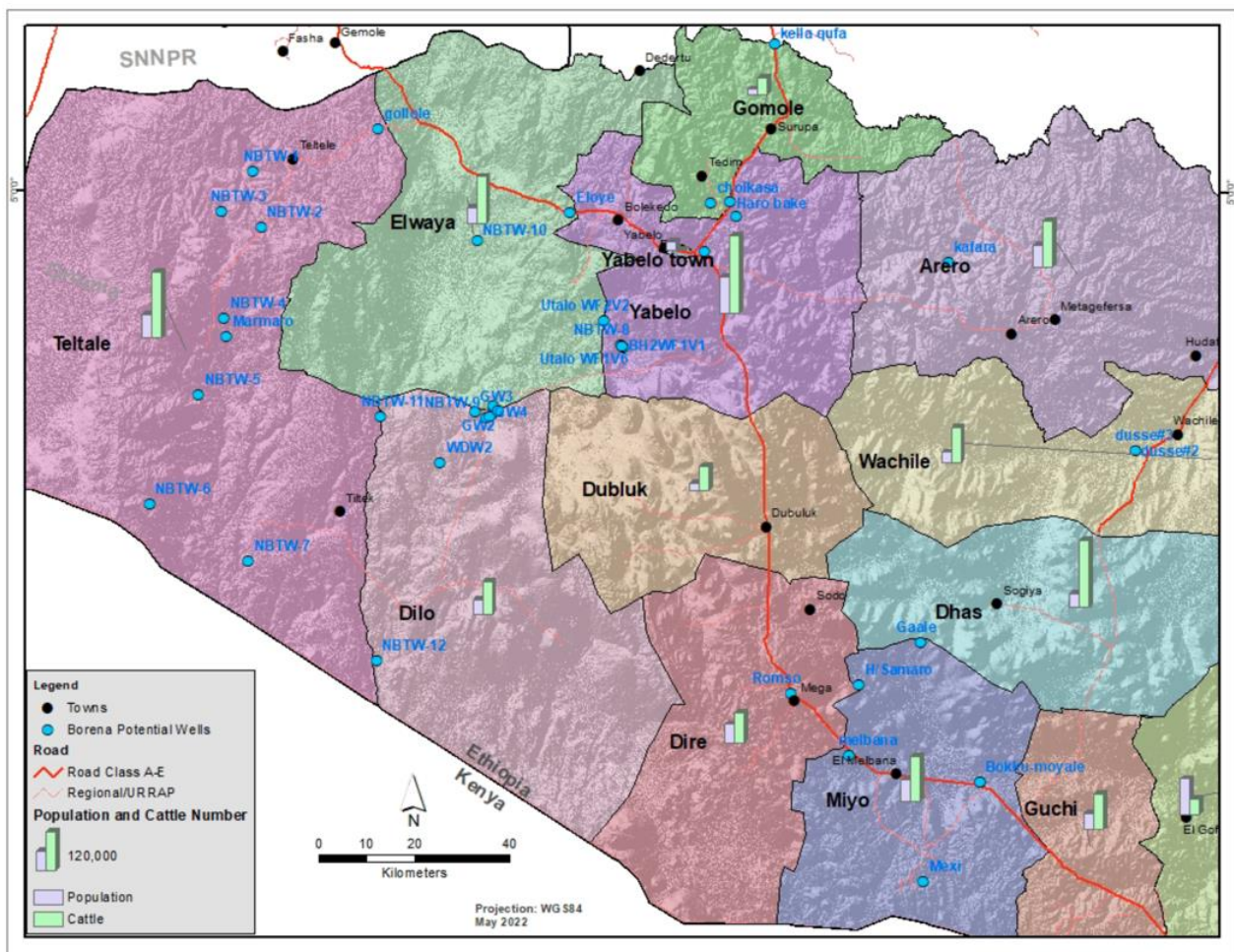


Figure 5: Cattle number and population size map of the Gelchet Sarite Water Supply project site in the Borena Zone

Source: Triple Line Consulting, 2022

Wildlife

Wildlife is one of the most important natural resources that Borena zone is endowed with. The diverse climate and topography of the zone supports a wide variety of fauna and flora. About 30 species of mammals and more than 300 species of bird life have been recorded in Borena National Park (BNP) in the Borena Zone, which is outside the project site. Some mammal species found in the park include: Gravy's Zebra, Grant's gazelle, Gerenuk, bias Oryx, Greater kudu, lesser kudu, Cheetah, Leopard, Lion and so on. However, as in the case in other parts of the region, the numbers of wild creatures have been decreasing, mainly due to the destruction of natural vegetation and uncontrolled hunting (MOWIE, 2017d, OWMEB, 2019c).

Socioeconomic Environment

Population: According to the 2015 population and housing census, the total population of Borena zone is 503,877 of which 447,913 is rural population (225,541 male and 222,372 female) and 55,964 is urban population (29,342 male and 26,623 female) (MOWIE, 2017a).

Agricultural and pastoral associations: There are 138 peasant associations and 14 urban centres in the zone. There are about 428 development agents available in the zone (OWMEB, 2019a).

Service co-operatives: In Borena zone, cooperatives are very important in changing the livelihood life of the pastoralist community. Accordingly, in the zone there are 936 cooperative associations and 4 unions. The number of members of cooperative associations is 76,000; their capital is Birr 122,910,958 for cooperative associations and Birr 6,961,564 for unions. Savings and credit of cooperative associations is Birr 55,940,759 (OWMEB, 2019a).

Food aid and drought: Throughout most of the year, communities are vulnerable to drought and they are dependent upon food aid. Different types of grain are distributed at different times to the communities. Data obtained from the Borena Zone Disaster Prevention Office indicates that foods distributed include edible oils, pulses and corn soya and sugar blend for children (CSB) (OWMEB, 2019a).

Water source for livestock and pastoralist communities

The existing water sources for the residents of the area are mainly traditional. This is because of the absence of ground and surface water in the area. The quality of groundwater in the area, in terms of heavy metal and mineral content, is also a concern. Hence, there are highly limited sources of water for the population residing in the project area. In general, most water sources were developed by NGOs and the government over a long period of time. Some members of the communities must walk about 15 kilometers to obtain potable water (MOWIE, 2017c).

The Borena water supply network project was designed almost a decade ago and was planned to be completed within five years. However, this was delayed for several reasons and the population in the project area is still underserved. Unfortunately, at the present time some of the project's water supply systems, the infrastructure for which has already been completed, provide very little service. Hence, there is the utmost need to scale-up, improve and strengthen these systems to deliver the required service to the community (MOWIE, 2017c).

Boreholes fitted with hand pumps, wells, ponds and springs are the major sources of drinking water for both human and livestock in rural areas of Borena zone. Similarly, boreholes fitted with hand pumps, motorized pumps and solar pumps are the major sources of drinking water for both livestock and humans in the urban areas of the Borena zone. According to a study conducted in 2019, about 43% of the total rural population and 50% of the total urban population of Borena zone is supplied with such potable water. The number of deep wells, shallow wells, hand-dug wells, spring development and distribution schemes in the zone that were operational in 2019 and providing service to the community were 72 deep wells, 214 shallow wells, 36 hand-dug wells and 65 spring developments (OWMEB, 2019b).

5. Environmental and social impact identification and impact mitigation measures

5.1. General description of the Project and ESMP

The project “Climate-resilient community access to safe water powered by renewable energy in drought-vulnerable regions of Ethiopia” focuses on **two intervention areas** that are particularly climate-vulnerable:

- The southern rangelands in **Oromia region’s Borena zone** support livestock that are sources of food and income for the agro-pastoral population as well as foreign currency (Fenetahun and Fentahun, 2020). The GCF-supported project area is the Galchet-Sarite water supply project comprising four (semi-)arid lowland, drought-prone and food-insecure districts (*woreda*: Yabello, Dire, Dilo, and Teltele). The Borena zone comprises a total area of 19,285 km², with a number of groundwater wells situated within the zone to enable climate-resilient access to safe water supply service for 248,810 rural people and 82,995 livestock (Oromia Water, Mineral and Energy Bureau 2019b). The modelling results for this hydrogeological system estimate the total available water at about 542 Mm³/year (circa 32% of the total volume of water available in the basin). Sensitivity analyses have identified that well fields (Gelchet-Hobok, Liso-Melka Sadeka, Megado) could be developed even by increasing the discharge rate to twice the current observed discharge in each well field. In order to address climate vulnerability, the GoE designed and drilled ground water wellfields to develop a sustainable water supply. However, due to financial constraints, the boreholes have only partially been developed. The target area receives a high amount of solar radiation and has particularly high potential to use solar water pumping (SWP) (Tekle, 2014). Existing deep wellfields include the Galchet-Sarite water supply project and the Borena Network Water Supply Project.
- The **Amhara region’s Raya-Kobo Girana Valley** in northern Ethiopia is characterized by good groundwater resources potential (>198 Mm³). The valley has more than 29,700 ha of irrigable land with a potential of irrigating 16,500 ha from groundwater sources (Müller-Mahn and Gebreyesus 2019). The project plans to irrigate 17,000 ha of agricultural land to increase productivity. This will increase the livelihood income of 68,000 targeted HHs to lift them out of poverty and food insecurity. The project also provides potable water to over 150,000 HHs and increases their overall adaptive capacity. The Kobo Girana Valley has also been identified by the Agricultural Transformation Agency (ATA) as a priority area for increasing national agricultural productivity through modern farming methods. Linkages with ATA will be explored in order to replicate the results of this project at a national level, thereby contributing to increasing national food productivity.

The project develops a new partnership between federal, regional and community stakeholders by pioneering Solar Water Pump (SWP) provision through the engagement of Water User Associations (WUAs), cooperatives and small businesses in establishing and utilizing solar water pumping for drinking water and irrigation. Agricultural cooperatives and water user associations offer existing social organizations established at the local level (kebele/woreda), but currently without renewable energy/irrigation expertise. The project pioneers financing and implementation arrangements that are self-sustaining and replicable, thereby accelerating the GoE’s objective for universal access to safe water, as well as increasing agricultural productivity.

This Environmental and Social Assessment and Management Plan has screened the project activities against the GCF’s and IFC/WB’s Social and Environmental Standards Procedure and

categorizes the project as a Medium Risk (International Finance Corporation/World Bank Category B) project.

This categorization is in due recognition that the project will be conducted in food-insecure and drought-affected areas and not in sensitive ecosystems (i.e. in wetlands, forests or others). Moreover, it will have minimal adverse social impacts and impact on cultural heritage. Furthermore, the anticipated impacts will be restricted to the project site and will not affect a broader area beyond the immediate project implementation sites. There is also no displacement and resettlement of the community during the development or implementation of the project. Finally, all impacts identified will be addressed through implementation of mitigation measures and there will be minimal residual impact after the implementation of the proposed mitigation measures.

5.2. Potential positive environmental and social implications

Kobo-Girana Valley

There is list of positive impacts (direct and indirect) that can be realized as the result of the implementation of the envisaged project. However, the most important include:

- Availability of adequate groundwater in terms of quantity and quality, thereby satisfying the water needs for the envisaged irrigated agriculture.
- In a valley like Kobo-Girana, with complex hydro-meteorological phenomena, **development of groundwater resources for irrigation** has several advantages over surface runoff, such as:
 - Sustainable sub-surface storage of water in comparison to dams
 - Ability to supply water even during a series of drought years
 - No evaporation or percolation loss
 - No challenges associated with siltation, especially when comparing it to dams in a heavy watershed erosion catchment like Kobo-Girana,
 - Relatively fertile alluvial soil in the plain areas where irrigation is to be implemented.
- The project will also contribute to reduced flooding, soil erosion and sedimentation, due to infrastructure and nature-based solutions that will be put in place, such as water storage tanks, irrigation canals and vegetation cover, as part of the project.
- Moreover, while there still the need to build capacity and expertise in irrigated agriculture, this is an area where there is relatively better exposure (in comparison to other parts of the country) to irrigated agriculture due to the interventions of the Kobo Girana Valley Development Programme, particularly in terms of the use of pressurized drip irrigation in the Kobo plains.

Moreover, there are also several general positive outcomes that will result from this intervention, including

- Increased agricultural yields and production and the generation of additional revenues directly from the project output.
- Increased and diversified food supply all year long, fulfilling basic local needs and improvement in quality of life due to new economic opportunities.
- Increase in local development and employment.
- Increased revenues for the local population due to induced development and complementary activities.

- Development of skills in utilizing irrigation systems and renewable energy sources (solar water pumps).
- Increased opportunities for high-value crop production with access to irrigated water and appropriate irrigation technology.
- Increase in land values due to irrigation access.
- Extremely low disruption of existing settlements, since groundwater wells have been developed already, which makes project costs lower.

Borena: Gelchet Sarite Water Supply

Similarly, the following are the most important direct and indirect positive environmental and social implication of the project in Borena:

- **Improved quantity and quality of drinking water supply:** Although the project area and its surroundings have no water supply system except one reservoir located at Yabalo (which distributes to the Yabalo area) and one borehole at Kelekela town, the Borena Zone suffers from lack of water. As observed during the field visit, Borena people collect water for drinking cooking food and sanitation from ponds. Therefore, the implementation of the proposed project is expected to have positive impact on water quality and quantity.
- **Improved investment / business opportunity:** Water is one of the basic social services required for development in urban and rural areas. Borena has a lot of cattle, goat and sheep for export meat, milk, cheese and meat. Hence, the availability of potable water supply can create a conducive environment for expansion of various domestic and foreign business opportunities in Borena Region.
- **Improved public health and sanitation service:** Water supply is a decisive social service required for health institutions to provide appropriate service for the community. Sanitation and hygiene activities of urban settlements are also unthinkable in the absence of safe drinking water. The existence of drinking water supply will obviously reduce water-related diseases such as diarrhea, thereby minimizing the cost of healthcare in households. In addition, it results in reduction of infant, child and maternal mortality and morbidity due to improved health and sanitation. Therefore, the implementation of the project will have beneficial impacts in enhancing service delivery of institutions and improvement of health and sanitation services in the Borena Region.
- **Increased productive time for women and girls:** The burdens of water problems often fall on the shoulders of women and children. Children and women devote a significant share of their time in searching for water. They also travel long distances, which accounts for a significant fraction of their productive time. Therefore, implementation of the proposed project helps children, especially girls, to have more time for schoolwork, if schools are established in their area.
- **Job opportunities:** The project can create short-term employment opportunities for the semi-skilled and unskilled labor force of the area and can help in generating incomes that can support their livelihoods. The construction phase will bring about job creation for both skilled and unskilled labor for vegetation clearing, menial works, drivers and machine operators. In addition, the operation phase is also expected to create job for some semi-skilled individuals on management of the water supply systems.

5.3. Potential negative impacts of the project

Kobo-Girana Valley

In the context of Kobo-Girana, the potential negative environmental and social impacts are comprehensively identified and described in the tables below (Tables 5 and 6). These impacts are further classified into impacts that are likely to occur during the construction/development and operational phases of the project. The impact identification was based on interviews with experts that know the Kobo Girana site well and some validation visits that were conducted by the personnel of the Kobo-Girana Valley Development Programme (KGVDP).

Table 5: Identified negative impacts that are likely to occur during the design and construction phase of the Kobo Girana project

Impact	Type	Description of impact
Flooding and sedimentation	Direct Short term	The project area is already prone to floods due to the steep slopes and denuded nature of the watershed. Such flooding and associated sedimentation can be further exacerbated during the construction/development stage of the project, due to clearing work and other activities that will take place to develop the required infrastructure for the project.
Soil erosion	Direct Short term	Similarly, the soil erosion issue can also be exacerbated during the construction/development stage of the project, due to clearing work and other activities that will take place to develop the required infrastructure for the project.
Gully erosion and widening of riverbanks	Direct Short term	This is already a concern in the Kobo-Girana Valley and may be exacerbated during the construction/development stage of the project.
Impact to vegetation	Direct Short term	Impact on flora during the construction phase is a likely negative impact. This may happen during construction of storage reservoirs, laying of transmission mains and distribution networks.
Disturbance of farmland	Direct Short term	The proposed project may require land for water supply system components, including as buffer zones along pipelines, for new service reservoirs, access roads to the boreholes, and for borehole equipment storage and maintenance (including for pumps and boosters). The immediate area around the boreholes should also be protected from contamination. However, considering that these will be minor disturbances, the project will not result in displacement of people.
Impact on property and buildings	Direct Short term	Properties such as boundary fences and homes may be affected, especially during construction of the rising mains within farm and residential areas. In addition, the construction activity may result in some physical relocation of public infrastructure, particularly in some urban localities within the project site: e.g. existing water supply pipes, drainage structures, utility cables, etc. However, considering that this will be minor disturbances, the project will not result in displacement of people.
Dust emission and	Direct Short term	There are potential air quality impacts from fumes from operating construction equipment and dust generation from earthworks and

Impact	Type	Description of impact
exhaust fumes		exposed soils. These impacts will only be short-term in nature and unlikely to cause anything more than nuisance.
Noise	Direct Short term	The noise impact during construction is expected to be negative but short-term. Sources of noise will be trucks in transit, heavy duty machinery and use of compressors to break hard ground. These temporary activities will include excavations of trenches for the distribution system, laying and connecting of pipe work and backfilling of trenches.
Water quality	Direct Short-term with potential long-term implications	Groundwater is very sensitive and may be polluted irreversibly unless recommended safety measures are put in place during well rehabilitation and construction activities. Hence, groundwater quality deterioration and aquifer degradation can be a concern unless proper care is taken.
Soil pollution	Direct Short-term with potential long-term implications	Soil contamination is possible during the construction phase due to spillage of hazardous materials (mainly used oil) or improper handling and disposal.
Workers and public safety	Direct Short-term	<ul style="list-style-type: none"> - Increased risk of accidents on working sites and roads and work injuries are possible during development/construction phase of the project. - Potential impacts may arise from operating construction equipment, open trenches and movement of materials and hardware to worksites. - The potential impact on public safety due to open trenches, dumped construction materials, and movement of trucks or construction machines may also be a concern.
Health impacts including malaria, water-borne diseases, and STDs	Indirect Short-term with potential long-term implications	This can also be aggravated, particularly during the construction stages due to the large number of workers that will be engaged. In general, there is insufficient health care and clean water facilities in the project locality.
Impact of existing conflict	Indirect Long-term	<p>The following can be the impact of the existing conflict during the design and construction phases of the project.</p> <ul style="list-style-type: none"> • Potential disruption of construction activities • Risk to the safety of project employees • Possible destruction or vandalism of existing and new infrastructure that is under construction • Tension and arbitrary detentions affecting workers and communities trust and their participation in the project.

Table 6: Identified negative impacts that are likely to occur during the implementation and operation phase of the Kobo Girana project

Impact	Type	Description of impact
Sustainability of the groundwater resource	Direct Long-term implication	The most profound negative environmental impact of the use of groundwater supplies for irrigation arises from unsustainable extraction of groundwater (withdrawing water more than the rate of recharge). This results in the lowering of the water table, land subsidence and decreased water quality.
Contamination of groundwater sources	Direct Long-term implication	The general increase in the population in the project areas, as well as the increase in population due to the expansion of irrigated agriculture and the associated economic development in the area, can lead to increased domestic effluents and discharge, particularly if sufficient solid and liquid waste disposal systems are not in place.
Water quality	Direct Long-term implication	Inherent water quality issues associated with groundwater, such as salt and heavy metal content, might be exacerbated due to the withdrawal of high levels of water for irrigation.
Agrochemicals use	Direct Long term implication	Increased use of fertilizers, pesticides, insecticides, herbicides and fungicides, because of the expansion of irrigated agriculture in the area.
Damage to Ecological resources	Direct Long term implication	Increased population in the area due to the project will exert much more pressure on the ecosystem and might even encourage settlement outside of the project site, resulting in encroachment of ecologically sensitive areas that are outside of the project site, including the forest reserve in Abware, Fajji and Gemshat, thereby resulting in reduction of biodiversity. This may also lead to the increased cutting of trees for construction and fuelwood needs, loss of vegetation due to land clearing, loss of forest products (fuelwood, timber, non-timber forest products, medicinal plants).
Hazardous solid waste	Direct Long term implication	Increased hazardous solid waste associated with the solar water pumps and other equipment and systems (including batteries) that are installed.
Socio-economic challenges	Direct Long term implication	<ul style="list-style-type: none"> - Lack of capacity due to limited or no appropriate training for farmers and supervisors in charge of the drip irrigation water system, since such a system requires higher skill levels. - Conflicts over water access and rights, and possible exclusion of some from access to irrigation (unless equity and fairness are promoted). - Population growth encouraged by irrigation scheme allocation criteria favouring large families. - Population increases due to migrant workers attracted by new economic opportunities and associated needs for services and facilities. - Decrease in the land available for livestock grazing.
Impact on human health	Indirect	The project might result in higher population in the project area and this may result in the increased proliferation of

Impact	Type	Description of impact
	Long term implication	communicable diseases such as diarrhoea and cholera associated with poor sanitary conditions, as well as sexually transmitted diseases (e.g. HIV/AIDS) and other infectious diseases. The existing health service may not accommodate this based on the health infrastructure, health personnel and medication, which is not even sufficient at present. Moreover, drip irrigation can also contribute to an increased incidence of water-associated diseases and diseases like malaria.
Migration and socio-economic implications	Indirect Long term implication	The number of migrant workers from other parts of the country can increase. This can have implication beyond the health impacts and can create additional socio-economic challenges, potentially even leading to conflict. The Raya area, where Kobo-Girana is situated, is the borders area between the Amhara and Tigray regions and as such migration can be a cause for conflict.
Impact of existing conflict	Indirect Long term implication	The following can be the impact of the existing conflict during the implementation and operation phases of the project. <ul style="list-style-type: none"> • Potential disruption of project activities/sub-projects • Risk to the safety of project employees and staff • Possible destruction or vandalism of existing and new infrastructure of the project • Tension and arbitrary detentions affecting staff, workers and communities trust and their participation in the project.

Borena: Gelchet Sarite Water Supply

With regard to the Borena: Gelchet Sarite Water Supply Project, the potential negative environmental and social impacts are comprehensively identified and described in the tables below (Table 7 and 8). These impacts are further classified into impacts that are related to the construction and operation phases of the project. The impact identification was based on interviews with experts that know the project site well and the validation visits that were conducted by the personnel of the Gelchet Sarite water supply project.

Table 7: Identified negative impacts that are likely to occur during the design and construction phase of the Gelchet Sarite water supply project

Impact	Type	Description of impact
Soil erosion and sedimentation	Direct Short-term	Earthworks activities for the various system components have the potential to cause erosion and sedimentation. However, this is not expected to be significant in the context of Gelchet-Sarite, since most of the infrastructure development for this project is in place already. However, construction of some storage reservoirs and water transmission lines can still take place and the impact on soil erosion and sedimentation may be an issue.

Impact	Type	Description of impact
Soil pollution	Direct Short-term with potential long-term implications	Soil contamination is possible during the construction phase due to spillage of hazardous materials (mainly used oil) or their improper handling and disposal.
Impact on Vegetation	Direct Short-term	The impact on flora is temporary and restricted to small areas. In the project localities there are some bush plants on hill sides that may be disturbed and partly destroyed during construction of storage reservoirs, and during the installation of transmission mains and distribution networks.
Disturbance to land	Direct Short term	The proposed project may require land for water supply system components, including pipelines, for new service reservoirs, access road to the boreholes, for borehole equipment storage and maintenance. The immediate area around the boreholes should also be protected from contamination. However, considering that these will be minor disturbances and require little land, the project will not result in displacement of people.
Impact on property and buildings	Direct Short term	Properties such as boundary fences and homes may be affected, especially during construction of the rising mains within farm and residential areas. In addition, the construction activity may result in some physical relocation of public infrastructure, particularly in some urban localities within the project site, such as existing water supply pipes, drainage structures, utility cables, etc. However, considering that these will be minor disturbances the project will not result in displacement of people.
Water quality	Direct Short term with long term implications	Groundwater is very sensitive and may be polluted irreversibly unless recommended safety measures are put in place during well rehabilitation and construction activities. Hence, groundwater quality deterioration and aquifer degradation can be a concern unless proper care is taken.
Workers and public safety issue	Direct Short term	<ul style="list-style-type: none"> - Increased risk of accidents on working sites and roads, and work injuries are possible during the development/construction phase of the project. - Potential impacts may arise from operating construction equipment, open trenches and movement of materials and hardware to worksites. - The potential impact on public safety due to open trenches, dumped construction materials, movement of trucks or construction machinery can also be a concern.
Dust emission and exhaust fumes	Direct Short term	There are potential air quality impacts from fumes from operating construction equipment and dust generation from earthworks and exposed soils. These impacts will only be short-term in nature and unlikely to cause anything more than nuisance.
Increased noise level	Direct Short term	The noise impact during construction is expected to be negative but short-term. Sources of noise will be trucks in

Impact	Type	Description of impact
		transit, heavy duty machinery and use of compressors to break hard ground. These temporary activities will include excavations of trenches for the distribution system, laying and connecting of pipe work and backfilling of trenches. At any one location, noise impacts would not be expected to last more than five days. At the storage reservoir and well fields, earthworks for building and reservoir foundations, concrete mixing and laying, building construction and other minor civil works are of relatively small scale. The major noise source during construction phase is directly related to operating machinery at the construction site. Such equipment includes excavators, delivery trucks and other powered equipment (e.g. drills and power saws).
Health Impact such as increased malaria, other water-borne diseases, and STDs concerns	Indirect Long term implication	As construction workers are from the surrounding areas, the chance that migrant workers could introduce diseases to the community members they interact with is diminished. But some health risks could result from waste generation (solid and liquid) at the construction camps and dust and emissions during construction activities in settlement areas.
Impact of the existing conflict	Indirect Long term implication	The following can be the impact of the existing conflict during the implementation and operation phase of the project. <ul style="list-style-type: none"> • Operational construction delays and increased costs • Safety risks for project employees and the community • Potential vandalism or theft of project assets

Table 8: Identified negative impacts that are likely to occur during the implementation and operation phase of the Gelchet Sarite water supply project

Impact	Type	Description of impact
Sustainability of the groundwater resource	Direct Long term	The most profound negative environmental impact of the use of groundwater supplies for irrigation arises from unsustainable extraction of groundwater (withdrawing water more than the rate of recharge). This results in the lowering of the water table, land subsidence and reduced water quality.
Contamination of groundwater sources	Direct Long term	Unless properly protected, groundwater sources can be contaminated by domestic effluents and discharges, particularly if sufficient solid and liquid waste disposal systems are not in place.
Water quality	Direct Long term	Inherent water quality issues associated with groundwater, such as salt and heavy metal content, might be exacerbated due to the withdrawal of high levels of water. In general, there has been observation of high level of some heavy metals and fluoride in groundwater in the project locality. However, the groundwater wells due for the project do not have high levels of heavy metals and fluoride.

Hazardous solid waste	Direct Long Term	Increased hazardous solid waste associated with the solar water pumps and other equipment and systems (including batteries) that are installed.
Impact on human health	Indirect Long Term	The project might result in higher population in the project area, and this may result in the increased proliferation of communicable diseases such as diarrhoea and cholera associated with poor sanitary conditions, as well as sexually transmitted diseases (e.g. HIV/AIDS) and other infectious diseases. The existing health service may not accommodate this based on the health infrastructure, health personnel and medication, which is not even sufficient at present. Moreover, increased incidence of water-associated diseases and diseases like malaria, can be a concern.
Migration and socio-economic implications	Indirect Long term	Unless planned and implemented with due consideration, the project might result in social-economic issues, including issues pertaining to the right to use water, which in turn will result in conflict. Moreover, migrant settlers from other parts of the country can increase attracted by the opportunities created by the project. Settler communities, who are mostly agrarian and sedentary, can have implications and can potentially affect some of the native pastoral communities and their livelihoods.
Impact of the existing conflict	Indirect Long term	The following can be the impact of the existing conflict during the implementation and operation phase of the project. <ul style="list-style-type: none"> • Operational construction delays and increased costs • Safety risks for project employees and the community • Potential vandalism or theft of project assets

5.4. Analysis of the identified negative environmental and social impacts

Impact Criteria

The following qualitative criteria were adopted to analyze the significance of negative environmental and social impacts that were identified. The methodology is based on the work of Wood (2003) and assesses the significance of an impact as a function of its probability of occurrence and its severity.

In Table 9 and Table 10, this qualitative assessment approach is described.

Table 9: Criteria for qualitatively assessing the probability and severity of impacts

	Probability				
	Very Low	Low	Medium	High	Very High
	Occurs globally but not in similar projects. Almost impossible for this site	Has occurred in other projects. Slight probability but no occurrence observed for this site	Has occurred in specific projects. Probable or frequent for this type of project but very few occurrences observed for this site	Happens several times per year in specific projects. Highly probable for this type of project and several occurrences observed for this site	Happens several times per year. Regular occurrence at this site.
Severity					
Catastrophic (Very high)	Medium	Medium-High	High	High-Very High	Very High
Severe (High)	Low - Medium	Medium	Medium-High	High	High-Very High
Critical (Medium)	Low	Low-Medium	Medium	Medium-High	High
Marginal (Low)	Very Low – Low	Low	Low-Medium	Medium	Medium – High
Negligible (Very Low)	Very Low	Very Low-Low	Low	Low – Medium	Medium

Table 10: Methodology for categorizing the significance of impacts

	Significance	Probability	Severity
Lesser significance	Very Low Significance	Very Low	Very Low
	Between Very Low and Low Significance	Very Low	Low
		Low	Very Low
	Low Significance	Very Low	Medium
		Low	Low
		Medium	Very Low
	Between Low and Medium	Very Low	High
		Low	Medium
		Medium	Low
		Very Low	Very High
Medium Significance	Medium	Low	High
		Medium	Medium
		High	Low
		Very High	Very Low
Higher Significance	Between Medium and High	Low	Very High
		Medium	High
		High	Medium
		Very High	Low

	Significance	Probability	Severity
	High	Medium	Very High
		High	High
		Very High	Medium
	Very High	Very High	Very High

Impact analysis

Based on the methodology described above, the significance of the environmental and social impacts observed in the two project sites is described in the subsequent sub-sections.

Kobo-Girana

Table 11: Impact significance assessment for impacts identified for the Kobo Girana Valley component of the project.

Impact	Probability	Severity	Significance	Justification
Design and construction phase impacts				
Flooding and sedimentation	Medium	Low	Low-Medium	Most infrastructure is already in place. Hence, the contribution of the project's construction activities to this impact will not be significant.
Soil erosion	Medium	Low	Low-Medium	
Gully erosion and widening of riverbanks	Medium	Low	Low-Medium	
Impact on vegetation	Low	Low	Low	Impact on vegetation will be restricted and localized, provided that this will only happen in the context of small infrastructure development such as construction of storage reservoirs, laying of transmission mains and distribution networks.
Disturbance of farmlands	Medium	Low	Low-Medium	The project will ensure that individuals' lands are not acquired for the purposes of the project. This is considering that all land for the project has already been acquired, including for the purposes of situating pumps and other infrastructure.
Impact on property and buildings	Very Low	Low	Very low - low	Since most infrastructure is already developed, only small and localised impacts will occur in this context.
Dust emission and exhaust fumes	Medium	Low	Low-Medium	The emission of dust, exhaust fumes and generation of noise will not be significant during the construction phase, as the construction undertaking is minimal and localized. The standard ambient level for noise is set within the following range, which is 75 db for
Noise	Medium	Low	Low-Medium	

Impact	Probability	Severity	Significance	Justification
				daytime industrial site (maximum allowable) and 45 db at night for residential sites (lowest level required) and these standards should be adhered to depending on the type of site in question. There are no specific standards in Ethiopia for ambient dust and exhaust exposure levels.
Water quality	Low	High	Medium	Water and soil pollution will not be significant during the construction phase, as the construction undertaking is minimal and localized. However, there can be severe detrimental impacts associated with groundwater and soil pollution, unless proper care is taken in managing used oil and other construction waste.
Soil pollution	Low	High	Medium	
Workers and public safety	Medium	High	Medium-High	In general, construction-related worker safety is a concern in Ethiopia. Hence contractors should be obligated to provide safety equipment and ensure workers are properly trained on safety issues.
Health impacts including malaria, water-borne diseases, and STDs	High	High	High	These need to be given due consideration as malaria and other water borne diseases are major concerns in localities in Kobo-Girana where the project is being implemented.
Impact of existing conflict	Medium	Medium	Medium	Although there is existing concern in the area due to the war reported in 2021, such conflicts are not reported in the past 2 years in the immediate localities in Kobo Girana where the project is being implemented. However, strict regular follow up on the conflict status in these localities should be conducted. The protection of workers and the community from exposure should be a priority.
Implementation and operation phase impacts				
Sustainability of the groundwater resource	Medium	High	Medium-High	The project has been developed based on detailed study on the groundwater resource potential of the area. Moreover, an additional, comprehensive assessment is being conducted to validate and update the study. Hence, the probability of

Impact	Probability	Severity	Significance	Justification
				occurrence of the impact is not high. However, the project needs to ensure groundwater extraction is kept at a relatively low level (i.e. there should be conservative withdrawal of the resource which should be set at 70% of maximum capacity to ensure the sustainability of the groundwater resource).
Contamination of groundwater sources	Medium	High	Medium-High	With population increase, this can be an important impact, particularly if sufficient solid and liquid waste disposal systems are not in place (medium probability) and the impact can be severe (high).
Water quality	Low	Medium	Low-Medium	Inherent water quality issues associated with groundwater (e.g. salt and heavy metal content) can be an issue, particularly in the context of extensive use for irrigated agriculture. However, such water quality issues have not been reported at the project sites (hence low probability considering water quality test has been made for each well during initial development).
Agrochemicals use	Medium	Medium	Medium	Considering that the agriculture produce is mainly edible, there will be low usage of agrochemicals in comparison to non-edible produce such as cotton. Moreover, this should be undertaken as per recommended levels for edible produce in Ethiopia (hence probability is considered medium).
Damage to ecological resources	High	Low	Medium	Encroachment and degradation of the ecology are already existing challenges. However, there is also ongoing land rehabilitation work that is improving/alleviating the situation.
Hazardous solid waste	High	Medium	Medium-High	This is a concern, considering the lack of proper means for disposal of such waste and the prevailing practices. The project needs to invest in proper hazardous waste management and disposal systems.
Impact on human health	High	High	High	This is also an important concern. Considerable attention should be given to control and prevent the spread of malaria and other water borne

Impact	Probability	Severity	Significance	Justification
				diseases. Comprehensive action should also be taken to prevent and control the prevailing communicable diseases. To the extent possible this should avoid the chemical control of such diseases which can be detrimental to the environment.
Migration and socio-economic implications	High	Medium	Medium-High	The number of migrant workers from other parts of the country can increase. This can have implication beyond the health impacts and can create additional socio-economic challenges, potentially even leading to conflict. The Raya area, where Kobo-Girana is situated, is the border area between the Amhara and Tigray regions and as such migration can be a cause for conflict.
Impact of existing conflict	Medium	Medium	Medium	Although there is existing concern in the area due to the war reported in 2021, such conflicts are not reported in the past 2 years in the immediate localities in Kobo Girana where the project is being implemented. However, strict regular follow up on the conflict status in these localities should be conducted. The protection of workers and the community from exposure should be a priority.

Borena: Gelchet-Sarite Water Supply Project

Table 12: Impact significance assessment for impacts identified for the Gelchet-Sarite Water Supply component of the project.

Impact	Probability	Severity	Significance	Justification
Design and construction phase impacts				
Soil erosion and sedimentation	Medium	Low	Low-Medium	Most infrastructure is already in place. Hence, the contribution of the project's construction activities to this impact will not be significant.
Soil pollution	Low	High	Medium	Water and soil pollution will not be significant during the construction phase, as the construction undertaking is minimal and localized. However, there can be severe detrimental impact associated with groundwater and soil pollution, unless
Water pollution	Low	High	Medium	

Impact	Probability	Severity	Significance	Justification
				proper care is taken in managing used oil and other construction waste.
Impact on ecologically sensitive area	Low	Low	Low	The project is not situated in an ecologically sensitive area.
Impact on vegetation	Medium	Low	Low-medium	The area is sparsely vegetated, with the predominant vegetation in the area being bush cover and grassland.
Disturbance to land	Low	Low	Low	The project will ensure that communal and individuals' lands are not acquired for the purposes of the project. This is considering that all land for the project has already been acquired, including for the purposes of situating pumps and other infrastructure.
Impact on property and buildings	Very Low	Low	Very low - low	Since most infrastructure is already developed, only relatively small and localised impacts will occur in this context.
Workers and public safety issue	Medium	High	Medium-High	In general, construction-related worker safety is a concern in Ethiopia. Hence, contractors should be obligated to provide safety equipment and ensure workers are properly trained on safety issues.
Dust emission and exhaust fumes	Medium	Low	Low-Medium	The emission of dust, exhaust fumes and generation of noise will not be significant during the construction phase, as the construction undertaking is minimal and localized. The standard ambient level for noise is set within the following range, which is 75 db for daytime industrial site (maximum allowable) and 45 db at night for residential sites (lowest level required) and these standards should be adhered to depending on the type of site in question. There are no specific standards in Ethiopia for ambient dust and exhaust exposure levels
Noise	Medium	Low	Low-Medium	
Health Impact such as increased malaria and other water-borne diseases	High	High	High	These is high prevalence of malaria and water borne disease in Borena. Comprehensive action should also be taken to prevent and control the prevailing communicable diseases. To the extent possible this should avoid the chemical control of such diseases

Impact	Probability	Severity	Significance	Justification
				which can be detrimental to the environment.
Impact of the existing conflict	High	Medium	Medium-High	There have been some incidents (minor) that have been reported in Borena. To this end, strict regular follow up on the conflict status should be conducted. The protection of workers and the community from exposure should be a priority
Implementation and operation phase impacts				
Sustainability of the groundwater resource	Medium	High	Medium-High	The project has been developed based on a detailed study on the groundwater resource potential of the area. Moreover, an additional, comprehensive assessment is being conducted to validate and update this study. Hence, the probability of occurrence of the impact is not high. However, the project needs to ensure groundwater extraction is kept at a relatively low level (i.e. there should be conservative withdrawal of the resource at 70% of maximum capacity to ensure the sustainability of the groundwater resource).
Contamination of groundwater sources	Medium	High	Medium-High	With population increase, this can be an important impact, particularly if sufficient solid and liquid waste disposal systems are not in place (medium probability) and the impact can be severe (high).
Water quality	Low	Medium	Low-Medium	Inherent water quality issues associated with groundwater (e.g. salt and heavy metal content) can be an issue. However, such water quality issues have not been reported thus far (hence low probability).
Hazardous solid waste	High	Medium	Medium-High	This is a concern, considering the lack of proper means of disposal of such waste and the prevailing practices. The project needs to invest in proper hazardous waste management and disposal systems.
Impact on human health	High	High	High	This is also an important concern. Considerable attention should be given to control and prevent the spread of malaria.

Impact	Probability	Severity	Significance	Justification
				Comprehensive action should also be taken to prevent and control the prevailing communicable diseases.
Migration and socio-economic implications	High	Medium	Medium-High	Unless planned and implemented with due consideration, the project might result in social-economic issues, including issues pertaining to the right to use water, which in turn will result in conflict. Moreover, migrant settlers from other parts of the country can increase attracted by the opportunities created by the project. Settler communities, who are mostly agrarian and sedentary, can have implications and can potentially affect some of the native pastoral communities and their livelihoods.
Impact of the existing conflict	High	Medium	Medium-High	There have been some incidents (minor) that have been reported in Borena. To this end, strict regular follow up on the conflict status should be conducted. The protection of workers and the community from exposure should be a priority

5.5. MITIGATION MEASURES

The mitigation measures for the construction and operation phase impacts that were identified for the Kobo-Girana Valley and Gelchet-Sarite water supply project are described in the tables (Table 13 and 14) below.

Kobo-Girana Valley

Table 13: Mitigation measures for the impact that were identified at the Kobo Girana valley site

Impact	Mitigation Measures
Design and construction phase impacts	
Flooding and sedimentation	<ul style="list-style-type: none"> - Ensure that construction undertaking is during the dry season (or in periods of low flooding, runoff and erosion) to minimise these impacts. - As per need, put in place localised solutions prior to the construction (gabions, trenches, etc.), particularly in the steep sloped areas, to reduce such impacts.
Soil erosion	
Gully erosion and widening of riverbanks	
Impact on vegetation	<ul style="list-style-type: none"> - Keep vegetation clearing to a minimum. - Look for alternative reservoir locations. - Compensate by planting vegetation to replace loss (where the impact is unavoidable).

Impact	Mitigation Measures
	<ul style="list-style-type: none"> - Landscaping and planting of vegetation should be done on disturbed surfaces as a compensatory measure.
Disturbance of farmlands	<ul style="list-style-type: none"> - Look for alternate sites for these purposes and avoid impacting farmlands and individuals' properties. - For disturbed farmland, backfill the dug/excavated soil as per its normal sequence of structure or layers and ensure the soil is compacted. Also, ensure to restore the organic rich topsoil.
Impact on property and buildings	<ul style="list-style-type: none"> - Alignment of the rising mains, transmission and distribution lines should follow the existing road as much as possible so as not to have impact on property and building. - For affected people, provide compensation.
Dust emission and exhaust fumes	<ul style="list-style-type: none"> - Watering to be enforced to keep dust levels low. - Regularly maintain construction vehicles and machinery to reduce emissions.
Noise	<ul style="list-style-type: none"> - Strict controls under construction contracts to limit the noise levels to acceptable levels. - Avoid construction activities causing nuisance noise during nighttime (restrictions on construction hours). - Limit the hours of operation for specific pieces of equipment, especially mobile sources such as excavators. - Install mufflers on engine exhausts.
Water and soil pollution	<ul style="list-style-type: none"> - Proper storage of construction materials such as oils, fuels and hazardous chemicals during construction activities. - Proper care shall be exercised to protect the groundwater from pollution and the top part of the well must be properly sealed by building head work and drainage shall be provided. - Testing and level monitoring shall be conducted regularly.
Workers and public safety	<ul style="list-style-type: none"> - Notifications of upcoming construction activities, visible barriers around active worksites, maintenance of safe access through worksites to commercial premises (e.g. planks cross open trenches) and traffic/pedestrian management (displaying road/traffic signs, labels, etc.). - Install speed humps at all settlements along the project roads. - Maintain, repair & overhaul vehicles and equipment. - Construct, maintain & repair roads. - Use protective/safety devices, including hard hats, safety boots and high-visibility vests. - Periodic awareness workshops for workforce on safe working practices.
Health impacts including malaria, water-borne diseases, and STDs	<ul style="list-style-type: none"> - Considerable attention should be given to control and prevent the spread of diseases like malaria through the provision of nets and other items that prevent exposure. - Comprehensive action should also be taken to prevent and control the prevailing communicable diseases, including through health awareness outreach and the provision of preventive items. - To the extent possible control and prevention measures should avoid chemical control of such diseases, which in turn can be detrimental to the environment.

Impact	Mitigation Measures
Impact of existing conflict	<ul style="list-style-type: none"> - Conflict is not reported in the past 2 years in the immediate localities in Kobo Girana where the project is being implemented. - However, strict regular follow up on the conflict status in these localities should be conducted. - The protection of workers and the community from exposure should be a priority.
Implementation and operation phase impacts	
Sustainability of the groundwater resource	<ul style="list-style-type: none"> - The project should be planned and designed based on adequate data on the volume and condition of the water resources. The hydrological mapping of the area which describes the capacity of the groundwater aquifer, and the depth of the groundwater table should be well developed before implementation. - There is also a need on the part of the Kobo-Girana Irrigation Development project to ensure that the extraction rate of groundwater does not exceed the natural replenishment of the resource based on the resource balance indicated in the hydro-geological study.
Contamination of groundwater sources	<ul style="list-style-type: none"> - Secure or protect the area around the groundwater sources to limit the risk of pollution. In addition, apply appropriate sanitation measures, put in place appropriate liquid and solid waste disposal systems for towns and the rural communities in the project area. - Ensure that there is adherence to the dictates of the Environmental Pollution Proclamation of Ethiopia (Proc. No. 300/2002).
Water quality	Groundwater quality should be regularly monitored/tested and only those wells with water quality/temperature that is within the permissible range should be used for irrigation development purposes.
Agrochemicals use	Apply appropriate dosages through the fertigation method of the drip system and adopt (and implement) an Integrated Pest Management (IPM) approach.
Damage to ecological resources	<ul style="list-style-type: none"> - This requires a multi-faceted solution by way of preparing and implementing an appropriate natural resource utilization master plan, which include areas that deserve special attention (such as forest reserves). In addition to having appropriate regulations that help safeguard the trees and the landscape, efforts shall be made for the development and promotion of alternative energy resources and other wood requirements, such as planned plantations for fuel wood and construction requirements. - The implementation of Kobo-Girana and Habru Agro-forestry Development Projects, which include the incorporation of tree plantations into home gardens, cropland, grazing land and riverbank and gully plantations as well as the farm wood lots proposed by the feasibility of the Kobo-Girana Valley Development Programme, is very important. - Around 5,619 and 13,456 ha of woodlots have already been studied and proposed for Kobo-Girana and Habru, respectively. Implementation of the woodlot projects that fall in the sub-watersheds and valleys of the irrigation schemes proposed can ease the pressure on ecological resources.
Hazardous solid waste	<ul style="list-style-type: none"> - When possible, there needs to be minimal usage of hazardous wastes - There needs to be appropriate disposal system for such wastes. - A good alternative is also to ensure (contractually) that the supplier of these products will also collect the associated waste.

Impact	Mitigation Measures
Impact on human health	<ul style="list-style-type: none"> - Considerable attention should be given to control and prevent the spread of diseases like malaria through the provision of nets and other items that prevent exposure. - Comprehensive action should also be taken to prevent and control the prevailing communicable diseases, including through health awareness outreach and the provision of preventive items. - To the extent possible control and prevention measures should avoid chemical control of such diseases, which in turn can be detrimental to the environment.
Migration and socio-economic implications	<p>Migration can have implication beyond the health impacts and can create additional socio-economic challenges, potentially even leading to conflict. These socio-economic challenges require a multifaceted approach and can be addressed through the design and implementation of appropriate:</p> <ul style="list-style-type: none"> - Capacity development programmes tailored as per the needs of the project. - Financial and credit system. - Schemes for access to benefit sharing, which is equitable and consultative (to avoid conflict). - Family planning and other related interventions/measures are also important to address some of the challenges elucidated. <p>Moreover, towns and rural communities in the project area, including the administration in the project area, should contribute to and ensure that the needs and requirements of the project in terms of services and facilities is met.</p>
Impact of existing conflict	<p>The following are important mitigation measures:</p> <ul style="list-style-type: none"> - Community Engagement: Engage local leaders and communities to build trust and ensure support for the project. - Conflict Monitoring: Regularly assess conflict dynamics and adjust operations as needed. This proactive approach allows for timely interventions and minimizes potential disruptions. - Conflict Mitigation: Continuous assessment of conflict situations with flexibility to halt disbursements. Engage with political solutions to address root causes of conflicts and ensure the project contributes positively to regional stability. - Awareness Campaigns: Conduct regular awareness campaigns about the project's benefits, focusing on building trust and mitigating risks of vandalism and theft. - Training Programs: Implement comprehensive training programs for local technicians and operators to enhance their skills in maintaining and operating solar-powered water systems - Withhold funding: In the unlikely incidence of full-scale war, fund disbursement to the project woredas should be halted until the federal government issues commencement of operations. - Knowledge Transfer: Engage international experts to provide technical assistance and support, ensuring local teams are well-equipped to handle technical challenges

Borena: Gelchet-Sarite Water Supply Project

Table 14: Mitigation measures for the impact that were identified at the Gelchet-Sarite site

Impact	Mitigation Measures
Design and construction phase impacts	
Soil erosion and sedimentation	<ul style="list-style-type: none"> - Schedule construction undertakings to be conducted in the dry season. - Limit ground disturbance and open trenches to areas of a workable size - Minimise soil removal/disturbance during wet season. - Reduce the time that excavations and trenches remain open - Place geo-textile silt traps at drainage ditches and materials stockpiles - Contain or isolate construction areas from other surface runoff through the use of diversion drains - Pass storm water runoff from construction areas through geo-textile silt traps before discharge into culverts or drainage systems. - Dispose of construction waste (solid waste) in an appropriate manner.
Soil pollution	<ul style="list-style-type: none"> - Take precaution not to spill fuel, oil & chemicals on to soil - Fuels and oils should be stored in bounded enclosures or in containers to ensure spills are contained. - Strictly control and monitor that the storage practices are acceptable.
Water pollution	<ul style="list-style-type: none"> - Proper storage of construction materials such as oils, fuels, and hazardous chemicals during construction activities - Proper care shall be exercised to protect the groundwater from pollution and the top part of the well must be properly sealed by building head work and drainage shall be provided - Test and level monitoring shall be conducted regularly
Impact on ecologically sensitive area	<ul style="list-style-type: none"> - No mitigation measure required as this is not an issue.
Impact on Vegetation	<ul style="list-style-type: none"> - keep vegetation clearing to a minimum - Looking for alternative reservoir locations - Compensate by planting vegetation to replace loss (where the impact is unavoidable) - Landscaping and planting of vegetation should be done on disturbed surfaces as a compensatory measure
Disturbance to land	<ul style="list-style-type: none"> - Look for alternate sites for these purposes and avoid impacting farmlands and individuals' properties. - For disturbed farmland backfill the dug/ excavated soil as per its normal sequence of structure or layer and ensure the soil is compacted. Also ensure to restore the organic rich topsoil.
Impact on property and buildings	<ul style="list-style-type: none"> - Alignment of the rising mains, transmission and distribution lines should follow the existing road as much as possible so as not to have impact on property and building - For affected people provide compensation
Workers and public safety issue	<ul style="list-style-type: none"> - Notifications of upcoming construction activities, visible barriers around active worksites, maintenance of safe access through worksites to commercial premises (e.g. planks cross open trenches) and traffic/pedestrian management (displaying road/traffic signs, put labels, etc.) - Install speed humps at all settlements along the project roads - Maintain, repair & overhaul vehicles, and equipment - Construct, maintain & repair roads - Use protective/safety devices including hard hats, safety boots and high-visibility vests

Impact	Mitigation Measures
	- Periodic awareness workshops for workforce on safe working practices
Dust emission and exhaust fumes	- Watering to be enforced to keep dust levels low - Maintenance construction vehicles & machineries to ensure exhaust emissions are not offensive
Noise	- Strict control under construction contract to limit the noise levels to acceptable levels - Avoiding construction activities causing nuisance noise during nighttime (restrictions on construction hours) - Limiting the hours of operation for specific pieces of equipment, especially mobile sources such as excavators. - Installing mufflers on engine exhausts
Health Impact such as increased malaria and other water-borne diseases	- Considerable attention should be given to control and prevent the spread of diseases like malaria through the provision of nets and other items that prevent exposure. - Comprehensive action should also be taken to prevent and control the prevailing communicable diseases, including through health awareness outreach and the provision of preventive items. - To the extent possible control and prevention measures should avoid chemical control of such diseases, which in turn can be detrimental to the environment.
Impact of the existing conflict	- There have been some incidents (minor) that have been reported in Borena. - Strict regular follow up on the conflict status should be conducted. - The protection of workers and the community from exposure should be a priority.
Implementation and operation phase impacts	
Sustainability of the groundwater resource	- The project should be planned and designed based on adequate data on the volume and condition of the water resources. The hydrological mapping of the area which describes the capacity of the groundwater aquifer, and the depth of the groundwater table should be well developed before implementation. - There is also a need on the part of the Gelchet-Sarite Water Supply Project to ensure that the extraction rate of groundwater does not exceed the natural replenishment of the resource based on the resource balance indicated in the hydro-geological study.
Contamination of groundwater sources	- Secure or protect the area around the groundwater sources to limit the risk of pollution. In addition, apply appropriate sanitation measures, put in place appropriate liquid and solid waste disposal systems for towns and the rural communities in the project area. - Ensure that there is adherence to the dictates of the Environmental Pollution Proclamation of Ethiopia (Proc. No. 300/2002)
Water quality	Groundwater quality should be regularly monitored/tested and only those wells with water quality/temperature that is within the permissible range should be used for drinking and irrigation development purposes.
Hazardous solid waste	- There needs to be appropriate disposal system for such wastes. - A good alternative is also to ensure (contractually) that the supplier of these products will also collect the associated waste.
Impact on human health	- Considerable attention should be given to control and prevent the spread of diseases like malaria through the provision of nets and other items that prevent exposure.

Impact	Mitigation Measures
	<ul style="list-style-type: none"> - Comprehensive action should also be taken to prevent and control the prevailing communicable diseases, including through health awareness outreach and the provision of preventive items.
Migration and socio-economic implications	<p>Some of these challenges can be mitigated through the design and implementation of appropriate:</p> <ul style="list-style-type: none"> - Capacity development programs tailored as per the needs of the project, - Financial and credit system, - Schemes for access to benefit sharing, which is equitable and consultative (to avoid conflict). - Family planning and other related interventions/measures are also important to address some of the challenges elucidated. - Moreover, towns and rural communities in the project area, including the administration in the project area, should contribute to and ensure that the needs and requirements of the project in terms services and facilities is met. - With regards to restricted grazing, a good way forward is to study and design livestock production in a way that it becomes economically meaningful by reducing stock number and enhancing stock quality, in such a way that it can co-exist and benefit from the irrigation scheme through appropriate zoning and the utilization of the waste biomass the is generated from the project.
Impact of the existing conflict	<p>The main potential mitigation measures are stipulated below:</p> <ul style="list-style-type: none"> - Community Engagement: Strengthen local governance by involving community leaders in decision-making processes and project implementation. - Capacity Building: Implement comprehensive training programs for local technicians and operators. - Withholding funding: In the unlikely incidence of full-scale war, fund disbursement to the project woredas should be halted until the federal government issues commencement of operations. - Knowledge Transfer: Engage international experts to provide technical assistance and support, ensuring local teams are well-equipped to handle technical challenges

6. Environmental and Social Management Plan

6.1. Objectives of the Environmental and Social Management Plan

An ESMP is a management tool used to assist in minimizing the negative environmental and social impact of a project; and reach a set of environmental and social objectives. To ensure the environmental and social objectives of the project are met, this ESMP will be used to structure and manage the implementation of the measures required to avoid or mitigate adverse effects.

The overall environmental and social objectives is to improve the livelihoods and capacity of the population in the project area to adapt to climate change and to effectively address the challenges facing the rural populations of Ethiopia.

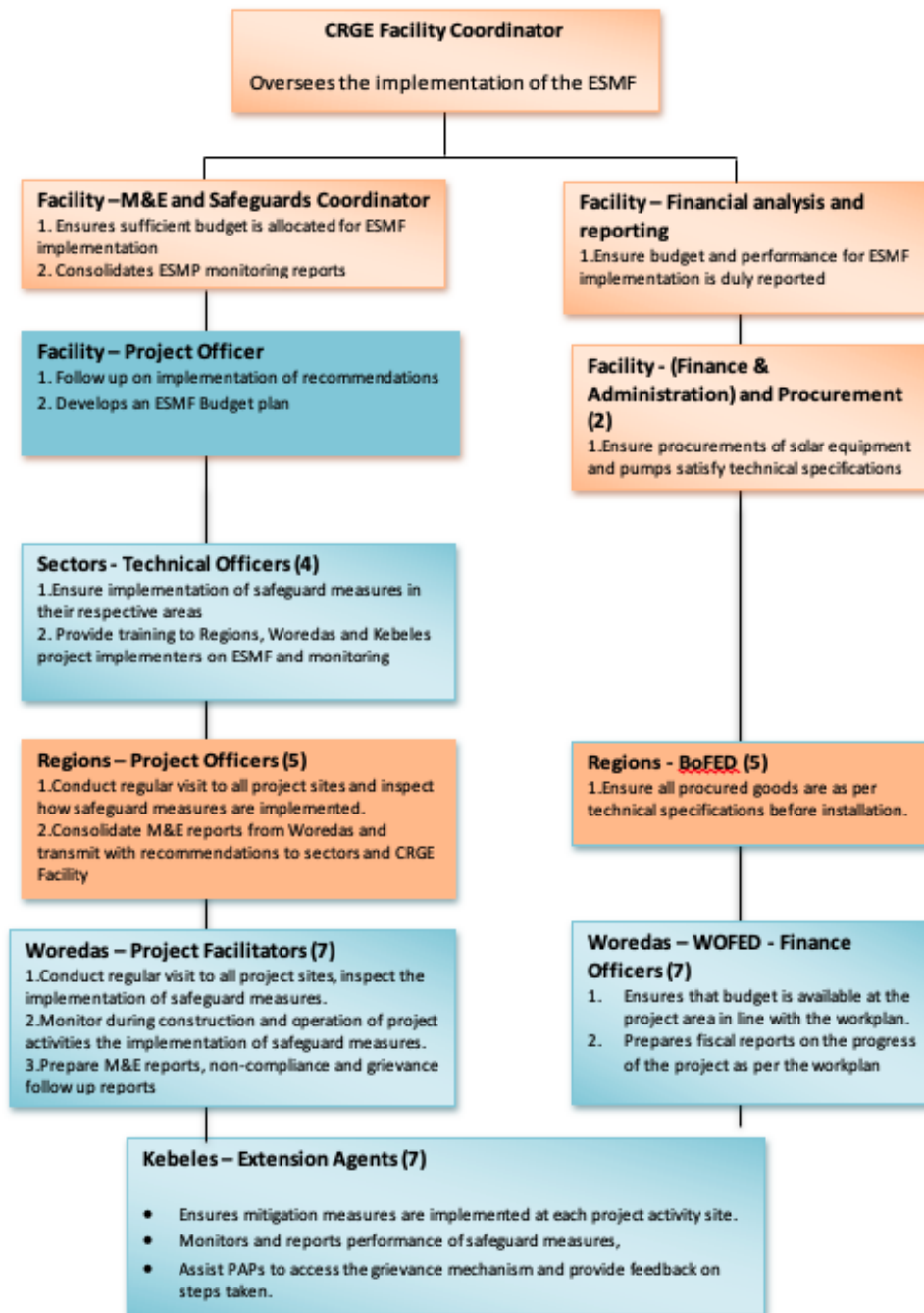
More specifically the objectives include:

- improving safe and sustainable water supply for domestic and productive use, to populations in the targeted area
- improving increased productivity and resilience, through expanding irrigation practices using clean, green and sustainable technologies, i.e. solar water pumps
- encourage good management practices through planning, commitment and continuous improvement of environmental practices
- minimize or prevent pollution of land, air and water
- protect native flora, fauna and important ecosystems
- comply with applicable laws, regulations and standards for the protection of the environment
- adopt the best practicable means available to prevent or minimize harmful environmental impact
- describe monitoring procedures required to identify impacts on the environment, and
- provide a governance arrangement for the effective implementation of the plan.

6.2. Implementation arrangement for the ESMP

In terms of ESMP implementation, the Ministry of Finance, CRGE Facility coordinator, will be responsible for the overall ESMP implementation coordination. At the technical level, the CRGE Facility M&E and Safeguards coordinator will ensure that sufficient budget is allocated for the implementation of the ESMP and will consolidate ESMP monitoring reports. The roles and responsibilities of different actors with regards to the implementation of ESMP is stipulated below.

Diagram 1: ESMF implementation Arrangement*



*The blue boxes below indicate staff that will be employed to implement this work and the brown boxes indicates that existing staff will be either be re-assigned or delegated to undertake the stipulated tasks.

6.3. Information Disclosure

The project will ensure proper disclosure of information including this ESIA and an ESMP (Category B), which will be disclosed at least 30 days in advance of the approving authority’s decision. Other

relevant safeguard reports will also be available in both English and the local language (if not English). The reports will be submitted to GCF and made available to the public via electronic links in the Accredited Entity's website as well as in locations convenient to affected peoples in consonance with requirements of GCF Information Disclosure Policy and Section 7.1 of (Information Disclosure) of GCF Environmental and Social Policy].

The ESMP included stakeholder consultation as part of the stakeholder engagement plan (Refer to Annex 7). The stakeholder engagement process will be continued throughout the span of the project and on the ground consultations outcome reports will be availed and disclosed.

Finally the ESMP report will posted on the Accredited Entity's (Ministry of Finance's) website, <https://www.MOFed.gov.et/programmes-projects/crge-facility/> , in line with the Government's and the GCF's public disclosure policy and to ensure that members of the public have access to this ESMP.

The ESMP and the ensuing safeguards documentation will be made available in both English Amharic and other local languages in line with GCF's disclosure timeline. It will also be available online throughout the project implementation period and beyond.

6.4. Complaints Register and Grievance Redress

The Complaints Register and Grievance Redress Mechanism set out in this ESMP and to be used as part of the project will provide an accessible, rapid fair and effective response to concerned stakeholders, especially any vulnerable group who often lack access to formal legal regimes. While recognizing that many complaints may be resolved immediately, the Complaints Register and Grievance Redress Mechanism set out in this ESMP encourage mutually acceptable resolution of issues as they arise.

Eligibility criteria for the Grievance Redress Mechanism include:

- Perceived negative economic, social or environmental impact on an individual and/or group, or concern about the potential to cause an impact
- Clearly specified kind of impact that has occurred or has the potential to occur; and explanation of how the project caused or may cause such impact; and
- Individual and/or group filing of a complaint and/or grievance is impacted, or at risk of being impacted; or the individual and/or group filing a complaint and/or grievance demonstrates that it has authority from an individual and or group that have been or may potentially be impacted to represent their interest.

Local communities and other interested stakeholders may always raise a grievance/complaint to the Kebele Administration, Woreda Administration, and Regional State Administration. Affected local communities should be informed about the ESMP provisions, including its grievance mechanism. Contact information of the Kebele, Woreda and Regional State designated environmental officer should be made publicly available.

The Ethiopian Institution of the Ombudsman (EIO) is a federal entity accountable to the Federal Parliament and responsible for ensuring that the constitutional rights of citizens are not violated by executive organs. It receives and investigates complaints in respect of maladministration; conducts supervision to ensure the executive carries out its functions according to the law; and seeks remedies in case of maladministration.

The Regional Public Grievance Hearing Offices (PGHOs) are regional entities accountable to their respective regional Presidents. They are responsible for receiving appeals, complaints and grievances related to public services and good governance; investigating these; and making recommendations and decisions to redress them. Most regions have established their PGHOs and have branches at zonal, woreda and kebele levels which are accountable to their respective chief administrator. At the kebele level, the Kebele Manager serves as the focal point.

A complainant has the option to lodge his/her complaint to the nearby EIO branch or the respective PGHO in person, through his/her representative, orally, in writing, by fax, telephone or in any other manner. Complaints are examined; investigated and remedial actions are taken to settle them. If not satisfied with the decision of the lower level of the GRM system, the complainant has the right to escalate his/her case to the next higher level of administration. In addition, some regions have mobile grievance handling teams at woreda level to address grievances by clustering kebeles; some have good governance command posts to handle cases that have not been settled by the Kebele Manager and woreda PGHOs.

Local communities and other interested stakeholders may raise a grievance/complaint at all times to the Kebele Administration, Woreda Administration, Regional State Administration. Affected local communities should be informed about the ESMF provisions, including its grievance mechanism. Contact information of the Kebele, Woreda and Regional State **M&E and safeguards officer** should be made publicly available.

As a first stage, grievances should be made to the Kebele designated **M&E and safeguard officer**, who should respond to grievances in writing within 15 calendar days of receipt. Claims should be properly filed at the office of the Woreda and Kebele Administrations, and a copy of the grievance should be provided to the Project Management Unit at MOF. If the claimant is not satisfied with the response, the grievance may be submitted to Project Management Unit at MOF.

The purpose of the complaints procedure is to ensure all complaints from local communities are dealt with appropriately, with corrective actions being implemented and the complainant being informed of the outcome. Both verbal and written complaints will be entered on the Complaints Log and the Complaints Action Form.

The complaints log provides a record to show that actions are tracked and carried out. It records:

- Date the complaint was reported.
- Person responsible for the complaint.
- Information on proposed corrective action sent to complainant.
- The date the complaint was closed out.
- Date response sent to complainant.

Possible Grievance Redress procedures at the different levels of administration based on the study done for the National REDD+ Secretariat³.

Table 15: Level of authority, responsible institution and procedure for grievance mechanism

³ MINISTRY OF ENVIRONMENT AND FOREST (MEF) OROMIA FOREST AND WILDLIFE ENTERPRISE (OFWE) 2015. OROMIA FORESTED LANDSCAPE PROGRAM (OFLP), RESETTLEMENT POLICY FRAMEWORK (RPF)

Level	Responsible Institution	Procedure
Federal Level	EPA and Project steering committee	EPA need to give response within one month
	Federal Ombudsman's Office	The Federal Ombudsman's can also give advice for unresolved issues before the case is submitted to the court
	Federal Court	Applicants may also pursue their cases through the court system, if they are not satisfied with the Grievance Redress System.
Regional Level	Regional Environment Office and PCU	If Applicants are not satisfied or referred to the regional environment office and the regional office should give response within 15 days,
	Regional Ombudsman's Office	Applicants may also get advice from the Regional Ombudsman's office
	Regional Court	Applicants may appeal to the court if it is not resolved at environment office
Woreda Level	Woreda Environment office	Applicants may raise their grievance to the Woreda environment office and response should be given within 10 days. If the Applicant are not satisfied by the response they can take the issue to the Regional PCU or Woreda formal court
	Woreda Ombudsman's Office	Applicants can also submit their apple to the Ombudsman's for advice
	Woreda Court	Applicants can submit their appeal to the formal court and continue with the formal process
Kebele* Level	Kebele Shengo	Local communities and other interested stakeholders (Applicants) may raise a grievance/complaint to the Kebele manager for grievance caused by the project and need to get a response within 10 days

At the national level, the EPA Directorate General for Environmental and Social Impact Assessment and Licensing is responsible for grievance redress. At the project level, the environmental/social safeguards expert, within the Project Management Office (PMO) at the Ministry of Finance will be responsible for grievance redress. The safeguards expert within the PMO will work closely with the EPA Directorate General for Environmental and Social Impact Assessment and Licensing.

This is also complimented by the GCF's Independent Redress Mechanism (IRM), which addresses complaints by people who believe they are negatively affected or may be affected by projects or programmes funded by the Green Climate Fund (GCF). The IRM also accepts requests for reconsideration from developing countries whose funding proposals have been denied by the GCF Board.

6.5. Mechanisms for Implementing the ESMP

Environmental Procedures and Site and Activity-Specific Work Plans/Instructions

Environmental procedures provide a written method describing how the management objectives for a particular environmental element are to be obtained. They contain the necessary detail to be site- or activity-specific and are required to be followed for all construction works. Site and activity-specific work plans and instructions will be developed, making use of templates and guidelines that were developed under the previously approved direct access GCF project of Ethiopia (FP058 - Responding to the increasing risk of drought: building gender-responsive resilience of the most vulnerable communities), which is being implemented by the Ministry of Finance.

Environmental Incident Reporting

Any incidents, including non-conformity with the procedures of the ESMP, are to be recorded using an Incident Record and the details entered into a register. For any incident that causes or has the potential to cause material or serious environmental harm, the site supervisor shall notify EPA or its delegate, as soon as possible. The contractor must cease work until remediation has been completed as per the approval of EPA.

Daily and Weekly Environmental Inspection Checklists

A daily environmental checklist is to be completed at each work site by the relevant site supervisor and maintained within a register. The completed checklist is forwarded to EPA for review and follow-up if any issues are identified. A weekly environmental checklist is to be completed and will include reference to any issues identified in the daily checklists completed by the Site Supervisors.

Corrective Actions

Any non-conformities with the ESMP are to be noted in weekly environmental inspections and logged into the register. Depending on the severity of the non-conformity, the site supervisor may specify a corrective action in the weekly site inspection report. The progress of all corrective actions will be tracked using the register. Any non-conformities and the issue of corrective actions are to be advised to EPA.

Review and Auditing

The ESMP and its procedures are to be reviewed at least every two months by EPA. The objective of the review is to update the document to reflect knowledge gained during the course of construction operations and to reflect new knowledge and changed community standards (values). Any changes are to be developed and implemented in consultation with EPA. When an update is made, all site personnel will be made aware of the revision as soon as possible through a meeting.

Training of Contractors



Contractors have the responsibility for ensuring systems are in place so that relevant employees, contractors and sub-contractors are aware of the environmental and social requirements for construction, including the ESMP. All construction personnel will attend an induction that covers health, safety, environment and cultural requirements. All staff and contractors engaged in any activity with the potential to cause serious environmental harm will receive task specific environmental training.

6.6. Environmental and Social Mitigation and Monitoring Plan and Matrix

In Table 16 and Table 17 a comprehensive matrix and plan on Environmental and Social Mitigation and Monitoring is presented for the Kobo-Girana and Sarite-Gelchet project sites, respectively. This is prepared to guide those responsible for ensuring the compliance of mitigation measures, including organizations, institutions, experts, field teams, etc. to monitor the implementation of each mitigation measure and overall compliance of the project.

Table 16: Environmental and Social Mitigation and Monitoring Plan and Matrix: Kobo-Girana Valley

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Kobo-Girana Valley						
Design and Construction	Flooding and sedimentation	Insignificant (low- medium impact), as most infrastructure is already in place. Hence, the contribution of the project's construction activities to this impact will not be significant.	<ul style="list-style-type: none"> - Ensure that construction undertaking is during the dry season (or in periods of low flooding, runoff and erosion) to minimise these impacts. - As per need, put in place localised solutions prior to the construction (gabions, trenches, etc.), particularly in the steep sloped areas, to reduce such impacts. 	-	During the installation period, which is in the first year of the project	Minimized impact of floods and sedimentation
Design and Construction	Soil erosion	Insignificant (low- medium impact), as most infrastructure is already in place. Hence, the contribution of the project's construction activities to this	<ul style="list-style-type: none"> - Ensure that construction undertaking is during the dry season (or in periods of low flooding, runoff and erosion) to minimise these impacts. - As per need, put in place localised solutions prior to the construction 	<ul style="list-style-type: none"> - Project team - Woreda natural resource management desk - Community 	During the installation period, which is in the first year of the project	Minimized impact of soil erosion

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Kobo-Girana Valley						
		impact will not be significant.	(gabions, trenches, etc.), particularly in the steep sloped areas, to reduce such impacts.	- Extension workers		
Design and Construction	Gully erosion and widening of riverbanks	Insignificant (low- medium impact), as most infrastructure is already in place. Hence, the contribution of the project's construction activities to this impact will not be significant.	- Ensure that construction undertaking is during the dry season (or in periods of low flooding, runoff and erosion) to minimise these impacts. - As per need, put in place localised solutions prior to the construction (gabions, trenches, etc.), particularly in the steep sloped areas, to reduce such impacts.	- Project team - Woreda natural resource management desk - Community - Extension workers	During the installation period, which is in the first year of the project	Minimized impact from soil erosion
Design and Construction	Impact on vegetation	Insignificant (low impact) since impact on vegetation will be restricted and localized, and this will only happen in the context of small infrastructure development such as construction of storage reservoirs, laying of transmission mains and distribution networks.	- Keep vegetation clearing to a minimum. - Look for alternative reservoir locations. - Compensate by planting vegetation to replace loss (where this is unavoidable). - Landscaping and planting of vegetation should be done on disturbed surfaces as a compensatory measure.	- Project team - Woreda natural resource management desk - Community - Extension workers	During the installation period, which is in the first year of the project	Minimized loss of vegetation
Design and Construction	Disturbance of farmlands	Insignificant (low-medium impact) The project will ensure that individuals' lands are not acquired for the purposes of	- Look for alternate sites for these purposes and avoid impacting farmlands and individuals' properties.	- Project team - Local government - Community	During the installation period, which is in the	Avoided or minimized impact on/ disturbance of individual farmlands

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Kobo-Girana Valley						
		the project. This is considering that all land for the project has already been acquired, including for the purposes of situating pumps and other infrastructure.	<ul style="list-style-type: none"> - For disturbed farmland, backfill the dug/excavated soil as per its normal sequence of structure or layers and ensure the soil is compacted. - Also, ensure to restore the organic rich topsoil. 	- Extension workers	first year of the project	
Design and Construction	Impact on property and buildings	Insignificant (low impact), since most infrastructure is already developed, only small and localised impacts will occur in this context.	<ul style="list-style-type: none"> - Alignment of the rising mains, transmission and distribution lines should follow the existing road as much as possible so as not to have impact on property and building. - For affected people, provide compensation. 	<ul style="list-style-type: none"> - Project team - Local government - Community 	During the installation period, which is in the first year of the project	Avoided or minimized impact on the property of individuals and buildings
Design and Construction	Dust emission and exhaust fumes	Insignificant (low Impact). The emission of dust and exhaust fumes will not be significant. However, there are no specific standards in Ethiopia for ambient dust and exhaust exposure levels.	<ul style="list-style-type: none"> - Watering to be enforced to keep dust levels low. - Regularly maintain construction vehicles and machinery to reduce emissions. 	<ul style="list-style-type: none"> - Project team - Contractor - Local government - Woreda environment desk - Community 		Minimized impact of dust and exhaust fumes
Design and Construction	Noise	Insignificant (low impact). Noise will not be significant during the construction phase, as the construction undertaking is minimal and localized. The standard	<ul style="list-style-type: none"> - Strict controls under construction contracts to limit the noise levels to acceptable levels. - Avoid construction activities causing nuisance noise during 	<ul style="list-style-type: none"> - Project team - Woreda environment desk - Community 	During the installation period (first year of operation)	Limited exposure levels within acceptable standards

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Kobo-Girana Valley						
		ambient level for noise is set within the following range, which is 75 db for daytime industrial site (maximum allowable) and 45 db at night for residential sites (lowest level required) and these standards should be adhered to depending on the type of site in question.	<p>nighttime (restrictions on construction hours).</p> <ul style="list-style-type: none"> - Limit the hours of operation for specific pieces of equipment, especially mobile sources such as excavators. - Install mufflers on engine exhausts. 			
Design and Construction	Water quality	Not as Significant (medium impact): Water pollution will not be significant during the construction phase, as the construction undertaking is minimal and localized. However, there can be severe detrimental impacts associated with groundwater pollution, unless proper care is taken in managing used oil and other construction waste.	<ul style="list-style-type: none"> - Proper storage of construction materials such as oils, fuels and hazardous chemicals during construction activities. - Proper care shall be exercised to protect the groundwater from pollution and the top part of the well must be properly sealed by building head work and drainage shall be provided. - Testing and level monitoring shall be conducted regularly. 	<ul style="list-style-type: none"> - Project team - Woreda environment and water desks - Community - Extension workers 	Recurrent	Water quality continues to be suitable for intended use.
Design and Construction	Soil pollution	Not as Significant (medium impact) Soil pollution will not be significant during the	<ul style="list-style-type: none"> - Proper storage of construction materials such as oils, fuels and hazardous chemicals during construction activities. 	<ul style="list-style-type: none"> - Project team - Woreda environment 	Recurrent	Soil and groundwater quality is not compromised

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Kobo-Girana Valley						
		construction phase, as the construction undertaking is minimal and localized. However, there can be severe detrimental impacts associated with Soil pollution, unless proper care is taken in managing used oil and other construction waste.	<ul style="list-style-type: none"> - Proper care shall be exercised to protect the groundwater from pollution and the top part of the well must be properly sealed by building head work and drainage shall be provided. - Testing and level monitoring shall be conducted regularly. 	<ul style="list-style-type: none"> and water desks - Community - Extension workers 		and continues to be suitable for intended use
Design and Construction	Workers and public safety	Significant (medium - high impact) In general, construction-related worker safety is a concern in Ethiopia. Hence contractors should be obligated to provide safety equipment and ensure workers are properly trained on safety issues.	<ul style="list-style-type: none"> - Notifications of upcoming construction activities, visible barriers around active worksites, maintenance of safe access through worksites to commercial premises (e.g. planks, open trenches) and traffic/pedestrian management (displaying road/traffic signs, labels, etc.). - Install speed humps at all settlements along the project roads. - Maintain, repair & overhaul vehicles and equipment. - Construct, maintain & repair roads. - Use protective/safety devices, including hard hats, safety boots and high-visibility vests. 	<ul style="list-style-type: none"> - Project team - Contractor - Local government - Woreda labour desk - Community 	Recurrent	Avoided and minimized risk to workers and public safety

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Kobo-Girana Valley						
			- Periodic awareness workshops for workforce on safe working practices.			
Design and Construction	Health impacts including malaria, water-borne diseases, and STDs	Significant (high impact). These need to be given due consideration as malaria and other water borne diseases are major concerns in localities in Kobo-Girana where the project is being implemented.	<ul style="list-style-type: none"> - Considerable attention should be given to control and prevent the spread of diseases like malaria through the provision of nets and other items that prevent exposure. - Comprehensive action should also be taken to prevent and control the prevailing communicable diseases, including through health awareness outreach and the provision of preventive items. - To the extent possible control and prevention measures should avoid chemical control of such diseases, which in turn can be detrimental to the environment. 	<ul style="list-style-type: none"> - Project team - Contractor - Local government - Woreda environment and health bureaus - Community 	Recurrent	Avoided or minimized health impacts
Design and Construction	Impact of existing conflict	Significant (medium - high impact): Although there is existing concern in the area due to the war reported in 2021, such conflicts are not reported in the past 2 years in the immediate localities in Kobo Girana where the project is being implemented. However,	<ul style="list-style-type: none"> - Conflict is not reported in the past 2 years in the immediate localities in Kobo Girana where the project is being implemented. - However, strict regular follow up on the conflict status in these localities should be conducted. - The protection of workers and the community from exposure should be a priority. 	<ul style="list-style-type: none"> - Project team - Contractor - Local government - Community 	Recurrent	Avoided and minimized risk of exposure to conflict of workers and the community.

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Kobo-Girana Valley						
		strict regular follow up on the conflict status in these localities should be conducted. The protection of workers and the community from exposure should be a priority.				
Implementation and operation	Sustainability of the groundwater resource	Significant (medium-high impact): The project has been developed based on detailed study on the groundwater resource potential of the area. Moreover, an additional, comprehensive assessment is being conducted to validate and update the study. Hence, the probability of occurrence of the impact is not high. However, the project needs to ensure groundwater extraction is kept at a relatively low level (i.e. there should be conservative withdrawal of the resource which should be set at 70% of maximum capacity to ensure the	<ul style="list-style-type: none"> - The project should be planned and designed based on adequate data on the volume and condition of the water resources. The hydrological mapping of the area which describes the capacity of the groundwater aquifer, and the depth of the groundwater table should be well developed before implementation. - There is also a need on the part of the Kobo-Girana Irrigation Development project to ensure that the extraction rate of groundwater does not exceed the natural replenishment of the resource based on the resource balance indicated in the hydro-geological study. 	<ul style="list-style-type: none"> - Project team - Woreda environment, water, and agriculture desks - Community and community rep. in the irrigation committee - Extension workers 	Recurrent	Avoided unsustainable extraction of water.

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Kobo-Girana Valley						
		sustainability of the groundwater resource).				
Implementation and operation	Contamination of groundwater sources	Significant (medium-high impact): With population increase, this can be an important impact, particularly if sufficient solid and liquid waste disposal systems are not in place (medium probability) and the impact can be severe (high).	<ul style="list-style-type: none"> - Secure or protect the area around the groundwater sources to limit the risk of pollution. - In addition, apply appropriate sanitation measures, put in place appropriate liquid and solid waste disposal systems for towns and the rural communities in the project area. - Ensure that there is adherence to the dictates of the Environmental Pollution Proclamation of Ethiopia (Proc. No. 300/2002). 	<ul style="list-style-type: none"> - Project team - Woreda environment and water desks - Community - Extension workers 	Recurrent	Groundwater quality is not compromised and continues to be suitable for intended use
Implementation and operation	Water quality	insignificant (low-medium impact): Inherent water quality issues associated with groundwater (e.g. salt and heavy metal content) can be an issue, particularly in the context of extensive use for irrigated agriculture. However, such water quality issues have not been reported at the project sites (hence low probability considering water quality test has been made for	<ul style="list-style-type: none"> - Groundwater quality should be regularly monitored/ tested - Only those wells with water quality/ temperature that is within the permissible range should be used for irrigation development purposes. 	<ul style="list-style-type: none"> - Project team - Woreda environment and water desks - Community - Extension workers 	Recurrent	Groundwater quality is not compromised and continues to be suitable for intended use

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Kobo-Girana Valley						
		each well during initial development).				
Implementation and operation	Agrochemicals use	Not as significant (medium impact): Considering that the agriculture produce is mainly edible, there will be low usage of agrochemicals in comparison to non-edible produce such as cotton. Moreover, this should be undertaken as per recommended levels for edible produce in Ethiopia (hence probability is considered medium).	<ul style="list-style-type: none"> - Apply appropriate dosages through the fertigation method of the drip system - Adopt (and implement) an Integrated Pest Management (IPM) approach. 	<ul style="list-style-type: none"> - Project team - Woreda agriculture desk - Community - Extension workers 	Recurrent	Avoided or minimized pollution from agrochemicals due to extensive use
Implementation and operation	Damage to ecological resources	Not as significant (medium impact): Encroachment and degradation of the ecology is already an existing challenge. However, there is also ongoing land rehabilitation work that is improving/alleviating the situation.	<ul style="list-style-type: none"> - This requires a multi-faceted solution by way of preparing and implementing an appropriate natural resource utilization master plan, which include areas that deserve special attention (such as forest reserves). - In addition to having appropriate regulations that help safeguard the trees and the landscape, efforts shall be made for the development and promotion of alternative energy resources and other wood 	<ul style="list-style-type: none"> - Project team - Woreda natural resource management desk - Community - Extension workers 	Recurrent	Minimized impact on ecological resources and avoided loss of natural vegetation

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Kobo-Girana Valley						
			<p>requirements, such as planned plantations for fuel wood and construction requirements.</p> <ul style="list-style-type: none"> - The implementation of Kobo-Girana and Habru Agro-forestry Development Projects, which include the incorporation of tree plantations into home gardens, cropland, grazing land and riverbank and gully plantations as well as the farm wood lots proposed by the feasibility of the Kobo-Girana Valley Development Programme, is very important. 			
Implementation and operation	Hazardous solid waste	Significant (medium-high impact): This is a concern, considering the lack of proper means for disposal of such waste and the prevailing practices. The project needs to invest in proper hazardous waste management and disposal systems.	<ul style="list-style-type: none"> - When possible, there needs to be minimal usage of hazardous wastes - There needs to be appropriate disposal system for such wastes. - A good alternative is also to ensure (contractually) that the supplier of these products will also collect the associated waste. 	<ul style="list-style-type: none"> - Project team - Contractors and suppliers - Woreda environment desk - Woreda health desk - Community 	Recurrent	Avoided and minimized risk of pollution from hazardous wastes
Implementation and operation	Impact on human health	Significant (high impact): This is also an important concern. Considerable attention should be given to control and prevent the	<ul style="list-style-type: none"> - Considerable attention should be given to control and prevent the spread of diseases like malaria through the provision of nets and other items that prevent exposure. 	<ul style="list-style-type: none"> - Project team - Contractor - Local government 	Recurrent	Avoided or minimized health impacts

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Kobo-Girana Valley						
		spread of malaria and other water borne diseases. Comprehensive action should also be taken to prevent and control the prevailing communicable diseases. To the extent possible this should avoid the chemical control of such diseases which can be detrimental to the environment.	<ul style="list-style-type: none"> - Comprehensive action should also be taken to prevent and control the prevailing communicable diseases, including through health awareness outreach and the provision of preventive items. - To the extent possible control and prevention measures should avoid chemical control of such diseases, which in turn can be detrimental to the environment. 	<ul style="list-style-type: none"> - Woreda environment and health bureaus - Community 		
Implementation and operation	Migration and socio-economic implications	Significant (medium-high impact): The number of migrant workers from other parts of the country can increase. This can have implication beyond the health impacts and can create additional socio-economic challenges, potentially even leading to conflict. The Raya area, where Kobo-Girana is situated, is the border area between the Amhara and Tigray regions and as such migration can be a cause for conflict.	<p>Migration can have implication beyond the health impacts and can create additional socio-economic challenges, potentially even leading to conflict. These socio-economic challenges require a multifaceted approach and can be addressed through the design and implementation of appropriate:</p> <ul style="list-style-type: none"> - Capacity development programmes tailored as per the needs of the project. - Financial and credit system. - Schemes for access to benefit sharing, which is equitable and consultative (to avoid conflict). 	<ul style="list-style-type: none"> - Project team - Contractor - Local government - Community 	Recurrent	Avoided or minimized socio-economic implication due to potential migration and workers from other localities.

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Kobo-Girana Valley						
			<p>- Family planning and other related interventions/measures are also important to address some of the challenges elucidated.</p> <p>Moreover, towns and rural communities in the project area, including the administration in the project area, should contribute to and ensure that the needs and requirements of the project in terms of services and facilities is met.</p>			
Implementation and operation	Impact of existing conflict	<p>Significant (medium-high impact): Although there is existing concern in the area due to the war reported in 2021, such conflicts are not reported in the past 2 years in the immediate localities in Kobo Girana where the project is being implemented. However, strict regular follow up on the conflict status in these localities should be conducted. The protection of workers and the community from exposure should be a priority.</p>	<p>The following are important mitigation measures:</p> <ul style="list-style-type: none"> - Community Engagement: Engage local leaders and communities to build trust and ensure support for the project. - Conflict Monitoring: Regularly assess conflict dynamics and adjust operations as needed. This proactive approach allows for timely interventions and minimizes potential disruptions. - Conflict Mitigation: Continuous assessment of conflict situations with flexibility to halt disbursements. Engage with political solutions to address root causes of conflicts and ensure the 	<ul style="list-style-type: none"> - Project team - Contractor - Local government - Community 	Recurrent	Avoided and minimized risk of exposure to conflict of workers and the community.

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Kobo-Girana Valley						
			<p>project contributes positively to regional stability.</p> <ul style="list-style-type: none"> - Awareness Campaigns: Conduct regular awareness campaigns about the project's benefits, focusing on building trust and mitigating risks of vandalism and theft. - Training Programs: Implement comprehensive training programs for local technicians and operators to enhance their skills in maintaining and operating solar-powered water systems - Withhold funding: In the unlikely incidence of full-scale war, fund disbursement to the project woredas should be halted until the federal government issues commencement of operations. - Knowledge Transfer: Engage international experts to provide technical assistance and support, ensuring local teams are well-equipped to handle technical challenges 			

Table 17: Environmental and Social Mitigation and Monitoring Plan and Matrix: Sarite-Gelchet (Borena)

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Borena: Sarite-Gelchet Site						
Design and Construction	Soil erosion and sedimentation	Insignificant (Low-Medium Impact). Most infrastructure is already in place. Hence, the contribution of the project's construction activities to this impact will not be significant.	<ul style="list-style-type: none"> - Schedule construction undertakings to be conducted in the dry season. - Limit ground disturbance and open trenches to areas of a workable size - Minimise soil removal/disturbance during wet season. - Reduce the time that excavations and trenches remain open - Place geo-textile silt traps at drainage ditches and materials stockpiles - Contain or isolate construction areas from other surface runoff using diversion drains - Pass storm water runoff from construction areas through geo-textile silt traps before discharge into culverts or drainage systems. - Dispose of construction waste (solid waste) in an appropriate manner. 	<ul style="list-style-type: none"> - Project team - Woreda natural resource management desk - Community - Extension workers 	During the installation period, which is in the first year of the project	Minimized impact of soil erosion and sedimentation
Design and Construction	Soil pollution	Not as Significant (Medium Impact). Soil pollution will not be significant during the	<ul style="list-style-type: none"> - Take precaution not to spill fuel, oil & chemicals on to soil - Fuels and oils should be stored in bounded enclosures or in 	<ul style="list-style-type: none"> - Project team - Woreda environment 	Recurrent	Soil and groundwater quality is not compromised

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Borena: Sarite-Gelchet Site						
		construction phase, as the construction undertaking is minimal and localized. However, there can be severe detrimental impact associated with groundwater and soil pollution, unless proper care is taken in managing used oil and other construction waste.	containers to ensure spills are contained. - Strictly control and monitor that the storage practices are acceptable.	and water desks - Community - Extension workers		and continues to be suitable for intended use
Design and Construction	Water pollution	Not as Significant (Medium Impact). Water pollution will not be significant during the construction phase, as the construction undertaking is minimal and localized. However, there can be severe detrimental impact associated with groundwater and soil pollution, unless proper care is taken in managing used oil and other construction waste.	- Proper storage of construction materials such as oils, fuels, and hazardous chemicals during construction activities - Proper care shall be exercised to protect the groundwater from pollution and the top part of the well must be properly sealed by building head work and drainage shall be provided - Test and level monitoring shall be conducted regularly	- Project team - Woreda environment and water desks - Community - Extension workers	Recurrent	Soil and groundwater quality is not compromised and continues to be suitable for intended use
Design and Construction	Impact on Vegetation	Insignificant (Low-Medium Impact). The area is sparsely vegetated, with	- keep vegetation clearing to a minimum	- Project team - Woreda natural resource	During the installation	Minimized loss of vegetation

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Borena: Sarite-Gelchet Site						
		the predominant vegetation in the area being bush cover and grassland.	<ul style="list-style-type: none"> - Looking for alternative reservoir locations - Compensate by planting vegetation to replace loss (where the impact is unavoidable) - Landscaping and planting of vegetation should be done on disturbed surfaces as a compensatory measure 	management desk <ul style="list-style-type: none"> - Community - Extension workers 	period, which is in the first year of the project	
Design and Construction	Disturbance to land	Insignificant (low Impact). The project will ensure that communal and individuals' lands are not acquired for the purposes of the project. This is considering that all land for the project has already been acquired, including for the purposes of situating pumps and other infrastructure.	<ul style="list-style-type: none"> - Look for alternate sites for these purposes and avoid impacting farmlands and individuals' properties. - For disturbed farmland backfill the dug/ excavated soil as per its normal sequence of structure or layer and ensure the soil is compacted. Also ensure to restore the organic rich topsoil. 	<ul style="list-style-type: none"> - Project team - Local government - Community - Extension workers 	During the installation period, which is in the first year of the project	Avoided or minimized impact on/ disturbance of individual land
Design and Construction	Impact on property and buildings	Insignificant (very low - low Impact). Since most infrastructure is already developed, only relatively small and localised impacts will occur in this context.	<ul style="list-style-type: none"> - Alignment of the rising mains, transmission and distribution lines should follow the existing road as much as possible so as not to have impact on property and building - For affected people provide compensation 	<ul style="list-style-type: none"> - Project team - Local government - Community 	During the installation period, which is in the first year of the project	Avoided or minimized impact on the property of individuals and buildings

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Borena: Sarite-Gelchet Site						
Design and Construction	Workers and public safety issue	Significant (medium - high impact). In general, construction-related worker safety is a concern in Ethiopia. Hence, contractors should be obligated to provide safety equipment and ensure workers are properly trained on safety issues.	<ul style="list-style-type: none"> - Notifications of upcoming construction activities, visible barriers around active worksites, maintenance of safe access through worksites to commercial premises (e.g. planks cross open trenches) and traffic/pedestrian management (displaying road/traffic signs, put labels, etc.) - Install speed humps at all settlements along the project roads - Maintain, repair & overhaul vehicles, and equipment - Construct, maintain & repair roads - Use protective/safety devices including hard hats, safety boots and high-visibility vests - Periodic awareness workshops for workforce on safe working practices 	<ul style="list-style-type: none"> - Project team - Contractor - Local government - Woreda labour desk - Community 	Recurrent	Avoided and minimized risk to workers and public safety
Design and Construction	Dust emission and exhaust fumes	Insignificant (low - medium Impact). The emission of dust and exhaust fumes will not be significant. However, there are no specific standards in Ethiopia for ambient dust and exhaust exposure levels.	<ul style="list-style-type: none"> - Watering to be enforced to keep dust levels low - Maintenance construction vehicles & machineries to ensure exhaust emissions are not offensive 	<ul style="list-style-type: none"> - Project team - Contractor - Local government - Woreda environment desk - Community 		Minimized impact of dust and exhaust fumes

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Borena: Sarite-Gelchet Site						
Design and Construction	Noise	Insignificant (low - medium impact). Noise will not be significant during the construction phase, as the construction undertaking is minimal and localized. The standard ambient level for noise is set within the following range, which is 75 db for daytime industrial site (maximum allowable) and 45 db at night for residential sites (lowest level required) and these standards should be adhered to depending on the type of site in question.	<ul style="list-style-type: none"> - Strict control under construction contract to limit the noise levels to acceptable levels - Avoiding construction activities causing nuisance noise during nighttime (restrictions on construction hours) - Limiting the hours of operation for specific pieces of equipment, especially mobile sources such as excavators. - Installing mufflers on engine exhausts 	<ul style="list-style-type: none"> - Project team - Woreda environment desk - Community 	During the installation period (first year of operation)	Limited exposure levels within acceptable standards
Design and Construction	Health Impact such as increased malaria and other water-borne diseases	Significant (high impact). There is high prevalence of malaria and water borne disease in Borena. Comprehensive action should also be taken to prevent and control the prevailing communicable diseases. To the extent possible this should avoid	<ul style="list-style-type: none"> - Considerable attention should be given to control and prevent the spread of diseases like malaria through the provision of nets and other items that prevent exposure. - Comprehensive action should also be taken to prevent and control the prevailing communicable diseases, including through health 	<ul style="list-style-type: none"> - Project team - Contractor - Local government - Woreda environment and health bureaus - Community 	Recurrent	Avoided or minimized health impacts

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Borena: Sarite-Gelchet Site						
		the chemical control of such diseases which can be detrimental to the environment.	awareness outreach and the provision of preventive items. - To the extent possible control and prevention measures should avoid chemical control of such diseases, which in turn can be detrimental to the environment.			
Design and Construction	Impact of the existing conflict	Significant (medium - high impact). There have been some incidents (minor) that have been reported in Borena. To this end, strict regular follow up on the conflict status should be conducted. The protection of workers and the community from exposure should be a priority	- There have been some incidents (minor) that have been reported in Borena. - Strict regular follow up on the conflict status should be conducted. - The protection of workers and the community from exposure should be a priority.	- Project team - Contractor - Local government - Community	Recurrent	Avoided and minimized risk of exposure to conflict of workers and the community.
Implementation and operation	Sustainability of the groundwater resource	Significant (medium - high impact). The project has been developed based on a detailed study on the groundwater resource potential of the area. Moreover, an additional, comprehensive assessment is being conducted to validate and	- The project should be planned and designed based on adequate data on the volume and condition of the water resources. The hydrological mapping of the area which describes the capacity of the groundwater aquifer, and the depth of the groundwater table should be well developed before implementation.	- Project team - Woreda environment, water, and agriculture desks - Community and community rep. in the	Recurrent	Avoided unsustainable extraction of water.

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Borena: Sarite-Gelchet Site						
		update this study. Hence, the probability of occurrence of the impact is not high. However, the project needs to ensure groundwater extraction is kept at a relatively low level (i.e. there should be conservative withdrawal of the resource at 70% of maximum capacity to ensure the sustainability of the groundwater resource).	- There is also a need on the part of the Gelchet-Sarite Water Supply Project to ensure that the extraction rate of groundwater does not exceed the natural replenishment of the resource based on the resource balance indicated in the hydro-geological study.	irrigation committee - Extension workers		
Implementation and operation	Contamination of groundwater sources	Significant (medium - high impact). With population increase, this can be an important impact, particularly if sufficient solid and liquid waste disposal systems are not in place (medium probability) and the impact can be severe (high).	- Secure or protect the area around the groundwater sources to limit the risk of pollution. In addition, apply appropriate sanitation measures, put in place appropriate liquid and solid waste disposal systems for towns and the rural communities in the project area. - Ensure that there is adherence to the dictates of the Environmental Pollution Proclamation of Ethiopia (Proc. No. 300/2002)	- Project team - Woreda environment and water desks - Community Extension workers	Recurrent	Groundwater quality is not compromised and continues to be suitable for intended use
Implementation and operation	Water quality	Insignificant (low - medium impact). Inherent water quality issues	- Groundwater quality should be regularly monitored/tested	- Project team - Woreda environment	Recurrent	Groundwater quality is not compromised

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Borena: Sarite-Gelchet Site						
		associated with groundwater (e.g. salt and heavy metal content) can be an issue. However, such water quality issues have not been reported thus far (hence low probability).	- Only those wells with water quality/temperature that is with the permissible range should be used for drinking and irrigation development purposes.	and water desks - Community - Extension workers		and continues to be suitable for intended use
Implementation and operation	Hazardous solid waste	Significant (medium - high impact). This is a concern, considering the lack of proper means of disposal of such waste and the prevailing practices. The project needs to invest in proper hazardous waste management and disposal systems.	- In There needs to be appropriate disposal system for such wastes. - A good alternative is also to ensure (contractually) that the supplier of these products will also collect the associated waste.	- Project team - Contractors and suppliers - Woreda environment desk - Woreda health desk - Community	Recurrent	Avoided and minimized risk of pollution from hazardous wastes
Implementation and operation	Impact on human health	Significant (high impact). This is an important concern. Considerable attention should be given to control and prevent the spread of malaria. Comprehensive action should also be taken to prevent and control the	- Considerable attention should be given to control and prevent the spread of diseases like malaria through the provision of nets and other items that prevent exposure. - Comprehensive action should also be taken to prevent and control the prevailing communicable diseases, including through health	- Project team - Contractor - Local government - Woreda environment and health bureaus - Community	Recurrent	Avoided or minimized health impacts

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Borena: Sarite-Gelchet Site						
		prevailing communicable diseases.	awareness outreach and the provision of preventive items.			
Implementation and operation	Migration and socio-economic implications	<p>Significant (medium - high impact). Unless planned and implemented with due consideration, the project might result in social-economic issues, including issues pertaining to the right to use water, which in turn will result in conflict. Moreover, migrant settlers from other parts of the country can increase attracted by the opportunities created by the project. Settler communities, who are mostly agrarian and sedentary, can have implications and can potentially affect some of the native pastoral communities and their livelihoods.</p>	<p>Some of these challenges can be mitigated through the design and implementation of appropriate:</p> <ul style="list-style-type: none"> - Capacity development programs tailored as per the needs of the project, - Financial and credit system, - Schemes for access to benefit sharing, which is equitable and consultative (to avoid conflict). - Family planning and other related interventions/measures are also important to address some of the challenges elucidated. - Moreover, towns and rural communities in the project area, including the administration in the project area, should contribute to and ensure that the needs and requirements of the project in terms services and facilities is met. - With regards to restricted grazing, a good way forward is to study and design livestock production in a way that it becomes economically meaningful by reducing stock number and enhancing stock 	<ul style="list-style-type: none"> - Project team - Contractor - Local government - Community 	Recurrent	Avoided or minimized socio-economic implication due to potential migration and workers from other localities.

Project Phase	Summary of risks	Risk significance	Mitigation measures	Responsible party/person	Schedule	Expected results
Borena: Sarite-Gelchet Site						
			quality, in such a way that it can co-exist and benefit from the irrigation scheme through appropriate zoning and the utilization of the waste biomass the is generated from the project.			
Implementation and operation	Impact of the existing conflict	Significant (medium - high impact). There have been some incidents (minor) that have been reported in Borena. To this end, strict regular follow up on the conflict status should be conducted. The protection of workers and the community from exposure should be a priority	<p>The main potential mitigation measures are stipulated below:</p> <ul style="list-style-type: none"> - Community Engagement: Strengthen local governance by involving community leaders in decision-making processes and project implementation. - Capacity Building: Implement comprehensive training programs for local technicians and operators. - Withholding funding: In the unlikely incidence of full-scale war, fund disbursement to the project woredas should be halted until the federal government issues commencement of operations. - Knowledge Transfer: Engage international experts to provide technical assistance and support, ensuring local teams are well-equipped to handle technical challenges 	<ul style="list-style-type: none"> - Project team - Contractor - Local government - Community 	Recurrent	Avoided and minimized risk of exposure to conflict of workers and the community.

7. ESMP Implementation Cost

The detailed costing for the ESMP implementation is presented for the Kobo-Girana and Gelchet-Sarite sites separately in Tables 18 and 19, respectively.

7.1. Kobo Girana Valley

Table 18: Cost of ESMP implementation in Kobo Girana Valley site.

Environmental and Social Issue	Mitigation measures and control activity	Assumption (for costing)	Cost estimate	Total
Construction phase impacts				
Flooding and sedimentation	<ul style="list-style-type: none"> - Ensure that construction undertaking is during the dry season (or in periods of low flooding, runoff and erosion), to minimise these impacts. - As per need, put in place localised solutions during construction (gabions, trenches, diversion drains silt traps, etc.), particularly in the steep sloped areas, to reduce such impacts. 	<ul style="list-style-type: none"> - Considering that the locality has a rugged terrain, there needs to be resource allocated to minimize these impacts. - This allocation can be up to 30 000 USD. 	30 000 USD to put in place localised solutions during the construction phase of work	30 000 USD
Soil erosion				
Gully erosion and widening of river banks				
Impact on vegetation	<ul style="list-style-type: none"> - Keep vegetation clearing to a minimum - Look for alternative reservoir locations - Compensate by planting vegetation to replace loss (where the impact is unavoidable) 	<ul style="list-style-type: none"> - For landscaping and planting work of disturbed surfaces, up to 10 000 USD should be 	10 000 USD (for landscaping and planting work of disturbed surfaces)	10 000 USD



Environmental and Social Issue	Mitigation measures and control activity	Assumption (for costing)	Cost estimate	Total
	- Landscaping and planting of vegetation should be done on disturbed surfaces as a compensatory measure	allocated as a contingency		
Disturbance of farmlands	- Look for alternate sites for these purposes and avoid impacting farmlands and individuals' properties. - For disturbed farmland, backfill the dug/ excavated soil as per its normal sequence of structure or layers and ensure the soil is compacted. Also, ensure restoration of the organic rich topsoil.	- For rehabilitation of disturbed farmland, up to 10,000 USD should allocated as a contingency	10,000 USD (for rehabilitation of disturbed farmlands)	10 000 USD
Impact on property and buildings	- Alignment of the rising mains, transmission and distribution lines should follow the existing road as much as possible so as not to have impact on property and building - For affected properties, provide compensation	- For compensation of affected properties allocate a contingency of up to 25,000 USD	25,000 USD (for compensation of affected properties)	25 000 USD
Dust emission and exhaust fumes	- Watering to be enforced to keep dust levels low - Regularly maintain construction vehicles and machinery to reduce emission.	- This should be part of the operational cost of the project	-	-
Noise	- Strict control under construction contract to limit the noise levels to acceptable levels - Avoid construction activities causing nuisance noise during night-time (restrictions on construction hours)	- This should be part of the operational cost of the project	-	-



Environmental and Social Issue	Mitigation measures and control activity	Assumption (for costing)	Cost estimate	Total
	<ul style="list-style-type: none"> - Limit the hours of operation for specific pieces of equipment, especially mobile sources such as excavators. - Install mufflers on engine exhausts 			
Water and soil pollution	<ul style="list-style-type: none"> - Proper storage of construction materials such as oils, fuels, and hazardous chemicals during construction activities - Proper care shall be exercised to protect the groundwater from pollution and the top part of the well must be properly sealed by building head work and drainage shall be provided - Test and level monitoring shall be conducted regularly 	This should also be part of the operational cost of the project	-	-
Workers and public safety	<ul style="list-style-type: none"> - Notifications of upcoming construction activities, visible barriers around active worksites, maintenance of safe access through worksites to commercial premises (e.g. planks cross open trenches) and traffic/pedestrian management (displaying road/traffic signs, put labels, etc.) - Install speed humps at all settlements along the project roads - Maintain, repair & overhaul vehicles, and equipment - Construct, maintain & repair roads - Use protective/safety devices including hard hats, safety boots and high-visibility vests 	<ul style="list-style-type: none"> - Allocate up to 10,000 USD for the provision of protective/safety devices and equipment (mainly for temporary and contract workers who might not have access to this equipment otherwise). 	10,000 USD (mainly to purchase and create access to personal protective equipment to temporary and contractual workers)	10 000 USD



Environmental and Social Issue	Mitigation measures and control activity	Assumption (for costing)	Cost estimate	Total
	<ul style="list-style-type: none"> - Periodic awareness workshops for workforce on safe working practices, 			
Malaria, water-borne diseases	<ul style="list-style-type: none"> - Considerable attention should be given to control and prevent the spread of diseases such as malaria. - Comprehensive action should also be taken to prevent and control the prevailing communicable diseases. 	<ul style="list-style-type: none"> - Up to 10,000 USD should be allocated to provide mosquito nets (for malaria) and protective and sanitary products workers of the project. 	10,000 USD for mosquito nets (for malaria) and protective and sanitary products for workers of the project	10 000 USD
Operation phase impacts				
Sustainability of the groundwater resource	<ul style="list-style-type: none"> - The project should be planned and designed based on adequate data on the volume and condition of the water resources. The hydrological mapping of the area which describes the capacity of the groundwater aquifer, and the depth of the groundwater table should be well developed before implementation. - There is also a need on the part of the Kobo-Girana Irrigation Development project to ensure that the extraction rate of groundwater does not exceed the natural replenishment of the resource based on the resource balance indicated in the hydro-geological study. 	<ul style="list-style-type: none"> - This only requires an enforcement measure. - Activities such as monitoring ground water level, etc. should be part of the operational budget of the project. 	-	-
Contamination of groundwater sources	<ul style="list-style-type: none"> - Secure or protect the area around the groundwater sources to limit the risk of pollution. In addition, apply appropriate sanitation measures, put in place appropriate liquid and 	<ul style="list-style-type: none"> - This only requires an enforcement measure. - Activities such as monitoring ground water 	-	-



Environmental and Social Issue	Mitigation measures and control activity	Assumption (for costing)	Cost estimate	Total
	<p>solid waste disposal systems for towns and the rural communities in the project area.</p> <ul style="list-style-type: none"> - Ensure that there is adherence to the dictates of the Environmental Pollution Proclamation of Ethiopia (Proc. No. 300/2002) 	<p>quality, etc. should be part of the operational budget of the project</p>		
Water quality	<ul style="list-style-type: none"> - Groundwater quality should be regularly monitored/tested and only those wells with water quality/temperature that is within the permissible range should be used for irrigation development purposes. 	<ul style="list-style-type: none"> - Monitoring of groundwater quality should be part of the operations budget of the project 	-	-
Agrochemicals use	<ul style="list-style-type: none"> - Apply appropriate dosages through the fertigation method of the drip system and adopt (and implement) an Integrated Pest Management (IPM) approach. 	<ul style="list-style-type: none"> - The implementation of this mitigation measure should be part of the operations budget of the project 	-	-
Damage to Ecological resources	<ul style="list-style-type: none"> - This requires a multi-faceted solution by way of preparing and implementing an appropriate natural resource utilization master plan which includes areas that deserve special attention. In addition to having appropriate regulations that help safeguard the trees and the landscape, efforts shall be made for the development and promotion of alternative energy resources and other wood requirements, such as planned plantations for fuel wood and construction requirements. 	<ul style="list-style-type: none"> - Allocate up to 25,000 USD for the development of woodlots of around 5,619 ha in Kobo-Girana and 13,456 ha in Habru in the sub-watersheds and valleys of the irrigation schemes to ease the pressure on the ecological resources. 	25,000 USD	25 000 USD



Environmental and Social Issue	Mitigation measures and control activity	Assumption (for costing)	Cost estimate	Total
	<ul style="list-style-type: none"> - The implementation of Kobo-Girana and Habru Agro-forestry Development Projects, which include the incorporation of tree plantations into home gardens, cropland, grazing land and river bank and gully plantations as well as the farm wood lots proposed by the feasibility of the Kobo-Girana Valley Development Programme, is very important. 			
Hazardous solid waste	<ul style="list-style-type: none"> - There needs to be appropriate disposal system for such wastes. - A good alternative is also to ensure (contractually) that the supplier of these products will also collect the associated waste. 	<ul style="list-style-type: none"> - The implementation of this mitigation measure should be part of the operations budget of the project 	-	-
Socio-economic challenges	<p>Addressing these socio-economic challenges require a multifaceted approach, which should be incorporated into policy measures, strategic plans and annual development plans of the project area and its surrounding. To this end, some of these challenges can be addressed through the design and implementation of appropriate:</p> <ul style="list-style-type: none"> - Capacity development programmes tailored as per the needs of the project, - Financial and credit system, and - Family planning and other related interventions/measures are also important to address some of the challenges elucidated. 	<ul style="list-style-type: none"> - The implementation of this mitigation measure should be part of the operations budget of the project. - However, allocating a contingency budget of around 80,000 USD can help ensure proper technical capacity building and other skills are provided to the community. Moreover, it can contribute towards 	75,000 USD for capacity building, development of skills and access to finance	75 000 USD



Environmental and Social Issue	Mitigation measures and control activity	Assumption (for costing)	Cost estimate	Total
	<ul style="list-style-type: none"> - Moreover, towns and rural communities in the project area, including the administration in the project area, should contribute to and ensure that the needs and requirements of the project in terms services and facilities is met. 	<ul style="list-style-type: none"> creating access to finance and credit. 		
Impact on human health	<ul style="list-style-type: none"> - Considerable attention should be given to control and prevent the spread of diseases like malaria. - Comprehensive action should also be taken to prevent and control the prevailing communicable diseases. - Provide masks and sanitary products to minimise the spread of COVID, and socially distance. 	<ul style="list-style-type: none"> - The implementation of this mitigation measure should be part of the operations budget of the project 	-	-
TOTAL				195 000 USD

7.2. Gelchet-Sarite water supply site

Table 19: Cost for the ESMP implementation in Gelchet-Sarite site.

Environmental and Social Issue	Mitigation measures and control activity	Assumption (for costing)	Cost estimate	Total
Construction phase impacts				
Soil erosion and sedimentation	<ul style="list-style-type: none"> - Schedule construction undertakings to be conducted in the dry season. - Limit ground disturbance and open trenches to areas of a workable size; - Minimise soil removal/disturbance during wet season. - Reduce the time that excavations and trenches remain open; - Place geo-textile silt traps at drainage ditches and materials stockpiles; - Contain or isolate construction areas from other surface runoff through the use of diversion drains; - Pass storm water runoff from construction areas through geo-textile silt traps before discharge into culverts or drainage systems. - Dispose of construction waste (solid waste) in an appropriate manner. 	<ul style="list-style-type: none"> - Considering that this is an important concern in the locality, there needs to be resource allocated to minimize the associated impacts. - This allocation can be up to 20,000 USD. 	20,000 USD to put in place localised solutions during the construction phase of work	20 000 USD

Environmental and Social Issue	Mitigation measures and control activity	Assumption (for costing)	Cost estimate	Total
Soil pollution	<ul style="list-style-type: none"> - Take precaution not to spill fuel, oil & chemicals on to soil - Fuels and oils should be stored in bounded enclosures or in containers to ensure spills are contained. - Strictly control and monitor that the storage practices are acceptable. 	<ul style="list-style-type: none"> - This should also be part of the operational cost of the project 	-	-
Water pollution	<ul style="list-style-type: none"> - Proper storage of construction materials such as oils, fuels, and hazardous chemicals during construction activities - Proper care shall be exercised to protect the groundwater from pollution and the top part of the well must be properly sealed by building head work and drainage shall be provided - Test and level monitoring shall be conducted regularly 	<ul style="list-style-type: none"> - This should also be part of the operational cost of the project 	-	-
Impact on ecologically sensitive area	<ul style="list-style-type: none"> - No mitigation measure required as this is not an issue. 	-	-	-
Impact on Vegetation	<ul style="list-style-type: none"> - keep vegetation clearing to a minimum - Looking for alternative reservoir locations - Compensate by planting vegetation to replace loss (where the impact is unavoidable) - Landscaping and planting of vegetation should be done on disturbed surfaces as a compensatory measure. 	<ul style="list-style-type: none"> - For landscaping and planting work of disturbed surfaces up to 10,000 USD should allocated as a contingency 	10,000 USD (for landscaping and planting work of disturbed surfaces)	10 000 USD

Environmental and Social Issue	Mitigation measures and control activity	Assumption (for costing)	Cost estimate	Total
Disturbance to land	<ul style="list-style-type: none"> - Look for alternate sites for these purposes and avoid impacting farmlands and individuals' properties. - For disturbed farmland backfill the dug/ excavated soil as per its normal sequence of structure or layer and ensure the soil is compacted. Also ensure to restore the organic rich top soil. 	<ul style="list-style-type: none"> - For rehabilitation of disturbed farmlands up to 10,000 USD should allocated as a contingency 	10,000 USD (for rehabilitation of disturbed farmlands)	10 000 USD
Impact on property and buildings	<ul style="list-style-type: none"> - Alignment of the rising mains, transmission and distribution lines should follow the existing road as much as possible so as not to have impact on property and building - For affected people provide compensation 	<ul style="list-style-type: none"> - For compensation of affected properties allocate a contingency of up to 15,000 USD 	15,000 USD (for compensation of affected properties)	15 000 USD
Workers and public safety issue	<ul style="list-style-type: none"> - Notifications of upcoming construction activities, visible barriers around active worksites, maintenance of safe access through worksites to commercial premises (e.g. planks cross open trenches) and traffic/pedestrian management (displaying road/traffic signs, put labels, etc.) - Install speed humps at all settlements along the project roads - Maintain, repair & overhaul vehicles, and equipment - Construct, maintain & repair roads 	<ul style="list-style-type: none"> - Allocate up to 10,000 USD for the provision of protective/safety devices and equipment (mainly for temporary and contract workers who might not have access to safety devices otherwise). 	10,000 USD (mainly to purchase and create access to personal protective equipment to temporary and contractual workers)	10 000 USD

Environmental and Social Issue	Mitigation measures and control activity	Assumption (for costing)	Cost estimate	Total
	<ul style="list-style-type: none"> - Use protective/safety devices including hard hats, safety boots and high-visibility vests - Periodic awareness workshops for workforce on safe working practices 			
Dust emission and exhaust fumes	<ul style="list-style-type: none"> - Watering to be enforced to keep dust levels low - Maintenance construction vehicles & machineries to ensure exhaust emissions are not offensive 	<ul style="list-style-type: none"> - This should be part of the operational cost of the project 	-	-
Noise	<ul style="list-style-type: none"> - Strict control under construction contract to limit the noise levels to acceptable levels - Avoiding construction activities causing nuisance noise during night time (restrictions on construction hours) - Limiting the hours of operation for specific pieces of equipment, especially mobile sources such as excavators. - Installing mufflers on engine exhausts 	<ul style="list-style-type: none"> - This should be part of the operational cost of the project 	-	-
Malaria, water borne diseases, and COVID	<ul style="list-style-type: none"> - Considerable attention should be given to control and prevent the spread of diseases like malaria. - Comprehensive action should also be taken to prevent and control the prevailing communicable diseases. 	<ul style="list-style-type: none"> - Up to 10,000 USD should be allocated to provide mosquito nets (for malaria) and protective and sanitary products (in the context of COVID) for workers of the project. 	10,000 USD for mosquito nets (for malaria) and protective and sanitary products (in the context of COVID) for workers of the project	10 000 USD

Environmental and Social Issue	Mitigation measures and control activity	Assumption (for costing)	Cost estimate	Total
Operation phase impacts				
Sustainability of the groundwater resource	<ul style="list-style-type: none"> - The project should be planned and designed on the basis of adequate data on the volume and condition of the water resources. The hydrological mapping of the area which describes the capacity of the groundwater aquifer and the depth of the groundwater table should be well developed before implementation. - There is also a need on the part of the Gelchet Sarite Water Supply Project to ensure that the extraction rate of groundwater does not exceed the natural replenishment of the resource based on the resource balance indicated in the hydro-geological study. 	<ul style="list-style-type: none"> - This only requires an enforcement measure. - Activities such as monitoring ground water level, etc. should be part of the operational budget of the project. 	-	-
Contamination of groundwater sources	<ul style="list-style-type: none"> - Secure or protect the area around the groundwater sources to limit the risk of pollution. In addition, apply appropriate sanitation measures, put in place appropriate liquid and solid waste disposal systems for towns and the rural communities in the project area. - Ensure that there is adherence to the dictates of the Environmental Pollution Proclamation of Ethiopia (Proc. No. 300/2002) 	<ul style="list-style-type: none"> - This only requires an enforcement measure. - Activities such as monitoring ground water quality, etc. should be part of the operational budget of the project 	-	-
Water quality	<ul style="list-style-type: none"> - Groundwater quality should we regularly monitored/tested and only those wells with 	<ul style="list-style-type: none"> - Monitoring of groundwater quality 	-	-

Environmental and Social Issue	Mitigation measures and control activity	Assumption (for costing)	Cost estimate	Total
	water quality/temperature that is with the permissible range should be used for drinking and irrigation development purposes.	should be part of the operations budget of the project		
Hazardous solid waste	<ul style="list-style-type: none"> - In There needs to be appropriate disposal system for such wastes. - A good alternative is also to ensure (contractually) that the supplier of these products will also collect the associated waste. 	<ul style="list-style-type: none"> - The implementation of this mitigation measure should be part of the operations budget of the project 	-	-
Impact on human health	<ul style="list-style-type: none"> - Considerable attention should be given to control and prevent the spread of diseases like malaria. - Comprehensive action should also be taken to prevent and control the prevailing communicable diseases. - Provide masks and sanitary products to minimise the spread of COVID, and socially distance. 	<ul style="list-style-type: none"> - The implementation of this mitigation measure should be part of the operations budget of the project 	-	-
Socio economic impacts	<p>Some of these challenges can be mitigated through the design and implementation of appropriate:</p> <ul style="list-style-type: none"> - Capacity development programs tailored as per the needs of the project, - Financial and credit system, and - Family planning and other related interventions/measures are also important to address some of the challenges elucidated. 	<ul style="list-style-type: none"> - The implementation of this mitigation measure should be part of the operations budget of the project. - However, allocating a contingency budget of around 65,000 USD can help ensure proper 	65,000 USD for capacity building, development of skills and access to finance	65 000 USD

Environmental and Social Issue	Mitigation measures and control activity	Assumption (for costing)	Cost estimate	Total
	<ul style="list-style-type: none"> - Moreover, towns and rural communities in the project area, including the administration in the project area, should contribute to and ensure that the needs and requirements of the project in terms services and facilities is met. - With regards to restricted grazing, a good way forward is to study and design livestock production in a way that it becomes economically meaningful by reducing stock number and enhancing stock quality, in such a way that it can co-exist and benefit from the irrigation scheme through appropriate zoning and the utilization of the waste biomass the is generated from the project. 	<p>technical capacity building and other skills are provided to the community. Moreover, it can contribute towards creating access to finance and credit.</p>		
TOTAL				140 000 USD

8. Public Consultation and Recurrent Stakeholder Engagement

8.1. Public Consultation

The Constitution of FDRE highlights the importance of public consultation in connection with development projects, as per article 92 of Chapter 10 (which sets out national policy principles and objectives), which specifies: “People have the right to full consultation and to the expression of their views in the planning and implementation of environmental policies and projects that affect them directly.”

The Environmental Policy of Ethiopia (EPE) and the Environmental Impact Assessment Proclamation and related procedures recognise the need for the consultation of the public during the establishment and undertaking of a development project.

Therefore, in response to the requirements of the GCF, and these national requirements, a consultation was carried out as an integral part of the ESMP preparation for the project.

The consultation was carried out with the following objectives:

- To identify and verify the potential negative and positive impacts of the project as well as the associated appropriate remedial measures that could be identified through the participation of key stakeholders.
- To include the opinions of representatives of different groups that will be affected by the project so that their views and suggestions are incorporated in the ESMP, and
- To increase awareness and understanding of the project and its acceptance.

The consultation was carried out on 6 and 7 April 2022, in Adama, Ethiopia, to consult on and validate the project in general and the ESMP in particular. A summary on the consultation workshop, including the points raised and agreed on by the participants is found in **Annex 2**.

The consultative meeting was mostly conducted in Amharic, which is the national language in Ethiopia. All discussions points were also recorded in Amharic. The main observations and concerns raised included:

- The need to ensure that there is little to minimal displacement and relocation of people because of the project, particularly given that most of the physical infrastructure required for the project is already constructed.
- The need to allocate sufficient resource to alleviate the socio-economic and health impacts that may result from the project, considering that these aspects can be neglected, as they are perceived to be indirect impacts.
- The need to build capacity locally to ensure that the ESMP is given due consideration and is implemented on the ground.

8.2. Recurrent stakeholder engagement

Context and Rationale

The continued stakeholder engagement is critical to structuring the project, where context-specific knowledge and connections will be key to understanding the dynamics and ensuring the success. In 2022, the project undertook its first stakeholder engagement/ public consultation. However, despite its success of this consultation process in ensuring the engagement of key stakeholders, including government entities at the local, regional and

national level, academia, civil society organizations, and community representatives, there is still the need to further strengthen this engagement. This is particularly true in terms of engaging community representatives, MSMEs, and other actors that are engaged at the local level.

Proposed stakeholder engagements

Across the program development, implementation, and monitoring, stakeholders are important in providing insight into environmental, social, and governance risks both to the program and the communities. To this end, the project will regularly involve the NDA to ensure that there is continued buy-in of the project.

Moreover, the project will continue to engage relevant government entities/regulatory bodies to ensure buy-in, feedback, understanding relevant on-going/future work and compliance with policy frameworks. Furthermore, the project aims to provide update on its activities to a diverse group of stakeholders on a regular basis. The project team will share program activities, outputs, outcomes, and impacts with these groups. It will also share outcomes of stakeholder engagement activity with select groups including GCF. Within the country the project aims to influence various stakeholders, policy makers, and private sector actors.

Table 20: Categories of stakeholder bodies and stakeholder engagement activities

Category	Frequency	Level of interest and focus	Stakeholder engagement activities
Federal level Steering and advisory group: Government, private sector, NGO and academia	Annual	Interest and focus on national level actors and on governance aspects of the project, its overall implementation and its potential for replication.	<ul style="list-style-type: none"> - Assessing the effectiveness of the governance structure for project implementation - High level discussion on opportunities and challenges - Identification of gaps and overlap to coordinate other engagements with the project. - Soliciting inputs and feedback
Regional level implementation support group: Government, MSMEs, NGOs, academic institutions	Bi-annual	<ul style="list-style-type: none"> - Interest and focus on regional/provincial level actors and on the overall implementation of the project. - There is one that is established per region. - One implementation group per region will be established. 	<ul style="list-style-type: none"> - More specific discussions on opportunities and challenges - More specific identification of gaps and overlap to coordinate other engagements with the project. - Soliciting inputs and feedback - Participating in local level M&E missions.

Category	Frequency	Level of interest and focus	Stakeholder engagement activities
<p>Local level:</p> <p>Woreda Steering and Implementation Support Group:</p> <p>Relevant sector government offices, and other actors as needed.</p>	Quarterly	<p>Interest and focus on practical aspects including gender, social, and environmental risks, challenges and opportunities.</p> <p>Updates on potential conflict (if any).</p>	<ul style="list-style-type: none"> - Quarterly discussions which are specific on implementation status of the project. - Discussions on specific challenges and opportunities. - Direct engagement with community representatives. - Farmers and pastoral communities' engagement day. - Budget transparency and posting budget annually
<p>Local Level:</p> <p>Community Representative Group, including community representatives, and vulnerable groups representatives</p>	Quarterly	<p>Liaising with the woreda steering group, the Interest and focus is on practical aspects, including joint monitoring, gender, social, and environmental risks, challenges and opportunities.</p> <p>Updates on potential conflict (if any).</p> <p>participatory community monitoring meeting</p>	<ul style="list-style-type: none"> - Quarterly discussions which are specific on implementation status of the project. - Discussions on specific challenges and opportunities. - Direct engagement with community representatives. - Farmers and pastoral communities' engagement day.



Table 21: Engagement periods of the different stakeholder bodies

Engagement Body	Timeline																			
	Year 1				Year 2				Year 3				Year 4				Year 5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1. Federal level Steering and advisory group:	█			█				█				█				█				█
2. Regional level implementation support group (Amhara)		█		█		█		█		█		█		█		█		█		█
3. Regional level implementation support group (Oromia)		█		█		█		█		█		█		█		█		█		█
4. Woreda steering and implementation support Group	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
5. Community Representatives group	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

9. Resettlement, Livelihood Restoration and Compensation Framework

9.1. Context

Ethiopia's Proclamation to provide for the expropriation of land holdings for the public purposes and payment of compensation (Proclamation No. 455/2005), and the Rural Land Administration and Use Proclamation (Proclamation 456/2005) cover provisions contained in GCF PS5.

Proclamation 456/2005 includes provisions that are in line with GCF performance standard 5: *"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; and rural lands that have gullies shall be rehabilitated by private and neighbouring holders and, as appropriate, by the local community, using biological and physical works."*

The Expropriation of Land Holdings for Public Purposes and Payment of Compensation Proclamation No.455/2005" states that: *"A woreda or an urban administration shall, upon payment in advance of compensation in accordance with this Proclamation, have the power to expropriate rural or urban landholdings for public purpose where it believes that it should be used for a better development project to be carried out by public entities, private investors, cooperative societies or other organs, or where' such expropriation has been decided by the appropriate higher regional or federal government organ for the same purpose."* The law specifies procedures of expropriation, compensation payment, displacement of land holders and grievance and appeal.

No resettlement is proposed as part of this project. However, as per the requirement of the GCF a Resettlement, Livelihood Restoration and Compensation Framework has developed by MOF.

9.2. Resettlement, Livelihood Restoration and Compensation Framework

In line with the stipulated proclamations, the compensation framework will be guided by the following principles:

1. Provide transparent, fair and timely compensation for displacement, including replacement for lost land in accordance with national regulations and applicable standards.
2. Restore the livelihoods and welfare of project affected persons and local communities such that their well-being is at the least, equal to their pre-resettlement conditions, or that they are better off.

The different types of affected persons (such as landowners, tenants, forest occupants without formal tenure, owners of permanent and non-permanent infrastructures, people potentially losing livelihood and access to resources, etc.) will be identified and their compensation entitlements will be stipulated in line with the national proclamations.

Individual and household compensation will be made in different forms (in cash, in kind and/or

through assistance) in the knowledge and presence of both man and wife and adult children or other relevant stakeholders, where applicable. It should be noted that when land holdings necessary for the livelihood of affected persons are taken away or reduced in size by the project, the preferred form of compensation is to offer an equivalent parcel of land elsewhere, i.e., land for land.

Other key elements of this framework are the process for notifying affected people, census and documentation of assets, agreements on compensation and integration in contracts, and the mechanism for delivering compensations to affected people. Livelihoods restoration is also an important element of this framework, as it prevents and mitigates the potential adverse impacts on vulnerable project affected persons.

Key principles guiding livelihood restoration planning are:

1. The understanding that supporting the restoration of income and the reestablishment of community support networks requires a combination of approaches.
2. Active participation of project affected persons in planning and decision making is required to ensure proposed support reflects local realities and priorities.
3. Affected people should be provided with choices so that they can self-determine how their household will best benefit from the livelihood restoration options.
4. Transition allowances are necessary but require clear eligibility and end points.
5. Capacity building should be incorporated into livelihood restoration activities to develop skills, including in agricultural practices. Capacity building acknowledges the different needs of women, men, youth, and vulnerable groups with respect to skills development.

To recognize the potential and magnitude of adverse impacts and develop livelihood restoration options, the following approach may be considered:

1. Livelihood restoration for vulnerable affected peoples should refer to the ecological conditions, livelihoods and socio-cultural characteristics of the affected persons/people.
2. Livelihood restoration should be able to support project affected people to gain a similar or even better livelihood, independently. It is important that the land acquisition and resettlement process will not cause dependency on the project, which eventually would make more problems in the future.
3. The livelihood restoration should be focused on the characteristics of the vulnerability and potential sources of livelihood assets that each household owns.
4. Involvement of representatives of communities, the project-affected people and host populations in the consultation process to build familiarity and to resolve disputes that may arise during and after the resettlement process.

9.3. Land Acquisition and Resettlement Action Plan

As mentioned in previous sections, no resettlement is proposed as part of this project. However, should this be required a comprehensive land acquisition and resettlement action plan should be developed. This land acquisition and resettlement action plan should be based on the IFC Performance Standards guidance note and should include:

- **Description of the project:** General description of the project and identification of the project area.

- **Potential impacts:** Identification of the project component or activities that give rise to resettlement, the area of impact of such component or activities, the alternatives considered to avoid or minimize resettlement; and the mechanisms established to minimize resettlement, to the extent possible, during project implementation.
- **Objectives and studies undertaken:** The main objectives of the resettlement program and a summary of studies undertaken in support of resettlement planning / implementation, e.g. census surveys, socio-economic studies, meetings, site selection studies, etc.
- **Regulatory framework:** Relevant laws of the host country, other policies and procedures, performance standards.
- **Institutional framework:** Political structure, NGOs.
- **Stakeholder engagement:** Summary of public consultation and disclosure associated with resettlement planning, including engagement with affected households, local and/or national authorities, relevant CBOs and NGOs and other identified stakeholders, including host communities. This should include, at a minimum, a list of key stakeholders identified, the process followed (meetings, focus groups, etc.), issues raised, responses provided, significant grievances (if any) and plan for ongoing engagement throughout the resettlement implementation process.
- **Socioeconomic characteristics:** The findings of socioeconomic studies to be conducted in the early stages of project preparation and with the involvement of potentially displaced people, including results of household and census survey, information on vulnerable groups, information on livelihoods and standards of living, land tenure and transfer systems, use of natural resources, patterns of social interaction, social services and public infrastructure.
- **Eligibility:** Definition of displaced persons and criteria for determining their eligibility for compensation and other resettlement assistance, including relevant cut-off dates.
- **Valuation of and compensation for losses:** The methodology used in valuing losses to determine their replacement cost; and a description of the proposed types and levels of compensation under local law and such supplementary measures as are necessary to achieve replacement cost for lost assets.
- **Magnitude of displacement:** Summary of the numbers of persons, households, structures, public buildings, businesses, croplands, churches, etc. to be affected.
- **Entitlement framework:** Showing all categories of affected persons and what options they were/are being offered, preferably summarized in tabular form.
- **Livelihood restoration measures:** The various measures to be used to improve or restore livelihoods of displaced people.
- **Resettlement sites:** Including site selection, site preparation, and relocation, alternative relocation sites considered and explanation of those selected, impacts on host communities.
- **Housing, infrastructure, and social services:** Plans to provide (or to finance resettlers' provision of) housing, infrastructure (e.g., water supply, feeder roads), and social services (e.g., schools, health services); plans to ensure comparable services to host populations; any necessary site development, engineering and architectural designs for these facilities.
- **Grievance procedures:** Affordable and accessible procedures for third-party settlement of disputes arising from resettlement; such grievance mechanisms should

consider the availability of judicial recourse and community and traditional dispute settlement mechanisms.

- **Organizational responsibilities:** The organizational framework for implementing resettlement, including identification of agencies responsible for delivery of resettlement measures and provision of services; arrangements to ensure appropriate coordination between agencies and jurisdictions involved in implementation; and any measures (including technical assistance) needed to strengthen the implementing agencies' capacity to design and carry out resettlement activities; provisions for the transfer to local authorities or resettlers themselves of responsibility for managing facilities and services provided under the project and for transferring other such responsibilities from the resettlement implementing agencies, when appropriate.
- **Implementation schedule:** This covers all resettlement activities from preparation through implementation, including target dates for the achievement of expected benefits to re-settlers and hosts, and implementing the various forms of assistance. The schedule should indicate how the resettlement activities are linked to the implementation of the overall project.
- **Costs and budget:** Tables showing itemized cost estimates for all resettlement activities, including allowances for inflation, population growth, and other contingencies; timetables for expenditures; sources of funds; and arrangements for timely flow of funds, and funding for resettlement, if any, in areas outside the jurisdiction of the implementing agencies.
- **Monitoring, evaluation and reporting:** Arrangements for monitoring of resettlement activities by the implementing agency, supplemented by independent monitors to ensure complete and objective information; performance monitoring indicators to measure inputs, outputs, and outcomes for resettlement activities; involvement of the displaced persons in the monitoring process; evaluation of the impact of resettlement for a reasonable period after all resettlement and related development activities have been completed; using the results of resettlement monitoring to guide subsequent implementation.

10. Native Communities Engagement Framework

10.1. Context

In Ethiopia, there is no specific national legislation on indigenous people, as the entire Ethiopian population is indigenous. With regards to this project, the focus is to enhance the livelihoods of native communities, including pastoral and smallholder farmers in a culturally appropriate manner, e.g. the project will supply water to the pastoral Borena people at the Gelchet Sarite Water Supply Project site, which will be for drinking and cattle upkeep.

Moreover, to comply with GCF's requirements the Ministry of Finance has developed a guiding principle entitled Native Communities Engagement Framework, which is developed to ensure the project will adhere to Free, Prior, and Informed Consent (FPIC) principles.

10.2. Definitions and approach

In this framework, the term '*native communities*' is used as this is a more acceptable terminology that indigenous groups (refer to first paragraph of this section). In a generic sense, native communities, in Ethiopia context refers to social and cultural groups possessing the following characteristics in varying degrees:

- Self-identification as members of a distinct social and cultural group.
- Collective attachment to geographically distinct habitats, territories, or areas of seasonal use or occupation as well as to the natural resources in these areas.

This framework represents the formal approach to issues affecting native communities in Ethiopia. As there are no formally recognized indigenous communities, the focus here is on native communities and NGOs, CSOs, and advocacy groups that are engaged with these communities. The aim of this native communities' engagement framework is to assess the impacts of climate change on the livelihoods of these communities, and to explore strategies for making the project investments align with their needs.

10.3. Main considerations

In the context of native communities, it should be noted that they are:

- **Vulnerable to climate change** - Native communities in Kobo-Girana and Borena are particularly vulnerable to the adverse impacts of climate change. Changes in weather patterns, extreme events, and environmental degradation directly affect their agricultural practices and pastoral livelihoods, leading to food insecurity, displacement, and heightened socio-economic challenges.
- **Limited access to resources** – Native communities in Kobo-Girana and Borena are constrained from accessing basic services such as finance, education, and healthcare.

10.4. Engagement Framework

As part of the diligence phase to the project, an assessment on the level of risk presented to native communities will be considered. This will include any potential adverse impacts, and, if any, how this will be mitigated. Overall, the framework aims to ensure that native communities



have equal access to the goods or services provided by the project.

Furthermore, considering the project's approach to stakeholder engagement, meaningful consultation will be conducted. On aspects that have negative implications to native communities, such as displacement, the project will obtain free, prior and informed consent (FPIC), before such actions are taken.

11. Conflict Sensitivity Analysis and Security Risk Assessment

11.1. Conflict Sensitivity Analysis

Conflict sensitivity analysis refers to a systematic process aimed at understanding the dynamics of conflict within a specific context. It involves analysing the root causes, actors, and impacts of conflict, and assessing how interventions may interact with these factors. The goal is to ensure that interventions do not exacerbate existing conflicts and, where possible, contribute to peacebuilding efforts. This involves continuous monitoring and adaptation of strategies to maintain a positive impact on conflict dynamics.

Amhara Region

While not a full-scale regional conflict, localized incidents and sporadic violence have persisted in Amhara regional state. This section attempts to assess the conflict dynamics and security risks associated with the GCF-funded project in the North Wello zone of the region. The analysis draws on information from Ethiopian government communication affairs offices, UNOCA, the Ethiopian Human Rights Commission, the US Embassy, and other credible sources. It aims to identify and mitigate potential conflicts and security risks to ensure the project's success while fostering peace and stability. By understanding the local context and potential interactions of the project with existing tensions, this report provides recommendations for mitigating risks and enhancing the project's positive impact. The scope of this assessment includes analysis of the main drivers of the conflict, key actors, impact on the project and proposed mitigation measures as well as measures taken by the government of Ethiopia.

The main drivers of conflict in Amhara region include political and ethnic tensions, competition for resources, historical grievances, disarmament disputes and the actors involved are local armed groups and central government forces.

This project will have some negative impacts with regards to the implementation of the project mainly:

- Potential disruption of project activities
- Risk to the safety of project staff and beneficiaries
- Possible destruction or vandalism of project infrastructure
- Political tensions and arbitrary detentions may affect community trust and participation in the project.

The main potential mitigation measures are stipulated below:

- **Community Engagement:** Engage local leaders and communities to build trust and ensure support for the project.
- **Conflict Monitoring:** Regularly assess conflict dynamics and adjust operations as needed. This proactive approach allows for timely interventions and minimizes potential disruptions.
- **Conflict Mitigation:** Continuous assessment of conflict situations with flexibility to halt disbursements. Engage with political solutions to address root causes of conflicts and ensure the project contributes positively to regional stability.

- **Awareness Campaigns:** Conduct regular awareness campaigns about the project's benefits, focusing on building trust and mitigating risks of vandalism and theft.
- **Training Programs:** Implement comprehensive training programs for local technicians and operators to enhance their skills in maintaining and operating solar-powered water systems
- **Withhold funding:** In the unlikely incidence of full-scale war, fund disbursement to the project woredas should be halted until the federal government issues commencement of operations.
- **Knowledge Transfer:** Engage international experts to provide technical assistance and support, ensuring local teams are well-equipped to handle technical challenges

Oromia Region

Oromia has a history of clashes between government forces and insurgent groups, driven by issues of marginalization, land disputes, and political representation. Efforts are being made to settle tensions through political dialogue, but sporadic violence and instability continue to affect local communities and development efforts in some parts of the regions. The main conflict drivers, actors, potential impacts of conflict on the GCF project and proposed mitigation measures are presented as follow. Furthermore, the efforts, which the government of Ethiopia is undertaking are also highlighted.

The main drivers of conflict in Amhara region include ethnic and political marginalization, land and resource disputes, and opposition to central government policies. The main actors involved in this conflict are insurgent groups and Federal government forces.

This project will have some negative impacts with regards to the implementation of the project mainly:

- Operational delays and increased costs
- Safety risks for project staff and beneficiaries
- Potential vandalism or theft of project assets

The main potential mitigation measures are stipulated below:

- **Community Engagement:** Strengthen local governance by involving community leaders in decision-making processes and project implementation.
- **Capacity Building:** Implement comprehensive training programs for local technicians and operators.
- **Withholding funding:** In the unlikely incidence of full-scale war, fund disbursement to the project woredas should be halted until the federal government issues commencement of operations.
- **Knowledge Transfer:** Engage international experts to provide technical assistance and support, ensuring local teams are well-equipped to handle technical challenges

11.2. Government Action towards conflict resolution

The government of Ethiopia has commenced multi-pronged efforts to address the conflict in Amhara and Oromia Regional States. Some of these efforts include:

- **Reorganization:** The government in collaboration with bilateral and multilateral development partners is working to create alternative livelihood options and other opportunities for former fighters and members of militia groups.
- **Dialogue and Negotiation:** The federal government in collaboration with various international bodies is working to engage in dialogue with the militia groups to deescalate tensions and address underlying grievances and achieving a sustainable peace.
- **Humanitarian Assistance:** The government, in collaboration with international partners, has launched extensive humanitarian programs to support those affected by the conflict. This includes providing food aid, medical supplies, and support for internally displaced persons (IDPs). Despite these efforts, the humanitarian situation remains dire, with millions in need of assistance and significant displacement within the region.
- **Accountability and Human Rights:** The Ethiopian government has expressed its willingness to ensure accountability and justice for violation of human rights violations and other atrocities occurred in areas where conflict occurred.

11.3. Security Risk Assessment

The security risk assessment identifies potential security threats that could affect the GCF-funded project. These threats include ethnic violence, armed attacks, political unrest, and criminal activities. Risk evaluation involves determining the likelihood of various threats occurring and their potential impact on the project. Given the current tensions in the project target regions, it is important to assess the likelihood probability of occurrences and likelihood impacts of security incidents, which could significantly affect personnel safety, disrupt project activities, and lead to resource loss. Accordingly, assessment has been conducted based on the following key risk areas.

Political and Governance Risks

Description: Political instability and ongoing conflicts in the Amhara and Oromia regions pose significant risks to the project's implementation. These risks include disruptions to project activities, destruction of infrastructure, and unsafe conditions for staff and beneficiaries.

Probability: Low to Medium

Impact: High

Mitigation Measures:

- Monitor political developments and conflict hotspots regularly.
- Maintain flexible project plans to adapt to changing security conditions.
- Engage with local and regional authorities to secure support and ensure the safety of project operations.
- Develop contingency plans for relocating project activities if necessary.

Technical and Operational Risks

Description: The conflict environment can lead to operational delays, increased costs, and the risk of vandalism or theft of project assets.

Probability: Low

Impact: Medium to High

Mitigation Measures:

- Strengthen community engagement to foster local ownership and protect project assets.
- Implement security measures such as fencing and local security agreements.
- Train local communities on the importance and proper use of project assets to prevent vandalism.

Environmental and Social Risks

Description: Conflict can exacerbate environmental degradation and social tensions, impacting the project's sustainability. The displacement of communities due to conflict can hinder project activities and outcomes.

Probability: Low

Impact: Medium

Mitigation Measures:

- Incorporate conflict-sensitive approaches in project planning and implementation.
- Support community-led initiatives to enhance resilience and reduce environmental impact.

Financial Risks

Description: Conflict can lead to financial instability, affecting the flow of funds and increasing implementation costs due to security measures and potential damage to infrastructure.

Probability: Low to Medium

Impact: Medium

Mitigation Measures:

- Establish flexible financial mechanisms to accommodate unforeseen expenses.
- Seek additional funding or contingency grants to cover conflict-related costs.

12. Due Diligence and Environmental Audit

The project has developed an environment and social due diligence questionnaire (Appendix 3) to identify any potential associated facilities (e.g., water distribution lines) that require such assessment.

The due diligence includes questions on whether there are:

- Environmental implications, such as impact on water availability and impact on biodiversity, due to the development and siting of these associated facilities, and
- Impacts on individuals and households, including loss of land, due to the development of associated facilities, such as distribution lines and water pump installations.
- Occupational health and safety issues on those involved in the development of water and other facilities.

Moreover, considering that the project involves upgrading existing facilities, an initial environmental audit will be carried out incorporating the following information, namely:

- **Executive Summary:** A concise discussion of all environmental and occupational health and safety areas of concern. Possible additional summary information may include recommended mitigation measures and their priority, the cost of mitigation, and a schedule for compliance.
- **Scope of the Audit:** A description of what the audit focused upon (where the audit was conducted), what was audited (processes, organization, operations, etc.), when the period of performance began and ended
- **Regulatory Setting:** Tabular summary of applicable environmental and occupational health and safety laws, regulations, guidelines, and policies as they may directly pertain to the scope of the audit.
- **Audit and Site Investigation Procedure:** Brief overview of the approach used to conduct the audit. A discussion of the records review, site reconnaissance, and interview activities; description of the site sampling plan and chemical testing plan, field investigations, environmental sampling and chemical analyses and methods, if applicable.
- **Findings and Areas of Concern:** Detailed discussion of all environmental and occupational health and safety areas of concern, which are prioritized into categories of those requiring immediate action; mid-term action; and long-term action.
- **Corrective Action Plan, Costs and Schedule (CAP):** For each area of concern, the appropriate corrective actions to mitigate them and why they are necessary. This includes estimates of the cost of implementing the corrective actions and a schedule for their implementation.
- **Annexes:** including references, copies of interview forms, any details regarding the audit protocol not already included, and data obtained during the audit.

13. Sexual Exploitation, Abuse and Harassment (SEAH)

The Government of Ethiopia through its Ministry of Women and Social Affairs (MoWSA) has drafted a Women Empowerment and Gender Equality policy which has provisions for Gender Based Violence. The policy is currently under review and once approved all public institutions including Ministry of Finance (MOF) are required to apply it.

The Ministry of Finance (MOF) has an employee code of conduct which states:

- Committing, attempting or facilitating conditions for sexual harassment, abuse, and/or violence, against a colleague or customer shall be penalized
- Employees and heads shall not abuse their authorities and apply such authorities to get personal interests.

Furthermore, to ensure Sexual Exploitation, Abuse and Harassment (SEAH) does not undermine the well-being of the communities and other stakeholders who will be involved in this project, guidelines are recommended to be in place. Specifically, the following potential risks are identified along with recommended mitigation actions:

1. Lack of awareness of what SEAH constitutes and how it needs to be addressed
 - Create awareness on prevention, handling and monitoring of SEAH in collaboration with MoWSA and its regional and woreda level offices.
 - This will be done to all those involved at federal, region and woreda levels by having dedicated sessions during project implementation team meetings.
2. Risk of SEAH during project delivery including trainings, irrigation system placements etc.
 - Put in place a screening process to identify project activities that might have high risk of SEAH.
 - Ensure any contracts to be signed between the project and partners (including project personnel) contain SEAH clauses.
3. Risk of violence against women within household due to increased women empowerment
 - Have a dedicated SEAH sessions during community consultations including women-only consultations.
 - Ensure they are clear on who to contact (and how) in case of any incidence.
4. Lack of reporting system

- Develop a Grievance Redress Mechanism for the project and ensure all stakeholders are aware of it.
- Ensure the reporting mechanisms are simple and safe.
- Ensure all stakeholders including contracted partners, project staff, government counterparts are required to report suspected or actual SEAH cases.
- Establish a safeguarding team at the project management level at the beginning of the project.
- Assign SEAH focal point both within the communities, project staff and women and social affair offices at the woreda level who will assist in reporting cases to the safeguarding team; this will support smooth communication and provide a sense of security to community members.
- Make different channels are available for reporting including telephone, in-person, police, community elders etc.
- The safeguarding team to advise on how to resolve reported cases and refer it to the police if necessary.
- All SEAH reports will be kept confidential to protect those involved.

5. Lack of follow up and proper documentation

- As part of its project monitoring, the AE will monitor the proper follow up of reported cases and how they are being kept.
- Reported cases will be included in the project report.
- Lessons learned through this process will be documented and be used to improve the project processes as well as future projects and programs of the AE.

Please refer to the Gender Assessment and Action Plan (GAAP) document and specifically to Activity 4 of the Gender Action Plan (on page 42), which is on Sexual Exploitation, Abuse and Harassment (SEAH).

14. References

1. ADSWE, 2017. Groundwater irrigation project in Kobo-Girana Valley. *Amhara Design and Supervision Works Enterprise, Bahir Dar.*
2. FDRE, 2021. Updated Nationally Determined Contribution. *Federal Democratic Republic of Ethiopia, Addis Ababa.*
3. FDRE, 2018. One Wash National Programme: A multisectoral SWAP. Phase II Programme Document. *Federal Democratic Republic of Ethiopia, Addis Ababa.*
4. Fenetahun, Y., and Fentahun, T. Socio-economic profile of arid and semi-arid agropastoral region of Borena rangeland Southern, Ethiopia. *MOJ Eco Environ Sci. 2020;5(3):113-122. DOI: 10.15406/mojes.2020.05.00183*
5. Gebreyes, M., and Müller-Mahn, D., 2019. Cultural political economy of irrigation management in northwestern Ethiopia: The case of the Kobo Girana Valley Development Programme. *Water Alternatives 12(3).*
6. KGVPD, 2019. The annual report of commercialized households. *Kobo Girana Valley Development Programme, Kobo.*
7. MCE (nd). Kobo-Girana pressurized irrigation study and detail design: Environmental impact assessment. *Metaferia Consulting Engineers, Addis Ababa.*
8. MOWIE, 2017a. Groundwater resources evaluation and assessment project of Borena area, draft final report: Volume I, Socio-economic study. *Ministry of Water Irrigation and Energy, Finfinne.*
9. MOWIE, 2017b. Groundwater resources evaluation and assessment project of Borena area, final report: Volume II: Geology & structural geology. *Ministry of Water Irrigation and Energy, Finfinne.*
10. MOWIE, 2017c. Groundwater resources evaluation and assessment project of Borena area: Volume V: hydrogeology & groundwater modeling annex i: main report; hydrogeology. *Ministry of Water Irrigation and Energy, Finfinne.*
11. MOWIE, 2017d. Groundwater resources evaluation and assessment project of Borena area, final report: Volume VII: Environmental scoping study. *Ministry of Water Irrigation and Energy, Finfinne.*
12. MOWR, 2009. Hydrological investigation report for Kobo-Girana Pressurized irrigation project, Volume - I, II, and III. *Ministry of Water Resources, Addis Ababa.*
13. Misgan, M., 2021. The Impact of Agricultural Commercialization on Food Security in Amhara Region: The Case of Kobo Girana Valley Development Program. *International Journal of Scientific & Engineering Research 12(3). ISSN 2229-5518*
14. OWMEB, 2019a. Gelchet-Sarite WSP feasibility study, socioeconomic study final report. *Oromia Water, Mineral and Energy Bureau, Finfinnee.*
15. OWMEB, 2019b. Gelchet-Sarite WSP feasibility study, detail design and project completion service, volume-IA final detail design report, *Oromia Water, Mineral and Energy Bureau, Finfinnee.*
16. OWMEB, 2019c. Environmental impact assessment: Gelchet-Sarite Water Supply Project. *Oromia Water, Mineral and Energy Bureau, Finfinnee.*
17. RKWAO, 2019. The Status of Food Security in Amhara Region. *Raya Kobo Woreda Agriculture Office, Kobo.*

18. Shiene, SD., 2012. Effectiveness of soil and water conservation measures for land restoration in the Wello area, northern Ethiopian highlands. Eds. Vlek, PLG., Denich, M., Martius, C., Manschadi, A., and Bogardi, J. *Ecology and Development Series No. 89*.
19. Tekle, FT., 2014. Assessment of Solar Energy Resources in Ethiopia: Modeling solar radiation and GIS-based multi-criteria analysis. Master's Thesis in Natural Resource Management. *Norwegian University of Science and Technology, Trondheim*.
20. Toga, MT., 2020. Solar powered irrigation for sustainable development and its risk in Ethiopia. *Bahir Dar University, Bahir Dar*.
21. Triple Line Consulting, 2022. Feasibility Study for the project climate-resilient community access to safe water powered by renewable energy in drought-vulnerable regions of Ethiopia. *Triple Line Consulting, Addis Ababa*.
22. Wood, C (2003). Environmental Impact Assessment: A Comparative Review, Second Edition, *Pierson Education Limited, Essex*

Appendix 1. List of Interviewees Consulted During Preparation of the ESMP

	Name	institution	Interview focus and date
1	Workneh Gashie	Ministry of Water and Energy	<ul style="list-style-type: none"> - The expert was involved in the initial design of the Gelchet-Sarite Water Supply project. - He has also conducted several recent visits to see development and progress in implementation of project. - The interview focused on understanding the existing environmental, social and health baseline in the area. - The identified impacts and proposed mitigation measures were also discussed with him - The interview took place on 21 Jan 2022.
2	Leta Abate	Engineering Corporation Oromia	<ul style="list-style-type: none"> - The expert is part of the team that is currently doing an upgrade/update study of the original project design document of the Gelchet-Sarite Water Supply project. - This study is current ongoing. - The interview focused on validating some of the ESMP observations with up to date information from this team that was doing work on the ground at present. - Interview was conducted on 28 Feb 2022.
3	Nega Ashagrie	Environmental Protection Authority	<ul style="list-style-type: none"> - The expert is part of the resource mobilization team at EPA. - The interview was conducted to understand any update to the EIA and other related legal requirements in Ethiopia. - Interview was conducted on 10 March 2022.
4	Jarso Qanchow	Borena community representative	<ul style="list-style-type: none"> - These community representatives in Borena where the Gelchet-Sarite Water Supply project is based, were interviewed together. - The interview focused on understanding the existing environmental, social and health baseline in the area. - The identified impacts and proposed mitigation measures were also discussed with them. - The interview took place on 11 Mar 2022.
5	Galma Denge	Borena Yabello community representative	
6	Dr. Molla Melesse	Kobo-Girana Valley Development Program (KGVDP)	<ul style="list-style-type: none"> - Dr. Molla is the head of the Kobo-Girana Valley Development Program (KGVDP) and has extensive understanding of the area. - The interview focused on understanding the existing environmental, social and health baseline in the area.

	Name	institution	Interview focus and date
			<ul style="list-style-type: none"> - The identified impacts and proposed mitigation measures were also discussed with them. - The interview took place on 21 Mar 2022.
7	Moges Getahun	Kobo community representative	<ul style="list-style-type: none"> - A community representative in the Kobo Girana Valley. - The interview focused on understanding the existing environmental, social and health baseline in the area. - The identified impacts and proposed mitigation measures were also discussed with him. - The interview took place on 19 April 2022.
8	Hizkyas Dufera	Ministry of Irrigation and Lowlands	<ul style="list-style-type: none"> - Advisor to the Minister of Irrigation and Lowlands - Interview was conducted to understand the role of the newly established ministry in the implementation of the project in general and in the implementation of the ESMP in specific. - Interview/discussion was held on 22 Apr 2022.
9	Andualem Bekele	Amhara Region Bureau	<ul style="list-style-type: none"> - An expert within the Regional (provincial) government in Amhara, where Kobo Girana is situated. - Interview was conducted to clarify the role of the regional government in the implementation of the project in general and in the implementation of the ESMP in specific. - Interview was conducted on 27 May 2022.
10	Daniel Reta	Oromia Region Bureau - Borena	<ul style="list-style-type: none"> - An expert within the Regional (provincial) government in Oromiya, where the Gelchet-Sarite Water Supply project is situated. - Interview was conducted to clarify the role of the regional government in the implementation of the project in general and in the implementation of the ESMP in specific. - Interview was conducted on 2 June 2022.

Appendix 2. Stakeholders Consultation

ANNEX 7: Stakeholders' Consultation

Climate-resilient community access to safe water powered by renewable energy in drought-vulnerable regions of Ethiopia



June 2024

Table of Contents

Background	131
The Stakeholder Engagement Process.....	133
Engaging stakeholders on proposal co-development and consultation.....	135
The main stakeholder consultation event.....	137
<i>Presentation.....</i>	<i>138</i>
<i>Discussion.....</i>	<i>138</i>
<i>Way forward.....</i>	<i>140</i>
Proposed Stakeholder Engagement Plan.....	141
Context.....	141
Proposed stakeholder engagements.....	141
Stakeholder Engagement Plan.....	142
Participants List: Stakeholder engagement event (22-25 January 2021)	145
Participants List: Main stakeholder consultation event (6-7 April 2022).....	146

Background

The project “Climate-resilient community access to safe water powered by renewable energy in drought-vulnerable regions of Ethiopia” is implemented in **two intervention areas** that are particularly climate-vulnerable, namely the **Borena zone** and the **Kobo Girana valley**.

The **Borena Zone** is in the southern rangelands in Oromia region where livestock is the predominant source of food and income for the agro-pastoral population (Fenetahun and Fentahun, 2020). In this target zone, the project area comprises four arid to semi-arid, drought prone and food insecure districts (or “woredas”), namely Yabello, Dire, Dilo, and Teltele (MOWE, 2017). In total, the area spans 19,285 km² and hosts an estimated 503,373 inhabitants as well as a population of approximately 1,469,900 livestock. On average, the modelling results for the hydrogeological system, consisting of the four sub-basins Laga Balal, Ririba, Magado and Taltale, estimate the total available water recharge at about 187,5 mcm/year. Due to highly fractured form of sub-surface water basins in Borena, no robust estimates or data exist on static groundwater supply. However, sensitivity analyses in the feasibility study estimate that, given the depth of basaltic aquifers in this hydrogeological zone, ground water extracted through this project will not tap into reserve of the ground water aquifer system but only extract water from surface water recharge. With solar radiation of >7,39 Kw/day in December, the target area is estimated to have a particularly high potential to use Solar water Pumps (SWP) (Tekle, 2014). Existing deep wellfields include the Galchet-Sarite water supply project and the Borena Network Water Supply Project.

The Amhara region’s **Kobo Girana Valley** in northern Ethiopia is a mountainous and traditionally fertile area with abundant (but largely untapped) groundwater resources potential. Population is estimated at about 1.6 million, on approximately 3,500 km² and hence much more densely inhabited. Given previous (diesel-pump centered) irrigation development in the area as part of the Kobo-Girana Valley Development Programme (KGVDP)⁴, geohydrological data is available and groundwater reserves are estimated at about 2,548.74 mcm (Million Cubic Meters), static estimate (Tripleline, 2022). Similar to the Borena zone, total abstraction through project-induced well

⁴ For a historical overview and critical account see Gebreyes, Million; Müller-Mahn, Detlef (2019): Cultural Political Economy of Irrigation Management in Northeastern Ethiopia: The Case of the Kobo-Girana Valley Development Programme, in: *Water Alternatives*, 12, p. 836-852

rehabilitation will not tap into reserve of the ground water aquifer system but only extract water from surface water recharge. Especially given shifting precipitation patterns and higher evaporation gradients the recharge rate of sub-basins will however need continuous monitoring to ensure the sustainable recharge of the groundwater supply.

To this end, the project develops a new partnership between federal, regional and community stakeholders by pioneering Solar Water Pump (SWP) provision through the engagement of Water User Associations (WUAs), cooperatives and small businesses in establishing and utilizing solar water pumping for drinking water and irrigation. Agricultural cooperatives and water user associations offer existing social organization established at the local level (kebele/woreda⁵), but typically without existing renewable energy/irrigation expertise. The project pioneers financing and implementation arrangements that are self-sustainable and replicable, thereby accelerating the GoE's objective for universal access to safe water as well as increasing agricultural productivity.

The objective of the project is to strengthen rural climate resilience by enabling the sustainable extraction of ground water in deep aquifers with solar water pumping (SWP) for agricultural production and drinking. To this end, the specific project objectives are to enable the sustainable use of deep boreholes for irrigation and drinking water and increase the adaptive capacity of the communities in these localities. The boreholes that are to be used for the project have already been drilled but were originally designed for use with diesel generators, which failed due to a lack of finance.

To ensure the full participation of the stakeholders concerned, several stakeholder consultations were facilitated during the design process of the project with national and district levels stakeholders. In this context, the project design consulted with a range of stakeholders and ensured that their views were considered.

⁵ A woreda is a local administrative level, which is the equivalent of a local district; a kebele is the lowest administrative unit (sub-district). Each woreda has an average population of 100,000. A kebele has an average population of 5,000.

The Stakeholder Engagement Process

At the onset of the project formulation, key stakeholders were identified in a consultative manner with Federal and Regional counterparts. The stakeholders identified included government agencies, civil society and non-government organizations, academic institutions, research centres and the private sector. Table 1 elucidates the key stakeholders identified and the role they play.

Table 1: Key stakeholders identified through a stakeholder mapping and assessment process

Stakeholder	Role	Impact
Federal Government Organs		
Ministry of Irrigation and Lowlands	To engage subject matter specialists in the project design and implementation	Poor design of the project, challenges in the project implementation
Ministry of Water and Energy	To engage subject matter specialists in the project design and implementation	Poor design of the project, challenges in the project implementation
Regional state stakeholders		
Bureaus of Irrigation and Lowlands in Oromia and Amhara	Need to make sure that regional priorities are part of the design and implementation is coordinated and delivery is efficient and effective	Project design and implementation will not be effective without the full engagement of line bureaus as they are mandated
Bureaus of water and energy in Oromia and Amhara	Need to make sure that regional priorities are part of the design and implementation is coordinated and delivery is efficient and effective	Project design and implementation will not be effective without the full engagement of line bureaus as they are mandated.
Local level Stakeholders		
Woreda administrator's office	Ensure delivery of social, economic and environmental goals of the district.	Poor coordination, delayed project progress, community not mobilized,
Farmers training centers	Mandated to provide farmers training and are also target for capacity building.	Farmers training and field implementation jeopardized

Stakeholder	Role	Impact
Religious organization	Engagement in community affairs, capacity building	Community mobilization and resistance to change
Other institutions such as school and health centers etc.	Engagement in the community affairs, capacity building	Exclusion generates mistrust and misunderstanding
Social groups (including community and vulnerable groups) representatives	Equal participation in project design and implementation, equal benefit sharing from the project outputs.	Project ineffective and unsustainable
Private sector	Technology and input supply opportunity, reliable market and capacity building	Poor participation leading to ineffectiveness,
	Reliable supply of agricultural produces, access to fiancé and capacity building	Poor participation of private sector in the agricultural value chain
Civil society organisations/NGOs	Voice community concern; engage in the project design and implementation, involve in ESS	Counterproductive communication, opportunity for synergy and co-financing
Academic and research organization	Engage in training, capacity development, technology and good practice generation,	Project not capturing opportunities and partnership

Some of these key stakeholders identified were consulted during the initial design stage of the project. To this end this consultation on the project design, 22-25 January 2021, in Adama (Ethiopia): This was a co-development event on the concept note/proposal development with experts and relevant stakeholders, including the Oromia and Amhara regions, where respectively the Borena (Galchet-Sarite) and Kobo-Girana localities are situated. On 13-14 April 2021, in Bishoftu (Ethiopia), this initial co-development exercise was further validate by the same participants.

Moreover, on 24 May 2021, in Addis Ababa (Ethiopia) an event organized to discuss with the private sector its potential engagement and access to GCF resources. As part of this process the project proposal on *Climate-resilient community access to safe water powered by renewable energy in drought-vulnerable regions of Ethiopia* was also presented as a potential area for private sector engagement.

As relevant, additional capacity building trainings on a number of relevant areas were also provided to key stakeholders during these events.

After these events, there was a longer proposal development process (between May 2021 and April 2022), during which the proposal development team continued to draw up on the expertise of several stakeholders from the project localities. Following this proposal development period, the main consultation event was organised in Adama (Ethiopia) on 6 and 7 April 2022. This event validated the overall project proposal and more specifically the Project's Environment and Social Management Plan and the Gender Assessment. This consultative event was attended by over 50 participants representing government, civil society, community representatives (including representatives of farmer and pastoral groups in Kobo-Girana and Borena, respectively), private sector, consultants and advisors undertaking work in these localities.

Engaging stakeholders on proposal co-development and consultation

The initial stakeholder engagement for the co-development of the concept and proposal took place in Adama between 22-25 January 2021. The event was attended by around 35 participants, of which more than half were representatives from the Oromia and Amhara regions, where respectively the Borena (Galchet-Sarite) and Kobo-Girana localities are situated (the list of participants is included).

In **Table 2** as the main elements that needed to be included in the proposal are highlighted.

<i>Area of concern</i>	<i>Where is it a concern? Borena, Kobo-Girana or both</i>	<i>What aspect should be considered and/or addressed?</i>
Subsistence agriculture and poverty is becoming magnified in event of climate extremes, and disasters that are slow and fast onset.	Mainly in Borena	low levels of technology, limited farm inputs, low access to finance, limited extension services, inadequate transport networks and low market information.
Absence of early warning system and therefore farmers are less prepared for climate shocks and do not optimize agricultural operation using real-time weather information, which could have boosted	Both in Borena (Galchet-Sarite) or Kobo-Girana Valley	Inadequate weather observation system and absence of climate information service,

Area of concern	Where is it a concern? Borena, Kobo-Girana or both	What aspect should be considered and/or addressed?
productive and reduced lose.		
Food insecurity: most household do not meet their food need, prevalence of high malnutrition	Both in Borena (Galchet-Sarite) or Kobo-Girana Valley	Limited livelihood Livelihood sensitive to climate shocks- (both slow and fast onset hazards)
Animal health: poor animal health, and high death rate of animals leading to precarious community livelihood	Mainly in Borena	Shortage of animal nutrition, fodder and pasture degradation, poor veterinary service, overstocking, genetic limitation in meat, milk and egg production and poor management of hydro-meteorological hazards; Animal concentration in limited grazing and water points – favorable for diseases transmission
Crop production: limited crop productivity and frequent crop failure	Both in Borena (Galchet-Sarite) or Kobo-Girana Valley	Dependency on rain and flood retreat agriculture, low level of improved technology and practice penetration, Poor management of hydro-meteorological hazards
Animal production: low and poor productivity of livestock and death, sometime total loose due to drought and food-exposing the famers to climate risk	Mainly in Borena	Shortage of animal nutrition, fodder and pasture degradation, poor veterinary service, overstocking, genetic limitation in meat, milk and egg production, poor management of hydro-meteorological hazards; poor market infrastructure
Financial exclusions: culture of saving is not developed and have limited access to financial services such as banks, insurance and credit	Both in Borena (Galchet-Sarite) and Kobo-Girana Valley	Low level of financials inclusion and financial literacy, limited access to financial services
Losses of Social capital: climate induced shock undermine the social capital by escalating social problem and creating depends on aid and	Both in Borena (Galchet-Sarite) and Kobo-Girana Valley	Community institutions weakens; Conflict escalates; Traditional coping mechanism exhausts due to high intensity climate shocks such as prolonged

Area of concern	Where is it a concern? Borena, Kobo-Girana or both	What aspect should be considered and/or addressed?
exhausting community capacity and solidarity		drought, flooding and erratic rain
Increasing Water stress: decreasing water availability due to drought and low dry weather flow and poor management of available water resource	Both in Borena and Kobo-Girana.	Poor watershed management, poor rain water management practices, poor water use efficiency and low water technology penetration
Declining Forest, wood resource and biodiversity further undermine resource base resilience of community	Mainly in Kobo-Girana	Drought and desertification, over extraction of forest and wood resources, improper land use practice
Enabling environment: there is no incentive mechanism for proper, efficient and sustainable resource use and management	Both in Borena and Kobo-Girana.	Policy implementation gap, capacity of local institutions to provide services, not function market system and poor technology access and penetration, access to financial service
Weak institutional support to communities to deal with shocks, early recovery and sustain livelihood	Nationally including in Borena and Kobo-Girana.	poor capacity manifested in skill and knowledge gaps, lack of systems and facilities
Sector centred planning and implementation of development intervention not enabling effective response to climate change shock	Nationally including in Borena and Kobo-Girana.	Lack of planning model the integrate development intervention at landscape level where jurisdiction, ecosystem process, and community and other actors interact for effective development interventions

The main stakeholder consultation event

On 6 and 7 April 2022, a consultation workshop was carried out in 6 and 7 April 2022, in Adama, Ethiopia, to consult on and validate the overall project proposal “Climate-resilient community access to safe water powered by renewable energy in drought-vulnerable regions of Ethiopia” and more specifically the Environment and social management plan for this project. The consultative meeting was mostly conducted in Amharic, which is the

national language in Ethiopia. All discussions points were also recorded in the Amharic. Hence this is the summary translation of the Amharic consultation report.

The workshop was attended by over 50 participants representing government, civil society, community representatives (including representatives of farmer and pastoral groups in Kobo-Girana and Borena, respectively), private sector, consultants and advisors undertaking work in these localities. A full list of participants is found enclosed.

Presentation

The workshop started with a series of presentations in the morning of 6 April, to give context of the work undertaken and included a presentation of:

- The agenda, workshop objectives and welcoming remarks by Zerihun Gettu (representing the Ministry of Finance, which is the GCF accredited entity) and Kassahun Wakoya (representing the NDA, which is the Environmental Protection Agency),
- An overview of the project proposal by Stephan. Hoch and Philipp Cenkowsky representing the consulting team that is involved in the development of this project proposal,
- The feasibility study that was prepared for the project by Tesfaye Hailu representing the consulting team, and
- The Environment and Social Management Plan that was prepared for the project by Robi Redda representing the consulting team.

Similarly, in the morning of 7 April additional presentation were also made and included a presentation of:

- The Gender Actions Plan of the project by Arsema Andargatchew representing the consulting team, and
- The governance arrangement for the implementation of the project by Dr. Mulugeta Mengist Ayalew representing the consulting team.

Discussion

In **Table 3** the main ESS and gender issues that were addressed during this consultation event are highlighted.

Table 3: Main ESS issues raised during the consultation

Area of concern	Where is the concern from? Borena, Kobo-Girana or both	Description of concern
Displacement and resettlement	Both	Would the project acquire land from farmers/community beyond the communal land (land that is shared by communities for undertaking development activities)
Access to clean water, and water quality	Both	<ul style="list-style-type: none"> - Communities access to clean water should be given due attention, as there is very limited access in both areas at the present - Some groundwater wells in Borena have high heavy metal and fluoride content so availing drinking water to the community is important. - Due attention should be given to groundwater well quality during the project development.
Participation in the project and access to benefit sharing	Both	<ul style="list-style-type: none"> - Who will participate in the project? - It is important to understand the area extent of the project and the households that will participate in the project. - In Borena the needs of pastoral communities should be considered due to their periodic mobility. - To the extent possible the project should also look at schemes that provide wider direct and indirect benefits to communities and create a scheme for access to benefits sharing
Health and socio-economic pressure due to development	Both	<ul style="list-style-type: none"> - With such water access projects, considerable attention should be given to control and prevent the spread of diseases like malaria. - Comprehensive action should also be taken to prevent and control the prevailing communicable diseases.

The consultation event allocated sufficient time for discussions. Participants raised a number of observations and concerns raised their main concerns including:

- The need to ensure that there is little to minimal displacement and relocation of people because of the project, particularly given that most of the physical infrastructure required for the project is already constructed
- The need to allocate sufficient resource to alleviate the socio-economic and health impacts that may result from the project, considering that these aspects can be neglected, as they are perceived to be indirect impacts
- The need to build capacity locally to ensure that the ESMP is given due consideration and is implemented on the ground.

Finally, the participants highlighted potential additional impacts that can result due to the project, given the realities on the ground. Moreover, a few impacts identified were validated to be of less significance (e.g. high heavy metal and salt content in groundwater wells in Kobo Girana as there were no wells with such characteristics in the area).

Way forward

Zerihun Getu of the Ministry of Finance closed the meeting on 7 April 2022. In his closing remarks, Mr. Getu highlighted that all inputs provided in the context of the different components of the project proposal will be further reiteration of these documents. To this end, the current version of the ESMP comprehensively addresses all comments that were provided during this consultation workshop.

Overall, the consultation was concluded with positive feedback from the participants to go ahead with the project, considering that the environmental and social risks including those pertaining to resettlement and reduced access to land were mitigated and/or well addressed.

Moreover, participants highlighted the need to have continued and recurrent stakeholders' engagement during implementation.



Proposed Stakeholder Engagement Plan

Context

During the main stakeholder engagement process on 6-7 April 2022, participants highlighted the need for continued recurrent stakeholder engagement was critical to inputs to the design, preparation, implementation and operation of the project, as context-specific knowledge and connections will be key to understanding the dynamics and ensuring the success. Despite, the success of the main stakeholder event in ensuring the participation of key stakeholders, including government entities at the local, regional and national level, academia, civil society organizations, and community representatives, there was still an underlined need to further strengthen and continue this engagement. This is particularly true in terms of further engaging community representatives, MSMEs, youth and women groups, and other actors that will be engaged in the project at the local level.

Proposed stakeholder engagements

Across the program development, implementation, and monitoring, stakeholders are important in providing insight into the project design, preparation, implementation and

operation of the project. They are also important in providing insight into environmental, social, and governance risks both to the program and the communities during the life span of the project. To this end, the project is in the process of identifying a broader representative group at the community level to be coordinated by the accredited entity, to ensure that there is proactive engagement and continued buy-in of the project. Through this process, the project aims to provide update on its activities to a diverse group of stakeholders on a regular basis. The project team will share program activities, outputs, outcomes, and impacts with these groups. It will also share outcomes of stakeholder engagement activity with select groups including GCF.

Within the country the project aims to influence various stakeholders, policy makers, and private sector actors. To this end, the project will continue to engage relevant government entities/regulatory bodies to ensure buy-in and feedback on the project and to ensure compliance with policy frameworks.

Stakeholder Engagement Plan

In **Table 4** and **Table 5** the proposed engagement plan is described.

Table 4: Categories of stakeholder bodies and stakeholder engagement activities

Category	Frequency	Level of interest and focus	Stakeholder engagement activities
Federal level Steering and advisory group: Government, private sector, NGO and academia	Annual	Interest and focus on national level actors and on governance aspects of the project, its overall implementation and its potential for replication.	<ul style="list-style-type: none"> - Assessing the effectiveness of the governance structure for project implementation - High level discussion on opportunities and challenges - Identification of gaps and overlap to coordinate other engagements with the project. - Soliciting inputs and feedback
Regional level implementation support group: Government, MSMEs, NGOs, academic institutions	Bi-annual	- Interest and focus on regional/ provincial level actors and on the overall implementation of the project.	<ul style="list-style-type: none"> - More specific discussions on opportunities and challenges - More specific identification of gaps and overlap to coordinate other engagements with the project. - Soliciting inputs and feedback

Category	Frequency	Level of interest and focus	Stakeholder engagement activities
		<ul style="list-style-type: none"> - There is one that is established per region. - One implementation group per region will be established. 	<ul style="list-style-type: none"> - Participating in local level M&E missions.
<p>Local level: Woreda Steering and Implementation Support Group: Relevant sector government offices, and other actors as needed.</p>	Quarterly	<p>Interest and focus on practical aspects including gender, social, and environmental risks, challenges and opportunities. Updates on potential conflict (if any).</p>	<ul style="list-style-type: none"> - Quarterly discussions which are specific on implementation status of the project. - Discussions on specific challenges and opportunities. - Direct engagement with community representatives. - Farmers and pastoral communities' engagement day. - Budget transparency and posting budget annually
<p>Local Level: Community Representative Group, including community representatives, and vulnerable groups representatives</p>	Quarterly	<p>Liaising with the woreda steering group, the Interest and focus is on practical aspects, including joint monitoring, gender, social, and environmental risks, challenges and opportunities. Updates on potential conflict (if any). participatory community monitoring meeting</p>	<ul style="list-style-type: none"> - Quarterly discussions which are specific on implementation status of the project. - Discussions on specific challenges and opportunities. - Direct engagement with community representatives. - Farmers and pastoral communities' engagement day.



Table 5: Engagement periods of the different stakeholder bodies

Engagement Body	Timeline																			
	Year 1				Year 2				Year 3				Year 4				Year 5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
5. Federal level Steering and advisory group:	█			█				█				█				█				█
6. Regional level implementation support group (Amhara)		█		█		█		█		█		█		█		█		█		█
7. Regional level implementation support group (Oromia)		█		█		█		█		█		█		█		█		█		█
8. Woreda steering and implementation support Group	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
6. Community Representatives group	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

Participants List - Stakeholder engagement event (22-25 January 2021)

	Name	Role	Region
1	DAWIT YOSEF	Water expert	Amhara
2	HUSSEN ABDELLA	Water expert	Oromia
3	ASNAKEW YEHULATEKA	Finance expert	Amhara
4	BESINET AMARE	Finance/ management expert	Amhara
5	DASNET AMARE	Finance expert	Oromia
6	ABRAHAM SINTAYEHU	Irrigation expert	Amhara
7	SNUREDIN HASSEN	Water Expert	Oromia
8	KASSAHUN H/GEBRIEL	Irrigation expert	Amhara
9	ADIL AHMED	Irrigation expert	Oromia
10	TILAHUN ADANE	Irrigation expert	Amhara
11	ETHIOPIA KASSAYE	Climate change expert	National government
12	SAMUEL TEKA	-	-
13	RESHID MUSTEFA	Irrigation expert	Oromia
14	ABEBE BEDANE	Finance expert	Oromia
15	TADELE MOLLA	Finance expert	Amhara
16	SENAYIT GABISA	Finance expert	Oromia
17	DAWIT MEKONNEN	Irrigation expert	Amhara
18	DEMELASH GELETA	Finance/management expert	Oromia
19	ABAS MOHAMMED	Climate change expert	National government
20	MENSUR DESSIE	Climate change expert	-
21	MOHAMMED ANDOSHE	Climate change expert	-
22	WUBSHET MENGISTU	Climate change expert	-
23	MASRESHA YIFRU	Climate change expert	-
24	ADDISU NEGASH	Climate change expert	-
25	ASEFA CHIMDI	Climate change expert	-
26	SAMSON EMIRU	Climate change expert	-
27	RUKIA SEID	Desk head	-
28	SORI CHALCHISA	Expert	-
29	TIGIST YEHEYIS	Director	-
30	WESENYELESH GETU	Director	-
31	YEHENEW ABEBE	officer	-
32	YETNAYET AMBACHEW	Expert	-
33	HABTAMU LIJALEM	Expert	-
34	HANA BASAZINEW	Expert	-
35	HAREGEWOIN BELAY	Expert3	-

Participants List - Main stakeholder consultation event (6-7 April 2022)

	Name	Role or institutions
1	Workneh Gashie	Ministry of Water and Energy
2	Samson Emeru	Ministry of Agriculture
3	Addisu Negash	Ministry of Agriculture
4	Teshale Bekasa	Oromia Water and Energy
5	Abebe Tamiru	Oromia Water and Energy
6	Tesfaye Lulie	Ministry of Water and Energy
7	Tefera Demesa	Ministry of Water and Energy
8	Fekadu Shentema	Ministry of Water and Energy
9	Leta Abate	Engineering Corporation Oromia
10	Kedir Hussein Seid	South Wollo Agriculture Dessie
11	Kapital Jemal	South Wollo Agriculture Kemissie
12	Solomon Alemu	Ministry of Agriculture
13	Temesgen Abera	National Meteorology Agency
14	Abay Husen	Oromia Water and Energy
15	Semere Gebre-Wahid	Amhara
16	Sisay Abbibaa	Oromia
17	Sedlework Mulat	Amhara Bureau of Finance
18	Solomon Ali	Ministry of Water and Energy
19	Anga Sebani	WASH Ethiopia Movement
20	Estifanos Getachew	OIPDB
21	Makeda Wolde Hiwot	Disaster Risk
22	Habtamu Denboba	EPA
23	Nega Ashagrie	EPA
24	Jarso Qanchow	Borena Zone
25	Nibretu Molla	Amhara Finance
26	Teferi Daba	Oromia
27	Zebidar Alemneh	MOWE
28	Desalegn Tebratu	EPA
29	Kasahun Wakoya	EPA
30	Asaminew Teshome	EMI
31	Senayt Zinabu	Amhara

	Name	Role or institutions
32	Bihonegn Semaw	Amhara
33	Gebre-medhin Shumiye	MOWE
34	Moges Getahun	Kobo representative
35	Zenebe Worku	Ministry of Irrigation and Lowlands
36	Tsegaye Alemu	Ministry of Irrigation and Lowlands
37	Andualem Bekele	Finance Bureau
38	Zewdu Dadi	Finance Bureau
39	Addisu Bula	Amhara
40	Ahmed Gallo Ablew	Amhara
41	Barok Kifle Meshesha	MOWE
42	Asnakew Yehuala	Finance Bureau Amhara
43	Galma Denge	Borena Yabello community representative
44	Banteamlak Wondimnew	Amhara
45	Mihretu Mohammed	Borena Zone
46	Molla Melesse	Amhara
47	Moges Sisay	Amhara
48	Demelash Geleta	Oromia
49	Daniel Reta	Borena
50	Misganaw Eyassu	MOF
51	Aschalew Befekadu	MOF
52	Genet Aynalem	MOF
53	Etenesh Gera	MOF
54	Mulugeta Meressa	MOF
55	Meron Admasu	MOF

Appendix 3: Due Diligence Checklist and Report

Due Diligence Checklist

Context: This is a checklist to be used by the project team to ensure compliance and due diligence. All materials collected here will be used to prepare a due diligence and/or an environment and social audit report as required. This will be completed by the project team, with oversight provided from the environmental and social safeguards officer of the project.				
Instructions: <ul style="list-style-type: none"> - Please ensure the “Comment” sections are completed. - If a question is marked as Not Applicable, please provide rationale. - Please include an action plan if required. - If IFC Performance Standards are applicable for this transaction, please ensure a sufficient E&S DD report is attached to the initial risk assessment. 				
Name and role	Project phase	Location	Date	Remarks
Applicable Requirements Please select the relevant response and comment on the current compliance status.				
Are the required applicable legal requirements identified and fulfilled?	Y	N	N/A	Comment Please provide evidence and/or describe
Can the team provide evidence of consultation with local government and communities?	Y	N	N/A	Comment Please provide evidence and/or describe
Is there an environmental and social oversight committee at the local level and does this body have linkages to the project?	Y	N	N/A	Comment Please provide evidence and/or describe
Labor and Working Conditions Please select the relevant response and comment compliance status				
Does infrastructure and equipment design and safety follows good industry practices?	Y	N	N/A	Comment Please provide evidence and/or describe
Is there Standard Operational Procedure for ongoing work?	Y	N	N/A	Comment Please provide evidence and/or describe
Is there a comprehensive grievance redress mechanism in place?	Y	N	N/A	Comment Please provide evidence and/or describe
Does project	Y	N	N/A	Comment

implementer and contractor provide appropriate personal protective equipment for works conducted?				Please provide evidence and/or describe
Community health and impact				
Please select the relevant response and comment compliance status				
Are there sufficient measures to mitigate and control malaria and other water borne diseases?	Y	N	N/A	Comment Please provide evidence and/or describe
Are there sufficient community awareness programmes on community and public health?	Y	N	N/A	Please provide evidence and/or describe
Does the project avoid or minimize chemical control of such diseases, which in turn can be detrimental to the environment?	Y	N	N/A	Comment Please provide evidence and/or describe
Are there appropriate disposal systems for hazardous wastes?	Y	N	N/A	Comment Please provide evidence and/or describe
Are suppliers contractually obligated to collect hazardous wastes of products they supply and dispose appropriately?	Y	N	N/A	Comment Please provide evidence and/or describe
Safety of workers and community (related to conflict)				
Please select the relevant response and comment compliance status				
Is there regular follow up on the conflict status in the area?	Y	N	N/A	Comment Please provide evidence and/or describe
Are there clearly stipulated measures to protect workers and the community from exposure to conflict?	Y	N	N/A	Comment Please provide evidence and/or describe
Land acquisition and involuntary resettlement				
Please select the relevant response and comment compliance status				
In case land is expropriated, are there instruments for compensation as per the stipulation of Section 9 of the ESIA/ESMP?	Y	N	N/A	Comment Please provide evidence and/or describe
In case land is expropriated, are there instruments for	Y	N	N/A	Comment Please provide evidence and/or describe

voluntary resettlement as per the stipulation of Section 9 of the ESIA/ESMP?				
Biodiversity Conservation and Sustainable Management of Living Natural Resources Please select the relevant response and comment compliance status				
Is there sensitive ecosystem, including natural, critical habitats and protected and internationally recognized ecological areas in the project vicinity?	Y	N	N/A	Comment Please provide evidence and/or describe
If there is sensitive ecosystem, then are procedures in place to protect these habitats?	Y	N	N/A	Comment Please provide evidence and/or describe
Native Communities' Please select the relevant response and comment compliance status				
Is the level of risk presented to native communities will be considered?	Y	N	N/A	Comment Please provide evidence and/or describe
In case of negative implications to native communities such as displacement, the project will obtain free, prior and informed consent (FPIC), before such actions are taken?	Y	N	N/A	Comment Please provide evidence and/or describe
Cultural Heritage Please select the relevant response and comment compliance status				
Has there been a chance find of cultural heritage in the project vicinity?	Y	N	N/A	Comment Please provide evidence and/or describe
Is there a procedure for handing cultural heritage in case of a chance find of a cultural heritage item?	Y	N	N/A	Comment Please provide evidence and/or describe

Additional Observations:

Due Diligence Report

The due diligence, and the environment and social audit report will include the following sections:

- **Executive Summary:** A concise discussion of all environmental and occupational health and safety areas of concern. Possible additional summary information may include recommended mitigation measures and their priority, the cost of mitigation, and a schedule for compliance.
- **Scope of the Audit:** A description of what the audit focused upon (where the audit was conducted), what was audited (processes, organization, operations, etc.), when the period of performance began and ended
- **Regulatory Setting:** Tabular summary of applicable environmental and occupational health and safety laws, regulations, guidelines, and policies as they may directly pertain to the scope of the audit.
- **Audit and Site Investigation Procedure:** Brief overview of the approach used to conduct the audit. A discussion of the records review, site reconnaissance, and interview activities; description of the site sampling plan and chemical testing plan, field investigations, environmental sampling and chemical analyses and methods, if applicable.
- **Findings and Areas of Concern:** Detailed discussion of all environmental and occupational health and safety areas of concern, which are prioritized into categories of those requiring immediate action; mid-term action; and long-term action.
- **Corrective Action Plan, Costs and Schedule (CAP):** For each area of concern, the appropriate corrective actions to mitigate them and why they are necessary. These includes estimates of the cost of implementing the corrective actions and a schedule for their implementation.
- **Annexes:** including references, copies of interview forms, any details regarding the audit protocol not already included, and data obtained during the audit.